



Automation Organizer
External Device Setup Manual

Chapter 1 PLC Link Communication

Chapter 2 Connection to a PLC

Chapter 3 O/I Link Communication

Chapter 4 DM Link Communication

Chapter 5 Modbus

Chapter 6 1: N Communication (Multi-drop)

Chapter 7 Communication Cables

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

- Be certain to read this manual carefully before performing installation, wiring, or maintenance work, or operating the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch.
- The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch has been manufactured with careful regard to quality. However, if you intend to use this product in applications where failure of this equipment may result in damage to property or injury, ensure that it used in conjunction with appropriate fail-safe backup equipment.
- In this manual, safety precautions are categorized in order of importance to Warning and Caution:

WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

WARNING

- The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch is not intended to be used for applications which require high reliability and safety, such as medical equipment, nuclear equipment, railways, aircraft, and vehicles. The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch cannot be used for these applications.
- For other applications which require high reliability in function and precision, provide a failsafe design and redundant control for the entire system including the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch.
- Turn off the power to the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch before installation, removal, wiring, maintenance, and inspection of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch. People without such expertise must not use the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch.
- The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch uses an LCD (liquid crystal display) as a display device. The liquid inside the LCD is harmful to the skin. If the LCD is broken and the liquid attaches to your skin or clothes, wash the liquid off using soap, and consult a doctor immediately.
- Emergency and interlocking circuits must be configured outside of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch. Do not use the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch's internal touch switches for an emergency circuit. If the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch failed, the external equipment connected to the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch will no longer be protected, and serious injury to operators and equipment damage may be caused. Also, connect the emergency stop switch (Direct opening action, Red switch) or the stop switch (Direct opening action, Gray switch) on the HG2S to the emergency stop circuit fixed to the machine in accordance with ISO13850/EN418.
- If an emergency stop switch is used for the HG2S, it should be secured and connected to the machine for fear of disconnecting easily.
- Connect the emergency stop switch or the stop switch and the enabling switch on the HG2S to function as either a category 0 or category 1 stop in accordance with IEC/EN60204-1 which applies to the HG2S.
- When the HG2S cable can be easily disconnected from the machine, use the HG2S with a stop switch so that the operator can easily notice that the HG2S is NOT an emergency stop device which always functions.



CAUTION

- Prevent the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch from falling while moving or transporting, otherwise damage or malfunction of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch will result.
- Use the product within the environmental limits given in the catalog and manual. Use of the product in high-temperature or high-humidity environments, or in locations where it is exposed to condensation, corrosive gas or large shock loads can create the risk of electrocution and fire.
- The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch is designed for use in pollution degree 2. Use the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch in environments of pollution degree 2. (based on the IEC60664-1 rating)
- Install the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch according to the instructions. Improper installation will result in falling, failure, electrical shock, fire hazard, or malfunction of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch.
- Prevent metal fragments or wire chips from dropping inside the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch housing. Ingress of such fragments and chips may cause fire hazard, damage, and malfunction.
- Use a power supply of the rated value. Using a wrong power supply may cause fire hazard.
- The HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch uses “PS2 of EN61131” as DC power supply. (based on the IEC/EN61131 rating)
- Use wire of a proper size to meet the voltage and current requirements.
- When exporting the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch to Europe, use an EN60127 (IEC60127) approved fuse on the power line outside the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch.
- The D-sub connector on the end of the cable of the HG2S is not water- and dust-proof. If protection against water and dust is required, the user must implement a water-proof provision on the connector or replace the D-sub connector with a water-proof connector.
- When exporting the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/3F/4F and Touch to Europe, use an EU-approved circuit protector.
- Make sure of safety before starting and stopping the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch. Incorrect operation of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch may cause mechanical damage or accidents.
- Use the HG2G-S/-5S/-5F, HG3G/4G, HG3F/4F and Touch in a local area network if you download, upload or monitor the project data via the Ethernet port.
- The touch panel of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch is made of glass, and will break if exposed to excessive shock. Take due care when handling it.
- When more than one button is pressed at the same time, due to the detection characteristics of an analog type touch panel, only the gravity center of the pressed area is sensed and the unit assumes that only one button is pressed. Thus, when more than one button is pressed simultaneously, the resulting operation is not guaranteed.
- The screen becomes blank when the backlight is burnt out, however, the touch panel remains enabled. Incorrect touch panel operation will occur when operating the touch panel when the backlight appears to be turned off but is actually burnt out. Note that this erroneous operation may result in damage.
- Do not push hard or scratch the touch panel and protection sheet with a hard object such as a tool, because they are damaged easily.
- At temperatures over the rated operating temperature, the clock accuracy is affected. Adjust the clock before use.
- For applications which require clock accuracy, adjust the clock periodically.
- Do not install the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch in areas subjected to strong ultraviolet rays, since ultraviolet rays may impair the quality of the LCD.
- Do not attempt to disassemble, repair or modify the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch. This can create the risk of fire or electrocution.
- When disposing of the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F and Touch, do so as an industrial waste.

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- Do not switch off the power or pull out the Memory Card while it is being accessed, as this may result in destruction of the stored data. If the data on the Memory Card is corrupted, format the Memory Card.
 - Be sure to confirm that the Memory Card Access lamp is not lit prior to turning the power off to the HG2G-5F, HG3G/4G, HG2F/3F/4F or pulling out the Memory card. Refer to the WindO/I-NV2 User's Manual for details.
 - Do not switch off the power or pull out the USB flash drive while it is being accessed, as this may result in destruction of the stored data. If the data on the USB flash drive is corrupted, format the USB flash drive.

Revision history

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Caution

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Symbols Used in this Document

This manual uses the following symbols to facilitate description.

Symbols



Useful information relating to a function



Information that requires special attention. Failure to operate the product in accordance with the information provided can lead to serious injury or damage.



Indicates the location of related information.



Screen buttons are indicated by enclosing text inside a rectangle or by using the actual graphic icon.



Keyboard keys are indicated by the keyboard inscription enclosed in square brackets.



Controls are indicated by enclosing text inside a rectangle

Abbreviations, Generic Terms, and Terminology Used in this Manual

Item	Description
HG2G-S	The name is short for MICRO/I HG2G-S*2**F-*
HG2G-5S	The name is short for MICRO/I HG2G-5ST22*F-*
HG2G-5F	The name is short for MICRO/I HG2G-5FT22TF-*
HG3G	The name is short for MICRO/I HG3G-*JT22*F-*
HG4G	The name is short for MICRO/I HG4G-CJT22*F-B.
HG1F	The name is short for MICRO/I HG1F-SB22*F-*
HG2F	The name is short for MICRO/I HG2F-S**2V**.
HG2S	The name is short for MICRO/I HG2S-S**2H-*
HG3F	The name is short for MICRO/I HG3F-FT22*F-*
HG4F	The name is short for MICRO/I HG4F-JT22*F-*
HG2G-S/-5S/-5F	The format used to refer to HG2G-S, HG2G-5S and HG2G-5F.
HG3G/4G	The format used to refer to HG3G and HG4G.
HG1F/2F/2S/3F/4F	The format used to refer to HG1F, HG2F, HG2S, HG3F and HG4F.
MICRO/I	Generic term used to refer to the HG2G-S/-5S/-5F, HG3G/4G, HG1F/2F/2S/3F/4F.
SmartAXIS	Another name for the SmartAXIS FT1A Series.
Touch	The generic term for the SmartAXIS FT1A-M12RA-* and the FT1A-C12RA-*.
Pro	The generic term for the FT1A Series that includes an LCD, excluding the Touch.
Lite	The generic term for the FT1A Series that does not include an LCD, excluding the Touch.
External device	Generic term used to refer to a PLC or micro computer that is connected to and communicates with the MICRO/I or Touch.
Device Address	Memory that is capable of storing values in unit of bits or words loaded on the MICRO/I or Touch and external device.
System Area	Device area that is pre-allocated for exchanging screen management, error information, and clock data between the MICRO/I or Touch and external device.
PLC Link Communication	A communication method that performs communication with the external device according to the setting of the screen and without a program.
DM Link Communication	A communication method that reads to or writes from the MICRO/I or Touch device from a computer or microcomputer board.
User Communication	A communication method which performs communication with external devices such as barcode readers and inverters.
No External Devices	A method that is capable of operating the MICRO/I or the Touch independently without connecting to external device.
O/I Link	A connection format that enables connections of up to 16 units of MICRO/I or Touch with high-speed communication of 115200bps.
O/I Link Master	The MICRO/I or Touch unit that is directly connected to external device on the O/I Link network.
O/I Link Slave	The MICRO/I or Touch units that are not directly connected to external device on the O/I Link network.
WindO/I-NV2	Software for creating projects of the MICRO/I.
WindO/I-NV3	Software for creating projects of the Touch.
Project	Data including image data required for operating the MICRO/I or Touch, which is created with WindO/I-NV2 or WindO/I-NV3 Software.

Item	Description
Device Monitor	A special Popup Screen on the MICRO/I or Touch on which value of the device can be displayed or changed.
System Screen	Pre-allocated screen dedicated for performing initial setting of the MICRO/I or Touch, self-diagnosis, and clearing the log data etc.
Pass-Through	A function that enables maintenance of the external device via the MICRO/I.
Memory Card	A term referring to either a CF or SD Memory Card.
External memory	A term referring to either a CF, SD Memory Card or a USB flash drive.

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Chapter 1 PLC Link Communication

1 PLC Link Communication

1.1 Overview

With the PLC Link communication, the MICRO/I and Touch reads from and writes data to external devices such as relays and registers via the PLC's Link Unit or the CPU Unit Programming Port (the terminology used depends on the PLC manufacturer). No special communication program is required on the PLC when PLC Link communication is used.

1.2 Operation

The MICRO/I and Touch can use PLC Link communication to read from and write to external devices.

- **Reading from the PLC**

The continuously reads data from external devices set in the currently displayed screen, and display parts (such as Numerical Displays and Pilot Lamps) in the MICRO/I or Touch are updated with the latest data at all Times.

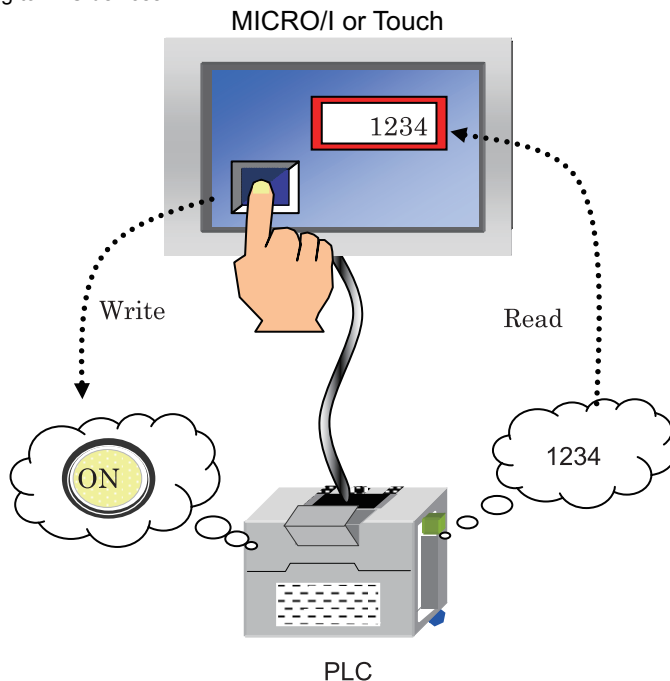
- **Writing to the PLC**

When data input parts in the MICRO/I or Touch (such as Bit or Word buttons) are operated, reading from the PLC is interrupted, and data is written to the PLC.

1.3 1: N Communication

When the Host I/F Driver or Communication Driver supporting the 1: N Communication is selected, two or more external devices can be connected to a single MICRO/I or Touch. Refer to Chapter 6 "1: N Communication (Multi-drop)" on page 653 for the details.

Reading from and writing to PLC devices

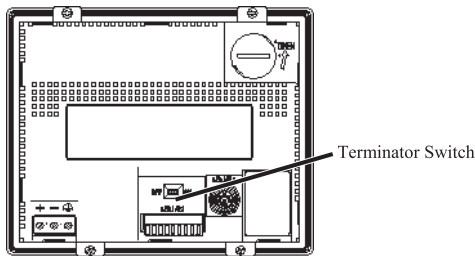


2 Important Points Regarding Wiring

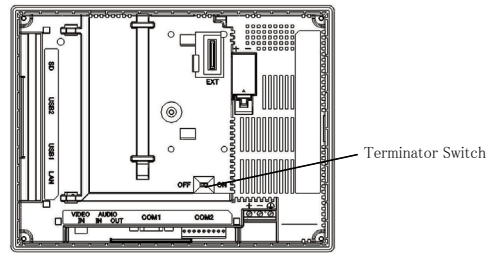
Take note of the following points when connecting a PLC to the MICRO/I or Touch.

- Depending on the environment, connect a shield wire to the FG terminal on either the PLC side or the MICRO/I or Touch side.
- When using the RS422/485 interface, use a twisted-pair cable so that the + and - signals are paired.
- In case of HG2F/3F/4F when using the RS422/485 interface, wire it using a twisted-pair cable so that the + and - signals are paired.
- In case of HG2S when using RS422/485 interface, setting the communication switch (SW2) as the below figure inserts a 330-Ohm terminating resistor. Use it if necessary.
- In case of HG2G-S/-5S/-5F, HG3G/4G and HG1F when using RS422/485 interface, setting the terminator switch ON inserts a 120-Ohm at HG2G-5F, HG3G/4G, 100-Ohm at HG2G-S/-5S or 330-Ohm at HG1F. *1 Use it if necessary.
- The Touch is not equipped with terminating resistance. When using the RS422/485 interface, insert terminating resistance with the appropriate value (around 100 to 120 Ω) between terminal No. 8 (RDA) and terminal No. 9 (RDB) as required.

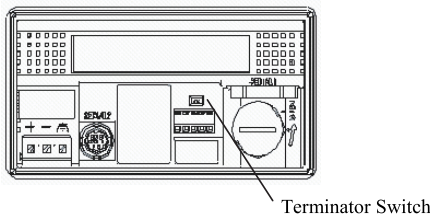
HG2G-S/-5S



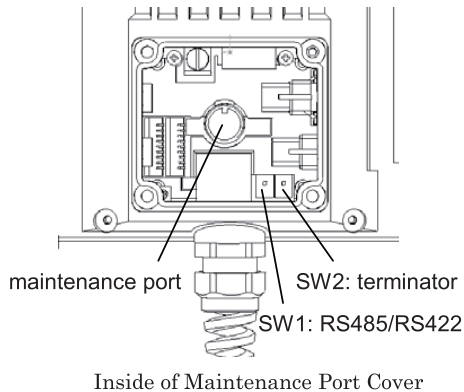
HG2G-5F, HG3G/4G



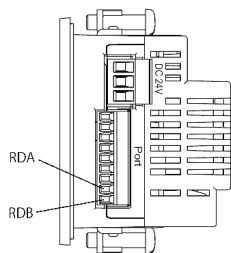
HG1F



HG2S



Touch



- | | |
|-------------------------------------|------------------------------------|
| SW1 | SW2 |
| <input type="checkbox"/> Up (RS485) | <input type="checkbox"/> Up (OFF) |
| <input type="checkbox"/> Down (ON) | <input type="checkbox"/> Down (ON) |

*1. In case of HG2G-5F, HG3G/4G inserts terminating resistor to only Terminal Port, not D-SUB port. Insert 100-120 Ohm terminating resistor when using RS422/485 interface at D-SUB port if necessary.

3 Settings for PLC Link Communication

You must setup MICRO/I or Touch using WindO/I-NV2 or WindO/I-NV3 in order for it to be able to communicate with the PLC that you will be using.

You will find the WindO/I-NV2 or WindO/I-NV3 setting items for PLC Link Communication in the Host I/F Selection and **Configuration - System Setup - Project** dialog boxes (refer to WindO/I-NV2 User's Manual or SmartAXIS Touch User's Manual). Match the settings for the items in the following table to those of the PLC that you will be using.

Configuration Procedure	Setting	Description
On the status bar, click Change Host I/F Driver or Change Communication Driver .	Manufacturer	Select the manufacturer, the Host I/F Driver or Communication Driver from the list of compatible PLCs given in Chapter 2 that corresponds to the one you will be using.
	Host I/F Driver Communication Driver	When the driver supporting 1: N communication is selected, the 1: N Communication option becomes selectable.
	Connection Type	
On the Configuration tab, in the System Setup group, click Project , and then click the Communication Interface tab.	Protocol	<p>The setting depends on the Connection to the PLC that you will use.</p> <p>HG2G-5F, HG3G/4G:</p> <p>Select Host Communication as the interface for PLC communication, and O/I Link Master or O/I Link Slave as the interface for O/I Link communication. Refer to Chapter 3 "O/I Link Communication" on page 553.</p> <p>HG2G-S/-5S, HG1F/2F/2S/3F/4F:</p> <p>Select Host Communication or O/I Link Slave from the SERIAL 1. Select O/I Link Master or O/I Link Slave from the O/I Link. Refer to Chapter 3 "O/I Link Communication" on page 553.</p> <p>Touch:</p> <p>Select the External Device Communication as the Port (RS232C). Select the External Device Communication, O/I Link Master or O/I Link Slave as the Port (RS422/485). Refer to Chapter 3 "O/I Link Communication" on page 553.</p>
	Baud Rate	The setting depends on the Connection to the PLC that you will use. Refer to Chapter 2 "Connection to a PLC" on page 7.
	Data Bits	
	Stop Bits	
	Parity	
	Flow Control	
	Serial Interface	



HG1F transmits the data even if CS signal line is OFF.

Configuration Procedure	Setting	Description
On the Configuration tab, in the System Setup group, click Project , and then click the Host I/F Driver or the Communication Driver tab.	Transmission Wait (x 10 msec.)	The settings depend on the PLC that you will use. Refer to the Environment Settings for your PLC. If there is no setting given for Transmission Wait, set it to 0.
	Retry Cycles	If communication errors occur despite trying the number set here, an error is displayed on the screen and the error information is set in the system area. The default setting is 5.
	Time Out (x 100 msec.)	This is the time that the MICRO/I or Touch will wait for a reply from the PLC after it sends a communication command. When this time elapses, the MICRO/I or Touch will send the command again. The default setting is 20. Give careful consideration to the value that you will use before changing this setting.
	Other setting	The settings depend on the PLC that you will use. Refer to the Environment Settings for your PLC.
On the Configuration tab, in the System Setup group, click Project , and then click the Host I/F Network tab	Station No	This number is used to distinguish a PLC when set to a device address.
	IP Address	IP address of each PLCs
	Port No	Port Number of each PLCs
	Other setting items	These items depend on the Host I/F Driver or the Communication Driver. You can see some items if the selected Host I/F Driver has any setting items. Refer to each manual.
On the Configuration tab, in the System Setup group, click Project , and then click the System tab	Start Time (sec.)	This is the time delay until the MICRO/I or Touch sends a communication command after the power is switched on. Set this when there may be occasions when the PLC is switched on after the MICRO/I or Touch, or when some time is required until the PLC communication port can be used.
	Use System Area	When Use System Area is selected, set Device Address for System Area so that the PLC device range is not exceeded.
	Use System Areas 3, 4	
	Watch Dog	When Watch Dog is selected, set the write device and the time for the write interval.
	Device	
Time (sec.)		

Chapter 2 Connection to a PLC

1 IDEC

Selecting OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485) as the Host I/F Driver allows the user to use the 1: N Communication and Pass-through function. However, SmartAXIS Pro/Lite does not support the Pass-through function. Selecting OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet) as the Host I/F Driver allows the user to use 1: N Communication.

- Pass-through function (Refer to "Pass-Through Function" in the WindO/I-NV2 User's Manual)
However, Touch does not support the Pass-through function.
- 1: N Communication function (Refer to Chapter 6 "1: N Communication (Multi-drop)" on page 653)

1.1 Connection Table

1.1.1 Compatible PLCs

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
OpenNet Controller								
FC3A-CP2	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P20)	Hardware	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
		RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-					

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
MICROSmart* ¹								
FC4A-C10R2	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
		RS232C Connection Diagram 1 (refer to P20)						
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet)				
FC4A-C16R2, FC4A-C24R2	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)				
		RS232C Connection Diagram 1 (refer to P20)						
	FC4A-PC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-PC3	RS422/485 2-wire Con- nection Diagram 2 (refer to P23)	None					
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet)				
FC4A-D20K3, FC4A-D20S3, FC4A-D20RK1, FC4A-D20RS1, FC4A-D40K3, FC4A-D40S3	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)				
		RS232C Connection Diagram 1 (refer to P20)						
	FC4A-HPC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-HPC3	RS422/485 2-wire Con- nection Diagram 2 (refer to P23)	None					
	FC4A-HPH1 + FC4A-PC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-HPH1 + FC4A-PC3	RS422/485 2-wire Con- nection Diagram 2 (refer to P23)	None					
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet)				

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
MICROSmart Pentra*1								
FC5A-C10R2, FC5A-C16R2, FC5A-C24R2, FC5A-C10R2C, FC5A-C16R2C, FC5A-C24R2C	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
		RS232C Connection Diagram 1 (refer to P20)						
	FC4A-PC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-PC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	FC5A-SIF2	RS232C Connection Diagram 4 (refer to P29)	None					
	FC5A-SIF4	RS422/485 2-wire Connection Diagram 2 (refer to P23)						
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-					
FC5A-D16RK1, FC5A-D16RS1, FC5A-D32K3, FC5A-D32S3	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
		RS232C Connection Diagram 1 (refer to P20)						
	FC4A-HPC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-HPC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	FC4A-HPH1 + FC4A-PC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-HPH1 + FC4A-PC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	FC5A-SIF2	RS232C Connection Diagram 4 (refer to P29)						
	FC5A-SIF4	RS422/485 2-wire Connection Diagram 2 (refer to P23)						
	Web Server Unit (FC4A-SX5ES1E)	Ethernet	-					

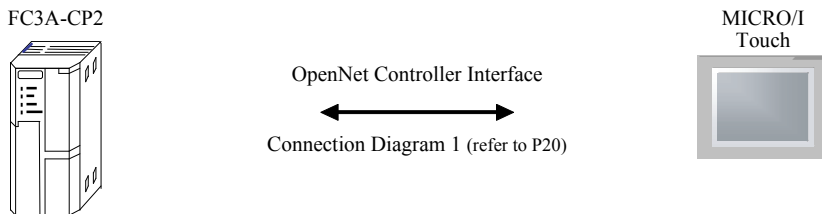
System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FC5A-D12K1E, FC5A-D12S1E	Not required (connects to CPU unit)	Ethernet	-	OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet)	X	X	X	X
	FC4A-HPC1	RS232C Connection Diagram 1 (refer to P20)	Hardware	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
	FC4A-HPC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	FC4A-HPH1 + FC4A-PC1	RS232C Connection Diagram 1 (refer to P20)	Hardware					
	FC4A-HPH1 + FC4A-PC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)	None					
	FC5A-SIF2	RS232C Connection Diagram 4 (refer to P29)						
	FC5A-SIF4	RS422/485 2-wire Connection Diagram 2 (refer to P23)						
SmartAXIS Pro/Lite								
FT1A-H24RA FT1A-H24RC, FT1A-B24RA, FT1A-B24RC, FT1A-H40RKA, FT1A-H40RSA, FT1A-H40RC, FT1A-B40RKA, FT1A-B40RSA, FT1A-B40RC, FT1A-H48KA, FT1A-H48SA, FT1A-H48KC, FT1A-H48SC, FT1A-B48KA, FT1A-B48SA, FT1A-B48KC, FT1A-B48SC	Not required (connects to CPU unit)	Ethernet	-	OpenNet, MicroSmart, SmartAXIS Pro/Lite (Ethernet)	X	X	X	X
	FT1A-PC1	RS232C Connection Diagram 3 (refer to P26)	None	OpenNet, MicroSmart, SmartAXIS Pro/Lite (RS232C/485)	X	X	X	X
	FT1A-PC2	RS422/485 2-wire Connection Diagram 5 (refer to P32)						
	FT1A-PC3	RS422/485 2-wire Connection Diagram 2 (refer to P23)						

*1 This PLC was used to test & verify communications.

1.2 System Configuration

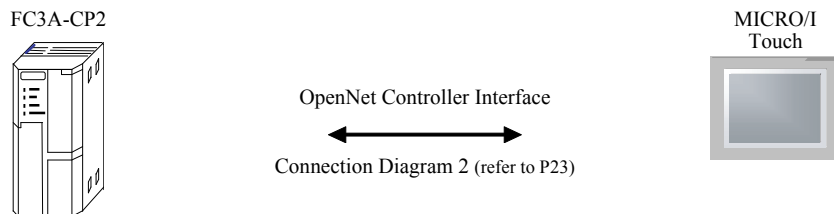
This is the system configuration for the connection of IDEC PLCs to the MICRO/I.

1.2.1 OpenNet Controller (connects to RS232C port of the CPU unit)

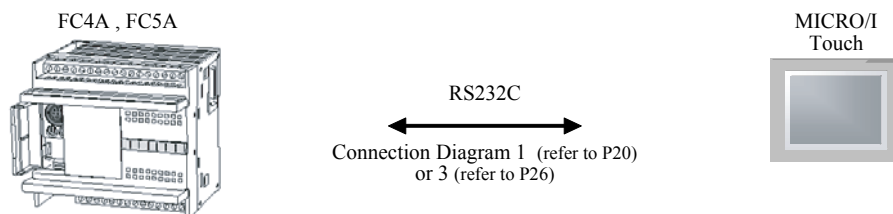


- In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC295).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC275).
- In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available. (part number: HG9Z-XC183).

1.2.2 OpenNet Controller (connects to RS485 port of the CPU unit)



1.2.3 MicroSmart/MICROSmart Pentra (uses the communication port1)



FC5A-D12K1E and FC5A-D12S1E can not be connected to the HMI with RS232C cable because they don't have built-in RS232C port.

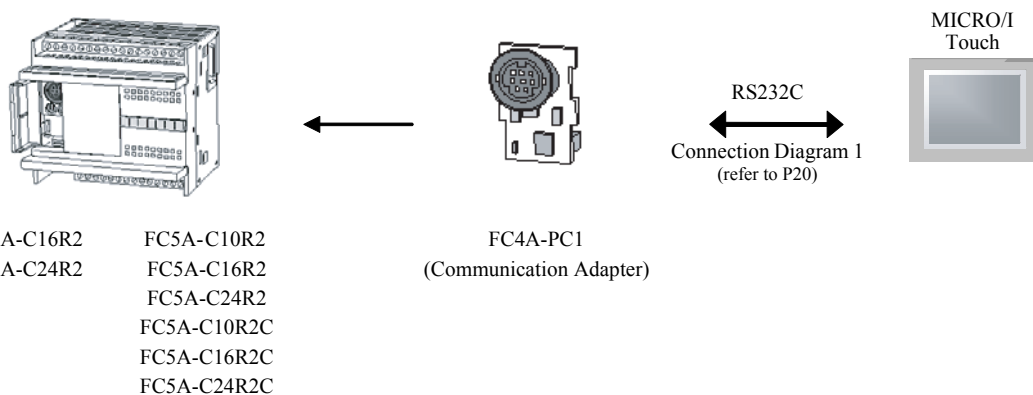
2

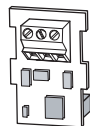
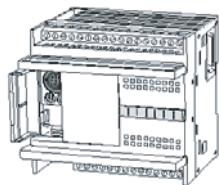
Connection to a PLC



- In case of HG2G-5F, HG3G/4G a connection cable is available for Connection Diagram 1 or 3 (part number: HG9Z-XC295).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available for Connection Diagram 1 or 3 (part number: HG9Z-XC275).
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC183)
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: FC4A-KC2C).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: FC4A-KC1C).

1.2.4 MicroSmart/MICROSmart Pentra (uses the communication port 2)





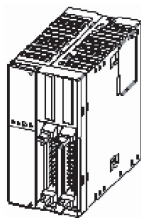
RS485
 Connection Diagram 2
 (refer to P23)



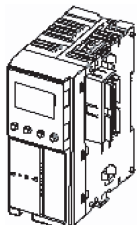
FC4A-C16R2
 FC4A-C24R2

FC5A-C10R2
 FC5A-C16R2
 FC5A-C24R2
 FC5A-C10R2C
 FC5A-C16R2C
 FC5A-C24R2C

FC4A-PC3
 (Communication Adapter)



FC4A-D****
 FC5A-D****

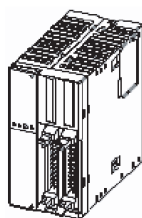


FC4A-HPH1
 (HMI Base Module)

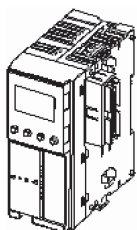


FC4A-PC1
 (Communication Adapter)

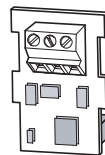
RS232C
 Connection Diagram 1
 (refer to P20)



FC4A-D****
 FC5A-D****



FC4A-HPH1
 (HMI Base Module)



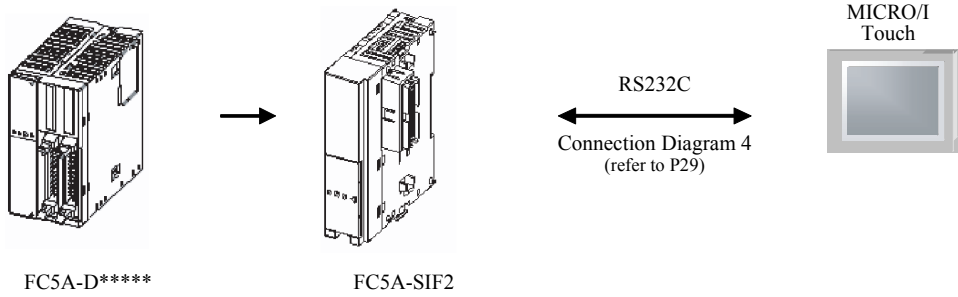
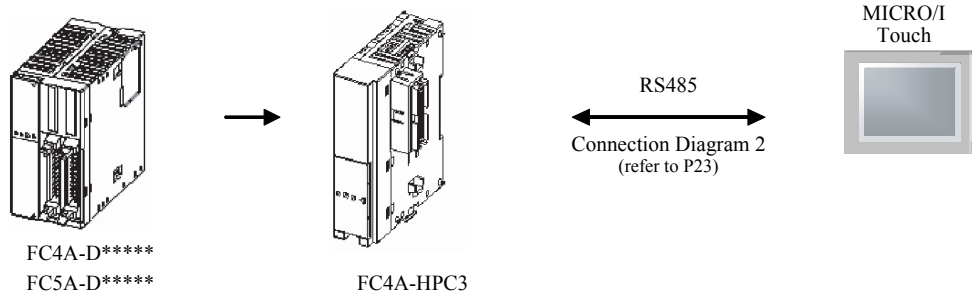
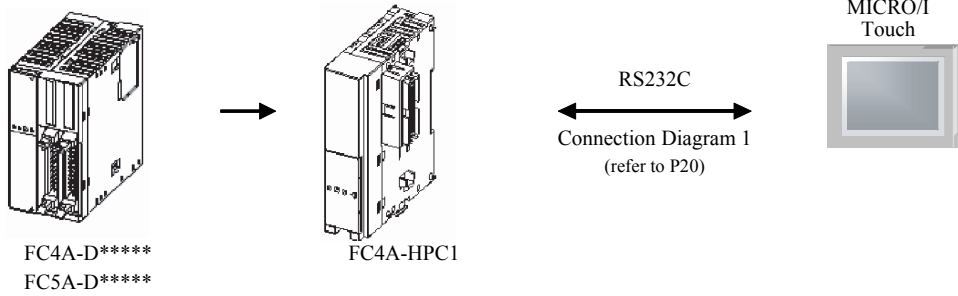
FC4A-PC3
 (Communication Adapter)

RS485
 Connection Diagram 2
 (refer to P23)

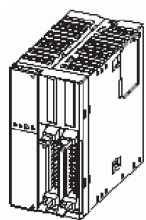


- In case of HG2G-5F, HG3G/4G a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC295).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC275).
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC183).

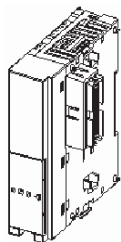
1.2.5 MicroSmart/MICROSmart Pentra (uses the Communication Module)



2
Connection to a PLC



FC5A-D*****



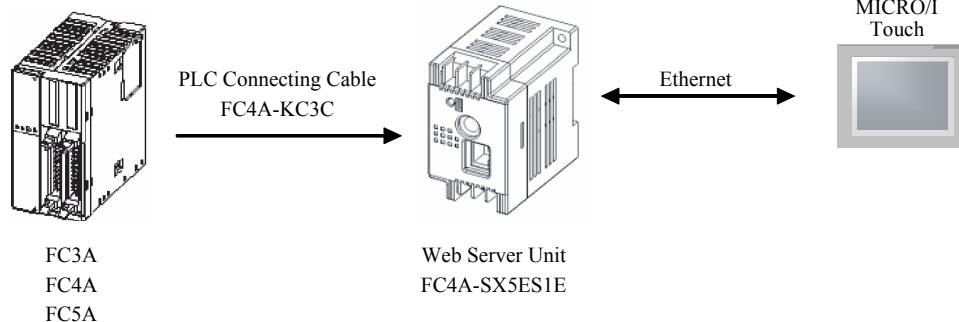
FC5A-SIF4

RS485
 ←→
 Connection Diagram 2
 (refer to P23)

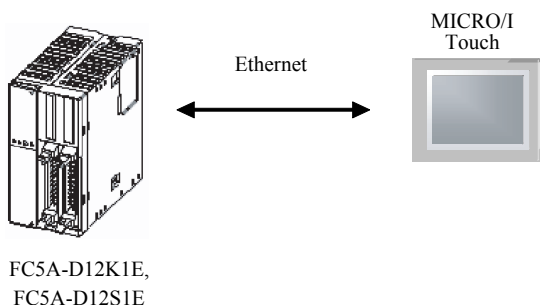


- In case of HG2G-5F, HG3G/4G a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC295).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC275).
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC183).

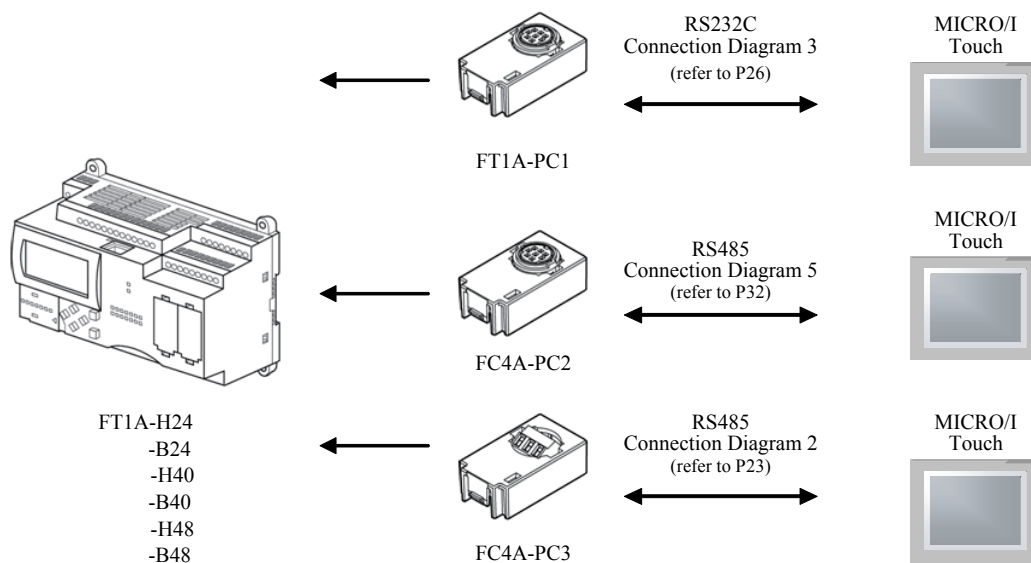
1.2.6 OpenNet Controller/MICROsmart/MICROsmart Pentra (uses Web Server Unit)



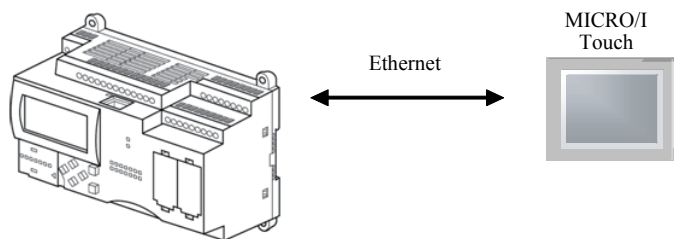
1.2.7 MICROsmart Pentra (FC5A-D12K1E, FC5A-D12S1E)



1.2.8 SmartAXIS Pro/Lite (with Communication cartridge)



1.2.9 SmartAXIS Pro/Lite

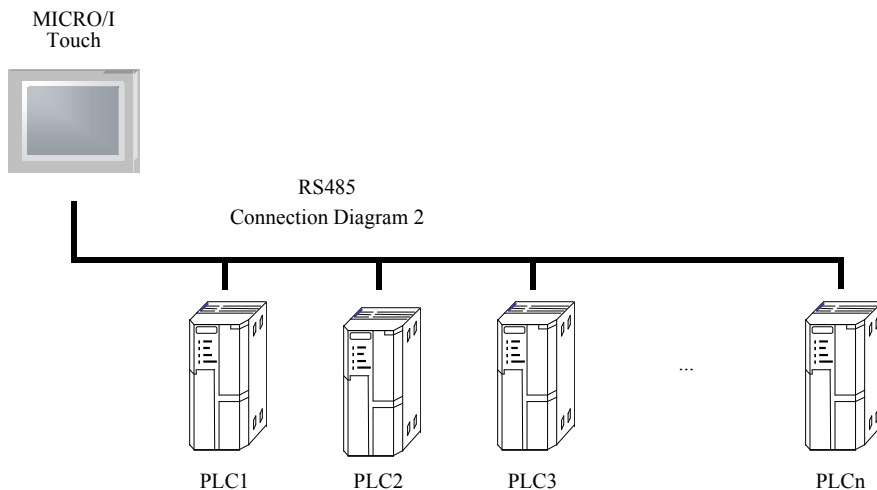


FT1A-H24
 -B24
 -H40
 -B40
 -H48
 -B48

1.2.10 1: N Communication-OpenNet Controller/MICROSmart/MICROSmart Pentra/SmartAXIS Pro/Lite

The 1: N communication can be established by using the following connections

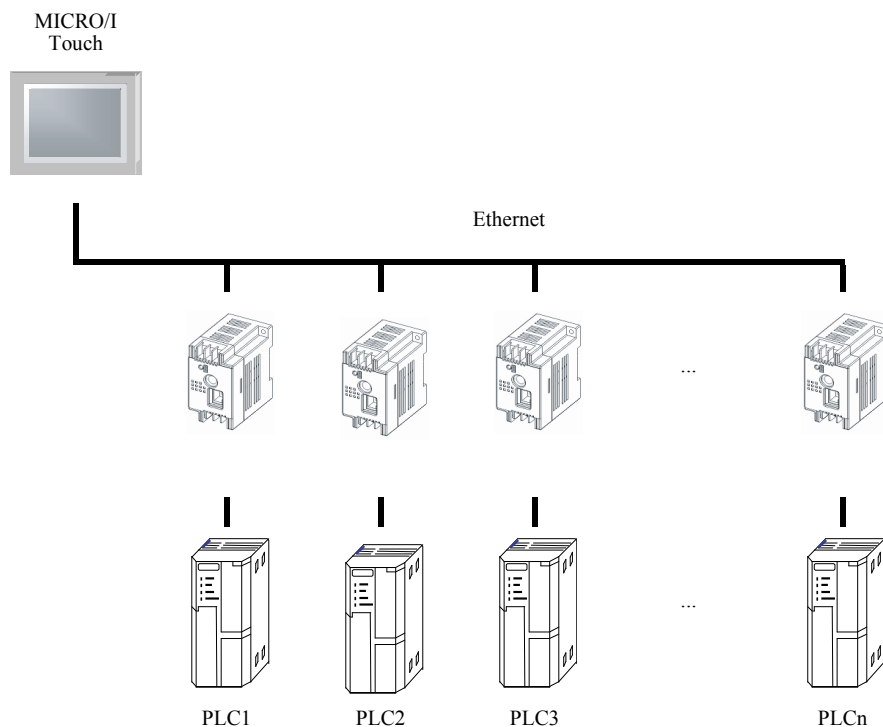
- OpenNet Controller (Connects to the RS485 port of the CPU unit)
- MICROSmart/MICROSmart Pentra (Port 2) on RS485 connection
- MICROSmart/MICROSmart Pentra (with Communication module) on RS485 connection
- SmartAXIS Pro/Lite (with Communication cartridge) on RS485 connection



1.2.11 1: N Communication-OpenNet Controller/MICROsmart/MICROsmart Pentra/SmartAXIS Pro/Lite (uses Web Server Unit)

The 1: N communication can be established by using the following connections

- OpenNet Controller(uses Web Server Unit)
- MICROsmart/MICROsmart Pentra (uses Web Server Unit)
- MICROsmart Pentra FC5A-D12K1E, FC5A-D12S1E (Do not uses Web Server Unit)
- SmartAXIS Pro/Lite (Do not uses Web Server Unit)



2

Connection to a PLC



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

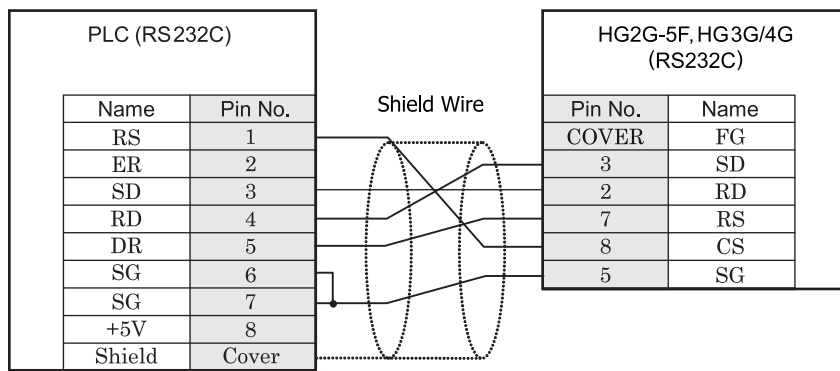
1.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

1.3.1 Connection Diagram 1: OpenNet Controller (RS232C port) to MICROI, Touch MICROSmart Pentra (RS232C port) to MICRO/I, Touch

HG2G-5F, HG3G/4G (Connector)



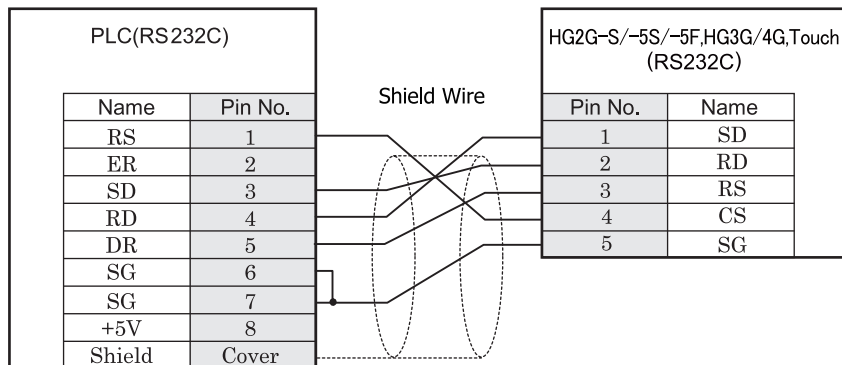
Mini Din 8P

D-sub, 9P connector plug type



- In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC295).

- The Connection Diagram 1 is not same as HG9Z-XC295. But both diagrams are available. Refer to Chapter 7 "1.20 PLC connection cable: HG9Z-XC295" on page 682 about the connection diagram of HG9Z-XC295.

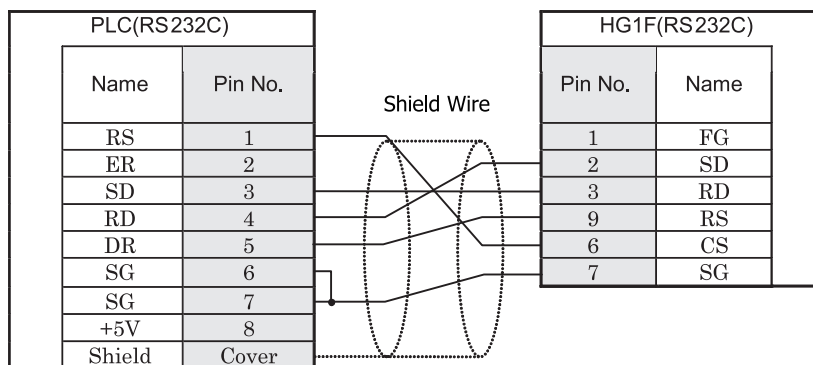
HG2G-S/-5S/-5F, HG3G/4G, Touch(Terminal)

Mini Din 8P

Terminal



- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC275).
- Refer to Chapter 7 "1.19 PLC connection cable: HG9Z-XC275" on page 680 about the connection diagram of HG9Z-XC275.

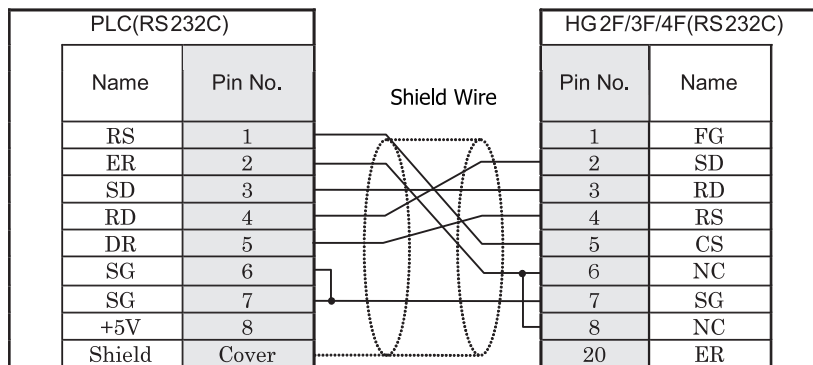
HG1F (Connector)

Mini Din 8P

D-sub, 9P connector socket type



- In case of HG1F a connection cable is available. (part number: HG9Z-XC183).
- The Connection Diagram 1 is not same as HG9Z-XC183. But both diagrams are available. Refer to Chapter 7 "1.13 PLC connection cable: HG9Z-XC183" on page 677 about the connection diagram of HG9Z-XC183.

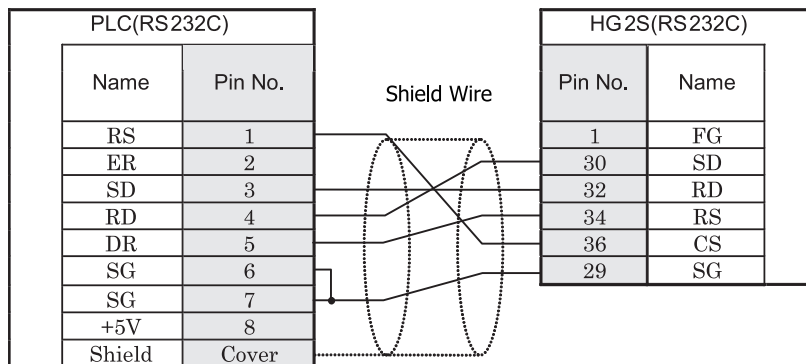
HG2F/3F/4F

Mini Din 8P

D-sub, 25P connector socket type



- In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C125).
- The Connection Diagram 1 is not same as HG9Z-3C125. But both diagrams are available. Refer to Chapter 7 "1.4 PLC connection cable: HG9Z-3C125" on page 671 about the connection diagram of HG9Z-3C125.

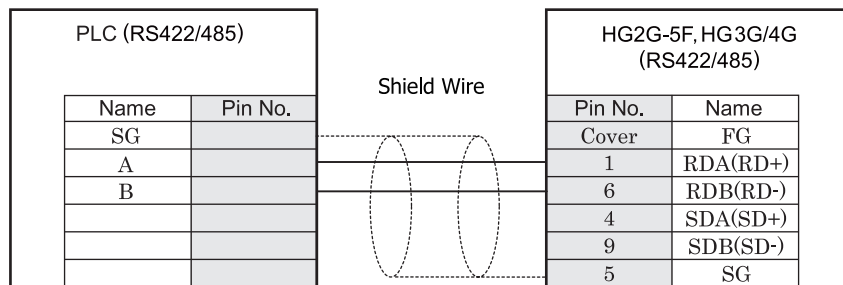
HG2S

Mini Din 8P

D-sub, 37P connector plug type

1.3.2 Connection Diagram 2: OpenNet Controller (RS485 port) to MICRO/I, Touch MICROSmart/MICROSmart Pentra (RS485 port) to MICRO/I, Touch MICROSmart/MICROSmart Pentra (FC5A-SIF4) to MICRO/I, Touch SmartAXIS Pro/Lite (FT1A-PC3) to MICRO/I, Touch

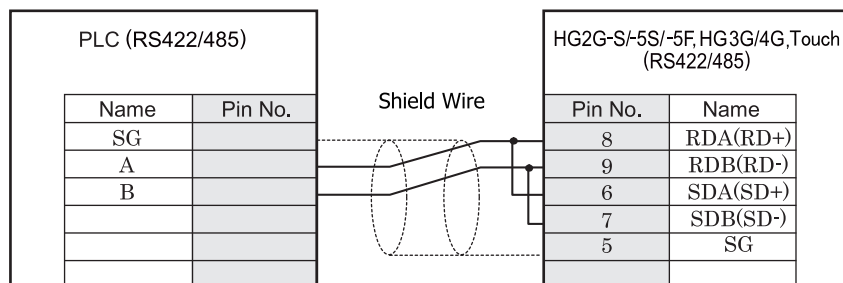
HG2G-5F, HG3G/4G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



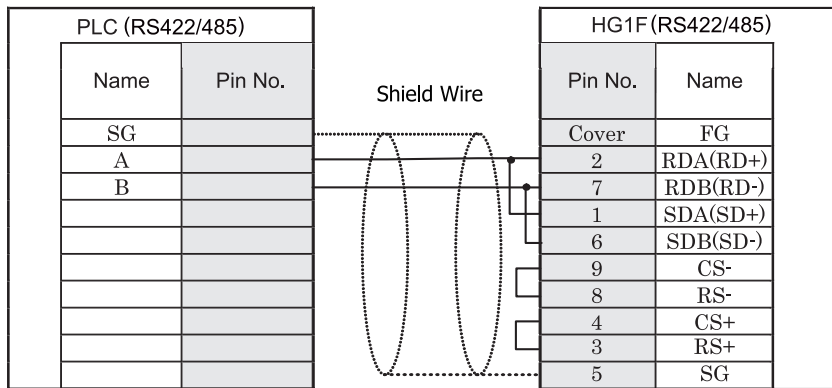
Screw terminal block

Terminal



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB. If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

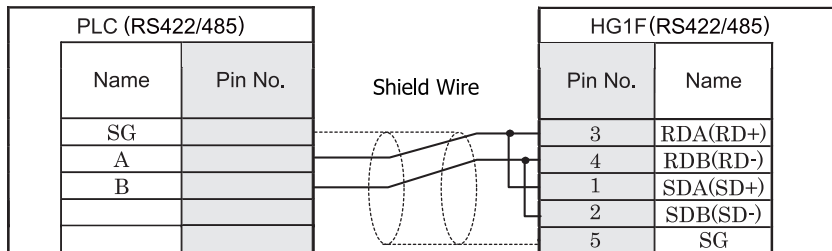
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw terminal block

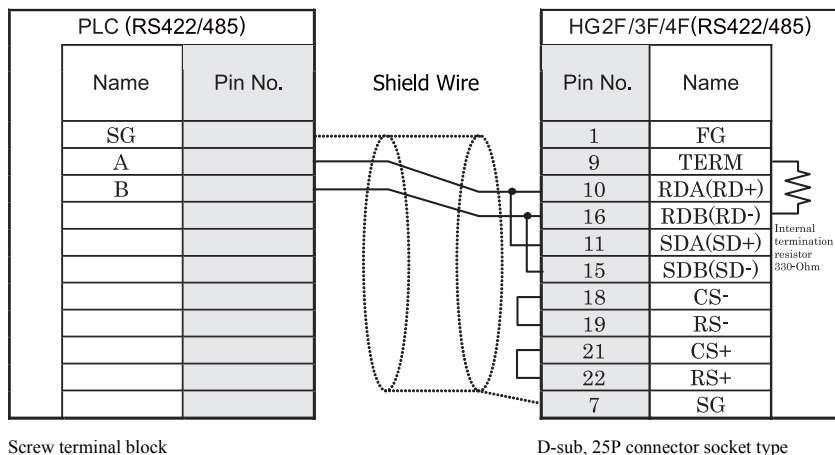
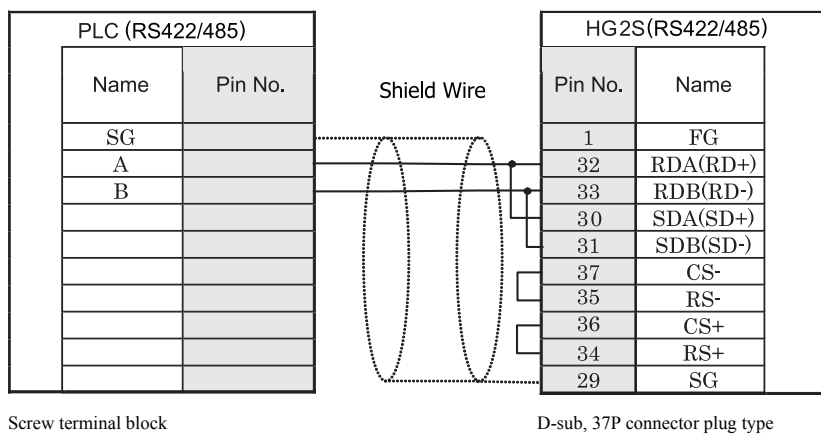
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



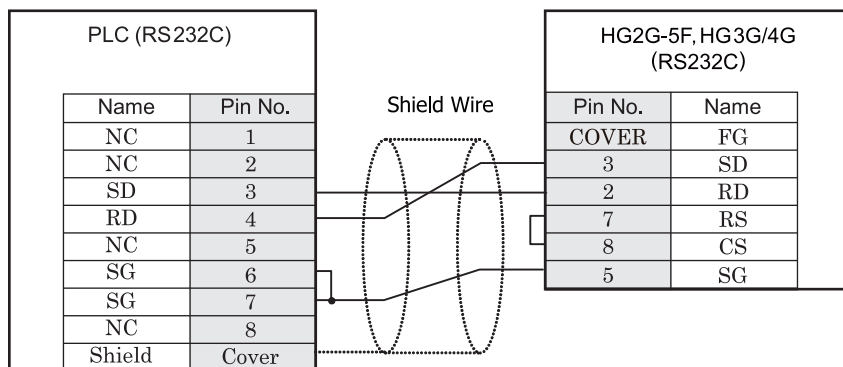
When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F**HG2S**

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

1.3.3 Connection Diagram 3: MICROsmart/MICROsmart Pentra (RS232C Port 1) to MICRO/I, Touch SmartAXIS Pro/Lite (FT1A-PC1) to MICRO/I, Touch

HG2G-5F, HG3G/4G (Connector)



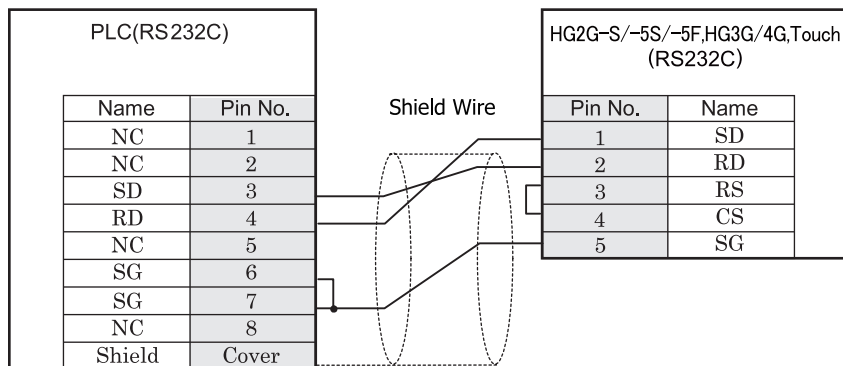
Mini DIN 8P

D-sub, 9P connector plug type



In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC295).

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



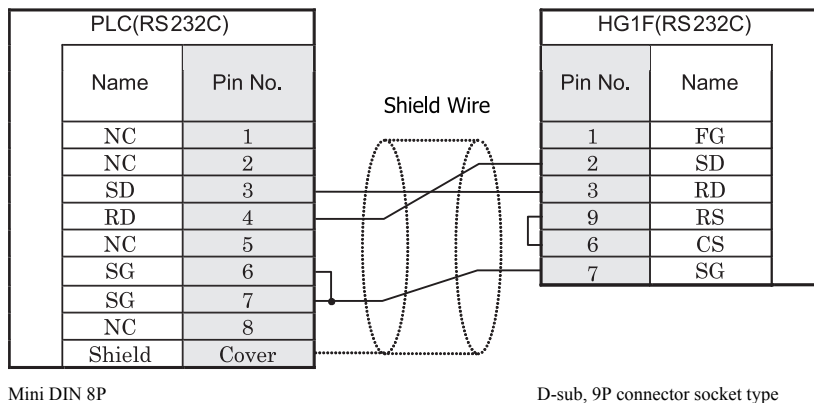
Mini Din 8P

Terminal

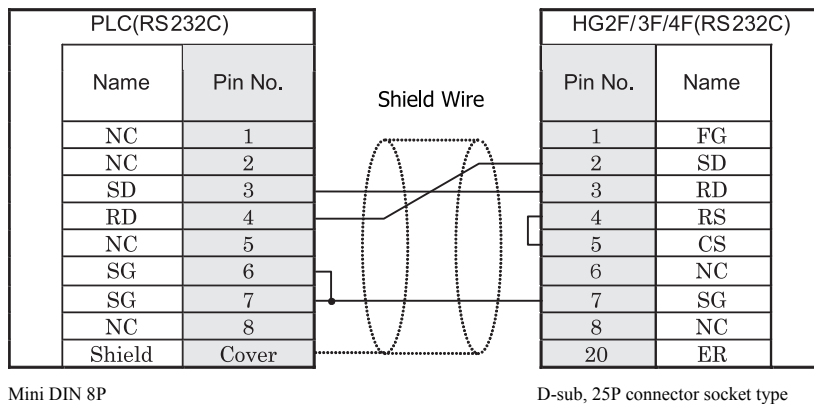


- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC275).

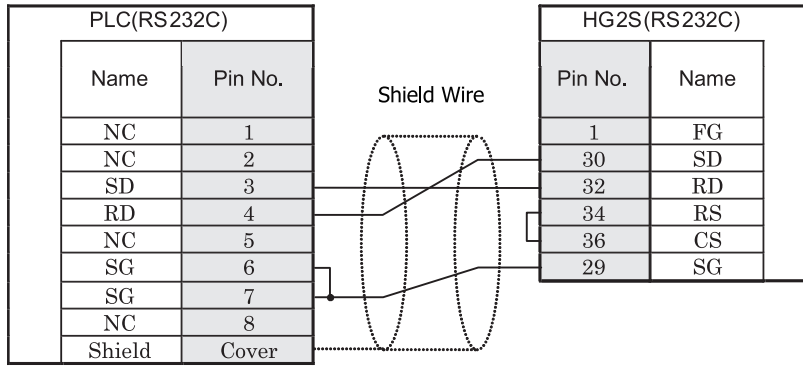
- Refer to Chapter 7 "1.19 PLC connection cable: HG9Z-XC275" on page 680 about the connection diagram of HG9Z-XC275.

HG1F (Connector)

- In case of HG1F a connection cable is available. (part number: FC4A-KC1C).
- The Connection Diagram 3 is not same as FC4A-KC1C. But both diagrams are available. Refer to Chapter 7 "1.10 PLC connection cable: FC4A-KC1C" on page 676 about the connection diagram of FC4A-KC1C.

HG2F/3F/4F

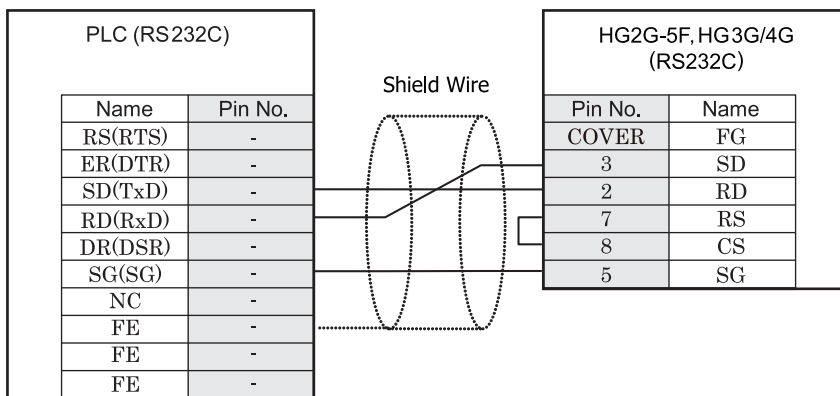
- In case of HG2F/3F/4Fa connection cable is available. (part number: FC4A-KC2C).
- The Connection Diagram 3 is not same as FC4A-KC2C. But both diagrams are available. Refer to Chapter 7 "1.2 PLC connection cable: FC4A-KC2C" on page 670 about the connection diagram of FC4A-KC2C.

HG2S

Mini DIN 8P

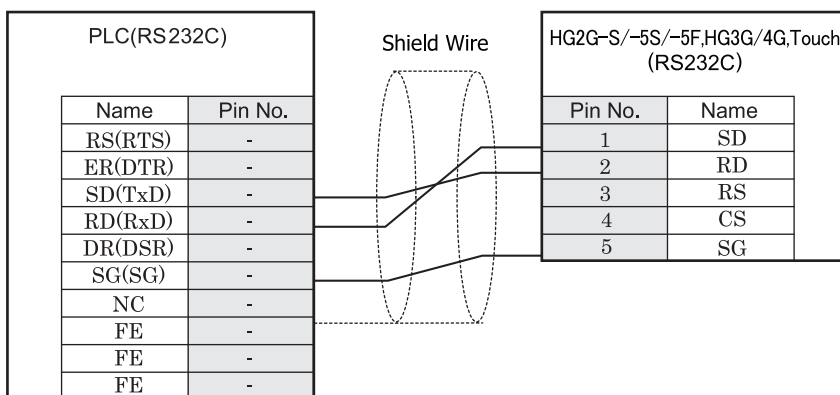
D-sub, 37P connector plug type

1.3.4 Connection Diagram 4: MICROSmart/MICROSmart Pentra (FC5A-SIF2) to MICRO/I, Touch

HG2G-5F, HG3G/4G (Connector)

Terminal

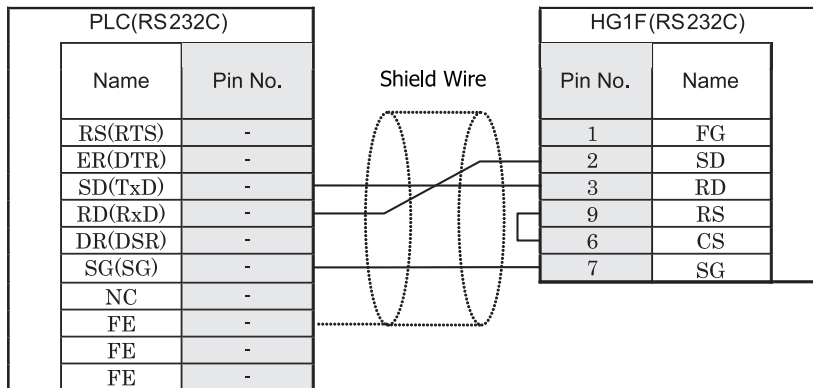
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

Terminal

Terminal

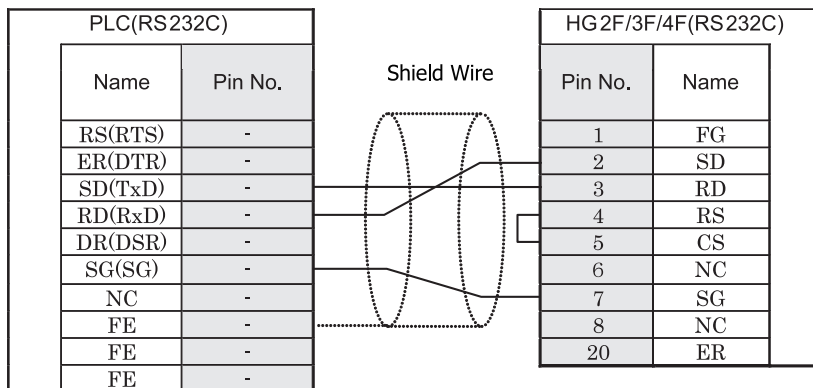
HG1F (Connector)



Terminal

D-sub, 9P connector socket type

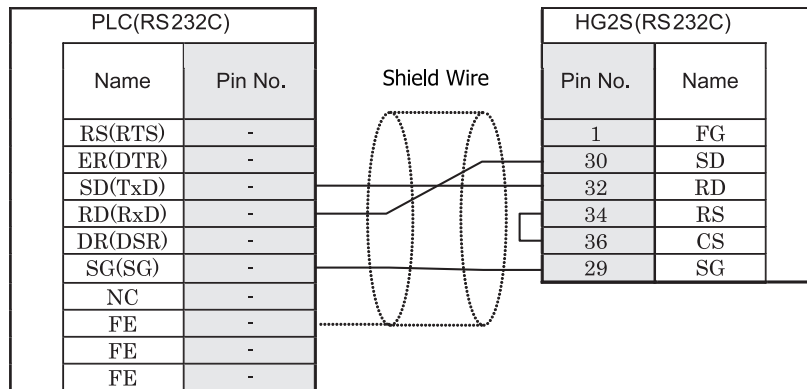
HG2F/3F/4F



Terminal

D-sub, 25P connector socket type

HG2S



Terminal

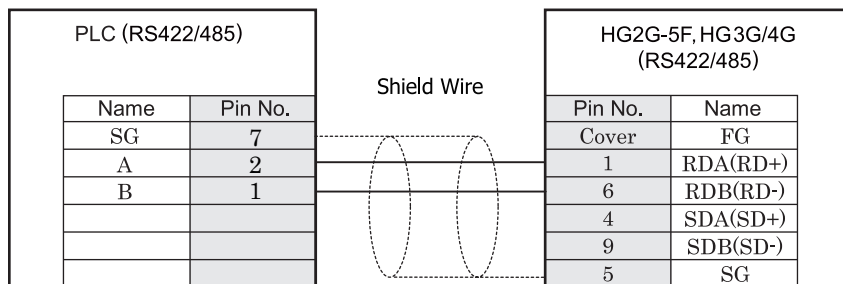
D-sub, 37P connector plug type

2

Connection to a PLC

1.3.5 Connection Diagram 5: SmartAXIS Pro/Lite (FT1A-PC2) to MICRO/I, Touch

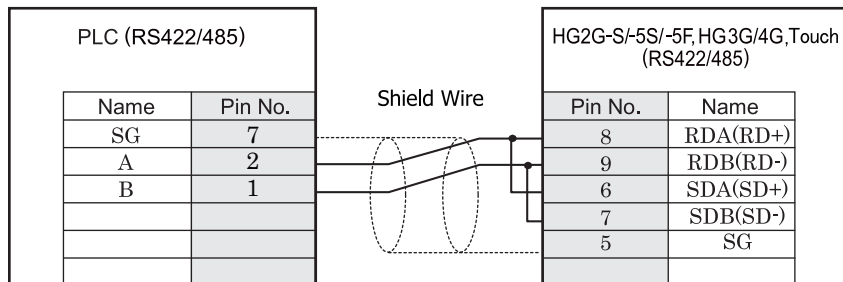
HG2G-5F, HG3G/4G (Connector)



MiniDIN8P

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

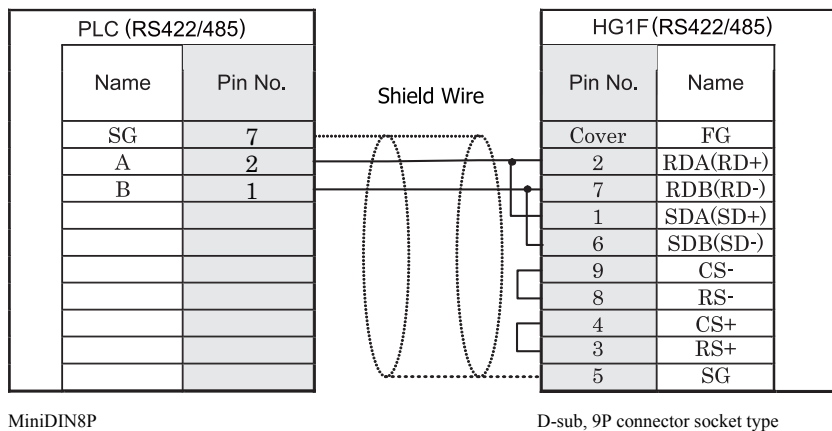
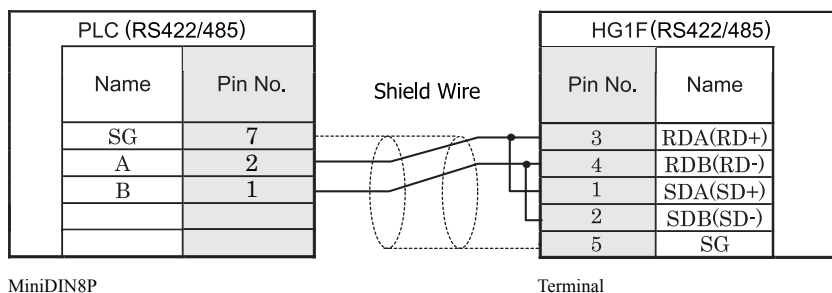


MiniDIN8P

Terminal



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB. If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC275).
- Refer to Chapter 7 "1.19 PLC connection cable: HG9Z-XC275" on page 680 about the connection diagram of HG9Z-XC275.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

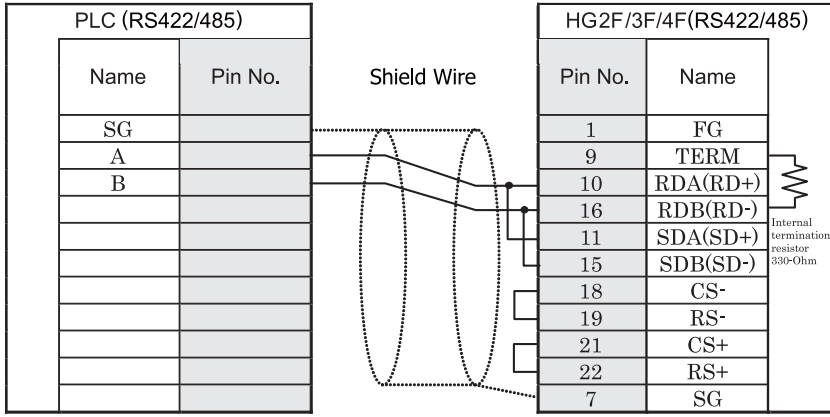
HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

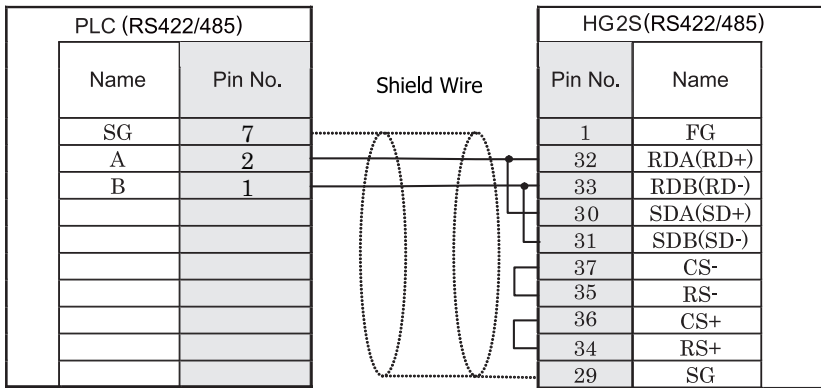
HG2F/3F/4F



MiniDIN8P

D-sub, 25P connector socket type

HG2S



MiniDIN8P

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

1.4 Environment Settings

1.4.1 OpenNet Controller and MICROSmart

Item	Setting
Baud Rate (bps)	9600
Data Bits (bits)	7
Parity	Even
Stop Bits	1
Network Number*1	0(DEC)

*1 Set a decimal number for the Network Number.



When connecting an OpenNet Controller to the MICRO/I, you must set the OpenNet Controller special Internal Relay M8014 to on.

1.4.2 OpenNet Controller, MICROSmart/MICROSmart Pentra (uses Web Server Unit)

Set the following items on **Project Settings** dialog box.

Item	Setting
IP Address (MICRO/I)	Set the IP address for MICRO/I. (Set this item in Communication Interface tab.)
Subnet Mask	Set the subnet mask for MICRO/I. (Set this item in Communication Interface tab.)
Default Gateway	Set the default gateway for MICRO/I. (Set this item in Communication Interface tab.)
IP Address (Web Server Unit)	Set the IP address for Web Server Unit. (Set this item in Host I/F Network tab.)
Port Number (Web Server Unit)	Set the port number for Web Server Unit. (Set this item in Host I/F Network tab.)



- When connecting an OpenNet Controller to the MICRO/I, you must set the OpenNet Controller special Internal Relay M8014 to on.
- If the HG3F/4F is connected to the IDEC Web Sever Unit, the communication speed of the Web Sever Unit (Ethernet) must be set to "10 Base" or "Auto".

1.4.3 MICROSmart Pentra (FC5A-D12K1E, FC5A-D12S1E)

Set the following items on **Project Settings** dialog box.

Item	Setting
IP Address (MICRO/I)	Set the IP address for MICRO/I. (Set this item in Communication Interface tab.)
Subnet Mask	Set the subnet mask for MICRO/I. (Set this item in Communication Interface tab.)
Default Gateway	Set the default gateway for MICRO/I. (Set this item in Communication Interface tab.)
IP Address (FC5A)	Set the IP address for FC5A. (Set this item in Host I/F Network tab.)
Port Number (FC5A)	Set the port number for FC5A. (Set this item in Host I/F Network tab.)

1.5 Usable Devices

1.5.1 OpenNet Controller/MICROsmart (uses Web Server Unit)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Internal Relay (Bit)	M	M	0 - 2557, 8000 - 8317	R/W	*1
Input (Bit)	I	I	0 - 627	R	*1
Output (Bit)	Q	Q	0 - 627	R/W	*1
Timer (Contact)	T	T	0 - 255	R	Dec
Counter (Contact)	C	C	0 - 255	R	Dec
Shift Register (Bit)	R	R	0 - 255	R	Dec

*1 Set position 1 for this device in octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Register	D	D	0 - 49999	R/W	Dec
Input (Word)	WI	I	0 - 620	R	Dec*1
Output (Word)	WQ	Q	0 - 620	R/W	Dec*1
Internal Relay (Word)	WM	M	0 - 2540, 8000 - 8300	R/W	Dec*1
Timer (Current)	TC	T	0 - 255	R	Dec
Counter (Current)	CC	C	0 - 255	R	Dec
Timer (Preset)	TP	T	0 - 255	R/W	Dec
Counter (Preset)	CP	C	0 - 255	R/W	Dec
Link Register	L	L	100 - 1317	R/W	*2
Shift Register (Word)	WR	R	0 - 240	R	Dec*3
Error Register	E	-	0 - 5	R/W	Dec

*1 Set this device using a multiplier of 20.

*2 Set position 1 for this device in octal.

*3 Set this device using a multiplier of 16.



- Usage limitations may exist for PLC devices depending on the operating conditions. Refer to the PLC manual to confirm performance under your actual operating conditions.

- When connecting an OpenNet Controller to the MICRO/I, you must set the OpenNet Controller special Internal Relay M8014 to on.

2 Mitsubishi

Selecting MELSEC-Q (CPU), MELSEC-FX (CPU), MELSEC-FX2N (CPU), or MELSEC-FX3U (CPU) for the Host I/F Driver allows the user to use the Pass-through function.

Selecting MELSEC-Q/QnA (Ethernet), MELSEC-FX3U(Ethernet) or MELSEC-FX(LINK) for the Host I/F Driver allows the user to use the 1: N Communication.

- Pass-through function (Refer to “Pass-Through Function” in the WindO/I-NV2 User's Manual)
However, Touch does not support the Pass-through function.
- 1: N Communication function (Refer to Chapter 6 “1: N Communication (Multi-drop)” on page 653)

2.1 Connection Table

2.1.1 Compatible PLCs

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series									
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch						
MELSEC-A														
A1N, A2N, A3N	AJ71C24, AJ71C24-S3/-S6/-S8, AJ71UC24	RS232C Connection Diagram 1 (refer to P56)	Hardware	MELSEC-AnN (LINK)	X	X	X	---						
		RS422/485 4-wire Connection Diagram 2 (refer to P59)												
A1SH*1	A1SJ71C24-R2*1, A1SJ71UC24-R2	RS232C Connection Diagram 3 (refer to P62)												
		A1SJ71C24-R4, A1SJ71UC24-R4							RS422/485 4-wire Connection Diagram 2 (refer to P59)					
A2CCPUC24	Not required (Connects to CPU unit)	RS232C Connection Diagram 3 (refer to P62)												
A0J2, A0J2H	A0J2-C214-S1	RS232C Connection Diagram 1 (refer to P56)												
		RS422/485 4-wire Connection Diagram 2 (refer to P59)												
A2A, A3A, A2U, A3U, A4U	AJ71C24-S6/-S8, AJ71UC24	RS232C Connection Diagram 1 (refer to P56)							MELSEC-AnA (Link)					
		RS422/485 4-wire Connection Diagram 2 (refer to P59)												
A2US, A2USH-S1	A1SJ71C24-R2, A1SJ71UC24-R2*1	RS232C Connection Diagram 3 (refer to P62)												
		A1SJ71C24-R4	RS422/485 4-wire Connection Diagram 2 (refer to P59)											

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
A2N*1	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)	None	MELSEC-AnN (CPU)	---	---	X	---
A1SJH A1SH, A2SH, A2C, A0J2H	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)		MELSEC-A1S/ A2C(CPU)				
A2A, A3A, A2US, A2USH	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)		MELSEC-AnA (CPU)				
A2U*1, A2USH-S1*1	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)		MELSEC-AnU (CPU)				
MELSEC-QnA								
Q4ACPU, Q4ARCPU, Q3ACPU, Q2ACPU-S1, Q2ACPU	AJ71QC24N-R2	RS232C Connection Diagram 1 (refer to P56) RS422/485 4-wire Connection Diagram 2 (refer to P59) RS422/485 4-wire Connection Diagram 9 (refer to P76)	Hardware/ None	MELSEC-Q/QnA (LINK)	X	X	X	---
	AJ71QC24N							
	AJ71QC24N-R4							
	AJ71QE71N3-T	Ethernet	-	MELSEC-Q/ QnA (Ethernet)	X	X	X	X
	AJ71QE71N-B2							
	AJ71QE71N-B5							
	Q2ASHCPU-S1, Q2ASHCPU, Q2ASCPU-S1, Q2ASCPU	A1SJ71QC24N-R2	RS232C Connection Diagram 3 (refer to P62) RS422/485 4-wire Connection Diagram 2 (refer to P59)	Hardware/ None	MELSEC-Q/QnA (LINK)	X	X	X
A1SJ71QC24N								
A1SJ71QE71N3-T		Ethernet	-	MELSEC-Q/ QnA (Ethernet)	X	X	X	X
A1SJ71QE71N-B2								
A1SJ71QE71N-B5								

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
MELSEC-Q								
Q00CPU* ¹ , Q01CPU* ¹ , Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P70) Connection Diagram 7 (refer to P72)	Hardware	MELSEC-Q/QnA (LINK)	X	X	X	---
Q02CPU* ¹ , Q02HCPU, Q06HCPU* ¹ , Q12HCPU, Q25HCPU, Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU	QJ71C24N-R2* ¹	RS232C Connection Diagram 3 (refer to P62)						
	QJ71C24N* ¹	RS422/485 4-wire Connection Diagram 2 (refer to P59)						
Q02CPU* ¹ , Q02HCPU	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P70) Connection Diagram 7 (refer to P72)		MELSEC-Q (CPU)				
Q02CPU-Amode	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P70) Connection Diagram 7 (refer to P72)		MELSEC-AnU (CPU)	---	---	X	---

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
Q00JCPU, Q00CPU, Q01CPU Q02CPU*1, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q00JCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU	QJ71E71-100*1, QJ71E71-B5, QJ71E71-B2	Ethernet	-	MELSEC-Q/QnA (Ethernet)	X	X	X	X
Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU	Not required (connects to CPU unit)							

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
MELSEC-FX								
FX1,FX2, FX2C	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)	Hardware	MELSEC-FX (CPU)	X	X	X	---
FX0, FX0N, (FX1N) ^{*1} , FX0S ^{*1} , FX1S ^{*1}	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)						
FX1NC, FX2NC	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 10 (refer to P79)		MELSEC-FX2N (CPU)	X	X	X	---
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX2NC-232ADP	RS232C Connection Diagram 8 (refer to P74)						
FX1N	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)		MELSEC-FX2N (CPU)	X	X	X	---
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX1N-232-BD ^{*2}	RS232C Connection Diagram 5 (refer to P68)						
	FX1N-422-BD ^{*2}	RS422/485 4-wire Connection Diagram 4 (refer to P65)						
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX1N-CNV-BD + FX2NC-232ADP	RS232C Connection Diagram 8 (refer to P74)						

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FX2N	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)	Hardware	MELSEC-FX2N (CPU)	X	X	X	---
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX2N-232-BD*2	RS232C Connection Diagram 5 (refer to P68)						
	FX2N-422-BD*2	RS422/485 4-wire Connection Diagram 4 (refer to P65)						
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
FX2N-CNV-BD + FX2NC-232ADP	RS232C Connection Diagram 8 (refer to P74)							
FX3UC*1, FX3U	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)	-	MELSEC-FX3UC (CPU)	X	X	X	X
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX3U-232ADP*1 or FX3U-CNV-BD + FX3U-232ADP	RS232C Connection Diagram 8 (refer to P74)						
	FX3U-232-BD							
	FX3U-ENET-L*3	Ethernet		MELSEC-FX3U (Ethernet)				
FX3G	Not required (connects to CPU unit)	RS422/485 4-wire Connection Diagram 4 (refer to P65)	Hardware	MELSEC-FX3UC (CPU)	X	X	X	---
		RS422/485 4-wire Connection Diagram 10 (refer to P79)						
	FX3G-CNV-ADP + FX3U-232ADP*1	RS232C Connection Diagram 8 (refer to P74)						

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FX1S, FX1N	FX1N-232-BD	RS232C	None	MELSEC-FX (LINK)	X	X	---	X
	FX1N-CNV-BD + FX2NC-232ADP	Connection Diagram 8 (refer to P74)						
	FX1N-485-BD	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
FX1N-CNV-BD + FX2NC-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)							
	RS422/485 2-wire Connection Diagram 12 (refer to P83)							
FX2N	FX2N-232-BD	RS232C						
	FX2N-CNV-BD + FX2NC-232ADP	Connection Diagram 8 (refer to P74)						
	FX2N-485-BD	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
FX2N-CNV-BD + FX2NC-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)							
	RS422/485 2-wire Connection Diagram 12 (refer to P83)							
FX1NC, FX2NC	FX2NC-232ADP	RS232C						
	FX2NC-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FX3U	FX3U-232-BD	RS232C	None	MELSEC-FX (LINK)	X	X	---	X
	FX3U-CNV-BD + FX3U-232ADP	Connection Diagram 8 (refer to P74)						
	FX3U-485-BD	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
	FX3U-CNV-BD + FX3U-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
FX3UC	FX3U-232-BD	RS232C	None	MELSEC-FX (LINK)	X	X	---	X
	FX3U-232ADP	Connection Diagram 8 (refer to P74)						
	FX3U-485-BD	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
	FX3U-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
FX3G	FX3G-232-BD	RS232C	None	MELSEC-FX (LINK)	X	X	---	X
	FX3G-CNV-ADP + FX3U-232ADP	Connection Diagram 8 (refer to P74)						
	FX3G-485-BD	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						
	FX3G-CNV-ADP + FX3U-485ADP	RS422/485 4-wire Connection Diagram 11 (refer to P82)						
		RS422/485 2-wire Connection Diagram 12 (refer to P83)						

*1 This PLC was used to test & verify communications.

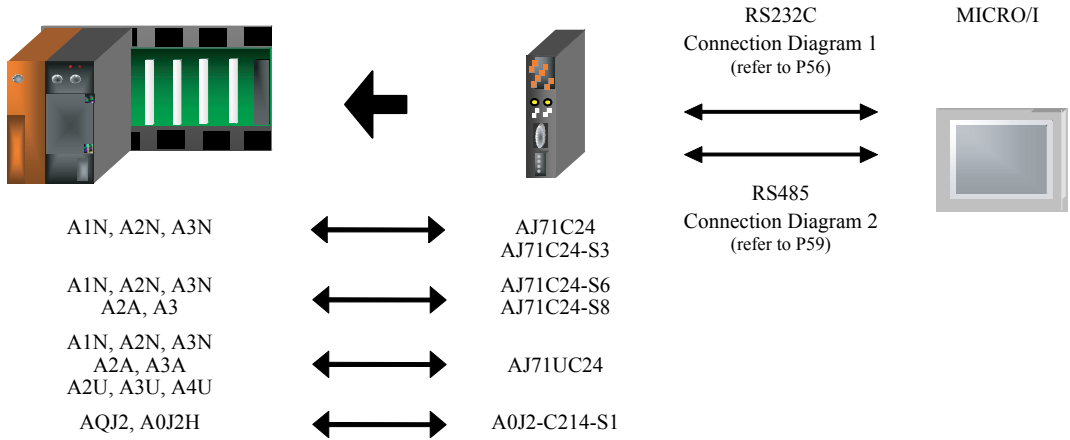
*2 These are communication boards.

*3 When connecting with MELSEC-FX3UC, FX2NC-CNV-IF or FX3UC-1PS-5V is required.

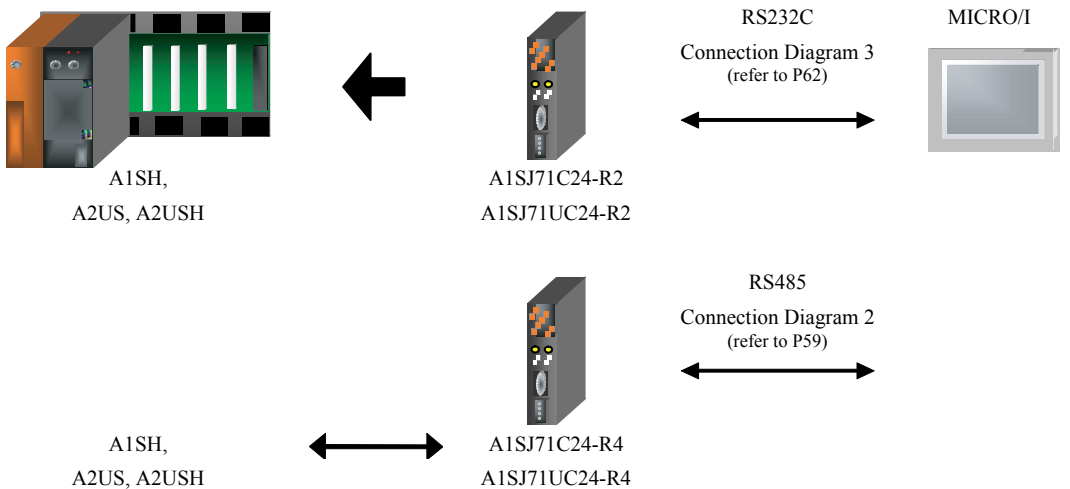
2.2 System Configuration

This is the system configuration for the connection of Mitsubishi PLCs to the MICRO/I.

2.2.1 MELSEC-A Series (using the Computer Link Unit)

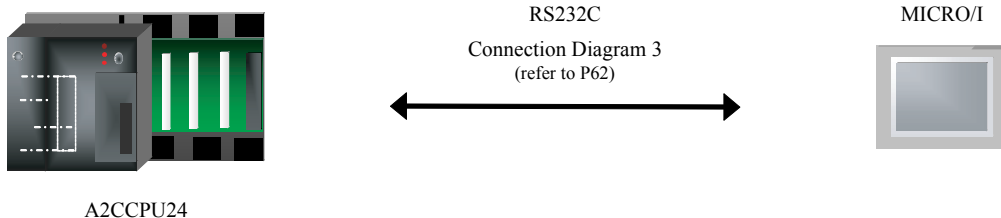


- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC145).



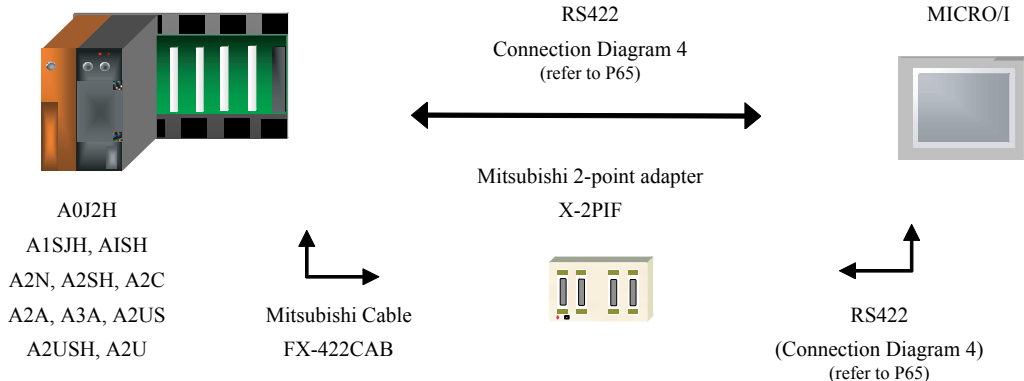
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.2 MELSEC-A Series (connected to the CPU Unit Link I/F)



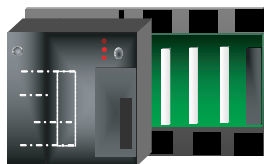
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.3 MELSEC-A Series (connected to the CPU Unit Programming Port)



- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).

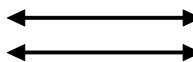
2.2.4 MELSEC-Q/QnA Series (using the Computer Link Unit)



Q02CPU, Q02HCPU,
Q06HCPU, Q12HCPU,
Q25HCPU,
Q00UJCPU, Q00UCPU,
Q01UCPU, Q02UCPU,
Q03UD(E)CPU,
Q04UD(E)HCPU,
Q06UD(E)HCPU,
Q10UD(E)HCPU,
Q13UD(E)HCPU,
Q20UD(E)HCPU,
Q26UD(E)HCPU,
Q50UDEHCPU,
Q100UDEHCPU

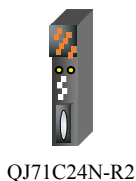


RS232C
Connection Diagram 3
(refer to P62)



RS485
Connection Diagram 2
(refer to P59)

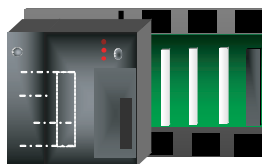
MICRO/I



RS232C
Connection Diagram 3
(refer to P62)



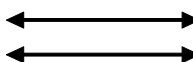
MICRO/I



Q4ACPU
Q4ARCPU
Q3ACPU
Q2ACPU-S1
Q2ACPU



RS232C
Connection Diagram 1
(refer to P56)



RS485
Connection Diagram 2
(refer to P59)

MICRO/I



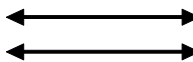
RS232C
Connection Diagram 1
(refer to P56)



MICRO/I



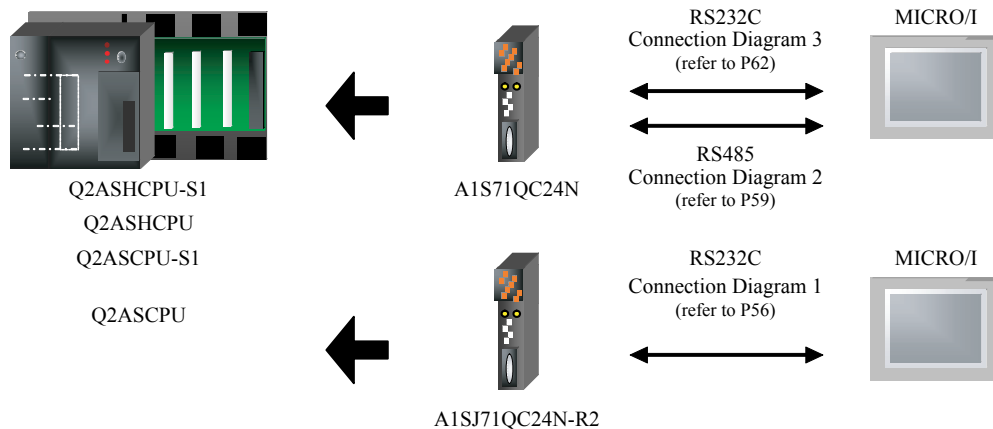
RS485
Connection Diagram 2
(refer to P59)



RS485
Connection Diagram 9
(refer to P76)

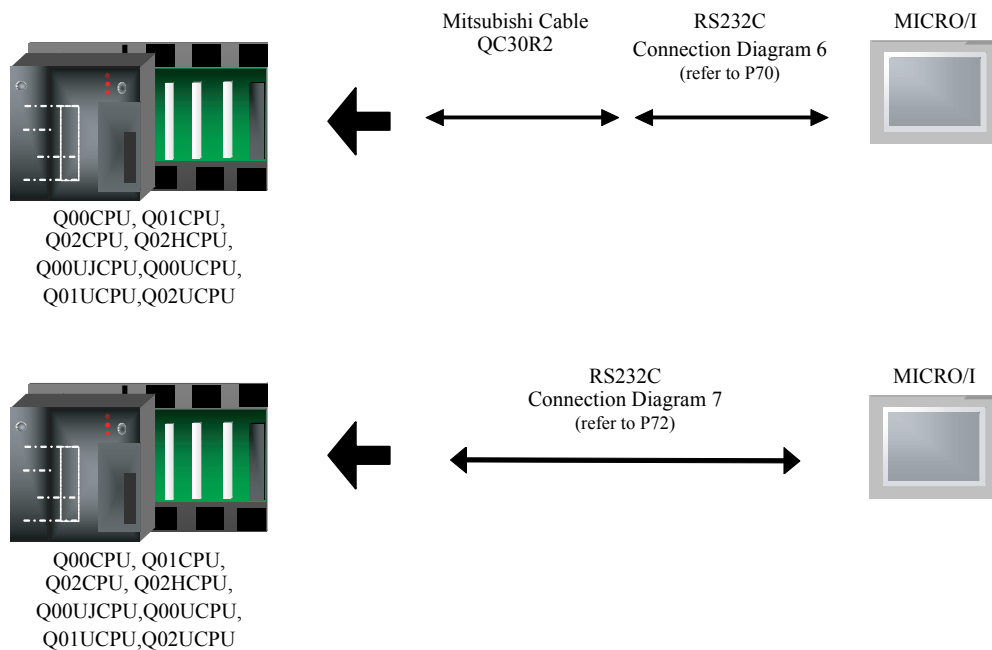
MICRO/I





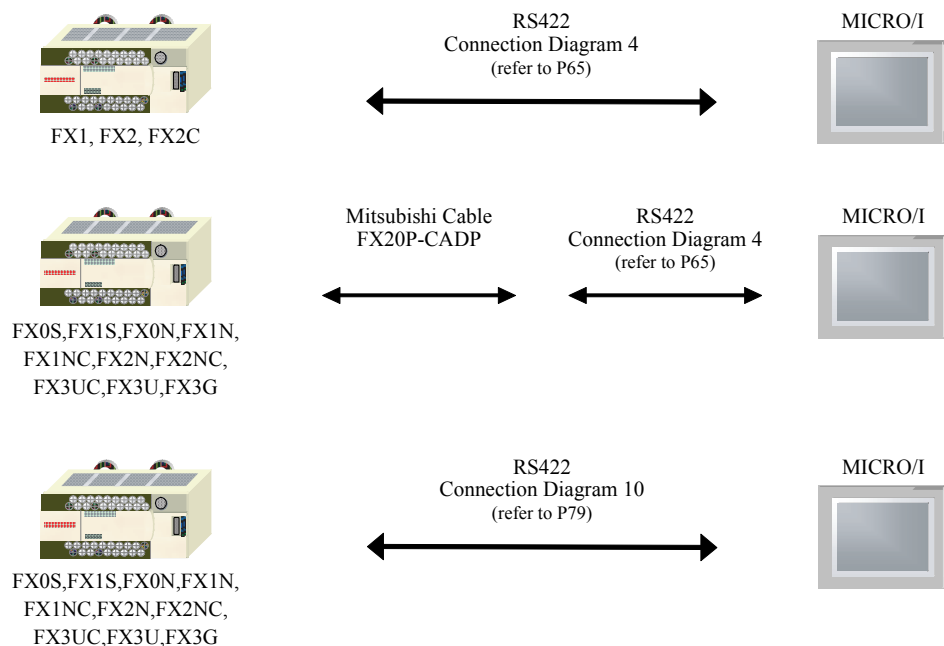
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.5 MELSEC-Q Series (connected to the CPU Unit Programming Port)

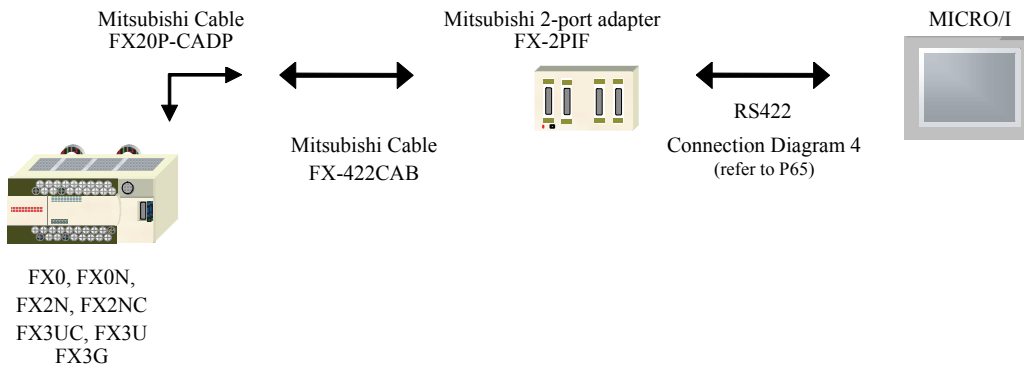
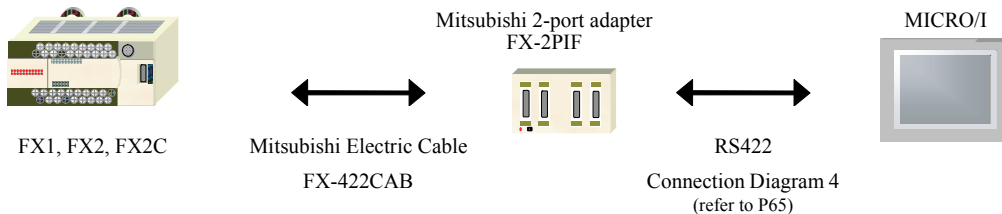


- In case of HG2G-5F, HG3G/4G connection cable is available for Connection Diagram 7 (part number: HG9Z-XC315).
- In case of HG1F connection cable is available for Connection Diagram 7 (part number: HG9Z-XC265).

2.2.6 MELSEC-FX Series (connects to the CPU unit programming port)



- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).
- In case of HG2G-5F, HG3G/4G a connection cable is available for Connection Diagram for Connection Diagram 10 (part number: HG9Z-XC305).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available for Connection Diagram for Connection Diagram 10 (part number: HG9Z-XC275).
Please do not use the communication cable part number HG9Z-XC275 for FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual because the Mini Din connector interferes with the housing of the PLC.
- In case of HG1F a connection cable is available for Connection Diagram 10 (part number: HG9Z-XC245).
Please do not use the communication cable part number HG9Z-XC245 for FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual because the Mini Din connector interferes with the housing of the PLC.

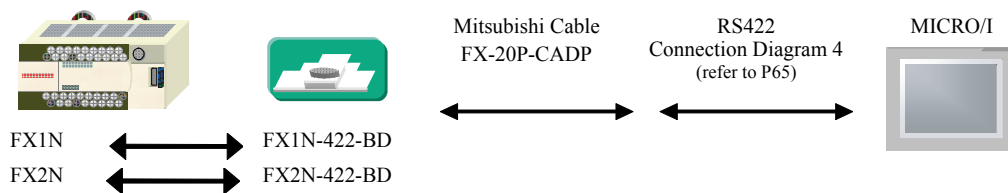


2

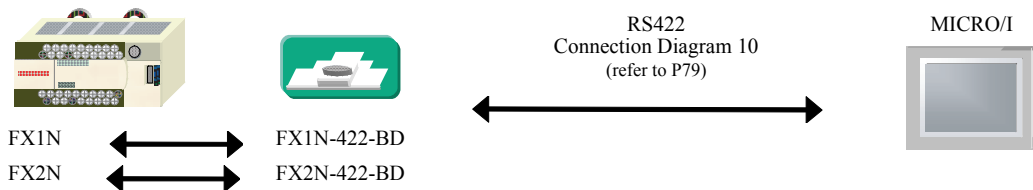
Connection to a PLC



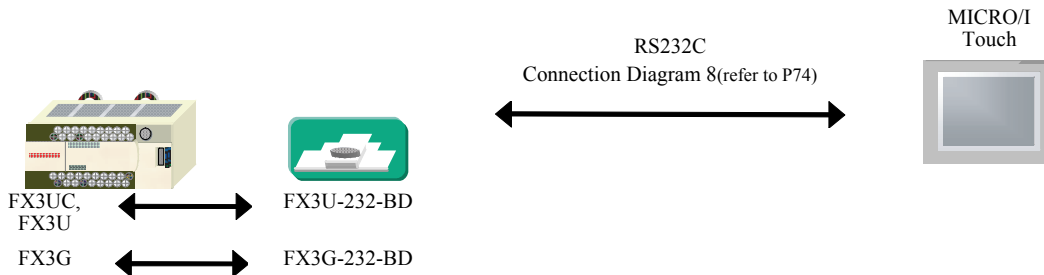
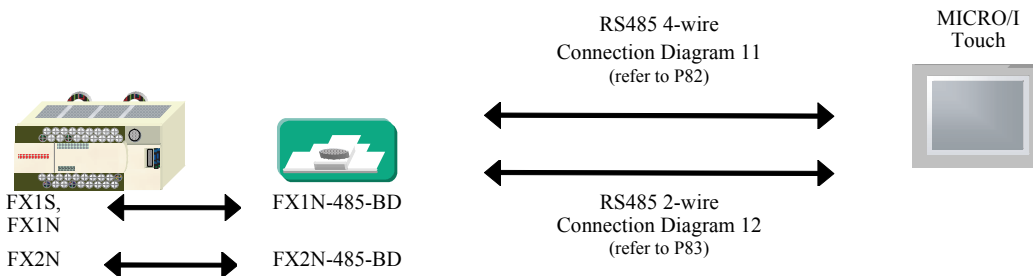
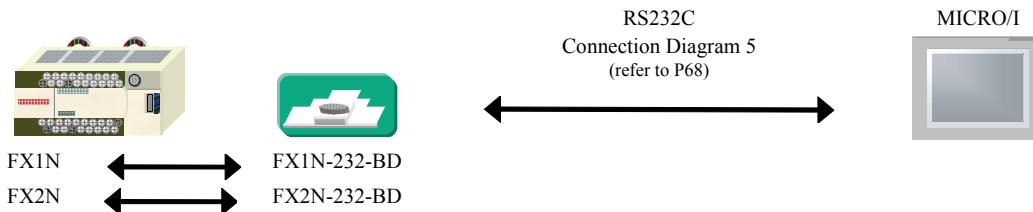
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).

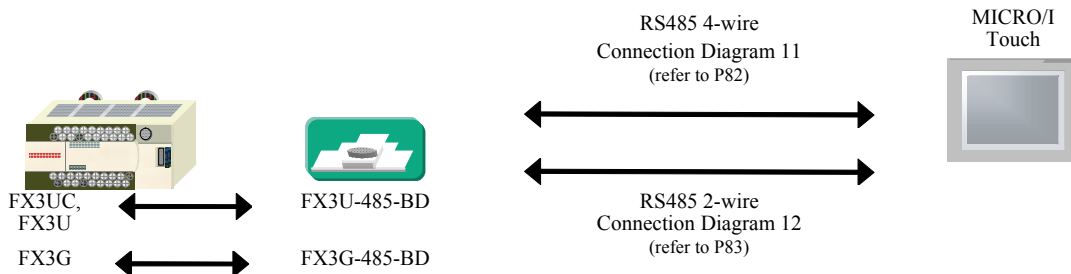


- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).

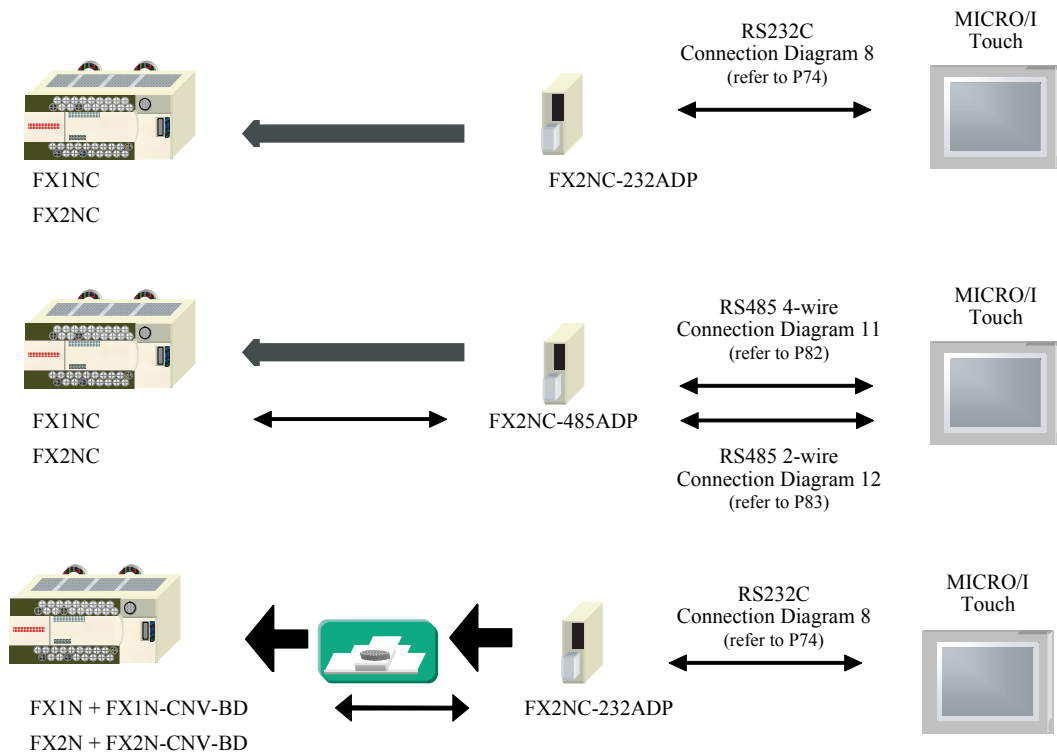


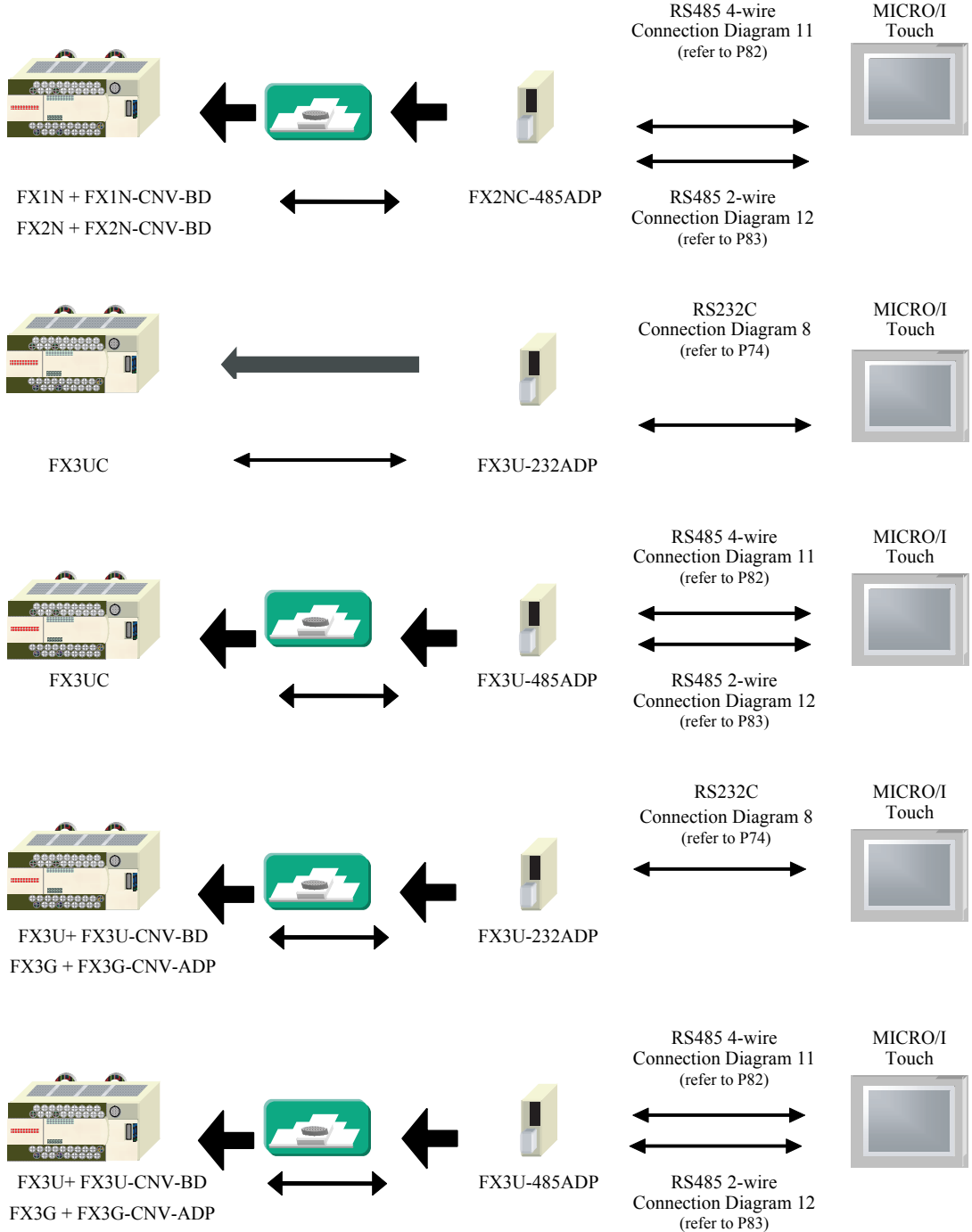
- In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC305).
- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available for Connection Diagram for Connection Diagram 10(part number: HG9Z-XC275).
Please do not use the communication cable part number HG9Z-XC275 for FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual because the Mini Din connector interferes with the housing of the PLC.
- In case of HG1F a connection cable is available for Connection Diagram 10 (part number: HG9Z-XC245).
Please do not use the communication cable part number HG9Z-XC245 for FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual because the Mini Din connector interferes with the housing of the PLC.



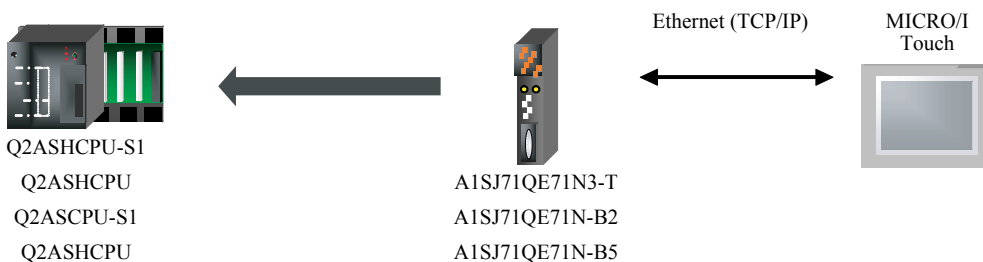
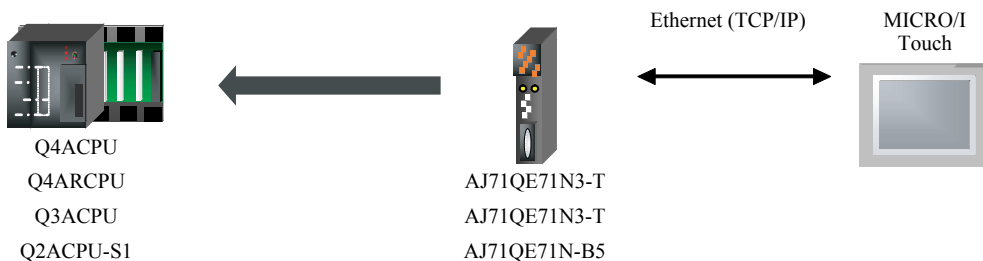
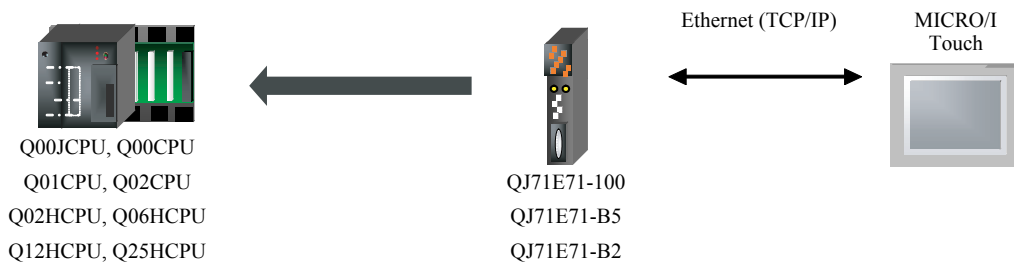


2.2.7 MELSEC-FX Series (connects to FX2NC-232ADP/FX2NC-485ADP/FX3U-232ADP/FX3U-485ADP)



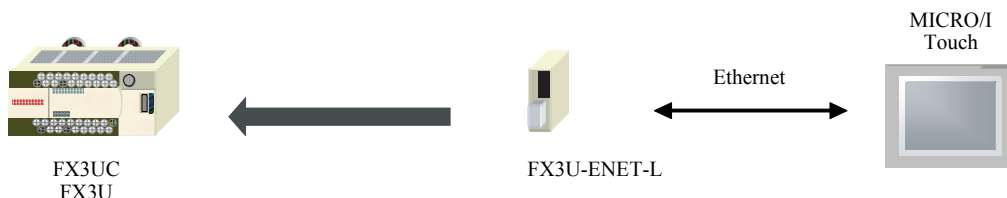


2.2.8 MELSEC-Q/QnA Series (Using the Ethernet Unit)



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

2.2.9 MELSEC-FX Series (Using the Ethernet Unit)



When connecting with MELSEC-FX3UC, FX2NC-CNV-IF or FX3UC-IPS-5V is required.

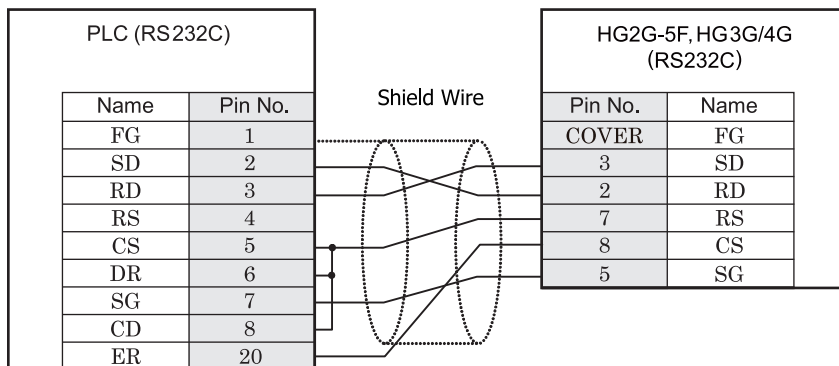
2.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable.

2.3.1 Connection Diagram 1: Computer Link Unit (RS232C) to MICRO/I

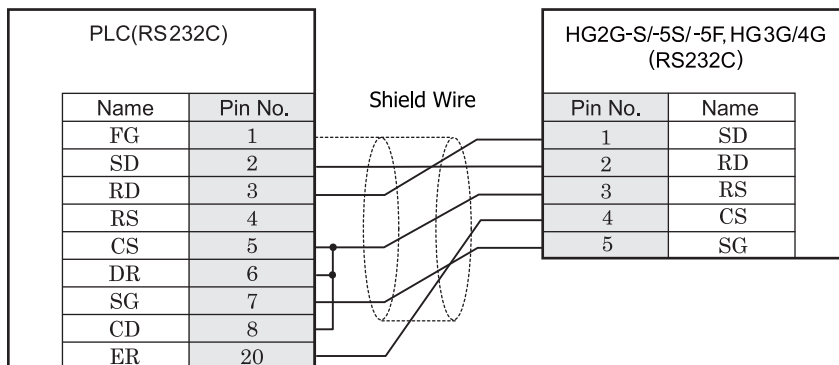
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type

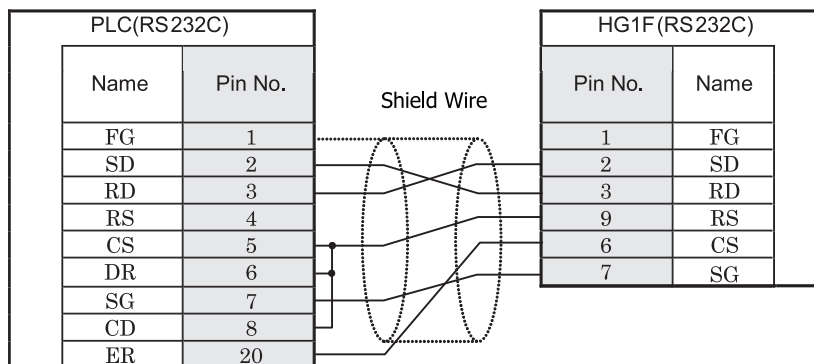
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 25P connector socket type

Terminal

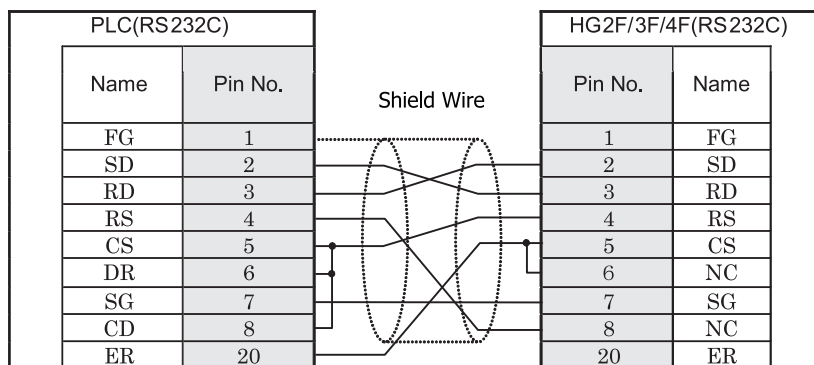
HG1F (Connector)

D-sub, 25P connector socket type

D-sub, 9P connector socket type



- In case of HG1F a connection cable is available. (part number: HG9Z-XC145).
- The connection diagram 1 is not same as HG9Z-XC145. But both diagrams are available. Refer to Chapter 7 "1.11 PLC connection cable: HG9Z-XC145" on page 676 about the connection diagram of HG9Z-XC145.

HG2F/3F/4F

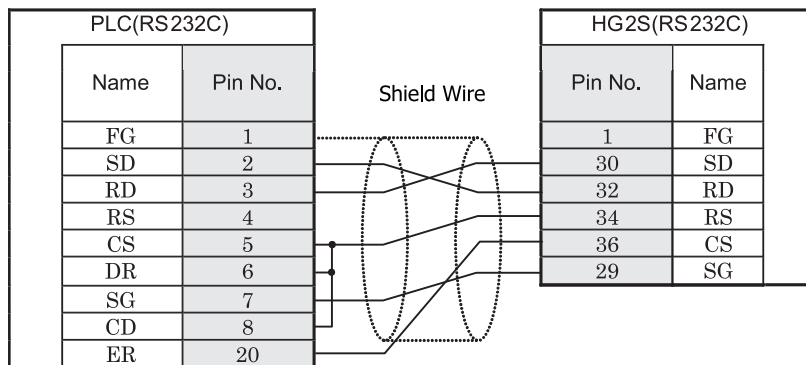
D-sub, 25P connector socket type

D-sub, 25P connector socket type



- In case of HG2F/3F/4Fa connection cable is available. (part number: HG9Z-3C135).
- The connection diagram 1 is not same as HG9Z-3C135. But both diagrams are available. Refer to Chapter 7 "1.5 PLC connection cable: HG9Z-3C135" on page 672 about the connection diagram of HG9Z-3C135.

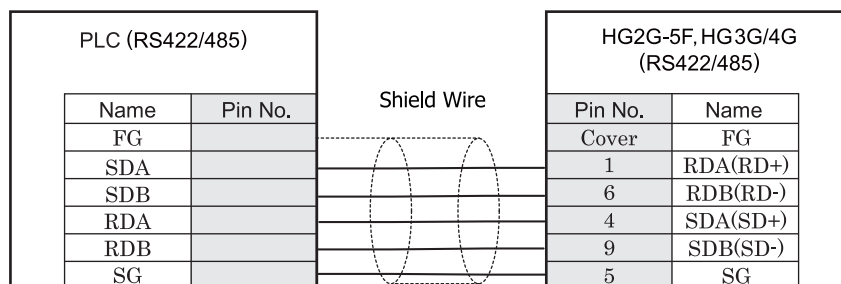
HG2S



D-sub, 25P connector socket type

D-sub, 37P connector plug type

2.3.2 Connection Diagram 2: Computer Link Unit (RS485) to MICRO/I

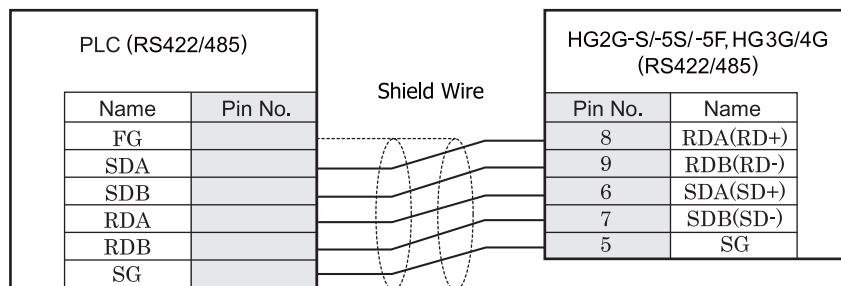
HG2G-5F, HG3G/4G (Connector)

Screw down terminal block

D-sub, 9P connector plug type



When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

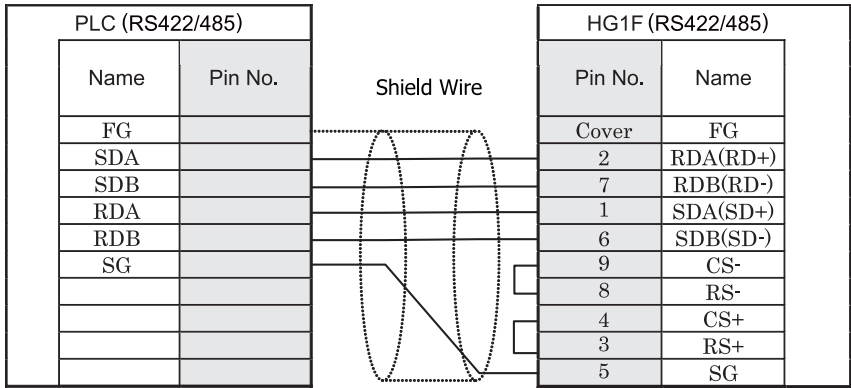
Screw down terminal block

Terminal



- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

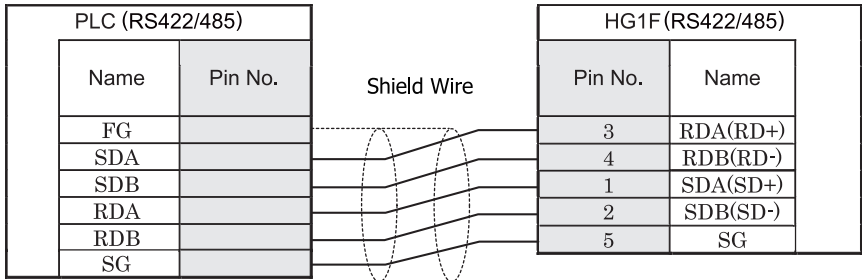
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw down terminal block

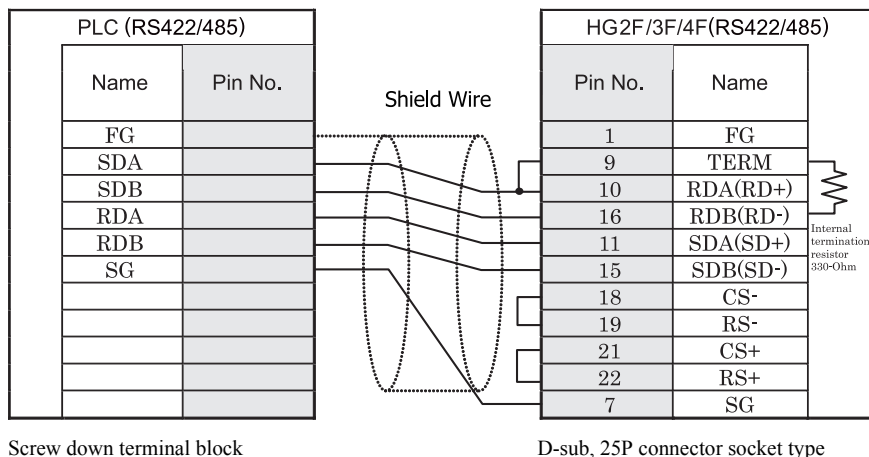
Terminal



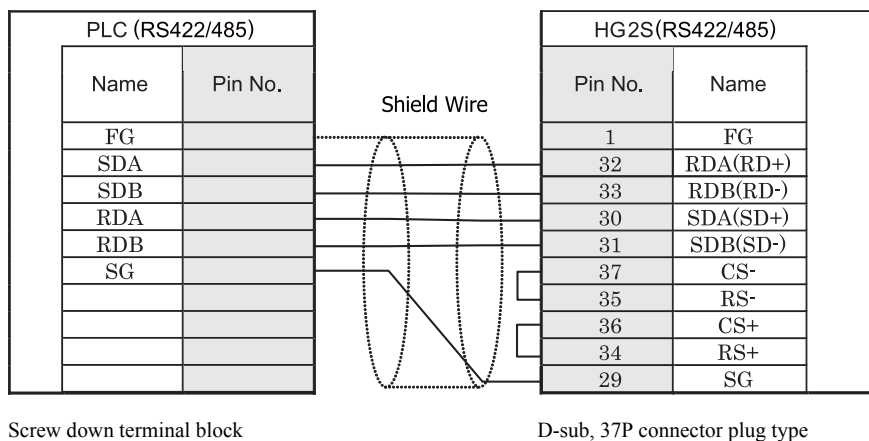
- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

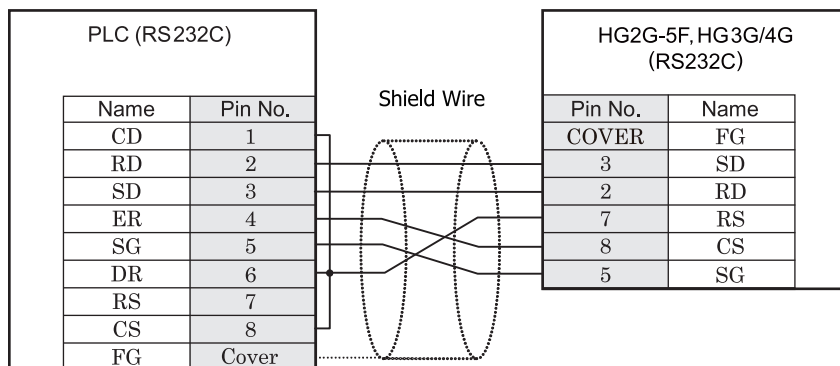
When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.

HG2S

- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.

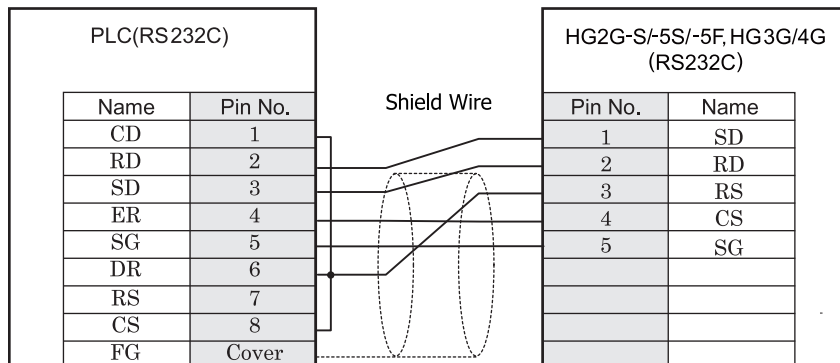
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

2.3.3 Connection Diagram 3: Computer Link Unit (RS232C) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

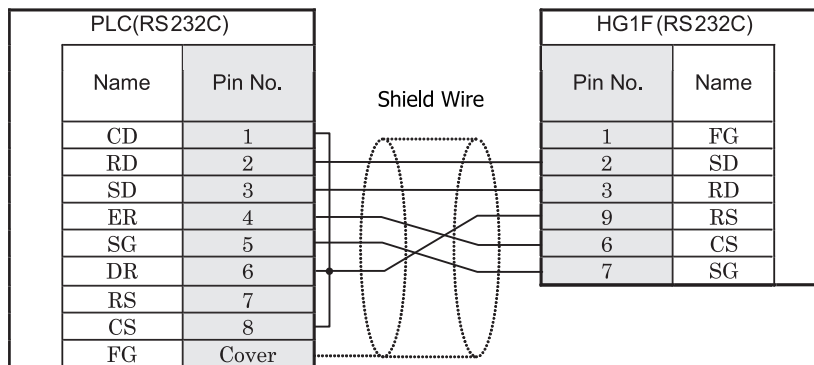
D-sub, 9P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

Terminal

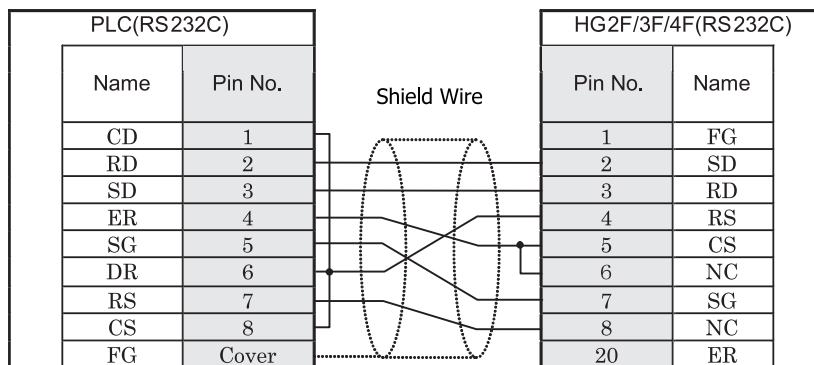
HG1F (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector socket type



- In case of HG1F a connection cable is available. (part number: HG9Z-XC203).
- The connection diagram 3 is not same as HG9Z-XC203. But both diagrams are available. Refer to Chapter 7 "1.14 PLC connection cable: HG9Z-XC203" on page 678 about the connection diagram of HG9Z-XC203.

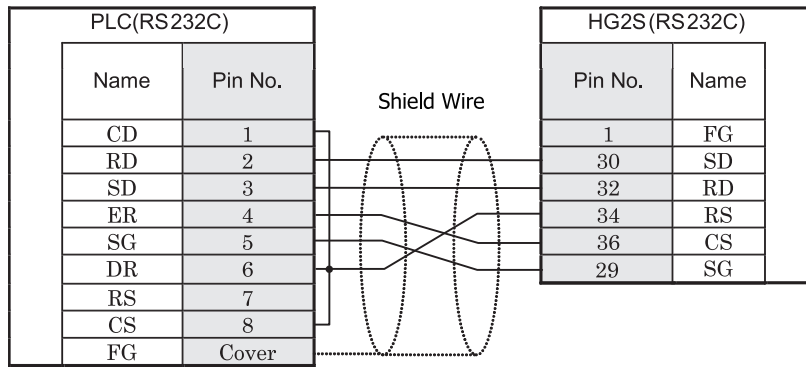
HG2F/3F/4F

D-sub, 9P connector socket type

D-sub, 25P connector socket type



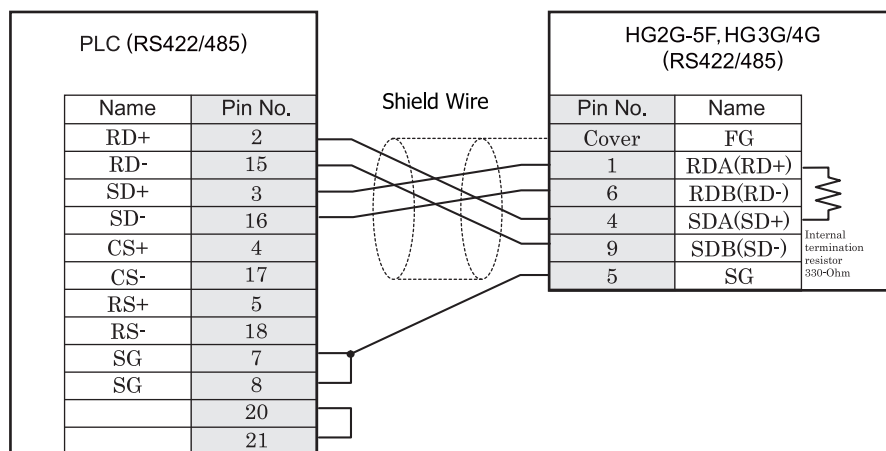
- In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C145).
- The connection diagram 3 is not same as HG9Z-3C145. But both diagrams are available. Refer to Chapter 7 "1.6 PLC connection cable: HG9Z-3C145" on page 672 about the connection diagram of HG9Z-3C145.

HG2S

D-sub, 9P connector socket type

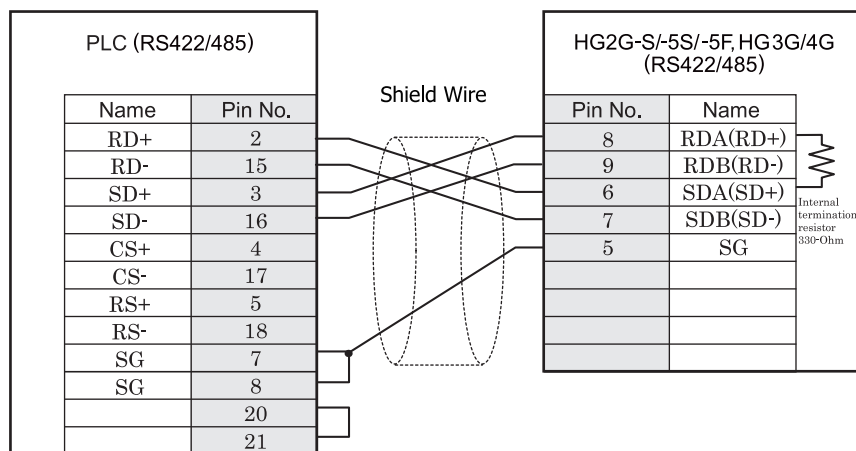
D-sub, 37P connector plug type

2.3.4 Connection Diagram 4: PLC, 2-port Adapter to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

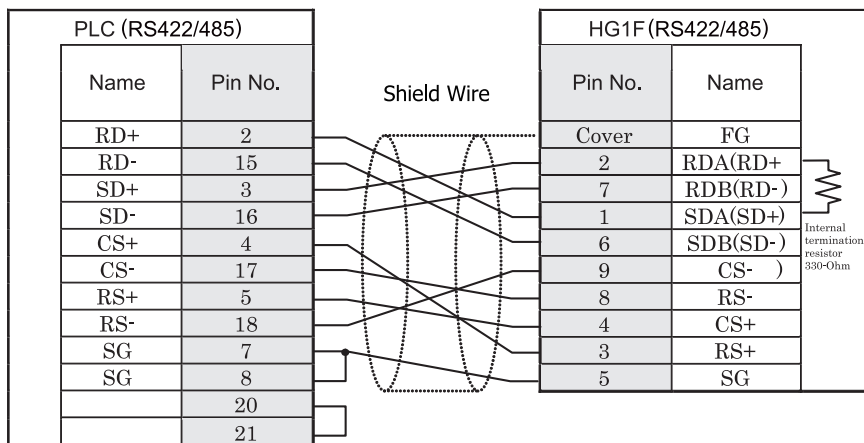
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 25P connector socket type (unit side)

Terminal

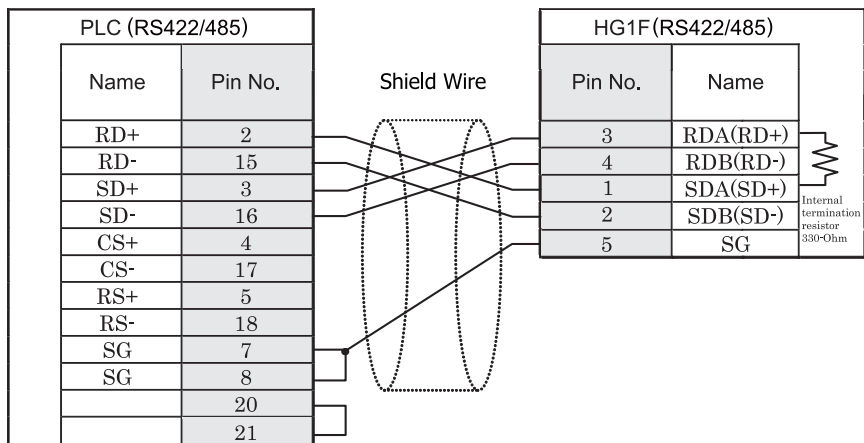


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 25P connector socket type (unit side)

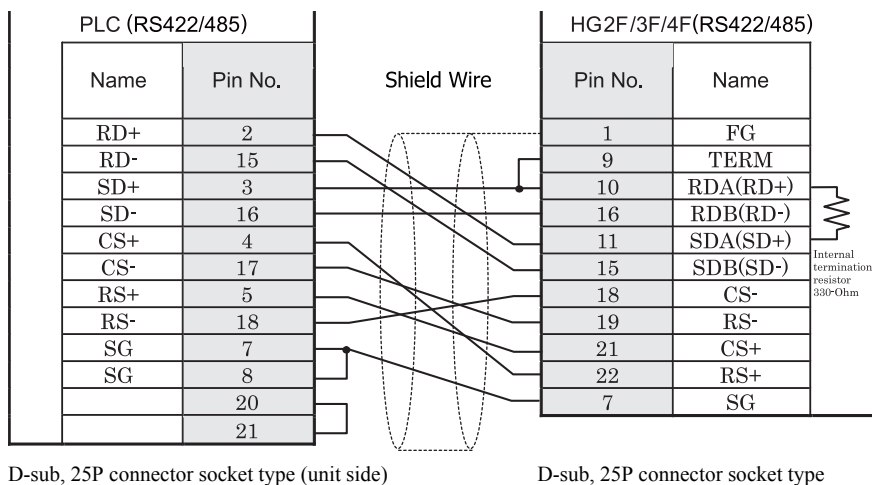
Terminal



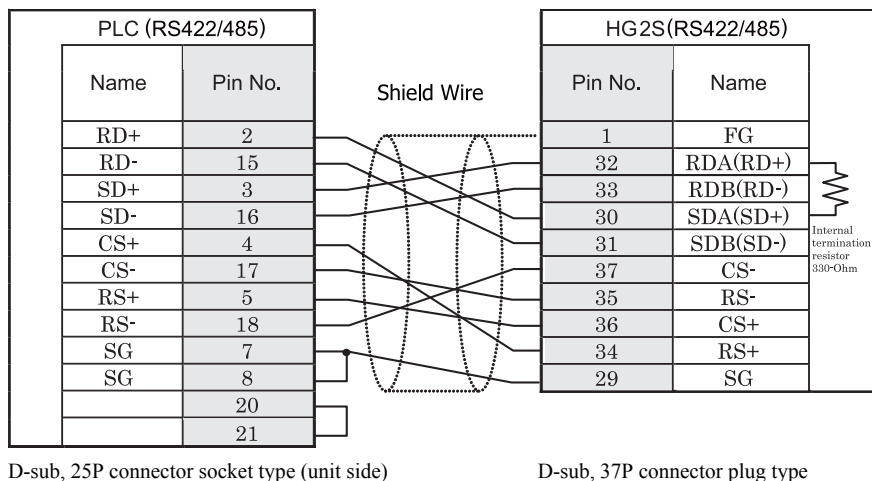
- In case of HG1F a connection cable is available. (part number: HG9Z-XC255).
- In case of HG1F there is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you connect to the CPU port of MELSEC-A series and MELSEC-FX series of Mitsubishi Electric, use D-sub 9Pin connector, NOT the Terminal Block type.

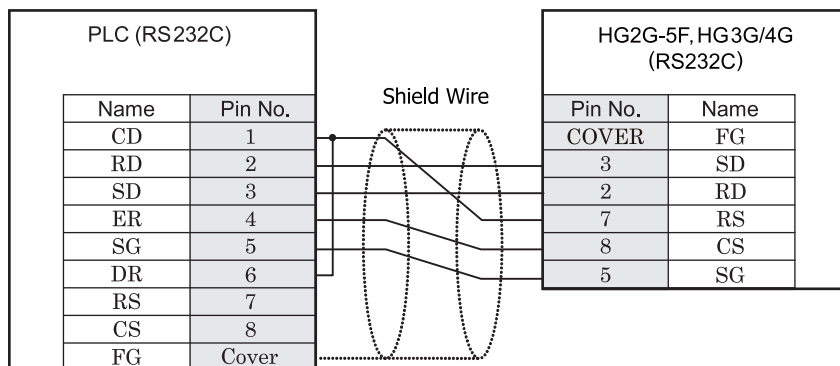
HG2F/3F/4F

In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C165).

HG2S

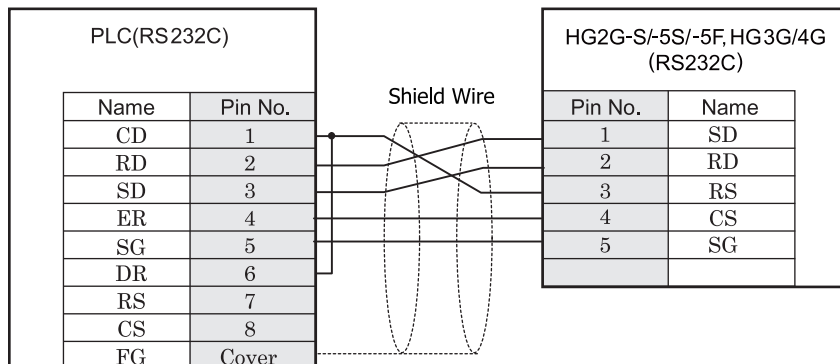
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

2.3.5 Connection Diagram 5: FX2N-232-BD to MICRO/I

HG2G-5F, HG3G/4G (Connector)

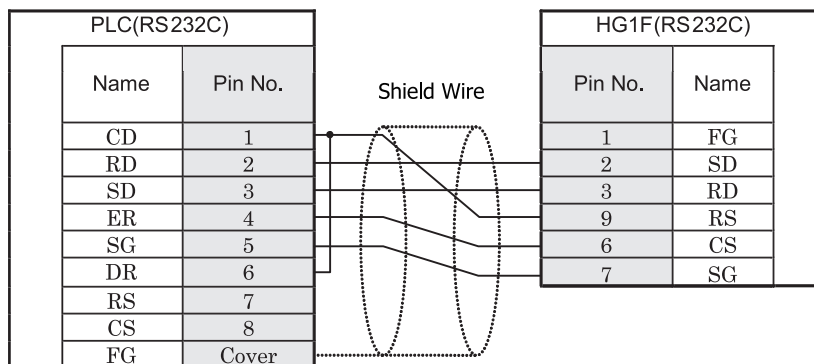
D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

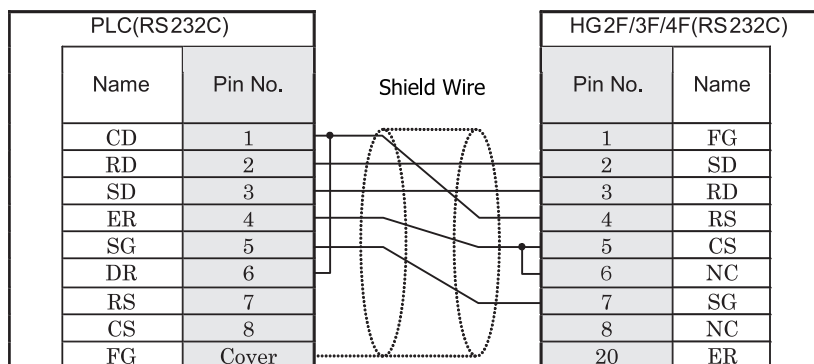
D-sub, 9P connector plug type

Terminal

HG1F (Connector)

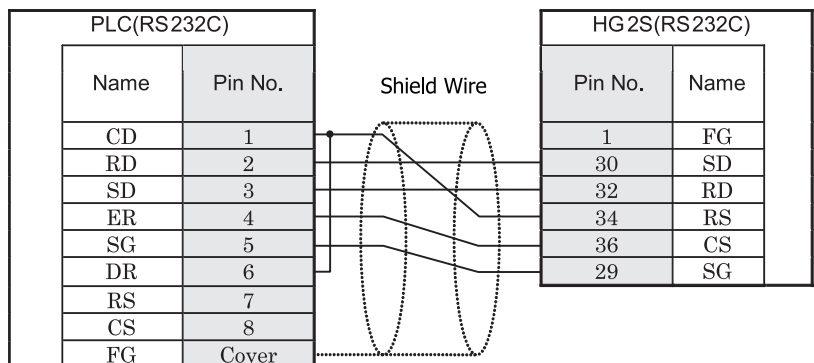
D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector plug type

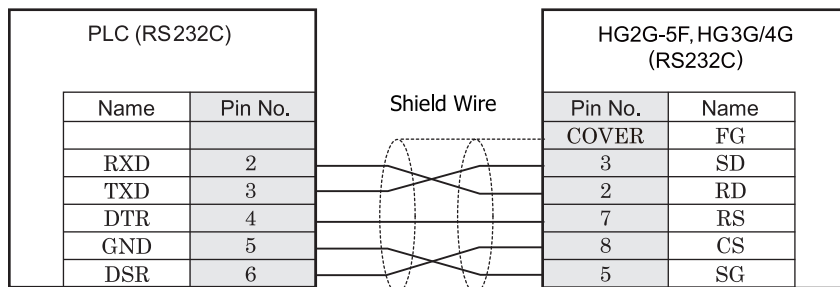
D-sub, 25P connector socket type

HG2S

D-sub, 9P connector plug type

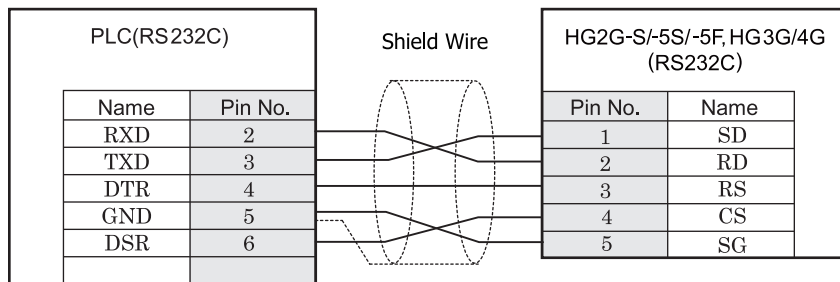
D-sub, 37P connector plug type

2.3.6 Connection Diagram 6: MELSEC-Q (Mitsubishi cable QC30R2) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

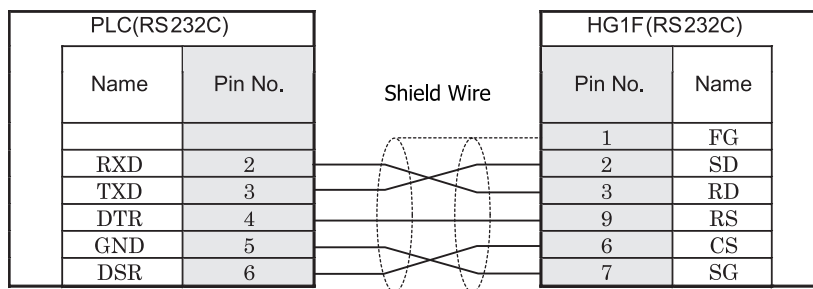
D-sub, 9P connector socket type (cable side)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

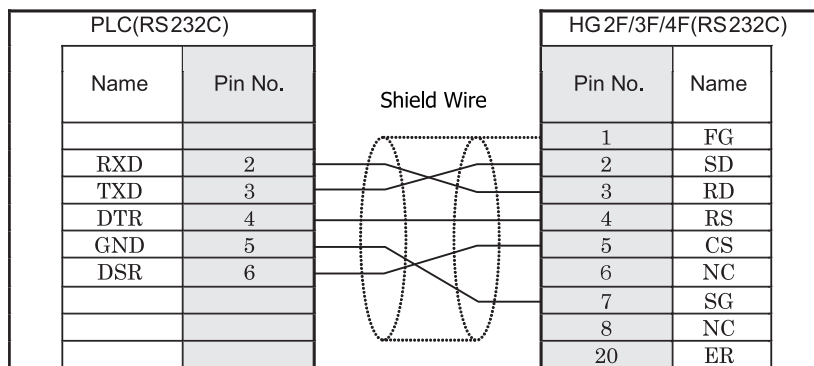
D-sub, 9P connector socket type (cable side)

Terminal

HG1F (Connector)

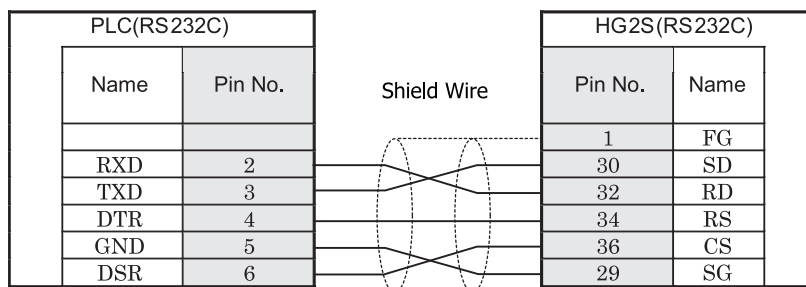
D-sub, 9P connector socket type (cable side)

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector socket type (cable side)

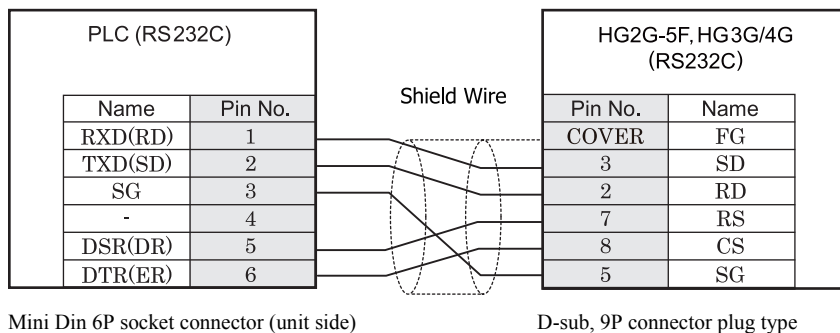
D-sub, 25P connector socket type

HG2S

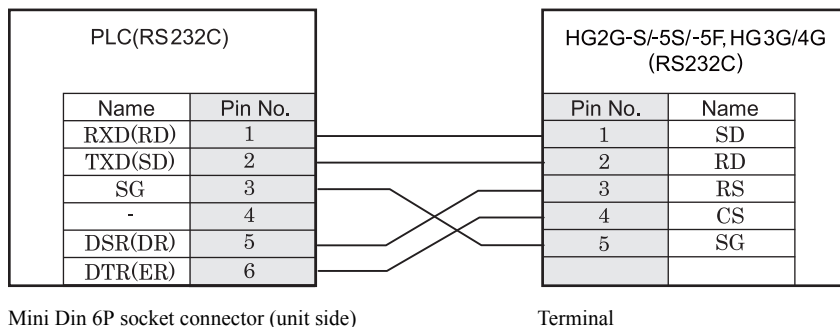
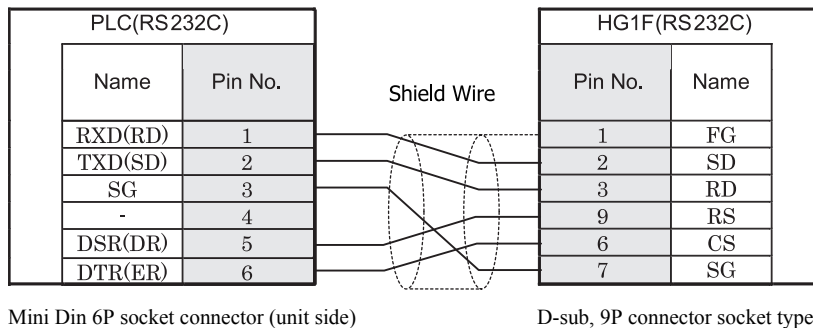
D-sub, 9P connector socket type (cable side)

D-sub, 37P connector plug type

2.3.7 Connection Diagram 7: MELSEC-Q (CPU unit programming port) to MICRO/I

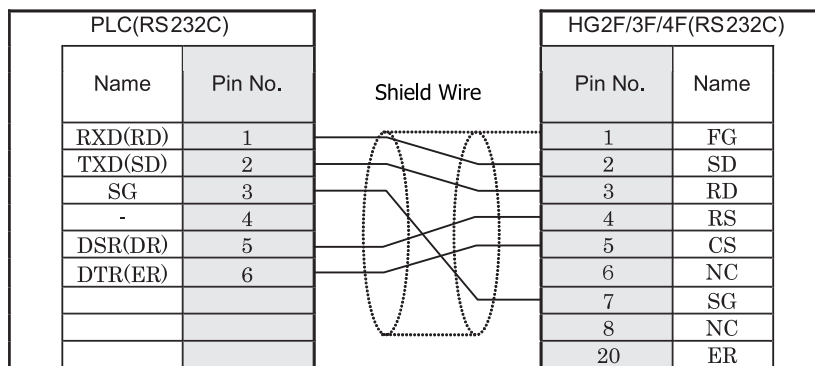
HG2G-5F, HG3G/4G (Connector)

In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC315).

HG2G-S/-5S/-5F, HG3G/4G (Terminal)**HG1F** (Connector)

In case of HG1F a connection cable is available. (part number: HG9Z-XC265).

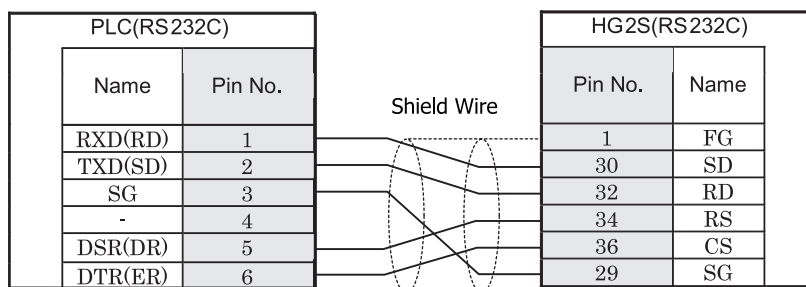
HG2F/3F/4F



Mini Din 6P socket connector (unit side)

D-sub, 25P connector socket type

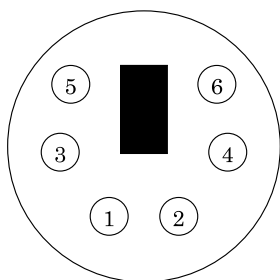
HG2S



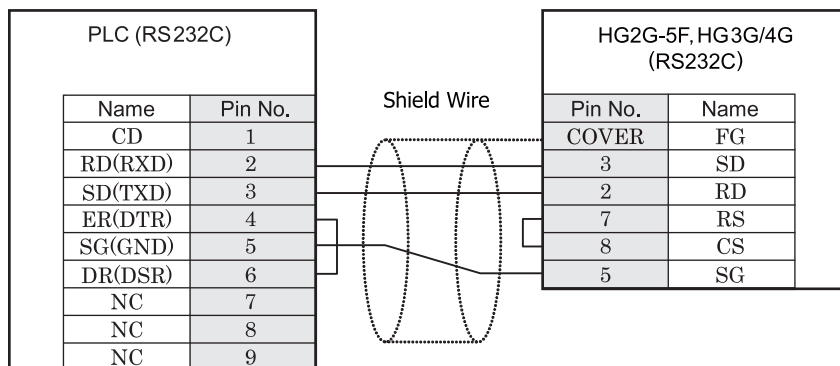
Mini Din 6P socket connector (unit side)

D-sub, 37P connector plug type

Mini-Din 6 Pin plug pin assignment by the side of the Mitsubishi Q series

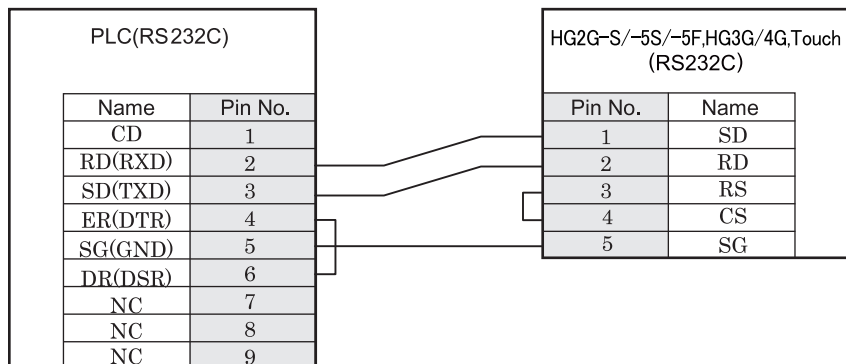


2.3.8 Connection Diagram 8: FX2NC-232ADP/FX3U-232ADP/FC3U-232-BD to MICRO/I, Touch

HG2G-5F, HG3G/4G (Connector)

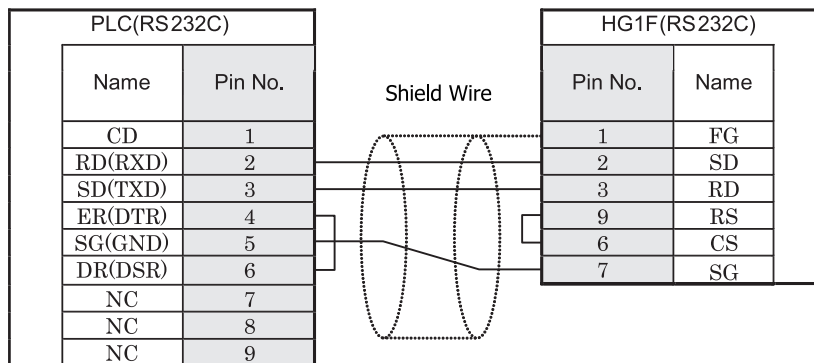
D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

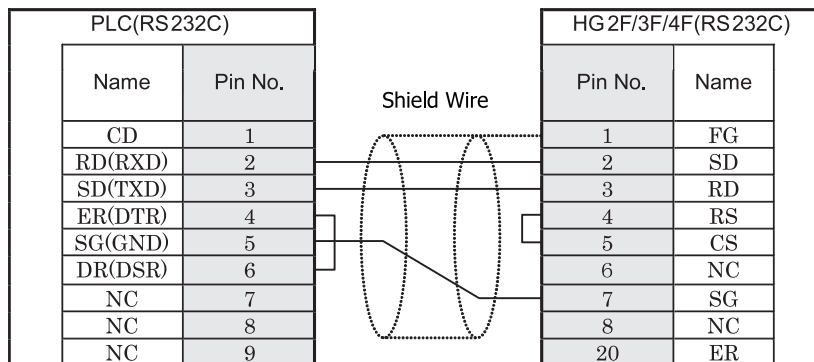
D-sub, 9P connector plug type

Terminal

HG1F (Connector)

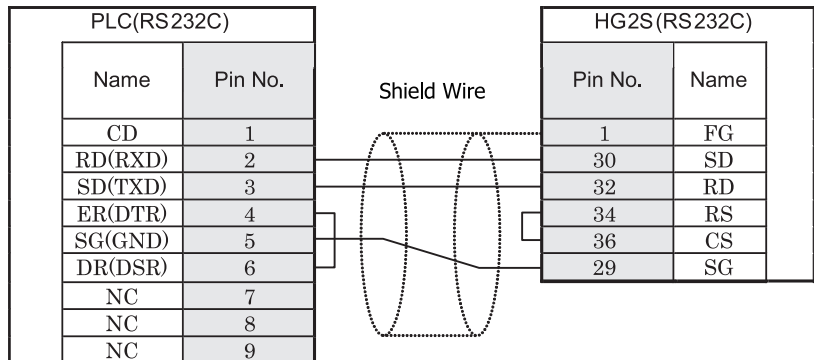
D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector plug type

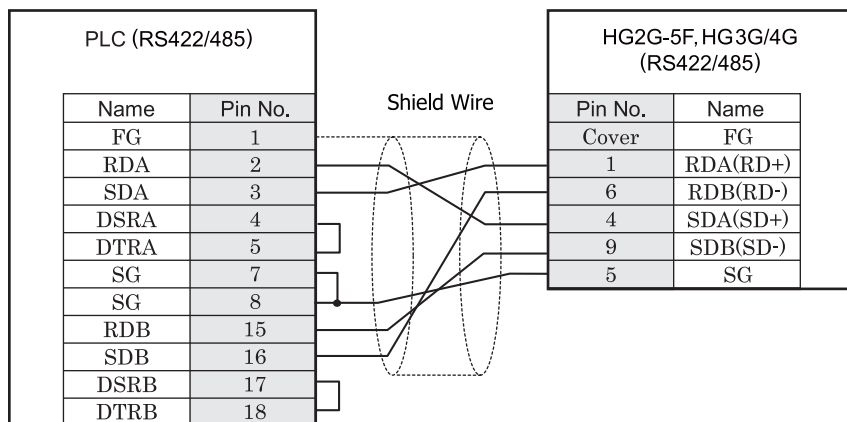
D-sub, 25P connector socket type

HG2S

D-sub, 9P connector plug type

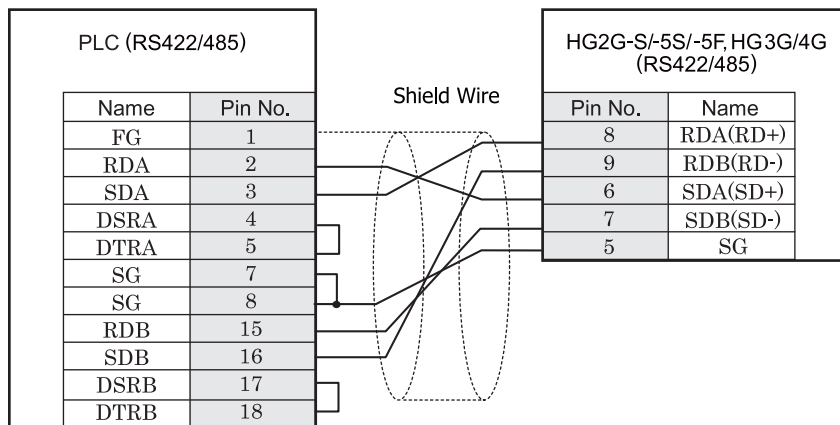
D-sub, 37P connector plug type

2.3.9 Connection Diagram 9: Computer Link Unit (RS485) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 25P connector socket type

D-sub, 9P connector plug type

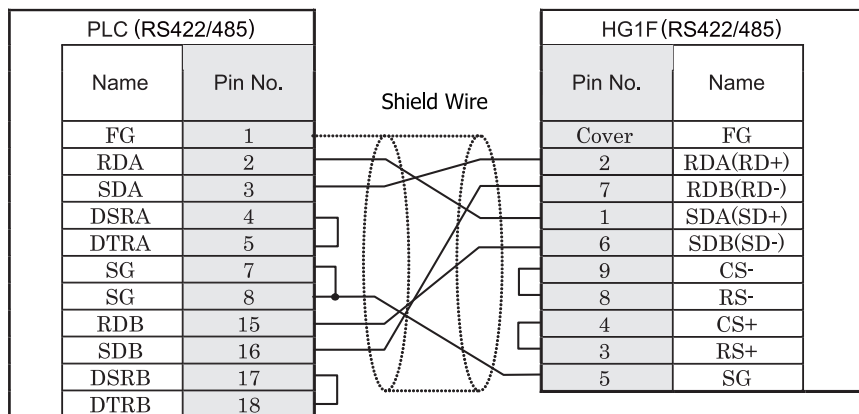
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 25P connector socket type

Terminal

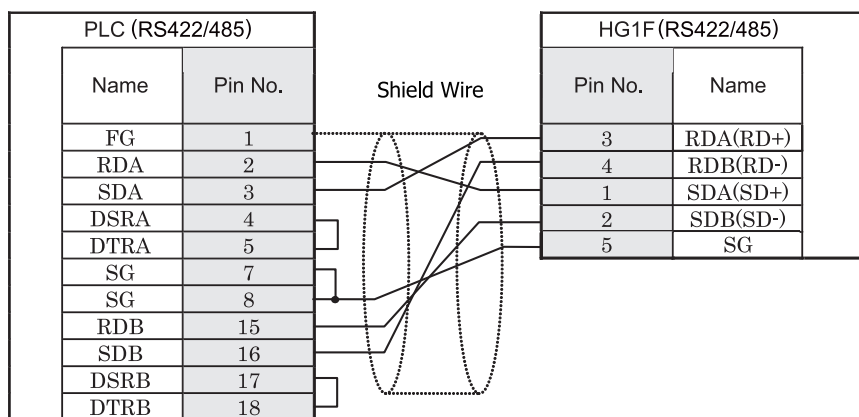


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 25P connector socket type

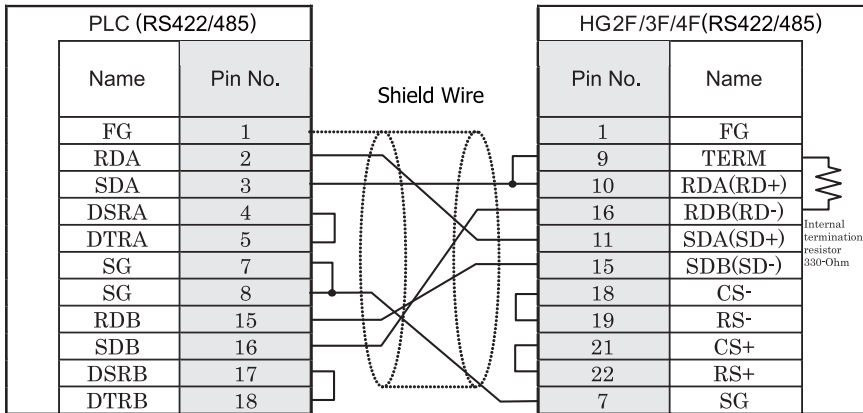
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

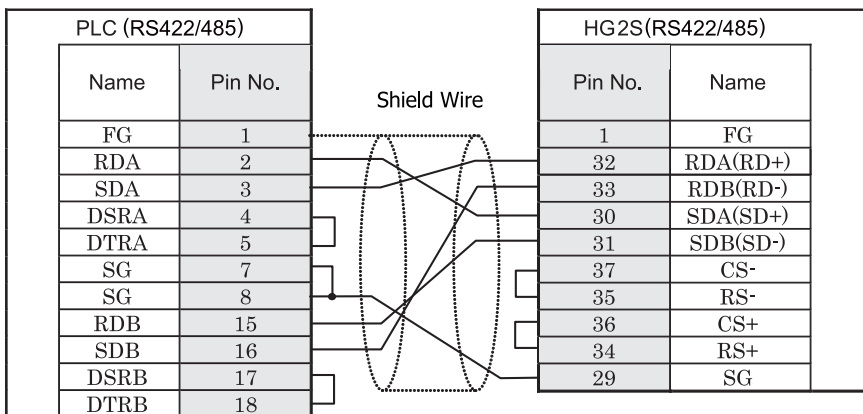


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

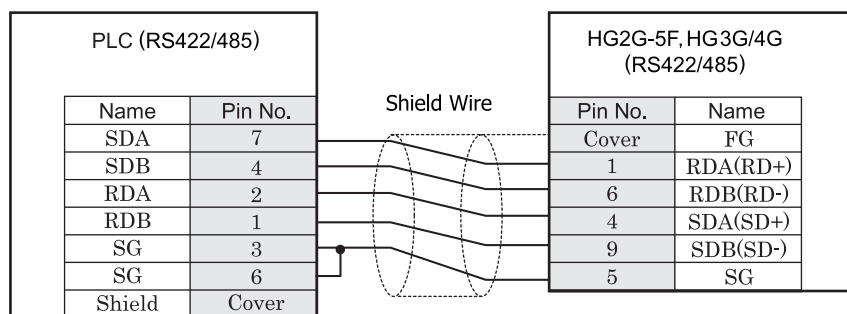
D-sub, 25P connector socket type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

2.3.10 Connection Diagram 10: MELSEC-FX Series CPU (RS485) to MICRO/I

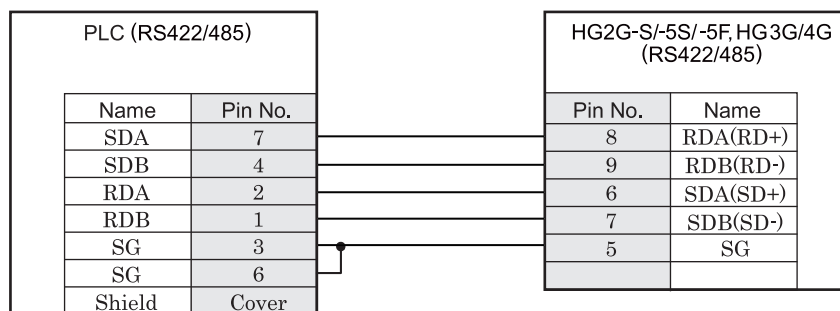
HG2G-5F, HG3G/4G (Connector)

Mini Din 8P Connector

D-sub, 9P connector plug type



In case of HG2G-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC305).

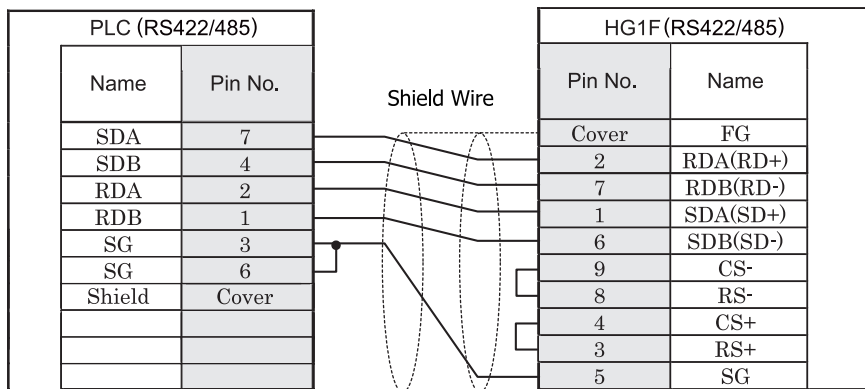
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Mini Din 8P Connector

Terminal

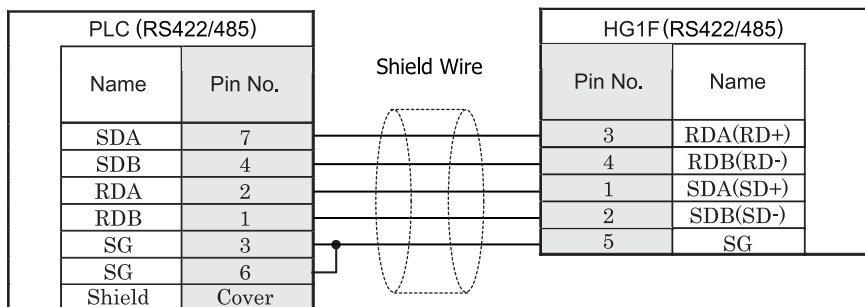


- In case of HG2G-S/-5S/-5F, HG3G/4G a connection cable is available. (part number: HG9Z-XC275). Please do not use HG9Z-XC275 because there is the case that FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual and a part of it interfere.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Mini Din 8P Connector

D-sub, 9P connector socket type

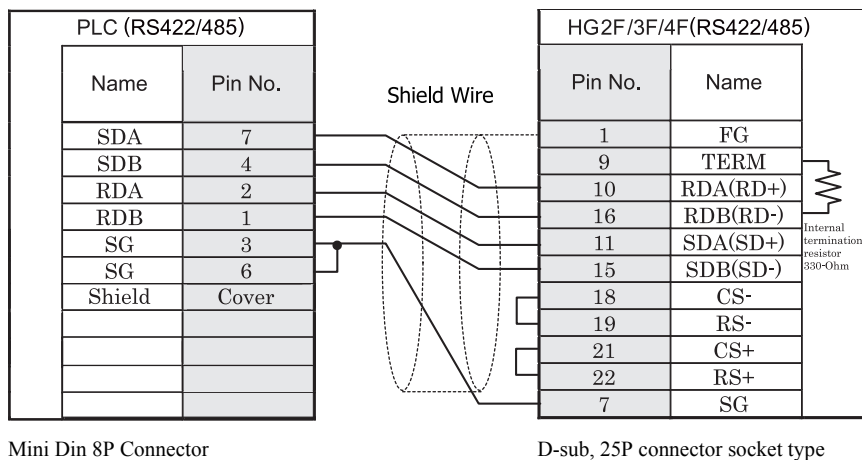
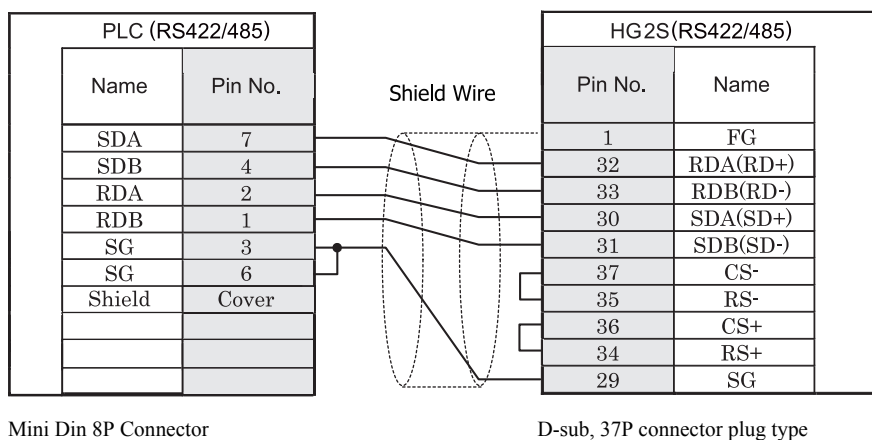
HG1F (Terminal)

Mini Din 8P Connector

Terminal



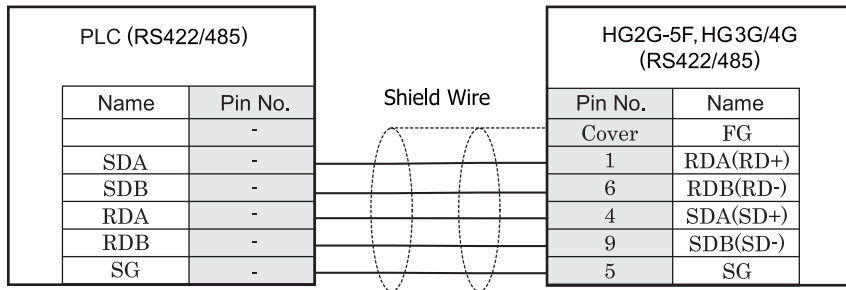
- In case of HG1F a connection cable is available. (part number: HG9Z-XC245).
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F**HG2S**

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

2.3.11 Connection Diagram 11: FX1N-485-BD/FX2N-485-BD/FX3U-485-BD/FX3G-485-BD/ FX2NC-485ADP/FX3U-485ADP(4-wire) - MICRO/I, Touch

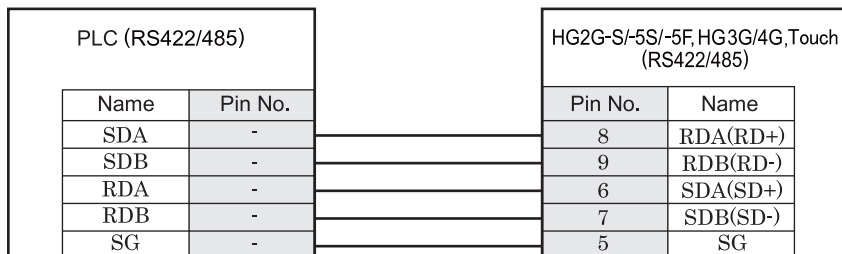
HG2G-5F, HG3G/4G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



Screw terminal block

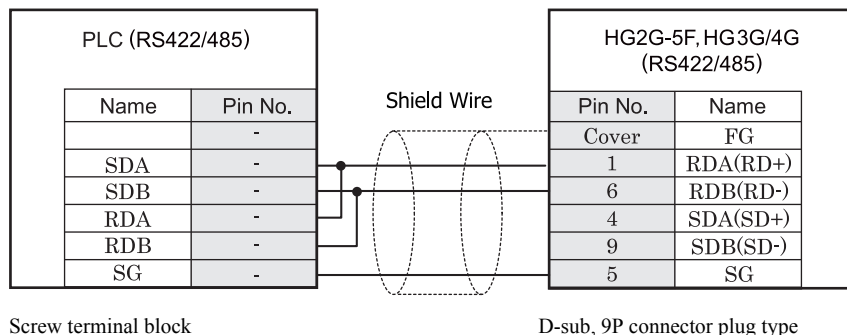
Terminal



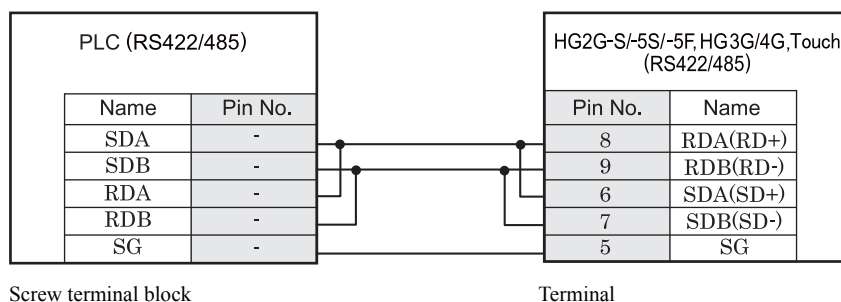
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).


2.3.12 Connection Diagram 12: FX1N-485-BD/FX2N-485-BD/FX3U-485-BD/FX3G-485-BD/ FX2NC-485ADP/FX3U-485ADP(2-wire) - MICRO/I, Touch

HG2G-5F, HG3G/4G (Connector)



HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



-  - There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

2.4 Environment Settings

2.4.1 MELSEC-A Series: Settings for the Computer Link Unit and CPU Unit Link I/F

Item		Setting
Interface		RS232C RS485
Transmission Control Protocol		Format 4 protocol mode
		Set the mode setting switch to 4. Set the mode setting switch to 8.
Station Number*1	Use the same settings as for the MICRO/I.	Set using the Station Number setting switch.
Data Bits		7 or 8 (set using the Transmission Specifications setting switch)
Baud Rate		1200, 2400, 4800, 9600 or 19200 bps (set using the Transmission Specifications setting switch)
Parity		None, Even or Odd (set using the Transmission Specifications setting switch)
Stop Bits		1 or 2 (set using the Transmission Specifications setting switch)
Checksum		Yes (set using the Transmission Specifications setting switch)
Write During RUN		Possible (set using the Transmission Specifications setting switch)
Transmission Side Termination Resistor		No Yes (set using the Transmission Specifications setting switch)
Receive Side Termination Resistor		No Yes (set using the Transmission Specifications setting switch)
Computer Link/Multi Drop Selection		Computer Link (set using the Transmission Specifications setting switch) Note: Only set if this item is present.

*1 Set a decimal number for the Station Number.



Refer to the Link Unit manual for details.

2.4.2 MELSEC-A Series: Connection to the Programming Port or 2-port Adapter

Item		Setting
Interface		RS422
Data Bits	Use the same settings as for the MICRO/I.	8 (fixed)
Baud Rate		9600 (fixed)
Parity		Odd (fixed)
Stop Bits		1 (fixed)



When using CPU Direct for the connection, the PLC program scan time will increase when it starts communicating with the MICRO/I. Investigate this under your actual operating conditions.

2.4.3 MELSEC-Q/QnA Series: Settings for the Computer Link Unit

Item		Setting
Interface		RS232C, RS422
Communication protocol		MC Protocol (Format 4)
Station Number*1	Use the same settings as for the MICRO/I.	0(DEC)
Data Bits		7 or 8
Baud Rate		1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bps
Parity		None, Even or Odd
Stop Bits		1 or 2
Checksum Code		Yes
Write During RUN		Possible

*1 Set a decimal number for the Station Number.
The PLC settings are performed using the I/O allocation for the GPPW.



Refer to the Q-compatible Serial Communication Unit user manual (Basic) for details.

2.4.4 MELSEC-Q00, 01CPU: Connection to the Programming Port

Please confirm by parameter setup of MELSEC-Q00 and 01CPU “using a serial communication function.”

Item		Setting
Station Number*1	Use the same settings as for the MICRO/I.	0(DEC)
Data Bits		8bit (fixed)
Baud Rate		19200, 38400, 57600 or 115200 bps
Parity		Odd
Stop Bits		1bit
Checksum Code		Yes

*1 Set a decimal number for the Station Number.

2.4.5 MELSEC-Q02CPU: Connection to the Programming Port

Item	Setting
Data Bits	8bit(fixed)
Baud Rate	9600, 19200, 38400, 57600 or 115200 bps
Parity	Odd
Stop Bits	1bit

2.4.6 MELSEC-FX Series : Host I/F Driver MELSEC-FX(CPU)/FX2N(CPU)/FX3UC(CPU) Settings

Item		Setting
Interface		RS232C, RS422
Data Bits	Use the same settings as for the MICRO/I.	7 (fixed)
Baud Rate*1		9600, 19200, 38400, 57600, 115200
Parity		Even (fixed)
Stop Bits		1 (fixed)

*1 The communication speed settings varies depending on the brand of PLC. Please refer to the PLC manual for details.



- When using CPU Direct for the connection, the PLC program scan time will increase when it starts communicating with the MICRO/I. Investigate this under your actual operating conditions.

- To connect MELSEC-FX series PLC and MICRO/I, check the following two things.
 - Unchecked the communication setting by the programming software.
 - Data Register 8120 (D8120) must be 0.
If the PLC is MELSEC-FX3U or MELSEC-3UC, check the following two things too.
If MICRO/I connects to CH1 on the PLC, Data Register 8400 (D8400) must be 0.
If MICRO/I connects to CH2 on the PLC, Data Register 8420 (D8420) must be 0.

2.4.7 MELSEC-FX Series : Host I/F Driver MELSEC-FX(LINK) Settings

Item		Setting
Interface		RS232C, RS422
Data Bits	Use the same settings as for the MICRO/I.	7, 8
Baud Rate *1		1200, 2400, 4800, 9600, 19200, 38400
Parity		None, Even or Odd
Stop Bits		1 or 2
Protocol		Special protocol Communication
Sum check		Enable
Transmission Control Protocol		With Type 4 (CR, LF)
Station No. *2		00-0F

*1 The communication speed settings varies depending on the brand of PLC. Please refer to the "Communication Control Edition" of the FX Series User's Manual for details.

*2 Set a decimal number for the Station Number.



In the case of FX1S, FX1N, and FX1NC, there must be an interval time of two scan times or more otherwise the command cannot be received after sending data for a command from an external device.

Example: If the PLC scan time is 10 msec, set transmission wait for the MICRO/I to 20 msec or more.

2.4.8 MELSEC-Q/QnA: in case using Ethernet Unit setting

1. MICRO/I settings - Project Settings dialog box

Item		Setting
Communication Interface tab	IP Address	Set the IP address of MICRO/I.
	Subnet mask	Set the subnet mask of MICRO/I.
	Default Gateway	Set the default gateway of MICRO/I.
Host I/F Network tab	IP Address	Set the IP address of PLC.
	Port Number	Set the port number of PLC to communicate with MICRO/I.



This Host I/F Driver does not support MELSECNET/H and MELSECNET/10 network.

2. PLC Settings

Item		setting	notes	
Network parameter	Network type	Ethernet	*1	
	Starting I/O No.	0020	*2	
	Network No.	1	*2	
	Total stations	-	-	
	Group No.	0	*2	
	Station No.	1	*2	
	Mode	On line	*1	
Operation Setting	Communication data code	Binary code	*1	
	Initial Timing	Always wait for OPEN	*1	
	IP Address	Input format	Decimal	*2
		IP address	Set IP address of PLC	*2
	Send frame setting	Ethernet	*1	
	Enable Write at RUN time	Check mark (enable)	*1	
TCP Existence confirmation setting	Use the Keep Alive	*1		
Open Setting	Protocol	TCP/IP	*1	
	Open system	Impassive open	*1	
	Fixed buffer	Send	*1	
	Fixed buffer communication	Procedure exist	*1	
	Pairing open	No pairs	*1	
	Existence confirmation	No confirm	*1	
	Local station Port No.	Set an arbitrary port number	*2 *3	
	Destination IP address	-	-	
Dest. Port No.	-	-		

*1 The setting of the above-mentioned is recommended.

*2 Set it according to the environment.

*3 MICRO/I is set by the decimal number though PLC is set by the hexadecimal number.



Refer to the Q Corresponding Ethernet Interface Module User's Manual or Q Corresponding Ethernet Interface Module User's Manual for detail.

2.4.9 MELSEC-FX: in case using Ethernet Unit setting

1. MICRO/I settings - Project Settings dialog box

Item	Setting	
Communication Interface tab	IP Address	Set the IP address of MICRO/I.
	Subnet Mask	Set the subnet mask of MICRO/I.
	Default Gateway	Set the default gateway of MICRO/I.
Host I/F Network tab	IP Address	Set the IP address of CPU Unit or Link Unit.
	Port Number	Set the port number of CPU Unit or Link Unit in.

2. PLC Settings

Ethernet Operation Setting

Item	Setting
Received data code setting	Binary code
Initial Timing	Always wait for OPEN (Communication possible during STOP)
IP Address	Set IP address of PLC
Send frame setting	Ethernet (V2.0)
TCP Existence confirmation setting	Use the Keep Alive

Open Setting

Item	Setting
Connection	Use 3 or 4
Protocol	TCP/IP
Open system	Impassive open
Existence confirmation	No confirm
Local station Port No. (Decimal)	Set an arbitrary port number 1025 to 5548 or 5552 to 65534 The default is 1025.

2.5 Usable Devices

2.5.1 MELSEC-AnA (LINK)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 1FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 8191	R/W	
Link Register	W	W	0 - 1FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special register	SD	SD	9000 - 9255	R	
File register	R	R	0 - 8191	R/W	
Expansion file register	ER	ZR	0 - 58191	R/W	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.2 MELSEC-AnN (LINK)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special register	SD	SD	9000 - 9255	R	
File register	R	R	0 - 8191	R/W	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.3 MELSEC-AnA (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 7FF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 7F0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 6143	R/W	
Link Register	W	W	0 - FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.4 MELSEC-AnN (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.5 MELSEC-AnU (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 1FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 8191	R/W	
Link Register	W	W	0 - 1FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.6 MELSEC-A1S/A2C (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 1FF	R	*1
Output Relay	Y	Y	0 - 1FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 1F0	R	*1 *2
Output Relay	WY	Y	0 - 1F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*3
Special Register	SD	SD	9000 - 9255	R	
File Register	R	R	0 - 8191	R/W	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

*3 This can only be used when the Link Unit is being used.



- File Register is not available, if Memory Cassettes is used.
- File Register is tested only MELSEC-A1S/A1SH/A1SJH/A2SH/A2C.
Don't use expect those CPU Unit.
- In case of using File Register, must reset to MICRO/I if PLC parameter is changed.

2.5.7 MELSEC-Q/QnA (Link)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Internal Relay	M	M	0 - 32767	R/W	
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Link Special Relay	SB	SB	0 - 7FF	R/W	*1
Link Relay	B	B	0 - 7FFF	R/W	*1
Latch Relay	L	L	0 - 32767	R/W	
Timer (contact)	TS	T	0 - 8191	R	
Timer (coil)	TC	T	0 - 8191	R/W	
Counter (contact)	CS	C	0 - 8191	R	
Counter (coil)	CC	C	0 - 8191	R/W	
Special Relay	SM	SM	0 - 2047	R	
Annunciator	F	F	0 - 32767	R/W	
Retentive Timer (contact)	SS	ST	0 - 2047	R	
Retentive Timer (coil)	SC	ST	0 - 2047	R/W	
Step Relay	S	S	0 - 32767	R/W	
Edge Relay	V	V	0 - 32767	R/W	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 32752	R/W	*2
Link Special Relay	WSB	SB	0 - 7F0	R/W	*1 *2
Link Relay	WB	B	0 - 7FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 32752	R/W	*2
Timer (current value)	TN	T	0 - 8191	R	
Counter (current value)	CN	C	0 - 8191	R	
Data Register	D	D	0 - 25599	R/W	
Link Register	W	W	0 - 24FF	R/W	*1
File register	R	R	0 - 32767	R/W	
Annunciator	WF	F	0 - 32752	R/W	*2
Special Relay	WSM	SM	0 - 2032	R	*2
Special register	SD	SD	0 - 2047	R	
Edge Relay	WV	V	0 - 32752	R/W	*2
Step Relay	WS	S	0 - 32752	R/W	*2
Retentive Timer (current value)	SN	ST	0 - 2047	R/W	
Special Link Register	SW	SW	0 - 7FF	R/W	*1
Ext File Register	ZR	ZR	0 - FFFF	R/W	*1

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.8 MELSEC-Q (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Internal Relay	M	M	0 - 32767	R/W	
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Link Special Relay	SB	SB	0 - 7FF	R/W	*1
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 32767	R/W	
Annunciator	F	F	0 - 32767	R/W	
Step Relay	S	S	0 - 8191	R/W	
Edge Relay	V	V	0 - 32767	R/W	
Timer (contact)	TS	T	0 - 23087	R	
Timer (coil)	TC	T	0 - 23087	R/W	
Counter (contact)	CS	C	0 - 23087	R	
Counter (coil)	CC	C	0 - 23087	R/W	
Retentive Timer (contact)	SS	ST	0 - 23087	R	
Retentive Timer (coil)	SC	ST	0 - 23087	R/W	
Special Relay	SM	SM	0 - 2047	R	

*1 Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 32752	R/W	*2
Link Relay	WB	B	0 - 7FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 32752	R/W	*2
Annunciator	WF	F	0 - 32752	R/W	*2
Edge Relay	WV	V	0 - 32752	R/W	*2
Step Relay	WS	S	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 23087	R	
Counter (current value)	CN	C	0 - 23087	R	
Retentive Timer (current value)	SN	ST	0 - 23087	R/W	
Data Register	D	D	0 - 25983	R/W	
Link Register	W	W	0 - 657F	R/W	
Special Relay	WSM	SM	0 - 2032	R	*2
Link Special Relay	WSB	SB	0 - 7F0	R/W	*1 *2
Special Register	SD	SD	0 - 2047	R	
Special link Register	SW	SW	0 - 7FF	R/W	
File Register	R	R	0 - 32767	R/W	
Extend file Register	ZR	ZR	0 - 131072	R/W	

*1 Set this device using hexadecimal.

*2 Set this device using a multiplier of 16.

2.5.9 MELSEC-FX (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 337	R	*1
Output Relay	Y	Y	0 - 337	R/W	*1
Internal Relay	M	M	0 - 1535	R/W	
Timer (contact)	TS	T	0 - 255	R	
Counter (contact)	CS	C	0 - 255	R	
State	S	S	0 - 999	R/W	

*1 Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 320	R	*1 *2
Output Relay	WY	Y	0 - 320	R/W	*1 *2
Internal Relay	WM	M	0 - 1520	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 199	R	
32-Bit Counter (current value)	DCN	C	2000 - 2551	R	*3
Data Register	D	D	0 - 999	R/W	
State	WS	WS	0 - 976	R/W	*2

*1 Set this device using octal.

*2 Set this device using a multiplier of 16.

*3 This device is a 32-bit device.

2.5.10 MELSEC-FX2N (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 337	R	*1
Output Relay	Y	Y	0 - 337	R/W	*1
Internal Relay	M	M	0 - 3071	R/W	
Timer (contact)	TS	T	0 - 255	R	
Counter (contact)	CS	C	0 - 255	R	
Special Int. Relay	SM	SM	8000 - 8255	R	
State	S	S	0 - 999	R/W	

*1 Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 360	R	*1 *2
Output Relay	WY	Y	0 - 360	R/W	*1 *2
Internal Relay	WM	M	0 - 3056	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 199	R	
32-Bit Counter (current value)	DCN	C	2000 - 2551	R	*3
Data Register	D	D	0 - 7999	R/W	
State	WS	S	0 - 976	R/W	*2
Special Int. Relay	WSM	SM	8000 - 8240	R	
Special Register	SD	SD	8000 - 8255	R	

*1 Set this device using octal.

*2 Set this device using a multiplier of 16.

*3 This device is a 32-bit device.

2.5.11 MELSEC-FX3UC (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 377	R	*1
Output Relay	Y	Y	0 - 377	R/W	*1
Internal Relay	M	M	0 - 7679	R/W	
Timer (contact)	TS	T	0 - 511	R	
Counter (contact)	CS	C	0 - 255	R	
Special Internal Relay	SM	SM	8000 - 8511	R	
State	S	S	0 - 4095	R/W	

*1 Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - 360	R	*1 *2
Output Relay	WY	Y	0 - 360	R/W	*1 *2
Internal Relay	WM	M	0 - 7664	R/W	*2
Timer (current value)	TN	T	0 - 511	R	
Counter (current value)	CN	C	0 - 199	R	
32-bit counter (current value)	DCN	C	2000 - 2551	R/W	*3
Data Register	D	D	0 - 7999	R/W	
State	WS	S	0 - 4080	R/W	*2
Special Internal Relay	WSM	SM	8000 - 8496	R	*2
Special Data Register	SD	SD	8000 - 8511	R	
Extended Register	R	R	0 - 32767	R/W	

*1 Set this device using octal.

*2 Set this device using a multiplier of 16.

*3 This device is a 32-bit device.

2.5.12 MELSEC-FX (LINK)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Int. Relay	M	M	0 - 7679	R/W	dec
Input Relay	X	X	0 - 377	R/W	hex
Output Relay	Y	Y	0 - 377	R/W	hex
Timer Relay (contact)	TS	T	0 - 511	R/W	dec
Counter Relay (contact)	CS	C	0 - 255	R/W	dec
Special Internal Relay	M	SM	8000 - 8511	R/W	dec
State	S	S	0 - 4095	R/W	dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Register	D	D	0 - 7999	R/W	dec
Input Relay (word)	WX	X	0 - 360	R/W	hex ^{*1}
Output Relay (word)	WY	Y	0 - 360	R/W	hex ^{*1}
Int. Relay (word)	WM	M	0 - 7664	R/W	dec ^{*1}
Timer (Current Value)	TN	T	0 - 511	R/W	dec
Counter (Current Value)	CN	C	0 - 199	R/W	dec
State (word)	WS	S	0 - 4080	R/W	dec ^{*1}
Special Internal Relay (word)	WSM	M	8000 - 8496	R/W	dec ^{*1}
Special Data Register	SD	D	8000 - 8511	R/W	dec
32-bit counter (current value)	DCN	C	2000 - 2511	R/W	*2
Extended Register	R	R	0 - 32767	R/W	dec

*1 Set this device using hexadecimal.

*2 This is a 32-bit device address.

The upper 3 digits represent an address in decimal, the last digit represents the upper and lower parts of 32-bit data in binary.

2.5.13 MELSEC-Q/QnA (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Special Relay (bit)	SM	SM	000000 - 002047	R	dec
Input Relay (bit)	X	X	000000 - 001FFF	R	hex
Output Relay (bit)	Y	Y	000000 - 001FFF	R/W	hex
Internal Relay (bit)	M	M	000000 - 475135	R/W	dec
Latch Relay (bit)	L	L	000000 - 475135	R/W	dec

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Annunciator (bit)	F	F	000000 - 475135	R/W	dec
Edge Relay (bit)	V	V	000000 - 475135	R/W	dec
Link Relay (bit)	B	B	000000 - 073FFF	R/W	hex
Timer (contact)	TS	TS	000000 - 475135	R	dec
Timer (coil)	TC	TC	000000 - 475135	R/W	dec
Retentive Timer (contact)	SS	SS	000000 - 475135	R	dec
Retentive Timer (coil)	SC	SC	000000 - 475135	R/W	dec
Counter (contact)	CS	CS	000000 - 475135	R	dec
Counter (coil)	CC	CC	000000 - 475135	R/W	dec
Link Special Relay (bit)	SB	SB	000000 - 0007FF	R/W	dec
Step Relay (bit)	S	S	000000 - 008191	R/W	dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Special Register	SD	SD	000000 - 002047	R	dec
Data Register	D	D	000000 - 029695	R/W	dec
Link Register	W	W	000000 - 0073FF	R/W	hex
Timer (current value)	TN	TN	000000 - 029695	R	dec
Retentive Timer (current value)	SN	SN	000000 - 029695	R/W	dec
Counter (current value)	CN	CN	000000 - 029695	R	dec
Special Link Register	SW	SW	000000 - 0007FF	R/W	hex
File Register	R	R	000000 - 032767	R/W	dec
Extend file Register	ZR	ZR	000000 - 0FE7FF	R/W	hex
Special Relay (word)	WSM	SM	000000 - 002032	R	dec ^{*1}
Input Relay (word)	WX	X	000000 - 001FF0	R	hex ^{*1}
Output Relay (word)	WY	Y	000000 - 001FF0	R/W	hex ^{*1}
Internal Relay (word)	WM	M	000000 - 475120	R/W	dec ^{*1}
Latch Relay (word)	WL	L	000000 - 475120	R/W	dec ^{*1}
Annunciator (word)	WF	F	000000 - 475120	R/W	dec ^{*1}
Edge Relay (word)	WV	V	000000 - 475120	R/W	dec ^{*1}
Link Relay (word)	WB	B	000000 - 073FF0	R/W	hex ^{*1}
Link Special Relay (word)	WSB	SB	000000 - 0007F0	R/W	hex ^{*1}
Step Relay (word)	WS	S	000000 - 008176	R/W	dec ^{*1}

*1 Set this device using a multiplier of 16.

2.5.14 MELSEC-FX (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Int. Relay	M	M	0 - 7679	R/W	dec
Input Relay	X	X	0 - 377	R	hex
Output Relay	Y	Y	0 - 377	R/W	hex
Timer Relay (contact)	TS	T	0 - 511	R	dec
Counter Relay (contact)	CS	C	0 - 255	R	dec
Special Internal Relay	M	SM	8000 - 8511	R	dec
State	S	S	0 - 4095	R/W	dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Register	D	D	0 - 7999	R/W	dec
Input Relay (word)	WX	X	0 - 360	R	hex
Output Relay (word)	WY	Y	0 - 360	R/W	hex
Int. Relay (word)	WM	M	0 - 7664	R/W	dec
Timer (Current Value)	TN	T	0 - 511	R	dec
Counter (Current Value)	CN	C	0 - 199	R	dec
State (word)	WS	S	0 - 4080	R/W	hex
Special Internal Relay (word)	WSM	M	8000 - 8496	R	dec
Special Data Register	SD	D	8000 - 8511	R	hex
32-bit counter (current value)	DCN	C	2000 - 2511	R	*1
Extended Register	R	R	0 - 32767	R/W	hex

*1 This device is a 32-bit device.

3 Omron

3.1 Connection Table

3.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
SYSMAC-C								
C500, C500F, C1000H, C2000, C2000H	C120-LK201-V1	RS232C Connection Diagram 1 (refer to P122)	Hardware	SYSMAC-C Series	X	X	X	---
	C120-LK202-V1	RS422/485 4-wire Connection Diagram 2 (refer to P125)						
	C500-LK201-V1	RS232C Connection Diagram 1 (refer to P122)						
		RS422/485 4-wire Connection Diagram 2 (refer to P125)						
C500-LK203	RS232C Connection Diagram 1 (refer to P122)							
	RS422/485 4-wire Connection Diagram 3 (refer to P128)							
C1000HF	C500-LK203	RS232C Connection Diagram 1 (refer to P122)						
		RS422/485 4-wire Connection Diagram 3 (refer to P128)						
C200HS	C200H-LK201	RS232C Connection Diagram 1 (refer to P122)						
	C200H-LK202	RS422/485 4-wire Connection Diagram 2 (refer to P125)						
C200HE, C200HG, C200HX	C200H-LK201	RS232C Connection Diagram 1 (refer to P122)						
	C200H-LK202	RS422/485 4-wire Connection Diagram 2 (refer to P125)						
	C200HW- COM02/COM04/ COM05/COM06	RS232C Connection Diagram 6 (refer to P136)						
	C200HW- COM03/COM06	RS422/485 4-wire Connection Diagram 7 (refer to P139)						

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
C120, C120F	C120-LK201-V1	RS232C Connection Diagram 1 (refer to P122)	Hardware	SYSMAC-C Series	X	X	X	---
	C120-LK202-V1	RS422/485 4-wire Connection Diagram 2 (refer to P125)						
C20H, C28H, C40H, C60H	Not required (connects to CPU unit)	RS232C Connection Diagram 4 (refer to P131)						
CQM1H, C200HS-CPU21/23/31/33	Not required (connects to CPU unit)	RS232C Connection Diagram 5 (refer to P133)						
C200HE-CPU42, C200HG-CPU43/63, C200HX-CPU44/64	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)						
CPM1, CPM1A, CPM2A	CPM1-CIF01	RS232C Connection Diagram 5 (refer to P133)						
	CPM1-CIF11	RS422/485 4-wire Connection Diagram 8 (refer to P142)						
CPM2A	Not required (connects to CPU unit)	RS232C Connection Diagram 5 (refer to P133)						
SYSMAC-CS1								
CS1G*1, CS1H	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC-CS1 Series	X	X	X	---
	CS1W-SCB41 (port1)	RS232C Connection Diagram 6 (refer to P136)						
	CS1W-SCB41 (port2)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CS1W-ENT01, CS1W-ENT11, CS1W-ENT21	Ethernet	-	SYSMAC-CS1/CJ Series (Ethernet)	X	X	X	X

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
SYSMAC-CJ1								
CJ1M*1, CJ1H, CJ1G	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1 Series	X	X	X	---
	CJ1W-SCU21-V1	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-SCU31-V1	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port1)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port2)	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-ETN21	Ethernet	-	SYSMAC-CS1/ CJ Series (Ethernet)	X	X	X	X
SYSMAC-CJ2								
CJ2M-CPU11/12/ 13/14/15 CJ2H-CPU64/ 65/66/67/68	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1 Series	X	X	X	---
	CJ1W-SCU21-V1	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-SCU31-V1	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port1)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port2)	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-ETN21	Ethernet	-	SYSMAC-CS1/ CJ Series (Ethernet)	X	X	X	X

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
CJ2M-CPU31/ 32/33/34/35	CP1W-CIF01	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1 Series	X	X	X	---
	CP1W-CIF11	RS422/485 4-wire Connection Diagram 8 (refer to P142)						
	CJ1W-SCU21-V1	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-SCU31-V1	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port1)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port2)	RS232C Connection Diagram 6 (refer to P136)						
	Ethernet port on the CPU Unit	Ethernet	-	SYSMAC-CS1/ CJ Series (Ethernet)	X	X	X	X
CJ1W-ETN21								
CJ2H-CPU64-EIP/ 65-EIP/66-EIP/ 67-EIP/68-EIP	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1 Series	X	X	X	---
	CJ1W-SCU21-V1	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-SCU31-V1	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port1)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port2)	RS232C Connection Diagram 6 (refer to P136)						
	Ethernet port on the CPU Unit	Ethernet						
	CJ1W-ETN21							

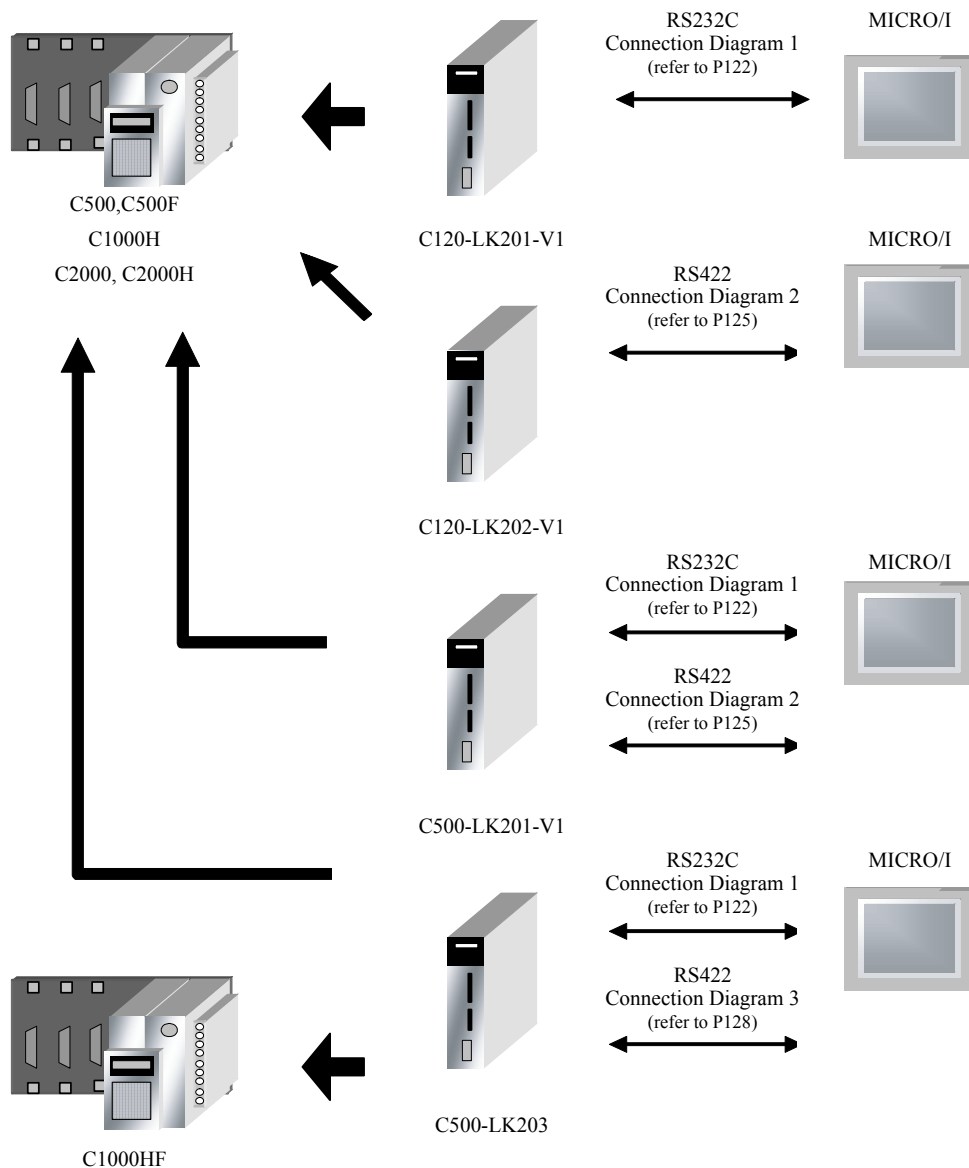
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
SYSMAC-CP1								
CP1E-N14/N20	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1Series	X	X	X	---
CP1E-NA20/N30/ N40/N60	Not required (connects to CPU unit)	RS232C Connection Diagram 6 (refer to P136)						
	CP1W-CIF01	RS232C Connection Diagram 6 (refer to P136)						
	CP1W-CIF11	RS422/485 4-wire Connection Diagram 8 (refer to P142)						
CP1L-L14/20 CP1L-M30/40/60 CP1L-EL20 CP1L-EM20/30/40	CP1W-CIF01	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1Series	X	X	X	---
	CP1W-CIF11	RS422/485 4-wire Connection Diagram 8 (refer to P142)						
CP1H-Y20D/ X40/XA20	CP1W-CIF01	RS232C Connection Diagram 6 (refer to P136)	Hardware	SYSMAC- CS1Series	X	X	X	---
	CP1W-CIF11	RS422/485 4-wire Connection Diagram 8 (refer to P142)						
	CJ1W-SCU21-V1	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-SCU31-V1	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port1)	RS422/485 4-wire Connection Diagram 7 (refer to P139)						
	CJ1W-SCU41-V1 (port2)	RS232C Connection Diagram 6 (refer to P136)						
	CJ1W-ETN21	Ethernet	-	SYSMAC-CS1/ CJ Series (Ethernet)	X	X	X	X

*1 This PLC was used to test & verify communications.

3.2 System Configuration

This is the system configuration for the connection of Omron PLCs to the MICRO/I

3.2.1 SYSMAC-C Series (using the PLC Link Unit)

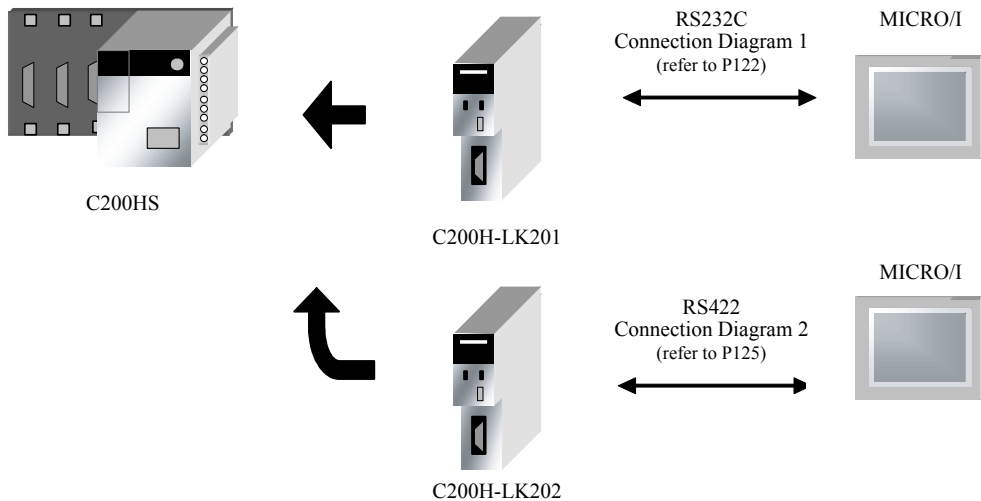


2

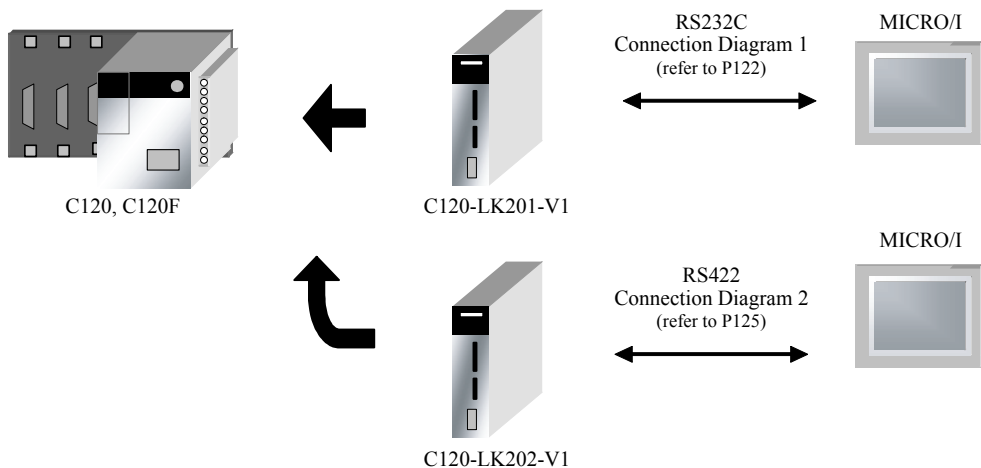
Connection to a PLC



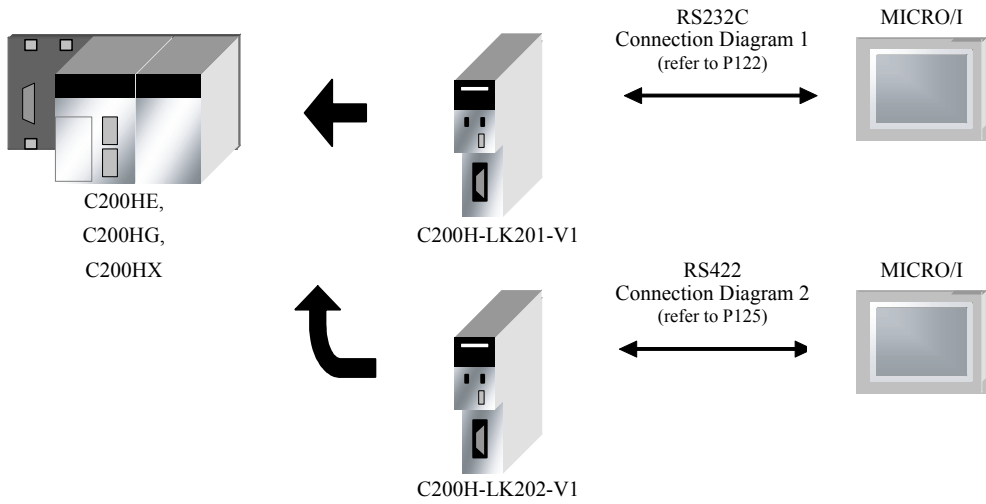
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155).



- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155)



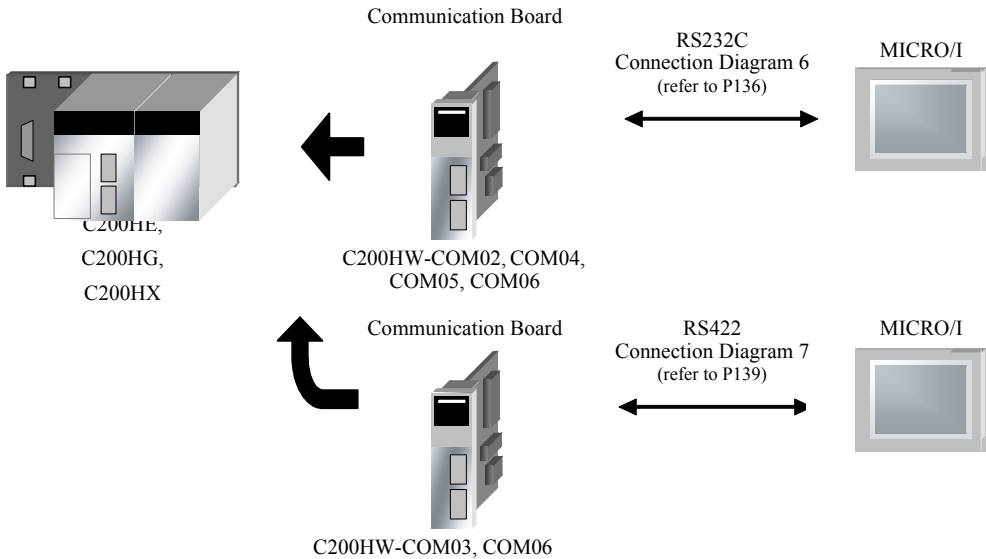
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155)



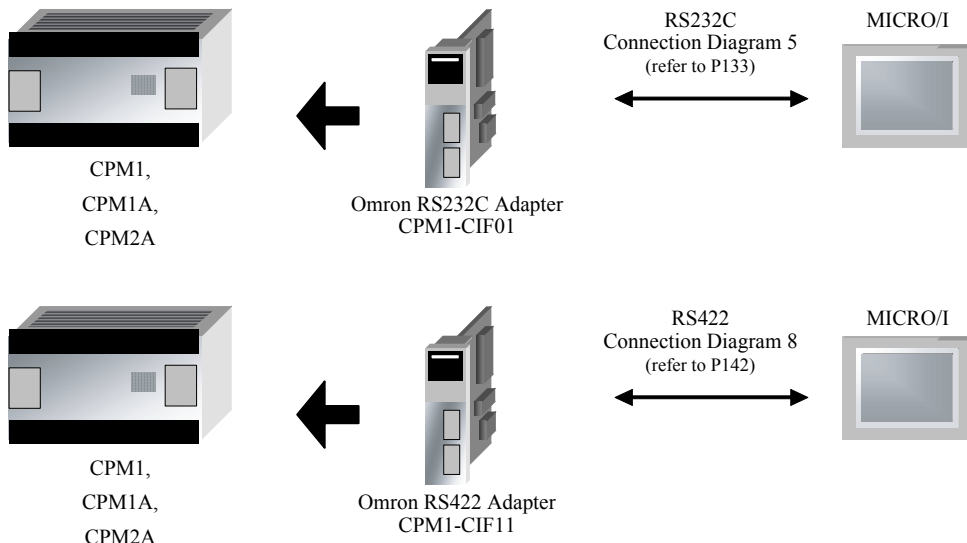
2
Connection to a PLC



- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155).

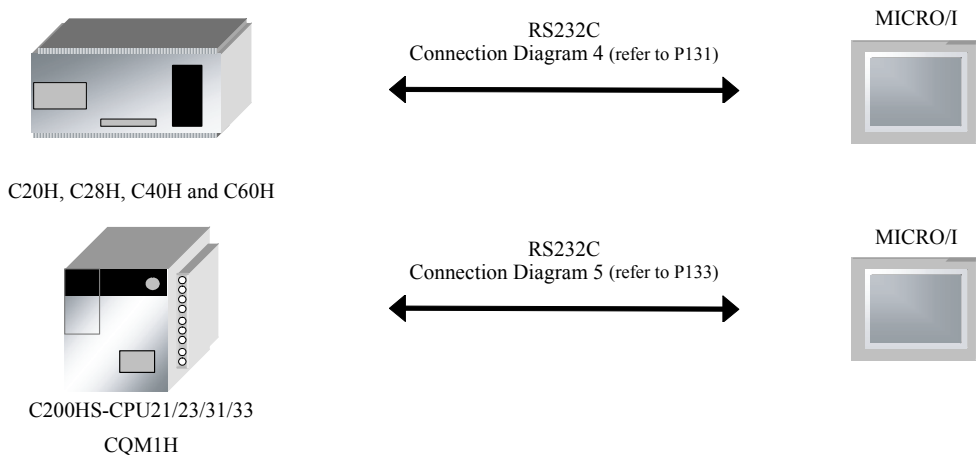


You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

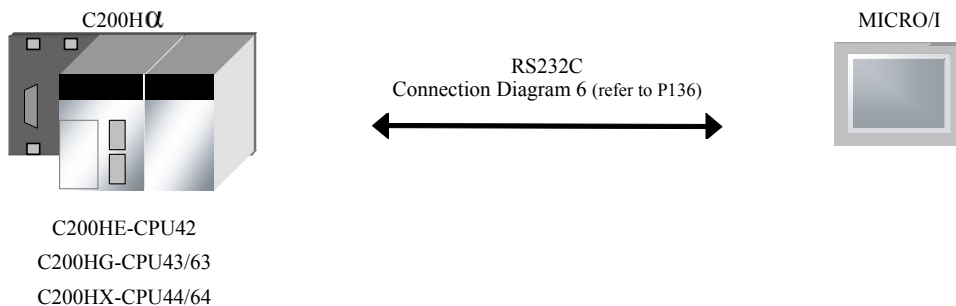


- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C155).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC213).

3.2.2 SYSMAC-C Series (using the Link I/F on the CPU Unit)

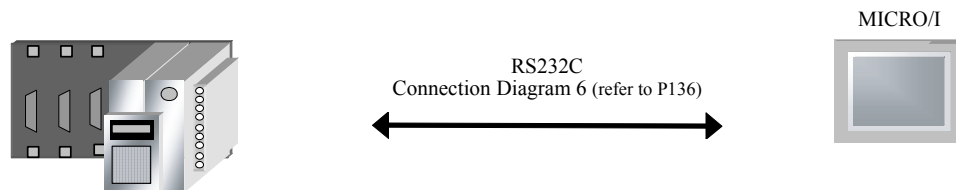


- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C155).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC213).



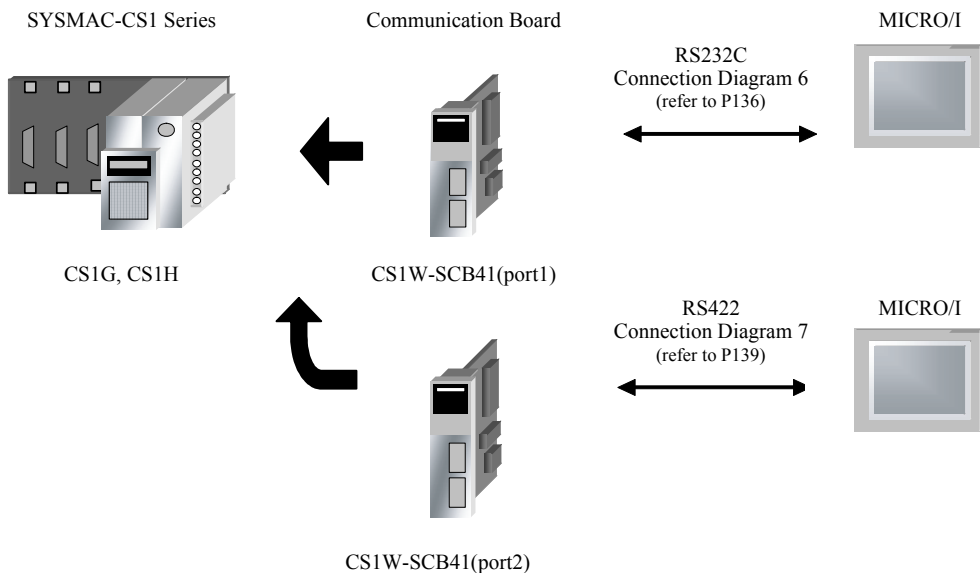
You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

3.2.3 SYSMAC-CS/CJ/CP Series (using RS232C Port on the CPU Unit)



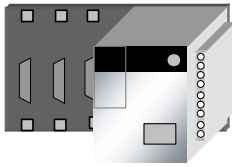
You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

3.2.4 SYSMAC-CS/CJ/CP Series (Using the Ethernet Communication Unit)



You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

SYSMAC-CJ/CP Series



CJ1M, CJ1H, CJ1G,
CJ2M, CJ2H, CP1H

Communication Board



CJ1W-SCU21-V1



CJ1W-SCU31-V1



CJ1W-SCU41-V1

RS232C
Connection Diagram 6
(refer to P136)



MICRO/I



RS422
Connection Diagram 7
(refer to P139)



MICRO/I



RS232C
Connection Diagram 6
(refer to P136)



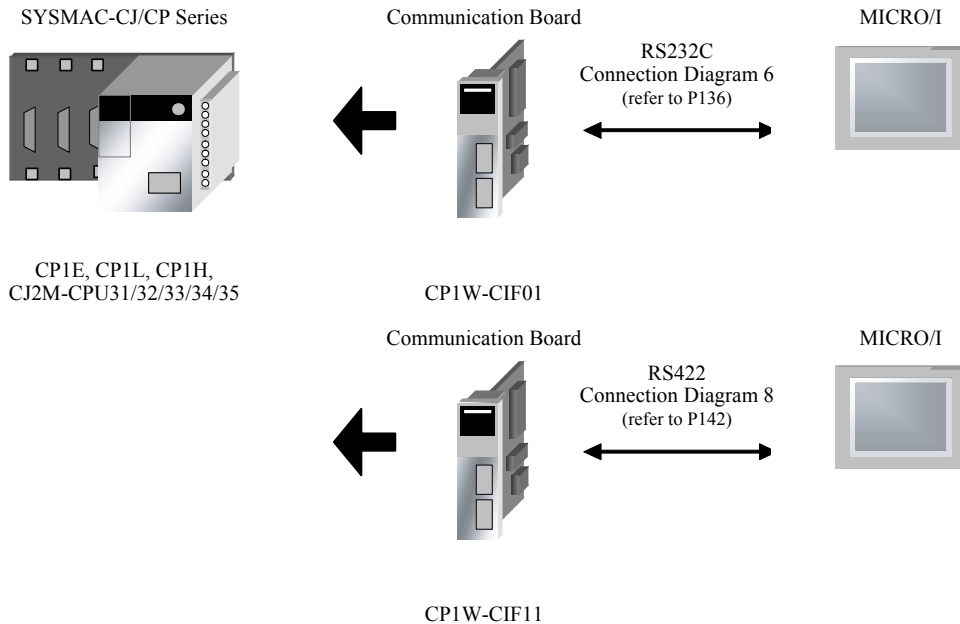
RS422
Connection Diagram 7
(refer to P139)



MICRO/I

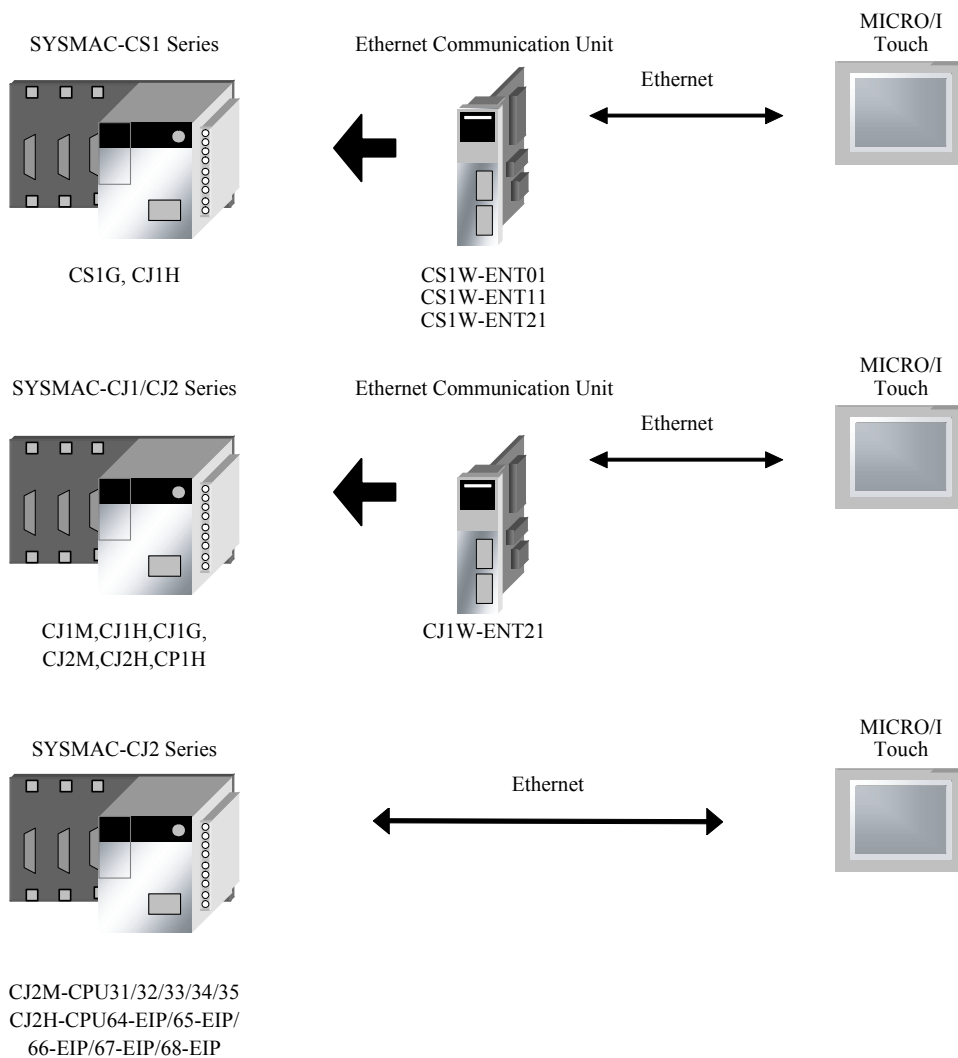


You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.



You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

3.2.5 SYSMAC-CS/CJ/CP Series (Using the Ethernet Communication Unit)



2

Connection to a PLC



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

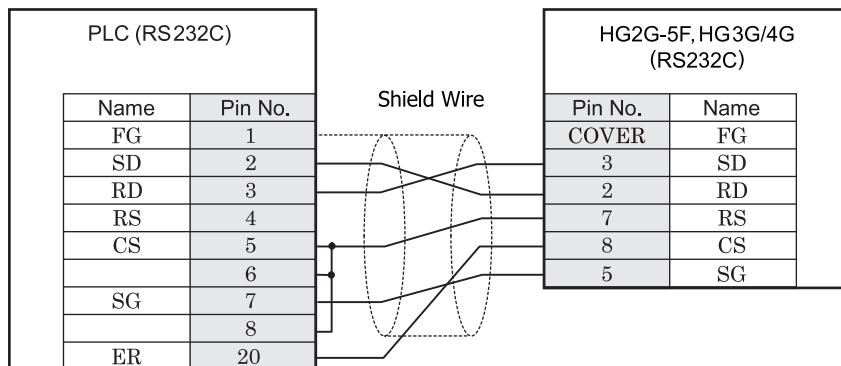
3.3 Connection Diagram



For details regarding wiring refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.3.1 Connection Diagram 1: RS232C Link Unit to MICRO/I

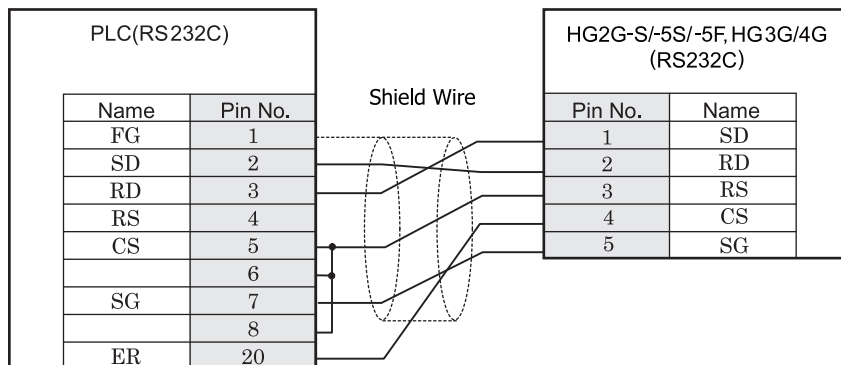
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type

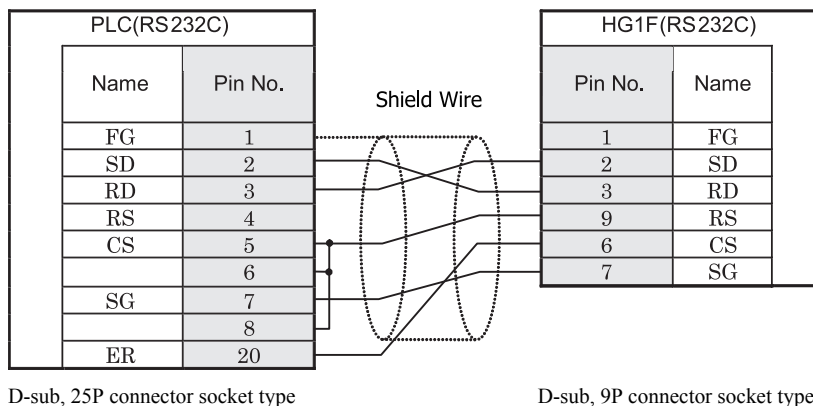
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

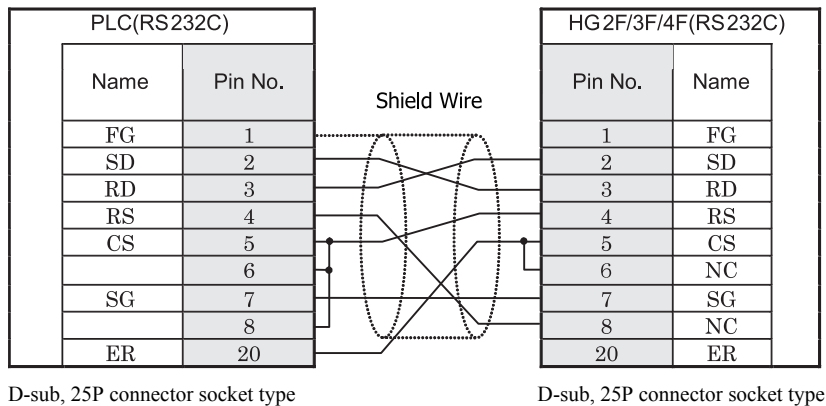


D-sub, 25P connector socket type

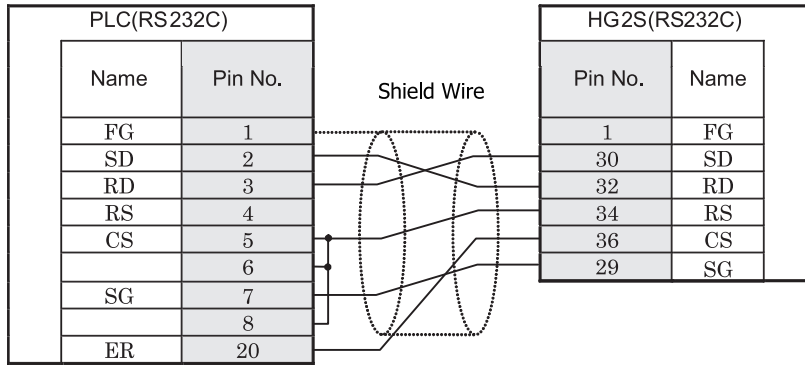
Terminal

HG1F (Connector)

- In case of HG1F a connection cable is available (part number: HG9Z-XC155).
- The connection diagram 1 is not same as HG9Z-XC155. But both diagrams are available. Refer to Chapter 7 "1.12 PLC connection cable: HG9Z-XC155" on page 677 about the connection diagram of HG9Z-XC155.

HG2F/3F/4F

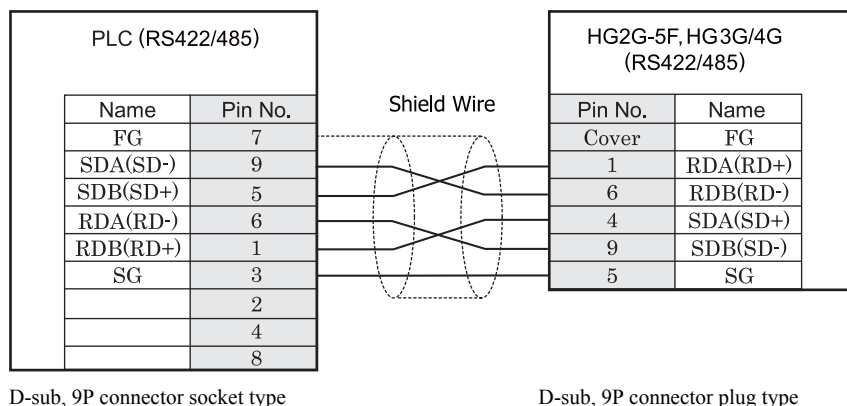
- In case of HG2F/3F/4Fa connection cable is available. (part number: HG9Z-3C135).
- The connection diagram 1 is not same as HG9Z-3C135. But both diagrams are available. Refer to Chapter 7 "1.5 PLC connection cable: HG9Z-3C135" on page 672 about the connection diagram of HG9Z-3C135.

HG2S

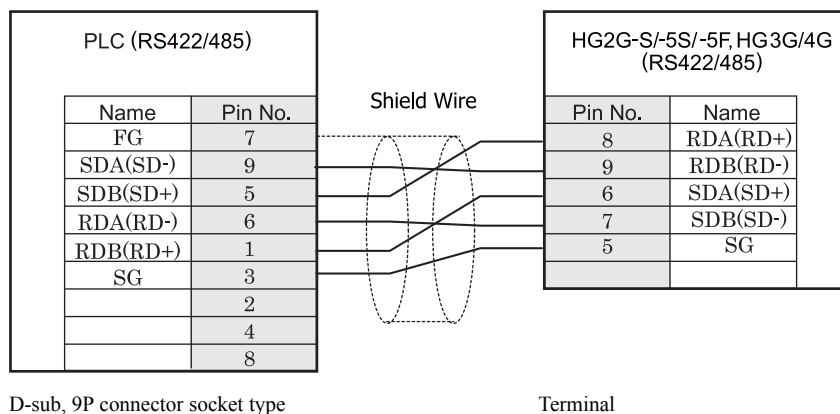
D-sub, 25P connector socket type

D-sub, 37P connector plug type

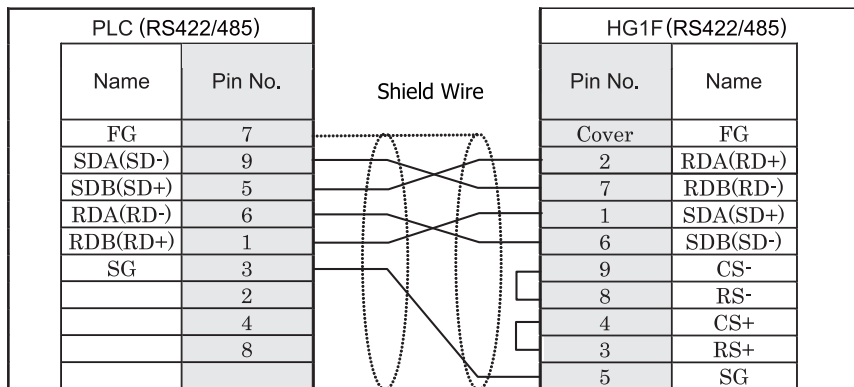
3.3.2 Connection Diagram 2: RS422 Link unit to MICRO/I

HG2G-5F, HG3G/4G (Connector)

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

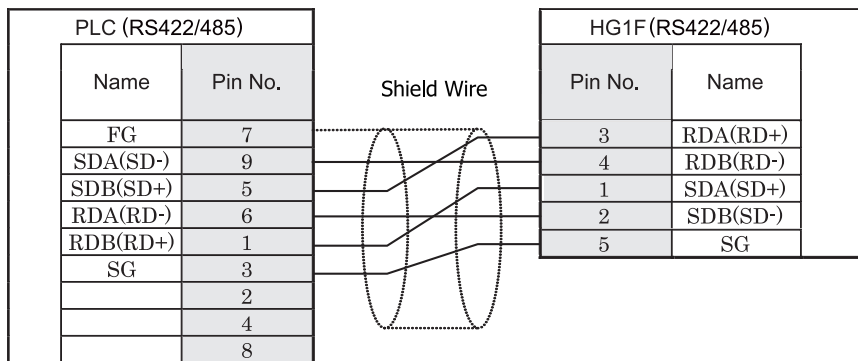
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 9P connector socket type

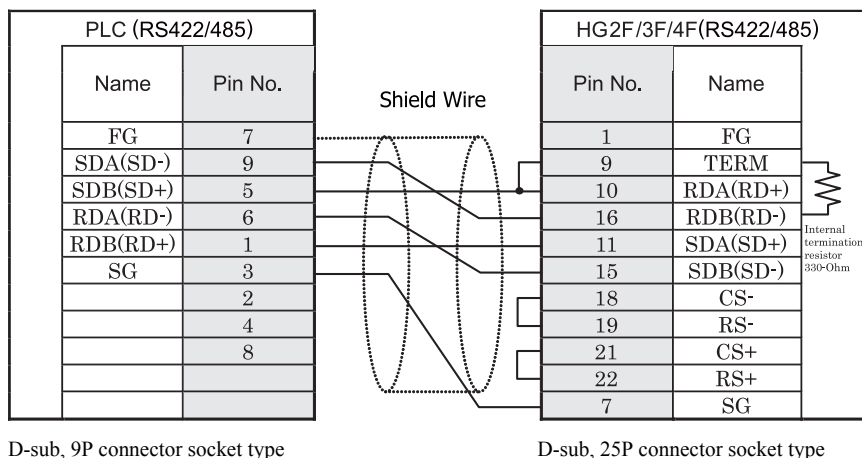
Terminal



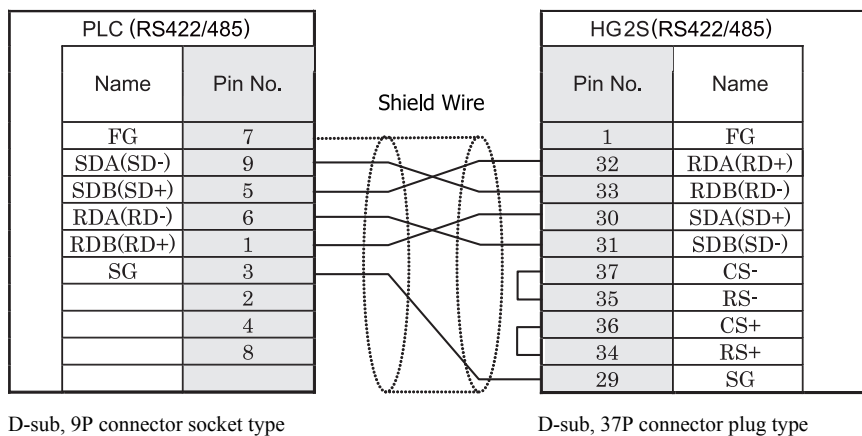
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

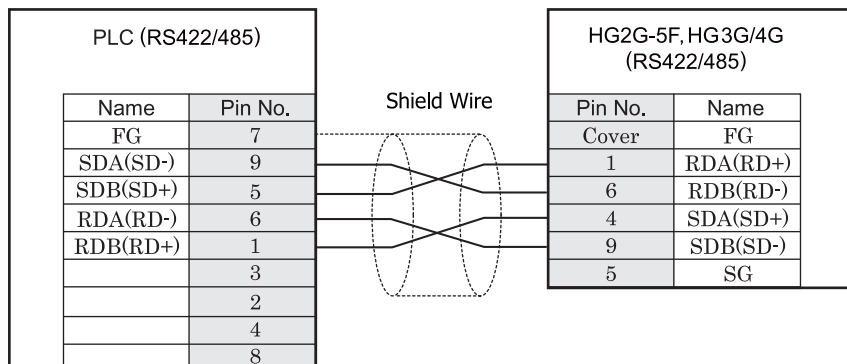
HG2F/3F/4F

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.3.3 Connection Diagram 3: RS422 Link unit to MICRO/I

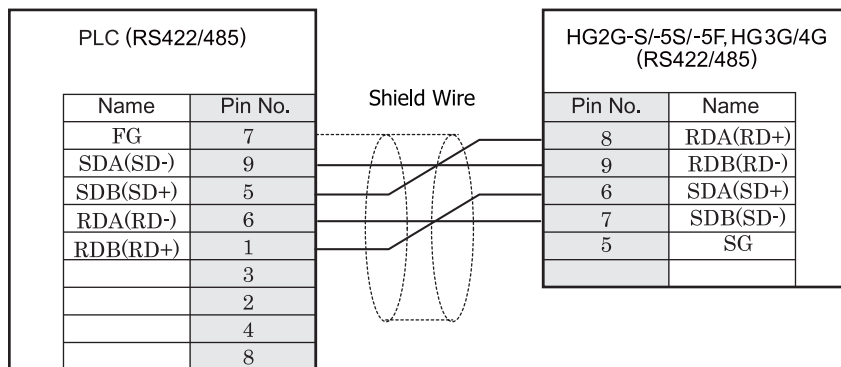
HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector plug type



We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

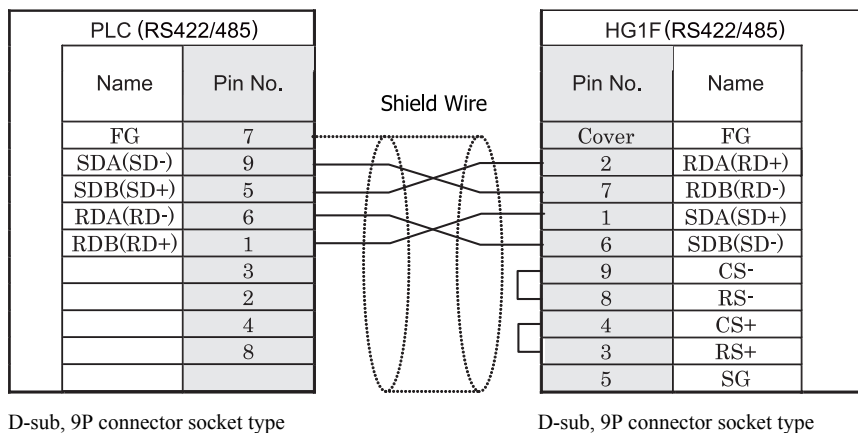
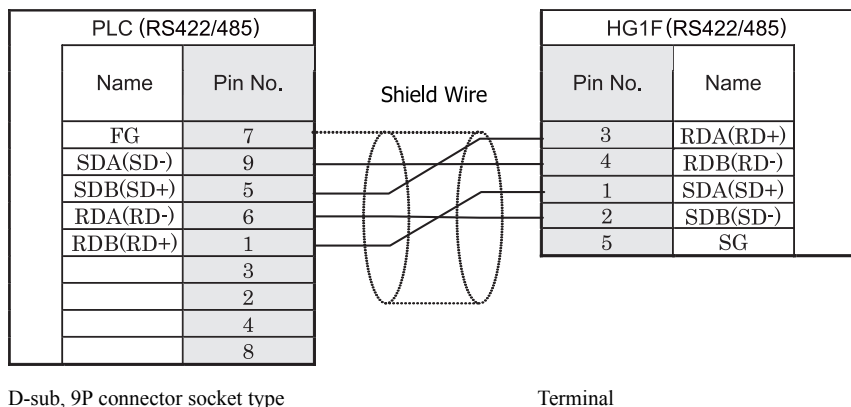
HG2G-S/-5S/-5F, HG3G/4G (Terminal)


D-sub, 9P connector socket type

Terminal



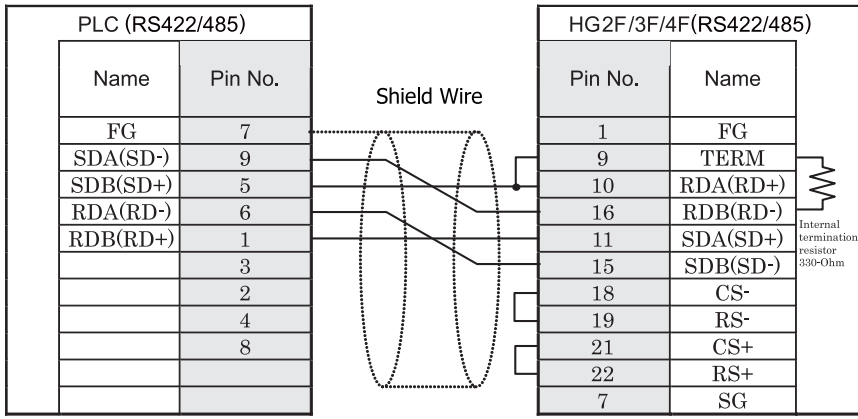
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)**HG1F** (Terminal)

-  - We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

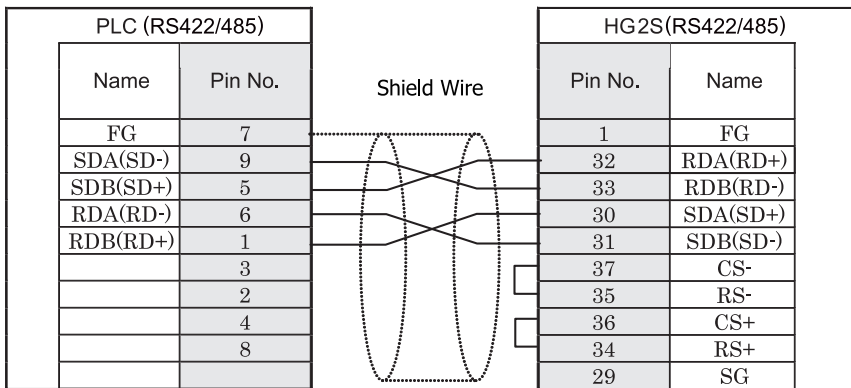
HG2F/3F/4F

D-sub, 9P connector socket type

D-sub, 25P connector socket type



We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S

D-sub, 9P connector socket type

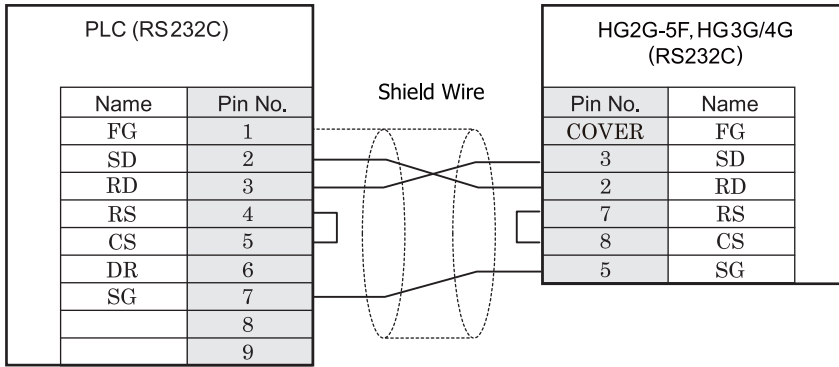
D-sub, 37P connector plug type



- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.3.4 Connection Diagram 4: CPU Unit Link I/F to MICRO/I

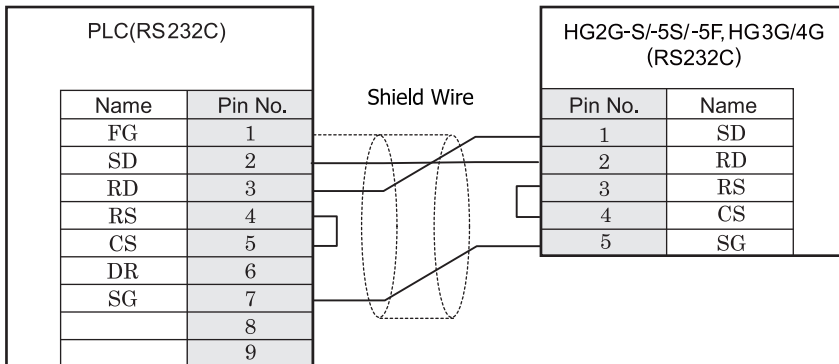
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector socket type (unit side)

D-sub, 9P connector plug type

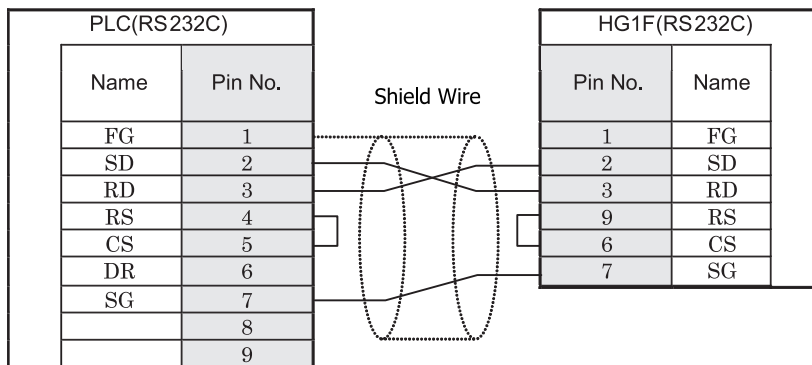
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector socket type (unit side)

Terminal

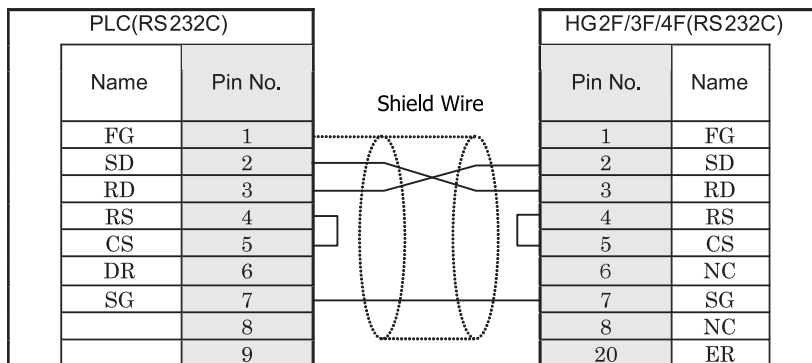
HG1F (Connector)



D-sub, 9P connector socket type (unit side)

D-sub, 9P connector socket type

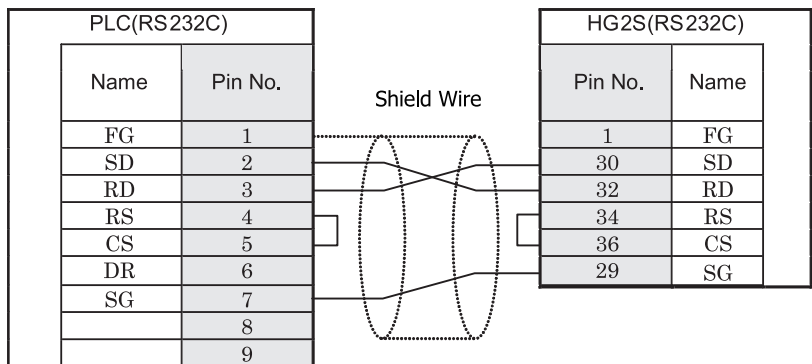
HG2F/3F/4F



D-sub, 9P connector socket type (unit side)

D-sub, 25P connector socket type

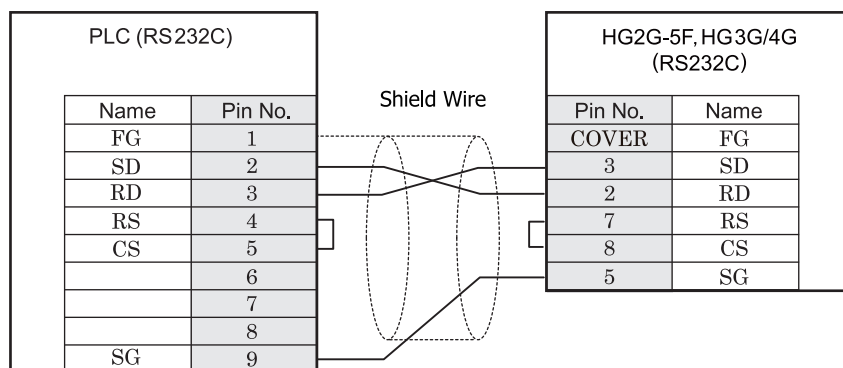
HG2S



D-sub, 9P connector socket type (unit side)

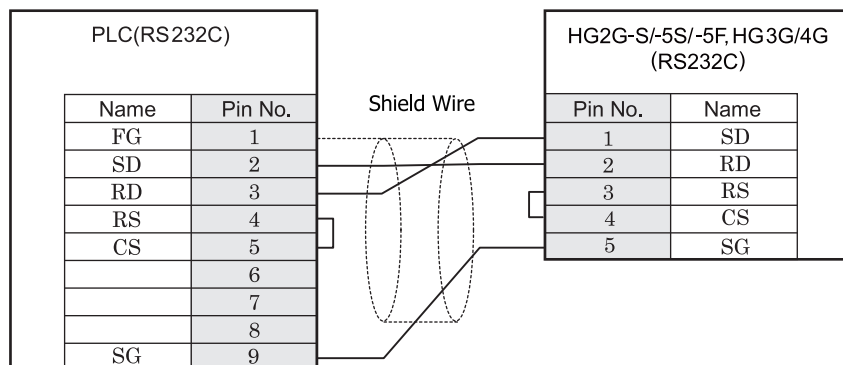
D-sub, 37P connector plug type

3.3.5 Connection Diagram 5: CPU Unit Link I/F to MICRO/I

HG2G-5F, HG3G/4G (Connector)

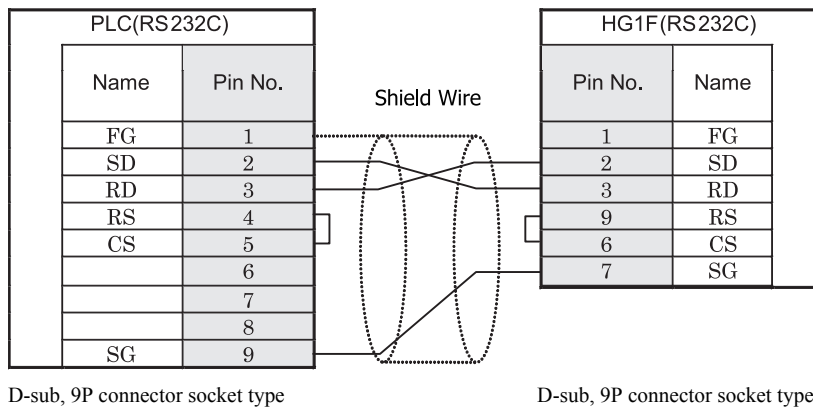
D-sub, 9P connector socket type

D-sub, 9P connector plug type

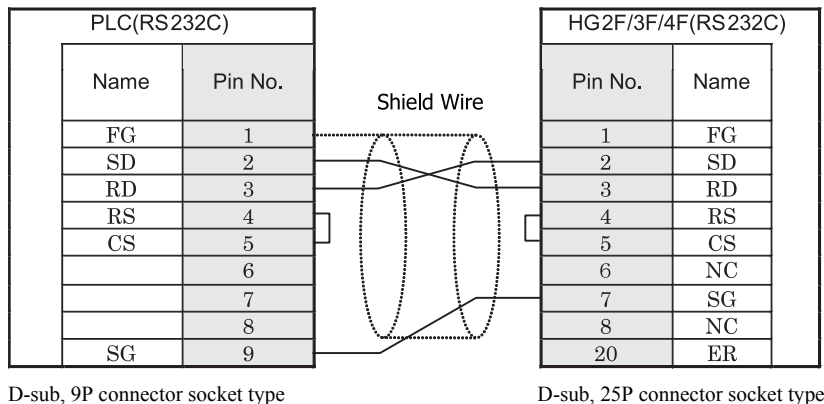
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

Terminal

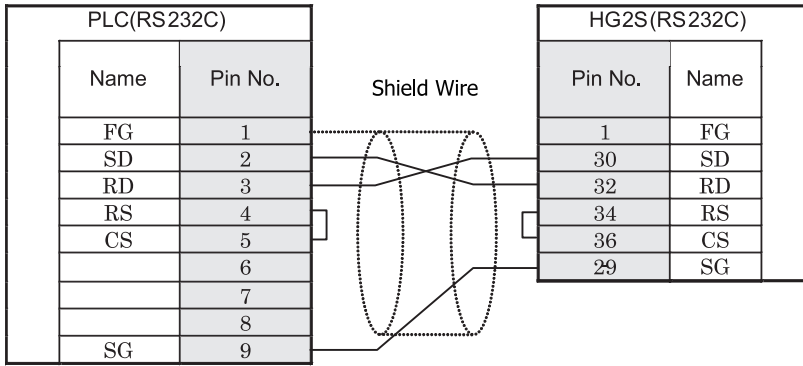
HG1F (Connector)

- In case of HG1F a connection cable is available. (part number: HG9Z-XC213).
- The connection diagram 5 is not same as HG9Z-XC213. But both diagrams are available. Refer to Chapter 7 "1.15 PLC connection cable: HG9Z-XC213" on page 678 about the connection diagram of HG9Z-XC213.

HG2F/3F/4F

- In case of HG2F/3F/4Fa connection cable is available. (part number: HG9Z-3C155).
- The connection diagram 5 is not same as HG9Z-3C155. But both diagrams are available. Refer to Chapter 7 "1.7 PLC connection cable: HG9Z-3C155" on page 673 about the connection diagram of HG9Z-3C155.

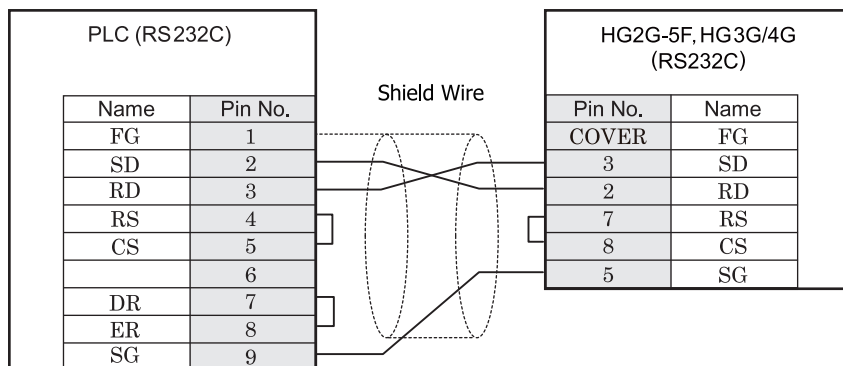
HG2S



D-sub, 9P connector socket type

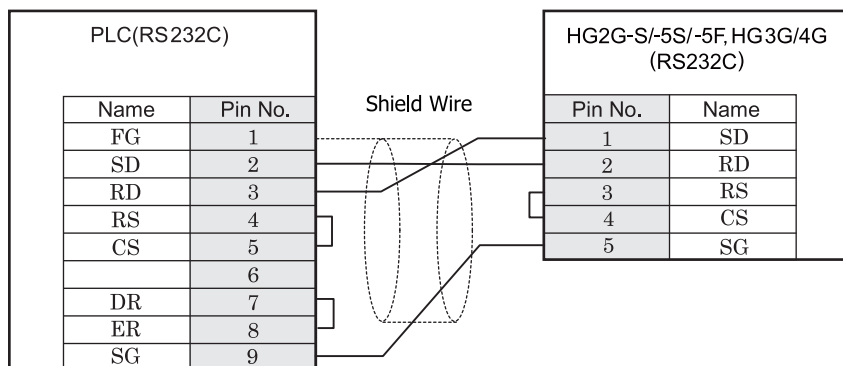
D-sub, 37P connector plug type

3.3.6 Connection Diagram 6: PLC (RS232C) I/F to MICRO/I

HG2G-5F, HG3G/4G (Connector)

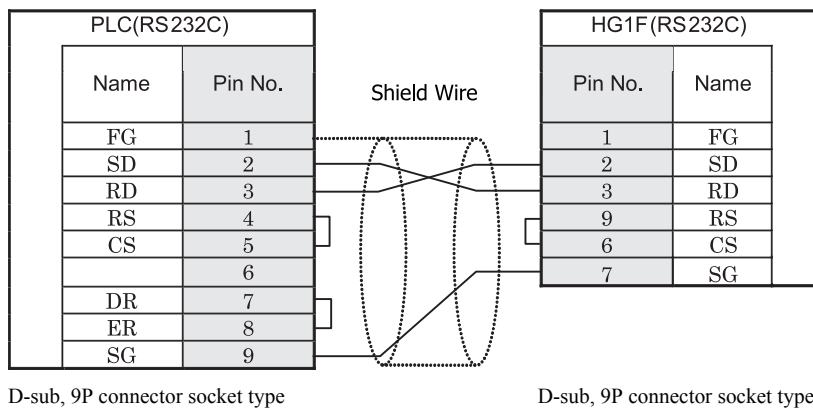
D-sub, 9P connector socket type

D-sub, 9P connector plug type

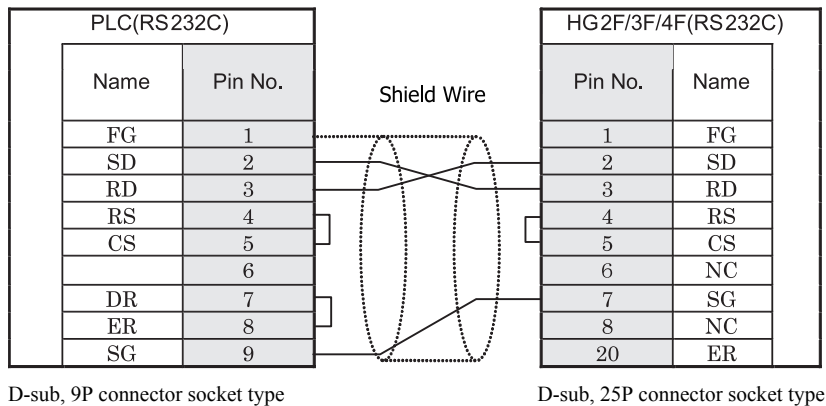
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

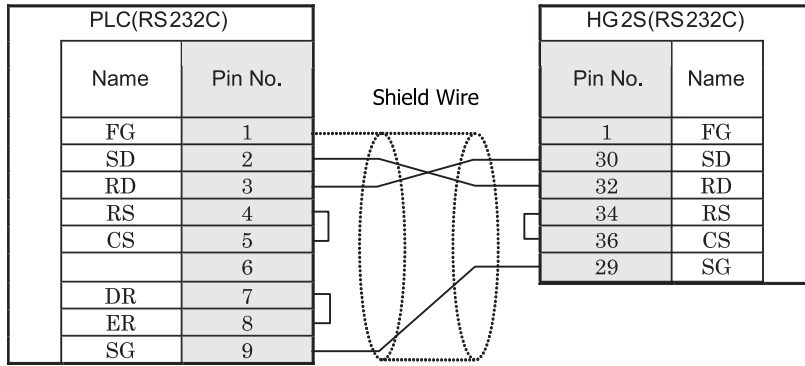
Terminal

HG1F (Connector)

- In case of HG1F a connection cable is available. (part number: HG9Z-XC213).
- The connection diagram 6 is not same as HG9Z-XC213. But both diagrams are available. Refer to Chapter 7 "1.15 PLC connection cable: HG9Z-XC213" on page 678 about the connection diagram of HG9Z-XC213.

HG2F/3F/4F

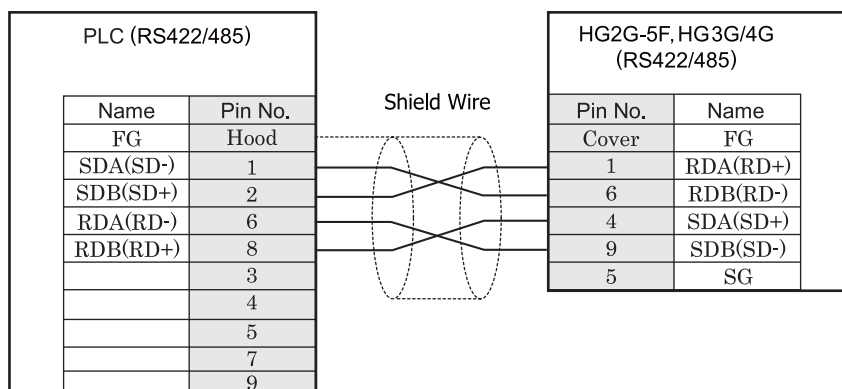
- In case of HG2F/3F/4Fa connection cable is available. (part number: HG9Z-3C155).
- The connection diagram 6 is not same as HG9Z-3C155. But both diagrams are available. Refer to Chapter 7 "1.7 PLC connection cable: HG9Z-3C155" on page 673 about the connection diagram of HG9Z-3C155.

HG2S

D-sub, 9P connector socket type

D-sub, 37P connector plug type

3.3.7 Connection Diagram 7: RS422 Communication Board to MICRO/I

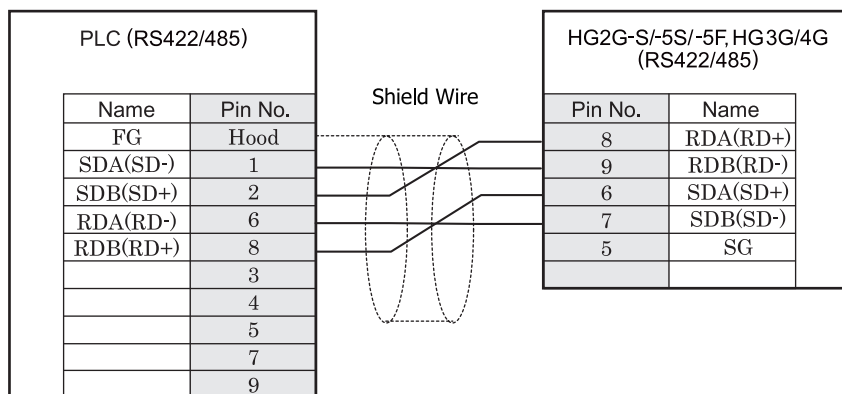
HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector plug type



We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

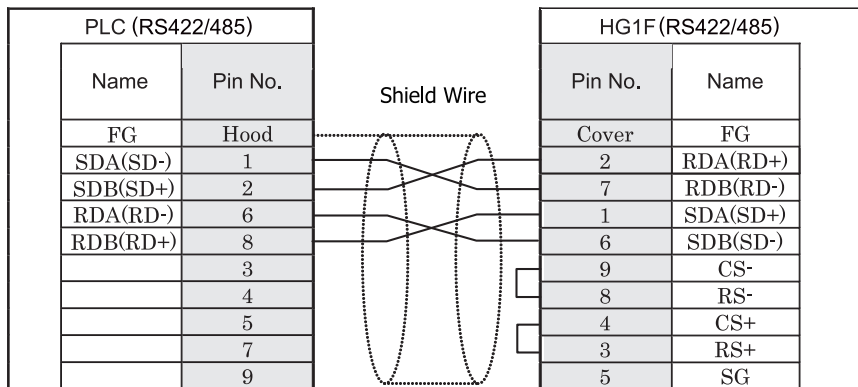
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

Terminal

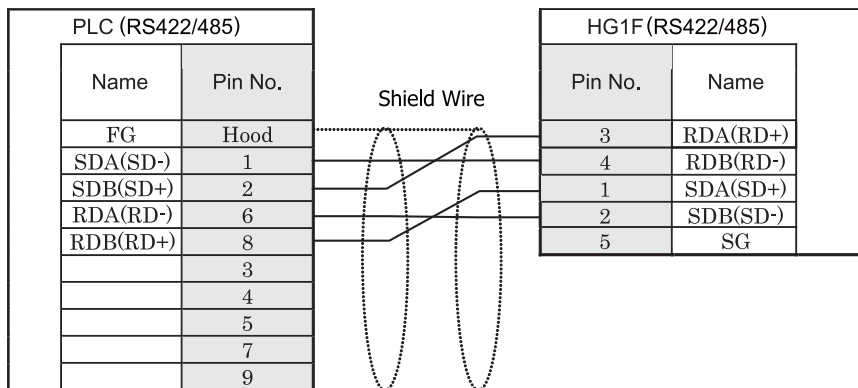


- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 9P connector socket type

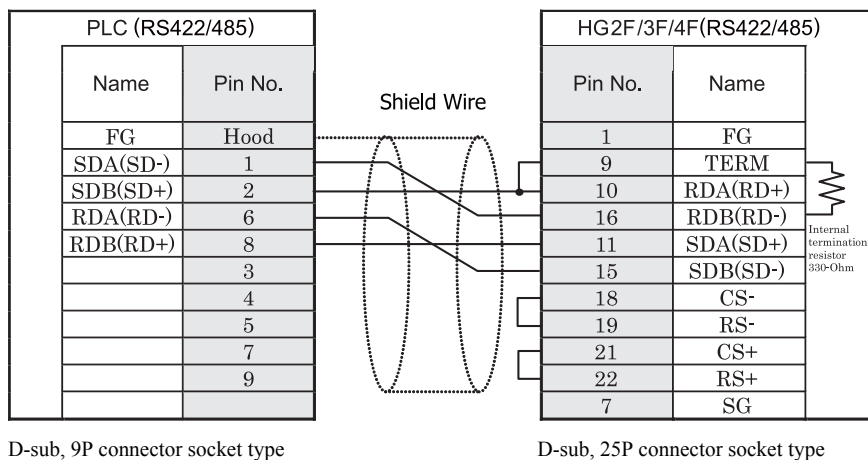
Terminal



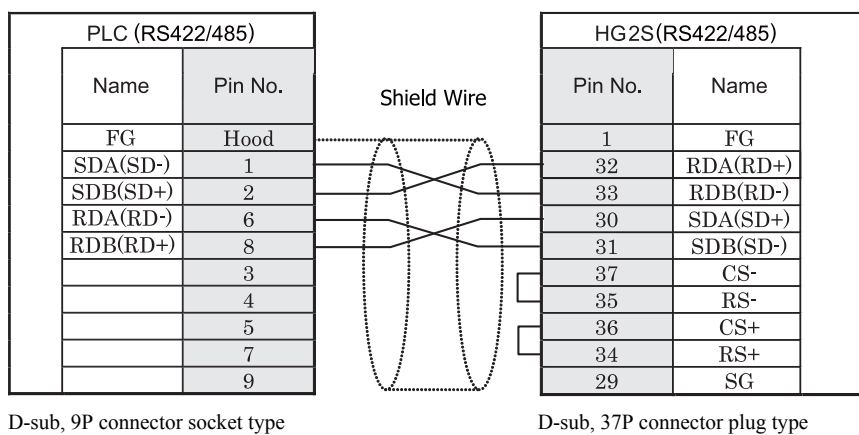
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

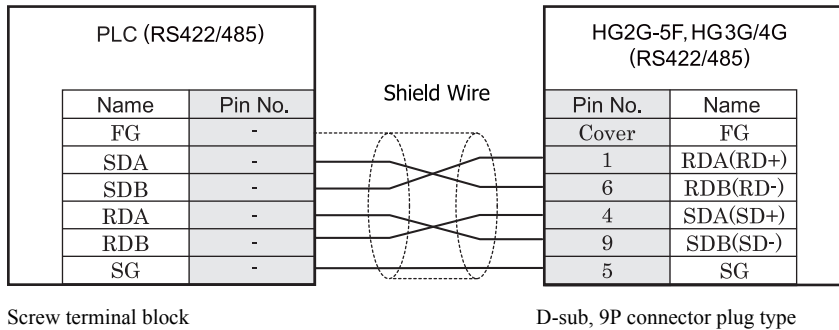
HG2F/3F/4F

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

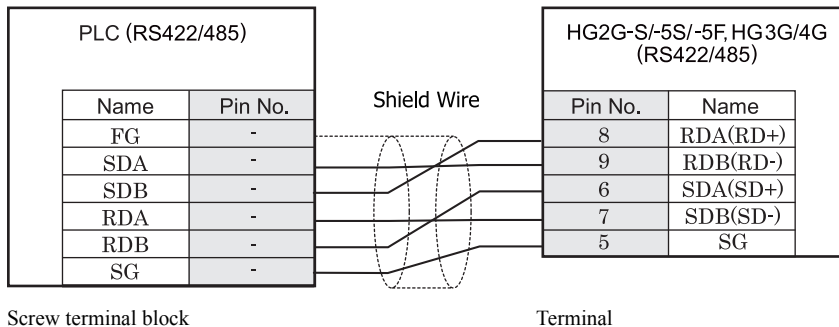
HG2S

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

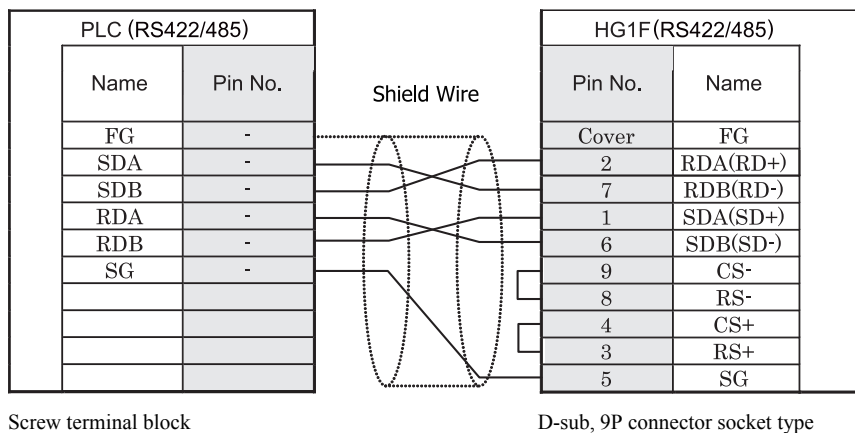
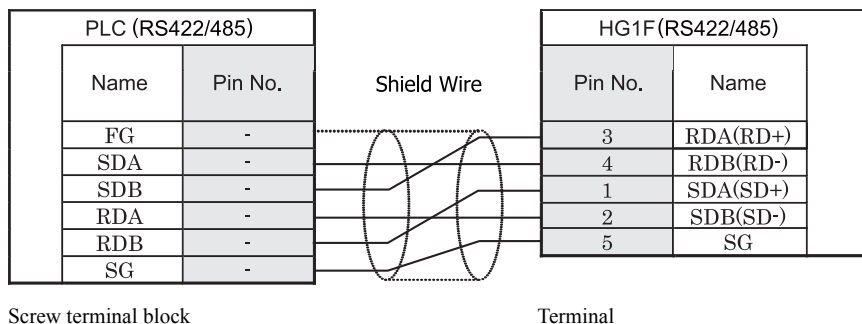
3.3.8 Connection Diagram 8: RS422 Adaptor to MICRO/I

HG2G-5F, HG3G/4G (Connector)

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

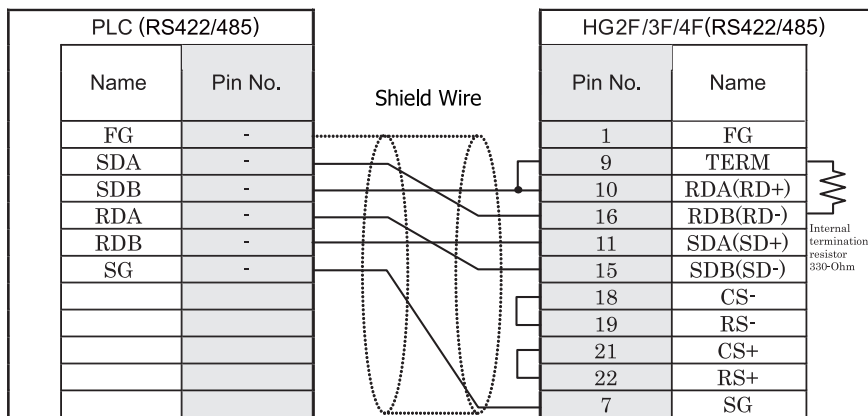
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)**HG1F** (Terminal)

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

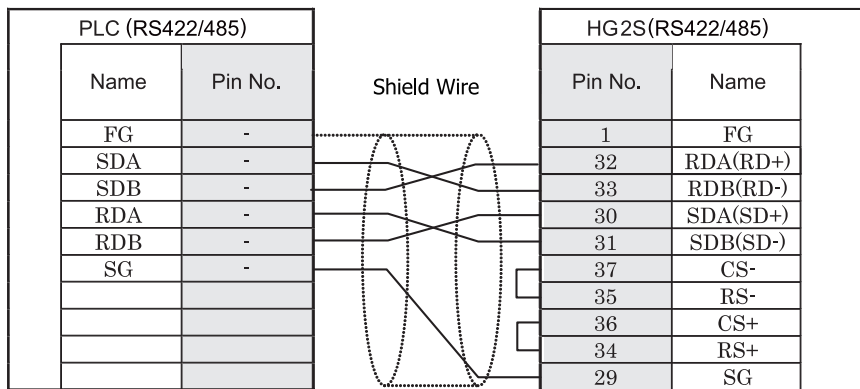
HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type



We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S

Screw terminal block

D-sub, 37P connector plug type



- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.4 Environment Settings

3.4.1 PLC Link Unit Settings

Perform the settings using the rotary switches and DIP switches on the Link Unit.

Item		Setting
Interface		RS232C RS485
Transmission Control Protocol		1:N
Command Level		Levels 1, 2 and 3 are valid
Baud Rate	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600 or 19200
Transmission Code		7 or 8 bit ASCII
Stop Bits		1 or 2
Unit No. *1		0 to 31(DEC)
Parity		Even or Odd
CTS Switch		0V (always on)
Synchronization Switch		Internal
Termination Resistor		----- Yes

*1 Set a decimal number for the Unit No.



- Refer to the Link Unit manual for details.
- Select using Register Command or not in **Project Settings - Host I/F Driver**.

3.4.2 CPU Unit RS232C Link I/F Settings

Write the RS232C I/F setting item for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
C20H/ 28H/40H/60H	CQM1H C200HS/ C200HE/ C200HG/ C200HX		
DM0920	DM6645	Standard/Individual Setting *1	Same setting as the MICRO/I
		Mode	PLC Link Mode
DM0921	DM6646	Communication parameters for when the previous item is set to Individual.	Use the same settings as for the MICRO/I.
DM0922	DM6647	Transmission Delay	0 msec
		RS/CS presence	None
DM0923	DM6648	Unit No.	Same setting as the MICRO/I

*1 Standard settings
 Baud Rate: 9600 bps
 Data Bits: 7 bits
 Stop Bits: 2 bits
 Parity: Even



Refer to the PLC manual for details.



For CQM 1 and C200HS, set the switch number 5 on the CPU Unit setting switch to OFF.

3.4.3 CPU Unit RS232C Link I/F Settings (SYSMAC-CS1 Series)

Write the RS232C I/F setting items for the System Settings Area using a peripheral tool (such as Proconn).

Channel	Item	Setting
160	Optional/Initial Setting *1	Set to 1 for Optional Setting.
	Serial Communication mode	Set to PLC Link.
	Data Bits	Use the same settings as for the MICRO/I.
	Stop Bits	
	Parity	
161	Port Communication Speed	Use the same settings as for the MICRO/I.
162	In the case of No Protocol Mode	Do not set.
163	Unit No.	Set to the same as the MICRO/I PLC Link Station Number.
164	In the case of No Protocol Mode	Do not set.

*1 Initial settings
 Baud Rate: 9600 bps
 Data Bits: 7 bits
 Stop Bits: 2 bits
 Parity: Even



Refer to the PLC manual for details.



For the SYSMAC-CS1 Series, set switch number 5 on the CPU Unit setting switch to OFF to enable you to make your own communication settings.

3.4.4 C200H α (Communication Board) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
Port A	Port B		
DM6555	DM6550	Standard Setting/Individual Setting *1	Same setting as the MICRO/I.
		Mode	PLC Link Mode
DM6556	DM6551	Communication parameters for when the previous item is set to Individual.	Same setting as the MICRO/I.
DM6557	DM6552	Transmission Delay	0 msec
DM6558	DM6553	Unit No.	Same setting as the MICRO/I.

*1 Standard settings
 Baud Rate: 9600bps
 Data Bits: 7 bits
 Stop Bits: 2 bits
 Parity: Even



Set DIP switch SW1 to the 4 side (4 lines).



Set DIP switch SW2 to ON to turn the termination resistor setting ON. Refer to the Communication Board manual for details.

3.4.5 SYSMAC-CS1 Series (Communication Board) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
Port 1	Port 2		
DM32000	DM32010	Optional/Initial Setting ^{*1} (*1)	Set to 1 for Optional Setting.
		Serial Communication mode	Set to PLC Link.
		Data Bits	Use the same settings as for the MICRO/I.
		Stop Bits	
		Parity	
DM32001	DM32011	Port Communication Speed	Use the same settings as for the MICRO/I.
DM32002	DM32012	Transmission Delay setting	0 for default (0ms)
		Delay time setting	
DM32003	DM32013	CTS control	Set to 0 for no
		Unit No.	Use the same settings as for the MICRO/I.

*1 Initial settings
 Baud Rate: 9600bps
 Data Bits:7bits
 Stop Bits:2bits
 Parity: Even



- Set the DIP switch 4 line.
- Set the DIP switch to ON to turn the termination resistor setting ON.

3.4.6 CPU Direct Settings (CPM1/CPM1A/CPM2A)

Connect via CPM-CIF01 (RS232C)/CPM 1-CIF11 (RS422).

Item	Setting
	RS232C
Baud Rate	9600 bps
Data Bits	7 bits
Stop Bits	2 bits
Parity	Even



The communication settings are fixed. Refer to the PLC manual for details.

3.4.7 SYSMAC-CS1/CJ Series (Ethernet Communication Unit) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

IP Address (MICRO/I)	Set the IP address of MICRO/I. (Set this item in Communication Interface tab.)
Subnet Mask	Set the subnet mask of MICRO/I. (Set this item in Communication Interface tab.)
Default Gateway	Set the default gateway of MICRO/I. (Set this item in Communication Interface tab.)
IP Address (Etherent Communication Unit)	Set the IP address of Ethernet Communication Unit. (Set this item in Host I/F Network tab.)
Port Number (Etherent Communication Unit)	Set the port number of Ethernet Communication Unit. (Set this item in Host I/F Network tab.)
FINS Network Address (Ethernet Communication Unit)	Set the network address which is set in the Etherent Communication Unit. (Set this item in Host I/F Network tab.)
FINS Node Address (Ethernet Communication Unit)	Set the node address which is set in the Ethernet Communication Unit. (Set this item in Host I/F Network tab.)
MICRO/I Port Number	Set the port number of MICRO/I. (Set this item in Host I/F Network tab.) If you set "0", the port number of MICRO/I is set automatically.
HMI FINS Network Address	Set the network address of the MICRO/I. (Set this item in Host I/F Driver tab.)
HMI FINS Node Address	Set the node address of the MICRO/I. (Set this item in Host I/F Driver tab.)



The communication settings are fixed. Refer to the Ethernet Communication Unit manual for details.

3.5 Usable Devices

3.5.1 SYSMAC-C (when the PLC type setting is SYSMAC-C Series)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input/Output Internal Relay	R	CIO	0 - 99915, 120000 - 614315	R/W	*1
Link Relay	LR	LR	0 - 19915	R/W	*1
Holding Relay	HR	HR	0 - 51115	R/W	*1
Auxiliary Memory Relay	AR	AR	0 - 95915	R	*1
Timer (contact)	TIMC	TC	0 - 2047	R	
Counter (contact)	CNTC	TC	0 - 4095	R	

*1 The lower 2 digits represent the bit number. (0 - 15)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input/Output Internal Relay	WR	CIO	0 - 999, 1200 - 6143	R/W	
Link Relay	WLR	LR	0 - 199	R/W	
Holding Relay	WHR	HR	0 - 511	R/W	
Auxiliary Memory Relay	WAR	AR	0 - 959	R	
Timer (current value)	TIMN	TC	0 - 2047	R	
Counter (current value)	CNTN	TC	0 - 4095	R	
Data Memory	DM	DM	0 - 9999	R/W	



Important points to note regarding setting performing Bit Write operations.

With a Bit Write operation, the word data is first read from the PLC, and a logic operation (AND or OR) is performed on the relevant bit before writing it to the PLC to ensure that the values of other bits in the same channel are preserved. However, be certain that the PLC does not modify the data in the channel during the time that the MICRO/I is writing the data.

3.5.2 SYSMAC-CS1 Series (when the PLC type setting is SYSMAC-CS1 Series)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Core I/O	CIO	CIO	0 - 614315	R/W	*1
Work Area	WR	WR	0 - 51115	R/W	*1
Holding Bit	HR	HR	0 - 51115	R/W	*1
Auxiliary Bit	AR	AR	0 - 95915	R	*1
Timer (Contact)	TIMC	TIMC	0 - 4095	R	
Counter (Contact)	CNTC	CNTC	0 - 4095	R	
Task Area	TK	TK	0 - 31	R	

*1 The lower 2 digits represent the bit number. (0 - 15)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Addresses Gradual
	MICRO/I	PLC			
Core I/O	WCIO	CIO	0 - 6143	R/W	
Work Area	WWR	WR	0 - 511	R/W	
Holding Bit	WHR	HR	0 - 511	R/W	
Auxiliary Bit	WAR	AR	0 - 959	R	
Timer (Present value)	TIMN	TIM	0 - 4095	R	
Counter (Present value)	CNTN	CNT	0 - 4095	R	
Data Memory	DM	DM	0 - 32767	R/W	
Expansion Data Memory (Bank 0)	EM0	EM0	0 - 32767	R/W	
Expansion Data Memory (Bank 1)	EM1	EM1	0 - 32767	R/W	
Expansion Data Memory (Bank 2)	EM2	EM2	0 - 32767	R/W	
Expansion Data Memory (Bank 3)	EM3	EM3	0 - 32767	R/W	
Expansion Data Memory (Bank 4)	EM4	EM4	0 - 32767	R/W	
Expansion Data Memory (Bank 5)	EM5	EM5	0 - 32767	R/W	
Expansion Data Memory (Bank 6)	EM6	EM6	0 - 32767	R/W	
Expansion Data Memory (Bank 7)	EM7	EM7	0 - 32767	R/W	
Expansion Data Memory (Bank 8)	EM8	EM8	0 - 32767	R/W	
Expansion Data Memory (Bank 9)	EM9	EM9	0 - 32767	R/W	
Expansion Data Memory (Bank A)	EMA	EMA	0 - 32767	R/W	
Expansion Data Memory (Bank B)	EMB	EMB	0 - 32767	R/W	
Expansion Data Memory (Bank C)	EMC	EMC	0 - 32767	R/W	
Task Area (Status)	TKS	TKS	0 - 31	R	
Index Register	IR	IR	0 - 15	R	
Data Register	DR	DR	0 - 15	R	



- The Task Flag (bit) is 1 (ON) when the cycle execution task is in the executable state, and 0 (OFF) when it is in the unexecuted or standby states.

- The Task Flag (Status) indicates the following states.
 - 0: Never started
 - 1: In the stopped state after starting once
 - 2: Starting

3.5.3 SYSMAC-CS1/CJ1 Ethernet (When the PLC type setting is SYSMAC-CS1/CJ1 Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Core I/O	CIO	CIO	0 - 614315	R/W	*1
Work Area	WR	WR	0 - 51115	R/W	*1
Holding Bit	HR	HR	0 - 51115	R/W	*1
Auxiliary Bit	AR	AR	0 - 95915	R	*1
Timer (Contact)	TIMC	TIMC	0 - 4095	R	
Counter (Contact)	CNTC	CNTC	0 - 4095	R	
Task Area	TK	TK	0 - 31	R	

*1 The lower 2 digits represent the bit number. (0 - 15)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Addresses Gradual
	MICRO/I	PLC			
Core I/O	WCIO	CIO	0 - 6143	R/W	
Work Area	WWR	WR	0 - 511	R/W	
Holding Bit	WHR	HR	0 - 511	R/W	
Auxiliary Bit	WAR	AR	0 - 959	R	
Timer (Present value)	TIMN	TIM	0 - 4095	R/W	
Counter (Present value)	CNTN	CNT	0 - 4095	R/W	
Data Memory	DM	DM	0 - 32767	R/W	
Expansion Data Memory (Bank 0)	EM0	EM0	0 - 32767	R/W	
Expansion Data Memory (Bank 1)	EM1	EM1	0 - 32767	R/W	
Expansion Data Memory (Bank 2)	EM2	EM2	0 - 32767	R/W	
Expansion Data Memory (Bank 3)	EM3	EM3	0 - 32767	R/W	
Expansion Data Memory (Bank 4)	EM4	EM4	0 - 32767	R/W	
Expansion Data Memory (Bank 5)	EM5	EM5	0 - 32767	R/W	
Expansion Data Memory (Bank 6)	EM6	EM6	0 - 32767	R/W	
Expansion Data Memory (Bank 7)	EM7	EM7	0 - 32767	R/W	
Expansion Data Memory (Bank 8)	EM8	EM8	0 - 32767	R/W	
Expansion Data Memory (Bank 9)	EM9	EM9	0 - 32767	R/W	
Expansion Data Memory (Bank A)	EMA	EMA	0 - 32767	R/W	
Expansion Data Memory (Bank B)	EMB	EMB	0 - 32767	R/W	
Expansion Data Memory (Bank C)	EMC	EMC	0 - 32767	R/W	
Expansion Data Memory (Bank D)	EMD	EMD	0 - 32767	R/W	
Expansion Data Memory (Bank E)	EME	EME	0 - 32767	R/W	
Expansion Data Memory (Bank F)	EMF	EMF	0 - 32767	R/W	
Expansion Data Memory (Bank 10)	EM10	EM10	0 - 32767	R/W	
Expansion Data Memory (Bank 11)	EM11	EM11	0 - 32767	R/W	
Expansion Data Memory (Bank 12)	EM12	EM12	0 - 32767	R/W	
Expansion Data Memory (Bank 13)	EM13	EM13	0 - 32767	R/W	
Expansion Data Memory (Bank 14)	EM14	EM14	0 - 32767	R/W	
Expansion Data Memory (Bank 15)	EM15	EM15	0 - 32767	R/W	
Expansion Data Memory (Bank 16)	EM16	EM16	0 - 32767	R/W	
Expansion Data Memory (Bank 17)	EM17	EM17	0 - 32767	R/W	
Expansion Data Memory (Bank 18)	EM18	EM18	0 - 32767	R/W	
Task Area (Status)	TKS	TKS	0 - 31	R	
Index Register	IR	IR	0 - 151	R/W	
Data Register	DR	DR	0 - 15	R/W	



- The Task Flag (bit) is 1 (ON) when the cycle execution task is in the executable state, and 0 (OFF) when it is in the unexcited or standby states.
 - The Task Flag (Status) indicates the following states.
 - 0: Never started
 - 1: In the stopped state after starting once
 - 2: Starting
 - In SYSMAC-CS1/CJ Ethernet Host I/F Driver, Index Register is defined as a 32bit device and all 32bits are available. This register is originally 32bit device in Omron PLC, but only lower 16bits are available in SYSMAC-CS1 Series Host I/F Driver. This is different from SYSMAC-CS1 Series Host I/F Driver.
-

4 Allen-Bradley

4.1 Connection Table

4.1.1 Compatible PLCs

System (CPU unit)	Link unit	WindO/I-NV2 Settings			Product Series				
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch	
PLC-5									
All PLC-5*1 models that can be connected to 1770-KF2	1770-KF2*1	RS232C Connection Diagram 2 (refer to P166)	Hardware	PLC-5	X	X	X	---	
		RS422/485 4-wire Connection Diagram 3 (refer to P168)							
All PLC-5*1 models	Not required (connects to CPU unit)	RS232C Connection Diagram2 (refer to P166)	Hardware	PLC-5	X	X	X	---	
		RS422/485 4-wire Connection Diagram 4 (refer to P171)							
SLC 500									
SLC5/03*1, SLC5/04, SLC5/05	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P164)	Hardware	Micro Logix/ SLC500 Full Duplex)	SLC500 (Half Duplex)	X	X	X	---
Micro-Logix									
MicroLogix1000, MicroLogix1200*1	Not required (connects to CPU unit)	RS232C Connection Diagram 5 (refer to P174)	Hardware	Micro Logix/ SLC500 Full Duplex)	-	X	X	X	---
MicroLogix1100*1	Not required (connects to CPU unit)	RS232C Connection Diagram 8 (refer to P180)							
MicroLogix1500*1	Not required (connects to Mini Din connector on CPU unit)	RS232C Connection Diagram 5 (refer to P174)							
	Not required (connects to D-sub connector on CPU unit)	RS232C Connection Diagram 6 (refer to P176)							

*1 This PLC was used to test & verify communications.



If your existing project is using "SLC500" with Ver.2.30 or earlier, "SLC500 (Half Duplex)" will appear to the Protocol setting with Ver.2.40 or later. SLC 500 (Half Duplex) driver is merged into the MicroLogix1200 (Full Duplex) driver. WindO/I-NV2 software still provides the SLC 500 (Half Duplex) driver for the existing projects, but it's recommended to use the MicroLogix1200 (Full Duplex) driver if you create a new project. Some address format between MicroLogix 1200 (Full Duplex) and SLC 500 (Half Duplex) are slight different.

Selecting DirectLogic Logix DF1 (Full Duplex) or DirectLogic (Ethernet) for the Host I/F Driver allows the user to use the 1: N Communication function.

1: N Communication function (Refer to Chapter 6 "1: N Communication (Multi-drop)" on page 653)

System (CPU unit)	Link unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
ControlLogix* ¹								
ControlLogix 5550* ¹ , ControlLogix 5555* ¹	Not required (connects to CPU unit)* ¹	RS232C Connection Diagram 7* ¹ (refer to P178)	None	Logix DF1 (Full Duplex)	X	X	X	---
CompactLogix								
1768 CompactLogix, 1769 CompactLogix* ¹	Not required (connects to CPU unit)	RS232C Connection Diagram 7 (refer to P178)	None	Logix DF1 (Full Duplex)	X	X	X	---
FlexLogix								
1794-L33, 1794-L34	Not required (connects to CPU unit)	RS232C Connection Diagram 7 (refer to P178)	None	Logix DF1 (Full Duplex)	X	X	X	---

*1 This PLC was used to test & verify communications.

System (CPU unit)	Link unit	WindO/I-NV2 Settings		Product Series			
		Interface	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
ControlLogix							
ControlLogix5550, ControlLogix5555*1	1756-ENBT, 1756-EN2T	Ethernet	Ethernet/IP	X	X	X	---
CompactLogix							
1769 CompactLogix*1	Not required (connects to CPU unit)	Ethernet	Ethernet/IP	X	X	X	---
PLC-5							
PLC-5*1	1785-ENET*1	Ethernet	Ethernet/IP	X	X	X	---
PLC-5E	Not required (connects to CPU unit)						
SLC 500							
SLC5/05*1	Not required*1 (connects to CPU unit)	Ethernet	Ethernet/IP	X	X	X	---
SLC5/03, SLC5/04, SLC5/05*1	1761-NET-ENI*1						
MicroLogix							
MicroLogix1000, MicroLogix1100*1, MicroLogix1200*1, MicroLogix1500*1	1761-NET-ENI*1	Ethernet	Ethernet/IP	X	X	X	---
MicroLogix1100*1	Not required (connects to Built-in Ethernet port on CPU unit)*1*2						
ControlLogix							
ControlLogix5550, ControlLogix5555*1	1756-ENBT, 1756-EN2T	Ethernet	Ethernet/IP (Native Tag)	X	---	---	---
CompactLogix							
1769 CompactLogix*1	Not required (connects to CPU unit)	Ethernet	Ethernet/IP (Native Tag)	X	---	---	---

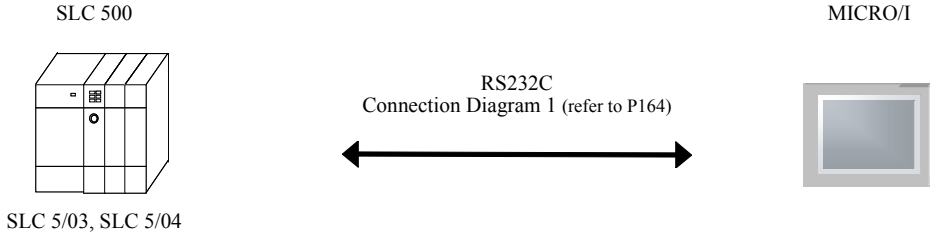
*1 This PLC was used to test & verify communications.

*2 To connect the Ethernet port on MicroLogix1100, check the firmware version. MICRO/I supports version 4 or later. (The latest firmware is on the Allen-Bradley web site.)

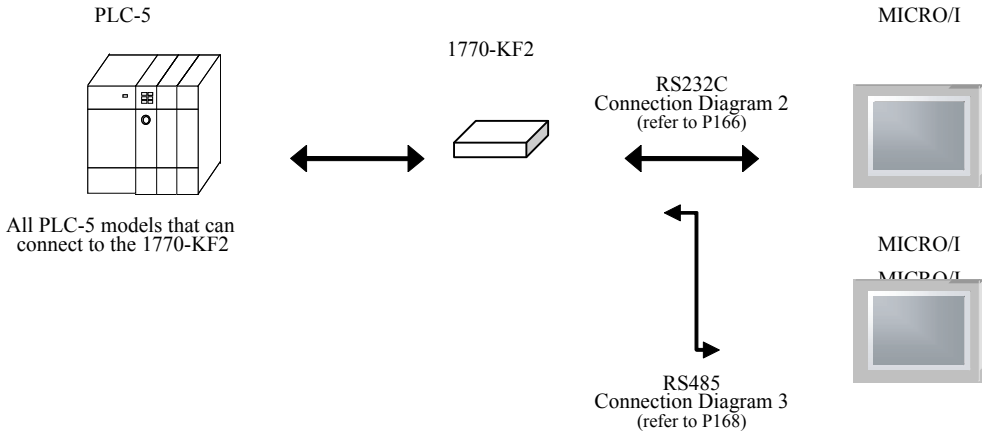
4.2 System Configuration

This is the system configuration for the connection of Allen-Bradley PLCs to MICRO/I.

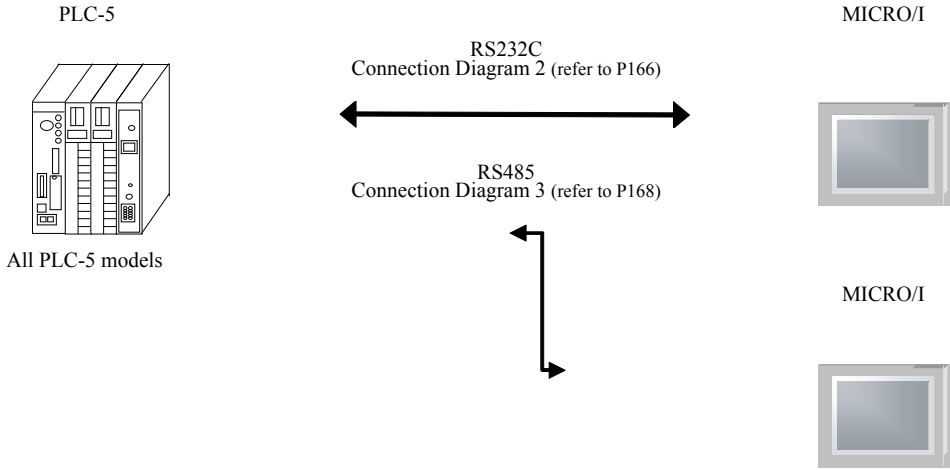
4.2.1 SLC 500 (connected to the CPU Channel 0 serial port)



4.2.2 PLC-5 (Interface Module)



4.2.3 PLC-5 (CPU Direct)

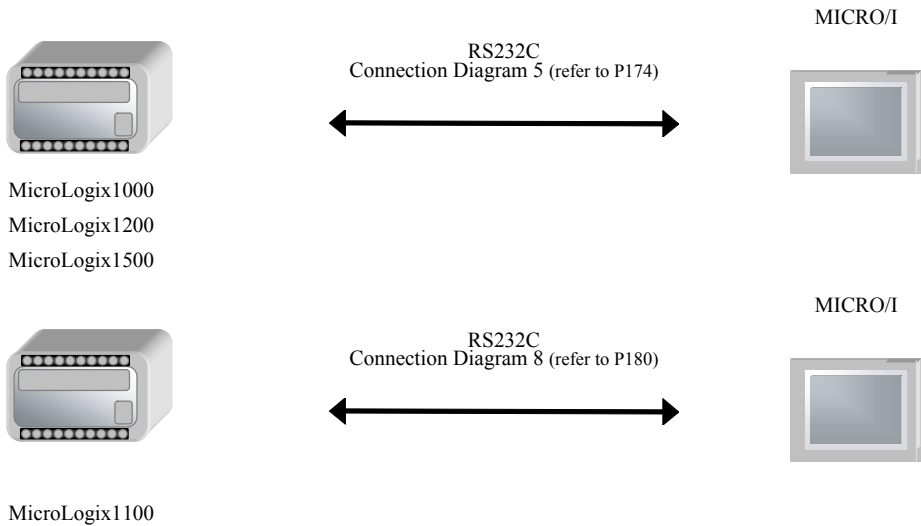


2
Connection to a PLC

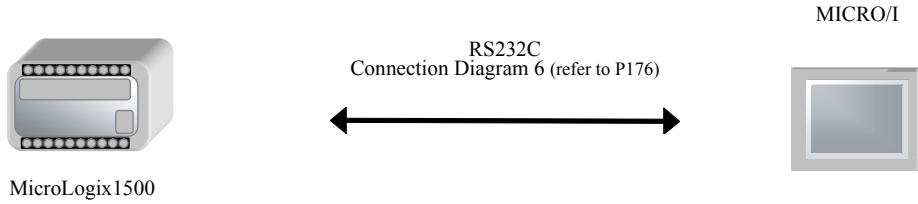


Connect to the CPU Channel 0 serial port.

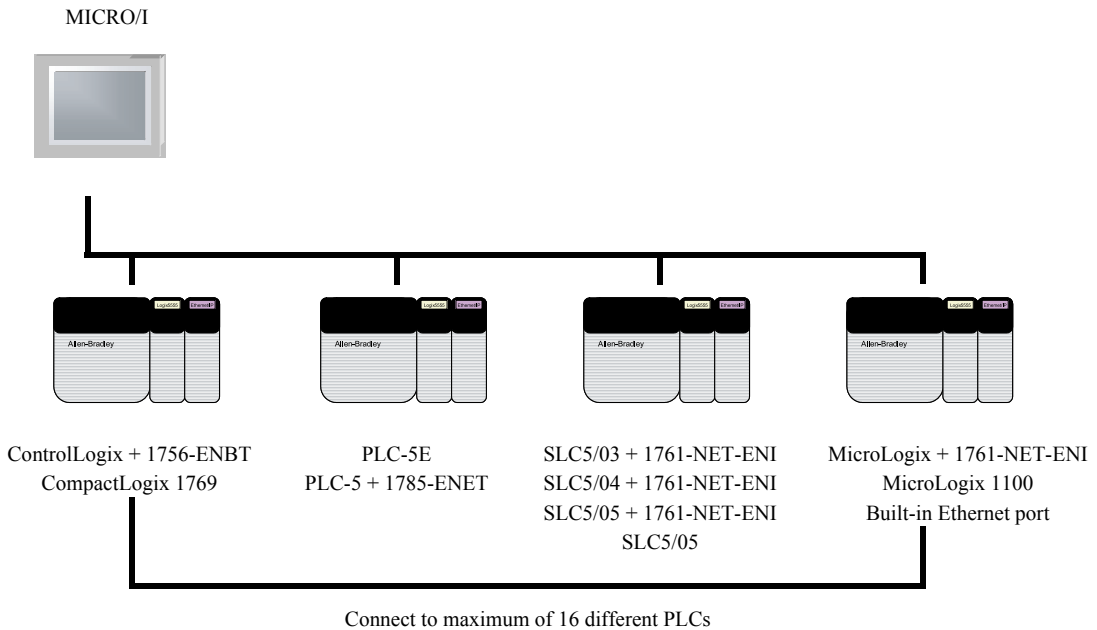
4.2.4 MicroLogix 1000/1100/1200/1500 (Mini Din connector on CPU Unit)



4.2.5 MicroLogix 1500 (D-sub 9 Pin connector on CPU Unit)

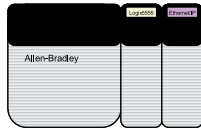


4.2.6 Ethernet/IP (MicroLogix, PLC-5, SLC 500, ControlLogix, CompactLogix)



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

4.2.7 ControlLogix/CompactLogix/FlexLogix (CPU Unit)



ControlLogix
CompactLogix
FlexLogix

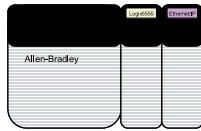
RS232C
Connection Diagram 7 (refer to P178)



MICRO/I



4.2.8 Ethernet/IP (Native Tag) ControlLogix/CompactLogix/ (CPU Unit)



ControlLogix
CompactLogix

Ethernet



MICRO/I



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

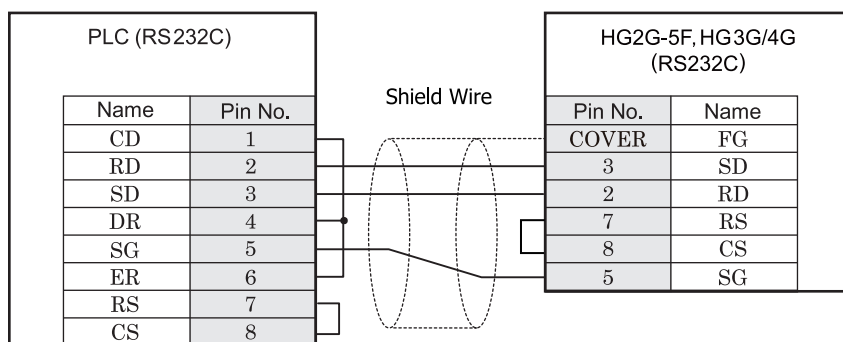
4.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring and termination resistors, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

4.3.1 Connection Diagram 1: SLC 500 (RS232C) to MICRO/I

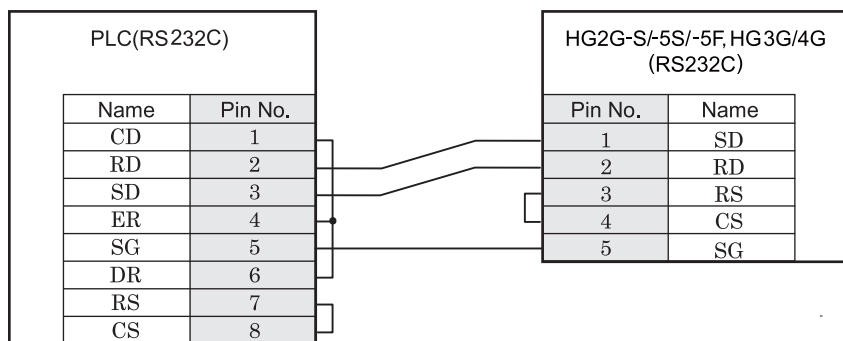
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type (unit side)

D-sub, 9P connector plug type

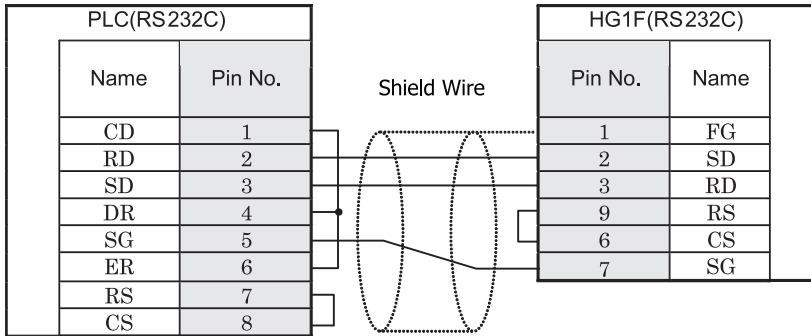
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector plug type (unit side)

Terminal

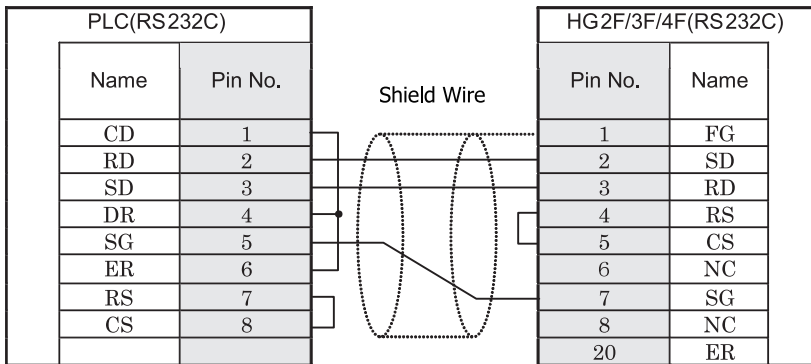
HG1F (Connector)



D-sub, 9P connector plug type (unit side)

D-sub, 9P connector socket type

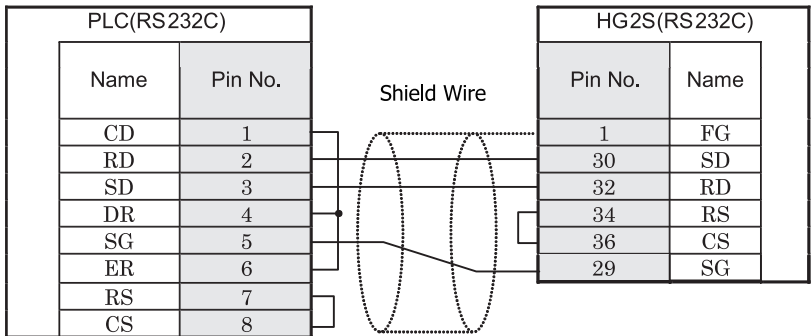
HG2F/3F/4F



D-sub, 9P connector plug type (unit side)

D-sub, 25P connector socket type

HG2S

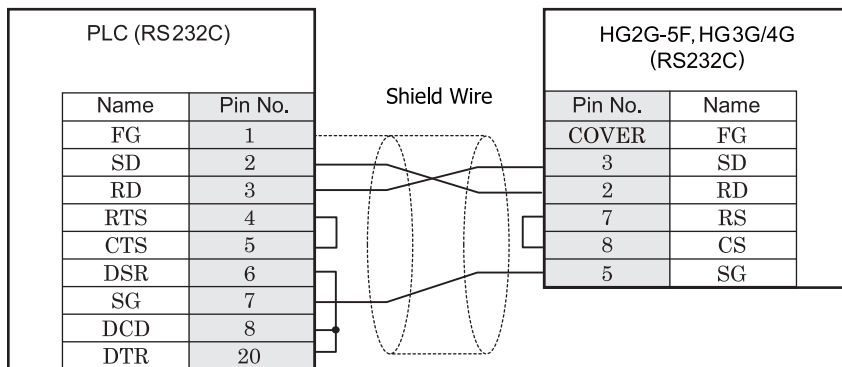


D-sub, 9P connector plug type (unit side)

D-sub, 37P connector plug type

4.3.2 Connection Diagram 2: Interface Module (RS232C) to MICRO/I and PLC-5 (RS232C) to MICRO/I

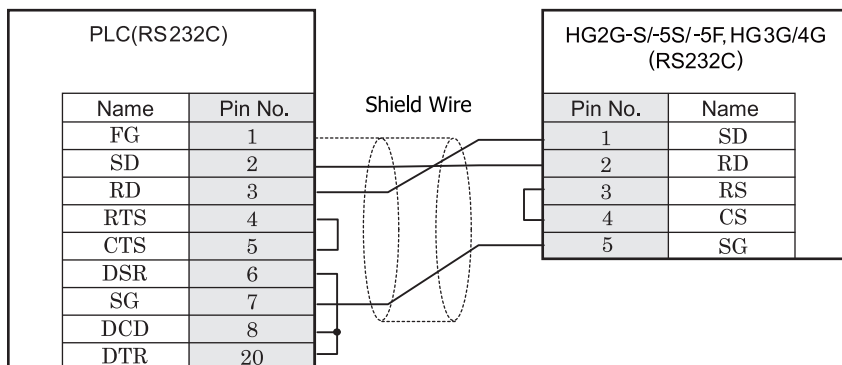
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

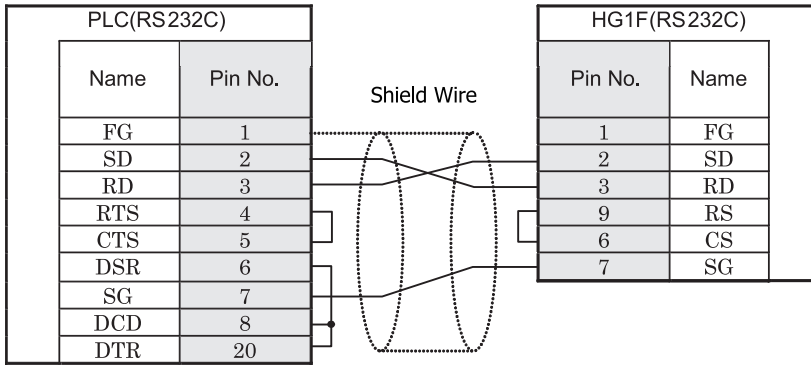
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 25P connector socket type (unit side)

Terminal

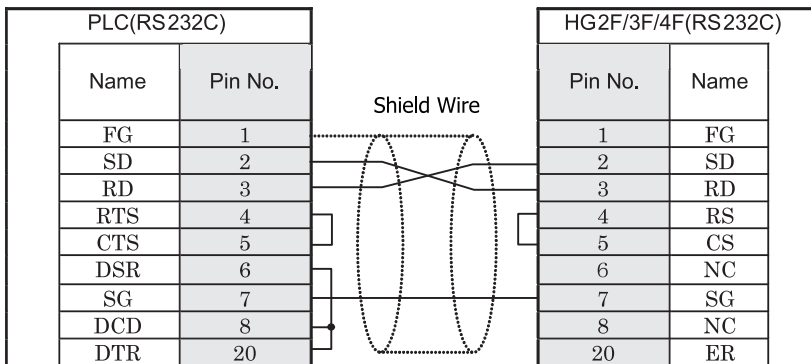
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

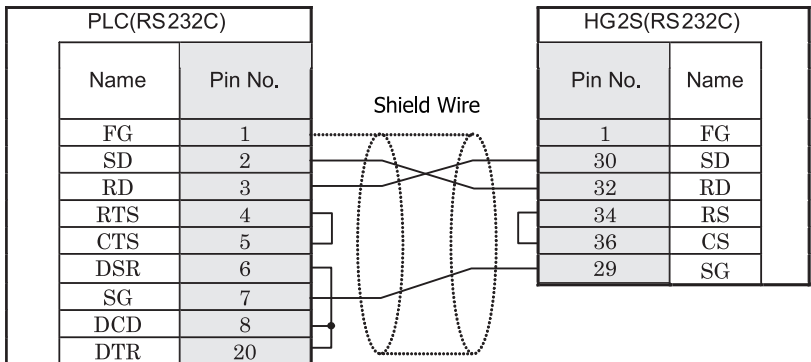
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

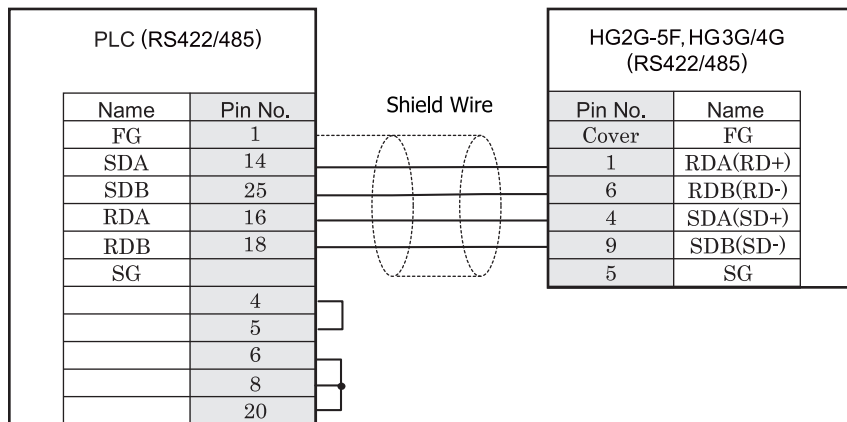
HG2S



D-sub, 25P connector socket type (unit side)

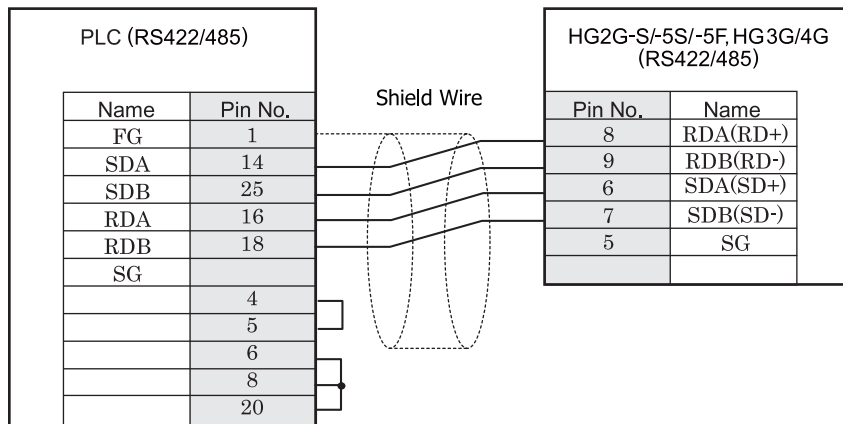
D-sub, 37P connector plug type

4.3.3 Connection Diagram 3: Interface Module (RS422) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

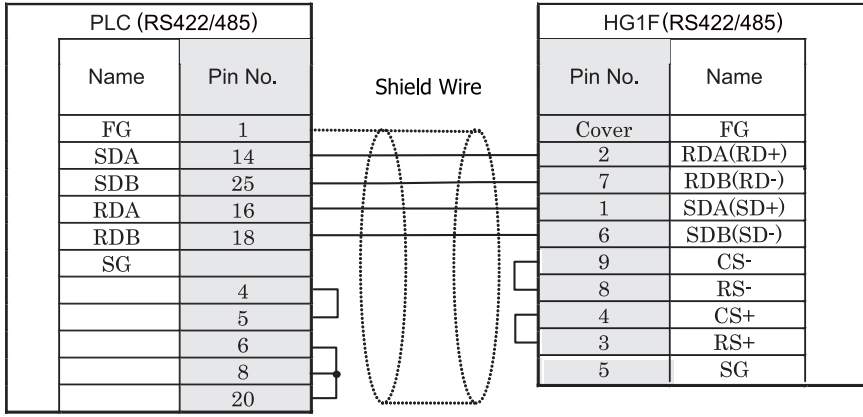
D-sub, 25P connector socket type (unit side)

Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

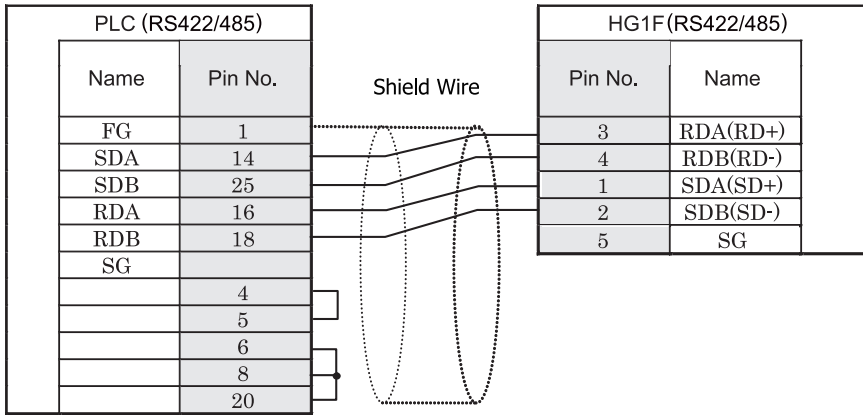
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)

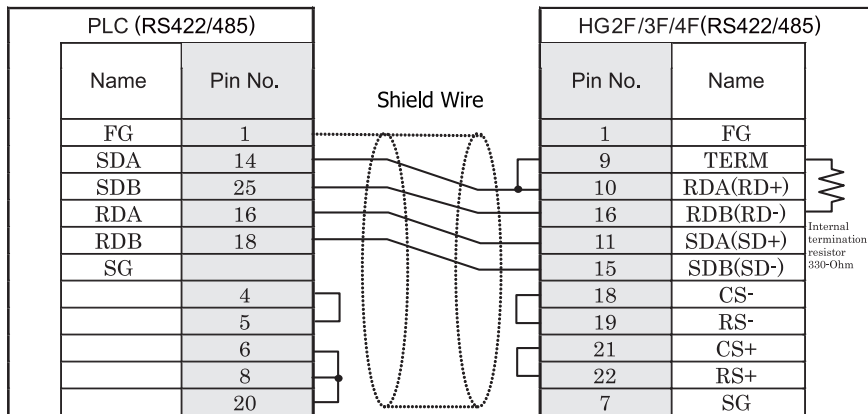


D-sub, 25P connector socket type (unit side)

Terminal

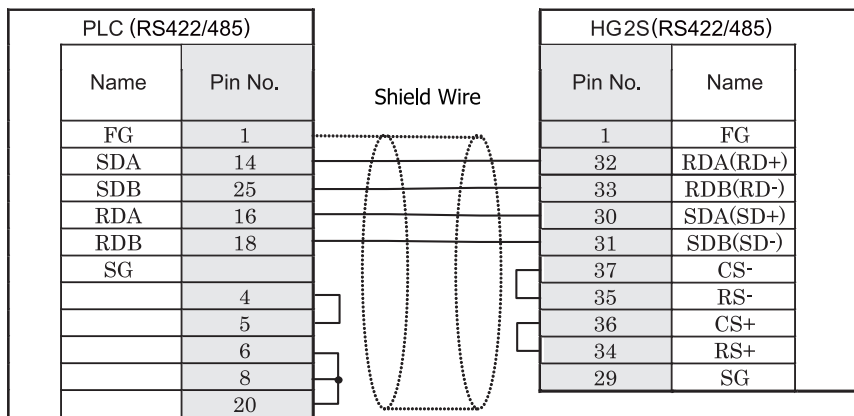


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

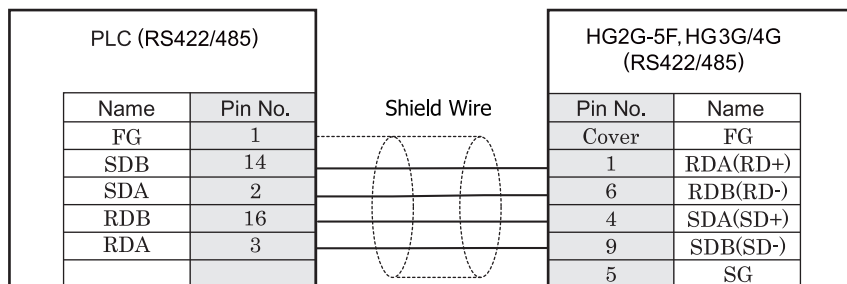
D-sub, 25P connector socket type (unit side)

D-sub, 37P connector plug type



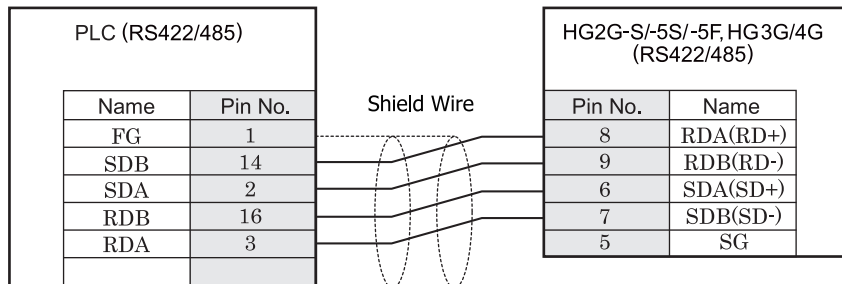
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

4.3.4 Connection Diagram 4: PLC-5 (RS422) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

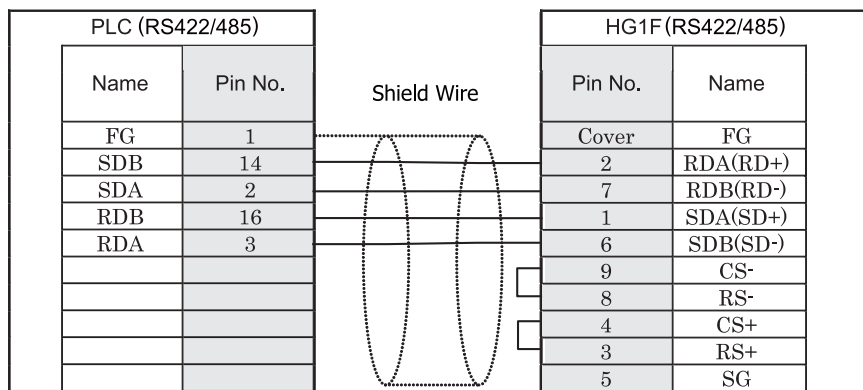
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 25P connector socket type (unit side)

Terminal

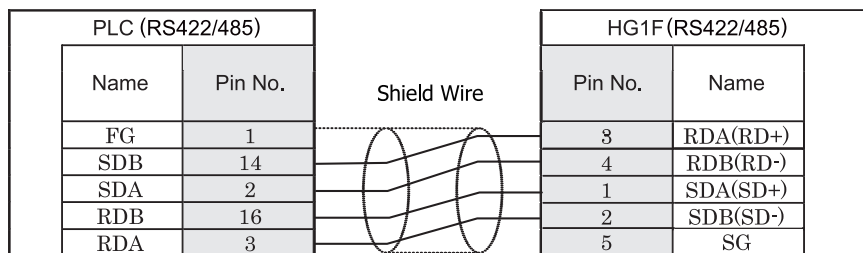


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

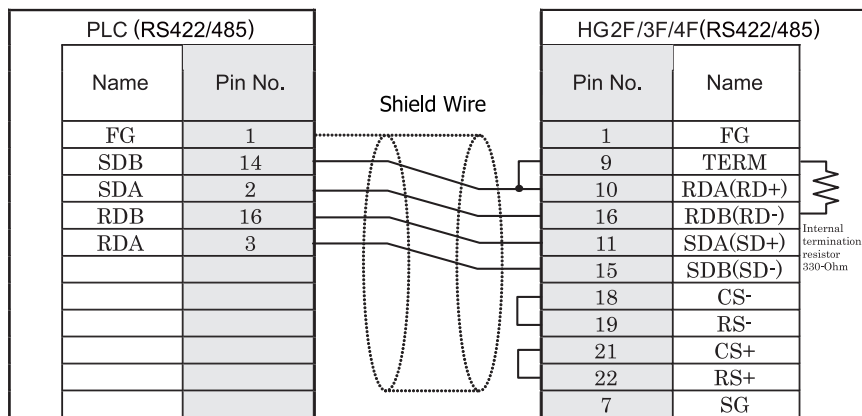
HG1F (Terminal)

D-sub, 25P connector socket type (unit side)

Terminal

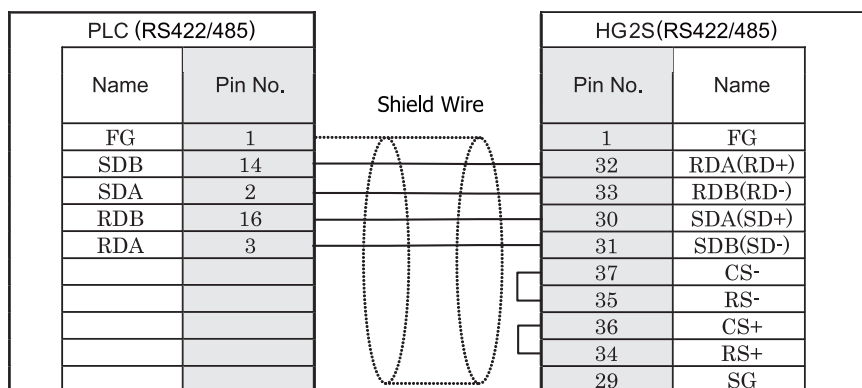


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

D-sub, 25P connector socket type (unit side)

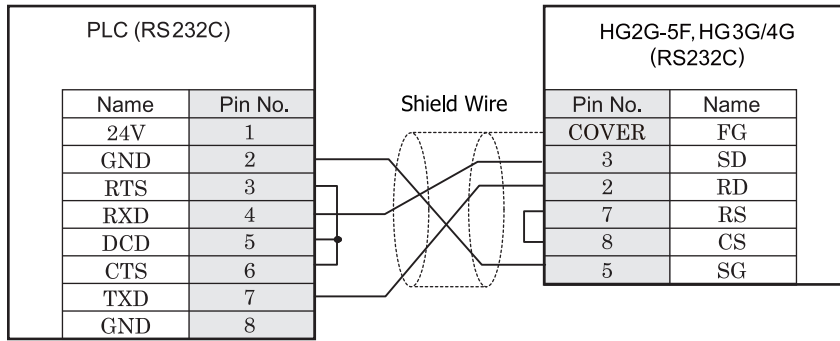
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

4.3.5 Connection Diagram 5: MicroLogix 1000/1200/1500(Mini Din connector) to MICRO/I

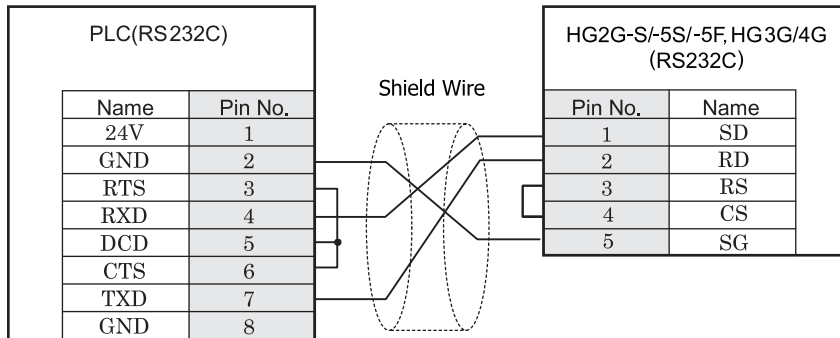
HG2G-5F, HG3G/4G (Connector)



Mini Din 8P socket type

D-sub, 9P connector plug type

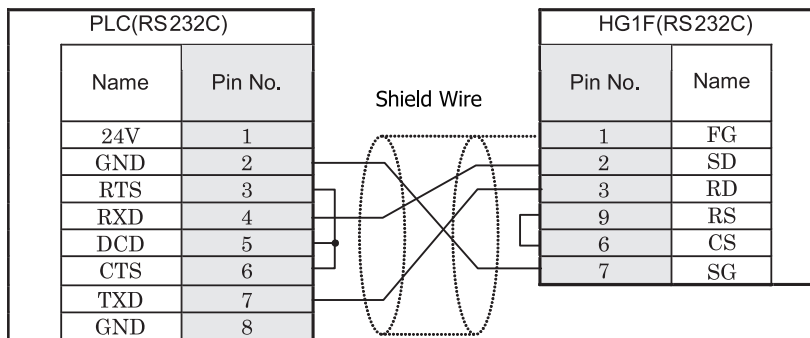
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Mini Din 8P socket type

Terminal

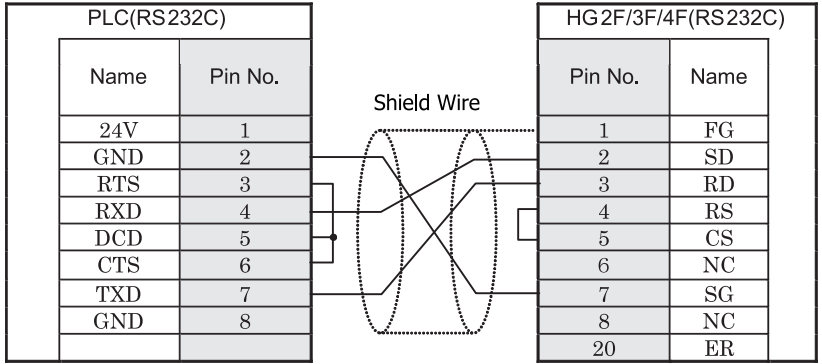
HG1F (Connector)



Mini Din 8P socket type

D-sub, 9P connector socket type

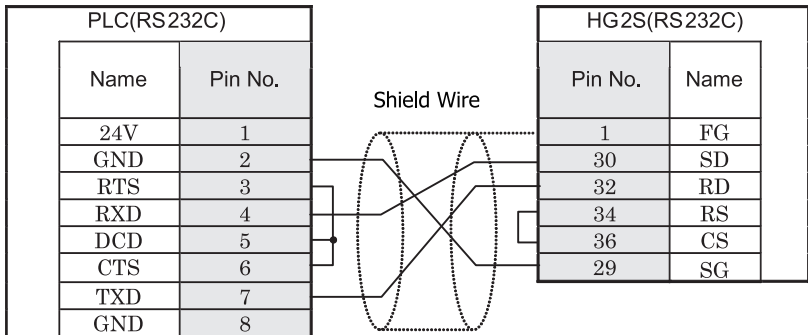
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S

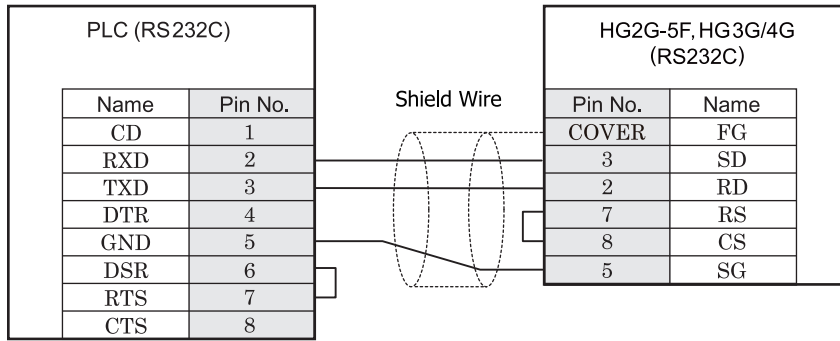


Mini Din 8P socket type

D-sub, 37P connector plug type

4.3.6 Connection Diagram 6: MicroLogix 1500(D-sub 9 Pin connector) to MICRO/I

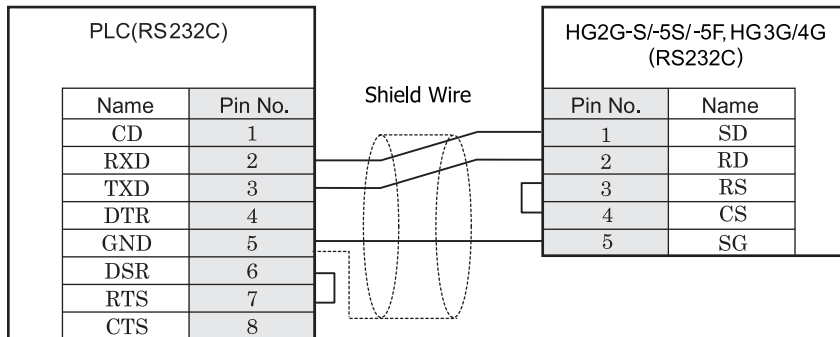
HG2G-5F, HG3G/4G (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector plug type

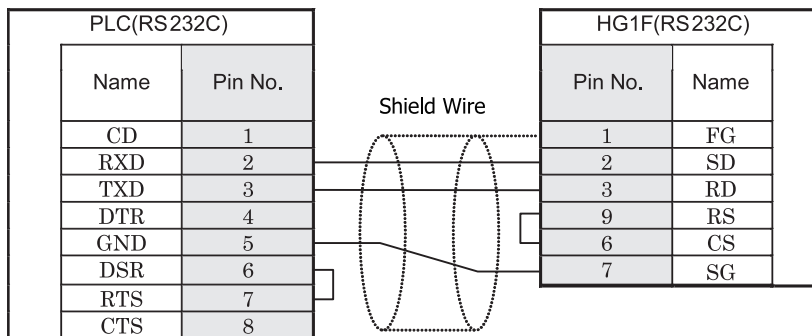
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub 9 Pin connector plug type

Terminal

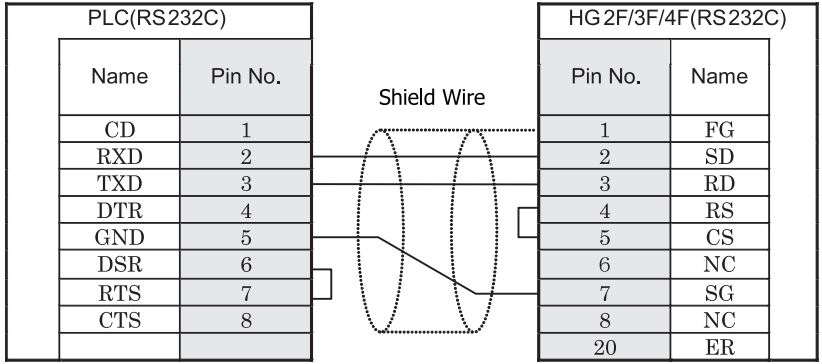
HG1F (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector socket type

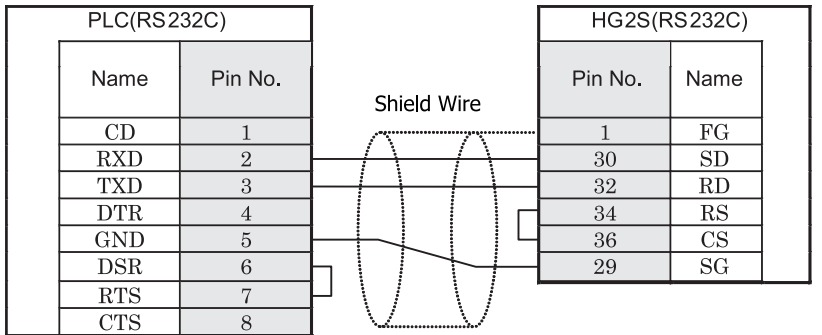
HG2F/3F/4F



D-sub 9 Pin connector plug type

D-sub, 25P connector socket type

HG2S

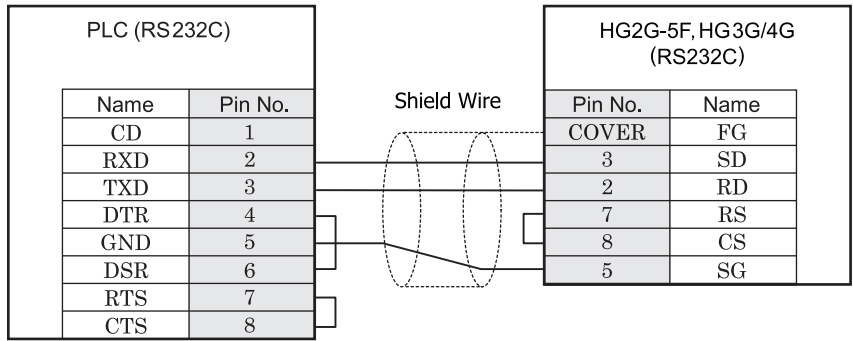


D-sub 9 Pin connector plug type

D-sub, 37P connector plug type

4.3.7 Connection Diagram 7: ControlLogix/CompactLogix/FlexLogix - MICRO/I

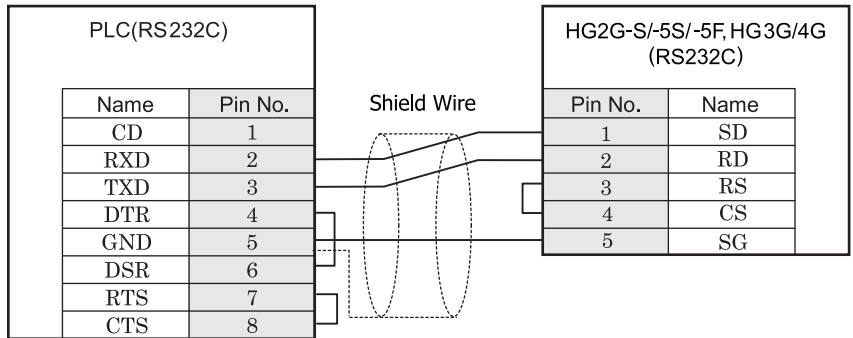
HG2G-5F, HG3G/4G (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector plug type

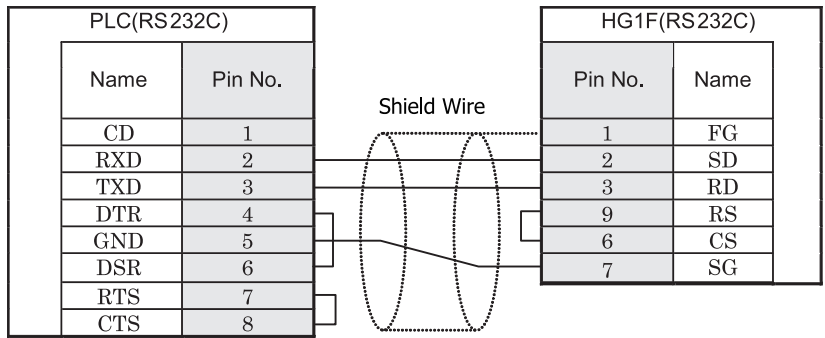
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub 9 Pin connector plug type

Terminal

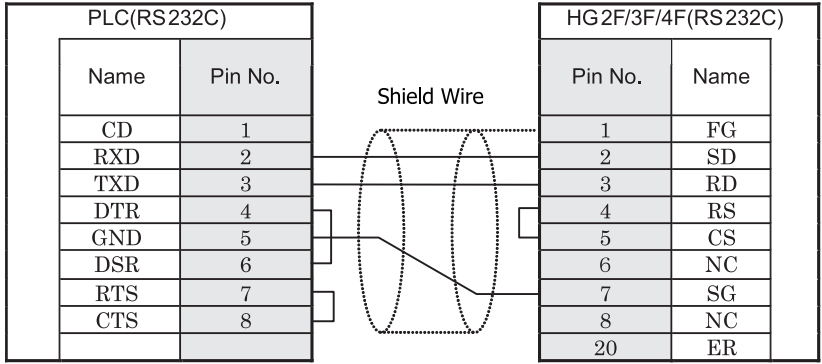
HG1F (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector socket type

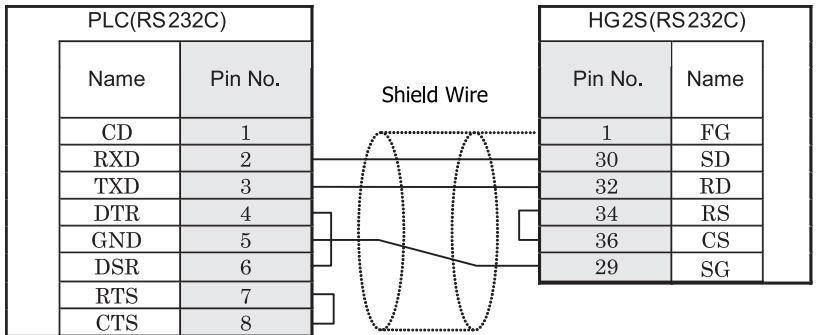
HG2F/3F/4F



D-sub 9 Pin connector plug type

D-sub, 25P connector socket type

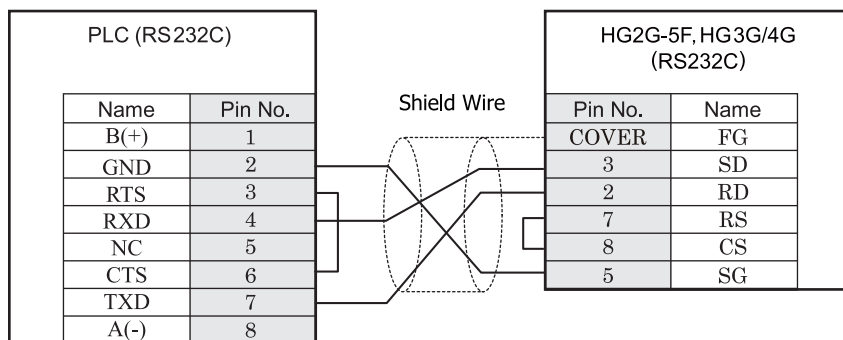
HG2S



D-sub 9 Pin connector plug type

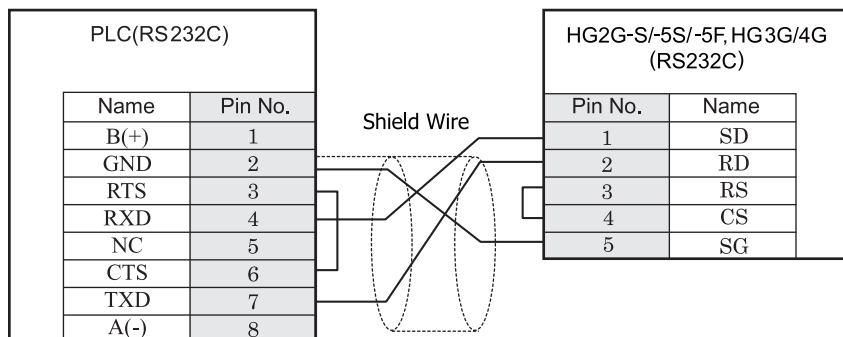
D-sub, 37P connector plug type

4.3.8 Connection Diagram 8: MicroLogix 1100(Mini Din connector) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

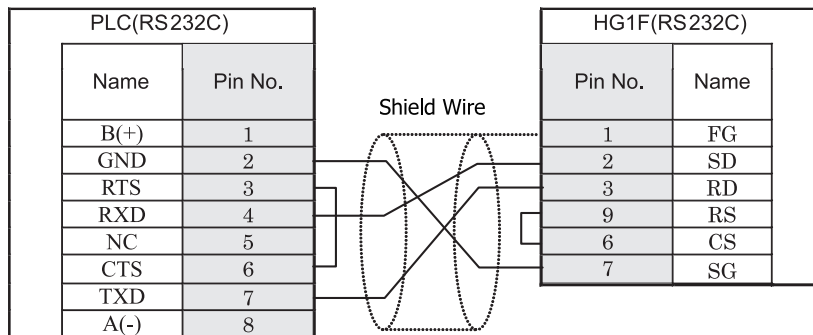
Mini Din 8P socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Mini Din 8P socket type

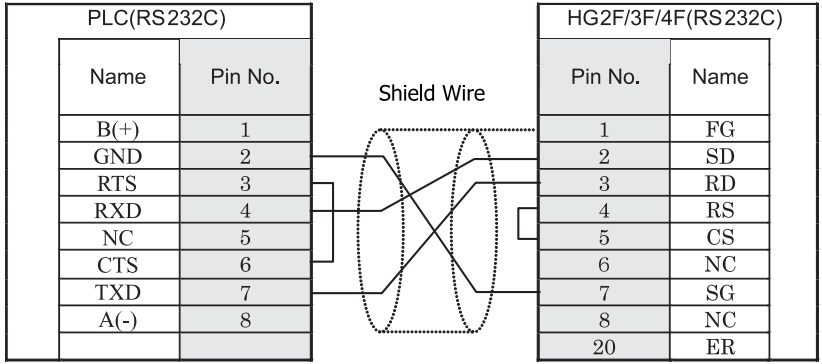
Terminal

HG1F (Connector)

Mini Din 8P socket type

D-sub, 9P connector socket type

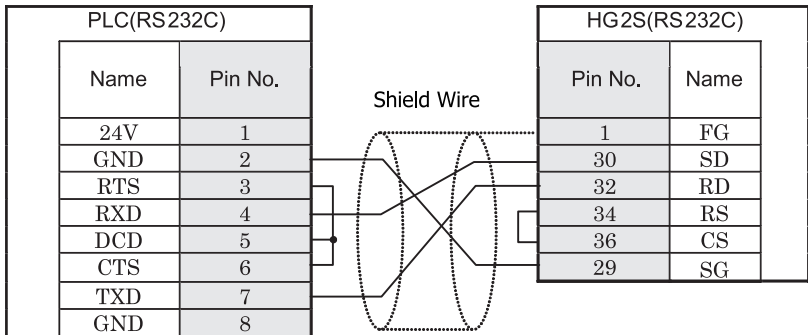
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S



Mini Din 8P socket type

D-sub, 37P connector plug type

4.4 Environment Settings

Allowed communication settings for MicroLogix, SLC 500, PLC-5, ControlLogix and CompactLogix are as follows.

4.4.1 MicroLogix, SLC 500 (Full Duplex)

Item	Setting
Baud Rate (bps) ^{*1 *2}	1200, 2400, 4800, 9600 or 19200
Data Bits ^{*2}	8 (fixed)
Parity ^{*1 *2}	None or Even
Stop Bits ^{*1 *2}	1
Flow Control	Hardware or None
Serial Interface	RS232C
Driver ^{*1}	DF1 Full-Duplex ^{*3}
Control Line ^{*1}	No Handshaking ^{*3}
Error Detection ^{*1}	CRC ^{*3}
Embedded Response ^{*1}	Auto Detect
Duplicate Packet Detect ^{*1}	Enable
Node Address ^{*1 *2 *4}	0 to 254 (decimal)

*1 Select using RSLogix software (set Chan0 to System of Controller-Channel Configuration).

*2 The setting for this item must match the setting on the MICRO/I Series unit.

*3 Be certain to select as indicated.

*4 Be certain to select as indicated. Select the MICRO/I Node Address using the Node Address (MICRO/I) under **Project Settings** in WindO/I-NV2 software.

4.4.2 SLC 500 (Half Duplex)

Item	Setting
Interface	RS232C
Baud Rate (bps) ^{*1*2}	1200, 2400, 4800, 9600 or 19200
Data Bits ^{*2}	8 (fixed)
Parity ^{*1 *2}	None or Even
Stop Bits ^{*1 *2}	1
Driver ^{*1}	DF1 Half-Duplex Slave ^{*3}
Duplicate Detect ^{*1}	Disabled ^{*3}
Error Detect ^{*1}	BCC ^{*3}
Control Line ^{*1}	No handshaking ^{*3}
Node Address ^{*1 *2*4}	0 to 254 (decimal)

*1 Set using RSLogix500 (set Chan0 to System of Controller-Channel Configuration).

*2 The setting for this item must match the setting on the MICRO/I Series unit.

*3 Be certain to set as indicated.

*4 Set the MICRO/I Node Address using the Node Address (MICRO/I) setting in **Configuration-System Setup-Project-Host I/F Driver** of WindO/I-NV2.

4.4.3 PLC-5

Item	Setting
Interface *1 *2	RS232C, RS485 4-wire
Baud Rate (bps) *3*4	1200, 2400, 4800, 9600 or 19200
Data Bits *3 *4	8 (fixed)
Parity *3 *4	None or Even
Stop Bits *3 *4	1 (fixed)
Communication Protocol *3	Half duplex *5
Channel 0 Protocol *3	DF1 Slave *5
Duplicate Detect *3	OFF *5
Error Detect *3	BCC *5
Control Line *3	No handshaking *5
Network Link *3	Data highway plus
PLC-5 Processor Station Address *4 *6	00 to 77 (Octal)
1770-KF2 Node Number *1 *4 *7	00 to 77 (Octal)

*1 When using the 1770-KF2 Module, select this setting using the 1770-KF2 Module DIP switch.

*2 In the case of a direct connection to the PLC-5 Processor Module, select this setting using the PLC-5 Processor Module DIP switch.

*3 When using the 1770-KF2 Module, select this setting using the DIP switch on 1770-KF2 Module. In case of a direct connection to the PLC-5 Processor Module, select using the 6200 Programming Software (Channel 0 configuration).

*4 The setting for this item must match the setting on the MICRO/I Series unit.

*5 Be certain to select as indicated.

*6 This setting is required regardless of whether 1770-KF2 Module is used or not. When using the 1770-KF2 Module, select this setting using the DIP switch on PLC-5 Processor, and in the case of a direct connection to the PLC-5 Processor Module, select using the 6200 Programming Software (Channel 0 configuration).

*7 This selection is only necessary if you are using the Interface Module.



Setting the Station Address using WindO/I-NV2.

- When using the 1770-KF2 Module, select “Use 1770-KF2” checkbox in the WindO/I-NV2 **Configuration - System Setup - Project - Host I/F Driver**, and set “Station Address (1770-KF2)” and “Station Address (PLC5)”.
- In case of direct connection to PLC5 Processor Module, do not select the “Use 1770-KF2” checkbox. Instead select “Station Address (1770-KF2)”.
These numbers are to be set using octal for the PLC-5 and 1770-KF2, but hexadecimal for the WindO/I-NV2.

4.4.4 Ethernet/IP (ControlLogix, CompactLogix, PLC-5, SLC 500, MicroLogix)

Communication Interface Setting (Ethernet)

Item	Setting
Interface	Ethernet
IP Address	Set the IP address of MICRO/I.
Subnet Mask	Set the subnet mask of MICRO/I.
Default Gateway	Set the default gateway of MICRO/I.

Host I/F Network Setting

Set some network information of PLCs. It can be set to maximum of 16.

Item	Setting
Station No.	The number to select PLC when set device address.
IP Address	Set the IP address of communicated PLC.
Port Number	Set the port number of communicated PLC.
Product	Set the product of communicated PLC. (For ControlLogix or CompactLogix, select «Logix».)
Slot Number	Set the CPU slot number of communicated PLC.

4.4.5 ControlLogix, CompactLogix, FlexLogix

Item	Setting
Baud Rate (bps) *1	1200, 2400, 4800, 9600 or 19200
Data Bits *1	8 (fixed)
Parity *1	None or Even
Stop Bits *1	1
Flow Control	None
Serial Interface	RS232C
Protocol	DF1 Point to Point *2
Control Line	No Handshaking *2
Error Detection	BCC or CRC
Embedded Response	Auto Detect
Duplicate Packet Detect	Enable
Station Address *1 *3	0 to 254 (decimal)

*1 The setting for this item must match the setting on the MICRO/I Series unit.

*2 Be certain to select as indicated.

*3 Select the MICRO/I Node Address using the Station Address (MICRO/I) under **Configuration - System Setup - Project - Host I/F Driver** in WindO/I-NV2.

4.4.6 Ethernet/IP (Logix Native Tag) (ControlLogix, CompactLogix)

Communication Interface Setting

Item	Setting
Interface	Ethernet
IP Address	Set the IP address of MICRO/I.
Subnet Mask	Set the subnet mask of MICRO/I.
Default Gateway	Set the default gateway of MICRO/I.

HostI/F Network Setting

Set some network information of PLCs. It can be set to maximum of 16.

Item	Setting
Station No.	The number to select PLC when set device address.
IP Address	Set the IP address of communicated PLC.
Port Number	Set the port number of communicated PLC.
Slot Number	Set the CPU slot number of communicated PLC.
Tag File	Set the tag database file.

4.5 Usable Devices

The types of compatible devices and their ranges are shown below. Device address selection for the MicroLogix1200, SLC 500 and PLC-5 CPU's are done using File No., Element No., Bit No. etc., with an appropriate delimiter. But the WindO/I-NV2 address selection is done without the delimiter. The MICRO/I address specification syntax (address specification rules) is explained below. Follow the syntax below when performing address selections using WindO/I-NV2 software.

MICRO/I support the following device types and range.

WindO/I-NV2 supports the device address format as same as MicroLogix, SLC 500, PLC-5 programming software along with the standard device address format of WindO/I-NV2.

- **Standard device address format of WindO/I-NV2**
File Number, Element and Bit Number are separated by some delimiters in device address format of Allen-Bradley's software. However, standard device address format of WindO/I-NV2 does not contain delimiters. It remove some delimiters from Allen-Bradley's device address format.
- **Allen-Bradley device address format**
This device address format is same as the device address format of Allen-Bradley's software. (Some part of the format is diferent. Refer to the following.)

4.5.1 MicroLogix, SLC 500 (Full Duplex)

Bit Device

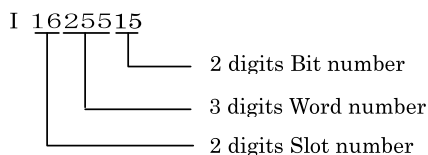
Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Output	O	O	0 - 1625515	R	10 ^{*1}
Input	I	I	0 - 1625515	R	10 ^{*1}
Binary	B	B	300000 - 325515, 900000 - 25525515	R/W	10 ^{*2}
Timer Enable Bit	TEN	T(EN)	4000 - 4255, 9000 - 255255	R	10 ^{*3}
Timer Timing Bit	TTT	T(TT)	4000 - 4255, 9000 - 255255	R	10 ^{*3}
Timer Done Bit	TDN	T(DN)	4000 - 4255, 9000 - 255255	R	10 ^{*3}
Counter Up Enable Bit	CCU	C(CU)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Counter Down Enable Bit	CCD	C(CD)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Counter Done Bit	CDN	C(DN)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Counter Overflow Bit	COV	C(OV)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Counter Underflow Bit	CUN	C(UN)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Counter Update Accumulator	CUA	C(UA)	5000 - 5255, 9000 - 255255	R	10 ^{*3}
Control Enable Bit	REN	R(EN)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Queue Bit	REU	R(EU)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Asynchronous Bit Done Bit	RDN	R(DN)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Synchronous Done Bit	REM	R(EM)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Error Bit	RER	E(ER)	6000 - 6255, 9000 - 255255	R	10 ^{*3}

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Control Unload Bit	RUL	R(UL)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Running Bit	RIN	R(IN)	6000 - 6255, 9000 - 255255	R	10 ^{*3}
Control Found Bit	RFD	R(FD)	6000 - 6255, 9000 - 255255	R	10 ^{*3}

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

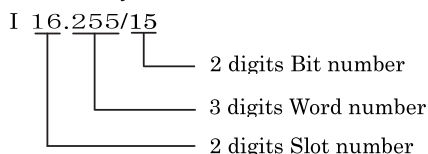


Example

MicroLogix1200 Address --- I:2.12/6

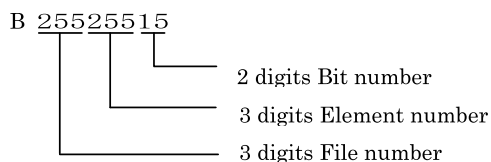
WindO/I-NV2 Address --- I 201206

Allen-Bradley device address format



*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

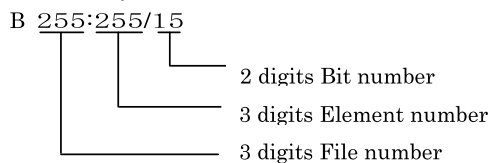


Example

MicroLogix1200 Address --- B10:123/5

WindO/I-NV2 Address --- B 1012305

Allen-Bradley device address format



*3 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

TEN 255255

└──┬──┘ 3 digits Element number
└──┬──┘ 3 digits File number

Example

MicroLogix1200 Address --- T12:123/EN

WindO/I-NV2 Address --- TEN 12123

Allen-Bradley device address format

TEN 255:255

└──┬──┘ 3 digits Element number
└──┬──┘ 3 digits File number



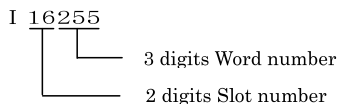
A communication error will occur if you specify a file or element that is not allocated to the MicroLogix1200, SLC 500 data table map.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Output	WO	O	0 - 16255	R	10 ^{*1}
Input	WI	I	0 - 16255	R	10 ^{*1}
Status	S	S	2000 - 2065	R	10 ^{*2}
Bit	WB	B	3000 - 3255, 9000 - 255255	R/W	10 ^{*2}
Timer (Preset Value)	TP	T(P)	4000 - 4255, 9000 - 255255	R/W	10 ^{*2}
Timer (Accumulated Value)	TA	T(A)	4000 - 4255, 9000 - 255255	R/W	10 ^{*2}
Counter (Preset Value)	CP	C(P)	5000 - 5255, 9000 - 255255	R/W	10 ^{*2}
Counter (Accumulated Value)	CA	C(A)	5000 - 5255, 9000 - 255255	R/W	10 ^{*2}
Control (Number of characters specified to be sent or received)	RLEN	R(LEN)	6000 - 6255, 9000 - 255255	R/W	10 ^{*2}
Control (Number of characters actually sent or received)	RPOS	R(POS)	6000 - 6255, 9000 - 255255	R/W	10 ^{*2}
Integer	N	N	7000 - 7255, 9000 - 255255	R/W	10 ^{*2}
Float Point	F	F	80000 - 82551, 90000 - 2552551	R/W	10 ^{*3}
Long Word	L	L	90000 - 2552551	R/W	10 ^{*3}
ASCII	A	A	9000 - 255255	R/W	10 ^{*2}
String LEN	STL	ST	9000 - 255255	R	10 ^{*2}
String DATA	ST	ST	900000 - 25525540	R/W	10 ^{*4}

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

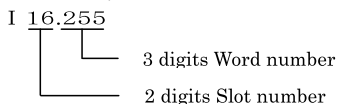


Example

MicroLogix1200 Address --- I:12.10

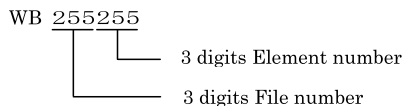
WindO/I-NV2 Address --- I 12010

Allen-Bradley device address format



*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

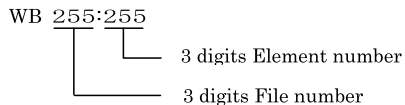


Example

MicroLogix1200 Address --- B123:255

WindO/I-NV2 Address --- WB 123255

Allen-Bradley device address format

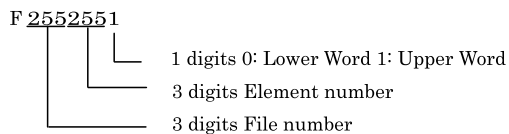


*3 Address selection rule is as follows.

WindO/I-NV2 uses 32 bit device as the divided 2 word device.

Therefore, the last one digit shows that the device is upper word or lower word.

Standard device address format of WindO/I-NV2

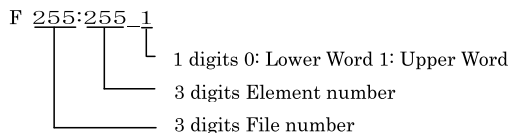


Example

MicroLogix1200 Address --- F123:255

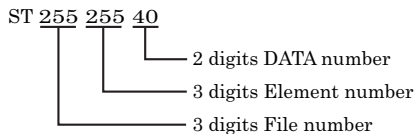
WindO/I-NV2 Address --- F 1232550 and F1232551

Allen-Bradley device address format



*4 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

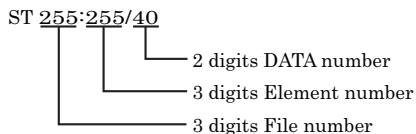


Example

MicroLogix1200 Address ---ST 123:255.DATA[40]

WindO/I-NV2 Address ---ST 12325540

Allen-Bradley device address format



- WO, WI, WB is same devices as O, I, B. They are used as word devices.



- Floating Point (F) and Long Word (L) are 32-bit devices. When you write to these devices, please be sure to write a high word and low word simultaneously. If you write only high word or only low word, 0 will be written into the other word.
- String devices are only compatible with HG2G-S/-5S/-5F, HG3G/4G.
- String LEN stores the number of characters written when a string is written from the String DATA start address (DATA[0]) of each element.
If the address to write is not from the start, the value of String LEN is not updated.
- When writing a string from a character input, the NULL terminating character is written at the end of the string.
The NULL is automatically set by the HMI. Be aware that this is not only for Allen-Bradley driver. This is the specification of Character Input.
- A communication error will occur if you specify a file or element that is not allocated to the MicroLogix1200, SLC 500 data table map.

4.5.2 SLC 500 (Half Duplex)

Bit Device

Device Name	Device Symbol		Address Range*1	Read /Write	Address Gradual
	MICRO/I	PLC			
Timer (done)	TDN	T	4000 - 4255, 10000 - 255255	R	10
Timer (timing)	TT	T	4000 - 4255, 10000 - 255255	R	10
Timer (enable)	EN	T	4000 - 4255, 10000 - 255255	R	10
Counter (done)	CDN	C	5000 - 5255, 10000 - 255255	R	10
Counter (up enable)	CU	C	5000 - 5255, 10000 - 255255	R	10
Counter (down enable)	CD	C	5000 - 5255, 10000 - 255255	R	10
Counter (overflow)	OV	C	5000 - 5255, 10000 - 255255	R	10
Counter (underflow)	UN	C	5000 - 5255, 10000 - 255255	R	10
Counter (high-speed counter update)	UA	C	5000 - 5255, 10000 - 255255	R	10

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

WB 255255
 └──┬── 3 digits Element number
 └──┬── 3 digits File number

Example

SLC 500 Address --- T 4:12 / TD

WindO/I-NV2 Address --- TDN 4 012

Allen-Bradley device address format

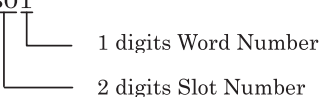
TDN 255:255
 └──┬── 3 digits Element number
 └──┬── 3 digits File number

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Addresses Gradual
	MICRO/I	PLC			
Input	WI	I	0 - 301	R	10 ^{*1}
Output	WO	O	0 - 301	R	10 ^{*1}
Bit	WB	B	3000 - 3255, 10000 - 255255	R/W	10 ^{*2}
Timer (accumulated value)	TA	T	4000 - 4255, 10000 - 255255	R	10 ^{*2}
Counter (accumulated value)	CA	C	5000 - 5255, 10000 - 255255	R	10 ^{*2}
Timer (preset value)	TP	T	4000 - 4255, 10000 - 255255	R/W	10 ^{*2}
Counter (preset value)	CP	C	5000 - 5255, 10000 - 255255	R/W	10 ^{*2}
Integer ^{*3}	N	N	7000 - 7255, 10000 - 255255	R/W	10 ^{*2}
ASCII	A	A	10000 - 255255	R/W	10 ^{*2}

*1 Address selection rule is as follows.

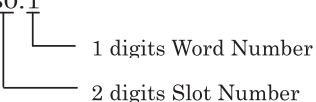
Standard device address format of WindO/I-NV2

WI 301


SLC 500 Address --- I 30.1

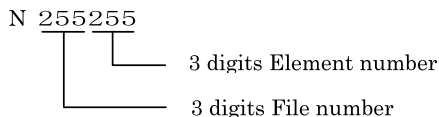
WindO/I-NV2 Address ---WI 301

Allen-Bradley device address format

WI 30.1


*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

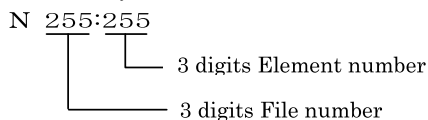


Example

SLC 500 Address --- N 255:255

WindO/I-NV2 Address --- N 255255

Allen-Bradley device address format



*3 Allocate the System Area above the file number 7 integer file. It will not operate with file number 10 and above. You must construct an area above the SLC 500 data table file that corresponds to the System Area Address set by WindO/I-NV2.



The input and output addresses are made up of the slot number and the word number.

- The address makeup is as follows:
 - Bottom digit: Word number
 - 2nd and 3rd digits from the bottom: Slot number
- If the module in the slot has 16 or fewer points, the word number is 0, and if it is a 32-point module, the word number is 0 for the lower word (bit 0 to bit 15) and 1 for the upper word (bit 16 to bit 31).
- In the case of a rack-type controller, the slot number is attributed as is, and in the case of a package-type controller, it is as follows.
 - Package-type controller: 0
 - Left slot of the expansion rack: 1
 - Right slot of the expansion rack: 2

Example:

Address specification with SLC 500: I: 1.0

Address specification with WindO/I-NV2: 1 0



- You cannot directly write to inputs and outputs.
- A communication error will occur if you specify a file or element that is not allocated to the SLC 500 data table map.

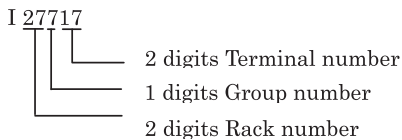
4.5.3 PLC-5 (Half Duplex)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input	I	I	0 - 27717* ¹	R/W	8
Output	O	O	0 - 27717* ¹	R/W	8
Bit	B	B	300000 - 9999915* ²	R	10
Timer (complete)	TDN	T	3000 - 99999* ³	R	10
Timer (timing)	TT	T	3000 - 99999* ³	R	10
Timer (enable)	EN	T	3000 - 99999* ³	R	10
Counter (complete)	CDN	C	3000 - 99999* ³	R	10
Counter (up enable)	CU	C	3000 - 99999* ³	R	10
Counter (down enable)	CD	C	3000 - 99999* ³	R	10
Counter (overflow)	OV	C	3000 - 99999* ³	R	10
Counter (underflow)	UN	C	3000 - 99999* ³	R	10

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

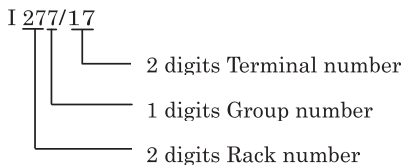


Example

PLC-5 Address --- I:277/17

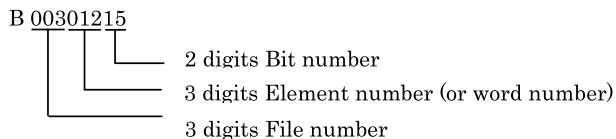
WindO/I-NV2 Address --- I 27717

Allen-Bradley device address format



*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

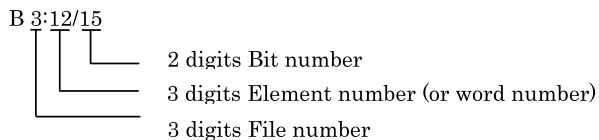


Example

PLC-5 Address --- B 3:12 / 15

WindO/I-NV2 Address --- 3 012 15

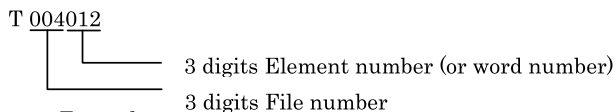
Allen-Bradley device address format



With the PLC-5, addresses can be specified with word and bit units, or with bit units only (i.e. there are two ways), while with WindO/I-NV2 you must specify addresses using word and bit units.

*3 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

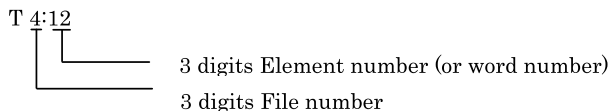


Example

PLC-5 Address --- T 4:12 / TD

WindO/I-NV2 Address --- 4 012

Allen-Bradley device address format

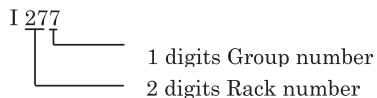


Word Device

Device Name	Device Symbol		Address Range	Read /Write	Addresses Gradual
	MICRO/I	PLC			
Input	WI	I	0 - 277* ¹	R	8
Output	WO	O	0 - 277* ¹	R/W	8
Bit	WB	B	3000 - 99999 * ²	R/W	10
Timer (current value)	TA	T	3000 - 99999 * ²	R	10
Counter (current value)	CA	C	3000 - 99999 * ²	R	10
Timer (preset value)	TP	T	3000 - 99999 * ²	R/W	10
Counter (preset value)	CP	C	3000 - 99999 * ²	R/W	10
Integer	N	N	3000 - 99999* ² * ³	R/W	10
BCD	D	D	3000 - 99999 * ²	R/W	10
ASCII	A	A	3000 - 99999 * ²	R/W	10

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

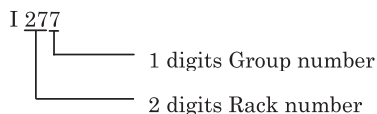


Example

PLC-5 Address --- I:277

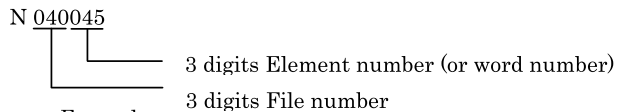
WindO/I-NV2 Address --- I 277

Allen-Bradley device address format



*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

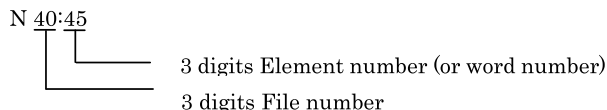


Example

PLC-5 Address --- N 40:45

WindO/I-NV2 Address --- 40 045

Allen-Bradley device address format



*3 System Area should assigned using a file number between 1 and 9 only. It will not work with file number 10 or above. You must construct an area in the PLC-5 data table file that corresponds to the System Area Address selected by WindO/I-NV2.

4.5.4 Ethernet/IP

If you select Ethernet/IP as Host I/F Driver, the driver contains some PLCs devices.

Therefore, the following devices name may be not same as devices name for each PLC.

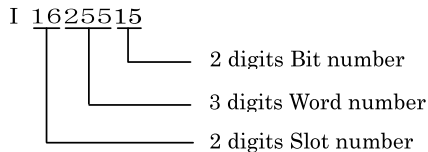
Refer to the following cross reference table about detail.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
SLC/MicroLogix Input	SI	I	0 - 1625515	R	10 ^{*1}
SLC/MicroLogix Output	SO	O	0 - 1625515	R	10 ^{*1}
PLC-5 Input	PI	I	0 - 27717	R	10 ^{*2}
PLC-5 Output	PO	O	0 - 27717	R/W	10 ^{*2}
Binary	B	B	0 - 9999915	R/W	10 ^{*3}
Timer Enable bit	TEN	TEN	0 - 999999	R	10 ^{*4}
Timer Timing Bit	TTT	TTT	0 - 999999	R	10 ^{*4}
Timer Done Bit	TDN	TDN	0 - 999999	R	10 ^{*4}
Counter Up Enable Bit	CCU	CCU	0 - 999999	R	10 ^{*4}
Counter Down Enable Bit	CCD	CCD	0 - 999999	R	10 ^{*4}
Counter Done Bit	CDN	CDN	0 - 999999	R	10 ^{*4}
Counter Overflow Bit	COV	COV	0 - 999999	R	10 ^{*4}
Counter Underflow Bit	CUN	CUN	0 - 999999	R	10 ^{*4}
Counter Update Accumulator	CUA	CUA	0 - 999999	R	10 ^{*4}
Control Enable Bit	REN	REN	0 - 999999	R	10 ^{*4}
Control Queue Bit	REU	REU	0 - 999999	R	10 ^{*4}
Control Aynchronous Done Bit	RDN	RDN	0 - 999999	R	10 ^{*4}
Control Synchronous Done Bit	REM	REM	0 - 999999	R	10 ^{*4}
Control Error Bit	RER	RER	0 - 999999	R	10 ^{*4}
Control Unload Bit	RUL	RUL	0 - 999999	R	10 ^{*4}
Control Running Bit	RIN	RIN	0 - 999999	R	10 ^{*4}
Control Found Bit	RFD	RFD	0 - 999999	R	10 ^{*4}

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

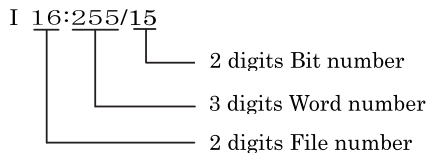


Example

MicroLogix/SLC 500 Address --- I:2/12.6

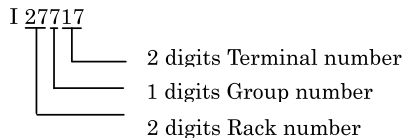
WindO/I-NV2 Address --- I 201206

Allen-Bradley device address format



*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

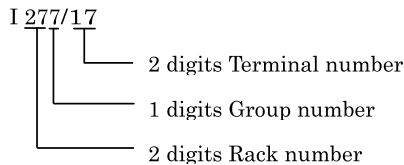


Example

PLC-5 Address --- I:277/17

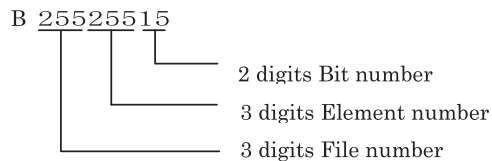
WindO/I-NV2 Address --- I 27717

Allen-Bradley device address format



*3 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

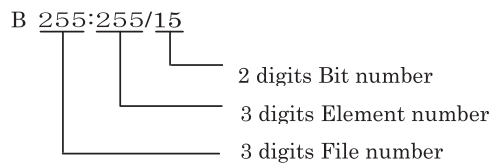


Example

MicroLogix1200 Address --- B10:123/5

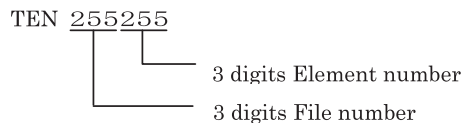
WindO/I-NV2 Address --- B 1012305

Allen-Bradley device address format



*4 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

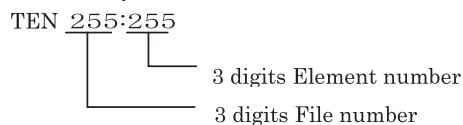


Example

MicroLogix1200 Address --- T12:123/EN

WindO/I-NV2 Address --- TEN 12123

Allen-Bradley device address format




Word Device

Device Name	Device Symbol		Address Range	Read /Write	Addresses Gradual
	MICRO/I	PLC			
SLC/MicroLogix Input (Word)	SWI	I	0 - 16255	R	10 ^{*1}
SLC/MicroLogix Output (Word)	SWO	O	0 - 16255	R	10 ^{*1}
PLC-5 Input (Word)	PWI	I	0 - 277	R	10 ^{*2}
PLC-5 Output (Word)	PWO	O	0 - 277	R/W	10 ^{*2}
Status	S	S	2000 - 2026	R	10 ^{*3}
Timer (Preset Value)	TP	TP	0 - 999999	R/W	10 ^{*3}
Timer (Accumulated Value)	TA	TA	0 - 999999	R/W	10 ^{*3}
Counter (Preset Value)	CP	CP	0 - 999999	R/W	10 ^{*3}
Counter (Accumulated Value)	CA	CA	0 - 999999	R/W	10 ^{*3}
Control LEN	RLEN	RLEN	0 - 999999	R/W	10 ^{*3}
Control POS	RPOS	RPOS	0 - 999999	R/W	10 ^{*3}
Bit (Word)	WB	WB	0 - 999999	R/W	10 ^{*3}
Integer	N	N	0 - 999999	R/W	10 ^{*3}
Float/REAL	F	F	0 - 9999991	R/W	10 ^{*4}
Long/DINT	L	L	0 - 9999991	R/W	10 ^{*4}
Ascii	A	A	0 - 999999	R/W	10 ^{*3}
BCD	BCD	BCD	0 - 999999	R/W	10 ^{*3}
SINT	SINT	SINT	0 - 999999	R/W	10 ^{*3}
String LEN	STL	ST	0 - 999999	R	10 ^{*3}
String DATA	ST	ST	0 - 99999940	R/W	10 ^{*5}

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2


I 16255

 3 digits Word number
 2 digits Slot number

Example

MicroLogix1200 Address --- I:12/10

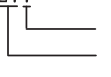
WindO/I-NV2 Address --- I 12010

Allen-Bradley device address format

I 16:255

 3 digits Word number
 2 digits Slot number

*2 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

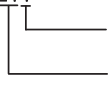
I 277

 1 digits Group number
 2 digits Rack number

Example

PLC-5 Address --- I:277

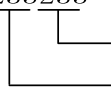
WindO/I-NV2 Address --- I 277

Allen-Bradley device address format

I 277

 1 digits Group number
 2 digits Rack number

*3 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

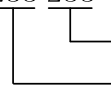
WB 255255

 3 digits Element number
 3 digits File number

Example

MicroLogix1200 Address --- B123:255

WindO/I-NV2 Address --- WB 123255

Allen-Bradley device address format

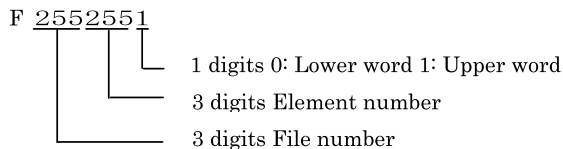
WB 255:255

 3 digits Element number
 3 digits File number

*4 Address selection rule is as follows.

WindO/I-NV2 uses 32 bit device as the divided 2 word device.

Therefore, the last one digit shows that the device is upper word or lower word

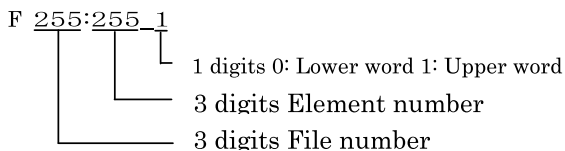
Standard device address format of WindO/I-NV2



MicroLogix1200 Address --- F123:255

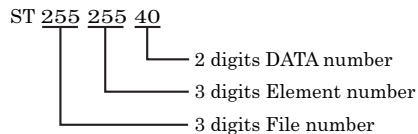
WindO/I-NV2 Address --- F 1232550 or F1232551

Allen-Bradley device address format



*5 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

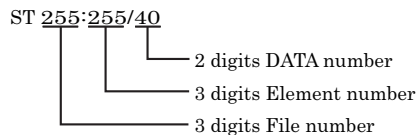


Example

MicroLogix1200 Address ---ST 123:255.DATA[40]

WindO/I-NV2 Address ---ST 12325540

Allen-Bradley device address format



WO, WI, WB is same devices as O, I, B. They are used as word devices.



- Floating Point (F) and Long Word (L) are 32-bit devices. When you write to these devices, please be sure to write a high word and low word simultaneously. If you write only high word or only low word, 0 will be written into the other word.
- String devices are only compatible with HG2G-S/-5S/-5F, HG3G/4G.
- String LEN stores the number of characters written when a string is written from the String DATA start address (DATA[0]) of each element.
If the address to write is not from the start, the value of String LEN is not updated.
- When writing a string from a character input, the NULL terminating character is written at the end of the string.
- A communication error will occur if you specify a file or element that is not allocated to the MicroLogix1200, SLC 500 data table map.

- Cross reference table of devices name

Bit Device

Device Name	Device Symbol	MicroLogix/SLC500	PLC-5	ControlLogix CompcatLogix
SLC/MicroLogix Input	SI	Input (Bit)	-	-
SLC/MicroLogix Output	SO	Output (Bit)	-	-
PLC-5 Input	PI	-	Input (Bit)	-
PLC-5 Output	PO	-	Output (Bit)	-
Binary	B	Binary	Binary	-
Timer Enable bit	TEN	Timer Enable bit	Timer Enable bit	-
Timer Timing Bit	TTT	Timer Timing Bit	Timer Timing Bit	-
Timer Done Bit	TDN	Timer Done Bit	Timer Done Bit	-
Counter Up Enable Bit	CCU	Counter Up Enable Bit	Counter Up Enable Bit	-
Counter Down Enable Bit	CCD	Counter Down Enable Bit	Counter Down Enable Bit	-
Counter Done Bit	CDN	Counter Done Bit	Counter Done Bit	-
Counter Overflow Bit	COV	Counter Overflow Bit	Counter Overflow Bit	-
Counter Underflow Bit	CUN	Counter Underflow Bit	Counter Underflow Bit	-
Counter Update Accumulator	CUA	Counter Update Accumulator	-	-
Control Enable Bit	REN	Control Enable Bit	-	-
Control Queue Bit	REU	Control Queue Bit	-	-
Control Aynchronous Done Bit	RDN	Control Aynchronous Done Bit	-	-
Control Synchronous Done Bit	REM	Control Synchronous Done Bit	-	-
Control Error Bit	RER	Control Error Bit	-	-
Control Unload Bit	RUL	Control Unload Bit	-	-
Control Running Bit	RIN	Control Running Bit	-	-
Control Found Bit	RFD	Control Found Bit	-	-

Word Device

Device Name	Device Symbol	MicroLogix/SLC500	PLC-5	ControlLogix CompactLogix
SLC/MicroLogix Input (Word)	SWI	Input (Word)	-	-
SLC/MicroLogix Output (Word)	SWO	Output (Word)	-	-
PLC-5 Input (Word)	PWI	-	Input (Word)	-
PLC-5 Output (Word)	PWO	-	Output (Word)	-
Status	S	Status	Status	-
Timer (Preset Value)	TP	Timer (Preset Value)	Timer (Preset Value)	-
Timer (Accumulated Value)	TA	Timer (Accumulated Value)	Timer (Accumulated Value)	-
Counter (Preset Value)	CP	Counter (Preset Value)	Counter (Preset Value)	-
Counter (Accumulated Value)	CA	Counter (Accumulated Value)	Counter (Accumulated Value)	-
Control LEN	RLEN	Control LEN	-	-
Control POS	RPOS	Control POS	-	-
Bit (Word)	WB	Bit (Word)	Bit (Word)	-
Integer	N	Integer	Integer	INT
Float/REAL	F	Float	-	REAL
Long/DINT	L	Long	-	DINT
Ascii	A	Ascii	Ascii	-
BCD	BCD	-	BCD	-
SINT	SINT	-	-	SINT
String	ST	String	-	-

4.5.5 Logix DF1 (Full Duplex)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
INT	INT	INT	0 - 999999	R/W	10 ^{*1}
REAL	REAL	REAL	0 - 9999991	R/W	10 ^{*2}
DINT	DINT	DINT	0 - 9999991	R/W	10 ^{*2}
SINT	SINT	SINT	0 - 999999	R/W	10 ^{*1}

*1 Address selection rule is as follows.

Standard device address format of WindO/I-NV2

INT 255255

3 digits Element number
3 digits File number

Example

ControlLogix Address --- INT 123:255

WindO/I-NV2 Address --- INT 123255

Allen-Bradley device address format

INT 255:255

3 digits Element number
3 digits File number

*2 Address selection rule is as follows.

WindO/I-NV2 uses 32 bit device as the divided 2 word device.

Therefore, the last one digit shows that the device is upper word or lower word.

Standard device address format of WindO/I-NV2

REAL 2552551

1 digits 0: Lower word 1: Upper word
3 digits Element number
3 digits File number

ControlLogix Address --- REAL 123:255

WindO/I-NV2 Address --- REAL 1232550 or F1232551

Allen-Bradley device address format

REAL 255:255-1

1 digits 0: Lower word 1: Upper word
3 digits Element number
3 digits File number



- Floating Point (F) and Long Word (L) are 32-bit devices. When you write to these devices, please be sure to write a high word and low word simultaneously. If you write only high word or only low word, 0 will be written into the other word.
 - A communication error will occur if you specify a file or element that is not allocated to the MicroLogix1200, SLC 500 data table map.
-

4.6 The way to set device address when use ControlLogix, CompactLogix series

In ControlLogix and CompactLogix series, device is set with tag name. However, you have to set with a Symbol and Address format that is the same as MicroLogix, SLC 500 and PLC-5 because WindO/I-NV2 can not operate a tag name directly.

You have to attach each tag name to a device symbol and device address at that time.

This is called mapping.

4.6.1 The way of mapping

The following work is done in RS Logix 5000 software.

1. Define some tags to communicate with MICRO/I in “Controller Tags”
2. Select “Logic” and “Map PLC/SLC Messages...” on main menu in RS Logix 5000 software.
3. Attach File Number to each tag name in “PLC3,5/SLC Mapping” dialog box.

4.6.2 The way to select device address in WindO/I-NV2

When select device address in WindO/I-NV2, set tag type to device symbol and set array number to File Number.

4.6.3 The process to select device address

Define some tags in RSLogix 5000 software.

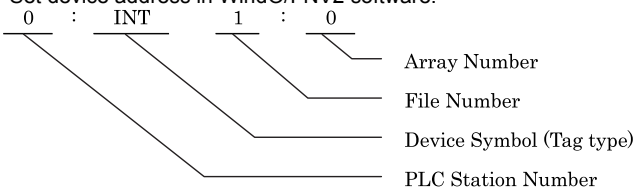
Tag name	Data Type	Array
Tag_A	INT	[10]
Tag_B	SINT*1	[10]
Tag_C	DINT	[10]
Tag_D	REAL	[10]

*1 Must define SINT type's tag with couple of byte.

Do mapping tag to File Number.

Tag name	Data Type	Array		File Number
Tag_A	INT		-	1
Tag_B	SINT	[10]	-	2
Tag_C	DINT	[10]	-	3
Tag_D	REAL	[10]	-	4

Set device address in WindO/I-NV2 software.



4.6.4 Setting Example for WindO/I-NV2

Refer to the following about setting an example for WindO/I-NV2 software.

(PLC station number is 0 in the example.)

*The setting example uses Allen-Bradley device address format.

Tag name	Data Tyde	Array		File Number
Tag_A	INT		-	1
Tag_B	SINT	[10]	-	2
Tag_C	DINT	[10]	-	3
Tag_D	REAL	[10]	-	4

Example1: Set an array number 0 in Tag_A.
0: INT 1:0

Example2: Set an array number 5 in Tag_B.
0: SINT 2:5

Example3: Set a lower word on array number 3 in Tag_C.
0: DINT 3:3_0

Example4: Set an upper word on array number 9 in Tag_D.
0: REAL 4:10_1

Note:

Need to set upper word or lower word in WindO/I-NV2 software when use 32 bit device.

Add “_0” after array number when use lower word.

Add “_1” after array number when use upper word.

4.7 The way to set device address when use Ethernet/IP (Logix Native Tag)

When using Ethernet/IP (Logix Native Tag) as a communication driver, the device address is set using tags.

In the case of WindO/I-NV2, you can set tag names by importing a tag database file (L5K file and CSV file) created using an Allen Bradley RSLogix 5000.

4.7.1 Supported data type

Ethernet/IP(Logix Native Tag) supports these data types: Also supports arrays with elements of up to three-dimensions and user-defined structure .

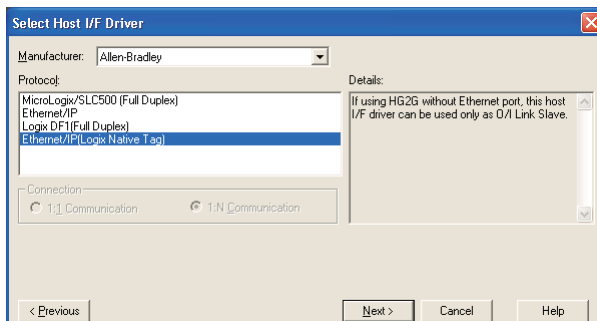
- BOOL*1
- INT
- DINT
- SINT
- REAL
- TIMER
- COUNTER
- CONTROL
- STRING

*1 Does not support BOOL type arrays.

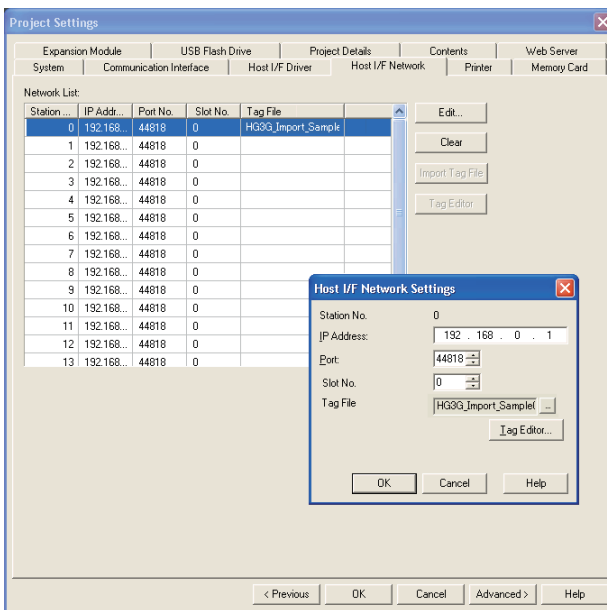
4.7.2 Setting process

Adjust the settings below in WindO/I-NV2.

1. Select “Ethernet/IP(Logix Native Tag)” under the Protocol setting in the Select Host I/F Driver dialog box.



2. In the Host I/F Network tab in the Project Settings dialog box, set the IP address, port number, slot number, and tag file to match the communicated PLC. Use an L5K file or CSV file exported from RSLogix 5000.



- Change the port number as necessary.
- To create tag data base file (L5K), open a project as per RSLogix 5000, then select Save As on the File menu, and select "RS Logix 5000 Import/Export File(*.L5K)" as the Save as type.

4.7.3 Setting Tags

Tags can be set in the following ways.

- Using the keyboard, type the tag name directly into the text box where the device address is set.
- Click the [...] button on the right of the text box where the device address is set, and then select a tag from the tag list in the Device Address Settings dialog box.



Refer to online help for more details about the Device Address Settings dialog box.

4.7.4 Editing Tags

Tags imported using the WindO/I-NV2 can be edited using Tag Editor.

Tag Editor can add and edit tags.

Tag Name	Data Type	Used
[-] tag012345678901234...	test5	0
[-] tag012345678901...	test4[5]	0
[+] tag0123456789...	test4	0
[+] tag0123456789...	test4	0
[+] tag0123456789...	test4	0
[+] tag0123456789...	test4	0
[+] tag0123456789...	test4	0
[+] tag0123456789...	test4	0
[+] tag123456789012345...	test	0
Tag_A	INT[100]	0
[+] Tag_B	UserDefinedTag_A	0
Tag_BOOL	BOOL	0
Tag_C	SINT[5,5,5]	0
[+] Tag_CONTROL	CONTROL[10]	0
[+] Tag_COUNTER	COUNTER[10]	0
Tag_DINT	DINT[10]	0
Tag_INT	INT[10]	0
Tag_REAL	REAL[10]	0
Tag_SINT	SINT[10]	0



Refer to online help for more details about the Tag Editor.

4.7.5 Cautions When Using Indirect Read and Indirect Write

MICRO/I is capable of specifying a device address offset for certain parts.

When using Logix Native Tag, the offset is specified according to the following rules.

- Offsets cannot be specified for tags with no arrays.
- The array number for tags with arrays changes according to the offset value.

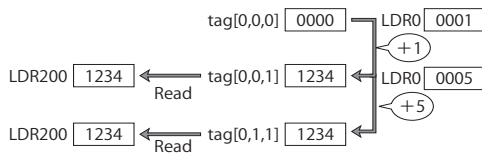
Example: When a device address of [0,0,0] is specified for a INT type tag created with an array element of [2,3,4], if the offset value is 1, use data of [0,0,1]. When the offset value is 5, use data of [0,1,1].

Script

```
[LDR 200] = OFFSET(tag[0,0,0],[LDR 0]);
```

Operation description

When the value of LDR0 is 1, the value of tag[0,0,1], the device 1 words from tag[0,0,0], is read and stored in LDR200.



- The offset value will change to match the array numbers in the structure if TIMER, COUNTER, CONTROL or user-defined structure data type array is created.

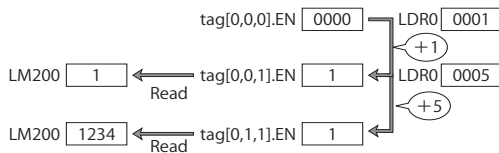
Example: When a device address of [0,0,0].EN is specified for a TIMER type tag created with an array element of [2,3,4], if the offset value is 1, use data of [0,0,1].EN. When the offset value is 5, use data of [0,1,1].EN.

Script

```
[LM 200] = OFFSET(tag[0,0,0].EN,[LDR 0]);
```

Operation description

When the value of LDR0 is 1, the value of tag[0,0,1].EN, the device 1 words from tag[0,0,0].EN, is read and stored in LDR200.



- When a user-defined structure is created with an array, if members of the structure also have arrays, change the offset value according to the array of the member.

- With the MICRO/I, reference device values are specified in units of 16-bit devices. Therefore, to specify a value for DINT, REAL, TIMER (a 32-bit device), or PRE and ACC elements in the CONTROL structure, it is necessary to double the reference device value in the PLC before specifying it.

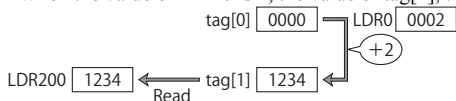
Example 1: If 1 is specified as the reference device value for DINT[0], the upper word for DINT[0] is used. To use DINT[1], specify a reference device value of 2.

Script

```
[LM 200] = OFFSET(tag[0],[LDR 0]);
```

Operation description

When the value of LDR0 is 2, the value of tag[1], the device 2 words from tag[0], is read and stored in LDR200.



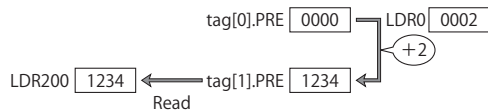
Example 2: If 1 is specified as the reference device value for TIMER[0].PRE, the upper word for TIMER[0].PRE is used. To use TIMER[1].PRE, specify a reference device value of 2.

Script

```
[LM 200] = OFFSET(tag[0].PRE,[LDR 0]);
```

Operation description

When the value of LDR0 is 2, the value of tag[1].PRE, the device 2 words from tag[0].PRE, is read and stored in LDR200.



4.7.6 Restrictions

- Maximum number of characters for a tag name is 256 characters.
- Array elements can be up to 3 dimensions.
- The maximum array number is 65535.
- Up to 65535 tags can be used per Station No. in device settings.
- When tags that contain 32-bit data are specified in WindO/I-NV2, the lower 16 bits are selected. The upper 16 bits cannot be specified directly.
- The external device cannot be monitored using the MICRO/I device monitor or MICRO/I-NV2.
- WindO/I-NV2 has been checked to work with RSLogix5000 version 13.
- O/I-Link cannot be used when using an Ethernet/IP(Logix Native Tag) connection.
- Does not support Predefined structures and Module-Defined structures except for the TIMER, COUNTER, CONTROL structure.
- Does not support the Alias.
- If the tag database file format to import is CSV, user-defined structures cannot be imported.
- The STRING data structure DATA is SINT, but with the MICRO/I it is handled in 2 byte units.
The data type of DATA tag in STRING data structure is SINT, but MICRO/I handle device data as 2byte.(SINT data type is 1 byte data)
When the tag database file (L5K, CSV) is imported and the file contains STRING data, or when a STRING type tag is added with Tag Editor, even number arrays (DATA[0], DATA[2], DATA[4], ...) are displayed.
- The STRING data structure LEN stores the number of characters written when a string is written from the DATA start address (D0).
If the address to write is not from the start, the value of String LEN is not updated.
- When writing a string from a character input, the NULL terminating character is written at the end of the string.

5 SIEMENS

5.1 Connection Table

5.1.1 Compatible PLCs

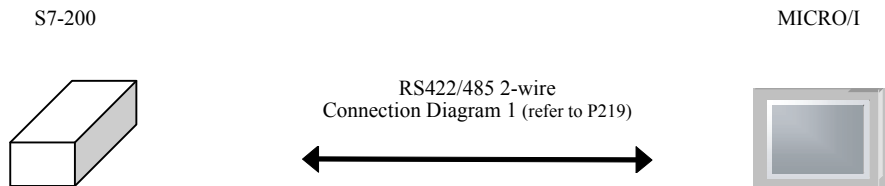
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
S7-200								
CPU212, CPU214, CPU215, CPU216* ¹ , CPU221, CPU222, CPU224, CPU224XP, CPU226, CPU226XM* ¹	Not required (connects to CPU unit directly)	RS422/485 2-wire Connection Diagram 1 (refer to P219)	None	S7-200(PPI)	X	X	X	---
S7-300								
CPU 313* ¹ , CPU 314, CPU 315, CPU 315-2DP* ¹ CPU 316, CPU 318	CP-340* ¹ CP-341* ¹	RS232C Connection Diagram 2 (refer to P224)	Hardware	S7-300 3964(R) /RK512	X	X	X	---
		RS422/485 4-wire Connection Diagram 3 (refer to P226)	None					
CPU 313-2PtP	Not required (connects to CPU unit directly)	RS422/485 2-wire Connection Diagram 4 (refer to P228)	None	S7-MPI				
S7-400								
CPU 412, CPU 414, CPU 416, CPU 416F-2* ¹ , CPU 417	CP-440, CP-441* ¹	RS232C Connection Diagram 2 (refer to P224)	Hardware	S7-300 3964(R) /RK512	X	X	X	---
		RS422/485 4-wire Connection Diagram 3 (refer to P226)	None					
S7-1200								
CPU1211C CPU1212C CPU1214C	Not required (Connects to CPU unit)	Ethernet	-	S7-1200 (Ethernet)	X	X	---	X

*1 This PLC was used to test & verify communications.

5.2 System Configuration

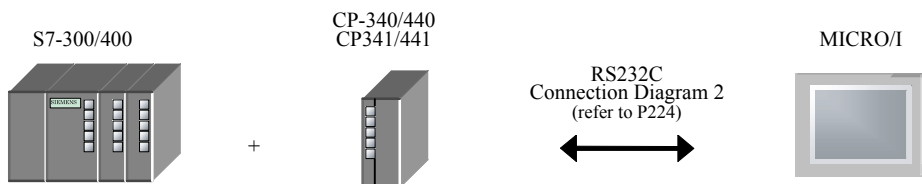
This is the system configuration for the connection of SIEMENS PLCs to MICRO/I screens.

5.2.1 S7-200

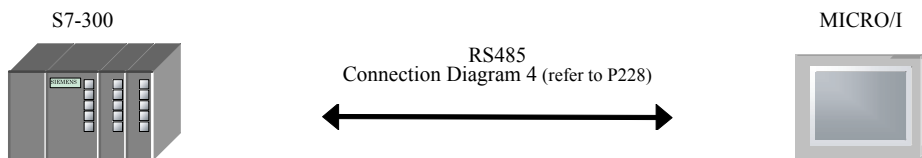


Connects to Serial port of CPU unit.

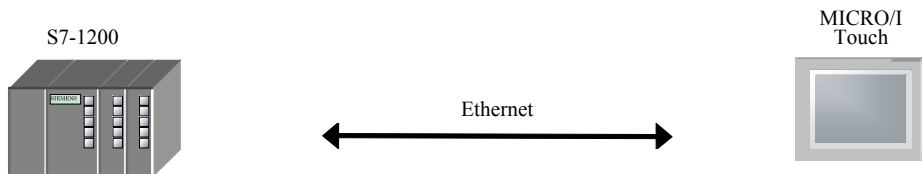
5.2.2 S7-300/400(CP-340, CP-341)



5.2.3 S7-300(MPI Interface)



5.2.4 Connection to the Ethernet port for S7-1200



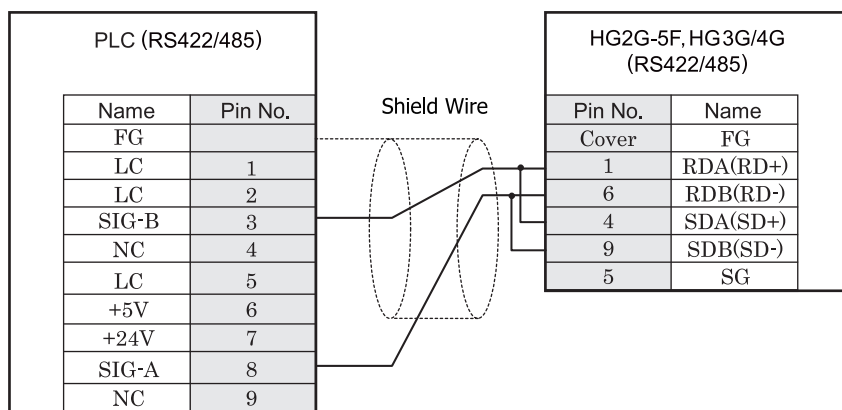
5.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

5.3.1 Connection Diagram 1: S7-200 (RS485) to MICRO/I

HG2G-5F, HG3G/4G (Connector)



D-sub, 9P socket connector (plug type)

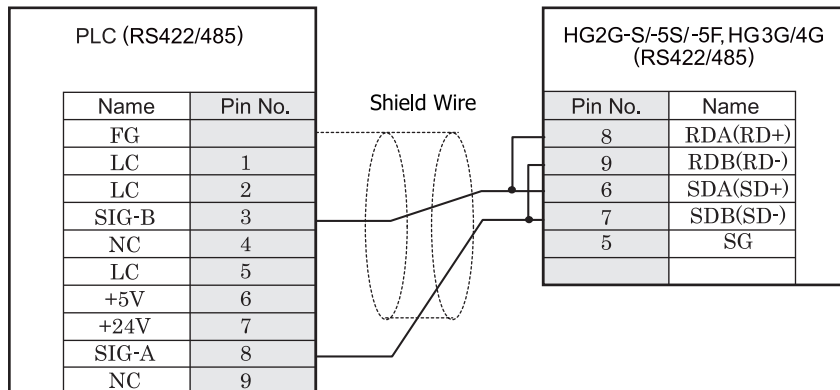
D-sub, 9P connector plug type

2

Connection to a PLC



- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.

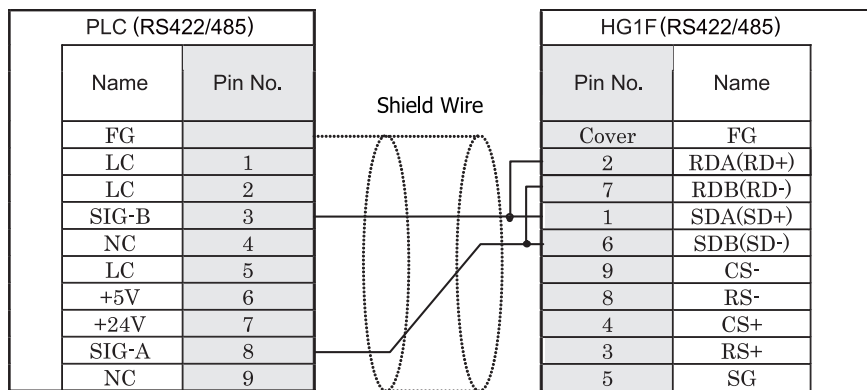
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P socket connector (plug type)

Terminal

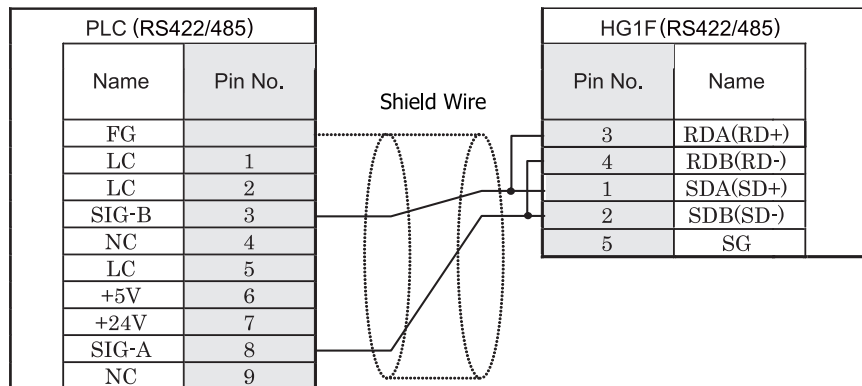


- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 9P socket connector (plug type)

D-sub, 9P connector socket type

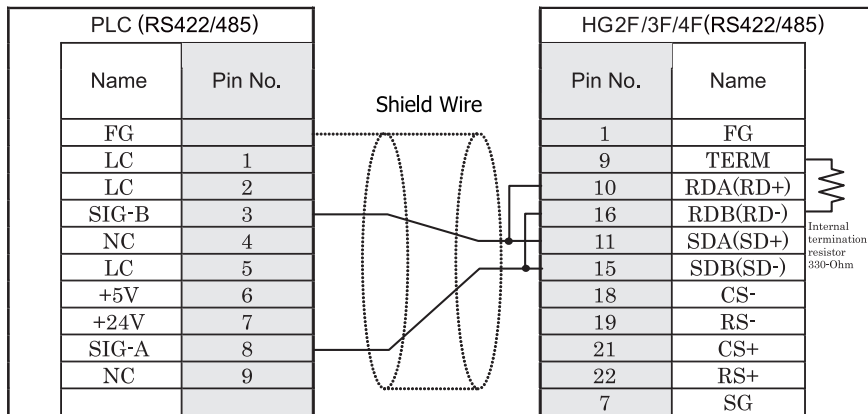
HG1F (Terminal)

D-sub, 9P socket connector (plug type)

Terminal



- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

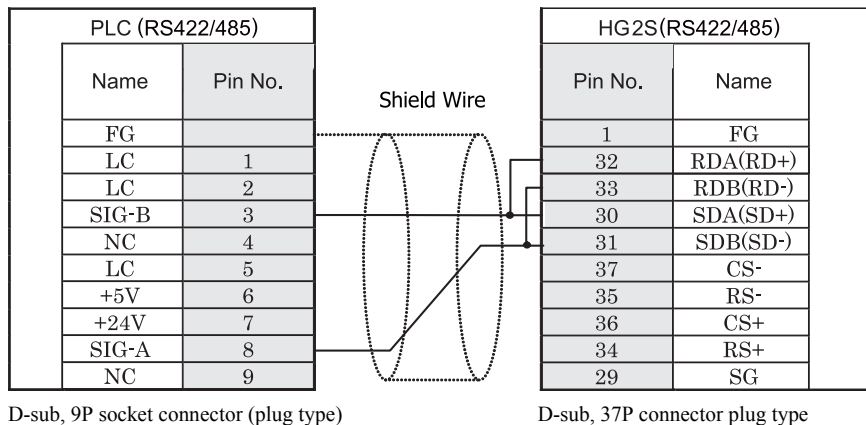
HG2F/3F/4F

D-sub, 9P socket connector (plug type)

D-sub, 25P connector socket type

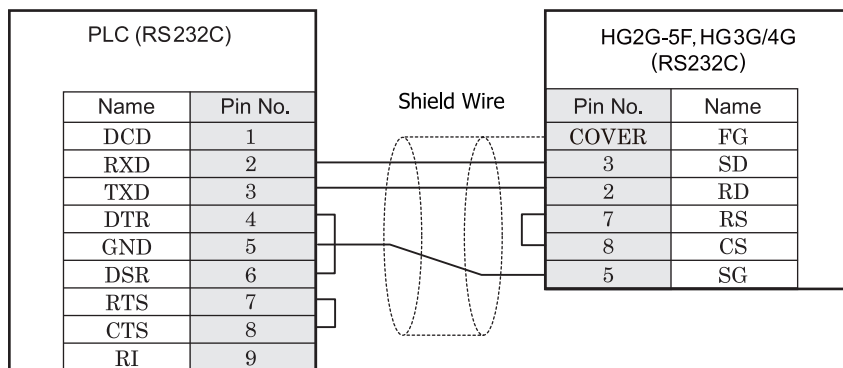


- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.

HG2S

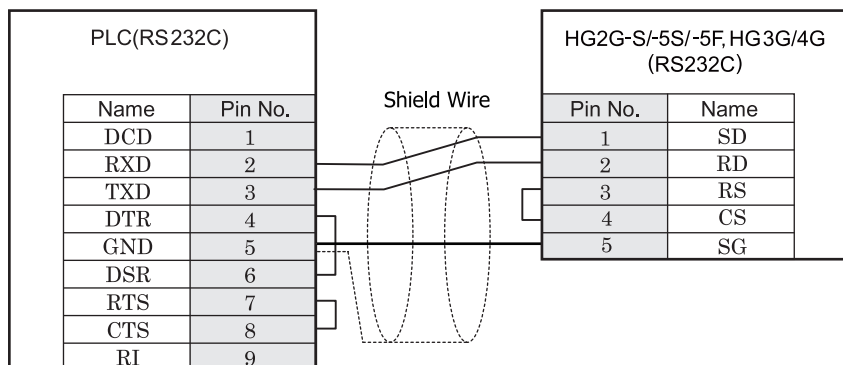
- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

5.3.2 Connection Diagram 2: S7-300/S7-400 + Communication Interface (RS232C) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

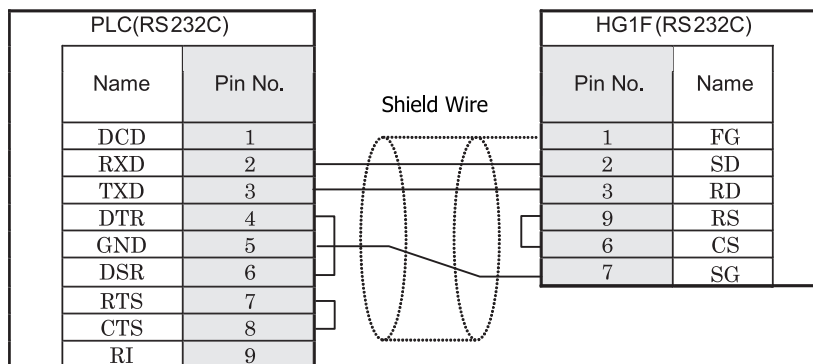
D-sub, 9P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

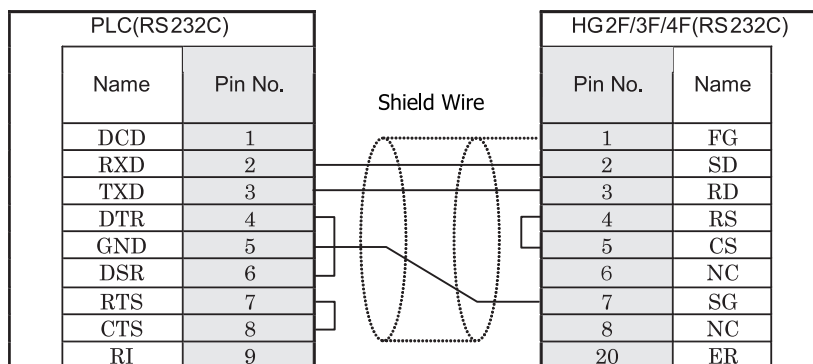
D-sub, 9P connector socket type

Terminal

HG1F (Connector)

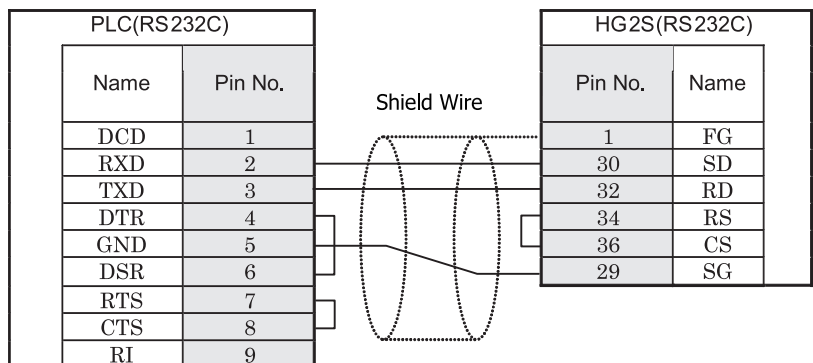
D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector socket type

D-sub, 25P connector socket type

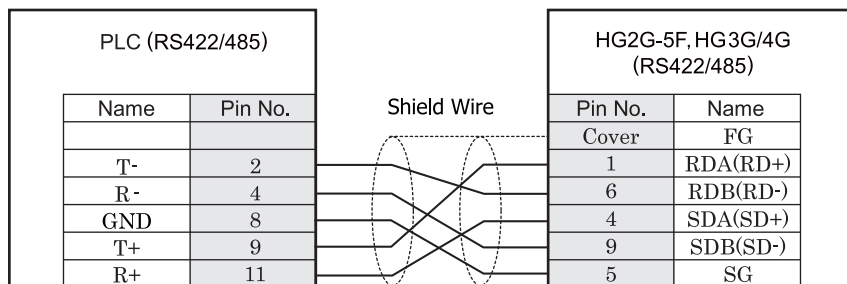
HG2S

D-sub, 9P connector socket type

D-sub, 37P connector plug type

5.3.3 Connection Diagram 3: S7-300/S7-400 + Communication Interface (RS422/485) to MICRO/I

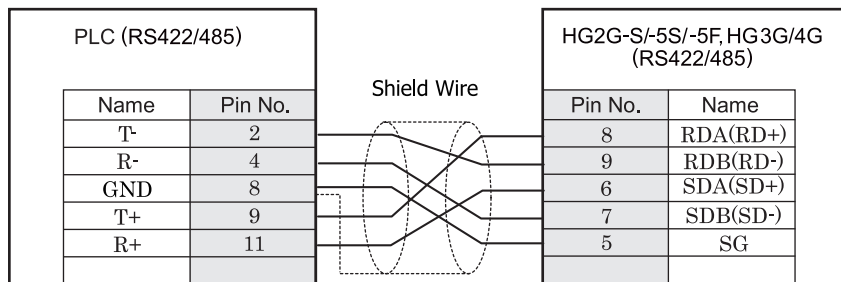
HG2G-5F, HG3G/4G (Connector)



Mini Din 8P socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



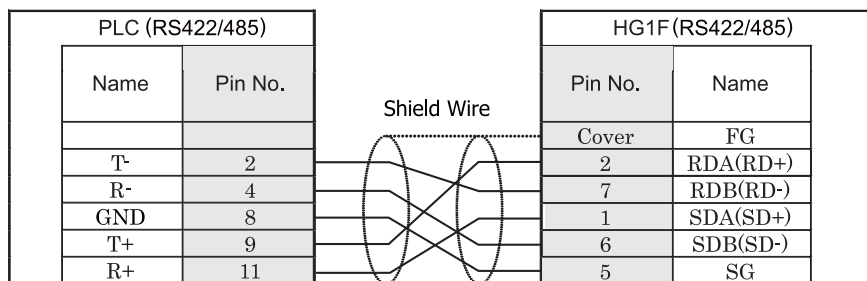
Mini Din 8P socket type

Terminal



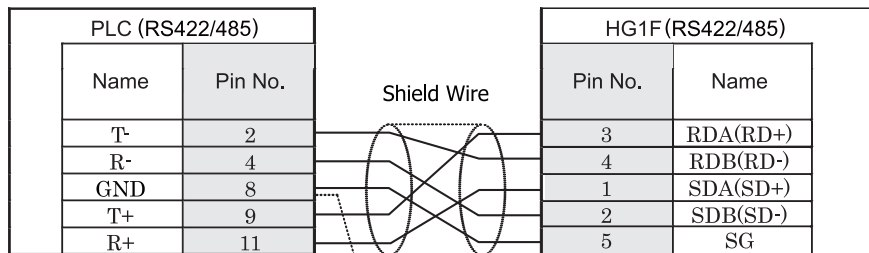
There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)



Mini Din 8P socket type

D-sub, 9P connector socket type

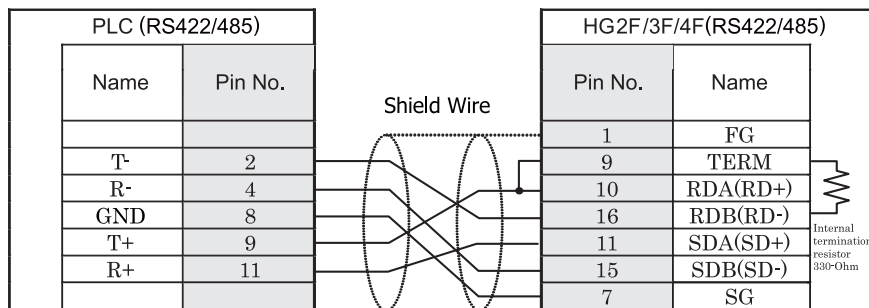
HG1F (Terminal)

Mini Din 8P socket type

Terminal

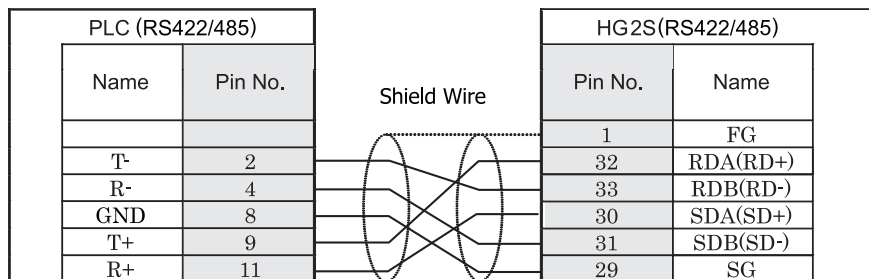


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S

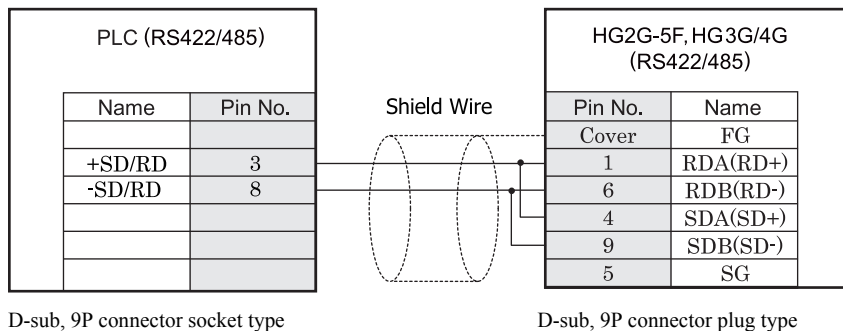
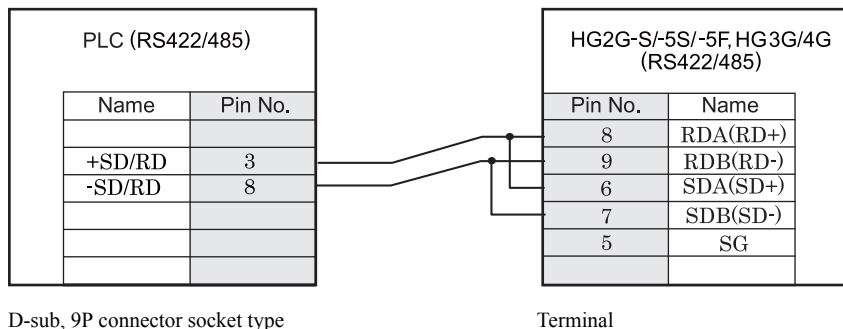
Mini Din 8P socket type

D-sub, 37P connector plug type

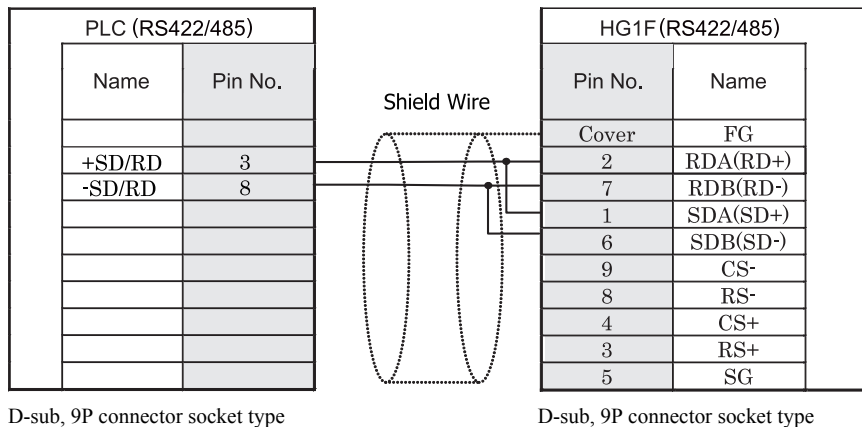
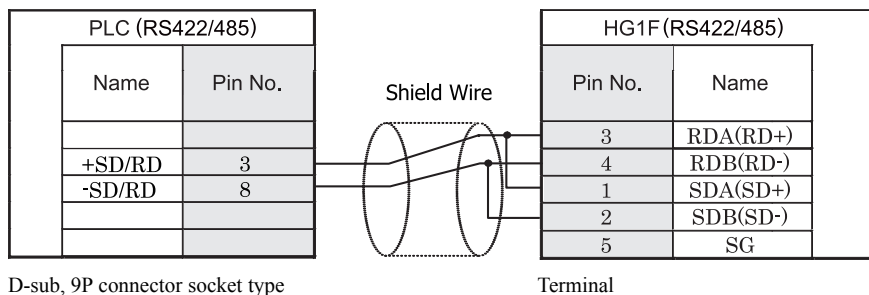


There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

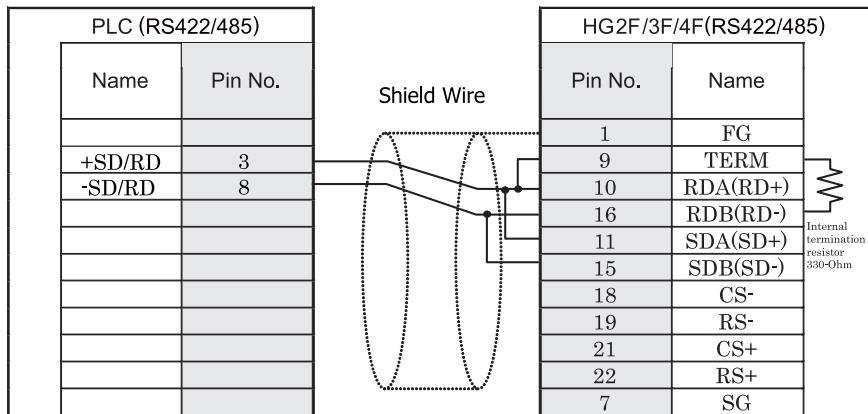
5.3.4 Connection Diagram 4: S7-300 MPI Interface (RS485) to MICRO/I

HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G** (Terminal)

There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

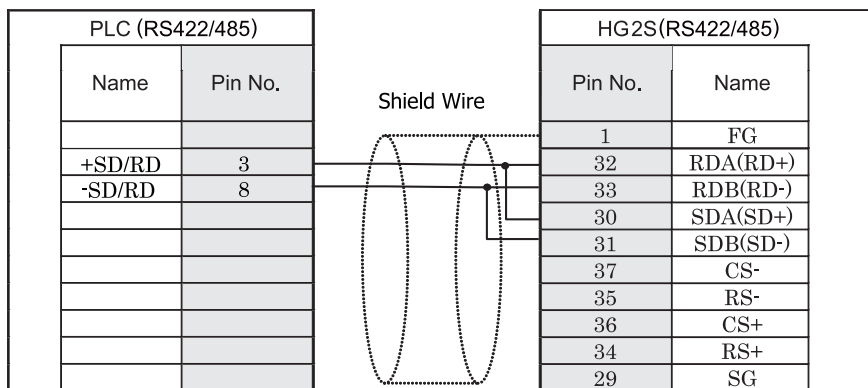
HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

D-sub, 9P connector socket type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

5.4 Environment Settings

5.4.1 S7-200

The communication port settings for S7-200 and MICRO/I host port are as follows.

Items	Details
PLC Address	1 to 126(Dec) (0 to 7e (Hex)) Set the value to same value as ADDRESS (PLC) in WindO/I-NV2.
Highest Address (Highest Station Address)	1 to 126(Dec) (0 to 7e(Hex)) Set the value to same value as HSA in WindO/I-NV2.
Baud Rate (bps)	9600 or 19200 Set the value to same value as Baud Rate in WindO/I-NV2.
HG Address	0 to 7e (Hex) (0 to 126(Dec)) Set the value as ADDRESS (HG) in WindO/I-NV2.
Data Bits	8 (fixed) Set the value in WindO/I-NV2.
Parity	EVEN (fixed) Set the value in WindO/I-NV2.
Stop Bits	1 (fixed) Set the value in WindO/I-NV2.



- Set the communication port that communicates with MICRO/I to PPI/Slave mode. Please make sure to set SMB30 or SMB130 values to 0 in order to select proper communication port settings. Refer to the manual of S7-200 for details.
- We checked the following problems in some versions of S7-200.
When S7-200 is set as the master and the address of S7-200 is the same as HSA, token path does not work correctly. This problem can be solved by setting HSA as a larger value than Address actually used.
This problem does not occur when one MICRO/I is connected to one S7-200 PLC.

5.4.2 S7-300/400 with Communication Module

The communication port settings for S7-300 and MICRO/I host port are as follows.

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Baud Rate (bps)		1200, 2400, 4800, 9600, 19200 or 38400
Data Bits		8 (Fixed)
Parity		Even, Odd or None
Stop Bits		1 or 2
BCC		Enable or Disable
Priority		Low



- MICRO/I type performs communication based on 3964 (R) and RK512 protocol.
- CP340 is supporting only the 3964 and 3964R protocol. Therefore when using CP340, it is necessary to construct the program to realize RK512 protocol in PLC. This is programmed using the function blocks FB2 and FB3, in SIEMENS PLC.
- CP341 is supporting 3964 (R) and RK512 protocol, please choose RK512 by setup PLC.
- The program of CP340 refers to a sample program.
The sample program is recorded on CD-ROM after Wind O/I NV2 Ver2.50.
Please refer to the following folder.
(Wind O/I NV2 CD-ROM) /Sample/Host_if/SIEMENS/ Downloading from our Web site is possible.

5.4.3 S7- 300 with MPI Interface

The communication port settings for S7-300 and MICRO/I host port are as follows.

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS422/485 2-wire
Baud Rate (bps)		19200 or 187500
Data Bits		8 (Fixed)
Parity		Even (Fixed)
Stop Bits		1 (Fixed)
HG Node Address	It should not be duplicated to other node addresses	1 - 126 (The default value is 1)
PLC Node Address	Use the same settings as for the MICRO/I.	1 - 126 (The default value is 2)
Maximum MPI Address		1 - 126 (The default value is 31)

5.4.4 Connecting with the S7-1200 via Ethernet

1. MICRO/I settings - Project Settings dialog box

Item		Setting
Communication Interface tab	IP Address	Set the IP address of MICRO/I.
	Subnet mask	Set the subnet mask of MICRO/I.
	Default Gateway	Set the default gateway of MICRO/I.
Host I/F Network tab	IP Address	Set the IP address of PLC.
	Port Number	Set the port number of PLC to communicate with MICRO/I.

2. PLC Settings

Item		setting	notes	
Network parameter	Network type	Ethernet	*1	
	Starting I/O No.	0020	*2	
	Network No.	1	*2	
	Total stations	-	-	
	Group No.	0	*2	
	Station No.	1	*2	
	Mode	On line	*1	
Operation Setting	Communication data code	Binary code	*1	
	Initial Timing	Always wait for OPEN	*1	
	IP Address	Input format	Decimal	*2
		IP address	Set IP address of PLC	*2
	Send frame setting	Ethernet	*1	
	Enable Write at RUN time	Check mark (enable)	*1	
TCP Existence confirmation setting	Use the Keep Alive	*1		
Open Setting	Protocol	TCP/IP	*1	
	Open system	Impassive open	*1	
	Fixed buffer	Send	*1	
	Fixed buffer communication	Procedure exist	*1	
	Pairing open	No pairs	*1	
	Existence confirmation	No confirm	*1	
	Local station Port No.	Set an arbitrary port number	*2 *3	
	Destination IP address	-	-	
Dest. Port No.	-	-		

*1 The setting of the above-mentioned is recommended.

*2 Set it according to the environment.

*3 MICRO/I is set by the decimal number though PLC is set by the hexadecimal number.



Refer to the Q Corresponding Ethernet Interface Module User's Manual or Q Corresponding Ethernet Interface Module User's Manual for detail.

5.5 Usable Devices

5.5.1 S7-200

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Variable memory	V	V	0 - 102397	R/W	*1
Process-image-input-register	I	I	0 - 157	R	*1
Process-image-output-register	Q	Q	0 - 157	R/W	*1
Bit memory	M	M	0 - 317	R/W	*1
Special Memory	SM	SM	0 - 5497	R	*1
Timer (Bit)	T	T	0 - 255	R	Dec
Counter (Bit)	C	C	0 - 255	R	Dec
Sequential control relay	S	S	0 - 317	R/W	*1

*1 The 1st figure is written with the number of octal number, and the 2nd [or more] figure is written with the number of decimal.



The devices (V, I, Q, M, SM, S) which include a period in the address in S7-200 are written without a period in MICRO/I. For example, V10.1 is written as V101 in MICRO/I.
AC (Accumulator registers), L (Local memory) of PLC Devices can not use in MICRO/I.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Variable memory	VW	VW	0 - 10238	R/W	*1
Timer (Current Value)	TW	T	0 - 255	R/W	Dec
Counter (Current Value)	CW	C	0 - 255	R/W	Dec
Process-image-input-register	IW	IW	0 - 14	R	*1
Process-image-output-register	QW	QW	0 - 14	R/W	*1
Bit memory	MW	MW	0 - 30	R/W	*1
Special Memory	SMW	SMW	0 - 548	R	*1
Analog input	AIW	AIW	0 - 62	R	*1
Analog output	AQW	AQW	0 - 62	R/W	*1
Sequential control relay	SW	SW	0 - 30	R/W	*1
High speed counter	HC	HC	0 - 51	R	*2

*1 Only even number can be specified.

*2 The 1st figure is written with the number of binary number,
and the 2nd [or more] figure is written with the number of decimal.



- The devices (V, I, Q, M, SM, S) which include a period in the address in S7-200 are written without a period in MICRO/I.
For example, V10.1 is written as V101 in MICRO/I.
AC (Accumulator registers), L (Local memory) of PLC Devices can not use in MICRO/I.

- The value of High speed counter which is a double word value is divided into two, and is treated as WORD device in MICRO/I.
The higher word is written by adding 0 to the lowest digit of the address, the lower word is written by adding 1 to the lowest digit of the address.
For example, the lower word of HC1 is written as HC11 in MICRO/I.
If you read in a double word value, The lowest digit of the address write 0. For example, HC2 is written as HC20 in MICRO/I.

5.5.2 S7- 300/400 with Communication Module

When using CP-341/441, following devices can be read and written.

When using CP-340440, only a data block (DB) can be read and written.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Bit)	I	I	0 - 1277	R	*1
Output (Bit)	Q	Q	0 - 1277	R	*1
Memory (Bit)	M	M	0 - 2557	R	*1

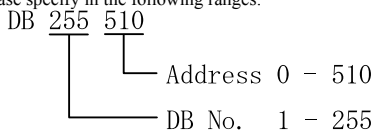
*1 The 1st figure is written in octal number format, and the 2nd [or more] figure is written in decimal number format.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Word)	IW	IW	0 - 126	R	*1
Output (Word)	QW	QW	0 - 126	R	*1
Bit Memory (Word)	MW	MW	0 - 254	R	*1
Timer cell	T	T	0 - 127	R	Dec
Counter cell	C	C	0 - 63	R	Dec
Data Block	DB	DB	1000 - 255510	R/W	*1*2

*1 Only an even number can be specified.

*2 Please specify in the following ranges.



- When a non activated data block is accessed in the PLC, a communication error will occur. Please be sure to activate relevant data blocks in the PLC.
- Endians differ in S7-300, and MICRO/I type. Please use neither bit specification of a WORD device, nor 32-bit WORD (double WORD).

5.5.3 S7- 300 with MPI Interface

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Bit)	I	I	0 - 10237	R	*1
Output (Bit)	Q	Q	0 - 10237	R/W	*1
Memory (Bit)	M	M	0 - 163837	R/W	*1

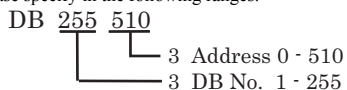
*1 The 1st figure is written in octal number format, and the 2nd [or more] figure is written in decimal number format.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Word)	IW	IW	0 - 1022	R	*1
Output (Word)	QW	QW	0 - 1022	R/W	*1
Bit Memory (Word)	MW	MW	0 - 16382	R/W	*1
Timer cell	T	T	0 - 2047	R	Dec
Counter cell	C	C	0 - 2047	R	Dec
Data Block	DB	DB	1000 - 255510	R/W	*1*2

*1 Only an even number can be specified.

*2 Please specify in the following ranges.



- When a non activated data block is accessed in the PLC, a communication error will occur. Please be sure to activate relevant data blocks in the PLC.
- Endians differ in S7-300, and MICRO/I type. Please use neither bit specification of a WORD device, nor 32-bit WORD (double WORD).

5.5.4 S7- 1200

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Bit)	I	I	0 - 10237	R/W	*1
Output (Bit)	Q	Q	0 - 10237	R/W	*1
Internal Relay (Bit)	M	M	0 - 40957	R/W	*1

*1 The 1st figure is written in octal number format, and the 2nd [or more] figure is written in decimal number format.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input (Word)	IW	I	0 - 1022	R/W	*1
Output (Word)	QW	Q	0 - 1022	R/W	*1
Internal Relay (Word)	MW	M	0 - 4094	R/W	*1
Data Block	DB	DB	10000 - 999998	R/W	*1*2

*1 Only an even number can be specified.

*2 The upper 2 digits are the DB number, the lower 4 digits are the address.



- When the data blocks are not configured on the PLC side, a communication error occurs. Always configure the data blocks on the PLC.

- When create a new Data Block, "Standard" must be selected as "Block access".
- "Data Type" in Data Block must be "Word".
- Only Global Data Block can be accessed.

6 Keyence

6.1 Connection Table

6.1.1 Compatible PLCs

System (CPU unit)	Link unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
KV-700,1000*1,3000,5000*1								
KV-700*1, KV-1000*1, KV-3000	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P244)	Hardware/ None	KV-3000/5000	X	X	X	---
KV-700*1, KV-1000*1, KV-3000, KV-5000*1, KV-5500	KV-L20R*1, KV-L20V, KV-L21V	RS232C(PORT1) Connection Diagram 2 (refer to P246)						
		RS232C(PORT2) Connection Diagram 3 (refer to P248)						
		RS422/485 4-wire Connection Diagram 4 (refer to P250)						
		RS422/485 2-wire Connection Diagram 5 (refer to P253)						
KV-LE20A, KV-LE20V, KV-LE21V		Ethernet	-	KV (Ethernet)	X	X	X	X
KV-5000*1, KV-5500	Not required (connects to Ethernet port)							
Conventional KV								
KV-10, 16, 20, 40 KV-80*1	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P244)	None	KV/KZ	---	X	X	---
Visual KV*2								
KV-10*1 KV-16, 24, 40	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P244)	None	KV/KZ	---	X	X	---
KV Nano								
KV-N14 KV-N24 KV-N40 KV-N60	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P244)	None	KV-3000/5000	X	X	X	---
	KV-N10L	RS232C Connection Diagram 2 (refer to P246)						
	KV-N11L	RS422/485 4-wire Connection Diagram 6 (refer to P256)						

*1 This PLC was used to test & verify communications.

*2 MICRO/I does not support all device addresses of the Visual KV series.

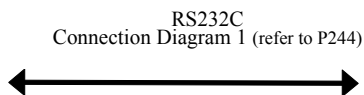
6.2 System Configuration

This is the system configuration for the connection of Keyence PLCs to the MICRO/I.

6.2.1 Connection to the CPU unit modular connector for KV-700/1000/3000

KV-700/1000/3000

MICRO/I

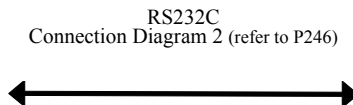


6.2.2 Connection to the D-sub, 9P connector plug type for KV-L20R/KV-L20V/KV-L21V

KV-700/1000/3000/5000/5500
+ KV-L20R/KV-L20V/KV-L21V

MICRO/I

(PORT1)

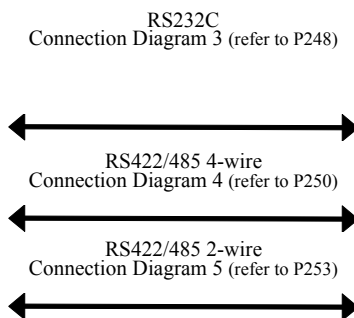


6.2.3 Connection to the terminal block for KV-L20R/KV-L20V/KV-L21V

KV-700/1000/3000/5000/5500
+ KV-L20R/KV-L20V/KV-L21V

MICRO/I

(PORT2)



2

Connection to a PLC

6.2.4 Connection to the Ethernet port for KV-LE20A/KV-LE20V/KV-LE21V

KV-700/1000/3000/5000/5500
+ KV-LE20A/KV-LE20V/KV-LE21V



Ethernet (TCP/IP)



MICRO/I
Touch



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

6.2.5 Connection to the Ethernet port for KV-5000/5500

KV-5000/5500



Ethernet (TCP/IP)



MICRO/I
Touch



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

6.2.6 Connection to the CPU unit modular connector for Conventional KV series and Visual KV series

Conventional KV series KV-10, 16, 24, 40
Visual KV series KV-10, 16, 20, 40, 80



RS232C
Connection Diagram 1 (refer to P244)



MICRO/I



6.2.7 Connection to the CPU unit modular connector for KV Nano

KV Nano



RS232C
Connection Diagram 1 (refer to P244)



MICRO/I



6.2.8 Connection to KV Nano + KV-N10L/KV-N11L

KV Nano + KV-N10L



RS232C
Connection Diagram 2 (refer to P246)



MICRO/I



KV Nano + KV-N11L



RS422/485 4-wire
Connection Diagram 6 (refer to P256)



MICRO/I



2

Connection to a PLC

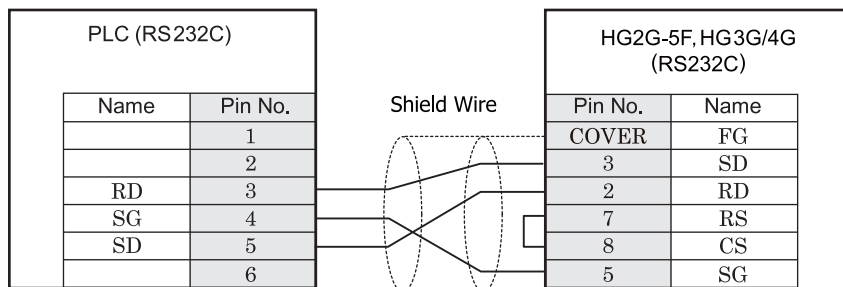
6.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

6.3.1 Connection Diagram 1: KV-700/1000/3000, Conventional KV, Visual KV and KV Nano to MICRO/I

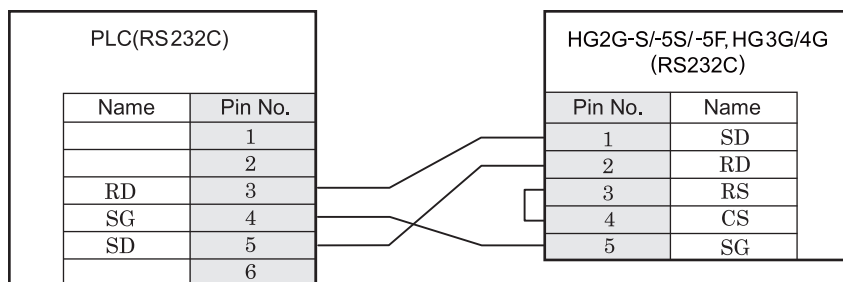
HG2G-5F, HG3G/4G (Connector)



Modular connector

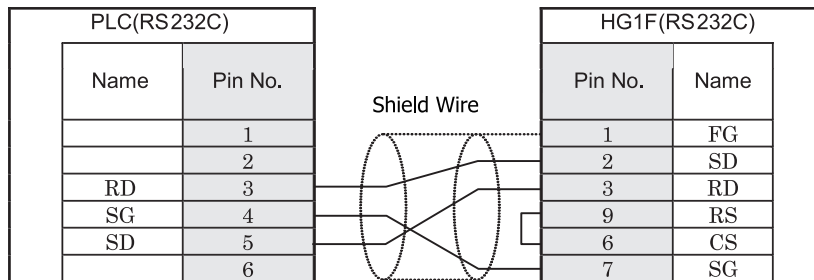
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



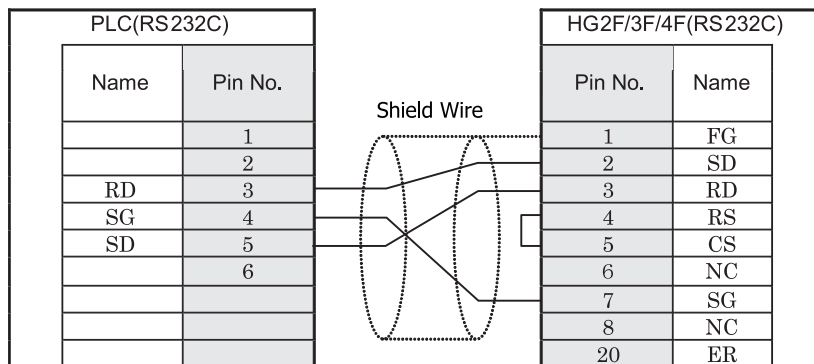
Modular connector

Terminal

HG1F (Connector)

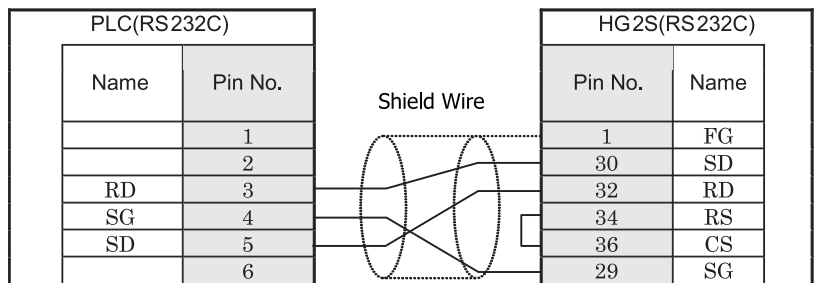
Modular connector

D-sub, 9P connector socket type

HG2F/3F/4F

Modular connector

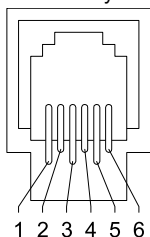
D-sub, 25P connector socket type

HG2S

Modular connector

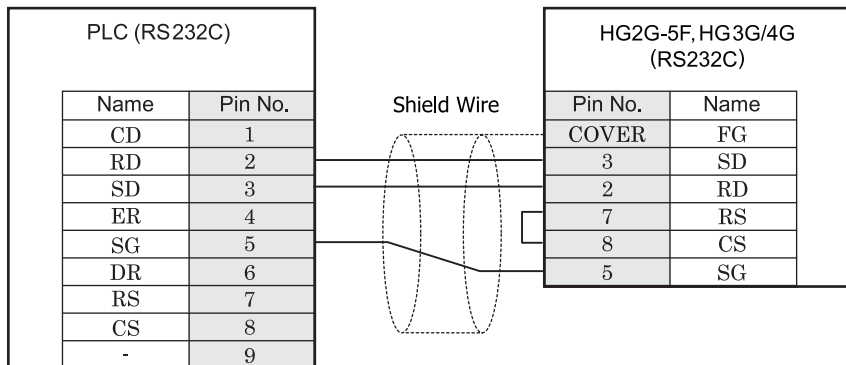
D-sub, 37P connector plug type

Connector Pin Layout for PLC side Modular jack



**6.3.2 Connection Diagram 2: KV-700/1000/3000/5000/5500 + KV-L20R/KV-L20V/KV-L21V (PORT1) to MICRO/I
KV Nano + KV-N10L to MICRO/I**

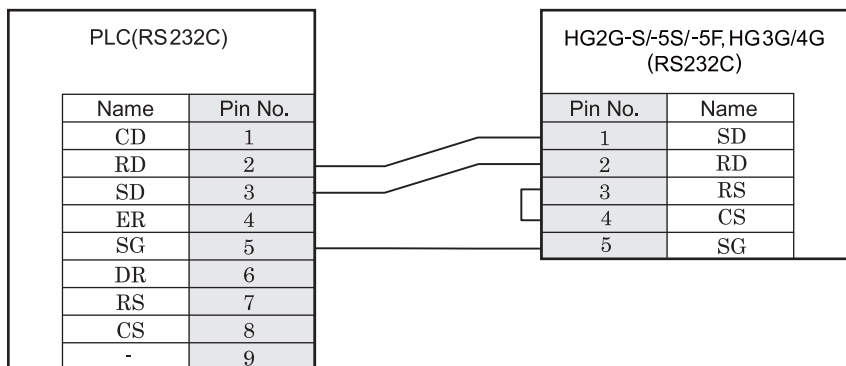
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

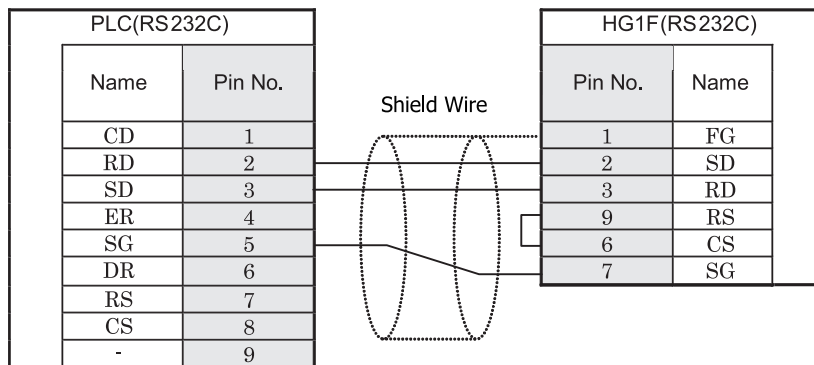
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



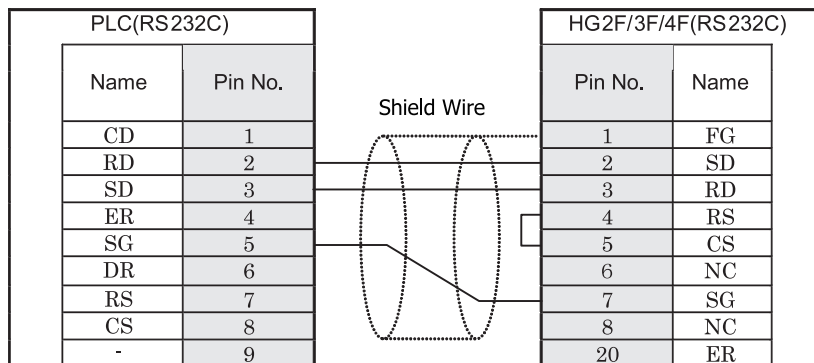
D-sub, 9P connector plug type

Terminal

HG1F (Connector)

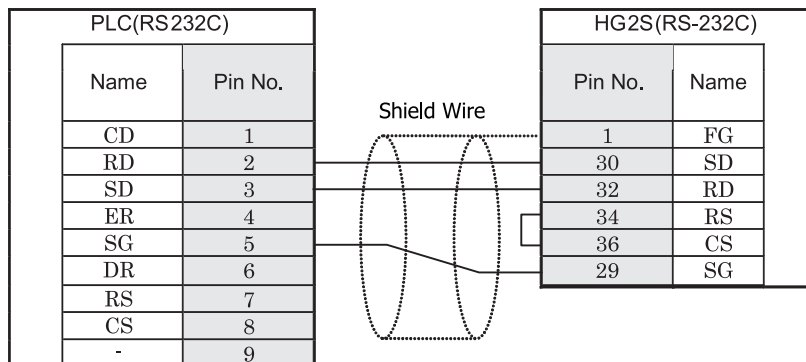
D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector plug type

D-sub, 25P connector socket type

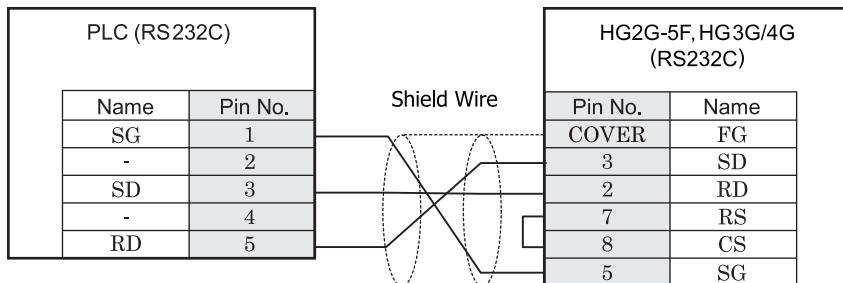
HG2S

D-sub, 9P connector plug type

D-sub, 37P connector plug type

6.3.3 Connection Diagram 3: KV-700/1000/3000/5000/5500 + KV-L20R/KV-L20V/KV-L21V (PORT2-RS232C) to MICRO/I

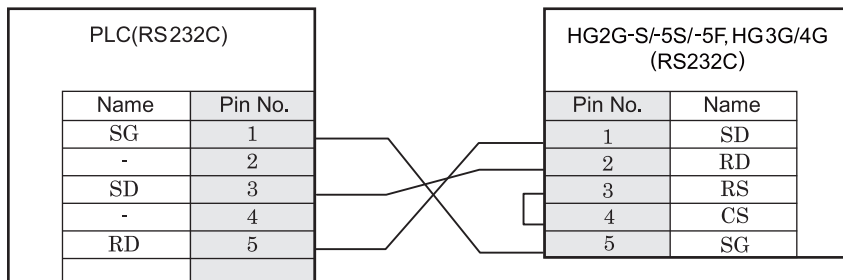
HG2G-5F, HG3G/4G (Connector)



Screw terminal block

D-sub, 9P connector plug type

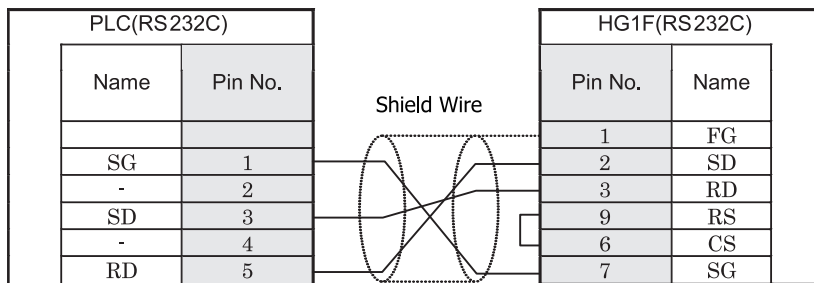
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw terminal block

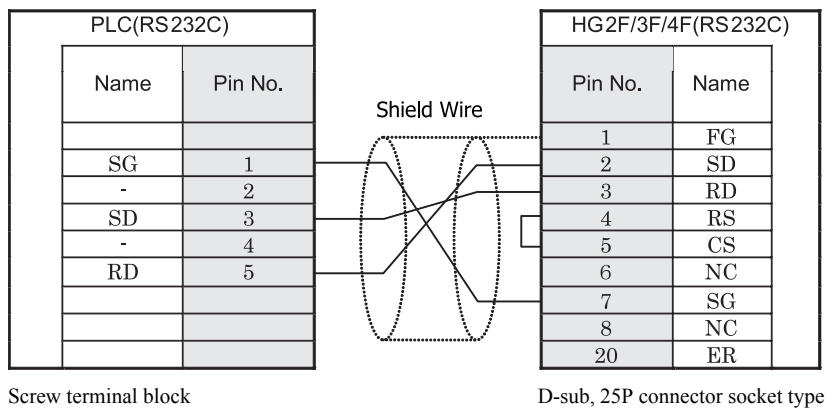
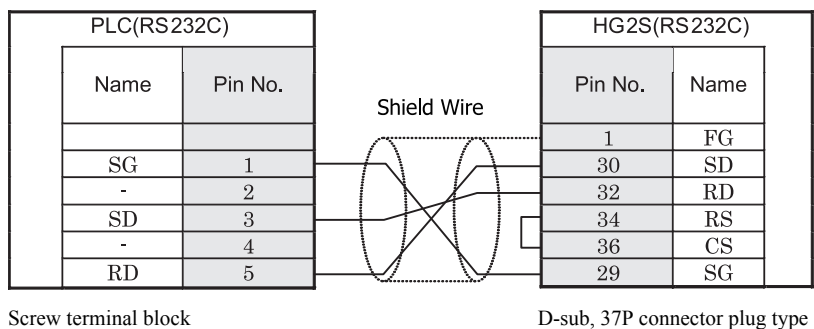
Terminal

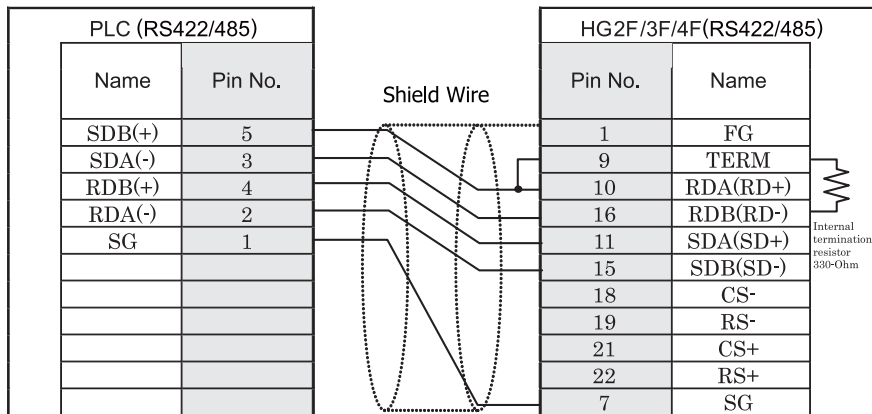
HG1F (Connector)



Screw terminal block

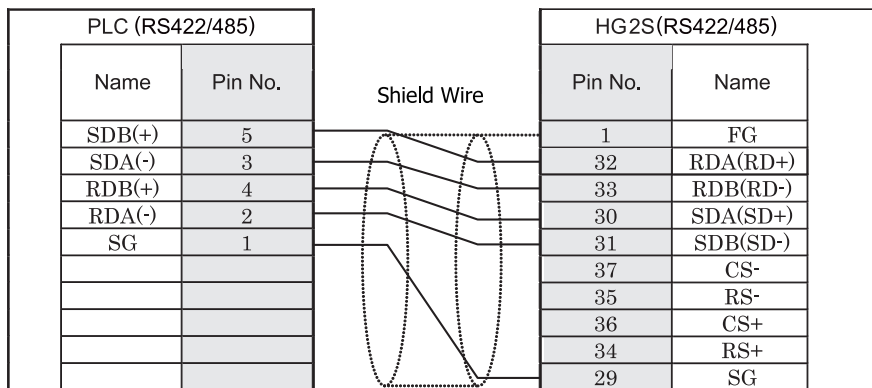
D-sub, 9P connector socket type

HG2F/3F/4F**HG2S**

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

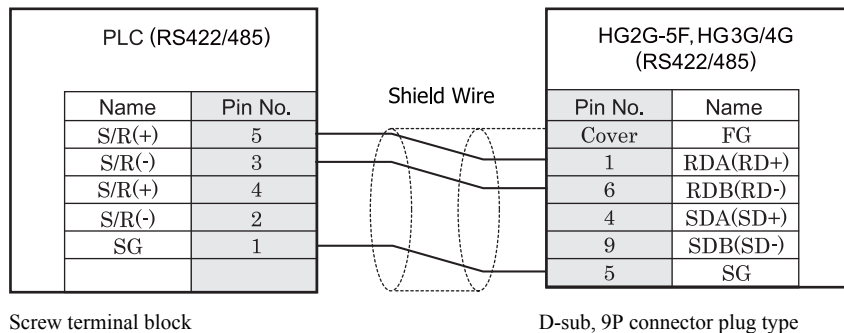
D-sub, 37P connector plug type



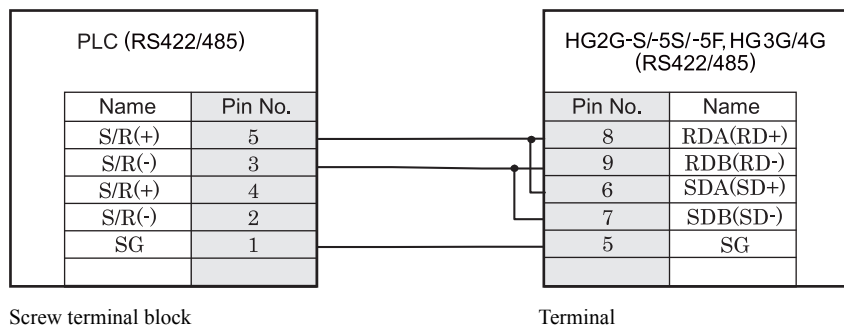
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

6.3.5 Connection Diagram 5: KV-700/1000/3000/5000/5500 + KV-L20R/KV-L20V/KV-L21V (PORT2 RS485 2-wire) to MICRO/I

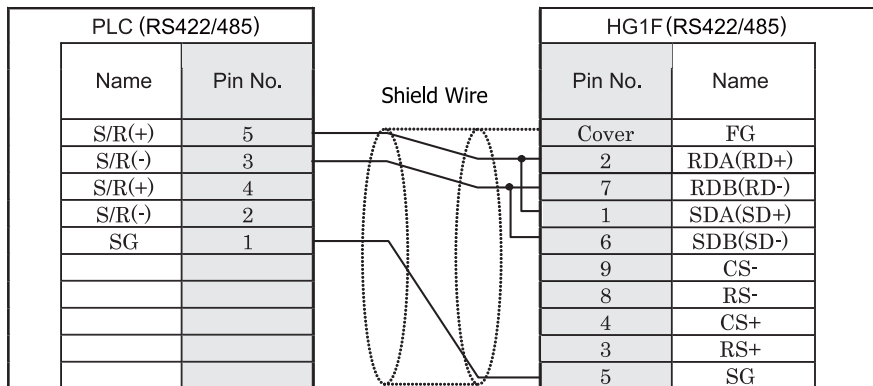
HG2G-5F, HG3G/4G (Connector)



HG2G-S/-5S/-5F, HG3G/4G (Terminal)

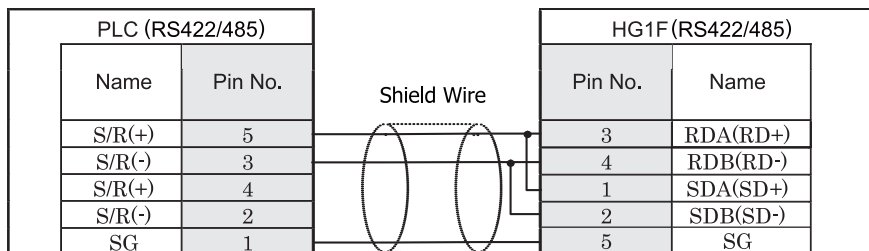


- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)

Screw terminal block

D-sub, 9P connector socket type

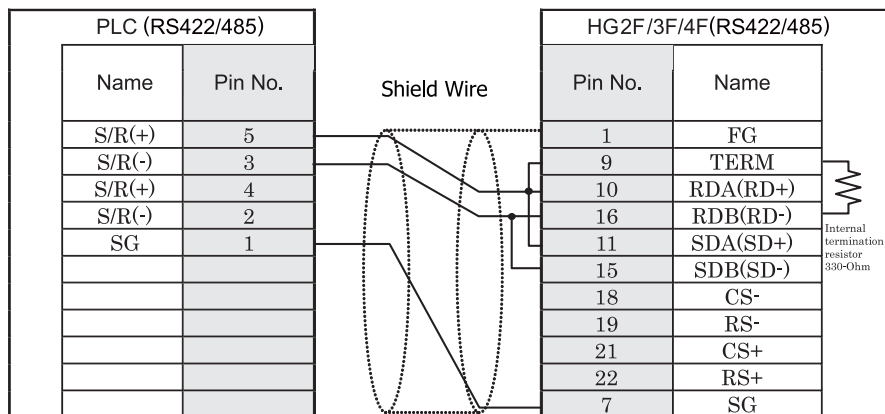
HG1F (Terminal)

Screw terminal block

Terminal

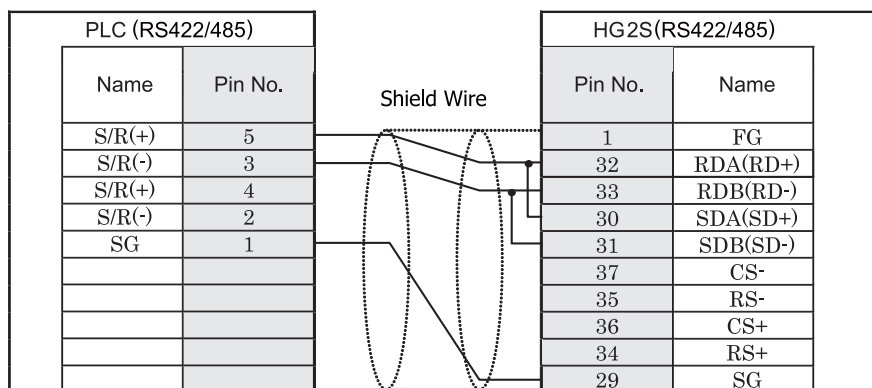


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

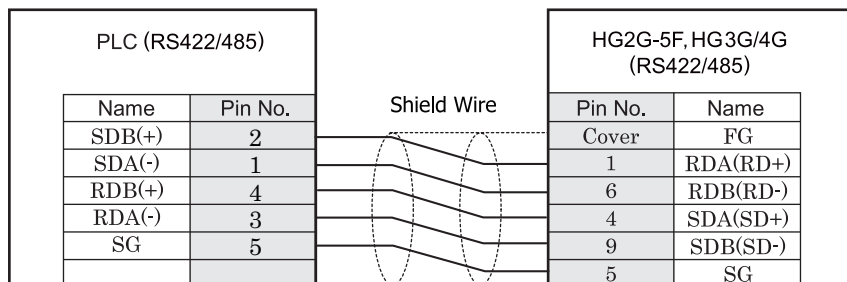
Screw terminal block

D-sub, 37P connector plug type



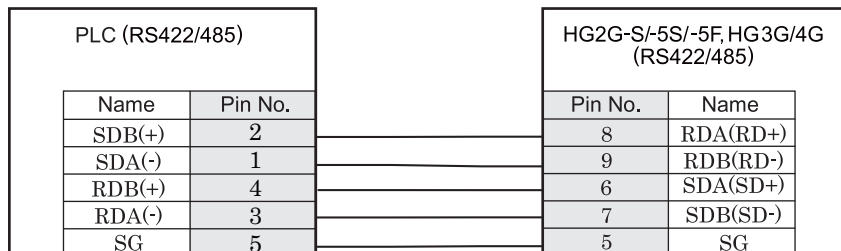
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

6.3.6 Connection Diagram 6: KV Nano + KV-N11L to MICRO/I

HG2G-5F, HG3G/4G (Connector)

Screw terminal block

D-sub, 9P connector plug type

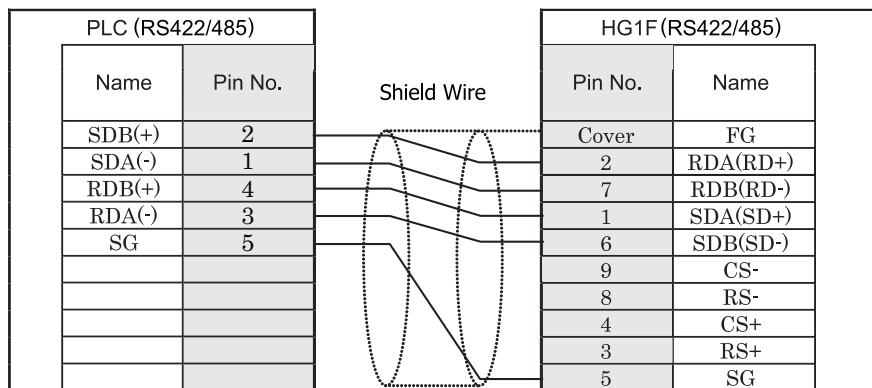
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Screw terminal block

Terminal

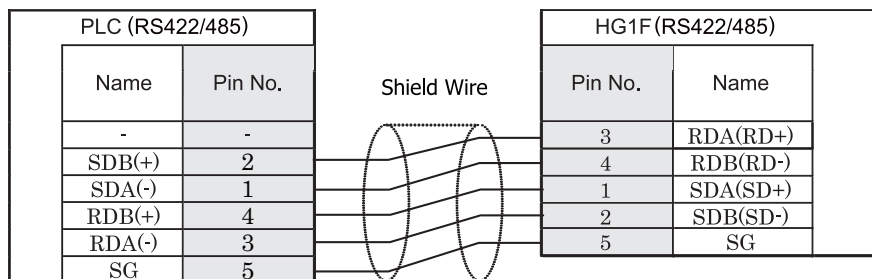


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Screw terminal block

D-sub, 9P connector socket type

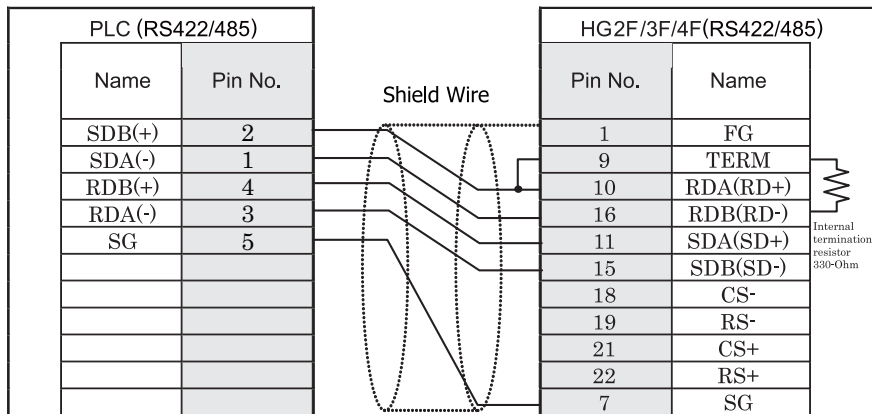
HG1F (Terminal)

Screw terminal block

Terminal

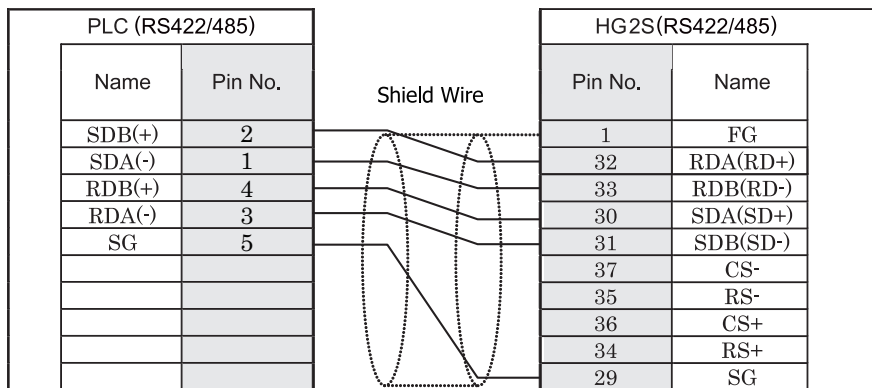


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

6.4 Environment Settings

6.4.1 KV-700/1000, Conventional KV series, Visual KV series

Item	Setting
Interface	RS232C
Data Bits	8
Baud Rate (bps)	9600
Parity	Even
Stop Bits	1



- Communication parameters are fixed. Please select above-mentioned settings for proper communication.
- Refer to the PLC manual for details.
- When performing communication with the CPU unit for KV-700, check the Connect CPU Unit (Enable)/ Link Unit (Disable) check box on the Host I/F Driver tab in the Project Settings dialog box.

6.4.2 KV-1000/3000

Item	Setting
Interface	RS232C
Data Bits	8
Baud Rate (bps)	9600, 19200, 38400, 57600 or 115200
Parity	Even
Stop Bits	1



- See the operation manual of PLC for more information.
- When setting the baud rate to less than 4800 bps, communications was executed at a baud rate of 9600 bps.
- When performing communication with the CPU unit for KV-1000/3000, check the Connect CPU Unit (Enable)/ Link Unit (Disable) check box on the Host I/F Driver tab in the Project Settings dialog box.

6.4.3 KV-700/1000/3000/5000/5500 + KV-L20R/KV-L20V/KV-L21V, KV Nano, KV Nano+KV-N10L/ KV-N11L

Item	Setting
Interface	RS232C, RS422/485 2-wire, RS422/485 4-wire
Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data Bits	8
Parity	Even
Stop Bits	1



- See the operation manual of the PLC for more information.
- When performing communication with a Serial Communication Unit or the KV Nano, clear the Connect CPU Unit (Enable)/ Link Unit (Disable) check box on the Host I/F Driver tab in the Project Settings dialog box.
- When communicating with the KV Nano, set the KV Nano port operation mode to KV mode (PLC link).

6.4.4 Environment settings for connection to the KV-5000/5500, KV-LE20A/KV-LE20V/KV-LE21V

1. MICRO/I settings

Item	Setting
IP Address	Set the IP address of MICRO/I.
Subnet mask	Set the subnet mask of MICRO/I.
Default Gateway	Set the default gateway of MICRO/I.

Item	Setting
IP Address	Set the IP address of PLC.
PORT	Set the port number of PLC to communicate with MICRO/I.
Protocol	TCP/IP, UDP/IP

2. PLC Settings

Item	Setting
IP Address	Set the IP address to PLC.
PORT	Set the arbitrary port number.



Refer to the PLC manual for details.

6.5 Usable Devices

6.5.1 KV700/1000/3000/5000/5500/KV Nano(RS233C, RS422/485)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
CPU Input Relay	X	X	0 - 999F	R	
CPU Output Relay	Y	Y	0 - 999F	R/W	
Spec. Internal Relay	M	M	0 - 15999	R/W	
Exp. /Spec. Internal Relay	R	R	0 - 99915	R/W	
Link Relay	B	B	0 - 3FFF	R/W	
Exp Int. Relay	MR	MR	0 - 99915	R/W	
Latch Relay	LR	LR	0 - 99915	R/W	
Control Relay	CR	CR	0 - 3915	R/W	
Work Relay	VB	VB	0 - 3FFF	R/W	
Timer (Relay)	T	T	0 - 3999	R/W	
Counter (Relay)	C	C	0 - 3999	R/W	
High-speed counter comparator (Relay)	CTC	CTC	0 - 3	R/W	



Only a reset action is possible for a High-speed counter comparator (Relay).



Please do not perform a set operation, as a communication error will occur.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Memory	DM	DM	0 - 65534	R/W	
Exp Data Memory E	EM	EM	0 - 65534	R/W	
Exp Data Memory F	FM	FM	0 - 32767	R/W	
File register	ZF	ZF	0 - 131071	R/W	
Link Register	W	W	0 - 3FFF	R/W	
Temporary Memory	TM	TM	0 - 511	R/W	
Timer (Preset)	TC	TC	0 - 39991	R/W	*1
Timer (Current)	TS	TS	0 - 39991	R/W	*1
Counter (Preset)	CC	CC	0 - 39991	R/W	*1
Counter (Current)	CS	CS	0 - 39991	R/W	*1
High-speed counter (Current)	CTH	CTH	0 - 11	R/W	*1
High-speed counter comparator (Preset)	CTCS	CTCS	0 - 31	R/W	*1
Digital Trimmer	AT	AT	0 - 71	R	
Index Register	Z	Z	1 - 12	R/W	
Control Memory	CM	CM	0 - 11998	R/W	
Work Memory	VM	VM	0 - 59999	R/W	

*1 These devices are 32-bit devices.

6.5.2 KV3000/5000/5500 (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
CPU Input Relay	X	X	0 - 999F	R	
CPU Output Relay	Y	Y	0 - 999F	R/W	
Spec. Internal Relay	M	M	0 - 15999	R/W	
Exp. /Spec. Internal Relay	R	R	0 - 99915	R/W	
Link Relay	B	B	0 - 3FFF	R/W	
Exp Int. Relay	MR	MR	0 - 99915	R/W	
Latch Relay	LR	LR	0 - 99915	R/W	
Control Relay	CR	CR	0 - 3915	R/W	
Work Relay	VB	VB	0 - 3FFF	R/W	
Timer (Relay)	T	T	0 - 3999	R/W	
Counter (Relay)	C	C	0 - 3999	R/W	
High-speed counter comparator (Relay)	CTC	CTC	0 - 3	R/W	



Only a reset action is possible for a High-speed counter comparator (Relay).



Please do not perform a set operation, as a communication error will occur.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Memory	DM	DM	0 - 65534	R/W	
Exp Data Memory E	EM	EM	0 - 65534	R/W	
Exp Data Memory F	FM	FM	0 - 32767	R/W	
File register	ZF	ZF	0 - 131071	R/W	
Link Register	W	W	0 - 3FFF	R/W	
Temporary Memory	TM	TM	0 - 511	R/W	
Timer (Preset)	TC	TC	0 - 39991	R/W	*1
Timer (Current)	TS	TS	0 - 39991	R/W	*1
Counter (Preset)	CC	CC	0 - 39991	R/W	*1
Counter (Current)	CS	CS	0 - 39991	R/W	*1
High-speed counter (Current)	CTH	CTH	0 - 11	R/W	*1
High-speed counter comparator (Preset)	CTCS	CTCS	0 - 31	R/W	*1
Digital Trimmer	AT	AT	0 - 71	R	
Index Register	Z	Z	1 - 12	R/W	
Control Memory	CM	CM	0 - 11998	R/W	
Work Memory	VM	VM	0 - 59999	R/W	

*1 These devices are 32-bit devices.

6.5.3 Conventional KV series and Visual KV series

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Internal Utility Relay	M	-	1000 - 1915, 3000 - 15915	R/W	10
Basic Input Relay	X	-	0 - 215	R	10
Basic Output Relay	Y	-	500 - 615	R/W	10
Extension Input Relay	SX	-	100 - 415	R	10
Extension Output Relay	SY	-	600 - 915	R/W	10
Timer (Contact)	T	T	0 - 249	R	10
Counter (Contact)	C	C	0 - 249	R	10
Special Internal Relay	SM	-	2000 - 2915	R/W	10

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Memory	D	DM	0 - 9999	R/W	10
Temporary Memory	TM	TM	0 - 31	R/W	10
Timer (Current)	TC	T	0 - 249	R/W	10
Counter (Current)	CC	C	0 - 249	R/W	10
Timer (Preset)	TS	T	0 - 249	R/W	10
Counter (Preset)	CS	C	0 - 249	R/W	10



- Basic Input Relay (X) addresses 100 and higher, as well as Basic Output Relay (Y) addresses 600 and higher, are only available when using the Conventional KV series KV-40/80 models.
- MICRO/I does not support all device addresses of the Visual KV series.

7 SHARP

7.1 Connection Table

7.1.1 Compatible PLCs

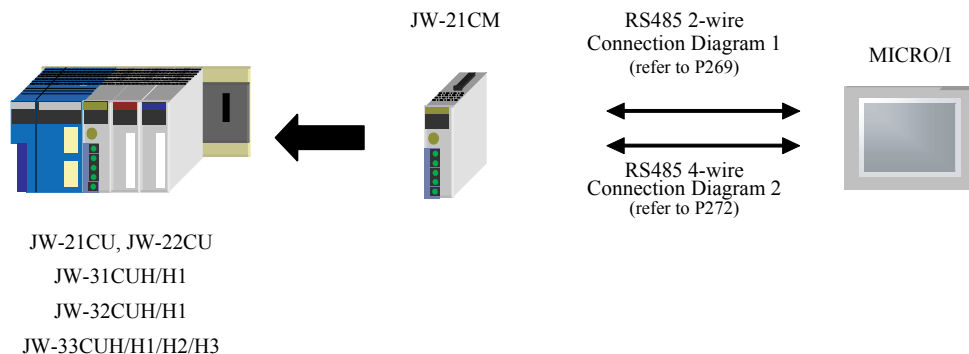
System (CPU unit)	Link unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
New Satellite JW								
JW-10	Not required (connects to CPU unit)	RS422-MMI Port Connection Diagram 6 (refer to P282)	Hardware	JW	---	X	X	---
		RS422/485 2-wire Connection Diagram 7 (refer to P285)						
JW-21CU, JW-22CU, JW-31CUH/H1, JW-32CUH/H1, JW-33CUH/H1* ¹ / H2/H3	JW-21CM	RS422/485 2-wire Connection Diagram 1 (refer to P269)						
		RS422/485 4-wire Connection Diagram 2 (refer to P272)						
JW-50CU/CUH, JW-70CU/CUH, JW-100CU/CUH	JW-10CM	RS422/485 4-wire Connection Diagram 2 (refer to P272)						
JW-22CU, JW-70CU/CUH, JW-100CU/CUH	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P275)						
JW-32CUH/H1, JW-33CUH/H1* ¹ / H2/H3		RS232C Connection Diagram 4 (refer to P277)						
		RS422/485 4-wire Connection Diagram 5 (refer to P279)						

*1 This PLC was used to test & verify communications.

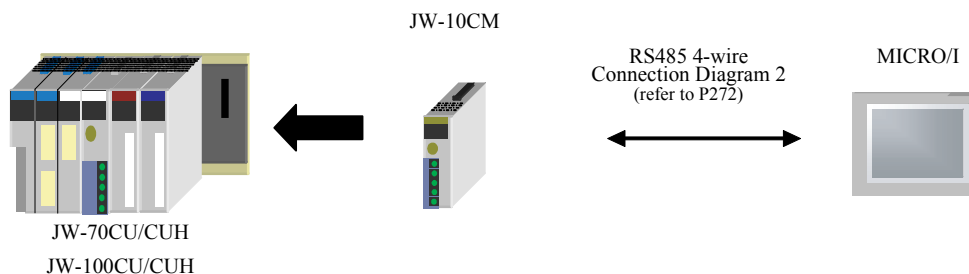
7.2 System Configuration

This is the system configuration for the connection of SHARP PLCs to the MICRO/I.

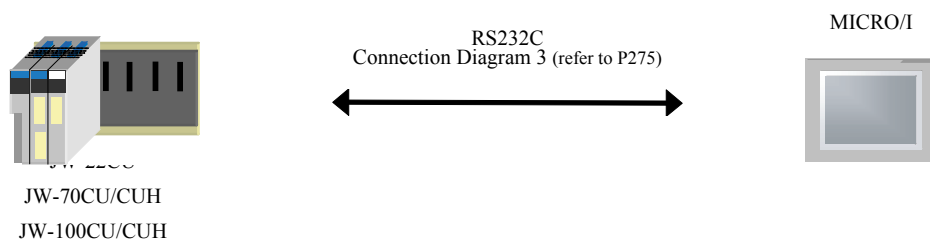
7.2.1 JW20/30 Series (using link module)



7.2.2 JW50/70/100 Series (using link module)

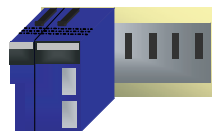


7.2.3 JW50/70/100 Series (using communication port)



Connect to the communication port of CPU unit.

7.2.4 JW30 Series (using communication port)



JW-32CUH/H1
JW-33CUH/H1/H2/H3

RS232C
Connection Diagram 4 (refer to P277)

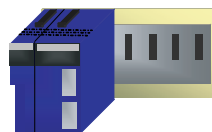


MICRO/I



Connect to the communication port2 of CPU unit.

7.2.5 JW30 Series (using communication port)



JW-32CUH/H1
JW-33CUH/H1/H2/H3

RS485
Connection Diagram 5 (refer to P279)

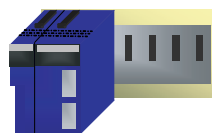


MICRO/I



Connect to the communication port1 or the communication port2 of CPU unit.

7.2.6 JW10 Series



JW-10

RS422 MMI
Connection Diagram 6 (refer to P282)



RS485 2-wire
Connection Diagram 7 (refer to P285)

MICRO/I



Connect to MMI port or communication port on CPU unit.

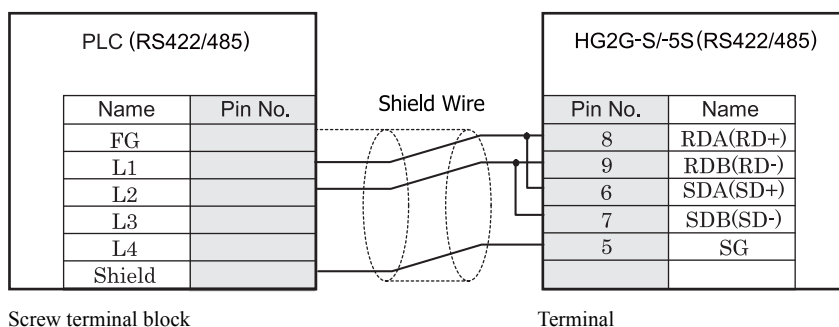
7.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

7.3.1 Connection Diagram 1: RS485 2-wire Link Unit to MICRO/I

HG2G-S/-5S (Connector)



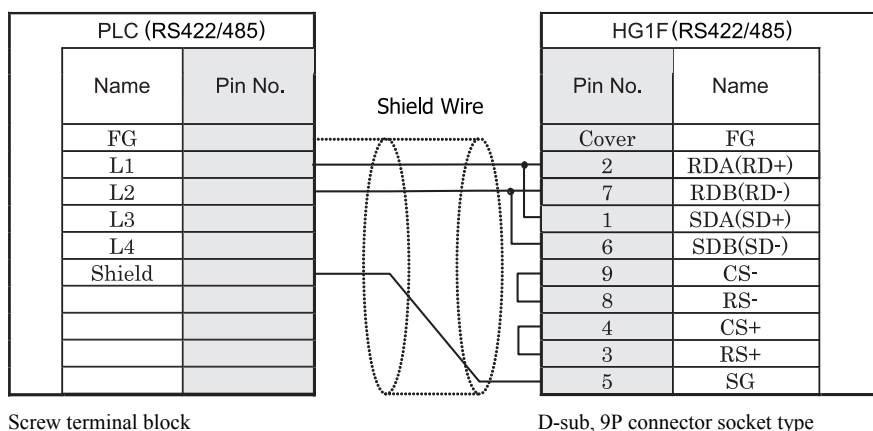
2

Connection to a PLC

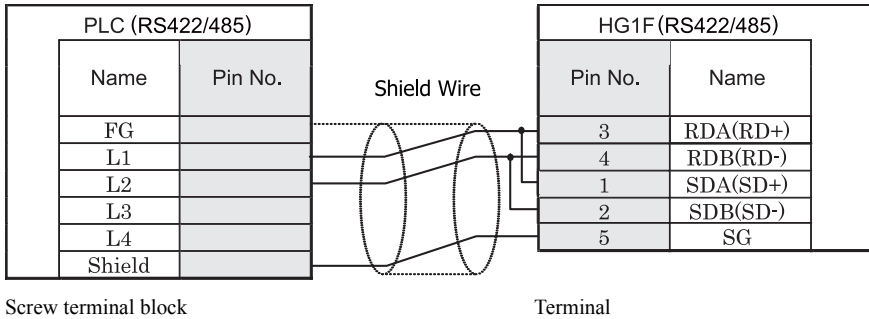


- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin number corresponding to TERM on the HG2G-S/-5S. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)



HG1F (Terminal)

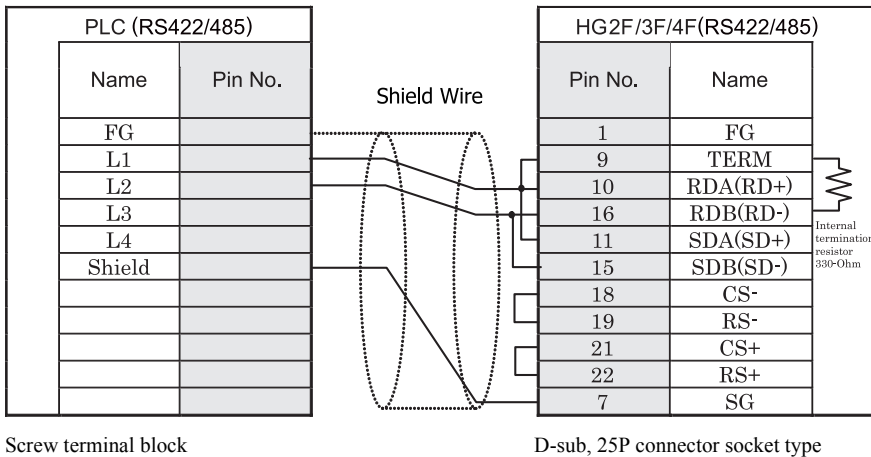


- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

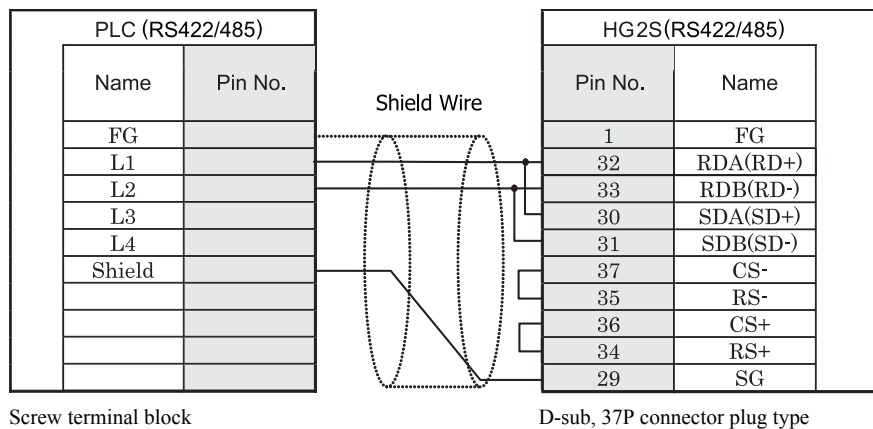


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

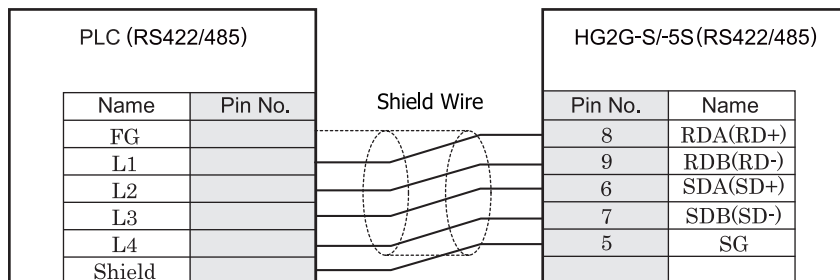


We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.

HG2S

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

7.3.2 Connection Diagram 2: RS485 4-wire Link Unit to MICRO/I

HG2G-S/-5S (Connector)

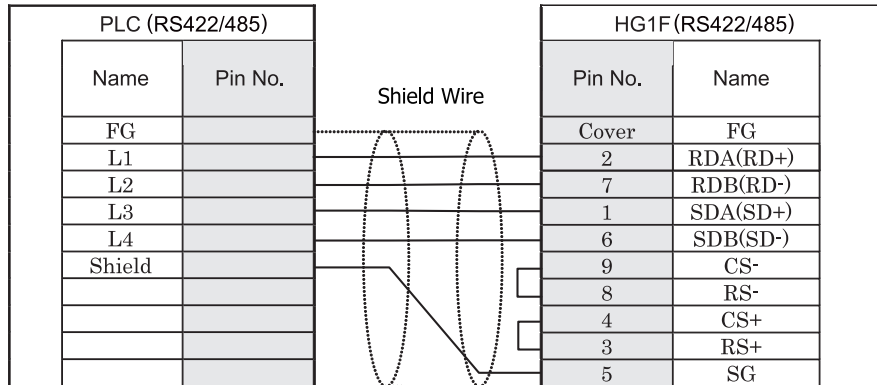
Screw terminal block

Terminal



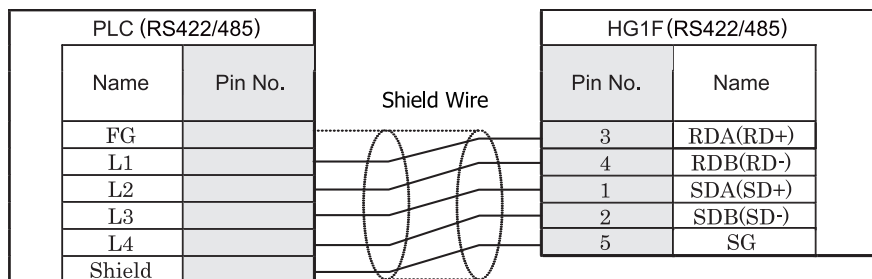
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.

- There is no pin number corresponding to TERM on the HG2G-S/-5S. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

Screw terminal block

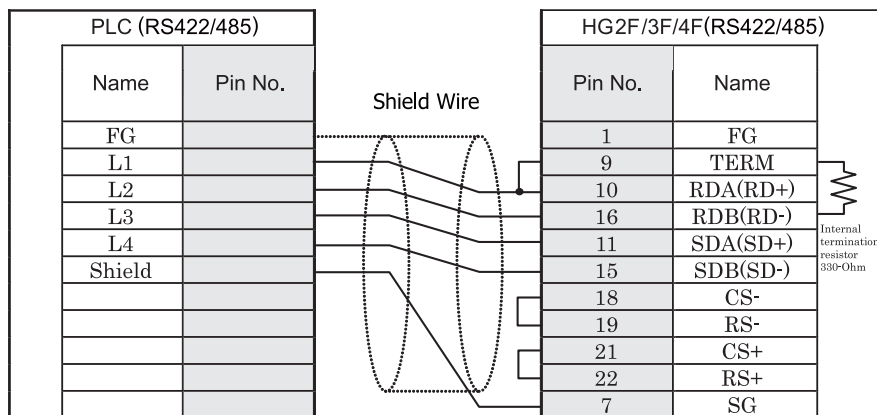
Terminal



- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

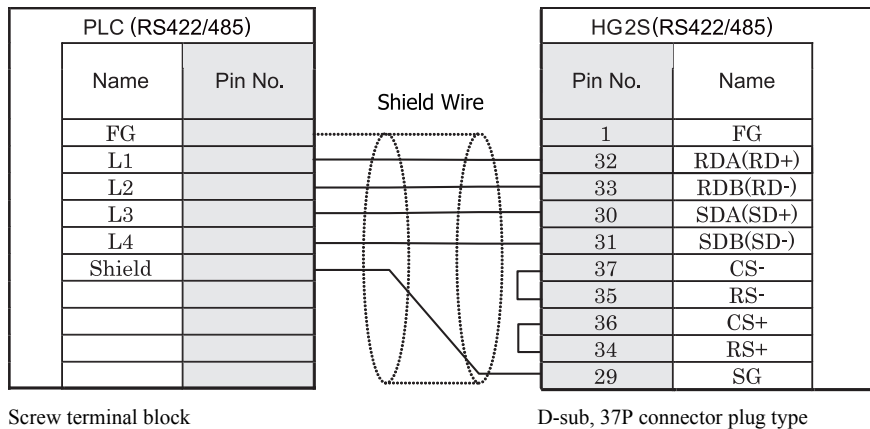
HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

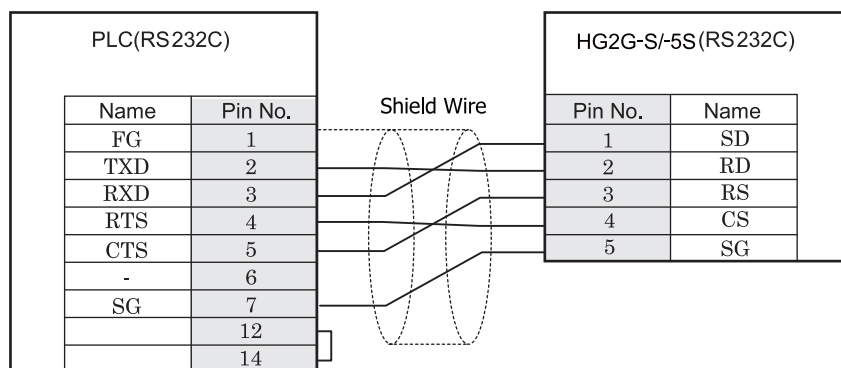


We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.

HG2S

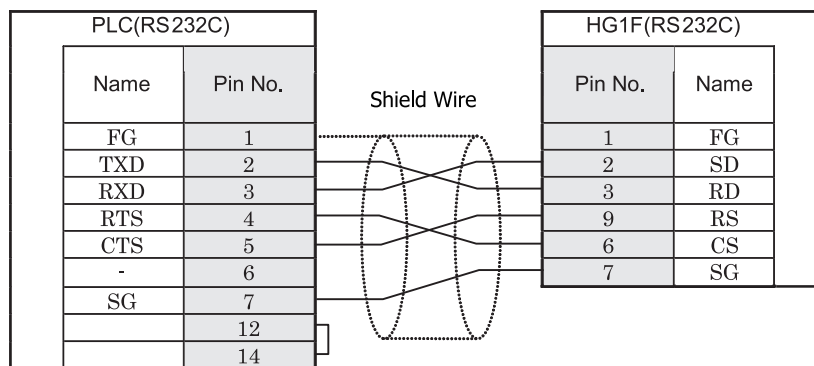
- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

7.3.3 Connection Diagram 3: PLC (RS232C) Communication Port to MICRO/I

HG2G-S/-5S (Connector)

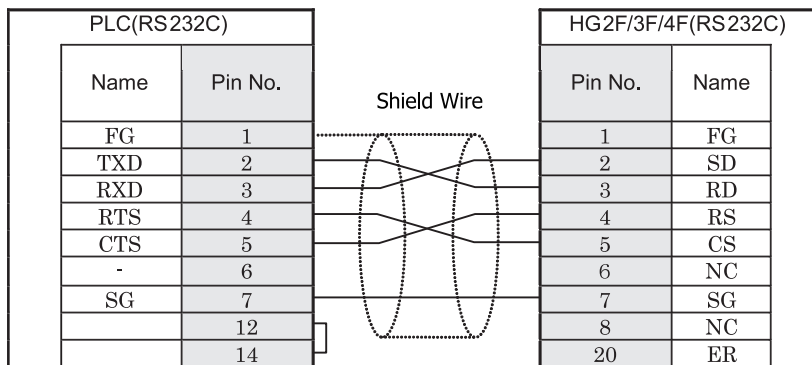
D-sub, 15P connector socket type

Terminal

HG1F (Connector)

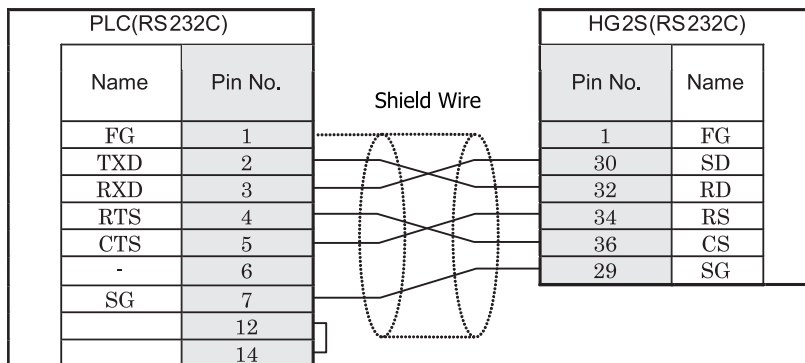
D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 15P connector socket type

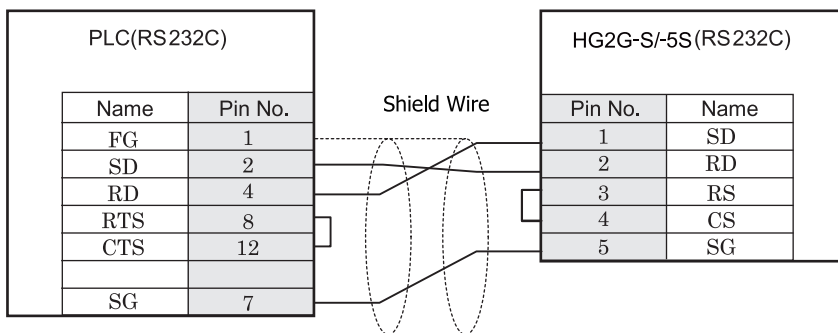
D-sub, 25P connector socket type

HG2S

D-sub, 15P connector socket type

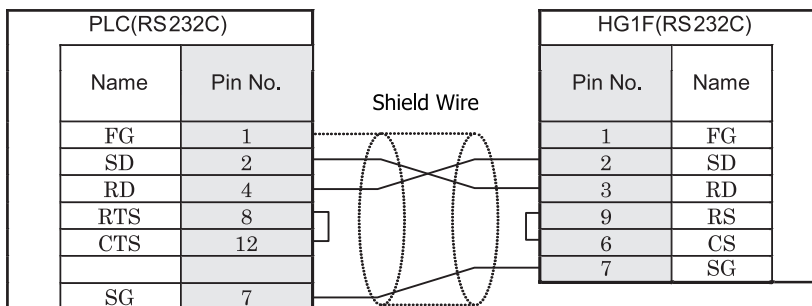
D-sub, 37P connector plug type

7.3.4 Connection Diagram 4: PLC (RS232C) Communication Port to MICRO/I

HG2G-S/-5S (Connector)

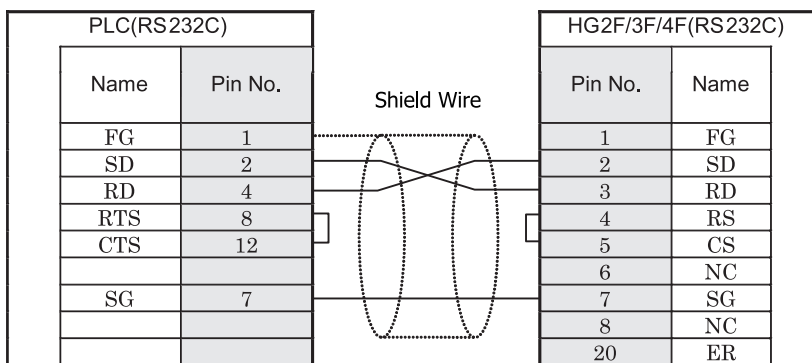
D-sub, 15P connector socket type

Terminal

HG1F (Connector)

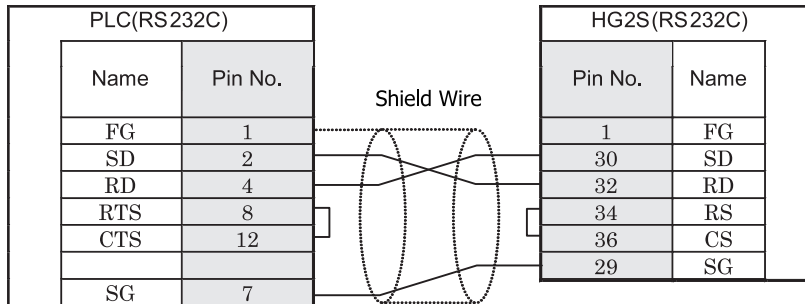
D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 15P connector socket type

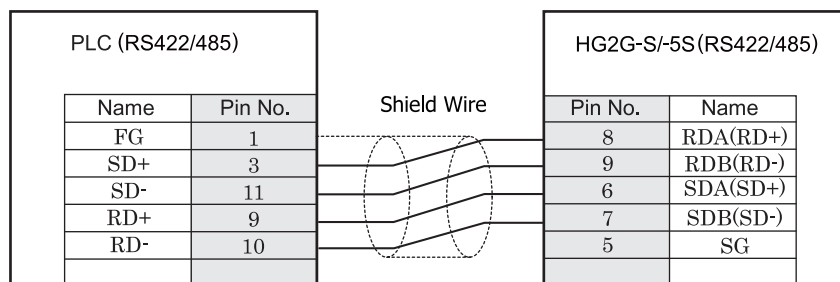
D-sub, 25P connector socket type

HG2S

D-sub, 15P connector socket type

D-sub, 37P connector plug type

7.3.5 Connection Diagram 5: PLC (RS485) Communication Port to MICRO/I

HG2G-S/-5S (Connector)

D-sub, 25P connector socket type

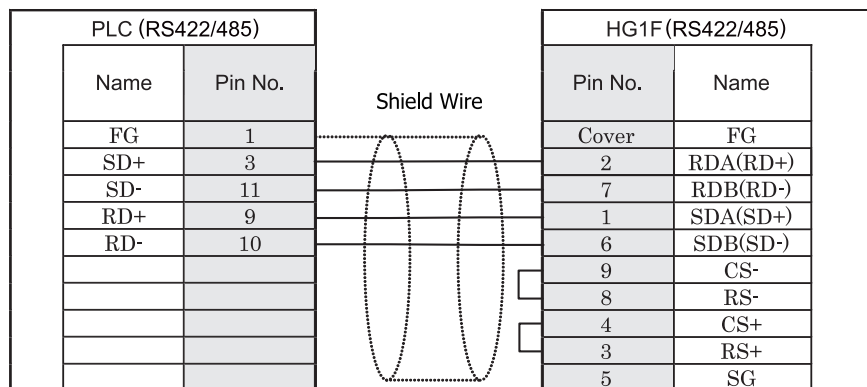
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

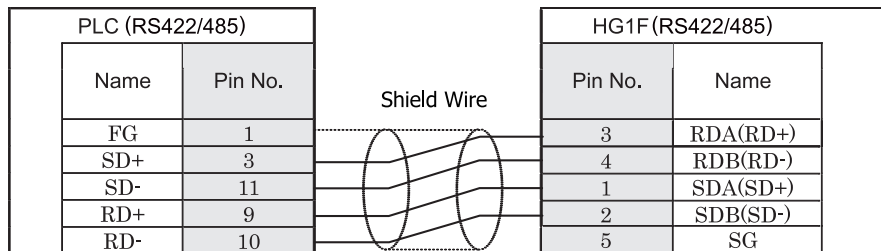


When you use the Terminal Block type of HG2G-S/-5S, make sure to configure the Hardware Flow control to NONE because the HG2G-S/-5S doesn't have control lines.

HG1F (Connector)

D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 25P connector socket type

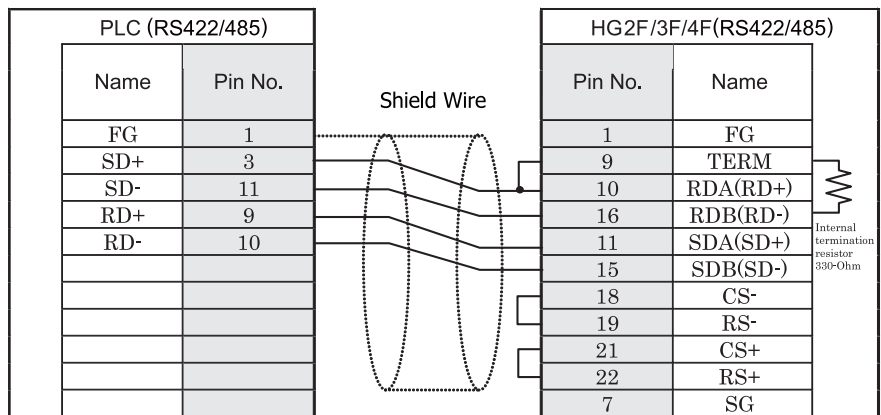
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

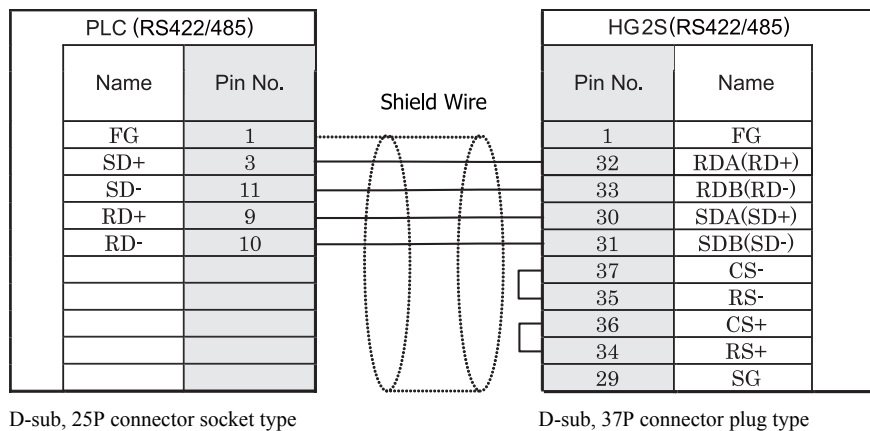


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

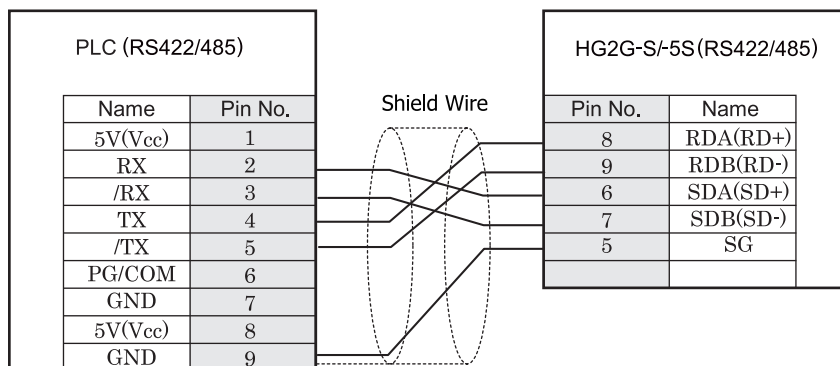
D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

7.3.6 Connection Diagram 6: JW-10 MMI Port (RS422) to MICRO/I

HG2G-S/-5S (Connector)

D-sub, 9P connector socket type

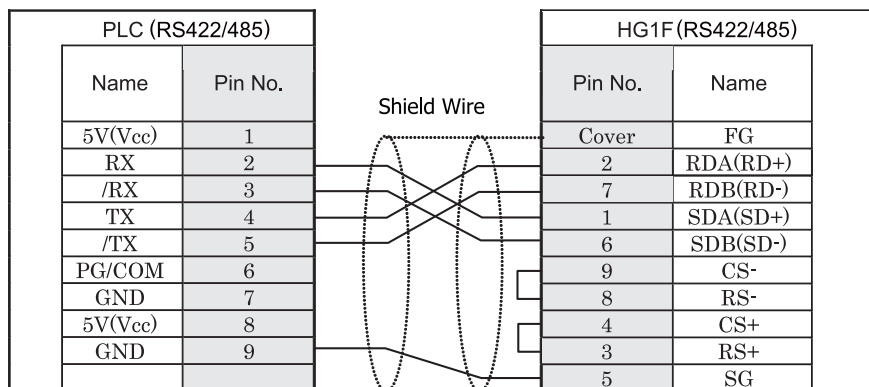
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

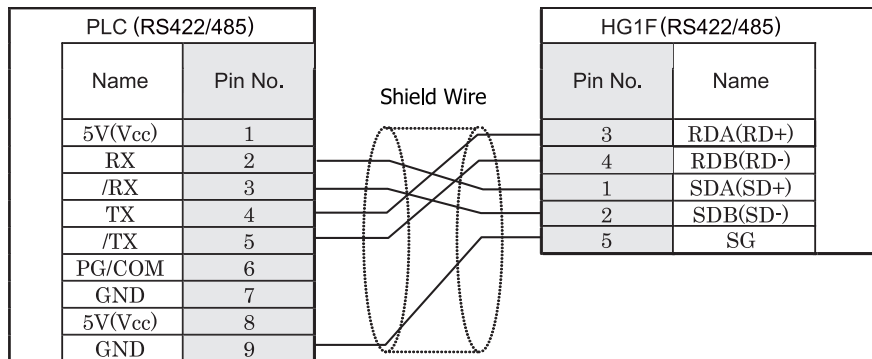


When you use the Terminal Block type of HG2G-S/-5S, make sure to configure the Hardware Flow control to NONE because the HG2G-S/-5S doesn't have control lines.

HG1F (Connector)

D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 9P connector socket type

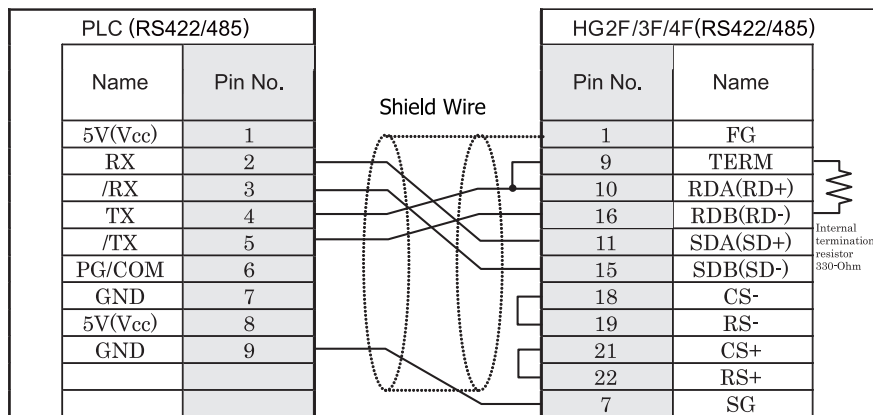
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

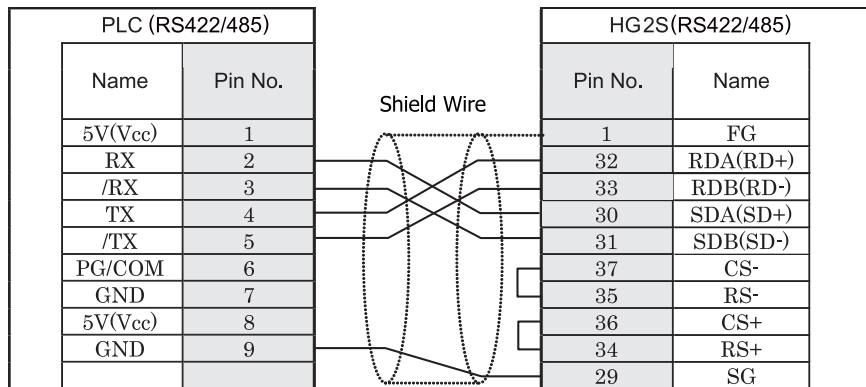


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

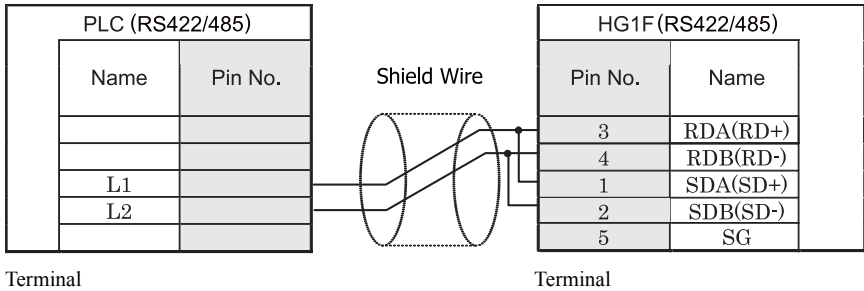
D-sub, 9P connector socket type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Terminal)

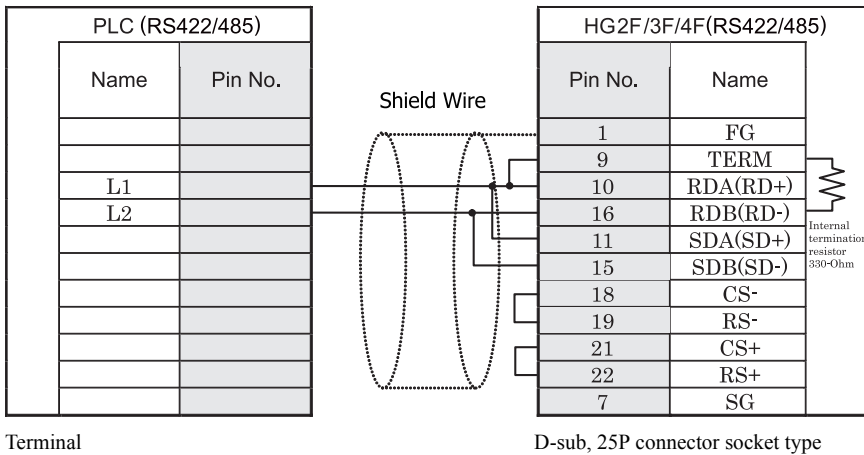


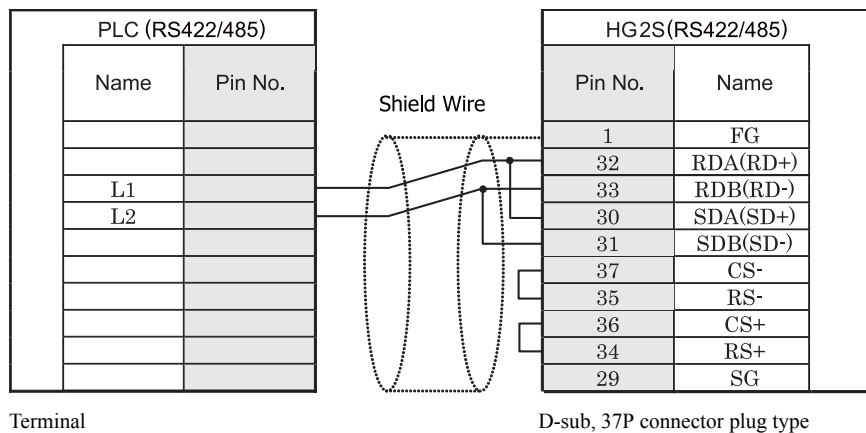
There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F



HG2S

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

7.4 Environment Settings

7.4.1 Using Computer Link Module

Item		Setting
Interface		RS485 2-wire (Set DIP switch SW3-2 to OFF) RS485 4-wire (Set DIP switch SW3-2 to ON)
Communication Mode		Computer Link (Command mode) (Set DIP switch SW0 to "4")
Station No.	Set to the same setting as the MICRO/I	01 to 17(oct) (Set DIP switch SW1 / SW2)
Data Bits		7 (fixed)
Baud Rate [bps]		1200, 2400, 4800, 9600 or 19200 (Set DIP switch SW4)
Parity		Even or Odd (Set DIP switch SW3-4)
Stop Bits		2 (fixed)

7.4.2 Using Communication Port

Item		Setting
Interface		RS232C, RS422/485
Station No.	Set to the same setting as the MICRO/I	001 to 037(oct) (Set System Memory #235/#237)
Data Bits		7 (fixed)
Baud Rate [bps]		1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 (Set the bit position D2D1D0 System Memory of #234/#236)
Parity		Even, Odd or None (Set the bit position D4D3 of System Memory #234/#236)
Stop Bits		1 or 2 (Set the bit position D5 of System Memory #234/#236)



- Set System Memory #234 for communication conditions of PLC (JW30 Communication port1: RS422), and set System Memory #235 for Station No.
- Set System Memory #236 for communication conditions of PLC (JW20/70/100 Communication port, JW30 Communication port2: RS232C, RS422), and set System Memory #237 for Station No.
- Confirm the PLC manuals as the speed of Baud Rate may not use according to PLC.
- When connecting with the communication port of a CPU unit and making it communicate, after receiving a response from PLC depending on the model of PLC, while MICRO/I transmit data, some which need waiting time are. In this time, please adjust **Configuration - System Setup - Project - Host I/F Driver - transmission wait** of WindO/I-NV2. Confirm the manual. (chapter of a communication port) of PLC about whether a **transmitting wait** setup need to be adjusted.
- Refer to "New Satellite JW manual" or "New Satellite JW Link Unit manual" for details.

7.5 Usable Devices

The types of devices handles by the MICRO/I and their ranges are shown below.

Bit Device

WindO/I-NV2 Device Name	R/W	WindO/I-NV2 address	PLC Device Name	PLC address
Relay	R/W	R0 - R15777	Relay	00000 - 15777
Ext. Relay	R/W	ER20000 - ER75777		20000 - 75777
Timer (Contact)	R	T0 - T777	Timer (Contact)	T0000 - T0777
Ext. Timer (Contact)	R	ET1000 - ET1777		T1000 - T1777
Counter (Contact)	R	C0 - C777	Counter (Contact)	C0000 - C0777
Ext. Counter (Contact)	R	EC1000 - EC1777		C1000 - C1777

Word Device

WindO/I-NV2 Device Name	R/W	WindO/I-NV2 address	PLC Device Name	PLC address
Timer (Current Value)	R	TC0 - TC777	Timer	0000 - 0777
Ext.Counter(Current Value)	R	ETC1000 - ETC1777	(Current Value)	1000 - 1777
Counter (Current Value)	R	CC0 - CC777	Counter	0000 - 0777
Ext.Counter (Current Value)	R	ECC1000 - ECC1777	(Current Value)	1000 - 1777
Register (A)	R/W	RA0 - RA1576	Register	a0000 - a1576
Ext.Register (A)	R/W	ERA2000 - ERA7576		a2000 - a7576
Register (B)	R/W	RB0 - RB1776		b0000 - b1776
Ext.Register (B)	R/W	ERB2000 - ERB3776		b2000 - b3776
Register (09)	R/W	R09_0 - R09_776		09000 - 09776
Register (19)	R/W	R19_0 - R19_776		19000 - 19776
Register (29)	R/W	R29_0 - R29_776		29000 - 29776
Register (39)	R/W	R39_0 - R39_776		39000 - 39776
Register (49)	R/W	R49_0 - R49_776		49000 - 49776
Register (59)	R/W	R59_0 - R59_776		59000 - 59776
Register (69)	R/W	R69_0 - R69_776		69000 - 69776
Register (79)	R/W	R79_0 - R79_776		79000 - 79776
Register (89)	R/W	R89_0 - R89_776		89000 - 89776
Register (99)	R/W	R99_0 - R99_776		99000 - 99776
Register (E)	R/W	RE0 - RE1776		E0000 - E1776
Ext.Register (E)	R/W	ERE2000 - ERE7776		E2000 - E7776
System Memory	R	S0 - S2176		System Memory
File Register (1)	R/W	F1_0 - F1_37776	File Register1	000000 - 037776
File Register (2)	R/W	F2_0 - F2_177776	File Register2	000000 - 177776
File Register (3)	R/W	F3_0 - F3_177776	File Register3	000000 - 177776



- Set all devices using octal.
- Confirm the PLC manuals as device or device address may not use according to PLC.
- R/W specifies Read and Write device. R specify Read only device.
- Word device address below “Register (A)” increase +2. (The other device increase +1.)
- Device address of WindO/I NV2 does not display as the number of figure used PLC.
Example: if you set to “Register 19005” using WindO/I NV2, it set to not “R19_005” but “R19_5”.

8 Hitachi

8.1 Supported Programmable Logic Controllers

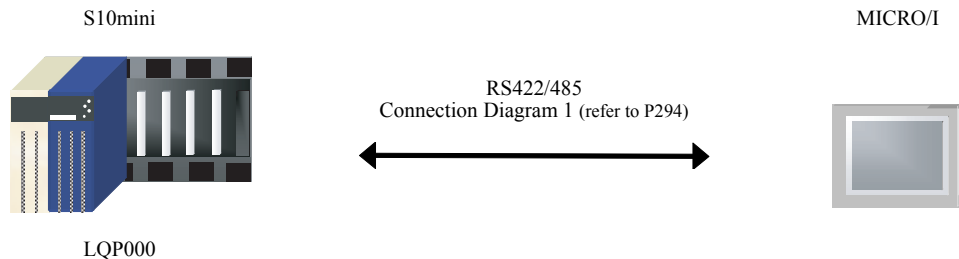
System (CPU unit)	Link unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -SI/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
S10mini								
S10mini*1	Not required (built into the CPU unit)	RS422/485 4-wire Connection Diagram 1 (refer to P294)	Hardware	S10mini	X	X	X	---
	LQE160	RS232C Connection Diagram 2 (refer to P297)						
	LQE165	RS422/485 4-wire Connection Diagram 3 (refer to P300)						
	LQE560	RS232C Connection Diagram 2 (refer to P297)						
	LQE565	RS422/485 4-wire Connection Diagram 3 (refer to P300)						
S10V*1								
LQP510*1	Not required (built into the CPU unit)	RS232C Connection Diagram 2 (refer to P297)	Hardware	S10mini	X	X	X	---
		RS422/485 4-wire Connection Diagram 3 (refer to P300)						
	LQE560*1	RS232C*1 Connection Diagram 2 (refer to P297)						
	LQE565	RS422/485 4-wire Connection Diagram 3 (refer to P300)						

*1 This PLC was used to test & verify communications.

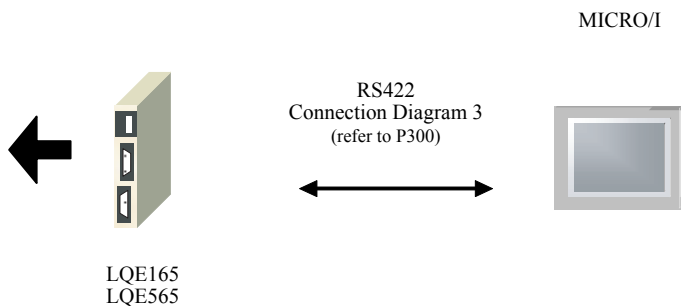
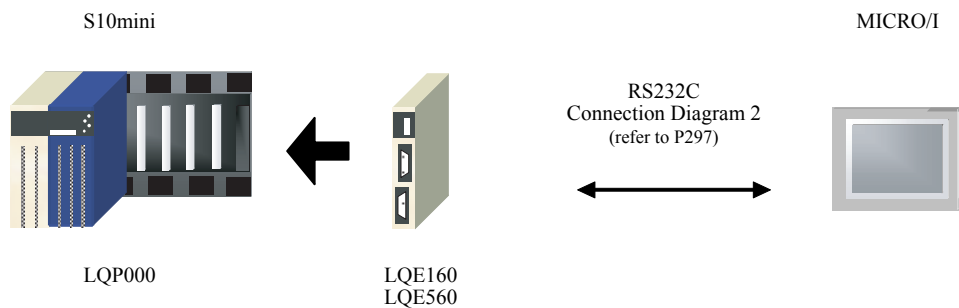
8.2 System Configuration

This is the system configuration for the connection of Hitachi PLC to the MICRO/I.

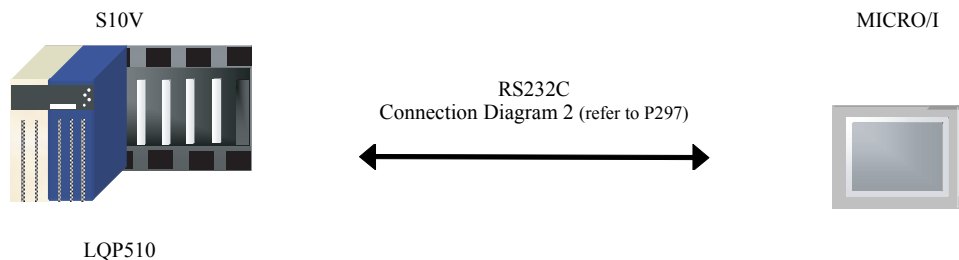
8.2.1 S10mini (LQP000) (connect to CPU unit RS232C port)



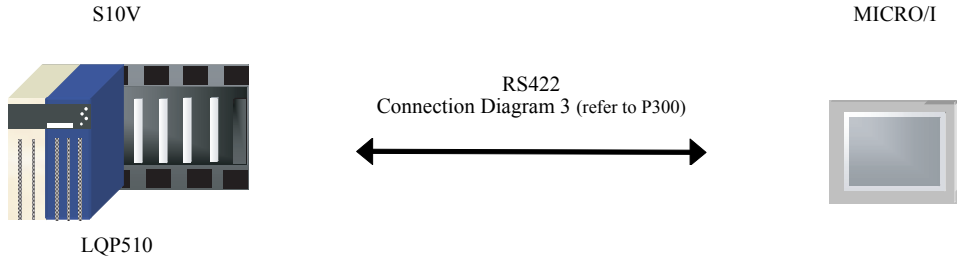
8.2.2 10mini Communication module



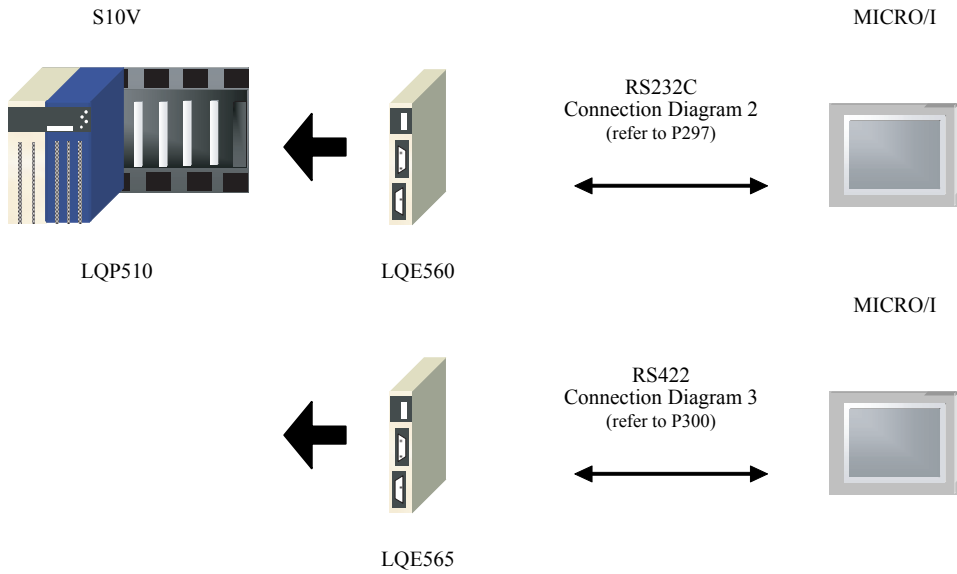
8.2.3 S10V RS232C Port on CPU Unit



8.2.4 S10V RS422 Port on CPU Unit



8.2.5 S10V Communication Module



2
Connection to a PLC

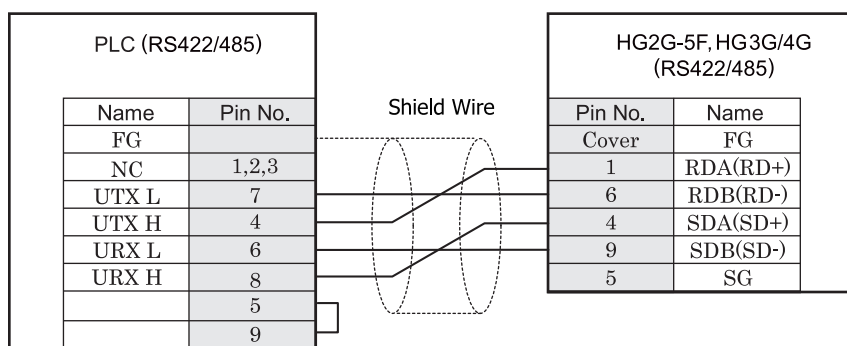
8.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

8.3.1 Connection Diagram 1: S10mini (RS422/485) to MICRO/I

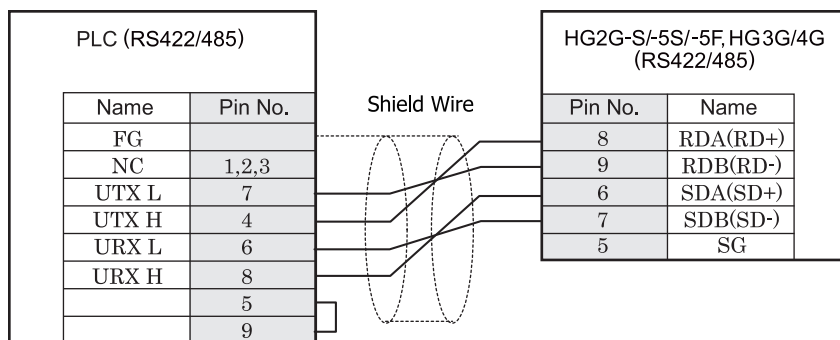
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector plug type

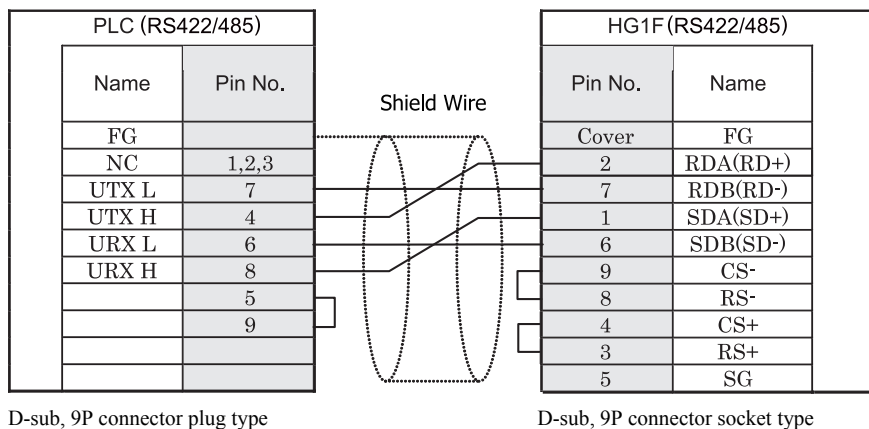
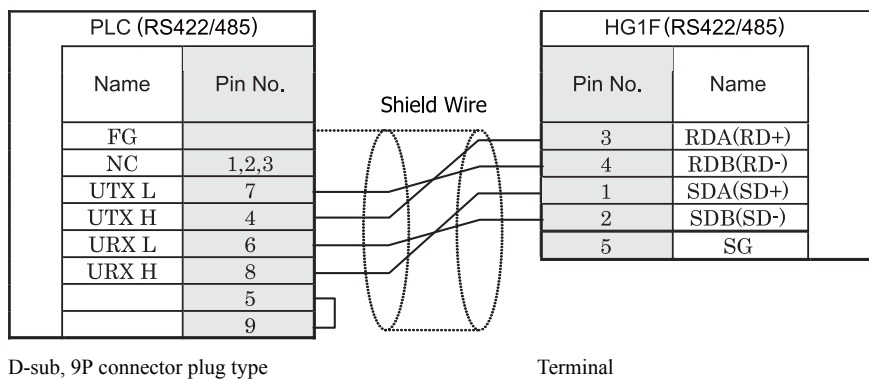
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



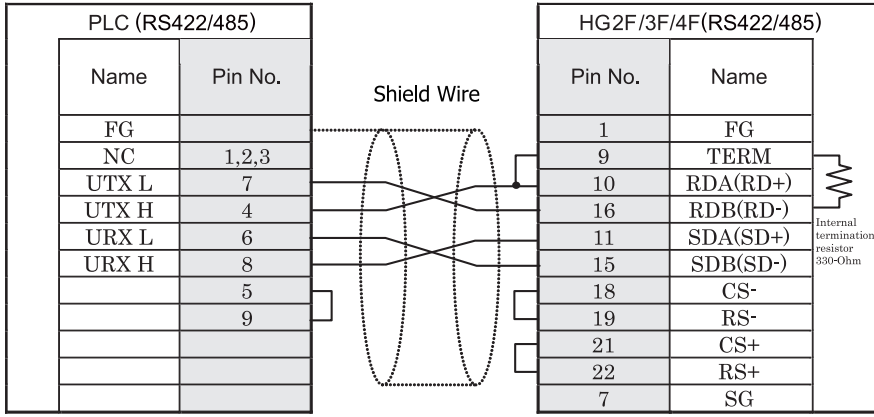
When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

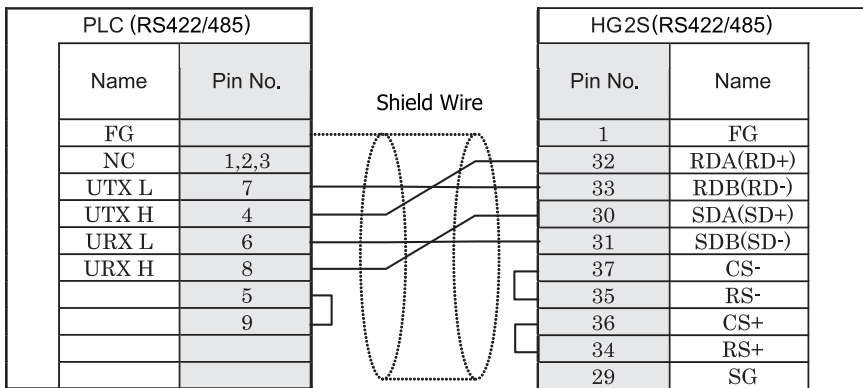


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

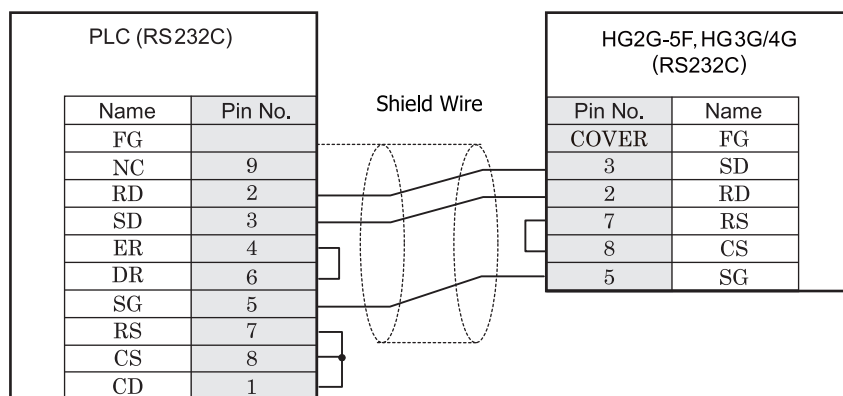
D-sub, 9P connector plug type

D-sub, 37P connector plug type



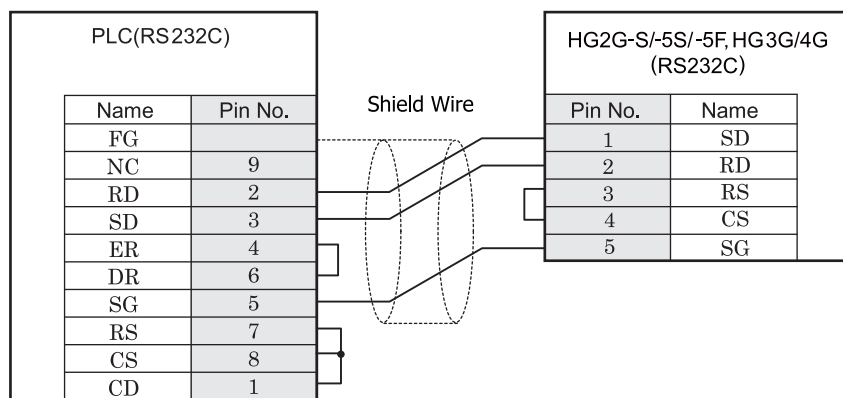
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

8.3.2 Connection Diagram 2: S10mini (RS232C) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector plug type

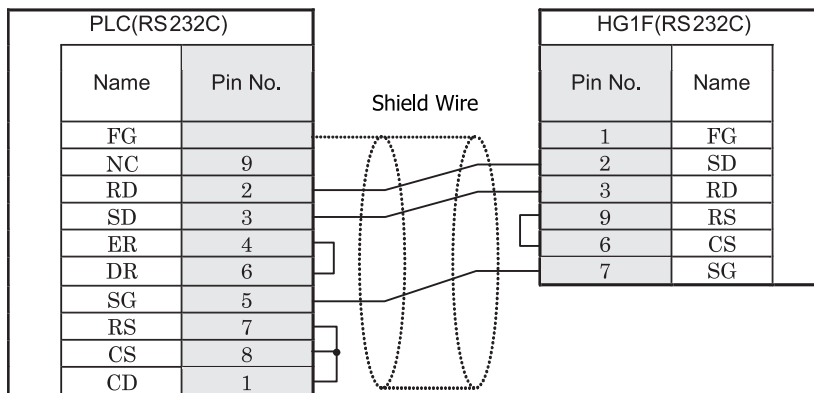
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector plug type

Terminal

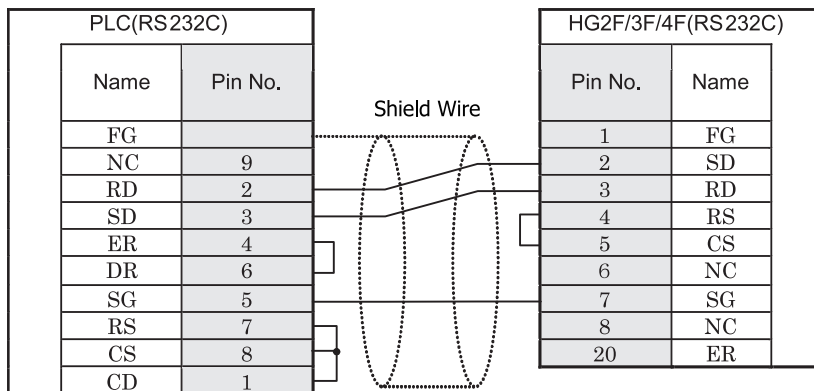
HG1F (Connector)



D-sub, 9P connector plug type

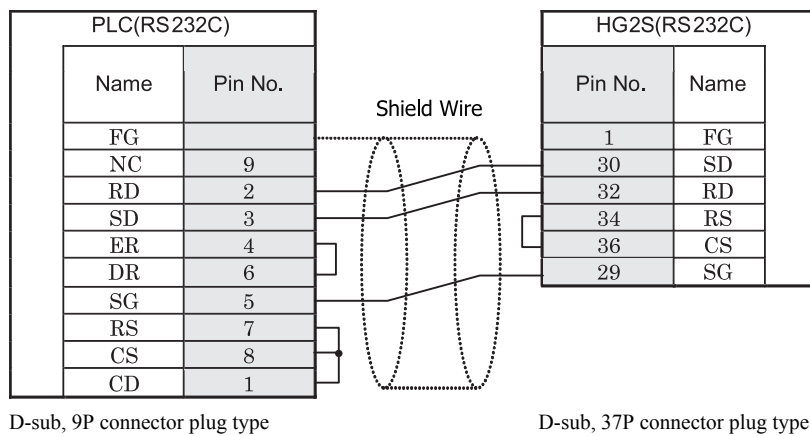
D-sub, 9P connector socket type

HG2F/3F/4F



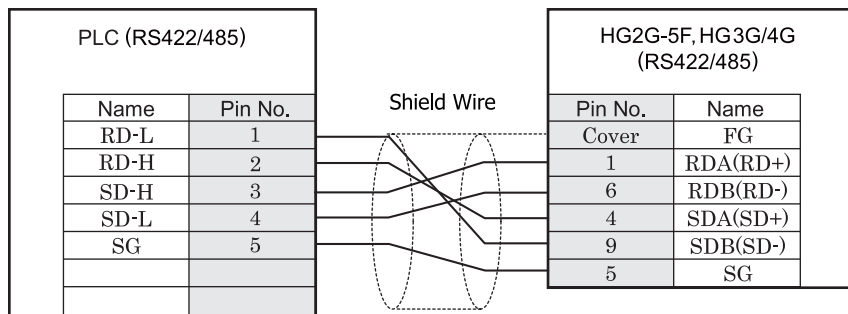
D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

8.3.3 Connection Diagram 3: S10V (RS422/485) to MICRO/I

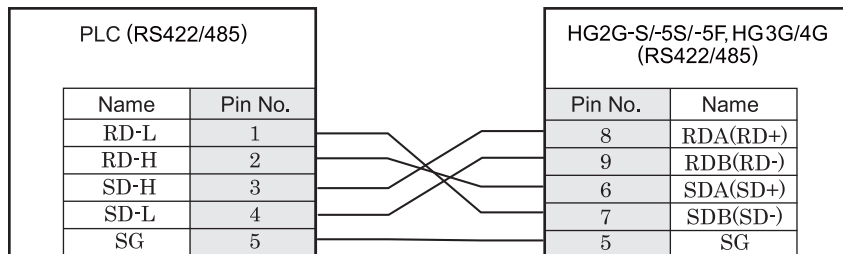
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector plug type

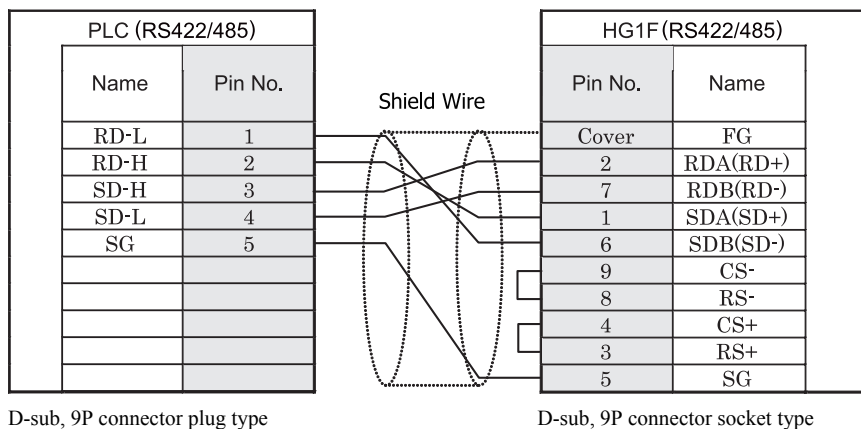
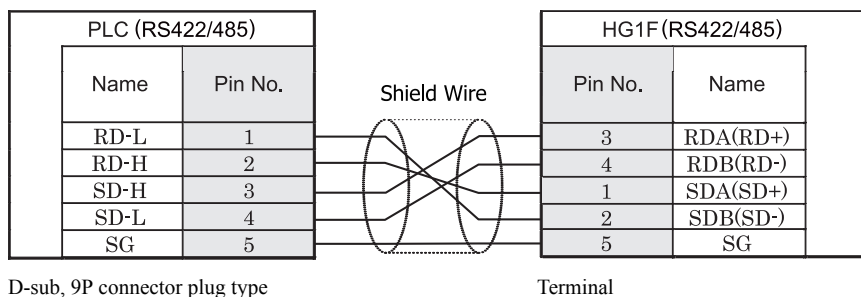
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



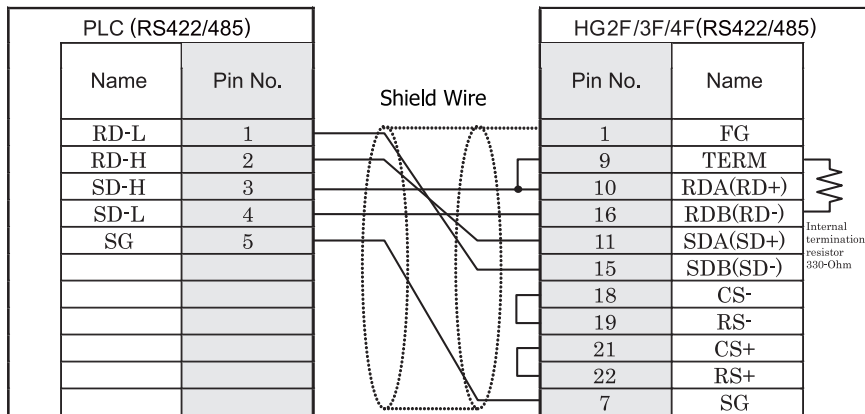
When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

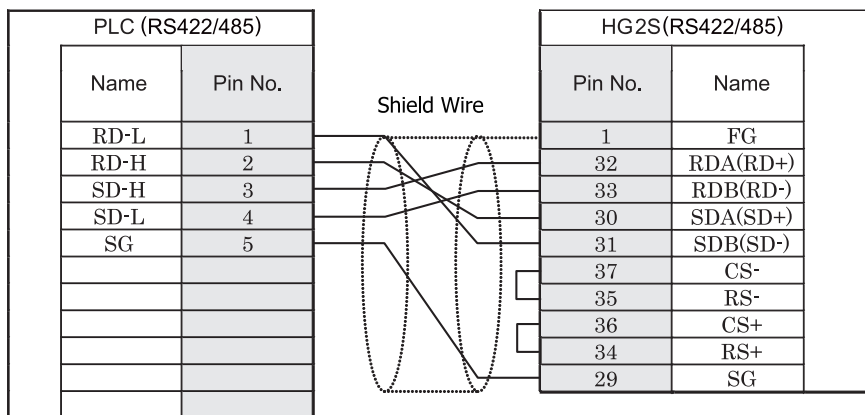


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

D-sub, 9P connector plug type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

8.4 Environment Settings

8.4.1 S10mini, S10V

Item	Setting
Interface	RS232C, RS422/485 4-wire
Baud Rate (bps)	19200
Data Bits	8
Parity	Odd
Stop Bits	1



Communication parameters are not flexible. Refer to the PLC manual for details.

8.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 7FF	R/W	
Output Relay	Y	Y	0 - 7FF	R/W	
Internal Relay	R	R	0 - 7FF	R/W	
Global Link	G	G	0 - FFF	R/W	
System Register	S	S	0 - BFF	R	
E Word	BEW	EW	400 - FFF	R/W	
Event	E	E	0 - FF	R/W	
Keep Relay	K	K	0 - 1FF	R/W	
On-Delay Timer (contact)	T	T	0 - 1FF	R	
One Shot Timer (contact)	U	U	0 - 7F	R	
Up/Down Counter (contact)	C	C	0 - 3F	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	XW	X	0 - 7F0	R/W	
Output Relay	YW	Y	0 - 7F0	R/W	
Internal Relay	RW	R	0 - 7F0	R/W	
Global Link	GW	G	0 - FF0	R/W	
System Register	SW	S	0 - BF0	R	
E Word	EW	EW	400 - FF0	R/W	
Event	WE	E	0 - F0	R/W	
Keep Relay	KW	K	0 - 1F0	R/W	
On-Delay Timer (contact)	TW	T	0 - 1F0	R	
One Shot Timer (contact)	UW	U	0 - 70	R	
Up/Down Counter (contact)	CW	C	0 - 30	R	
On-Delay Timer (elapsed value)	TC	T	0 - 1FF	R	
On-Delay Timer (setup value)	TS	T	0 - 1FF	R/W	
One Shot Timer (elapsed value)	UC	U	0 - 7F	R	
One Shot Timer (setup value)	US	U	0 - 7F	R/W	
Up/Down Counter (elapsed value)	CC	C	0 - 3F	R	
Up/Down Counter (setup value)	CS	C	0 - 3F	R/W	
Work Register	FW	FW	0 - BFF	R/W	
Data Register*1	DW	DW	0 - FFF	R/W	

*1 When you use word device as bit device, the bit position reverses the order, as shown in the example.

Example: specified address read address

DW 0-0	DW 0-15
DW 0-1	DW 0-14
:	:
DW 0-14	DW 0-1
DW 0-15	DW 0-0

9 JTEKT (Toyota)

9.1 Connection Table

9.1.1 Compatible PLCs

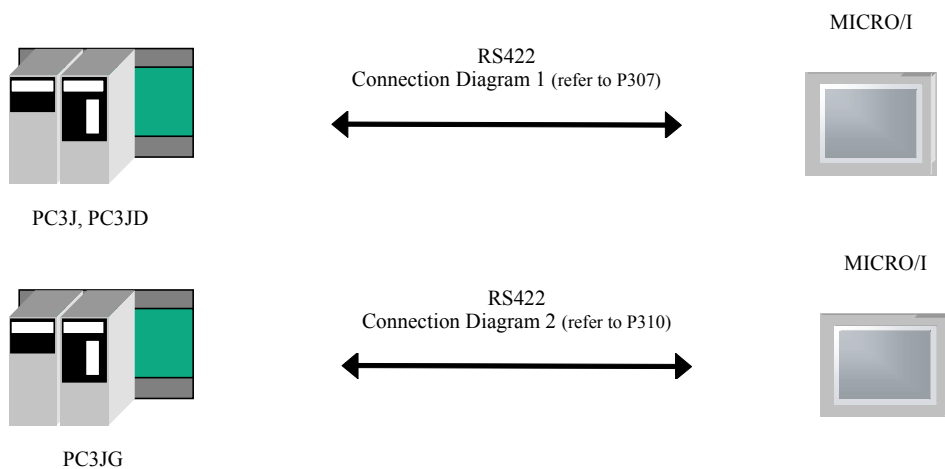
System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
TOYOPUC-PC2J								
PC2J*1	Not required (connects to Built-in Link)	RS422/485 2-wire Connection Diagram 1 (refer to P307)	Hardware	TOYOPUC-PC3J	X	X	X	---
TOYOPUC-PC3J								
PC3J*1 PC3JD*1	Not required (connects to Built-in Link)	RS422/485 2-wire Connection Diagram 1 (refer to P307)	Hardware	TOYOPUC-PC3J	X	X	X	---
PC3JG*1	Not required (connects to Built-in Link)	RS422/485 2-wire Connection Diagram 2 (refer to P310)						

*1 This PLC was used to test & verify communications.

9.2 System Configuration

This is the system configuration for the connection of JTEKT (Toyota) PLCs to the MICRO/I.

9.2.1 TOYOPUC-PC3J series (using the Built-in Link)



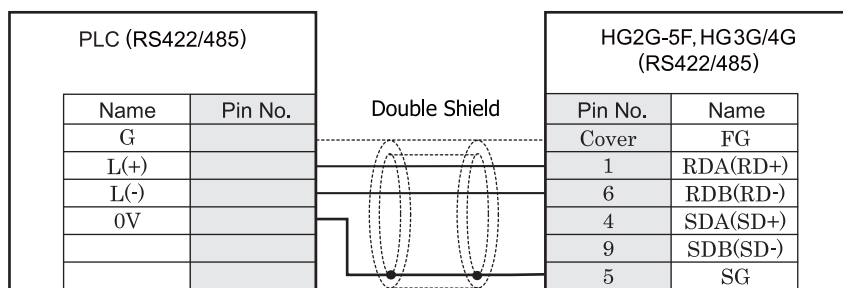
9.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

9.3.1 Connection Diagram 1: TOYOPUC-PC3J, PC3JD (Built-in Link) - MICRO/I

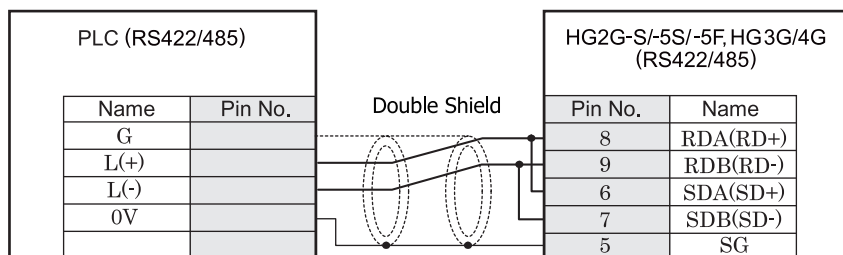
HG2G-5F, HG3G/4G (Connector)



Screw Terminal

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw Terminal

Terminal

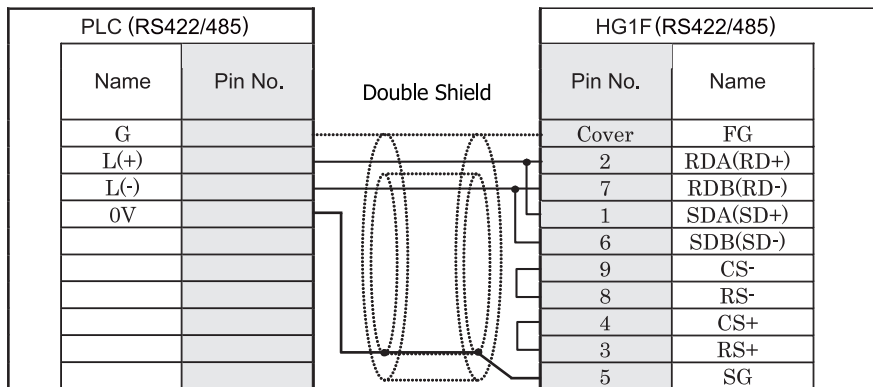


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

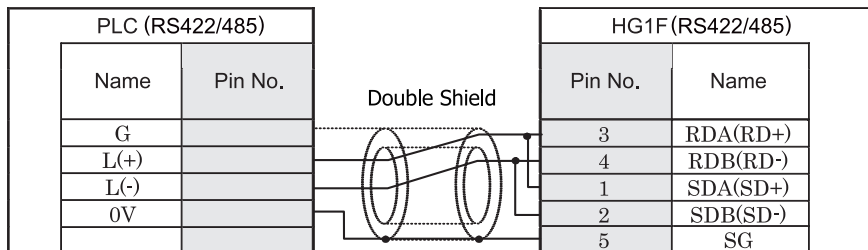
HG1F (Connector)



Screw Terminal

D-sub, 9P connector socket type

HG1F (Terminal)



Screw Terminal

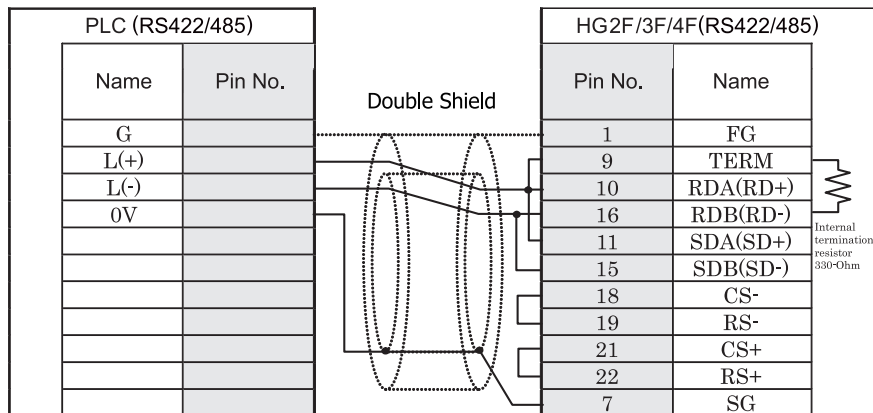
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

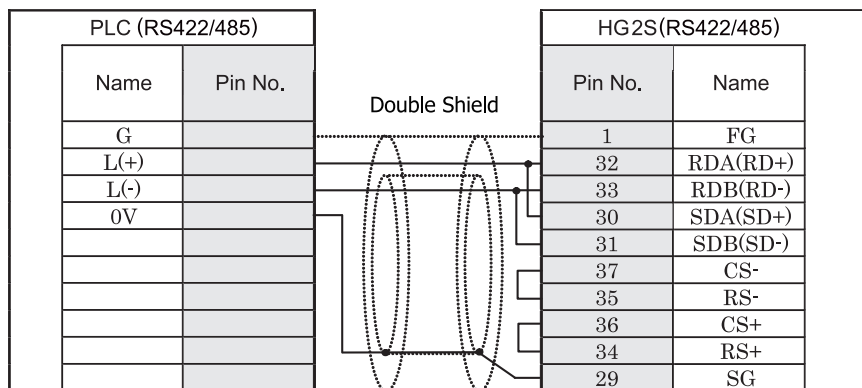


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

Screw Terminal

D-sub, 25P connector socket type

HG2S

Screw Terminal

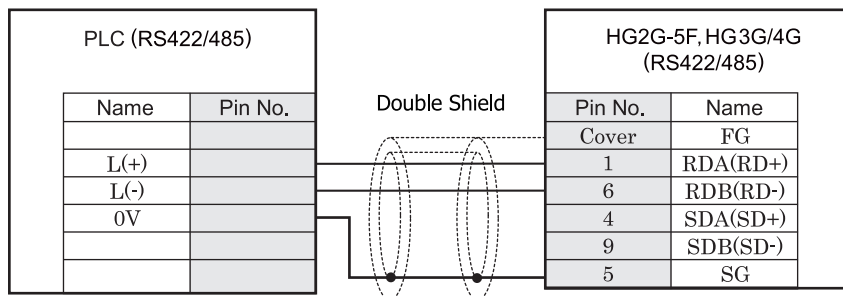
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

9.3.2 Connection Diagram 2: TOYOPUC-PC3JG (Built-in Link) - MICRO/I

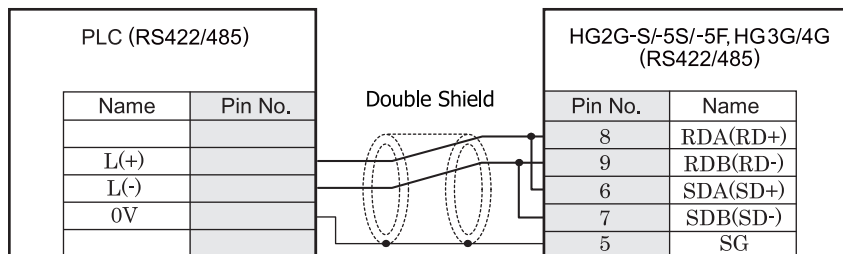
HG2G-5F, HG3G/4G (Connector)



Screw Terminal

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw Terminal

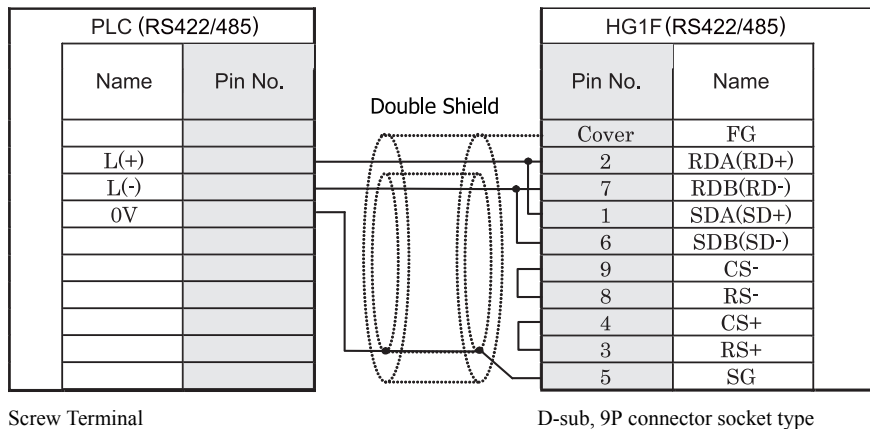
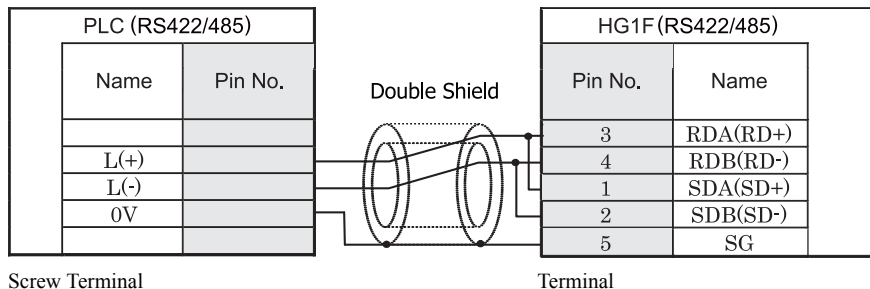
Terminal



When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.



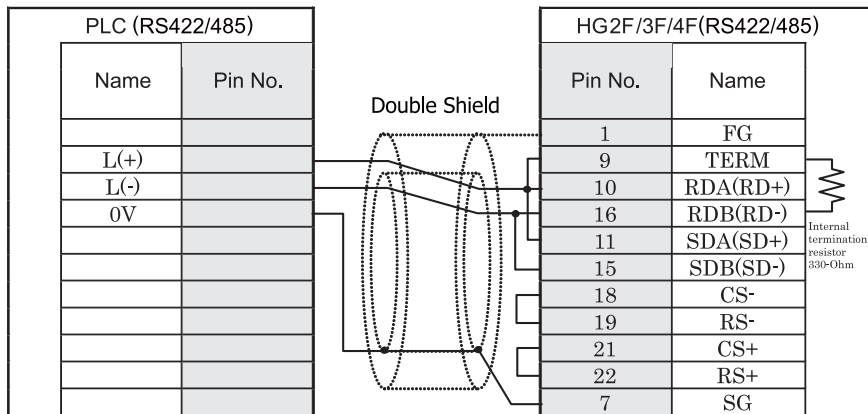
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

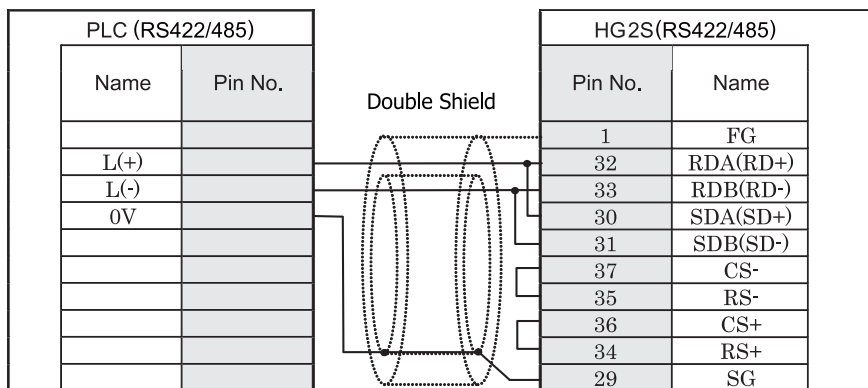


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

Screw Terminal

D-sub, 25P connector socket type

HG2S

Screw Terminal

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

9.4 Environment Settings

9.4.1 TOYOPUC-PC3J Series

Item	Setting
Interface	RS422/485 2-wire
Station No.	0-37 (set with octal number) *1
Data Bits	7 or 8
Communication Speed (bps)	1200, 2400, 4800, 9600, 19200, 38400 or 57600
Parity	Even (fix)
Stop Bits	1 or 2

*1 Although a Station No. is the number of octal in PC3J, please set it up with the number of Hexadecimal by WindO/I-NV2.
For example, when set up with "37" in PC3J, please set up with "1F" in WindO/I-NV2.



- Please set the communication conditions of PC3J in the built-in standard link parameters.
- When the built-in standard link parameters are not set, the link acts as the computer link for below settings.
Communication Speed: 19200bps
Data length: 8bit
Stop bit: 1bit
Parity: Even
Station No.: 0
- Please refer to "JTEKT TOYOPUC PC3J CPU MODULE OPERATION MANUAL" for details.

9.5 Usable Devices

9.5.1 TOYOPUC-PC3J

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 7FF	R/W	
Output Relay	Y	Y	0 - 7FF	R/W	
Internal relay	M	M	0 - 7FF	R/W	*1
Keep-relay	K	K	0 - 2FF	R/W	*1
Link relay	L	L	0 - 7FF	R/W	*1
Special relay	V	V	0 - FF	R/W	*1
Edge detection	P	P	0 - 1FF	R/W	*1
Timer contact	T	T	0 - 1FF	R	*1
Counter contact	C	C	0 - 1FF	R	*1
Internal relay	P3M	M	0 - 7FF	R/W	
Keep-relay	P3K	K	0 - 2FF	R/W	
Link relay	P3L	L	0 - 7FF	R/W	
Special relay	P3V	V	0 - FF	R/W	
Edge detection	P3P	P	0 - 1FF	R/W	
Timer contact	P3T	T	0 - 1FF	R	
Counter contact	P3C	C	0 - 1FF	R	
Internal relay	P2M	M	0 - 7FF	R/W	
Keep-relay	P2K	K	0 - 2FF	R/W	
Link relay	P2L	L	0 - 7FF	R/W	
Special relay	P2V	V	0 - FF	R/W	
Edge detection	P2P	P	0 - 1FF	R/W	
Timer contact	P2T	T	0 - 1FF	R	
Counter contact	P2C	C	0 - 1FF	R	
Internal relay	P1M	M	0 - 7FF	R/W	
Keep-relay	P1K	K	0 - 2FF	R/W	
Link relay	P1L	L	0 - 7FF	R/W	
Special relay	P1V	V	0 - FF	R/W	
Edge detection	P1P	P	0 - 1FF	R/W	
Timer contact	P1T	T	0 - 1FF	R	
Counter contact	P1C	C	0 - 1FF	R	

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Extended input	EX	EX	0 - 7FF	R/W	
Extended output	EY	EY	0 - 7FF	R/W	
Extended Internal relay	EM	EM	0 - 1FFF	R/W	
Extended keep-relay	EK	EK	0 - FFF	R/W	
Extended link relay	EL	EL	0 - 1FFF	R/W	
Extended special relay	EV	EV	0 - FFF	R/W	
Extended edge detection	EP	EP	0 - FFF	R/W	
Extended timer contact	ET	ET	0 - 7FF	R	
Extended counter contact	EC	EC	0 - 7FF	R	
Extended input	GX	GX	0 - FFFF	R/W	*2
Extended output	GY	GY	0 - FFFF	R/W	*2
Extended Internal relay	GM	GM	0 - FFFF	R/W	*2

*1 Parameter-set program No. in "Link parameter" is an objective of command processing. When the built-in standard link parameters are not set, Program1 is an objective of command processing.

*2 These devices are available in the case of a PC3JG mode.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input	WX	X	0 - 7F	R/W	
Output	WY	Y	0 - 7F	R/W	
Internal relay	WM	M	0 - 7F	R/W	*1
Keep-relay	WK	K	0 - 2F	R/W	*1
Link relay	WL	L	0 - 7F	R/W	*1
Timer contact	WT	T	0 - 1F	R	*1
Counter contact	WC	C	0 - 1F	R	*1
Present value register	N	N	0 - 1FF	R	*1
Data register	D	D	0 - 2FFF	R/W	*1
Link register	R	R	0 - 7FF	R/W	*1
Special register	S	S	0 - 3FF	R/W	*1
File register	B	B	0 - 1FFF	R/W	*1*2
Internal relay	P3WM	M	0 - 7F	R/W	
Keep-relay	P3WK	K	0 - 2F	R/W	
Link relay	P3WL	L	0 - 7F	R/W	
Timer contact	P3WT	T	0 - 1F	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Counter contact	P3WC	C	0 - 1F	R	
Present value register	P3N	N	0 - 1FF	R	
Data register	P3D	D	0 - 2FFF	R/W	
Link register	P3R	R	0 - 7FF	R/W	
Special register	P3S	S	0 - 3FF	R/W	
File register	P3B	B	0 - 1FFF	R/W	*2
Internal relay	P2WM	M	0 - 7F	R/W	
Keep-relay	P2WK	K	0 - 2F	R/W	
Link relay	P2WL	L	0 - 7F	R/W	
Timer contact	P2WT	T	0 - 1F	R	
Counter contact	P2WC	C	0 - 1F	R	
Present value register	P2N	N	0 - 1FF	R	
Data register	P2D	D	0 - 2FFF	R/W	
Link register	P2R	R	0 - 7FF	R/W	
Special register	P2S	S	0 - 3FF	R/W	
File register	P2B	B	0 - 1FFF	R/W	*2
Internal relay	P1WM	M	0 - 7F	R/W	
Keep-relay	P1WK	K	0 - 2F	R/W	
Link relay	P1WL	L	0 - 7F	R/W	
Timer contact	P1WT	T	0 - 1F	R	
Counter contact	P1WC	C	0 - 1F	R	
Present value register	P1N	N	0 - 1FF	R	
Data register	P1D	D	0 - 2FFF	R/W	
Link register	P1R	R	0 - 7FF	R/W	
Special register	P1S	S	0 - 3FF	R/W	
File register	P1B	B	0 - 1FFF	R/W	*2
Extended input	WEX	EX	0 - 7F	R/W	
Extended output	WEY	EY	0 - 7F	R/W	
Extended internal relay	WEM	EM	0 - 1FF	R/W	
Extended keep-relay	WEK	EK	0 - FF	R/W	
Extended link relay	WEL	EL	0 - 1FF	R/W	
Extended timer contact	WET	ET	0 - 7F	R	*1
Extended counter contact	WEC	EC	0 - 7F	R	*1
Extended present value register	EN	EN	0 - 7FF	R	
Extended data register	U	U	0 - 7FFF	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Extended special register	ES	ES	0 - 7FF	R/W	
Extended setup value register	H	H	0 - 7FF	R/W	
Extended input	WGX	GX	0 - FFF	R/W	*3
Extended output	WGY	GY	0 - FFF	R/W	*3
Extended internal relay	WGM	GM	0 - FFF	R/W	*3
Extended Buffer register 0	EB0	EB	0 - 7FFF	R/W	*3
Extended Buffer register 1	EB1	EB	8000 - FFFF	R/W	*3
Extended Buffer register 2	EB2	EB	10000 - 17FFF	R/W	*3
Extended Buffer register 3	EB3	EB	18000 - 1FFFF	R/W	*3

*1 Parameter-set program No. in "Link parameter" is an objective of command processing. When the built-in standard link parameters are not set, Program1 is an objective of command processing.

*2 When CPU operation mode is division mode, File register is not available.

*3 These devices are available in the case of a PC3JG mode.



Depending on the type of CPU operation mode of PC3J that you will be using, there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

10 Toshiba Machine Works

10.1 Connection Table

10.1.1 Compatible PLCs

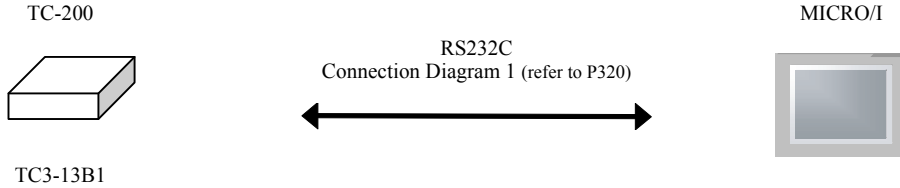
System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
TC200								
TC3-13B1*1	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P320)	Hardware /None	TC200	X	X	X	---
TCmini								
TC03-01, TC03-02*1	Not required (connects to CPU unit)	RS232C Connection Diagram 2 (refer to P322)	Hardware /None	TC200	X	X	X	---
	Not required (connects to CPU unit)	RS422/485 2-wire Connection Diagram 3 (refer to P324)						

*1 This PLC was used to test & verify communications.

10.2 System Configuration

This is the system configuration for the connection of Toshiba machine works PLCs to the MICRO/I.

10.2.1 TC200

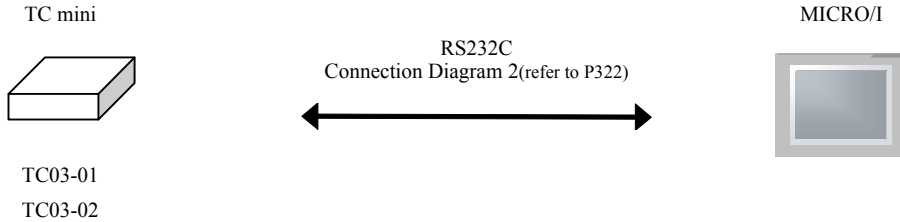


Connects to Serial port of CPU unit.

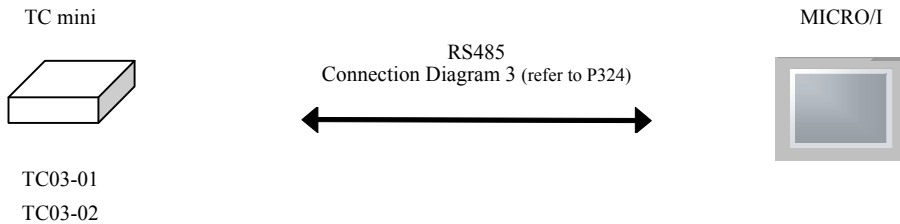
2

Connection to a PLC

10.2.2 TCmini (connected to the RS232C Port)



10.2.3 TCmini (connected to the RS-TCm485 Port)



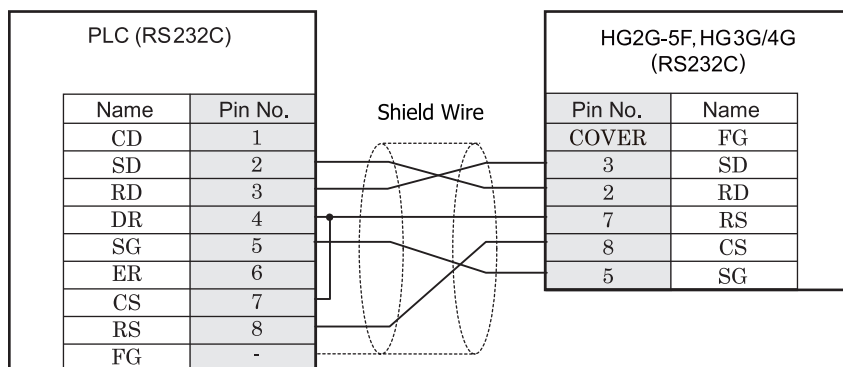
10.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

10.3.1 Connection Diagram 1: TC200 (RS232C) - MICRO/I

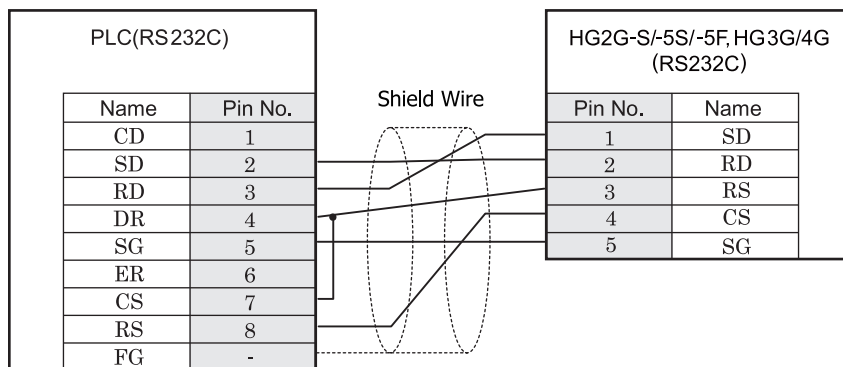
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

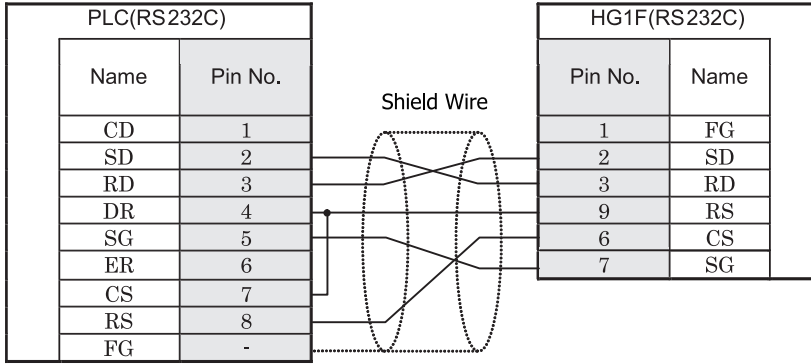
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector plug type

Terminal

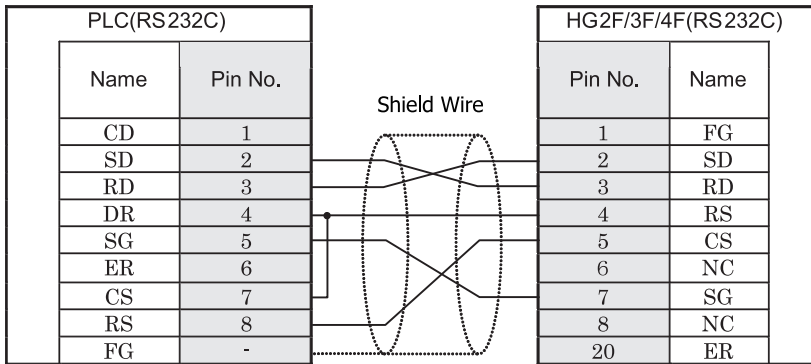
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

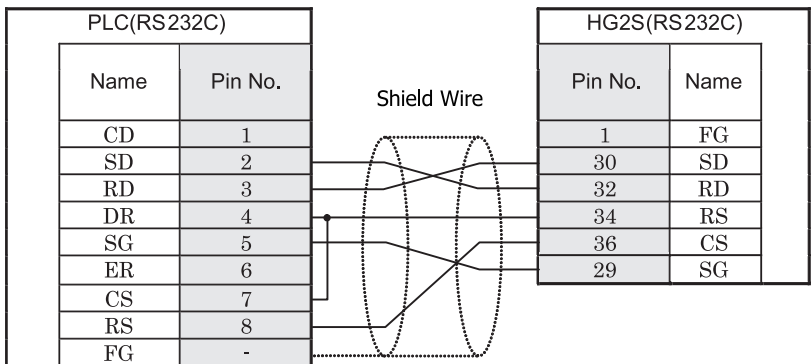
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

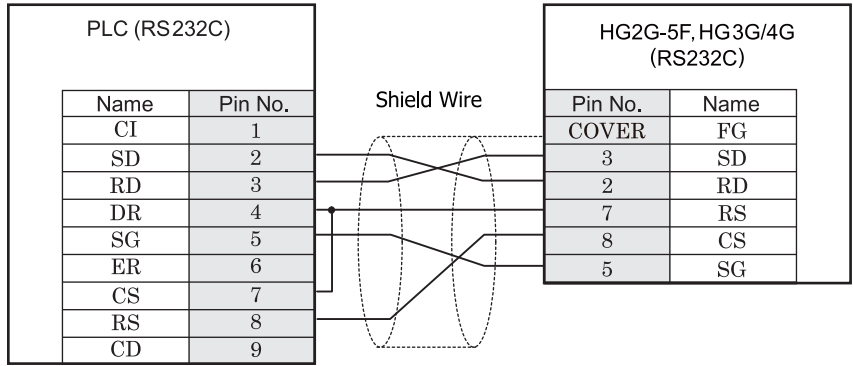


D-sub, 9P connector plug type

D-sub, 37P connector plug type

10.3.2 Connection Diagram 2: TCmini (RS232C) - MICRO/I

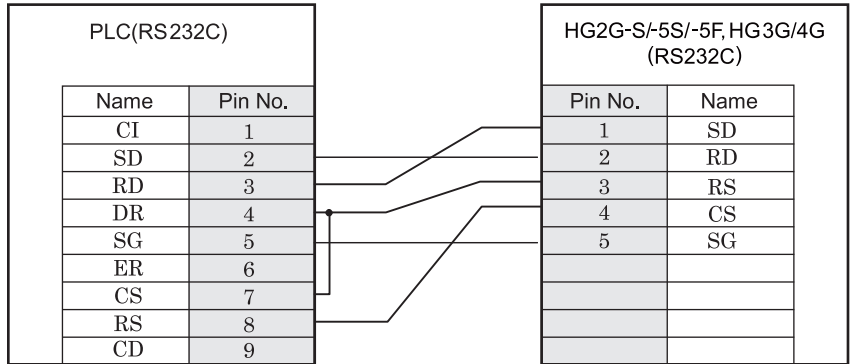
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

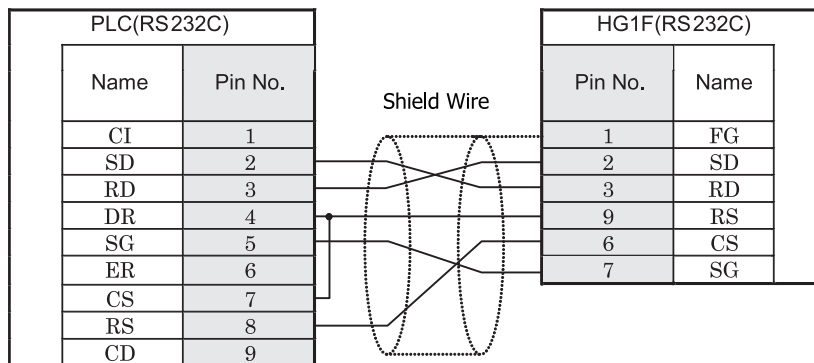
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



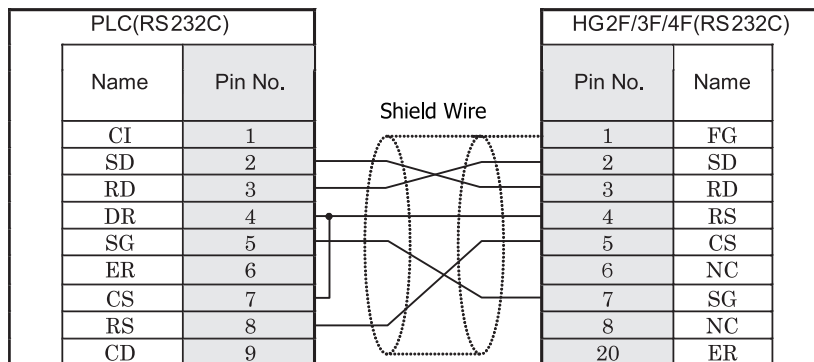
D-sub, 9P connector plug type

Terminal

HG1F (Connector)

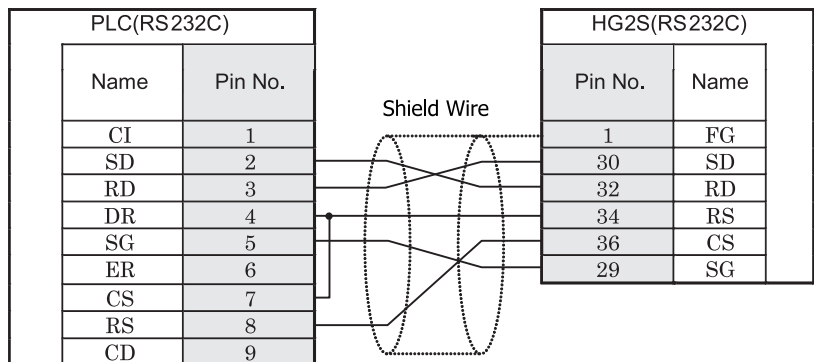
D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector plug type

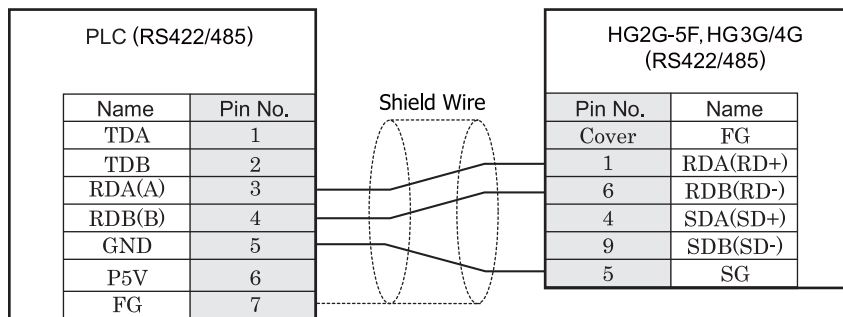
D-sub, 25P connector socket type

HG2S

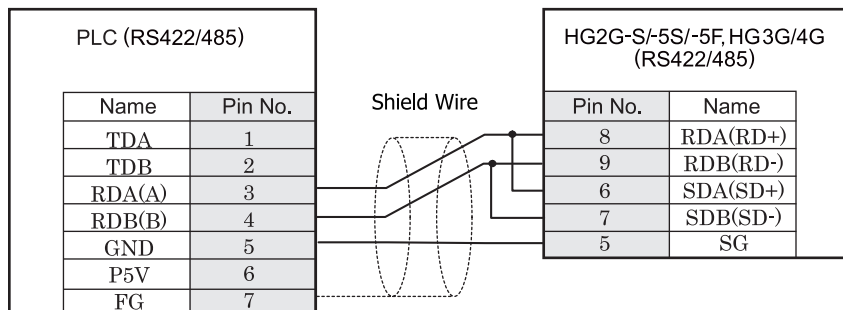
D-sub, 9P connector plug type

D-sub, 37P connector plug type

10.3.3 Connection Diagram 3:TCmini (RS485) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Terminal

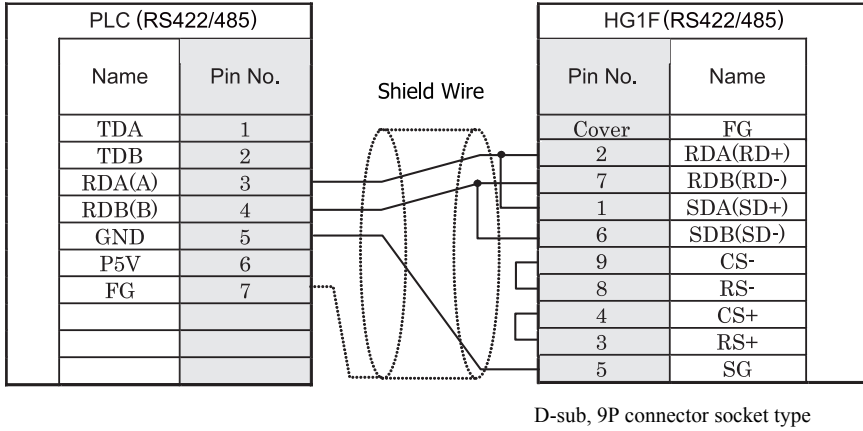


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

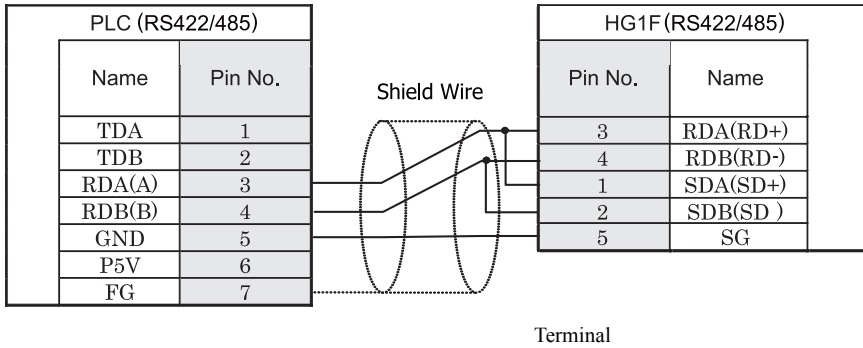


- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA and SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)



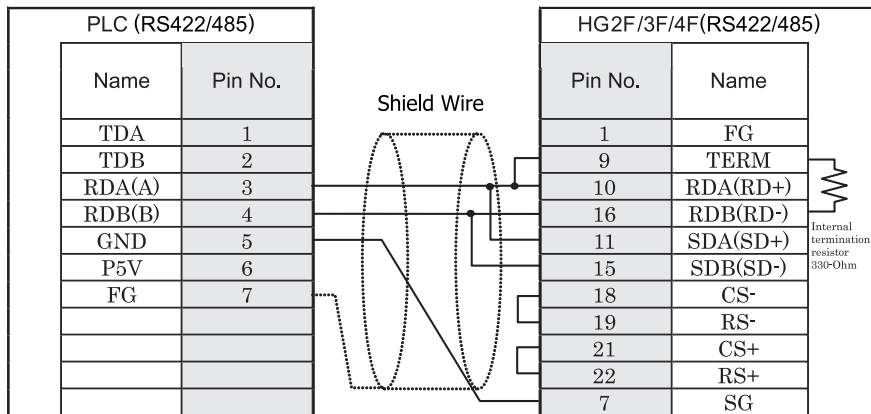
HG1F (Terminal)



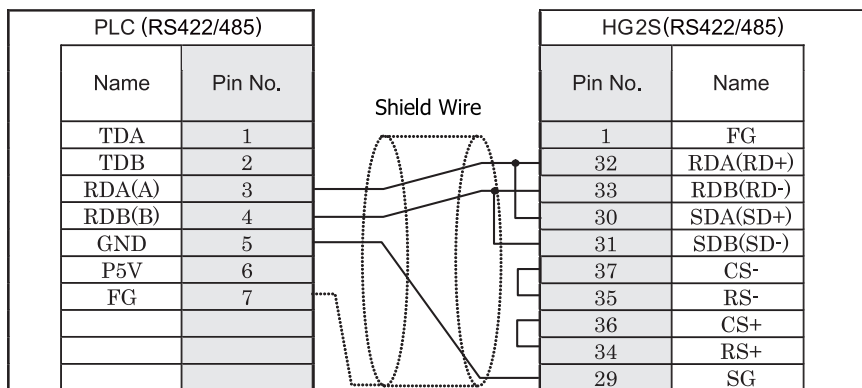
There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 25P connector socket type

HG2S

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

10.4 Environment Settings

10.4.1 TC200

Items	Details
Interface	RS232C
PC No. *1	00 - 63 (Set same as MICRO/I) (DEC)
Baud Rate (bps)	9600
Data Bits	8
Parity	None
Stop Bits	2

*1 Set a decimal number for the PC No.

10.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - F7F	R	
Output Relay	Y	Y	0 - F7F	R/W	
Internal Relay	R	R	0 - 77F	R/W	
Latch Relay	L	L	0 - 7F	R/W	
Exp.Int.Relay1	G	G	0 - F7F	R/W	
Exp.Int.Relay2	H	H	0 - F7F	R/W	
Spec. Aid Relay	A	A	0 - 16F	R/W	
Timer (Relay)	T	T	0 - 37F	R	
Counter (Relay)	C	C	0 - 37F	R	
Sift Register	S	S	0 - 7F	R/W	
Edge Relay	E	E	0 - 77F	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	WX	X	0 - F7	R	
Output Relay	WY	Y	0 - F7	R/W	
Internal Relay	WR	R	0 - 77	R/W	
Latch Relay	WL	L	0 - 7	R/W	
Exp.Int.Relay1	WG	G	0 - F7	R/W	
Exp.Int.Relay2	WH	H	0 - F7	R/W	
Spec. Aid Relay	WA	A	0 - 16	R/W	
Tim/Cnt.(Current Value)	P	P	0 - 77F	R	
Tim/Cnt.(Preset Value)	V	V	0 - 77F	R/W	
General Register1	D	D	0 - F7F	R/W	
General Register2	B	B	0 - F7F	R/W	
Sift Register	WS	S	0 - 7	R/W	
Edge Relay	WE	E	0 - 77	R/W	
Timer Relay (Word)	WT	T	0 - T77	R	
Counter Relay (Word)	WC	C	0 - 77	R	

11 GE Fanuc Automation

11.1 Connection Table

11.1.1 Compatible PLCs

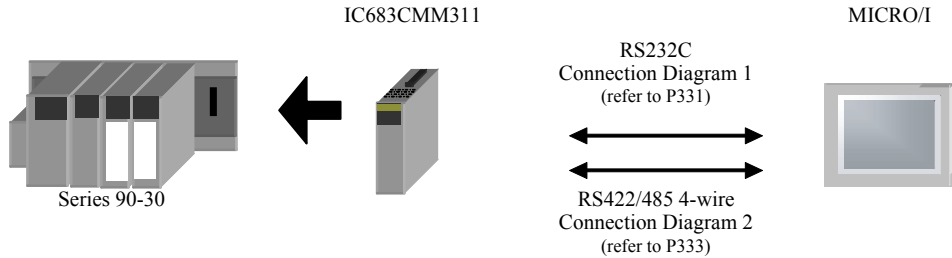
System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
Series90-30								
CPU331*1, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	IC693CMM311	RS232C Connection Diagram 1 (refer to P331)	Hardware	Series 90 (SNP-X)	X	X	X	---
		RS422/485 4-wire Connection Diagram 2 (refer to P333)						
CPU311, CPU313, CPU323, CPU331*1, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	Not required (connects to CPU (Power Supply) unit directly)	RS422/485 4-wire Connection Diagram 3 (refer to P336)						
VersaMax								
Nano	Not required (connects to CPU unit directly)	RS232C Connection Diagram 4 (refer to P339)	Hardware	Series 90 (SNP-X)	X	X	X	---
Micro (14point)		RS232C Connection Diagram 4 (refer to P339)						
Micro (23, 28*1point)		RS422/485 4-wire Connection Diagram 3 (refer to P339)						

*1 This PLC was used to test & verify communications.

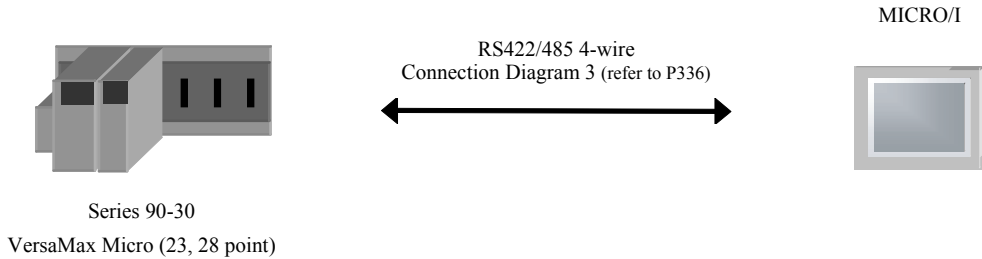
11.2 System Configuration

This is the system configuration for the connection of GE Fanuc PLCs to MICRO/I screens.

11.2.1 Series 90-30 (Using Communication Coprocessor Module (CMM))

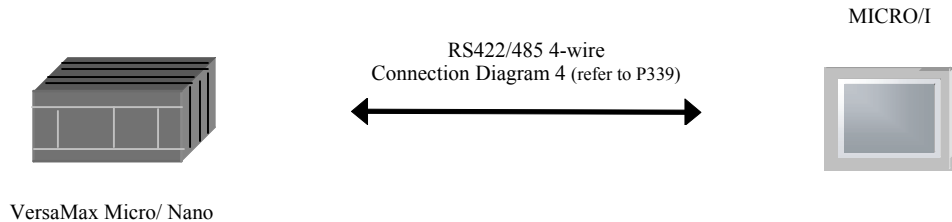


11.2.2 Series 90-30, VersaMax Micro (Using CPU Serial Port)



Connects to Serial port on Series 90-30 PLC Power Supply. Connects to Serial port 2 on VersaMax Micro PLC.

11.2.3 VersaMax Micro/Nano (Using Serial Port 1)



Connects to Serial port 1(RS232C) on VersaMax Micro/Nano PLC.

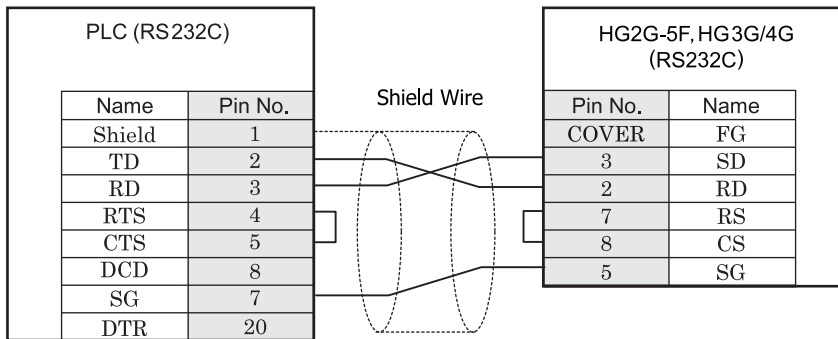
11.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not for the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

11.3.1 Connection Diagram 1: Series 90-30 Communication Coprocessor Module (CMM) (RS232C) to MICRO/I

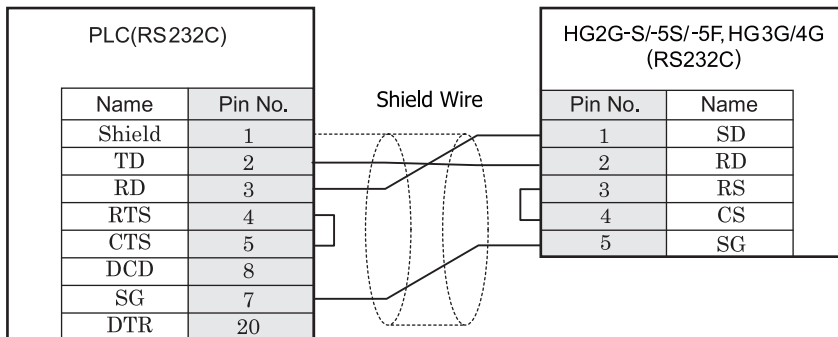
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



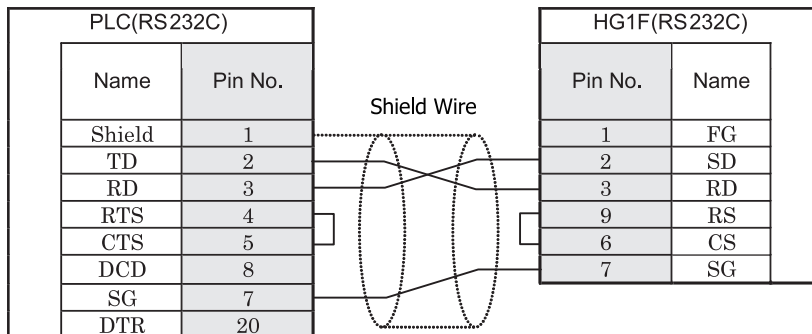
D-sub, 25P connector socket type (unit side)

Terminal

2

Connection to a PLC

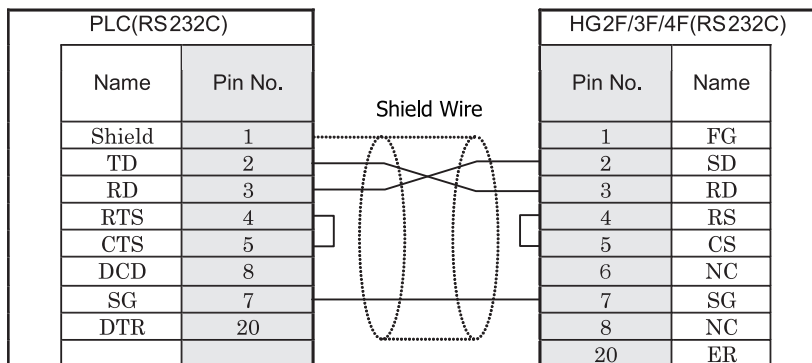
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

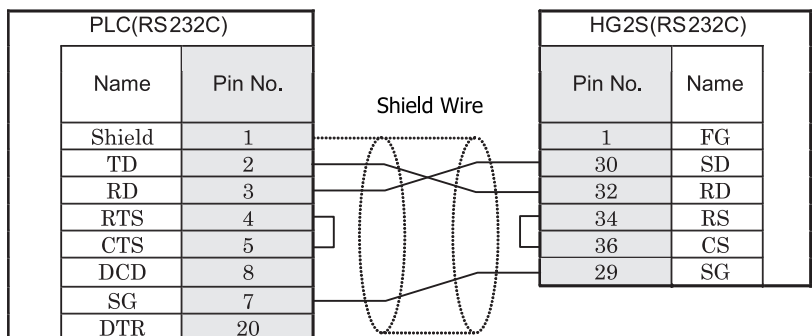
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

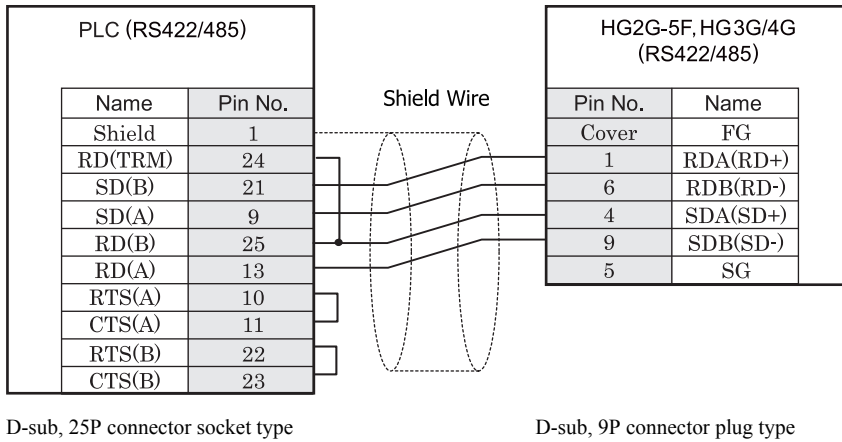


D-sub, 25P connector socket type (unit side)

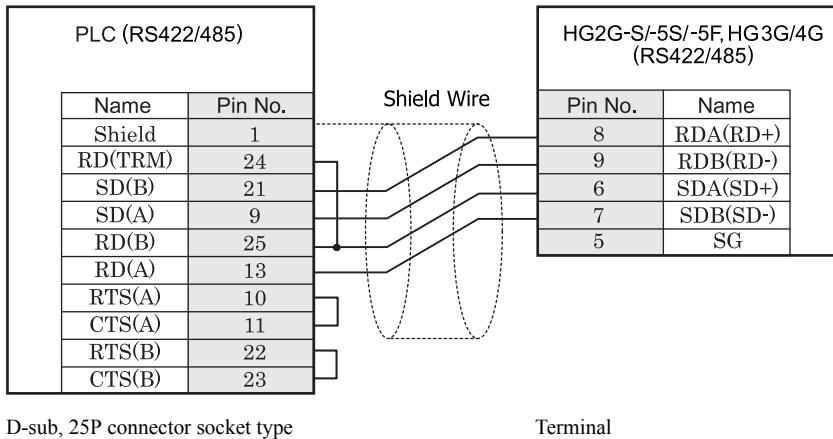
D-sub, 37P connector plug type

11.3.2 Connection Diagram 2: Series 90-30 Communication Coprocessor Module (CMM) (RS422/485) to MICRO/I

HG2G-5F, HG3G/4G (Connector)



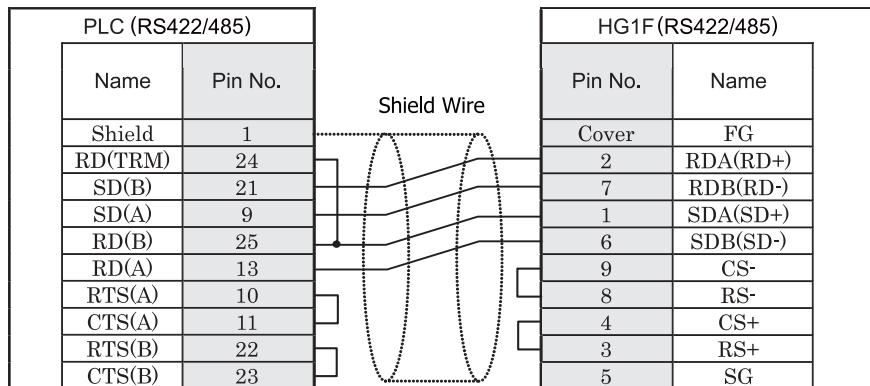
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

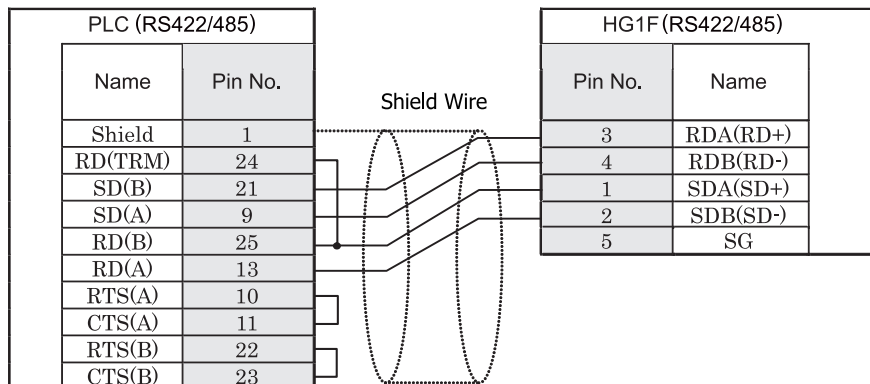


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)

D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 25P connector socket type

Terminal

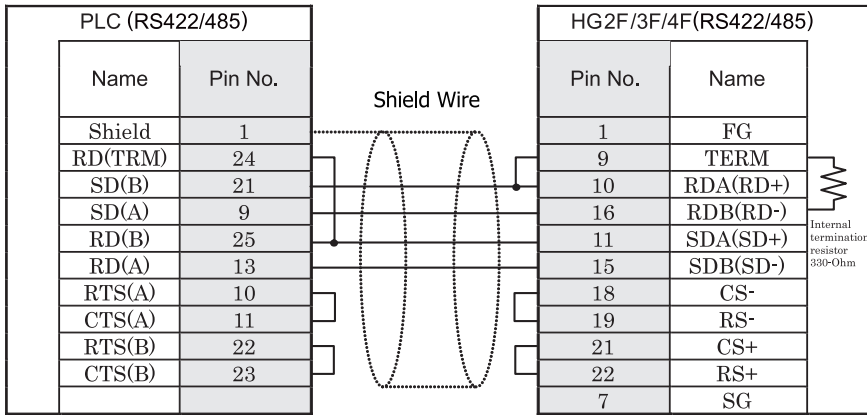


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

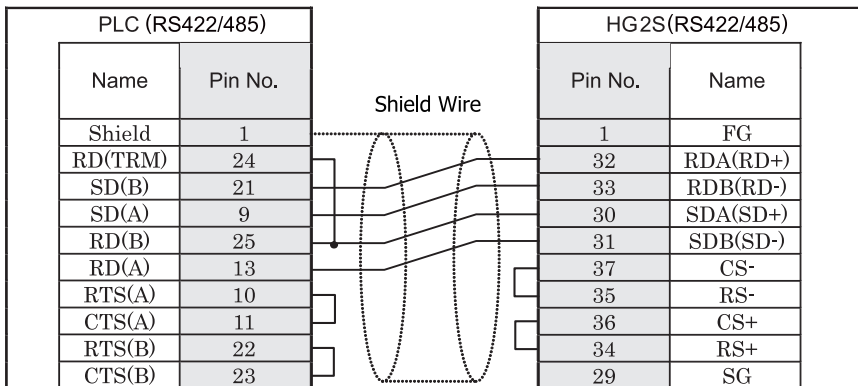
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S



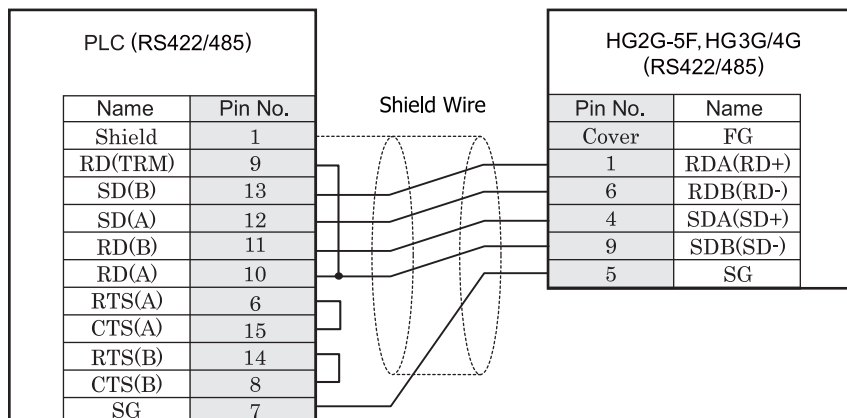
D-sub, 25P connector socket type

D-sub, 37P connector plug type



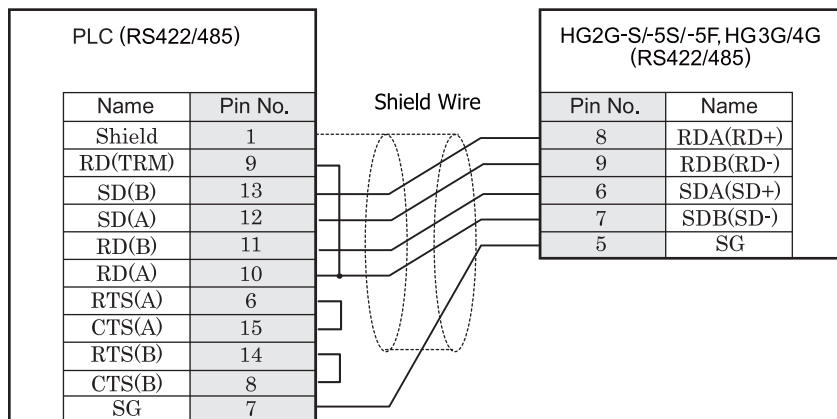
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

11.3.3 Connection Diagram 3: PLC (RS485) to MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 15P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 15P connector socket type

Terminal

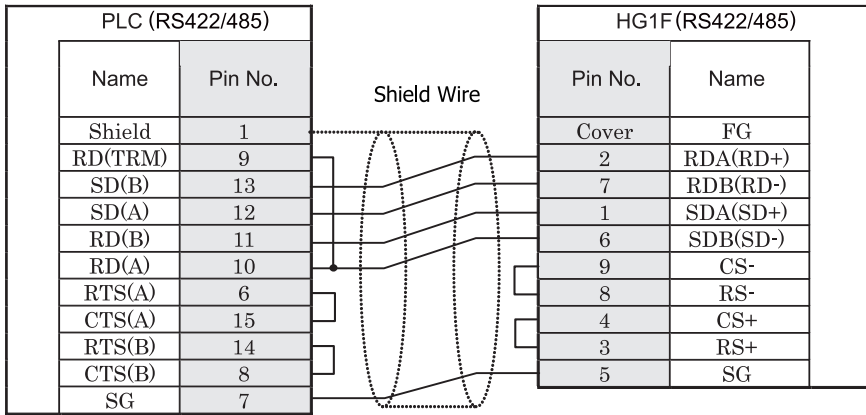


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G make sure to configure the Hardware Flow control to NONE.

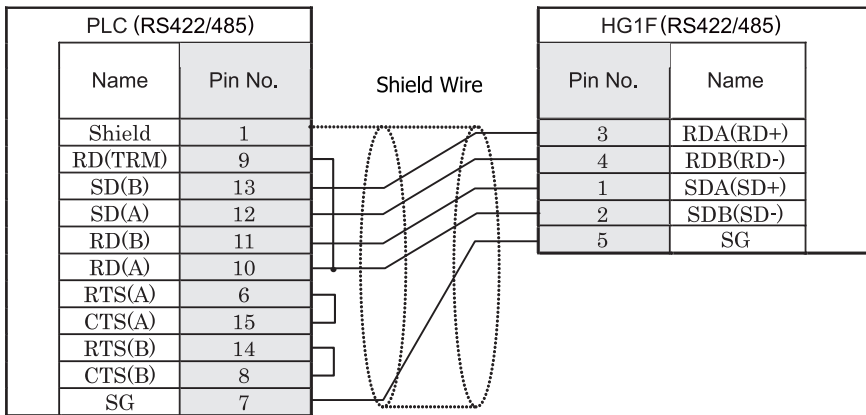
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 15P connector socket type

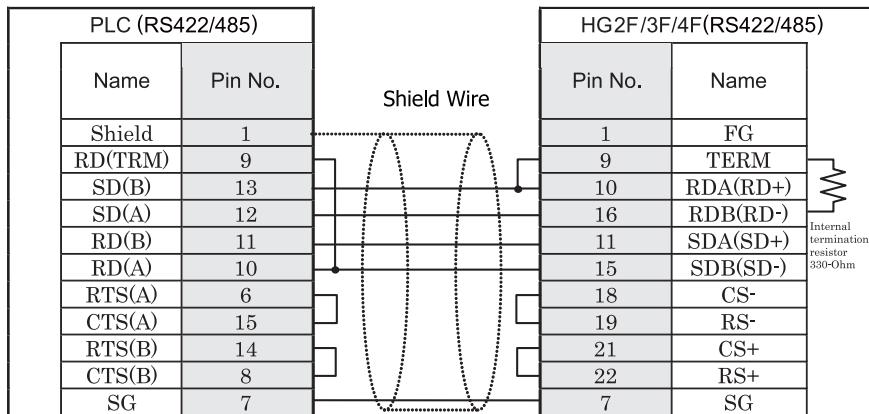
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

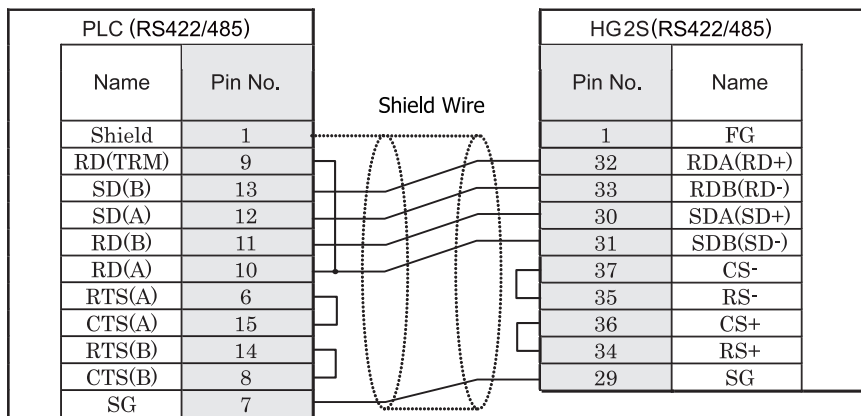


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

D-sub, 15P connector socket type

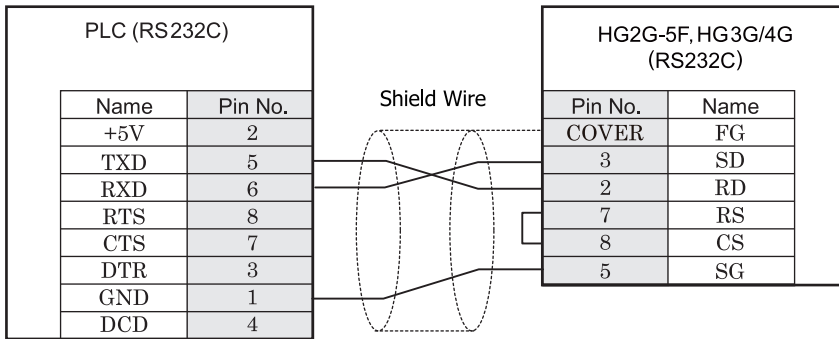
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

11.3.4 Connection Diagram 4: PLC (RS232C) to MICRO/I

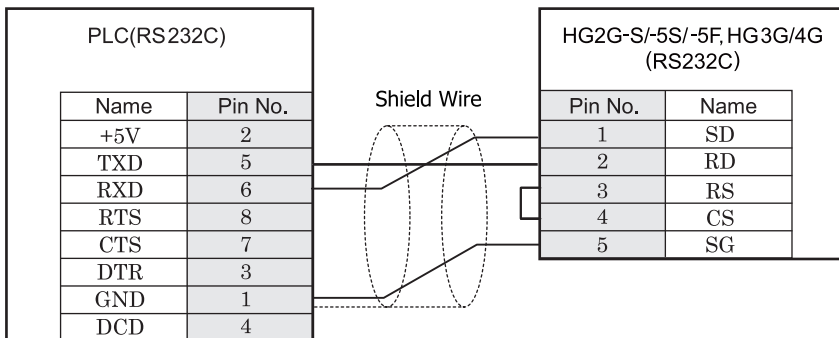
HG2G-5F, HG3G/4G (Connector)



RJ-45, 8P modular connector socket type

D-sub, 9P connector plug type

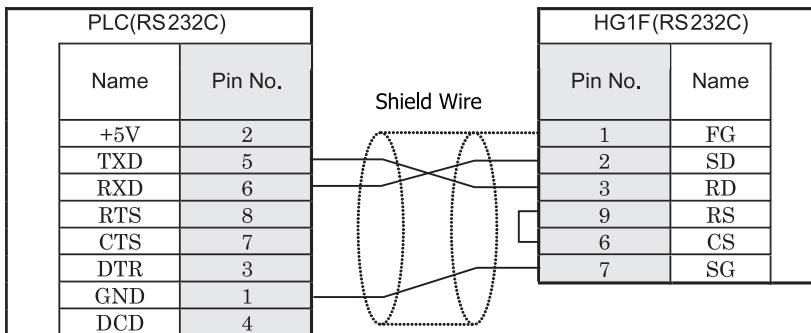
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



RJ-45, 8P modular connector socket type

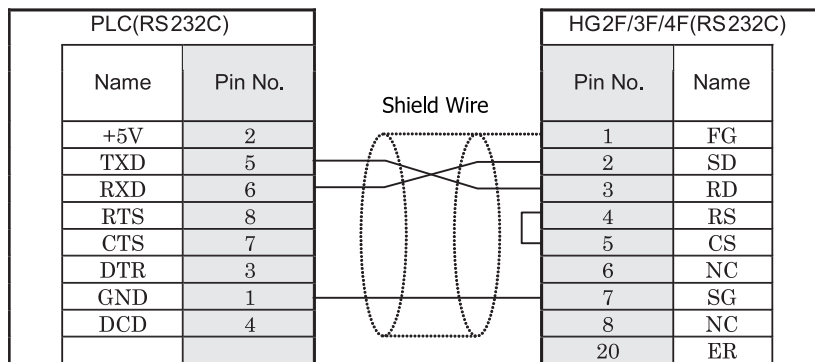
Terminal

HG1F (Connector)



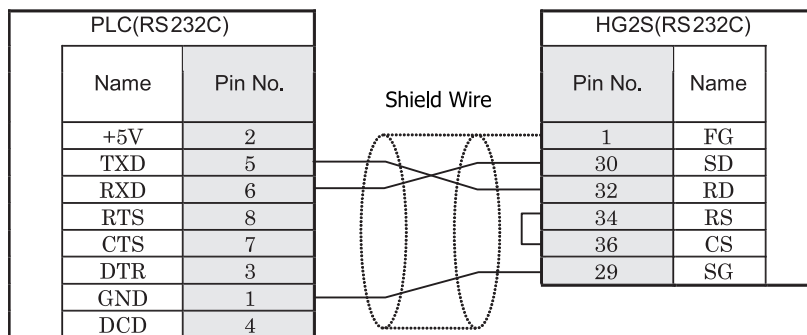
RJ-45, 8P modular connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

RJ-45, 8P modular connector socket type

D-sub, 25P connector socket type

HG2S

RJ-45, 8P modular connector socket type

D-sub, 37P connector plug type

11.4 Environment Settings

The communication port settings for GE Fanuc PLCs and MICRO/I host port are as follows

11.4.1 Series 90-30 Communication Coprocessor Module (CMM)

Item		Setting	
Interface	Set to the same setting as the MICRO/I	RS232C	RS485 4-wire
Baud Rate [bps]		1200, 2400, 4800, 9600 or 19200	
Data Bits		8 (fixed)	
Parity		Odd, Even or None	
Stop Bits		1 or 2	
Flow Control		None	Hardware or None
Configuration Mode		SNP Only	
SNP Enable		Yes	
SNP Mode		Slave	



Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.

11.4.2 Series 90-30 CPU Module

Item		Setting	
Interface	Set to the same setting as the MICRO/I	RS485 4-wire	
Baud Rate [bps]		1200, 2400, 4800, 9600 or 19200	
Data Bits		8 (fixed)	
Parity		Odd, Even or None	
Stop Bits		1 or 2	



Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.

11.4.3 VersaMax Micro/Nano

Item		Setting
Interface	Set to the same setting as the MICRO/I	RS232C (Port 1), RS485 4-wire (Port 2)
Baud Rate [bps]		1200, 2400, 4800, 9600 or 19200
Data Bits		8 (fixed)
Parity		Odd , Even or None
Stop Bits		1 or 2
Port Mode		SNP
Port Type		Slave



- Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.
- Refer to the manuals of Series90-30 or VersaMax Micro/Nano PLCs for details.

11.5 Usable Devices

The types of devices supported by the MICRO/I and their ranges are shown below.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Discrete Inputs	I	%I	1 - 12288	R	Dec
Discrete Outputs	Q	%Q	1 - 12288	R/W	Dec
Internal Coils	M	%M	1 - 12288	R/W	Dec
Temporary Coils	T	%T	1 - 256	R/W	Dec
Discrete Globals	G	%G	1 - 7680	R/W	Dec
System Status References S	S	%S	1 - 128	R	Dec
System Status References SA	SA	%SA	1 - 128	R/W	Dec
System Status References SB	SB	%SB	1 - 128	R/W	Dec
System Status References SC	SC	%SC	1 - 128	R/W	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Discrete Inputs	WI	%I	1 - 12273	R	Dec
Discrete Outputs	WQ	%Q	1 - 12273	R/W	Dec
Internal Coils	WM	%M	1 - 12273	R/W	Dec
Temporary Coils	WT	%T	1 - 241	R/W	Dec
Discrete Globals	WG	%G	1 - 7665	R/W	Dec
System Status References S	WS	%S	1 - 113	R	Dec
System Status References SA	WSA	%SA	1 - 113	R/W	Dec
System Status References SB	WSB	%SB	1 - 113	R/W	Dec
System Status References SC	WSC	%SC	1 - 113	R/W	Dec
Register Memory	R	%R	1 - 16384	R/W	Dec
Analog Inputs	AI	%AI	1 - 8192	R/W	Dec
Analog Outputs	AQ	%AQ	1 - 8192	R/W	Dec



The device ranges may differ depending on the PLC model. Please refer to PLC Manual for supported memory ranges of the PLC you are using.

12 Panasonic Electric Works

12.1 Connection Table

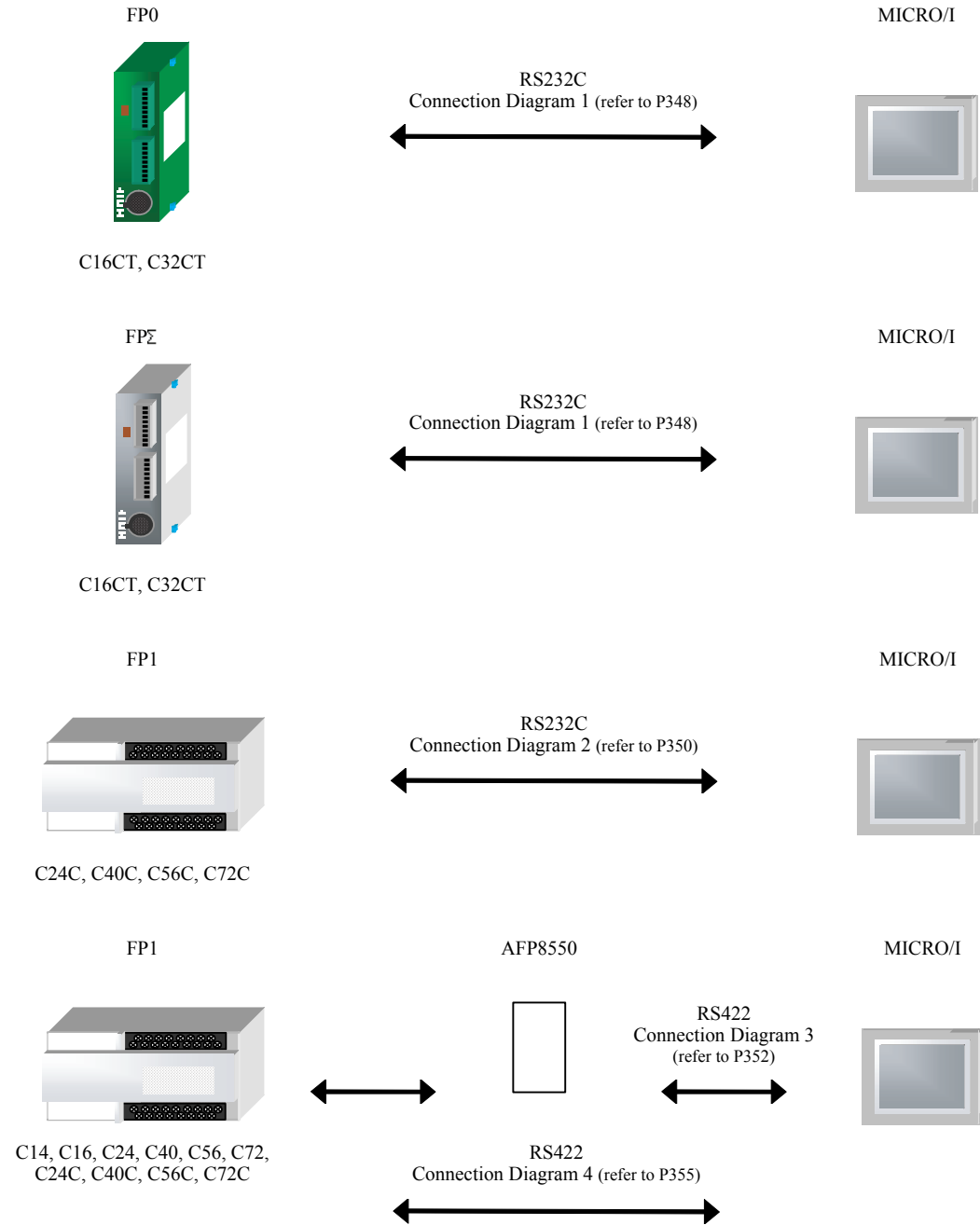
12.1.1 Compatible Protocols

System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FP Series								
FP0	Not required*1 (Connects to CPU unit directly)	RS232C Connection Diagram 1 (refer to P348)	Hardware	MEWNET	X	X	X	---
FP1*1	Not required (Connects to RS232C Port)	RS232C Connection Diagram 2 (refer to P350)						
	Not required (Connects to CPU unit directly)	RS232C (AFP8550) Connection Diagram 3 (refer to P352)						
	Not required*1 (Connects to CPU unit directly)	RS422/485 4-wire Connection Diagram 4 (refer to P355)						
FPΣ*1	Not required*1 (Connects to CPU unit directly)	RS232C Connection Diagram 1 (refer to P348)						
	Used Communication cassette AFPG801*1	RS232C Connection Diagram 5 (refer to P358)						
	Used Communication cassette AFPG802*1	RS232C Connection Diagram 6 (refer to P360)						
	Used Communication cassette AFPG803*1	RS422/485 2-wire Connection Diagram 7 (refer to P362)						
FP10, FP10SH	Not required*1 (Connects to Tool Pot or Com Port)	RS232C Connection Diagram 8 (refer to P365)						
	AFP3462*1							
FP2, FP2SH	Not required (Connects to Com Port)							
	AFP2462							

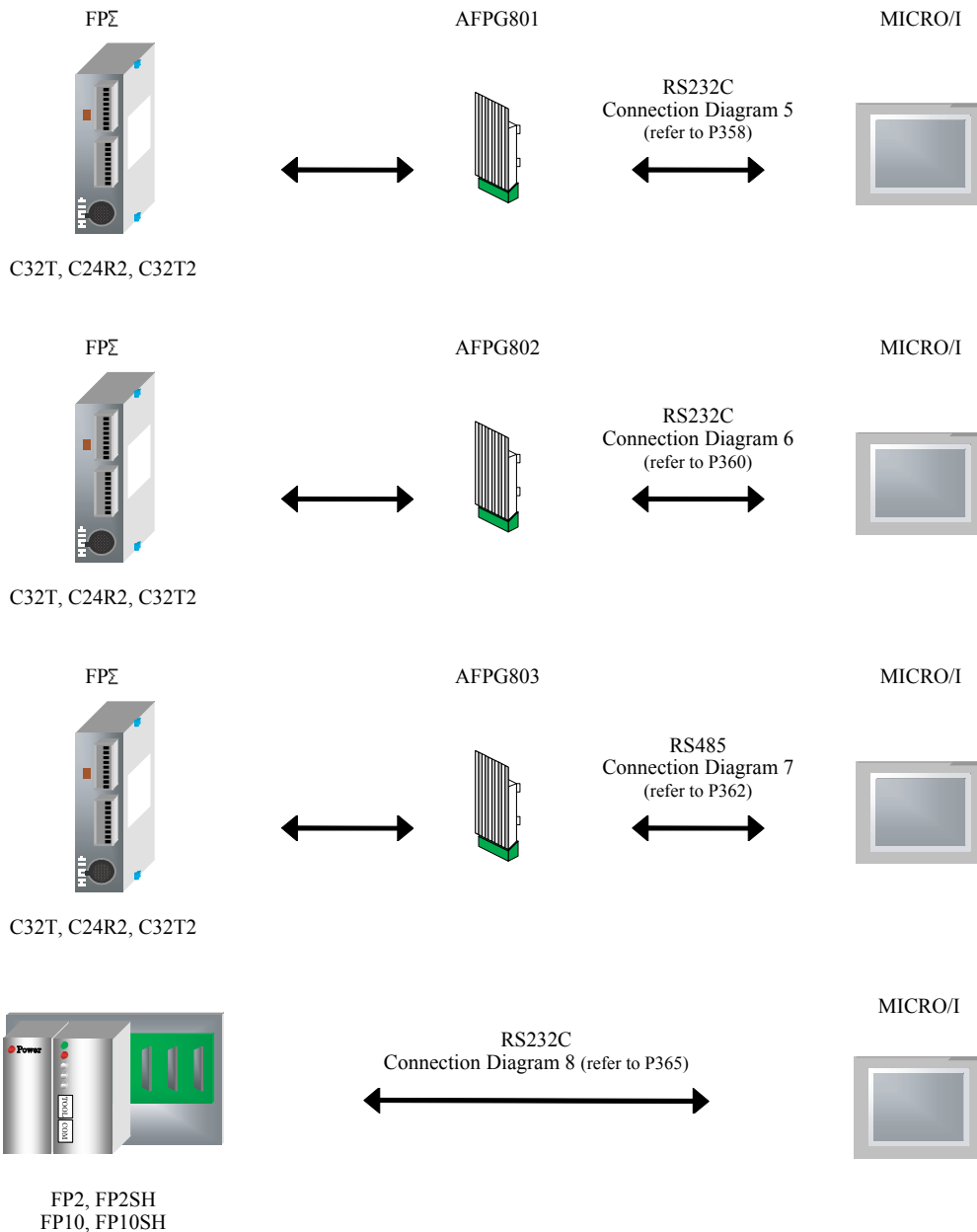
*1 This PLC was used to test & verify communications.

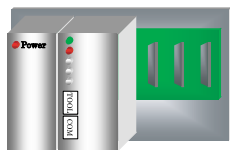
12.2 System Configuration

This is the system configuration for the connection of Panasonic Electric Works PLCs to the MICRO/I.



2
Connection to a PLC





FP10, FP10SH

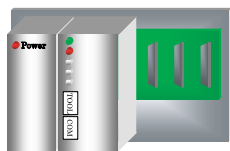


AFP3462

RS232C
Connection Diagram 8
(refer to P365)



MICRO/I



FP2, FP2SH



AFP2462

RS232C
Connection Diagram 8
(refer to P365)



MICRO/I



2

Connection to a PLC

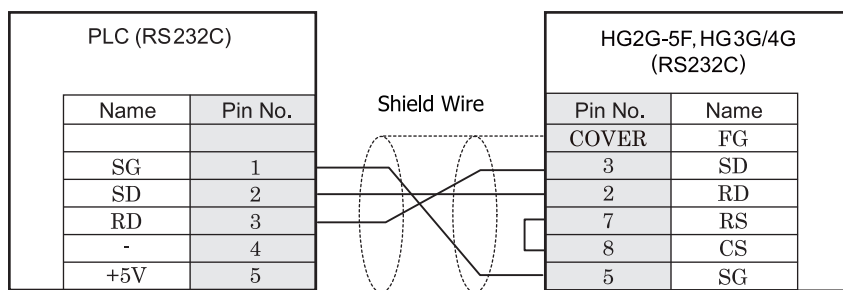
12.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not for the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

12.3.1 Connection Diagram 1: FP0, FPΣ- MICRO/I

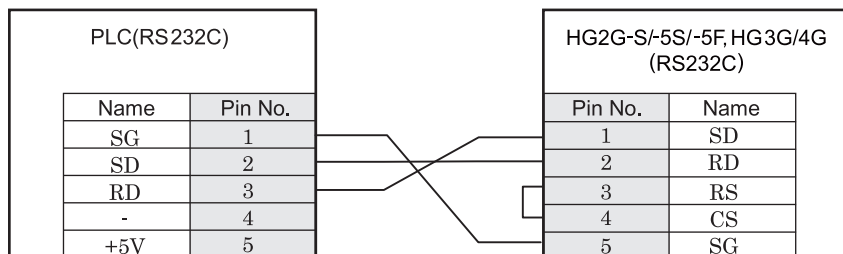
HG2G-5F, HG3G/4G (Connector)



Mini Din 5P, socket type

D-sub, 9P connector plug type

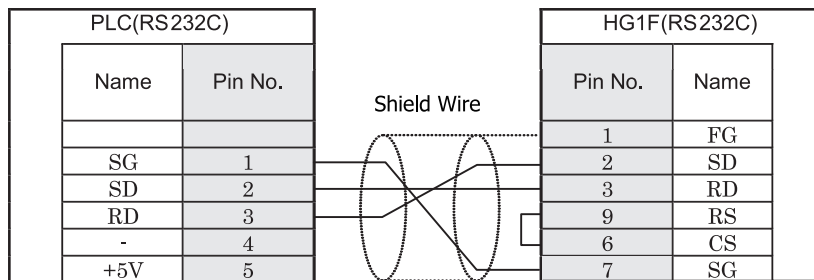
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Mini Din 5P, socket type

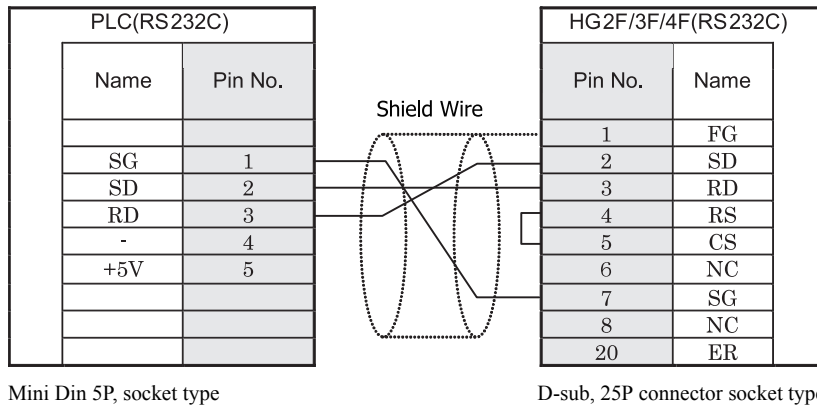
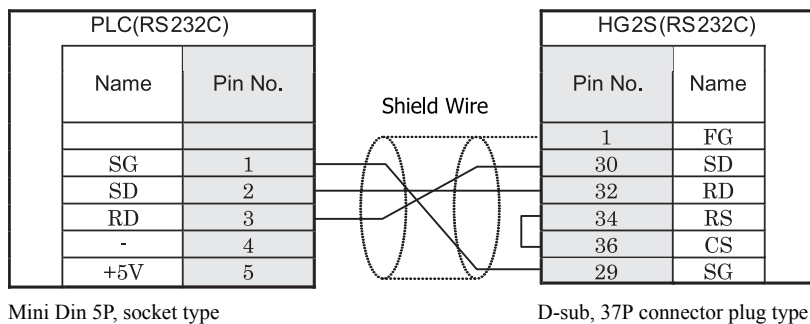
Terminal

HG1F (Connector)

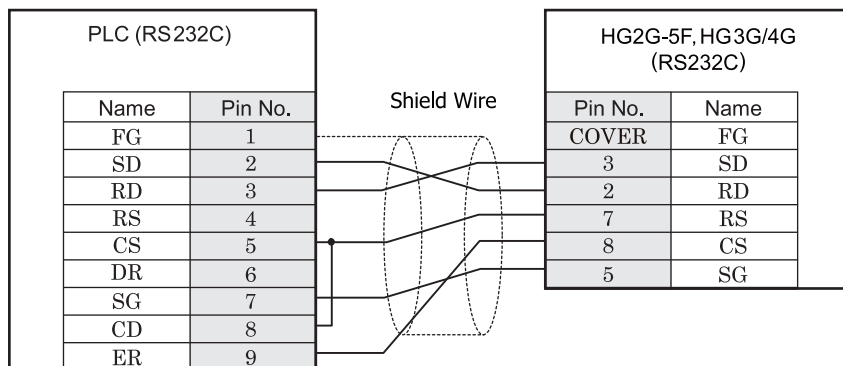


Mini Din 5P, socket type

D-sub, 9P connector socket type

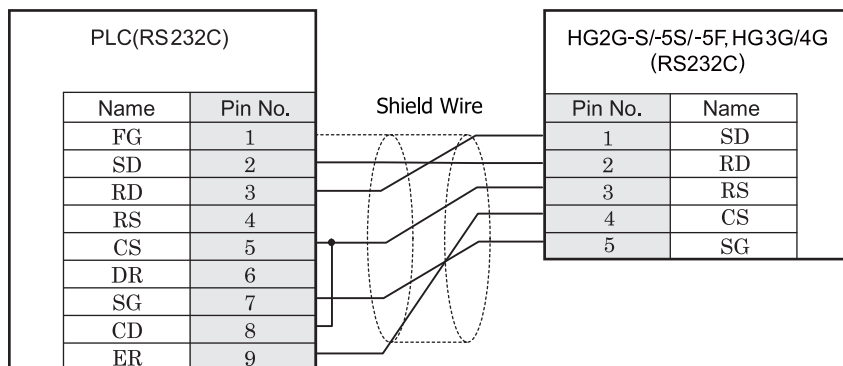
HG2F/3F/4F**HG2S**

12.3.2 Connection Diagram 2: FP1 (RS232C Port) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector socket type

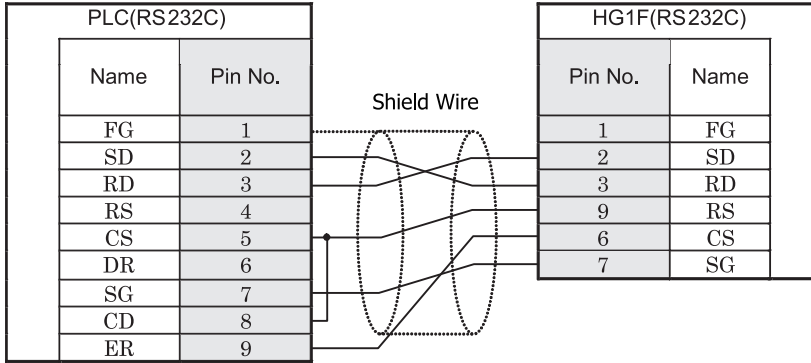
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

Terminal

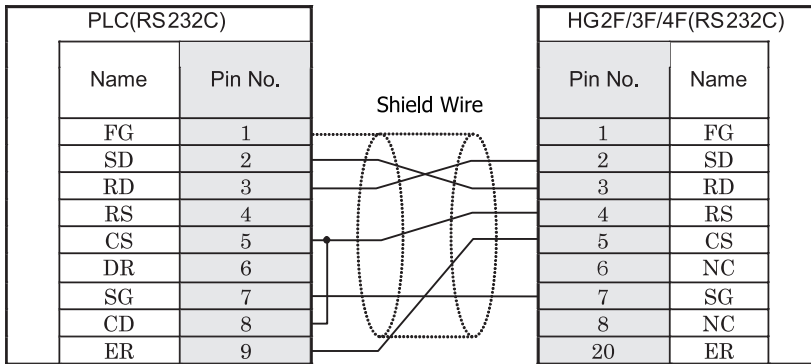
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

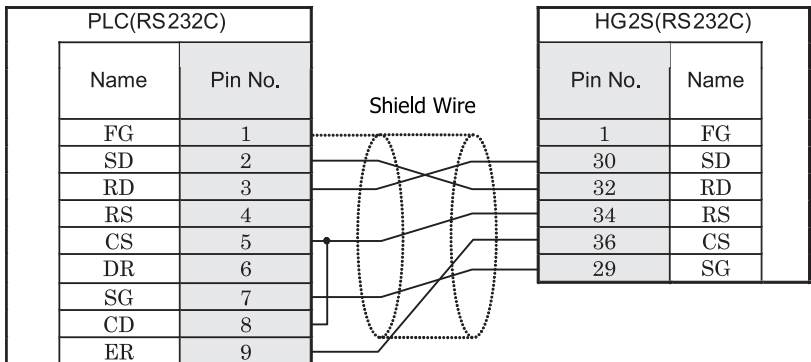
HG2F/3F/4F



Mini DIN 5P, socket type

D-sub, 25P connector socket type

HG2S

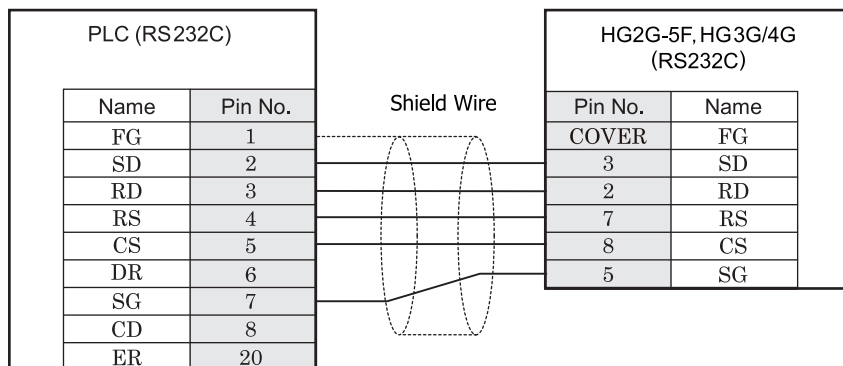


D-sub, 25P connector plug type

D-sub, 37P connector plug type

12.3.3 Connection Diagram 3: FP1 (AFP8550) - MICRO/I

HG2G-5F, HG3G/4G (Connector)



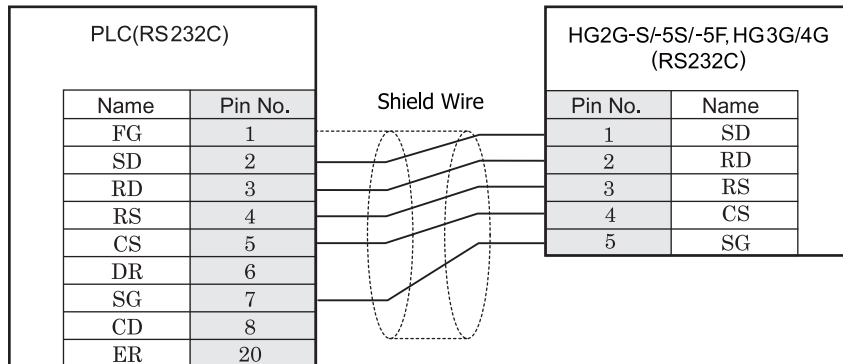
D-sub, 25P connector plug type

D-sub, 9P connector plug type

This figure shows the connection diagram when using the cable (AFP8550) from Panasonic Electric Works.

In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

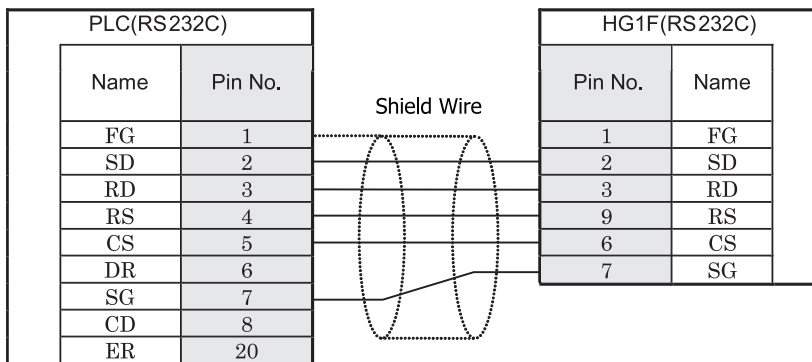


D-sub, 25P connector plug type

Terminal

This figure shows the connection diagram when using the cable (AFP8550) from Panasonic Electric Works.

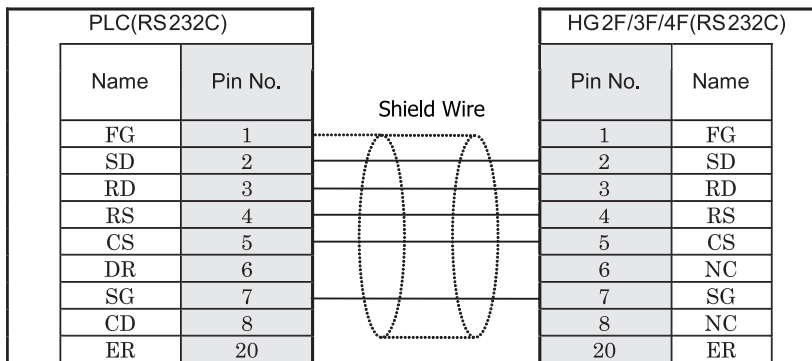
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG1F (Connector)

D-sub, 25P connector plug type

D-sub, 9P connector socket type

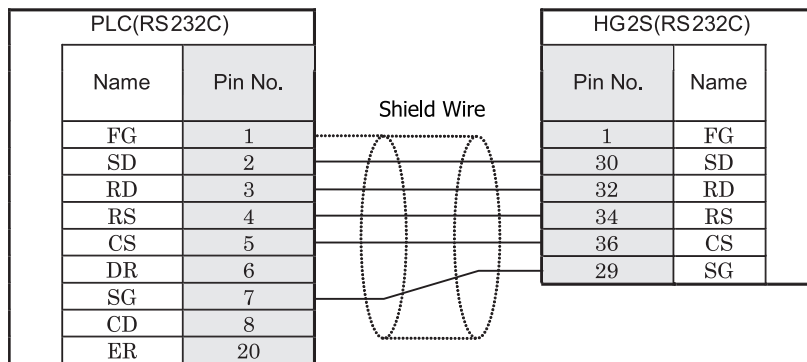
This figure shows the connection diagram when using the cable (AFP8550) from Panasonic Electric Works. In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG2F/3F/4F

D-sub, 25P connector plug type

D-sub, 25P connector socket type

This figure shows the connection diagram when using the cable (AFP8550) from Panasonic Electric Works. In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG2S

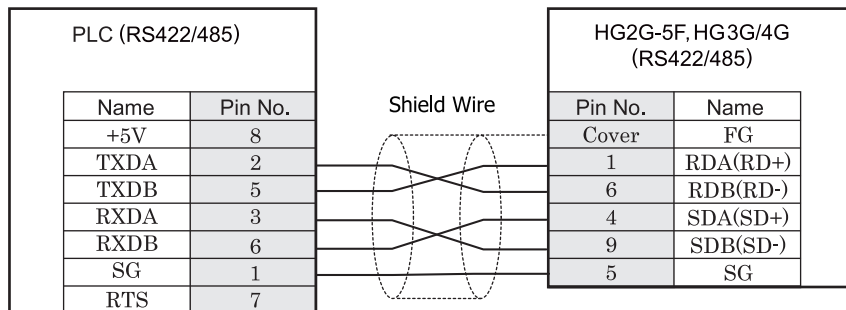
D-sub, 25P connector plug type

D-sub, 37P connector plug type

This figure shows the connection diagram when using the cable (AFP8550) from Panasonic Electric Works.

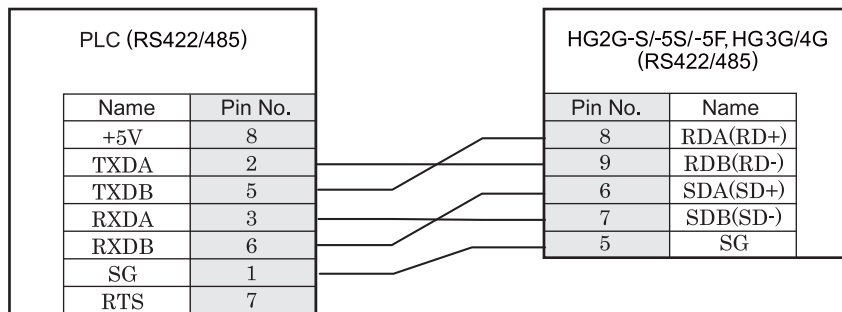
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

12.3.4 Connection Diagram 4: FP1 - MICRO/I

HG2G-5F, HG3G/4G (Connector)

Mini Din 8P socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Mini Din 8P socket type

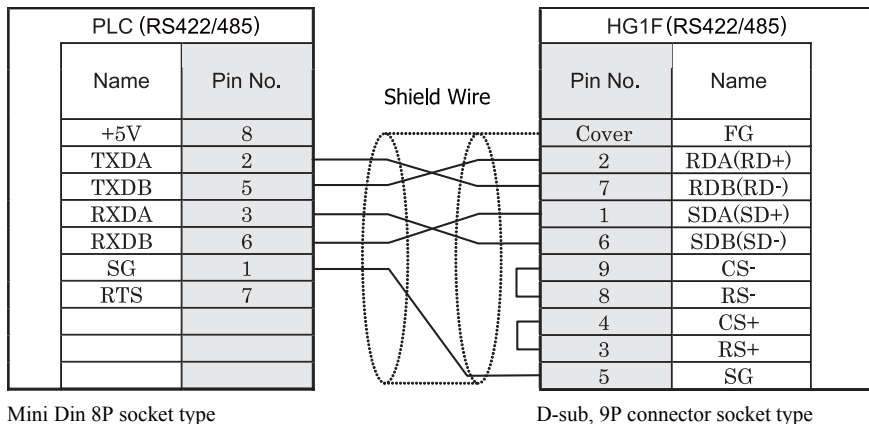
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

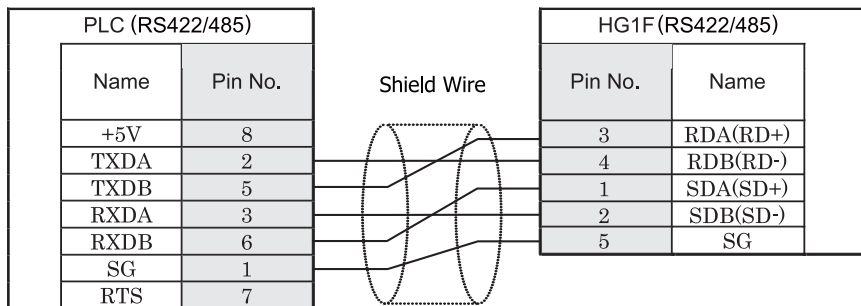


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)

Mini Din 8P socket type

D-sub, 9P connector socket type

HG1F (Terminal)

Mini Din 8P socket type

Terminal

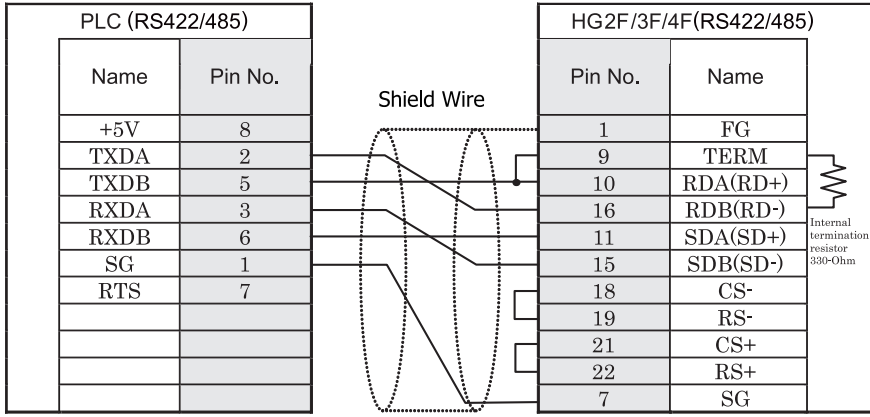


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

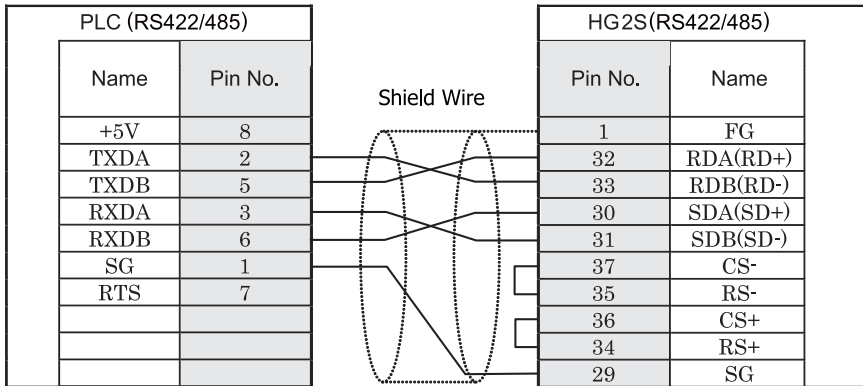
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S



Mini Din 8P socket type

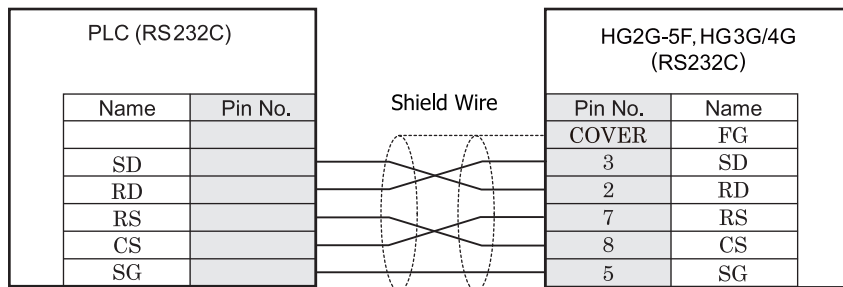
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

12.3.5 Connection Diagram 5: FPΣ- Communication cassette (AFPG801) - MICRO/I

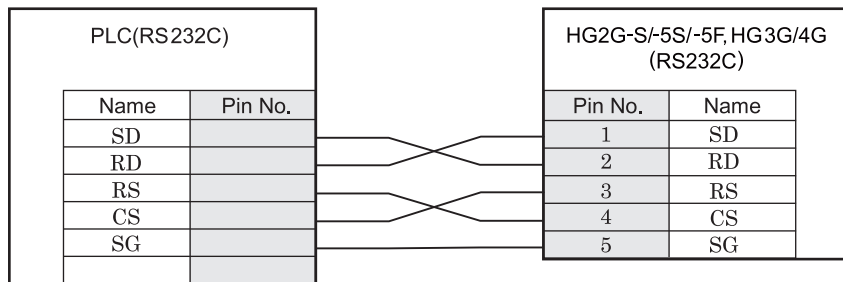
HG2G-5F, HG3G/4G (Connector)



Screw terminal block

D-sub, 9P connector plug type

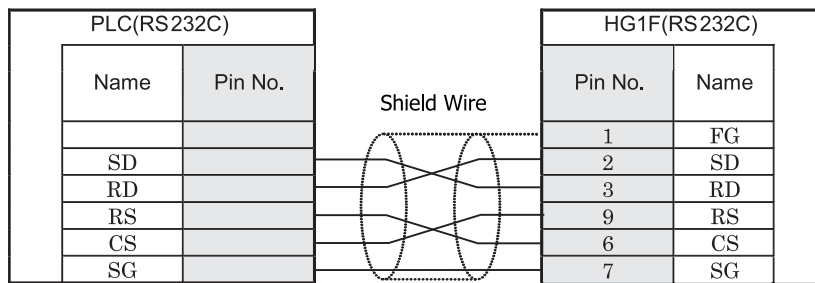
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw terminal block

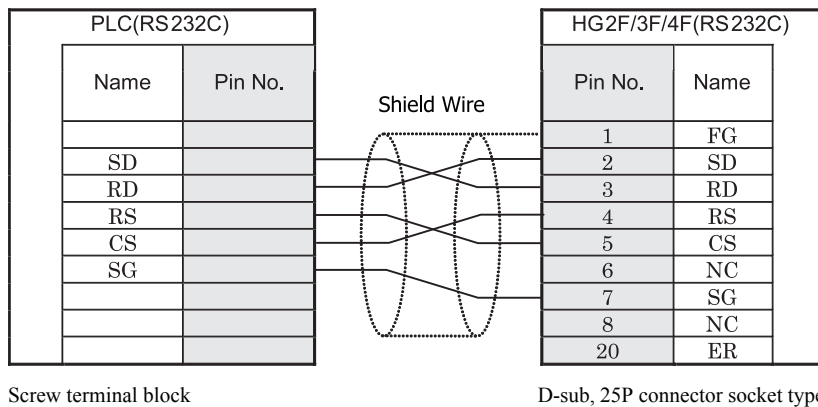
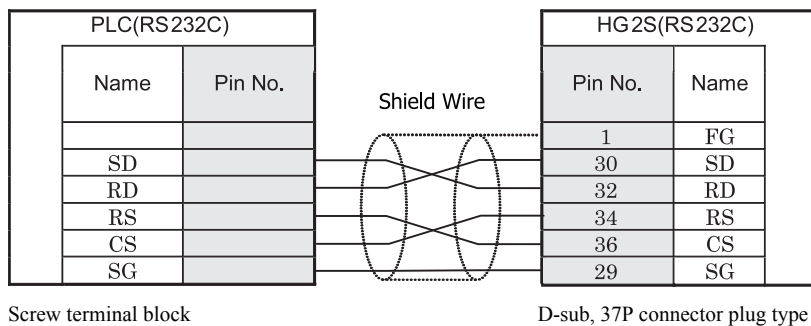
Terminal

HG1F (Connector)



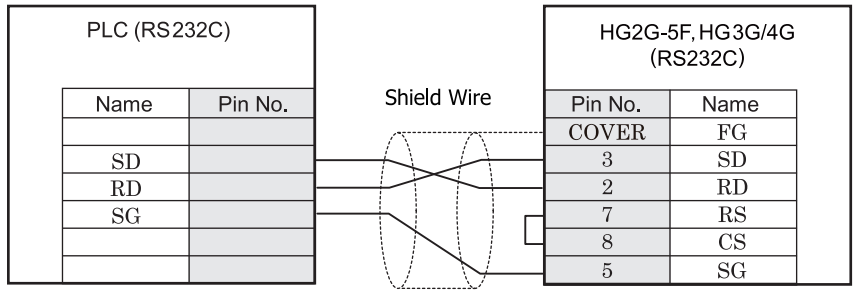
Screw terminal block

D-sub, 9P connector socket type

HG2F/3F/4F**HG2S**

12.3.6 Connection Diagram 6: FPΣ- Communication cassette (AFPG802) - MICRO/I

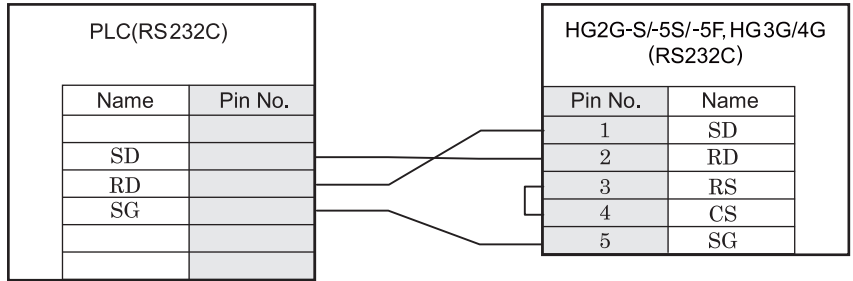
HG2G-5F, HG3G/4G (Connector)



Screw terminal block

D-sub, 9P connector plug type

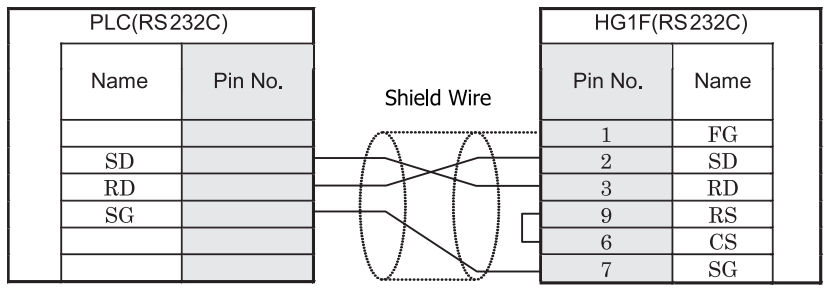
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw terminal block

Terminal

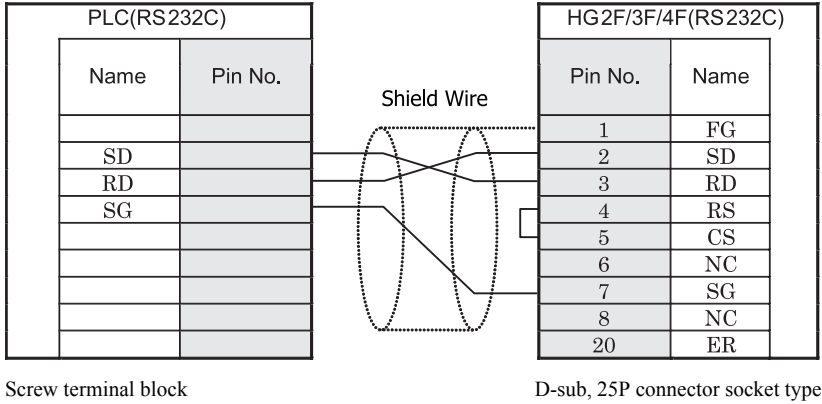
HG1F (Connector)



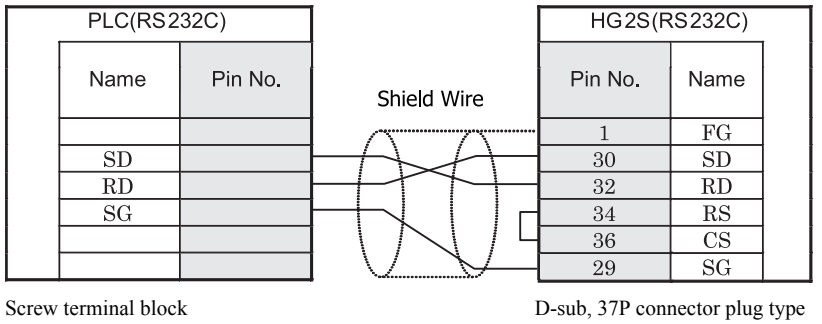
Screw terminal block

D-sub, 9P connector socket type

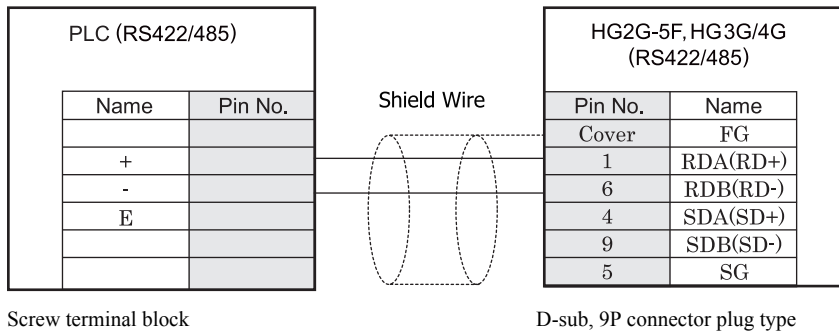
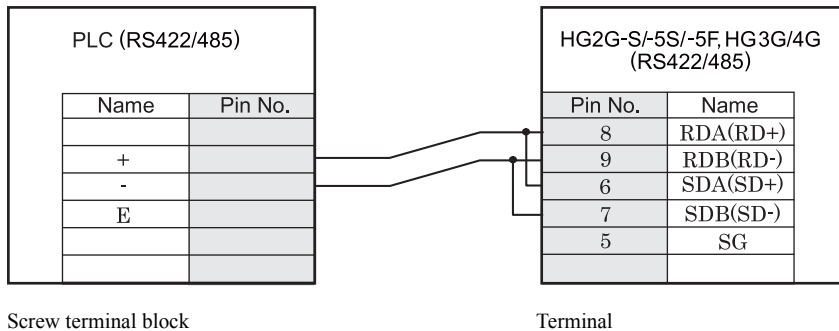
HG2F/3F/4F



HG2S



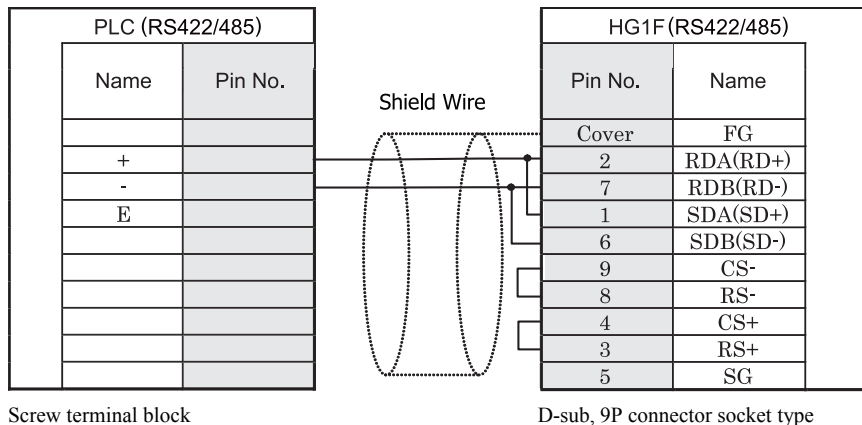
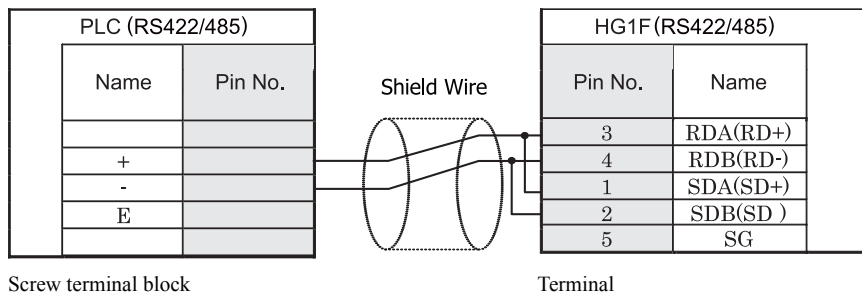
12.3.7 Connection Diagram 7: FPΣ- Communication cassette (AFPG803) - MICRO/I

HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G** (Terminal)

When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.



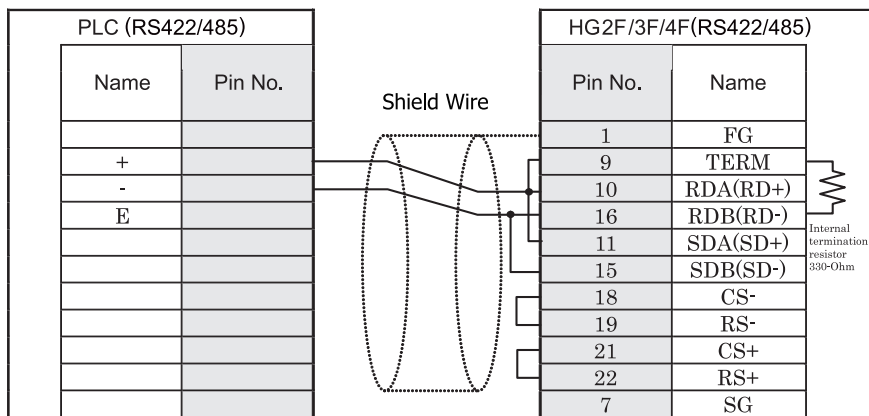
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

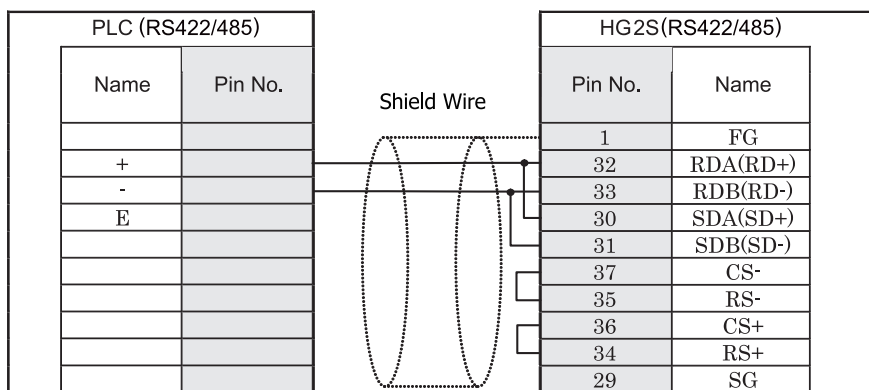


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

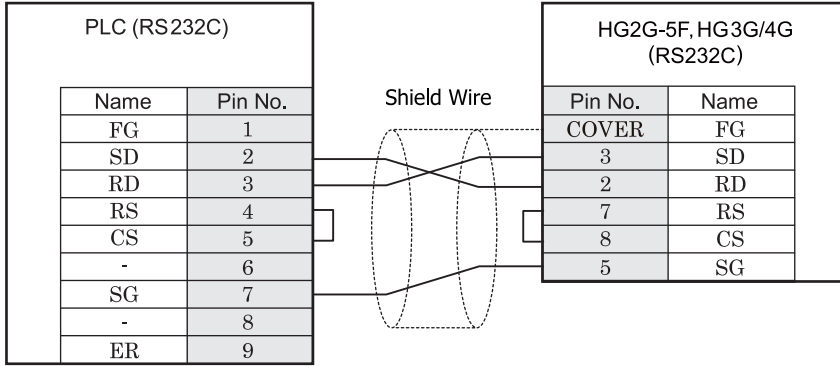
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

12.3.8 Connection Diagram 8: FP2, FP2SH, FP10, FP10SH - MICRO/I

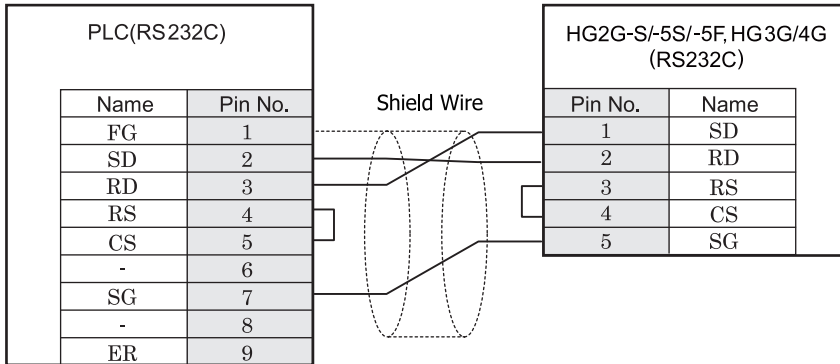
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

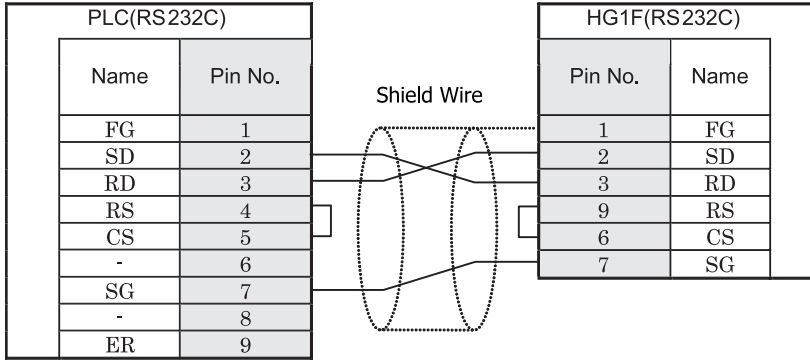
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector plug type

Terminal

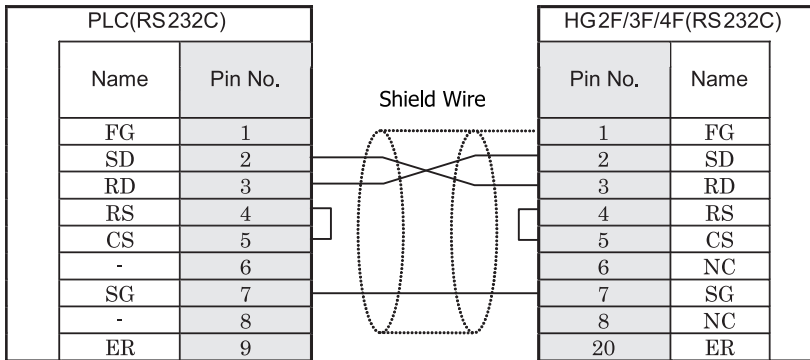
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

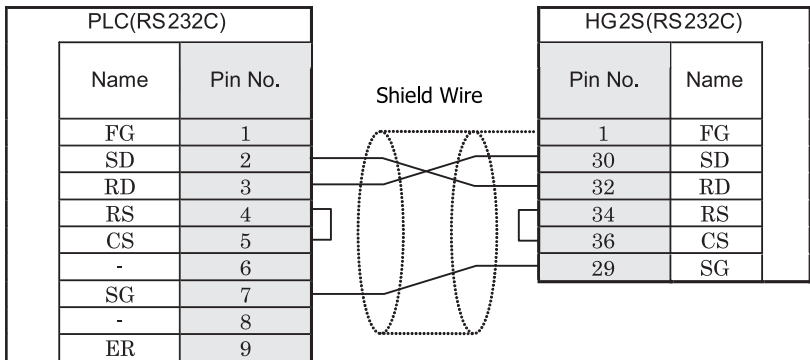
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector plug type

12.4 Environment Settings

12.4.1 FP0 and FP1 (tool port on CPU unit).

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C, RS422 4-wire
Slave Address		01 - 99(DEC) ^{*1}
Baud Rate (bps)		9600 or 19200
Data Bits		8
Parity		Odd
Stop Bits		1
Flow Control		Hardware or None

*1 There are some models that don't support Slave Address up to 99.

12.4.2 FP1 (RS232C port on CPU unit)

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Slave Address		01 - 99(DEC)
Baud Rate (bps)		1200, 2400, 4800, 9600 or 19200
Data Bits		7 or 8
Parity		None, Even or Odd
Stop Bits		1 or 2
Flow Control		Hardware or None

12.4.3 FPΣ (Tool port on CPU unit or communication cassette)

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C, RS485 2-wire
Slave Address		01 - 99 (DEC)
Baud Rate (bps)		2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data Bits		7 or 8
Parity		None, Even or Odd
Stop Bits		1 or 2
Flow Control		Hardware or None

12.4.4 FP10 and FP10SH (tool port on CPU unit).

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		9600 or 19200
Data Bits		7 or 8
Parity		Odd
Stop Bits		1
Flow Control		Hardware or None

12.4.5 FP2, FP2SH, FP10 and FP10SH (Communication port on CPU unit)

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data Bits		7 or 8
Parity		None, Even or Odd
Stop Bits		1 or 2
Flow Control		Hardware or None

12.4.6 FP10 and FP10SH (Computer Communication Unit)

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data Bits		7 or 8
Parity		None, Even or Odd
Stop Bits		1 or 2
Flow Control		Hardware or None

12.4.7 PLC FP2 and FP2SH (Computer Communication Unit)

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		4800, 9600, 19200, 38400, 57600 or 115200
Data Bits		7 or 8
Parity		Odd
Stop Bits		1
Flow Control		Hardware or None

12.5 Usable Devices

Types of devices supported by the MICRO/I and their ranges are shown below.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input	X	X	0 - 511F	R	*1
Output	Y	Y	0 - 511F	R/W	*1
Internal Relay	R	R	0 - 886F	R/W	*1
Special Internal relay	RE	R	9000 - 910F	R	*1
Link Relay	L	L	0 - 639F	R/W	*1
Timer	T	T	0 - 3071	R	Dec
Counter	C	C	0 - 3071	R	Dec
Error alarm relay	E	E	0 - 2047	R	Dec

*1 3 figures of higher ranks are expressed by decimal, and 1 figure of low ranks is expressed by hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input	WX	WX	0 - 00511	R	Dec
Output	WY	WY	0 - 00511	R/W	Dec
Internal Relay	WR	WR	0 - 00886	R/W	Dec
Special Internal relay	WRE	WR	900 - 00910	R	Dec
Link Relay	WL	WL	0 - 00639	R/W	Dec
Timer, Counter (Elapsed value)	EV	EV	0 - 03071	R	Dec
Timer, Counter (Set value)	SV	SV	0 - 03071	R/W	Dec
Data register	DT	DT	0 - 99999	R/W	Dec
Link data register	LD	LD	0 - 08447	R/W	Dec
File register	FL	FL	0 - 32764	R/W	Dec ^{*1}

*1 In FP2SH, the contents of a bank 0 are written.



The device ranges may differ depending on the PLC model. Please refer to PLC Manual for supported memory ranges of the PLC.

13 YASKAWA ELECTRIC CORPORATION

13.1 Connection Table

13.1.1 Compatible Protocols

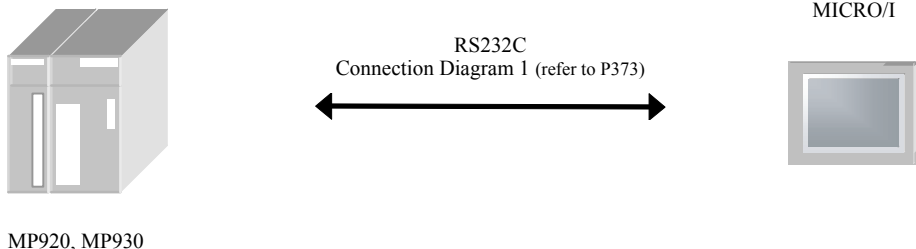
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
Machine Controller								
MP920*1 MP930	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P373)	Hardware	MP920-RTU	X	X	X	---
	217IF	RS422/485 4-wire Connection Diagram 2 (refer to P375)	None					
		RS422/485 2-wire Connection Diagram 3 (refer to P378)						
MP2300*1	217IF-01	RS232C Connection Diagram 1 (refer to P373)	Hardware					
		RS422/485 4-wire Connection Diagram 4 (refer to P381)	None					
		RS422/485 2-wire Connection Diagram 5 (refer to P384)						
MP2200 MP2300	218IF-01 218IF-02	Ethernet	-	MP2000 (Ethernet)	X	X	---	X
MP2310 MP2300S*1	Not required (Connects to CPU unit)							
	218IF-01 218IF-02							
MP2400	Not required (Connects to CPU unit)							

*1 This PLC was used to test & verify communications.

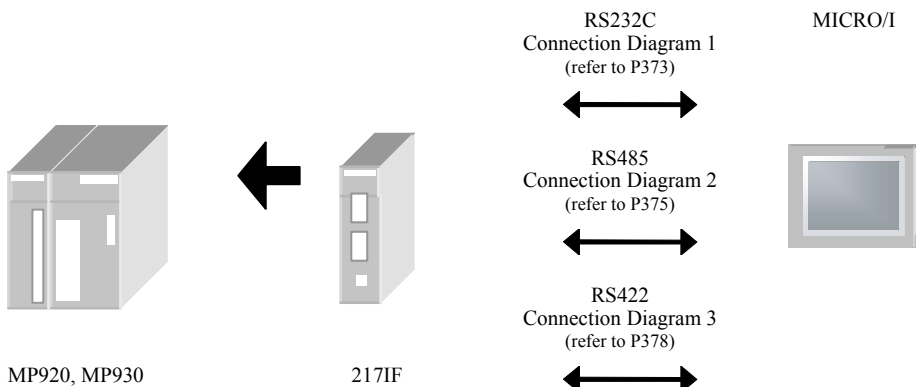
13.2 System Configuration

This is the system configuration for the connection of YASKAWA ELECTRIC CORPORATION PLCs to the MICRO/I.

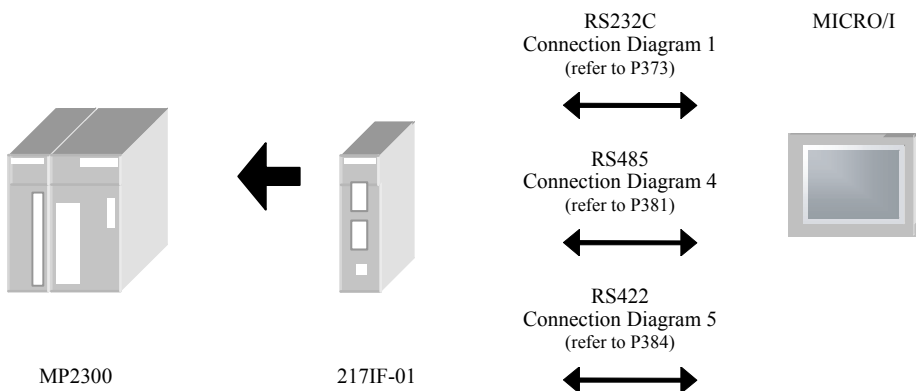
13.2.1 MP920, MP930 (connects to CPU Unit RS232C port)



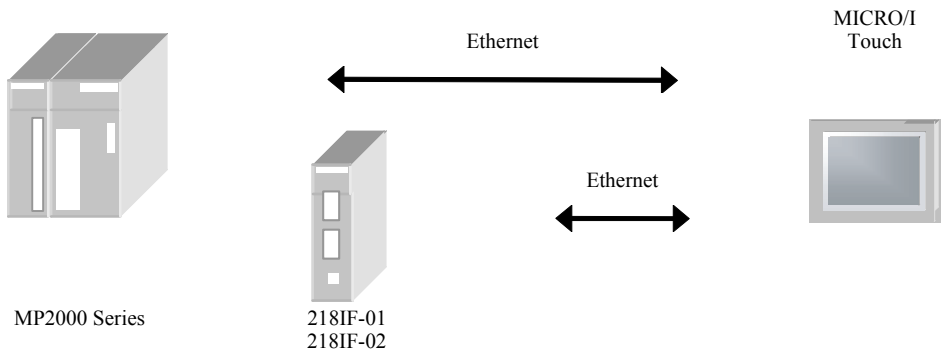
13.2.2 MP920,MP930(2171F)



13.2.3 MP2300 (2171F-01)



13.2.4 MP2000 Series (Ethernet)



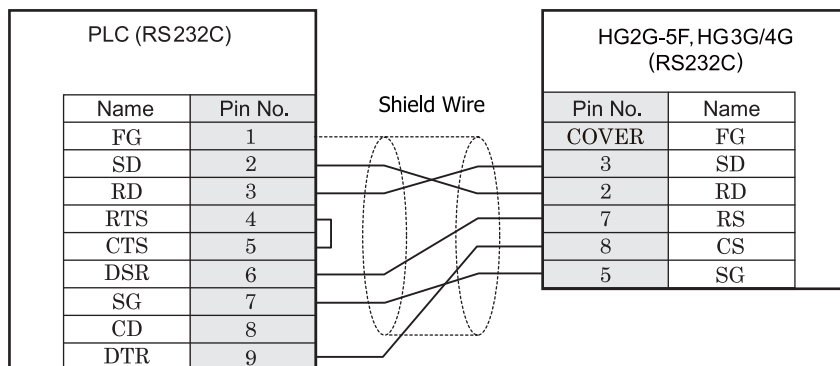
13.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

13.3.1 Connection Diagram 1: MP920, MP930, MP2300 to MICRO/I (RS232C)

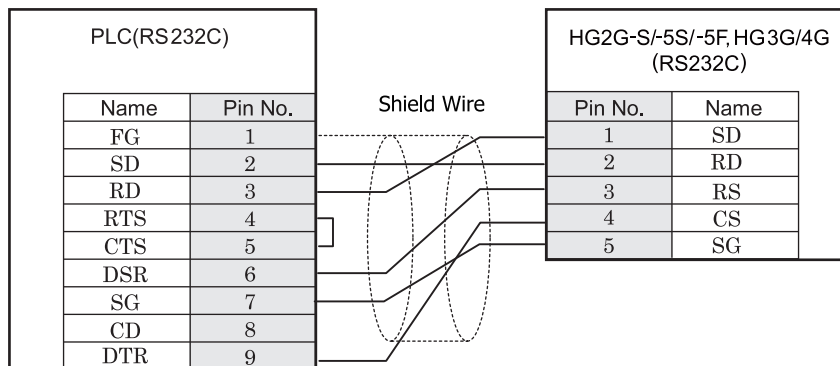
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

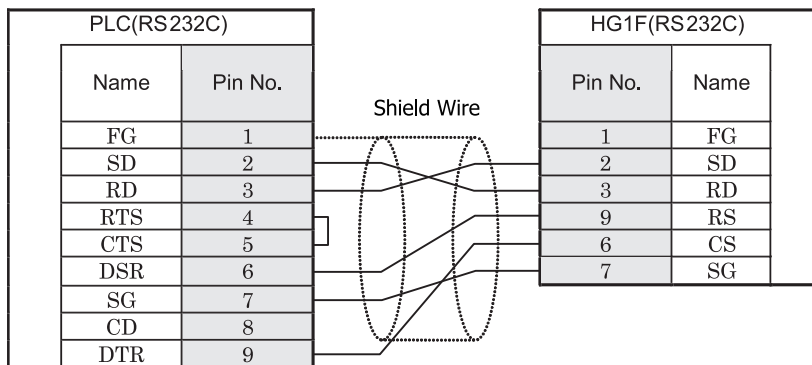
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector socket type

Terminal

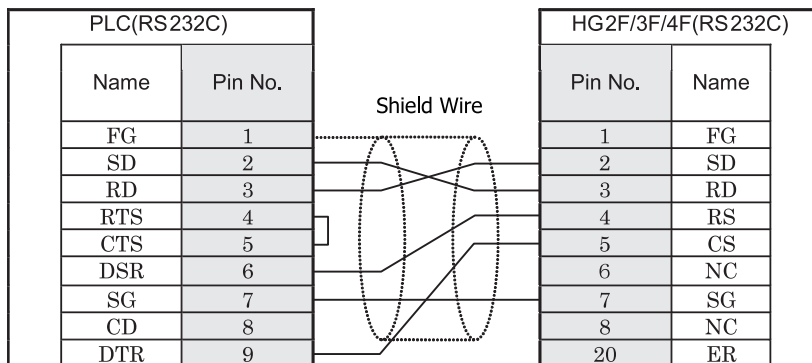
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

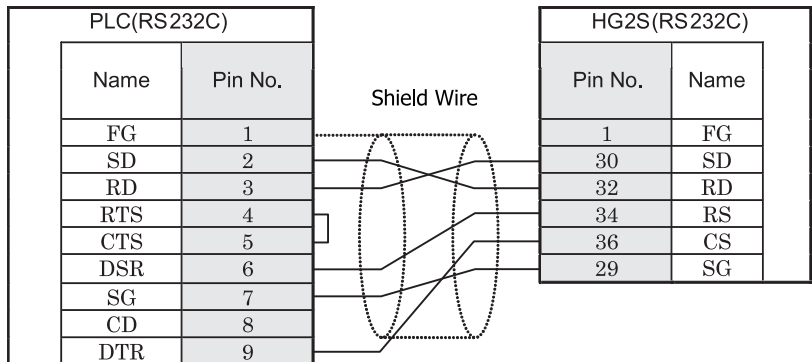
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

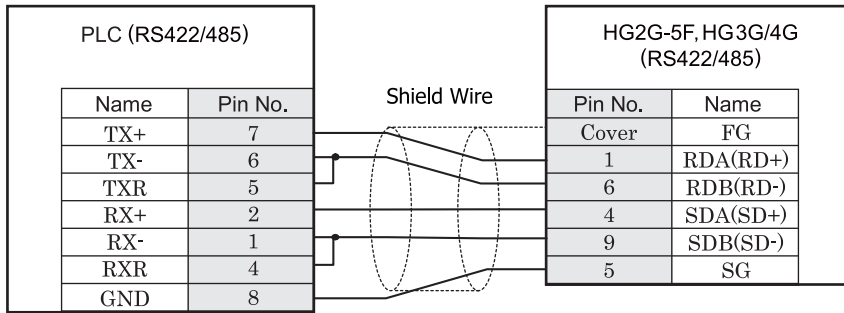
HG2S



D-sub, 9P connector socket type

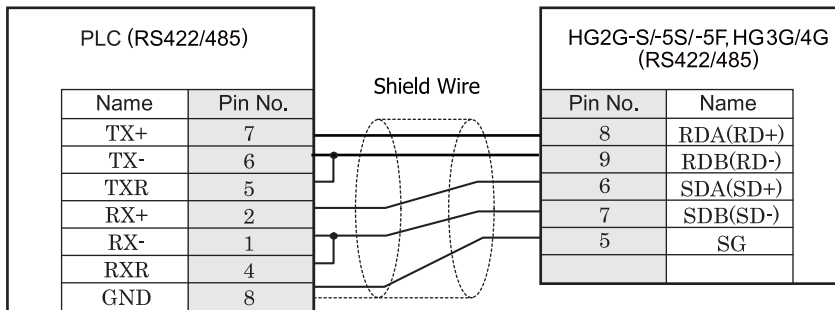
D-sub, 37P connector plug type

13.3.2 Connection Diagram 2: MP920, MP930 (217IF) - MICRO/I (RS422)

HG2G-5F, HG3G/4G (Connector)

MR-8M connector

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

MR-8M connector

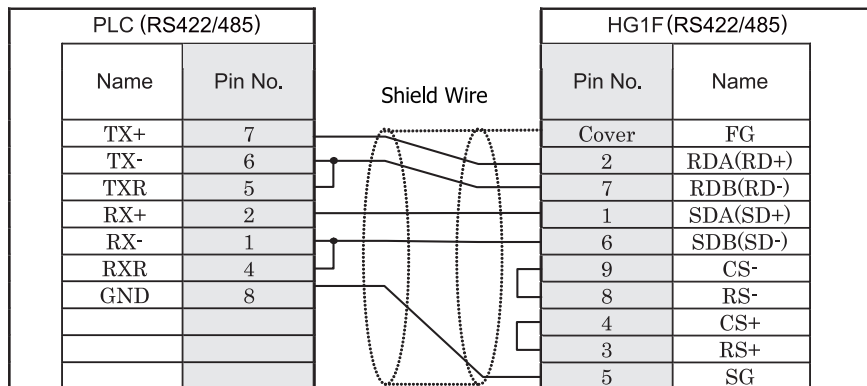
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

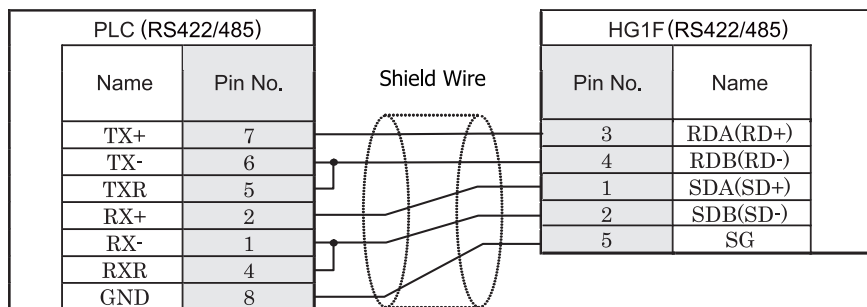


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)

MR-8M connector

D-sub, 9P connector socket type

HG1F (Terminal)

MR-8M connector

Terminal

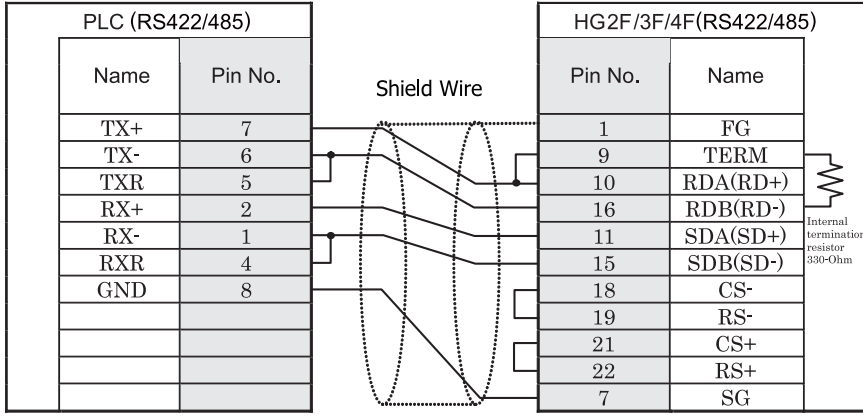


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

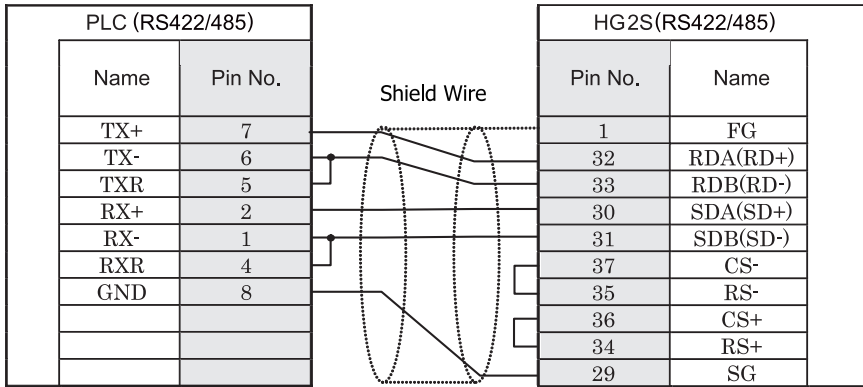
HG2F/3F/4F



MR-8M connector

D-sub, 25P connector socket type

HG2S



MR-8M connector

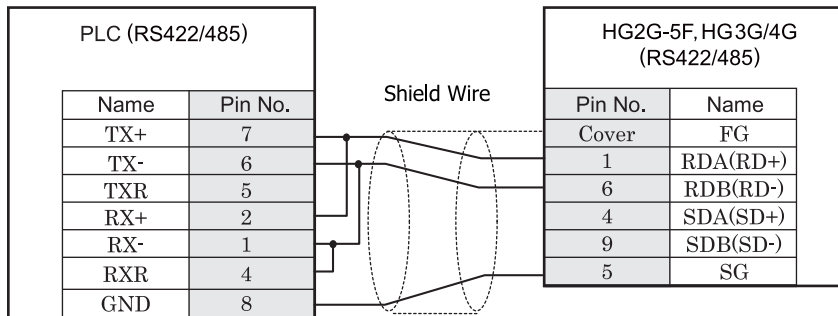
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

13.3.3 Connection Diagram 3: MP920, MP930 (217IF) - MICRO/I (RS485)

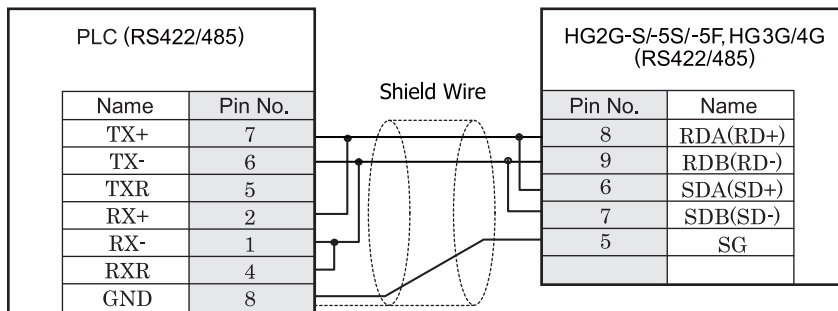
HG2G-5F, HG3G/4G (Connector)



MR-8M connector

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



MR-8M connector

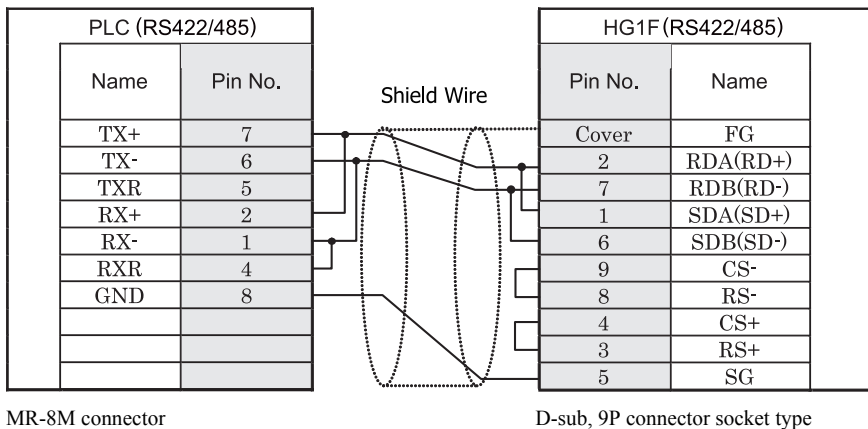
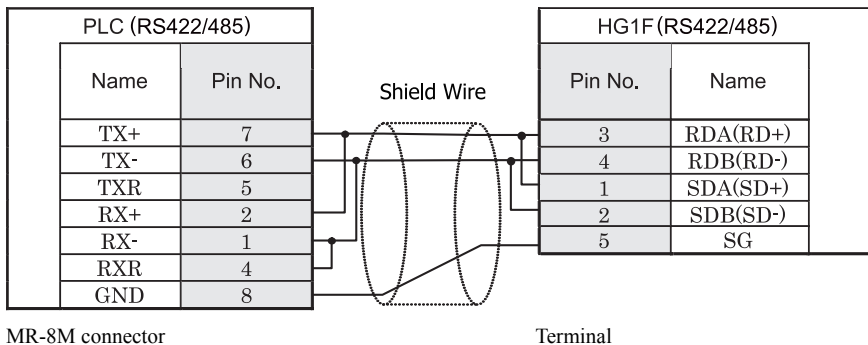
Terminal



When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.



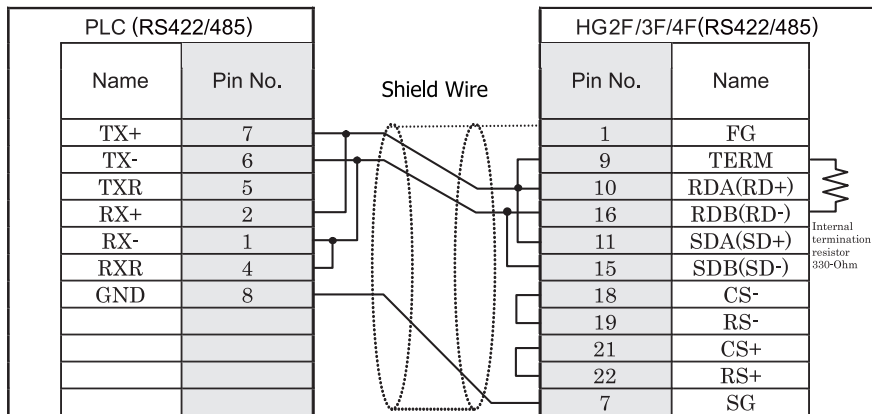
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

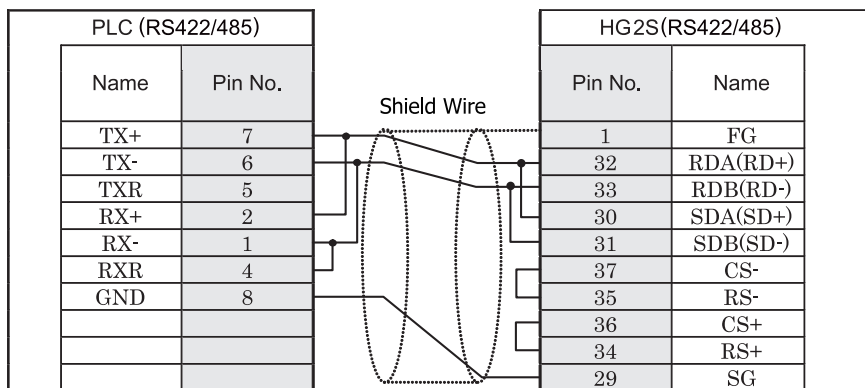


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

MR-8M connector

D-sub, 25P connector socket type

HG2S

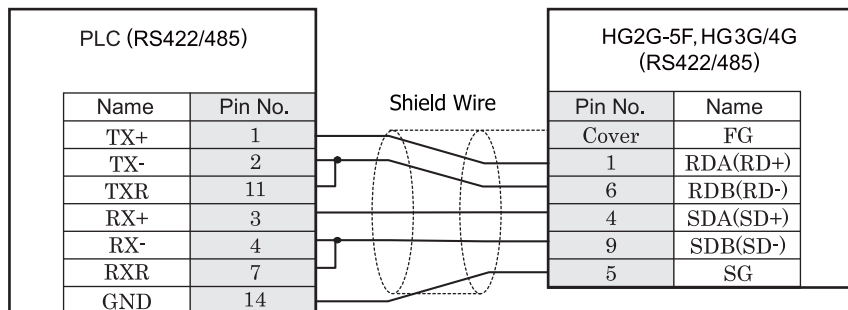
MR-8M connector

D-sub, 37P connector plug type



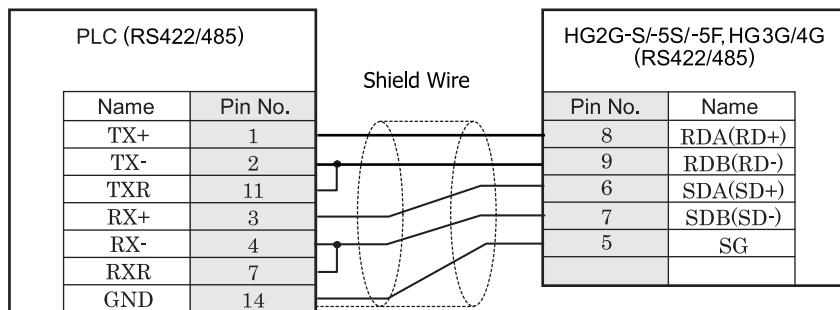
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

13.3.4 Connection Diagram 4: MP2300 (217IF-01) - MICRO/I (RS422)

HG2G-5F, HG3G/4G (Connector)

MDR14P connector

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

MDR14P connector

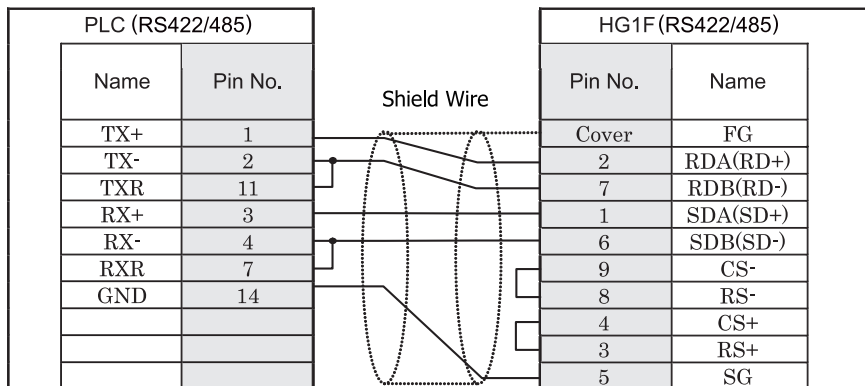
Terminal



There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

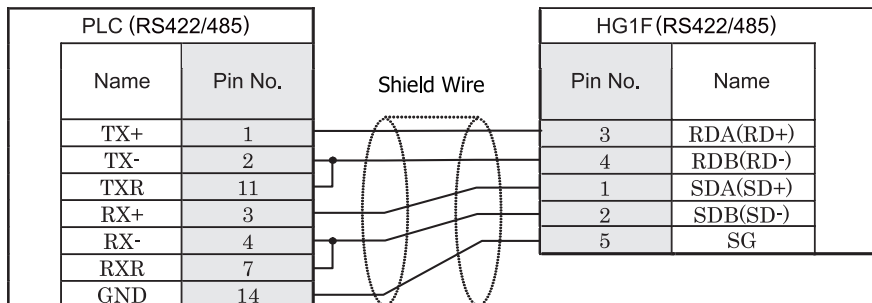


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

HG1F (Connector)

MDR14P connector

D-sub, 9P connector socket type

HG1F (Terminal)

MDR14P connector

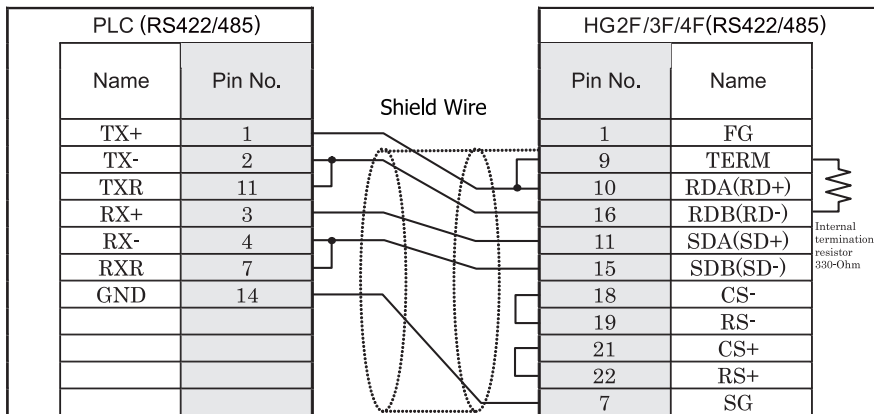
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

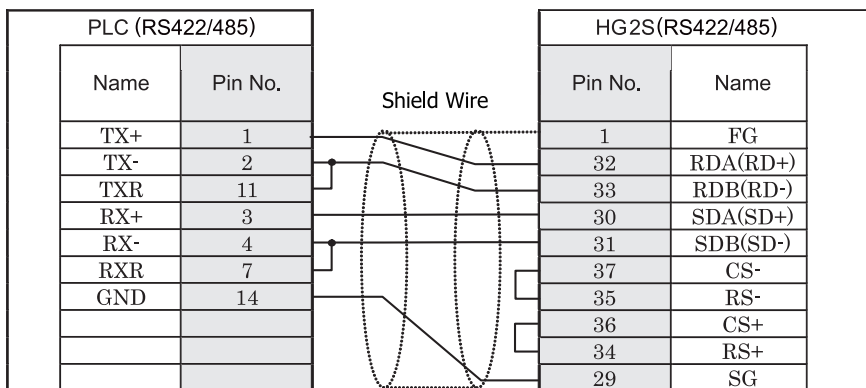


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

MDR14P connector

D-sub, 25P connector socket type

HG2S

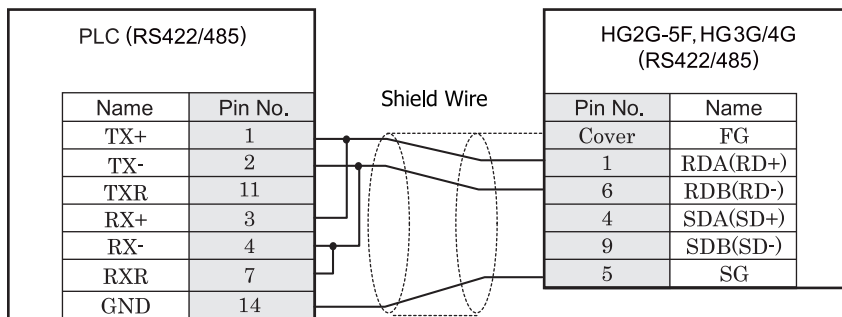
MDR14P connector

D-sub, 37P connector plug type



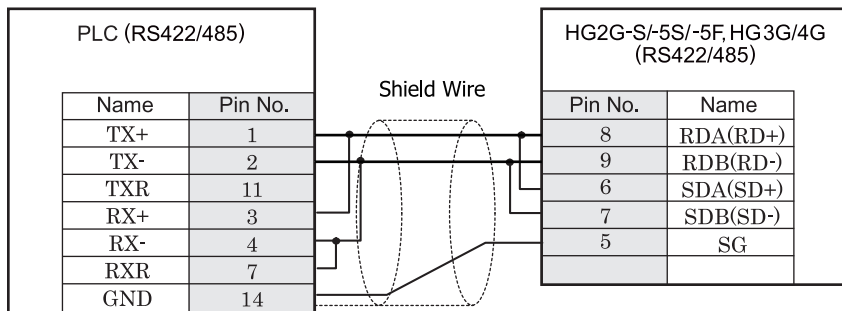
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

13.3.5 Connection Diagram 5: MP2300(217IF - 01) - MICRO/I (RS485)

HG2G-5F, HG3G/4G (Connector)

MDR14P connector

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

MDR14P connector

Terminal

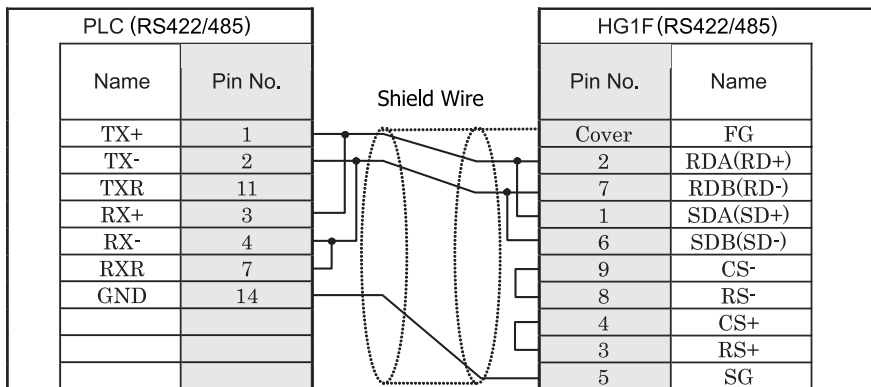


When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

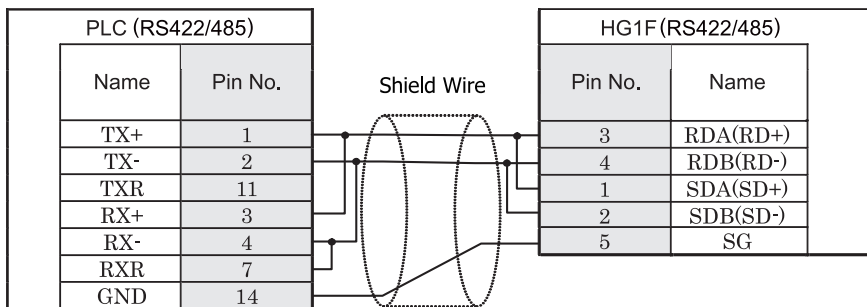
HG1F (Connector)



MDR14P connector

D-sub, 9P connector socket type

HG1F (Terminal)



MDR14P connector

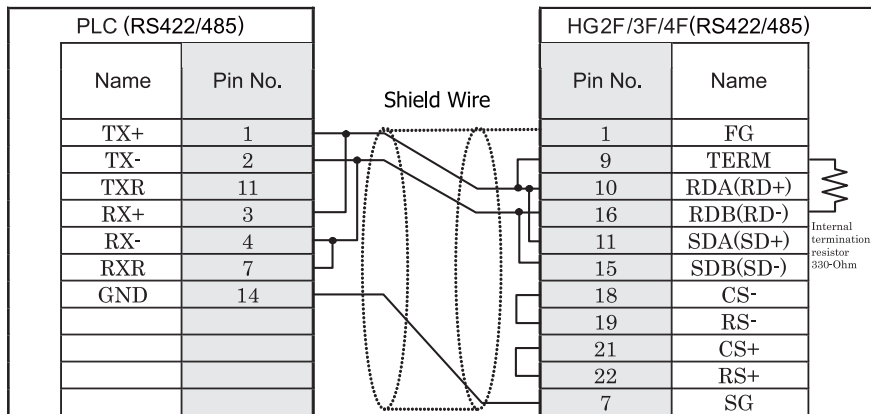
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

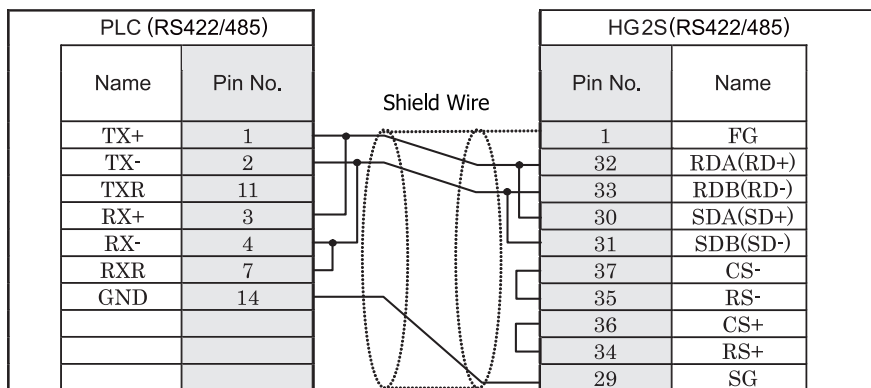


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

MDR14P connector

D-sub, 25P connector socket type

HG2S

MDR14P connector

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

13.4 Environment Settings

13.4.1 MP920, MP930, MP2300

Items	Details
Interface	RS232C, RS422/485
Protocol	MEMOBUS RTU
Slave Address	1 - 63 (DEC)
Baud Rate (bps)	9600 or 19200
Data Bits	8 (fixed)
Parity	None, Even or Odd
Stop Bits	1 or 2
Flow Control	Hardware



- It is necessary to set up transmission form by the rudder program.

- Please set up the head register by the side of the PLC as follows. Moreover, please give offset of each register as 0.

Module detailed setup

“Setup of a slave I/F register”	“Head REG”
“reading of an Inputs Status”	IW0000
“reading of an Inputs Registers”	IW0000
“reading/writing” of a Coil	MW00000
“reading/writing” of a Holding Registers	MW00000

13.4.2 Connecting with the MP2000 series via Ethernet

1. MICRO/I settings

Item	Setting
IP Address (MICRO/I)	Set the IP address of MICRO/I in Communication Interface tab.
Subnet Mask	Set the subnet mask of MICRO/I in Communication Interface tab.
Default Gateway	Set the default gateway of MICRO/I in Communication Interface tab.
IP Address (PLC)	Set the IP address of PLC in Host I/F Network tab.
Port Number (PLC)	Set the port number of PLC in Host I/F Network tab. The default is 10001.
MICRO/I Port Number	Set the port number of MICRO/I. (Set this item in Host I/F Network tab.) If you set "0", the port number of MICRO/I is set automatically.

2. PLC Settings

Item	Setting	
Transmission Parameters	IP Address	Set the IP address of PLC.
	Subnet Mask	Set the subnet mask of PLC.
	Default Gateway	Set the default gateway of PLC.
Connection Parameters	Local Port	Set the port number of PLC.
	Node IP Address	Set the IP address of MICRO/I.*1
	Node Port	Set the port number of MICRO/I.*2
	Connect Type	Set the TCP.
	Protocol Type	Select "Extended MEMOBUS" protocol.
	Code	Set the BIN.

*1 If the "Node IP Address" is set to "0.0.0.0", the connection is set in the "Unpassive Open mode". Any nodes in the network can access to the controller.

*2 To set the connection mode to "Unpassive Open mode", set 0 to "Node Port".



Please set up the head register by the side of the PLC as follows. Moreover, please give offset of each register as 0.

Module detailed setup

"Setup of a slave I/F register"	"Head REG"
"reading of an Inputs Status"	IW0000
"reading of an Inputs Registers"	IW0000
"reading/writing" of a Coil	MW00000
"reading/writing" of a Holding Registers	MW00000

13.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Coil	MB	MW	0 - 4095F	R/W	*1
Inputs Status	IB	IW	0 - FFFFF	R	Hexadecimal

*1 Upper four digits: Register Number (decimal)
 The lowest digit: Bit Number (hexadecimal)
 Example: 4095F 4095: Register Number, F: Bit Number

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Holding Registers	MW	MW	0 - 65535	R/W	Decimal
Inputs Registers	IW	IW	0 - FFFF	R	Hexadecimal

14 Koyo

Selecting DirectLogic 205/405 or DirectLogic (Ethernet) for the Host I/F Driver allows the user to use the 1: N Communication function.

- 1: N Communication function (Refer to Chapter 6 "1: N Communication (Multi-drop)" on page 653)

14.1 Connection Table

14.1.1 Compatible Protocols

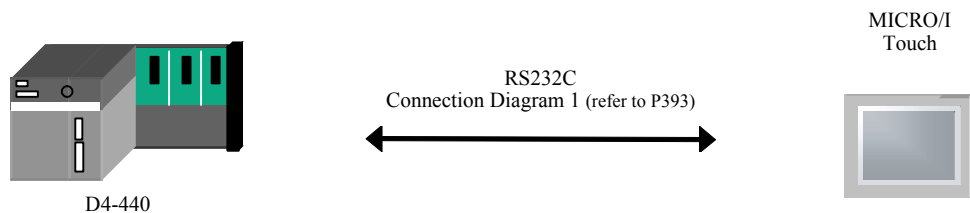
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
DirectLogic 05								
DL05	D0-ECOM D0-ECOM100*1	Ethernet	-	DirectLogic (Ethernet)	X	X	X	X
DirectLogic 06*1								
DL06*1	D0-ECOM D0-ECOM100*1	Ethernet	-	DirectLogic (Ethernet)	X	X	X	X
DirectLogic 205								
D2-240, D2-250, D2-250-1, D2-260	D2-ECOM D2-ECOM-F D2-ECOM100	Ethernet	-	DirectLogic (Ethernet)	X	X	X	X
D2-240 (Port2)*1 D2-250 (Port1, 2), D2-260 (Port1, 2)	Not required (connects to CPU unit)	RS232C Connection Diagram 3 (refer to P398)	Hardware	DirectLogic 205/405				
DirectLogic 405								
D4-430, D4-440*1	Not required (connects to CPU unit)	RS232C Connection Diagram 1 (refer to P393) RS422/485 4-wire Connection Diagram 2 (refer to P395)	Hardware	DirectLogic 205/405	X	X	X	X
D4-440	D4-DCM	RS232C Connection Diagram 1 (refer to P393)						
D4-430 D4-440*1 D4-450	D4-DCM*1	RS232C Connection Diagram 1 (refer to P393)						
	D4-ECOM, D4-ECOM-F, D4-ECOM100	Ethernet	-	DirectLogic (Ethernet)				

*1 This PLC was used to test & verify communications.

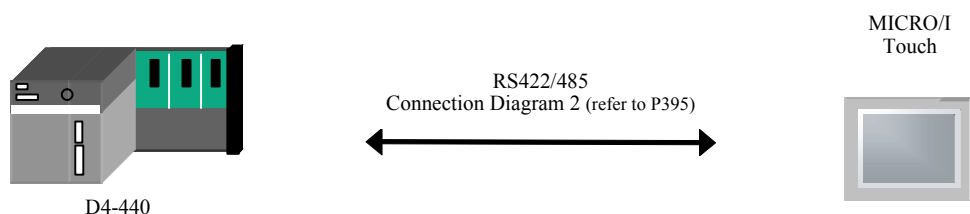
14.2 System Configuration

This is the system configuration for the connection of Koyo PLCs to the MICRO/I.

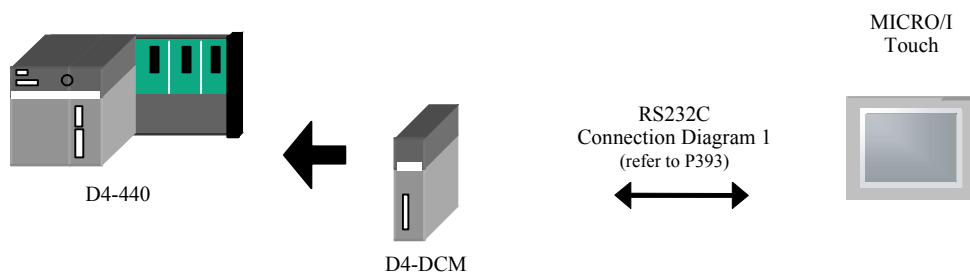
14.2.1 DirectLogic 405 (connects to CPU unit RS232C port)



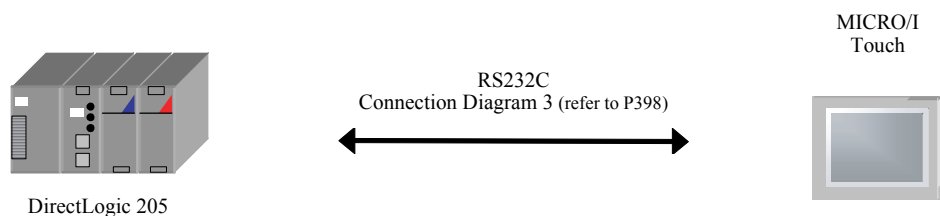
14.2.2 DirectLogic 405 (connects to CPU unit RS422 port)



14.2.3 DirectLogic 405 (connects to DATA COMMUNICATIONS MODULE RS232C port)

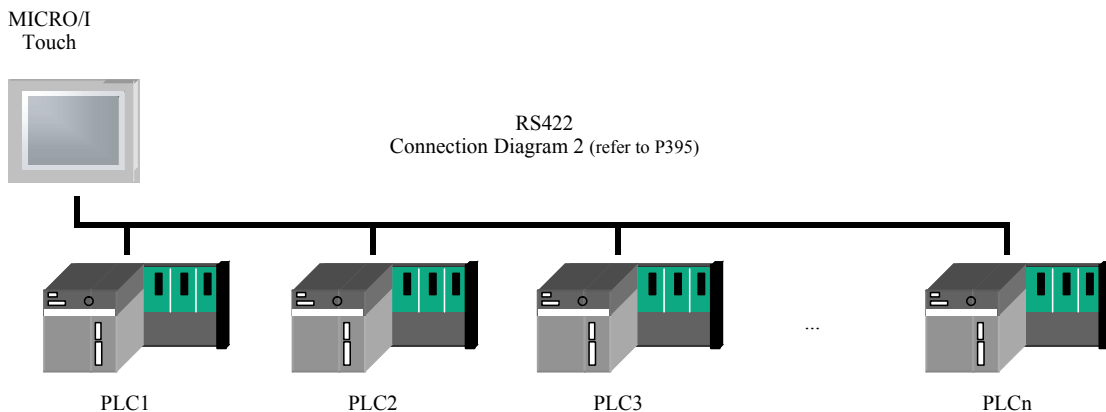


14.2.4 DirectLogic 205 (connects to CPU unit RS232C port)

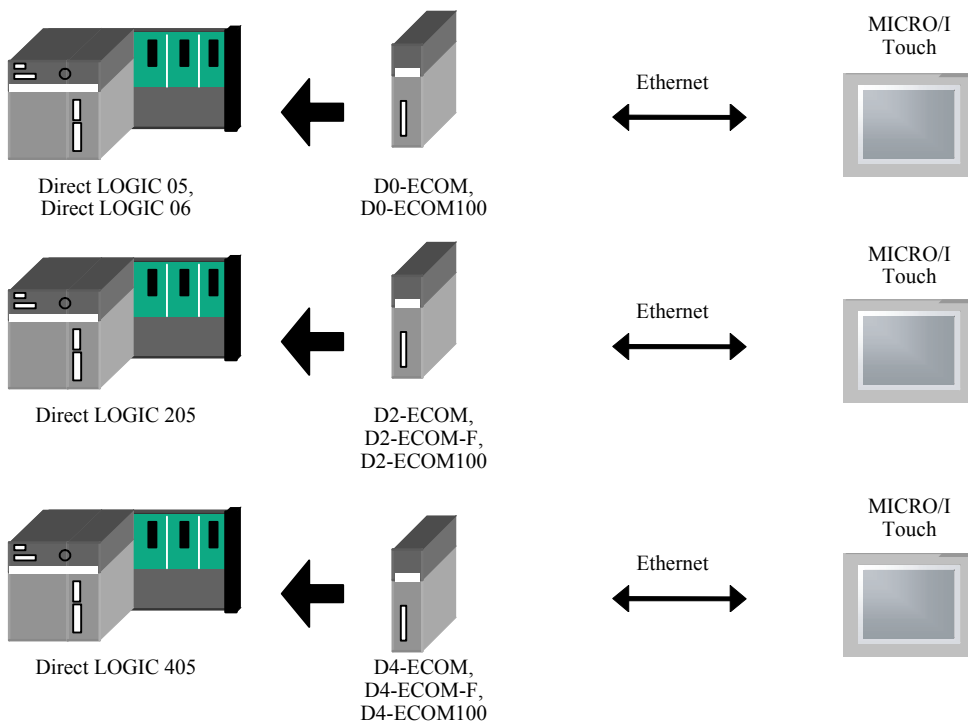


14.2.5 1: N Communication-DirectLogic 405 (Connects to the general-purpose RS422 communication port on the CPU unit)

The 1: N communication can be established by using the following connection.



14.2.6 DirectLogic Series (Ethernet)



- Use a crossover cable to connect the MICRO/I and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

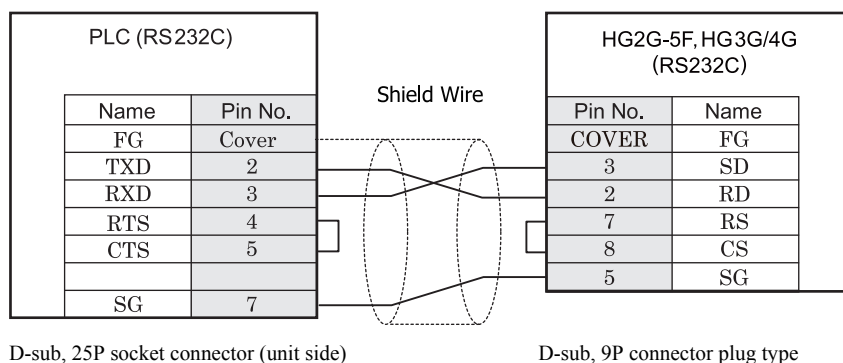
14.3 Connection Diagram



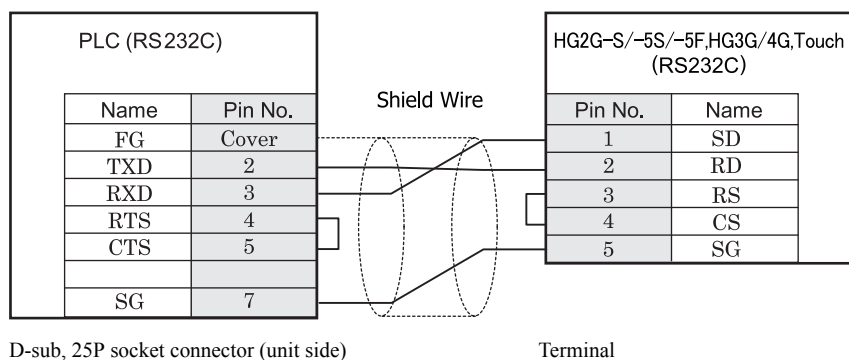
For details regarding wiring and termination resistors, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

14.3.1 Connection Diagram 1: DirectLogic 405(connects to CPU unit RS232C port) to MICRO/I, Touch D4-DCM (connects to DATA COMMUNICATIONS MODULE RS232C port) to MICRO/I, Touch

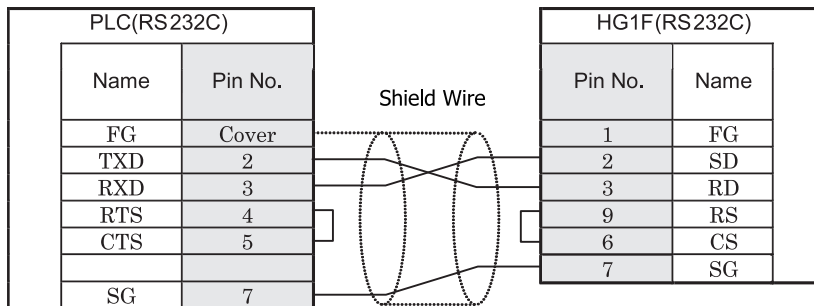
HG2G-5F, HG3G/4G (Connector)



HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



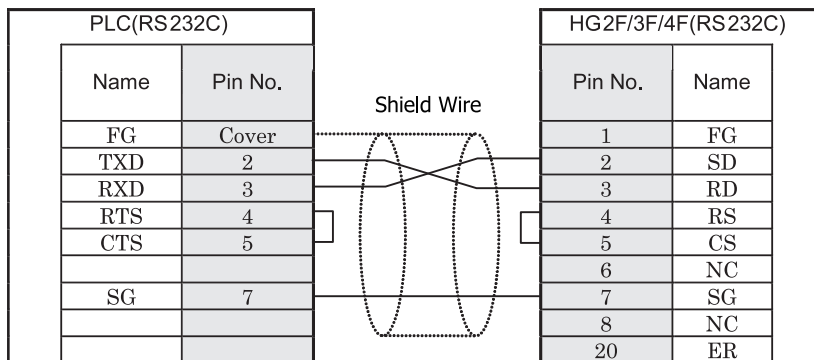
HG1F (Connector)



D-sub, 25P socket connector (unit side)

D-sub, 9P connector socket type

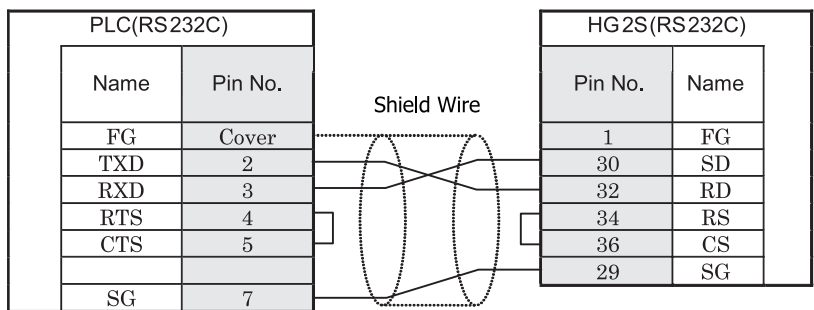
HG2F/3F/4F



D-sub, 25P socket connector (unit side)

D-sub, 25P connector socket type

HG2S

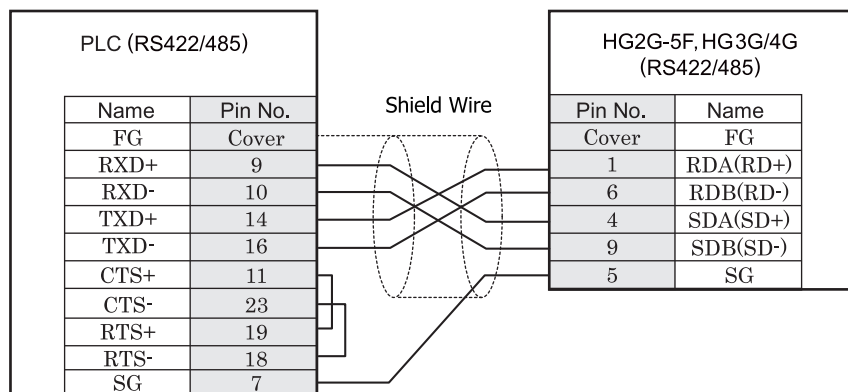


D-sub, 25P socket connector (unit side)

D-sub, 37P connector plug type

14.3.2 Connection Diagram 2: DirectLOGFIC 405 (connects to CPU unit RS422 port) to MICRO/I, Touch

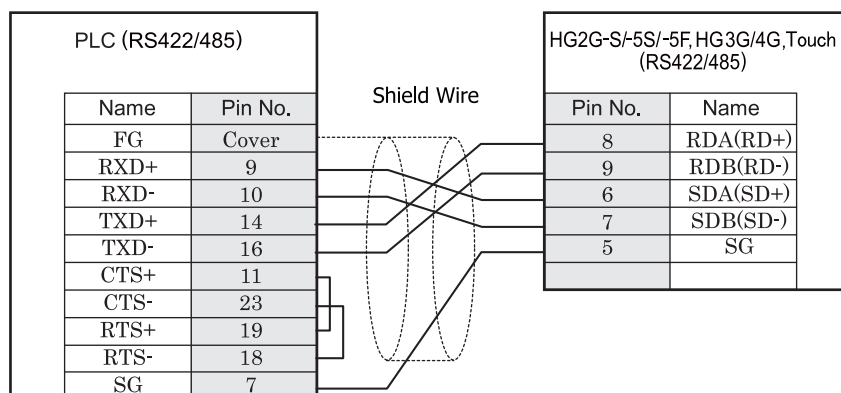
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P socket connector (unit side)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



D-sub, 25P socket connector (unit side)

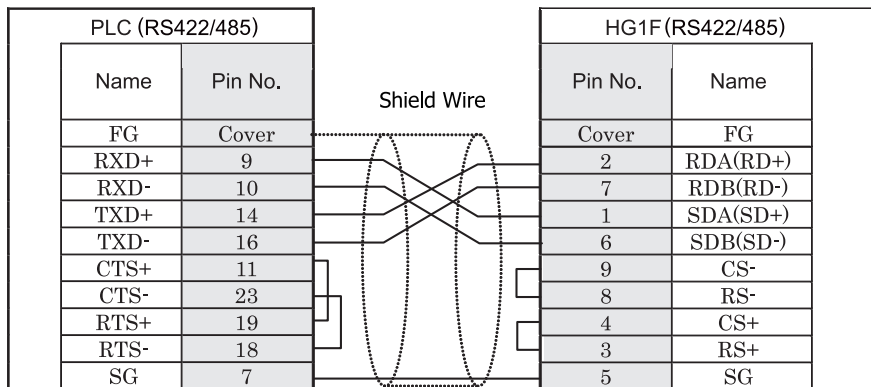
Terminal



When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

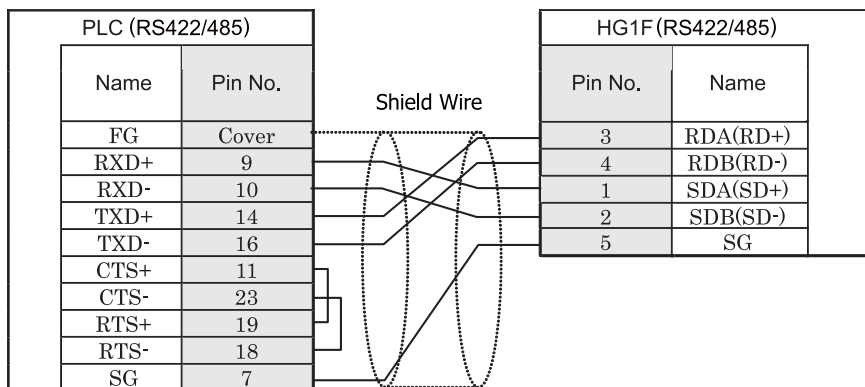


- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)

D-sub, 25P socket connector (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)

D-sub, 25P socket connector (unit side)

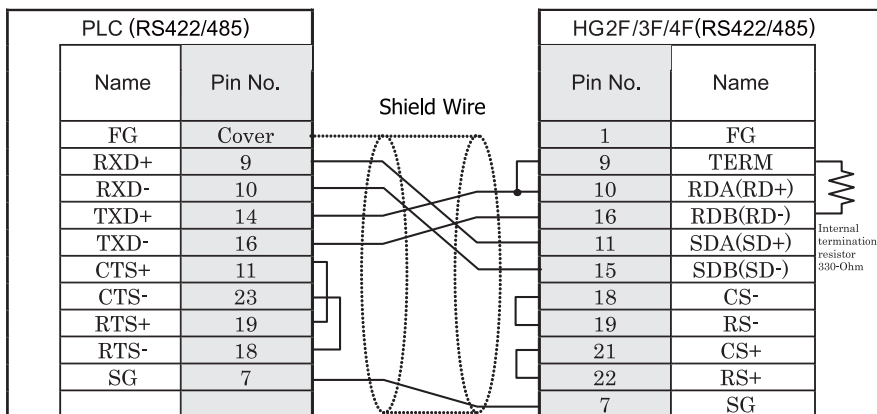
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

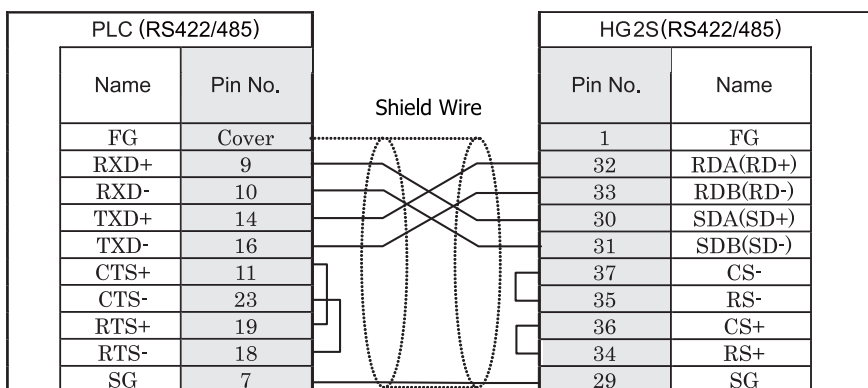


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

D-sub, 25P socket connector (unit side)

D-sub, 25P connector socket type

HG2S

D-sub, 25P socket connector (unit side)

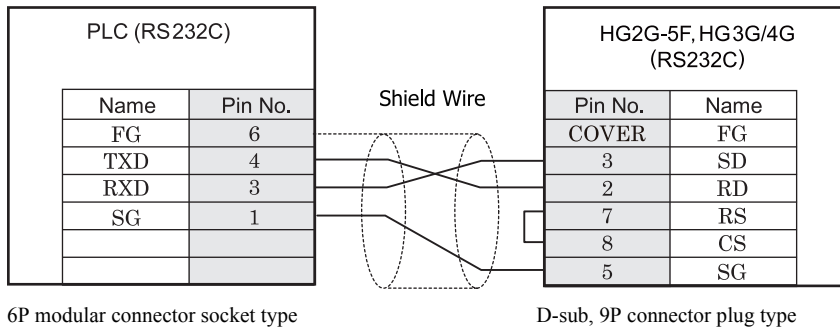
D-sub, 37P connector plug type



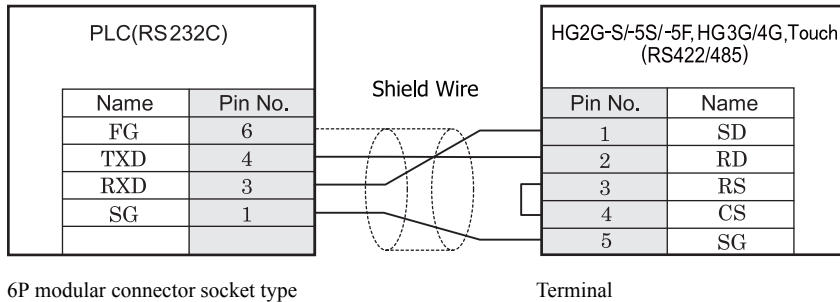
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

14.3.3 Connection Diagram 3: Direct LOGIC 205 (connects to CPU unit RS232C port) to MICRO/I, Touch

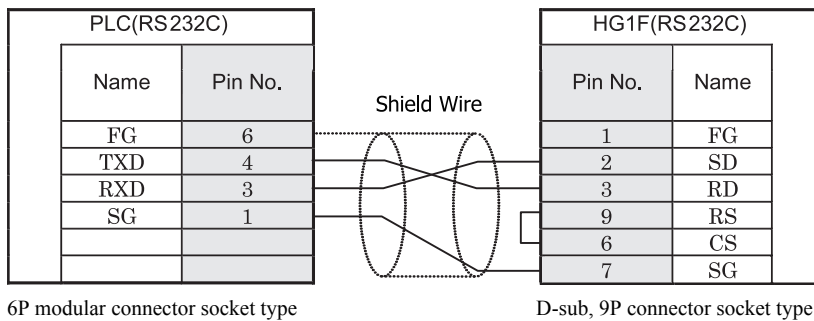
HG2G-5F, HG3G/4G (Connector)

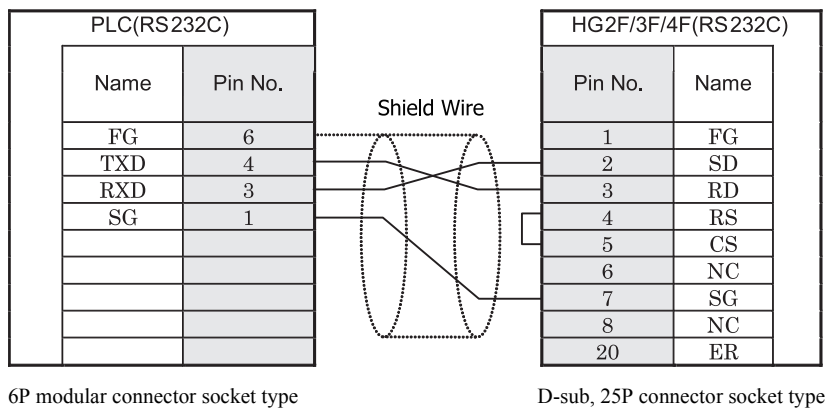
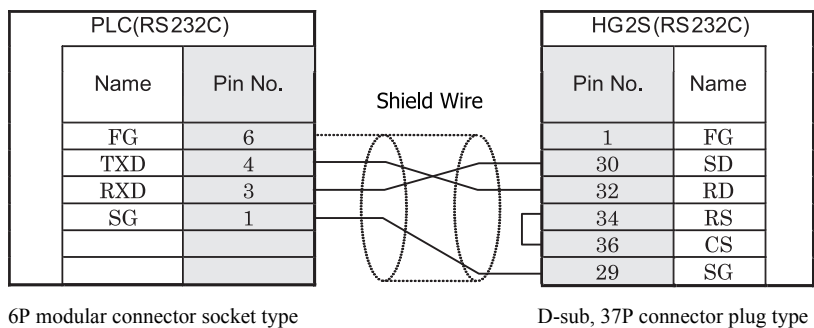


HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



HG1F (Connector)



HG2F/3F/4F**HG2S**

14.4 Environment Settings

14.4.1 D4-440 CPU Unit Communication port

Items	Details
Interface	RS232C, RS422
Data representation	HEX mode
Slave Address	1 - 90(DEC).
Baud Rate (bps)	9600 or 19200
Data Bits	8 (fixed)
Parity	None or Odd
Stop Bits	1 (fixed)
Flow Control	Hardware

14.4.2 D4-DCM DATA COMMUNICATIONS MODULE

Items	Details
Interface	RS232C
Data representation	HEX mode
Slave Address	1 – 90(DEC)
Baud Rate (bps)	9600 or 19200
Data Bits	8 (fixed)
Parity	None or Odd
Stop Bits	1 (fixed)
Flow Control	Hardware

14.4.3 DirectLogic 205 CPU Unit Communication port

Items	Details
Interface	RS232C
Data representation	HEX mode
Slave Address	1 – 90(DEC)
Baud Rate (bps)	9600
Data Bits	8 (fixed)
Parity	None or Odd
Stop Bits	1 (fixed)
Flow Control	Hardware

14.4.4 Ethernet Unit on DirectLogic

Set the following items on **Configuration-System Setup-Project** dialog box.

Item	Setting
IP Address (MICRO/I)	Set the IP address of MICRO/I in Communication Interface tab.
Subnet Mask	Set the subnet mask of MICRO/I in Communication Interface tab.
Default Gateway	Set the default gateway of MICRO/I in Communication Interface tab.
IP Address (Ethernet Unit)	Set the IP address of Ethernet unit in Host I/F Network tab.
Port Number (Ethernet Unit)	Set the port number of Ethernet unit in Host I/F Network tab.

14.5 Usable Devices

14.5.1 DirectLogic 405

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8 (octal)
Output Points (Bit)	Y	Y	0 - 1777	R/W	8 (octal)
Control Relays (Bit)	C	C	0 - 3777	R/W	8 (octal)
Stages (Bit)	S	S	0 - 1777	R/W	8 (octal)
Timer Status (Bit)	TS	T	0 - 377	R	8 (octal)
Counter Status (Bit)	CS	CT	0 - 377	R	8 (octal)
Remote In (Bit)	GX	GX	0 - 3777	R/W	8 (octal)
Remote Out (Bit)	GY	GY	0 - 3777	R/W	8 (octal)
Special Relays (Bit)	SP	SP	0 - 777	R	8 (octal)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Word)	XW	V	40400 - 40477	R	8 (octal)
Output Points (Word)	YW	V	40500 - 40577	R/W	8 (octal)
Control Relays (Word)	CW	V	40600 - 40777	R/W	8 (octal)
Stages (Word)	SW	V	41000 - 41077	R/W	8 (octal)
Remote In (Word)	GXW	V	40000 - 40177	R/W	8 (octal)
Remote Out (Word)	GYW	V	40200 - 40377	R/W	8 (octal)
Special Relays (Word)	SPW	V	41200 - 41237	R	8 (octal)
Timer Values	TV	V	0 - 377	R/W	8 (octal)
Counter Values	CV	V	1000 - 1377	R/W	8 (octal)
Data Registers	D	V	1400 - 7377	R/W	8 (octal)
System Parameters1	SR1	V	700 - 777	R	8 (octal)
System Parameters2	SR2	V	7400 - 7777	R	8 (octal)
Ext Registers	ER	V	10000 - 37777	R/W	8 (octal)



- We confirm only D4-440 address range. Depending on the type of PLC that you will be using, there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.
 - When selecting Bit Write, operation depends on the **Configuration-System Setup-Project-Host I/F Driver** which has an option to turn off all other bits in the byte or leave all other bits without change. Check or uncheck the check box for "Bit Write operation will write to a byte." (Byte refers to 8 bits.)
 - Check: When executing Bit Write, all other bits in the byte are turned off.
 - Unchecked: When executing Bit Write, all other bits are not changed.
- During Bit Write operation, the MICRO/I reads the byte data including the designated bit from the PLC, performs logical AND or OR operation with the designated bit, and writes the result into the PLC, therefore all other bits in the byte are not changed.

14.5.2 DirectLogic 205

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8 (octal)
Output Points (Bit)	Y	Y	0 - 1777	R/W	8 (octal)
Control Relays (Bit)	C	C	0 - 3777	R/W	8 (octal)
Stages (Bit)	S	S	0 - 1777	R/W	8 (octal)
Timer Status (Bit)	TS	T	0 - 377	R	8 (octal)
Counter Status (Bit)	CS	CT	0 - 377	R	8 (octal)
Remote In (Bit)	GX	GX	0 - 3777	R/W	8 (octal)
Remote Out (Bit)	GY	GY	0 - 3777	R/W	8 (octal)
Special Relays (Bit)	SP	SP	0 - 777	R	8 (octal)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Word)	XW	V	40400 - 40477	R	8 (octal)
Output Points (Word)	YW	V	40500 - 40577	R/W	8 (octal)
Control Relays (Word)	CW	V	40600 - 40777	R/W	8 (octal)
Stages (Word)	SW	V	41000 - 41077	R/W	8 (octal)
Remote In (Word)	GXW	V	40000 - 40177	R/W	8 (octal)
Remote Out (Word)	GYW	V	40200 - 40377	R/W	8 (octal)
Special Relays (Word)	SPW	V	41200 - 41237	R	8 (octal)
Timer Values	TV	V	0 - 377	R/W	8 (octal)
Counter Values	CV	V	1000 - 1377	R/W	8 (octal)
Data Registers	D	V	1400 - 7377	R/W	8 (octal)
System Parameters1	SR1	V	400 - 777	R	8 (octal)
System Parameters2	SR2	V	7400 - 7777	R	8 (octal)
Ext Registers	ER	V	10000 - 35777	R/W	8 (octal)



- We confirm only DirectLogic 205 address range. Depending on the type of PLC that you will be using, there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

- When selecting Bit Write, operation depends on the **Configuration-System Setup-Project-Host I/F Driver** which have an option to turn off all other bits in the byte or leave all other bits without change. Check or unchecked the check box for "Bit Write operation will write to a byte." (Byte refers to 8 bits.)

Check: When executing Bit Write, all other bits in the byte are turned off.

Unchecked: When executing Bit Write, all other bits are not changed.

During Bit Write operation, the MICRO/I reads the byte data including the designated bit from the PLC, performs logical AND or OR operation with the designated bit, and writes the result into the PLC, therefore all other bits in the byte are not changed.

14.5.3 DirectLogic (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8
Output Points (Bit)	Y	Y	0 - 1777	R/W	8
Control Relays (Bit)	C	C	0 - 3777	R/W	8
Special Relays (Bit)	SP	SP	0 - 777	R	8
Timers (Bit)	T	T	0 - 377	R	8
Counters (Bit)	CT	CT	0 - 377	R	8
Stages (Bit)	S	S	0 - 1777	R/W	8
Remote Input (Bit)	GX	GX	0 - 3777	R/W	8
Remote Output (Bit)	GY	GY	0 - 3777	R/W	8



Important points to note regarding setting performing Bit Write operations

With a Bit Write operation, the word data is first read from the PLC, and a logic operation (AND or OR) is performed on the relevant bit before writing it to the PLC to ensure that the values of other bits in the same channel are preserved.

However, be certain that the PLC does not modify the data in the channel during the time that the MICRO/I is writing the data.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Points (Word)	VX	V	40400 - 40477	R	8
Output Points (Word)	VY	V	40500 - 40577	R/W	8
Control Relays (Word)	VC	V	40600 - 40777	R/W	8
Special Relays (Word)	VSP	V	41200 - 41237	R	8
Timers (Word)	VT	V	41100 - 41117	R	8
Counters (Word)	VCT	V	41140 - 41157	R	8
Stages (Word)	VS	V	41000 - 41077	R/W	8
Timer Current Values	TA	V	0 - 377	R/W	8
Counter Current Values	CTA	V	1000 - 1377	R/W	8
Data Words	V	V	400 - 777 1200 - 7577 10000 - 35777	R/W	8
System parameters	VSYS	V	700 - 777 7400 - 7777 36000 - 37777	R	8
Remote Input (Word)	VGI	V	40000 - 40177	R/W	8
Remote Output (Word)	VGY	V	40200 - 40377	R/W	8

15 FANUC

15.1 Connection Table

15.1.1 Compatible PLCs

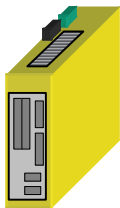
System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
Power Mate								
Power Mate-MODEL D*1	Not required	RS422/485 4-wire Connection Diagram 1 (refer to P408)	Hardware	Power Mate-MODEL D /Series 16i	X	X	X	---
Series								
16i, 160i*1 18i, 180i, 30i, 31i*1, 32i	Not required	RS232C Connection Diagram 2 (refer to P413)	Hardware	Power Mate-MODEL D /Series 16i	X	X	X	---

*1 This PLC was used to test & verify communications.

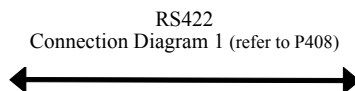
15.2 System Configuration

This is the system configuration for the connection of FANUC PLCs to the MICRO/I.

15.2.1 Power Mate-MODEL D



Power Mate-MODEL D

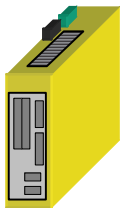


MICRO/I

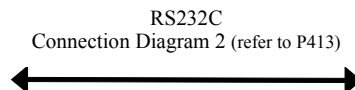


A touch-panel connection module (FANUC A20B-2902-0470) is needed for Power Mate-MODEL D.

15.2.2 Series 16i, 160i, 18i, 180i, 30i, 31i, 32i



Series 16i, 160i, 18i, 180i, 30i, 31i, 32i



MICRO/I



A touch-panel connection module is needed for Series 16i, 160i, 18i, 180i, 30i, 31i, 32i.
For details, please contact FANUC LTD.

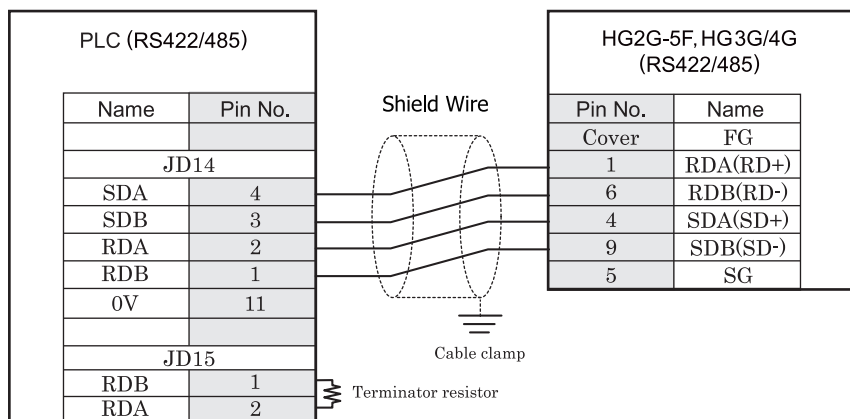
15.3 Connection Diagram



For details regarding wiring and termination resistors, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

15.3.1 Connection Diagram 1: Power Mate-MODEL D to MICRO/I

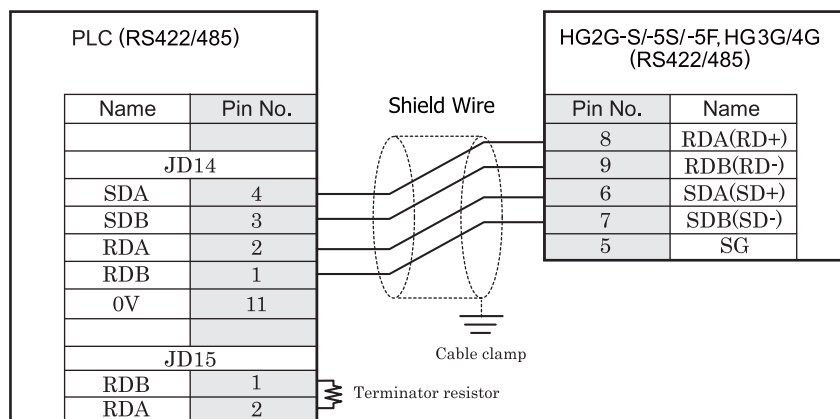
HG2G-5F, HG3G/4G (Connector)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



PCR-E20FS

(HONDA TSUSHIN KOGYO CO., LTD)

Terminal

2

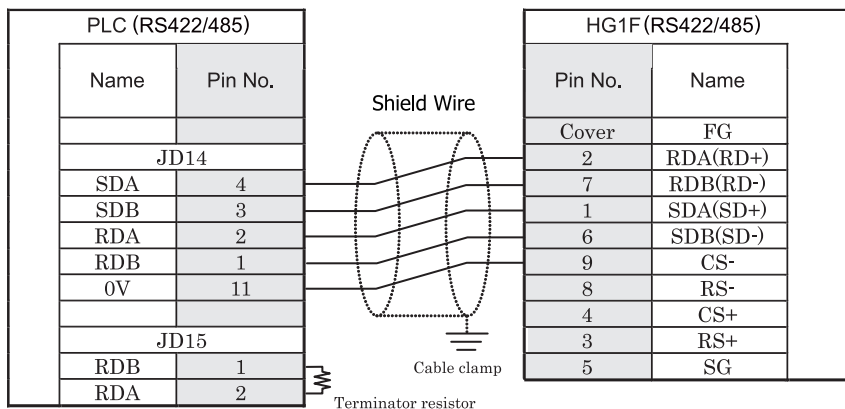
Connection to a PLC



- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.
- When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

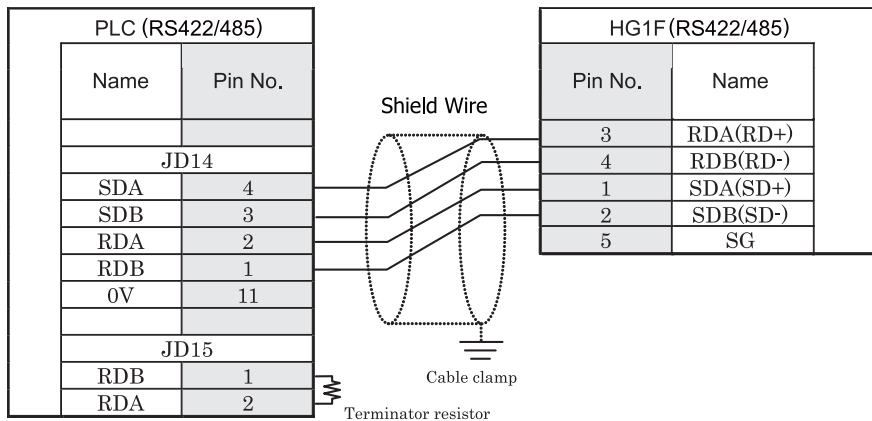


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

PCR-E20FS (HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector socket type

HG1F (Terminal)

PCR-E20FS (HONDA TSUSHIN KOGYO CO., LTD)

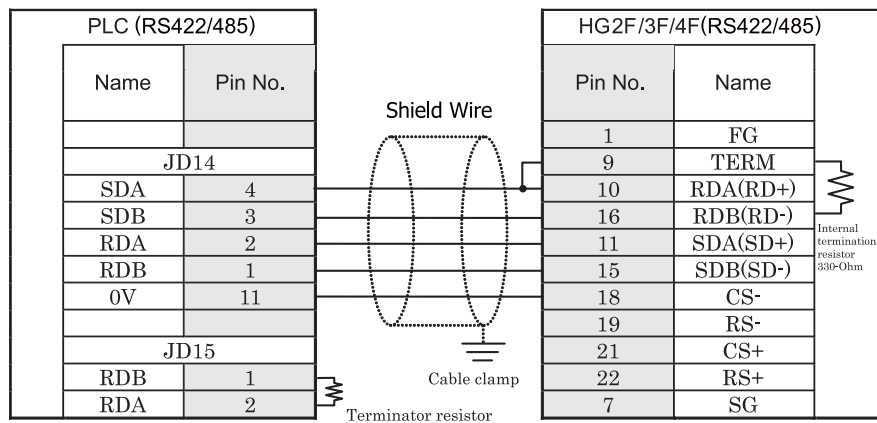
Terminal



- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.
- When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

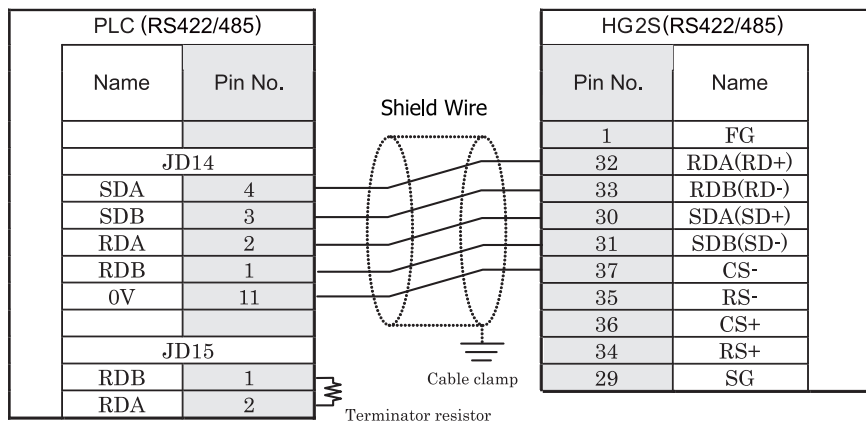
PCR-E20FS

(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 25P connector socket type



- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.

HG2S

PCR-E20FS

(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 37P connector plug type

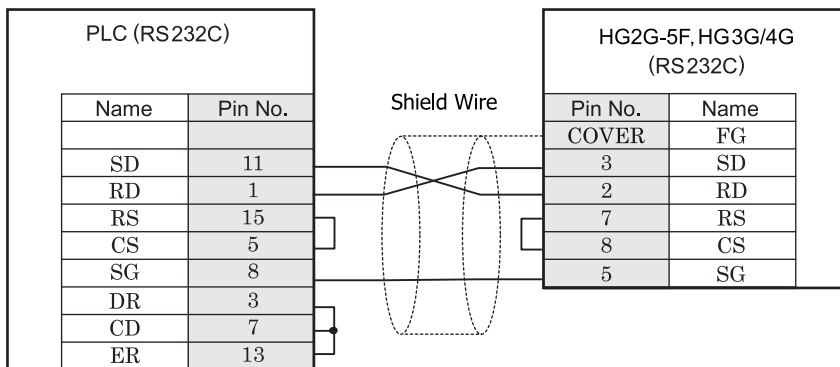


- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.



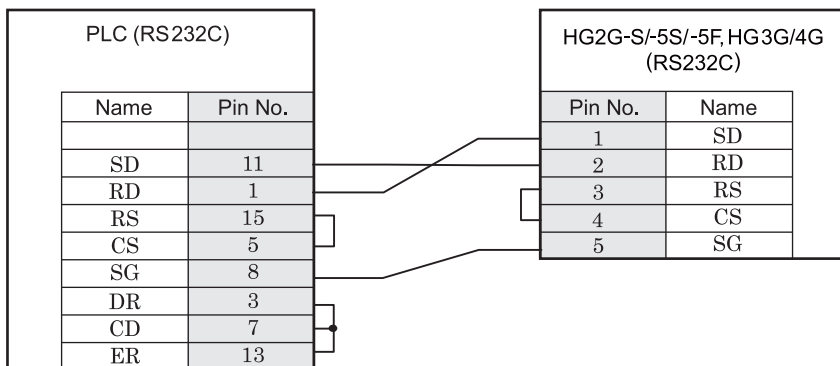
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

15.3.2 Connection Diagram 2: Series 16i, 160i, 18i, 180i, 30i, 31i, 32i to MICRO/I

HG2G-5F, HG3G/4G (Connector)

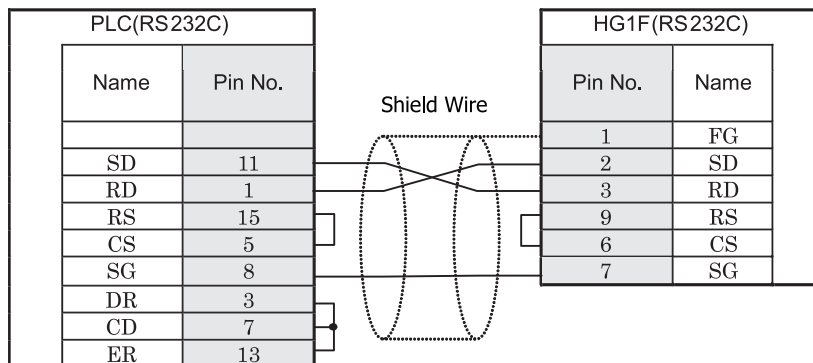
PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

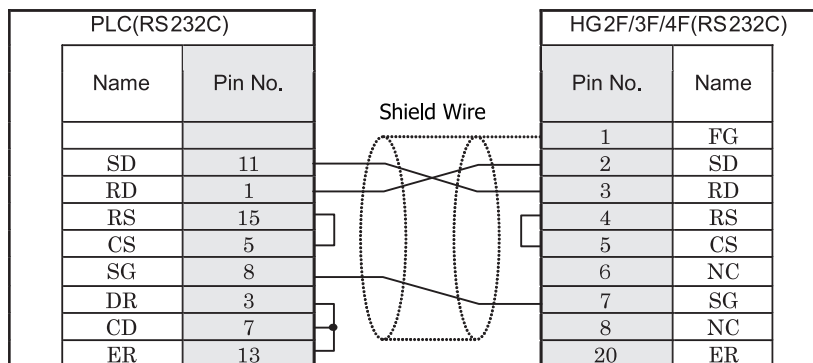
PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

Terminal

HG1F (Connector)

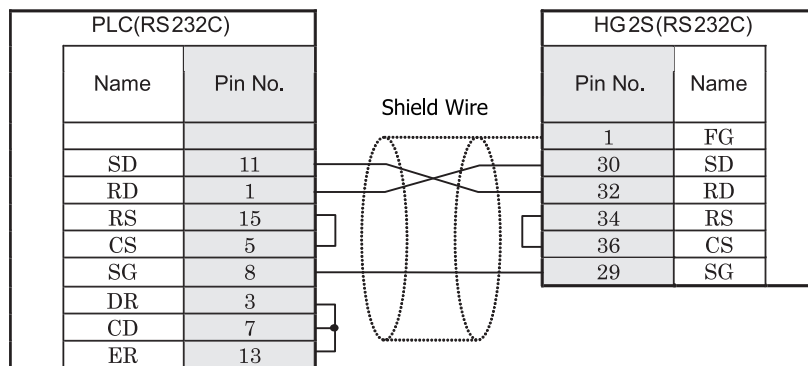
PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector socket type

HG2F/3F/4F

PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 25P connector socket type

HG2S

PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 37P connector plug type

2

Connection to a PLC

15.4 Environment Settings

15.4.1 Power Mate-MODEL D

Items	Details
Interface	RS422 4-wire
Slave Address	0 (Fixed)
Baud Rate (bps)	19200 (Fixed)
Data Bits	8 (Fixed)
Parity	Even (Fixed)
Stop Bits	1 (Fixed)

15.4.2 Series 16i, 160i, 18i, 180i, 30i, 31i, 32i

Items	Details
Interface	RS232C
Slave Address	0 (Fixed)
Baud Rate (bps)	19200 (Fixed)
Data Bits	8 (Fixed)
Parity	Even (Fixed)
Stop Bits	1 (Fixed)

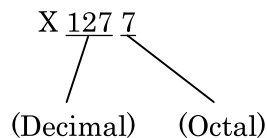
15.5 Usable Devices

15.5.1 Power Mate-MODEL D, Series 16i, 160i, 18i, 180i, 30i, 31i, 32i

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	0 - 99997	R/W	*1
Output Relay	Y	Y	0 - 99997	R/W	*1
Int. Relay	R	R	0 - 99997	R/W	*1
Keep Relay	K	K	0 - 99997	R/W	*1
Expansion Relay	E	E	0 - 99997	R/W	*1

*1 Please specify following ranges.



Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	XW	X	0 - 9998	R/W	Dec *1
Output Relay	YW	Y	0 - 9998	R/W	Dec *1
Int. Relay	RW	R	0 - 9998	R/W	Dec *1
Keep Relay	KW	K	0 - 9998	R/W	Dec *1
Timer	T	T	0 - 9998	R/W	Dec *1
Counter	C	C	0 - 9998	R/W	Dec *1
Data Table	D	D	0 - 9998	R/W	Dec *1
Expansion Relay	EW	E	0 - 9998	R/W	Dec *1

*1 Word device address increase +2.



The devices and the device ranges may vary based upon on the PLC model. Please refer to the PLC manual for details.

16 YOKOGAWA

16.1 Connection Table

16.1.1 Compatible PLCs

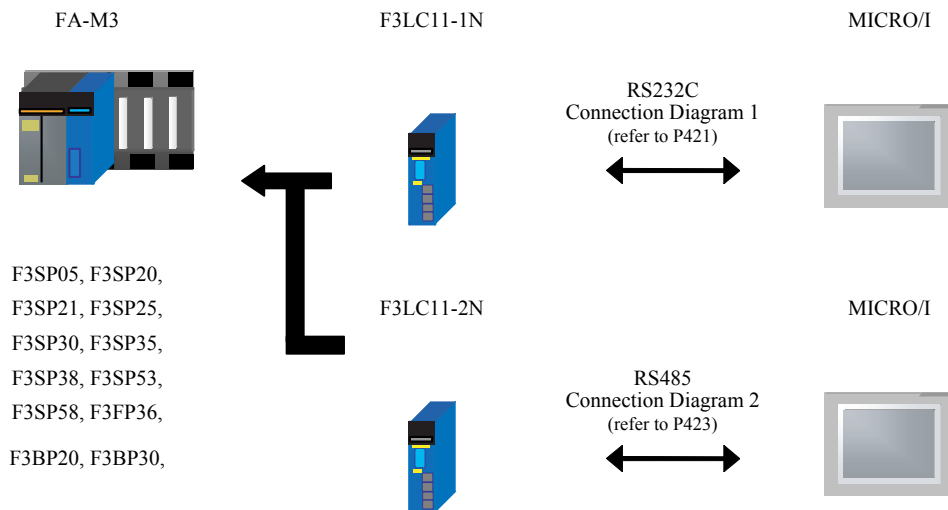
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Contro	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FA-M3								
FA-M3 (F3SP05, F3SP20, F3SP21*1, F3SP25, F3SP30, F3SP35, F3SP38, F3SP53, F3SP58, F3FP36, F3BP20, F3BP30)	F3LC11-1N*1	RS232C Connection Diagram 1 (refer to P421)	Hardware	FA-M3	X	X	X	---
	F3LC11-2N*1	RS422/485 4-wire Connection Diagram 2 (refer to P423)	None					
FA-M3 (F3SP05, F3SP21*1, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)	Not required	RS232C Connection Diagram 3 (refer to P426)	Hardware					
FA-M3 (F3SP05-0P, F3SP08-0P, F3SP21-0N, F3SP22-0S, F3SP25-2N, F3SP28-3N/3S, F3SP35-5N, F3SP38-6N/-6S, F3SP53-4H/-4S, F3SP58-6H/-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP76-7N)	F3LE01-5T/-0T, F3LE11-0T, F3LE12-0T	Ethernet	-	FA-M3(Ethernet)	X	X	X	X
	FA-M3 (F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP76-7N)							

*1 This PLC was used to test & verify communications.

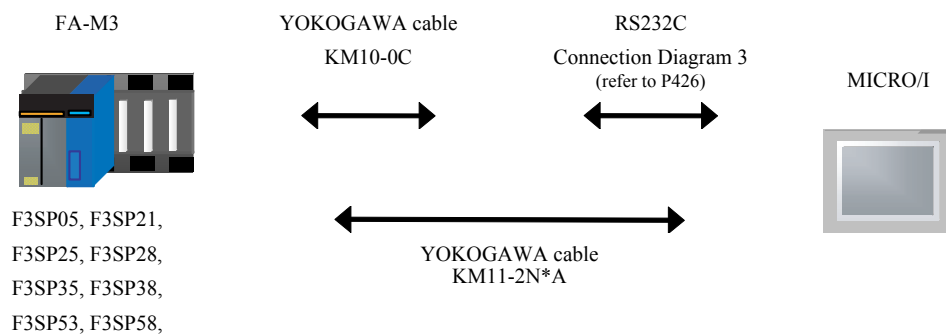
16.2 System Configuration

This is the system configuration for the connection of YOKOGAWA PLCs to the MICRO/I.

16.2.1 FA-M3 (Serial)



We recommend F3LC11-2N side to carry a "4-WIRE" setup of the terminus resistance (TERMINATOR) in long-distance transmission.

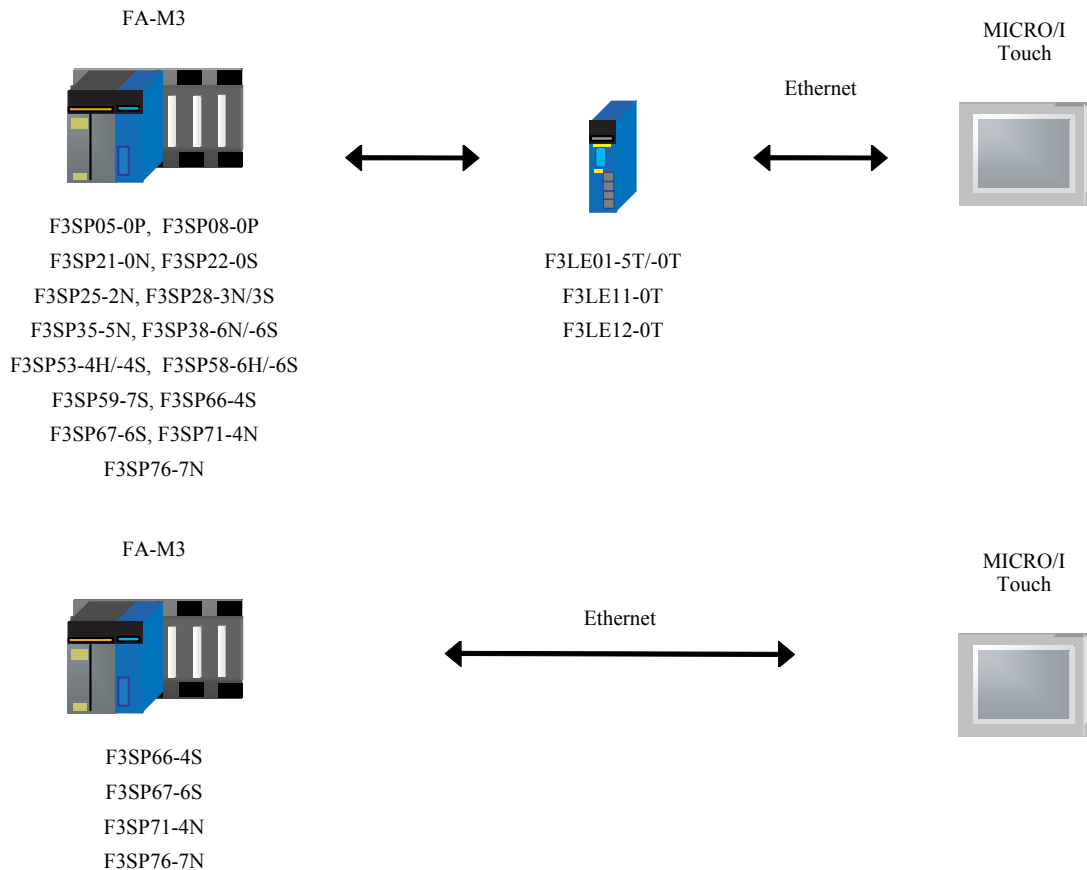


It connects with the port for programming tools of a CPU unit.



It does not correspond to "CPU direct connection system" of F3SP20 and F3SP30.

16.2.2 FA-M3 (Ethernet)



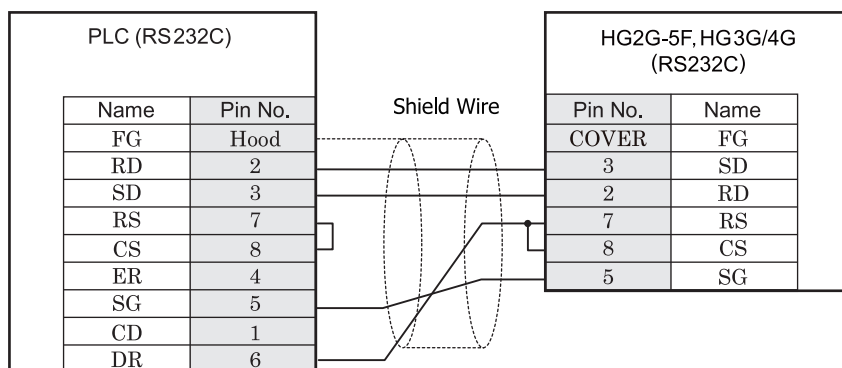
16.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

16.3.1 Connection Diagram 1: FA-M3 F3LC11-1N - MICRO/I

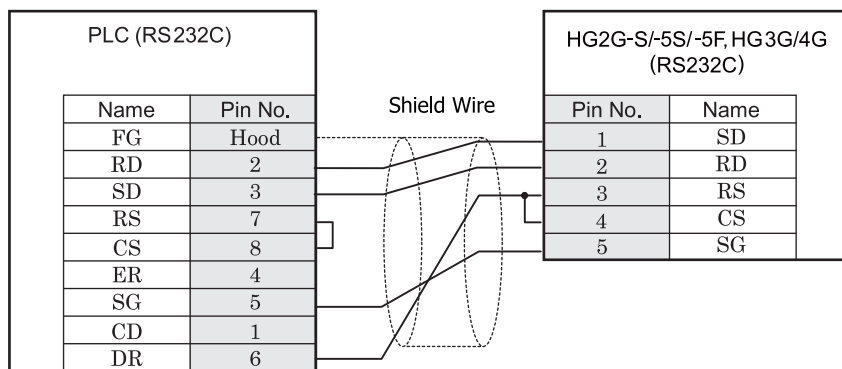
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

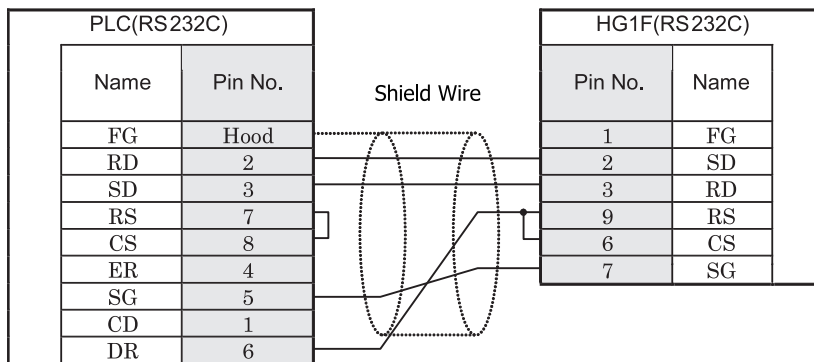
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector socket type

Terminal

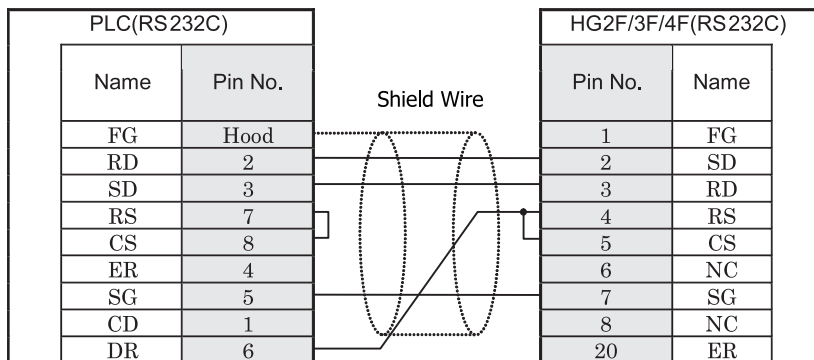
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

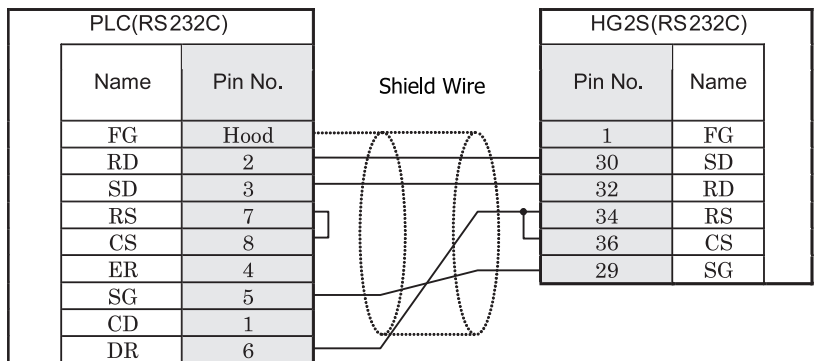
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

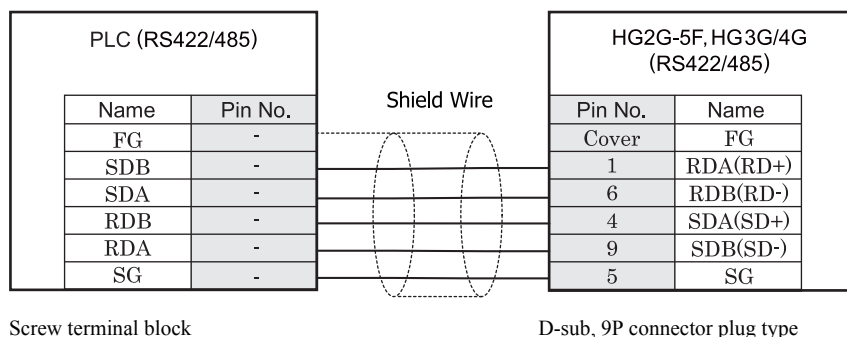
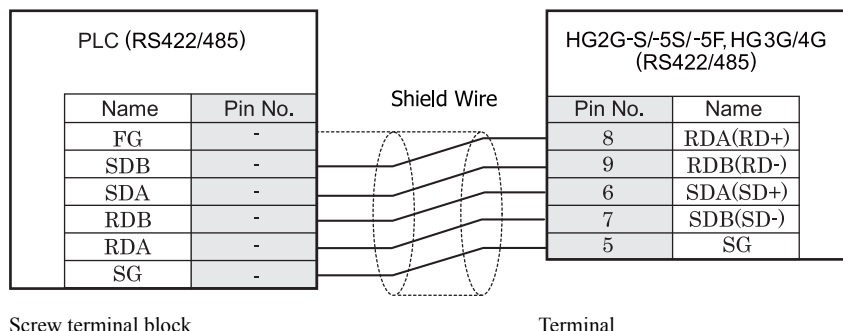
HG2S



D-sub, 9P connector socket type

D-sub, 37P connector plug type

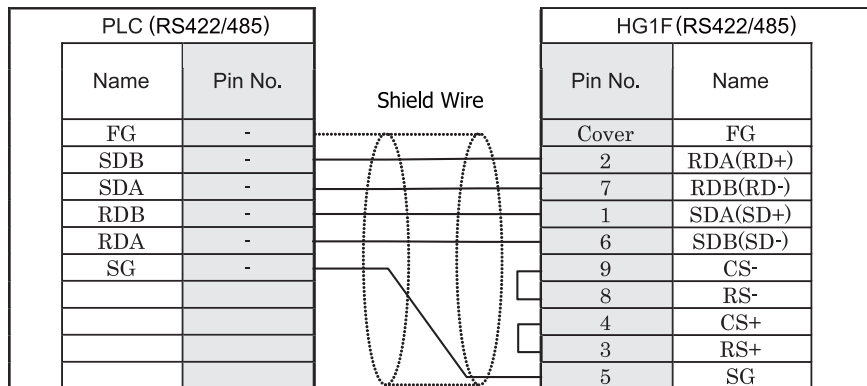
16.3.2 Connection Diagram 2: FA-M3 F3LC11-2N - MICRO/I

HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G** (Terminal)

- In MICRO/I and PLC, the name of A pole and B pole is reverse.
- When you use the Terminal Block type of HG2G-S/-5S/-5F, HG3G/4G, make sure to configure the Hardware Flow control to NONE.

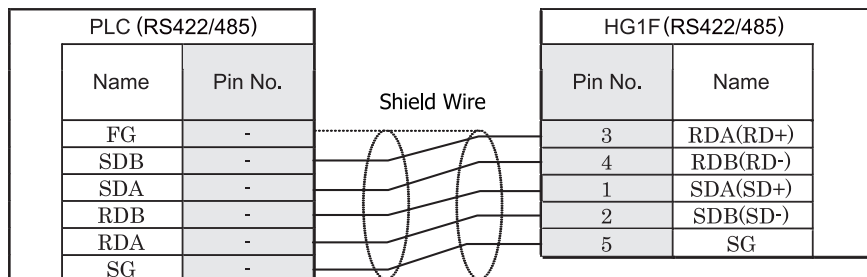


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

Screw terminal block

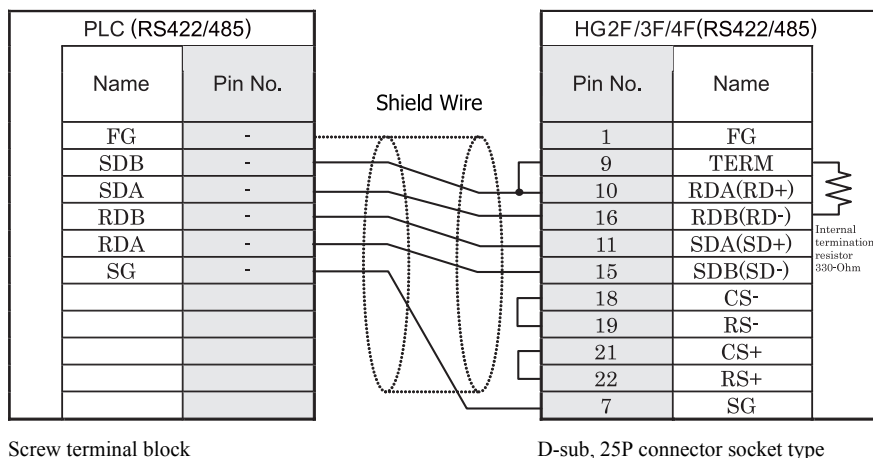
Terminal



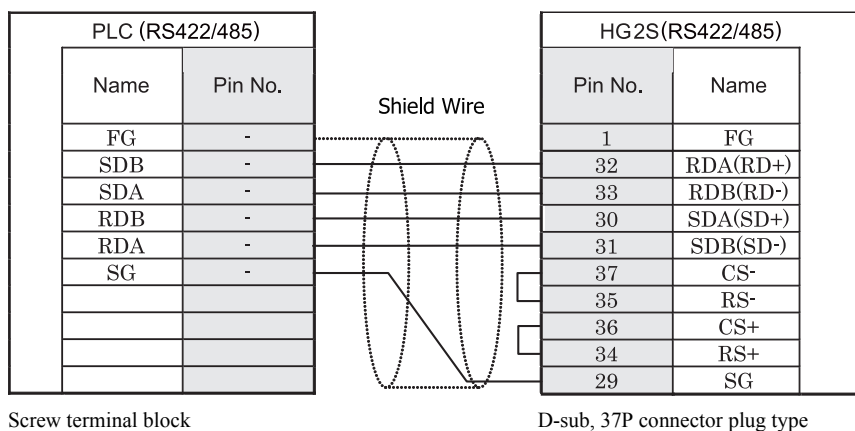
- In MICRO/I and PLC, the name of A pole and B pole is reverse.
- When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

In MICRO/I and PLC, the name of A pole and B pole is reverse.

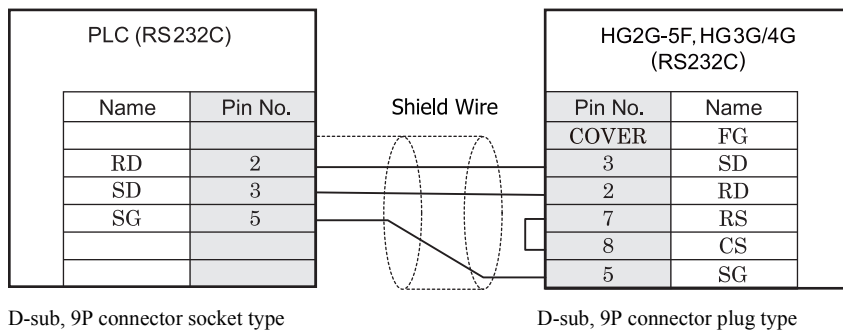
HG2S

In MICRO/I and PLC, the name of A pole and B pole is reverse.

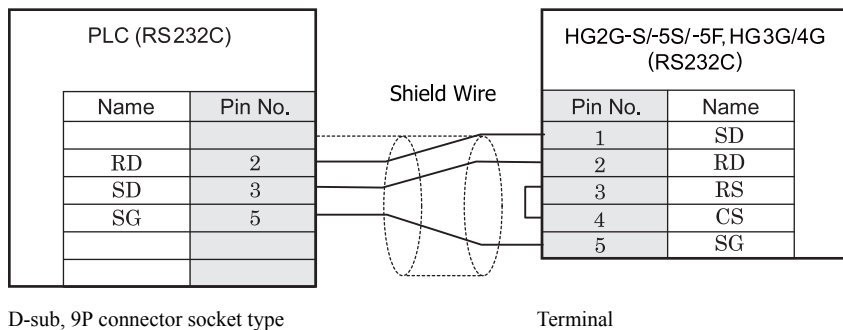


There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

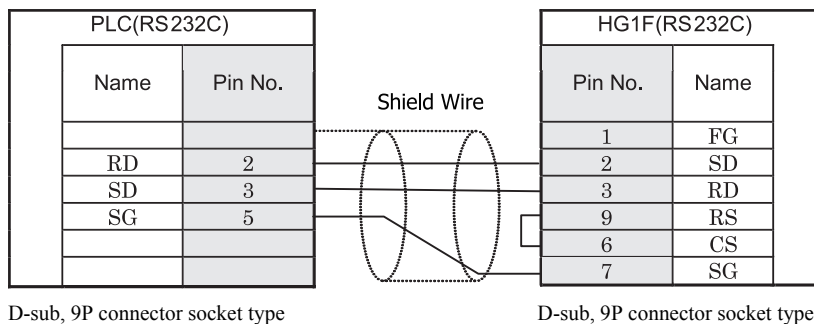
16.3.3 Connection Diagram 3: FA-M3 - MICRO/I

HG2G-5F, HG3G/4G (Connector)

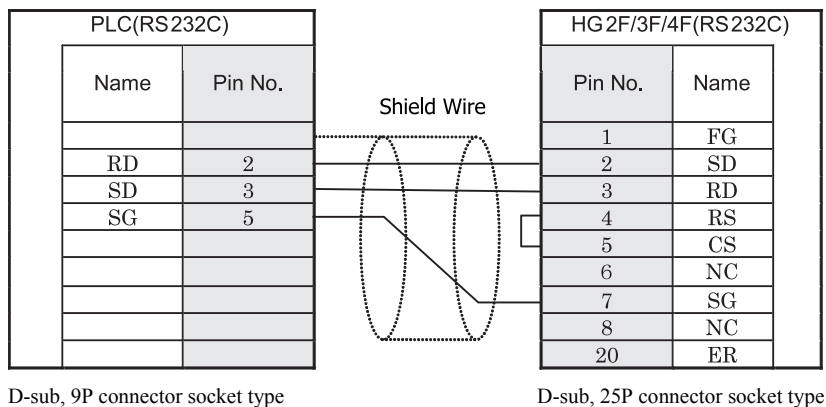
This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

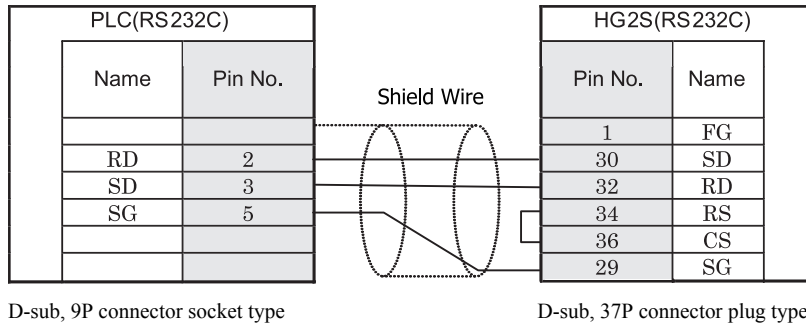
This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG1F (Connector)

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG2F/3F/4F

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG2S

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

16.4 Environment Settings

16.4.1 YOKOGAWA FA-M3 - Link Unit (F3LC11-1N, F3LC112N) to MICRO/I Setting

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C, RS485 4-wire
CPU Number		01(0x01)-4(0x04)
Station Number		01(DEC)
Baud Rate (bps)		9600 or 19200
Data Bits		7 or 8
Parity		Odd, Even or None
Stop Bits		1 or 2
Sum check		Enable
Terminus character specification		Enable
Protection function		Disable

16.4.2 YOKOGAWA FA-M3 CPU (Programming tool port) to MICRO/I Setting

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS232C
Station Number		01(DEC)(Fixed)
Baud Rate (bps)		9600 or 19200
Data Bits		8 (Fixed)
Parity		Even or None
Stop Bits		1 (Fixed)
Sum check		Enable
Terminus character specification		Enable

16.4.3 When connecting with the Yokogawa FA-M3 via Ethernet

Item	Setting
IP Address (MICRO/I)	Set the IP address of MICRO/I in Communication Interface tab.
Subnet Mask	Set the subnet mask of MICRO/I in Communication Interface tab.
Default Gateway	Set the default gateway of MICRO/I in Communication Interface tab.
IP Address (PLC)	Set the IP address of CPU Unit or Link Unit in Host I/F Network tab.
Port Number (PLC)	Set the IP address of CPU Unit or Link Unit in Host I/F Network tab.
CPU Number	Set the slot number of the CPU Unit to communicate with in Host I/F Network tab.

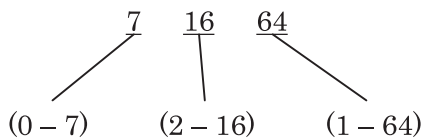
16.5 Usable Devices

16.5.1 FA-M3 (Serial)

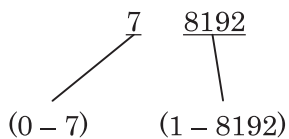
Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	X	X	201 - 71664	R	*1
Output Relay	Y	Y	201 - 71664	R/W	*1
Int. Relay	I	I	1 - 65536	R/W	Dec
Comm. Relay	E	E	1 - 4096	R/W	Dec
Link Relay	L	L	1 - 78192	R/W	*2
Spec. Relay	M	M	1 - 9984	R/W	Dec
Timer Relay	TU	T	1 - 3072	R	Dec
Counter Relay	CU	C	1 - 3072	R	Dec

*1 Please specify in the following ranges.



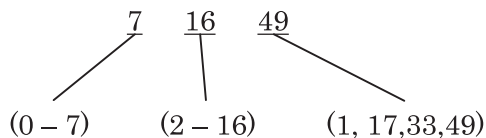
*2 Please specify in the following ranges.



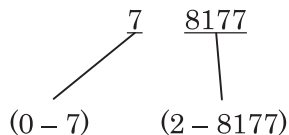
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay	XW	X	201 - 71649	R	*1
Output Relay	YW	Y	201 - 71649	R/W	*1
Int. Relay	IW	I	1 - 65521	R/W	Dec
Comm. Relay	EW	E	1 - 4081	R/W	Dec
Link Relay	LW	L	1 - 78177	R/W	*2
Spec. Relay	MW	M	1 - 9969	R/W	Dec
Timer (Current Value)	TP	T	1 - 3072	R/W	Dec
Timer (Preset Value)	TS	T	1 - 3072	R	Dec
Counter (Current Value)	CP	C	1 - 3072	R/W	Dec
Counter (Preset Value)	CS	C	1 - 3072	R	Dec
Data Register	D	D	1 - 65536	R/W	Dec
Comm. Register	R	R	1 - 4096	R/W	Dec
File Register	B	B	1 - 99999	R/W	Dec
Link Register	W	W	1 - 74096	R/W	*3
Spec. Register	Z	Z	1 - 1024	R/W	Dec

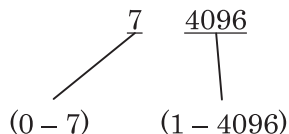
*1 Please specify in the following ranges.



*2 Please specify in the following ranges.



*3 Please specify in the following ranges.

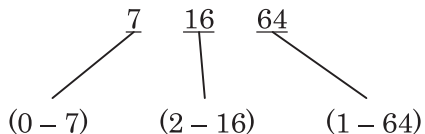


16.5.2 FA-M3 (Ethernet)

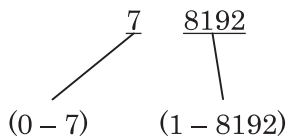
Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay (bit)	X	X	00201 - 71664	R	Dec ^{*1}
Output Relay (bit)	Y	Y	00201 - 71664	R/W	Dec ^{*1}
Int. Relay (bit)	I	I	00001 - 65536	R/W	Dec
Comm. Relay (bit)	E	E	0001 - 4096	R/W	Dec
Link Relay (bit)	L	L	00001 - 78192	R/W	Dec ^{*2}
Timer Relay (bit)	TU	T	0001 - 3072	R/W	Dec
Counter Relay (bit)	CU	C	0001 - 3072	R/W	Dec
Spec. Relay (bit)	M	M	0001 - 9984	R/W	Dec

*1 Please specify in the following ranges.



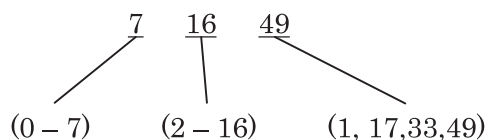
*2 Please specify in the following ranges.



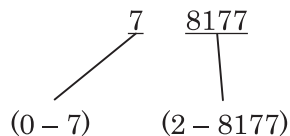
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay (word)	XW	X	00201 - 71649	R	Dec ^{*1}
Output Relay (word)	YW	Y	00201 - 71649	R/W	Dec ^{*1}
Int. Relay (word)	IW	I	00001 - 65521	R/W	Dec
Comm. Relay (word)	EW	E	0001 - 4081	R/W	Dec
Link Relay (word)	LW	L	00001 - 78177	R/W	Dec ^{*2}
Timer (Current Value)	TP	T	0001 - 3072	R	Dec
Counter (Current Value)	CP	C	0001 - 3072	R	Dec
Timer (Preset Value)	TS	T	0001 - 3072	R/W	Dec
Counter (Preset Value)	CS	C	0001 - 3072	R/W	Dec
Data Register	D	D	00001 - 65535	R/W	Dec
Link Register	W	W	00001 - 78192	R/W	Dec ^{*3}
File Register	B	B	00001 - 262144	R/W	Dec
Spec. Relay	MW	M	0001 - 9969	R/W	Dec
Spec. Register	Z	Z	0001 - 1024	R/W	Dec
Comm. Register	R	R	0001 - 4096	R/W	Dec
Index Register	V	V	001 - 256	R/W	Dec
Cache register	F	F	000001 - 524288	R/W	Dec

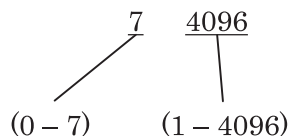
*1 Please specify in the following ranges.



*2 Please specify in the following ranges.



*3 Please specify in the following ranges.



17 INVERTER

17.1 Connection Table

17.1.1 Compatible Mitsubishi Inverters

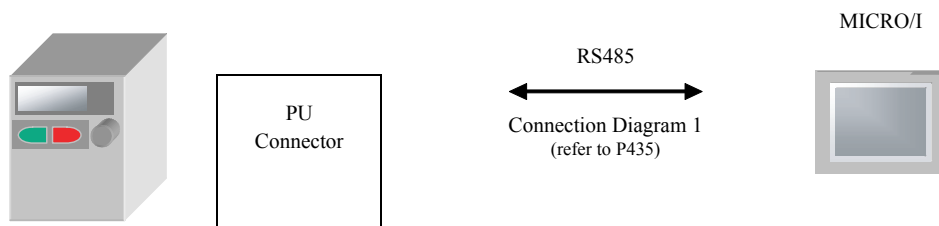
System	WindO/I-NV2 Settings			Product Series			
	Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FREQROL							
FREQROL-E500*1 FREQROL-S500*1	RS422/485 4-wire Connection Diagram 1 (refer to P435)	None	FREQROL	X	X	X	---

*1 This PLC was used to test & verify communications.

17.2 System Configuration

This is the system configuration for the connection of a Mitsubishi inverter with the MICRO/I.

17.2.1 Mitsubishi



For details including the connection procedures, refer to the instruction manual provided with the Mitsubishi inverter.

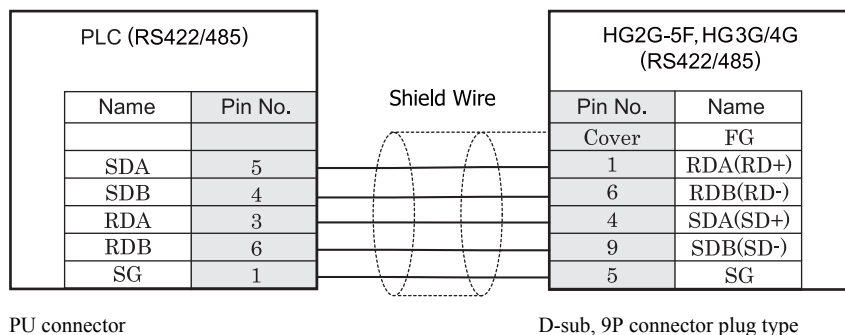
17.3 Connection Diagram



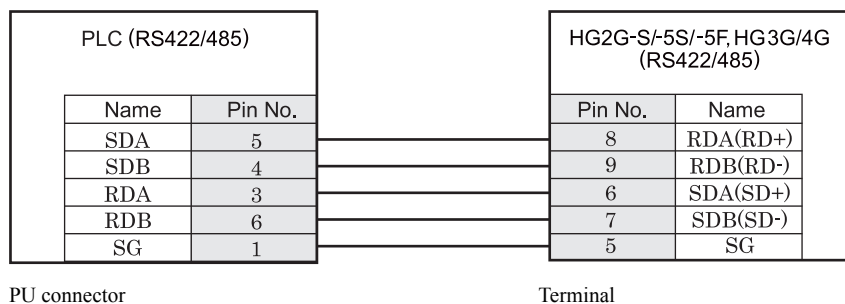
The connector types given in the Connection Diagrams are for the unit and not the cable.

17.3.1 Connection diagram 1: Mitsubishi inverter PU connector to MICRO/I

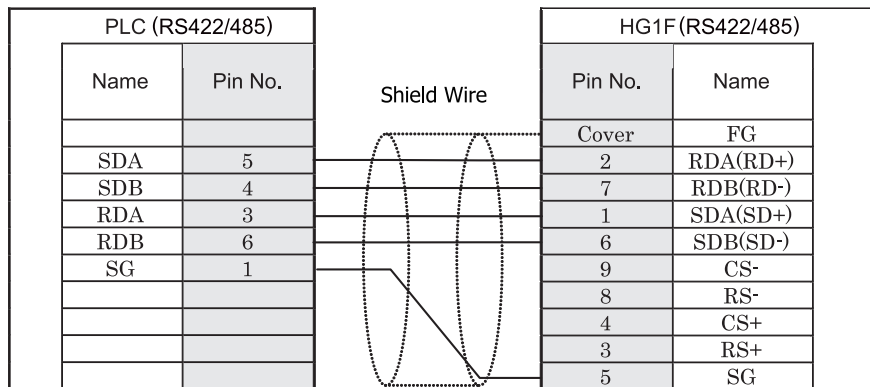
HG2G-5F, HG3G/4G (Connector)



HG2G-S/-5S/-5F, HG3G/4G (Terminal)

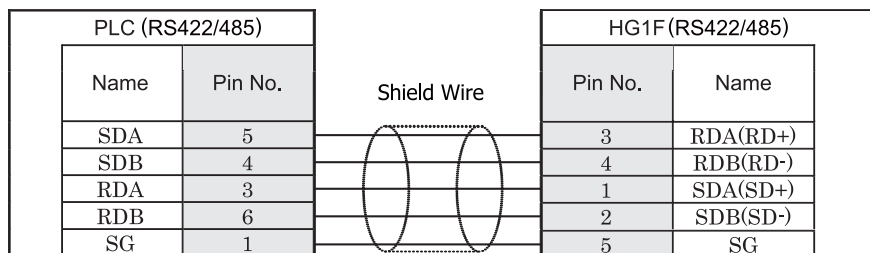


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

PU connector

D-sub, 9P connector socket type

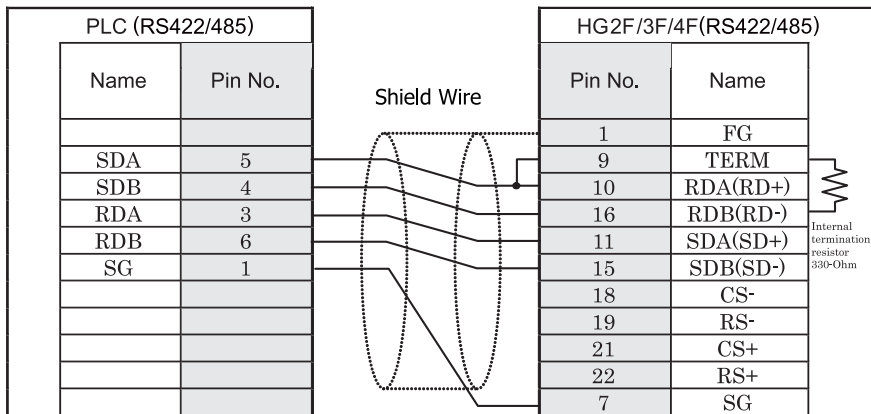
HG1F (Terminal)

PU connector

Terminal

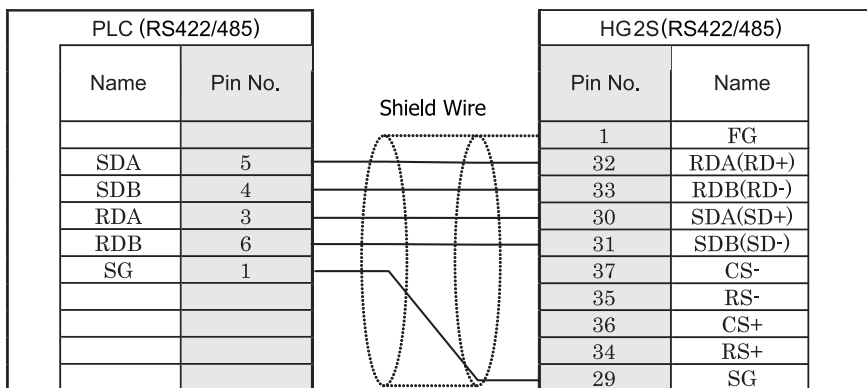


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

PU connector

D-sub, 25P connector socket type

HG2S

PU connector

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

17.4 Environment Settings

The following shows the settings of the communication port for performing communications between the Mitsubishi inverter FREQROL series and MICRO/I.

17.4.1 Environment settings for connecting the device to a Mitsubishi inverter

Items		Details
Interface	Use the same settings as for the MICRO/I.	RS485 4-wire
Inverter No.		01 - 31
Baud Rate (bps)		4800, 9600 or 19200
Data Bits		7 or 8
Stop Bits		1 / 2
Parity		Odd, Even or None
Ignore Write Error		Enable or Disable *1
Terminator	CR only	
Communication check time interval	Set to a value other than "0".	

*1 When you check "Ignore Write Error," MICRO/I don't display "Host communication Error" even if the Inverter returns NAK Error response.



MICRO/I set the error code from the inverter to LSD 112.

17.5 Usable Devices

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Parameter	P	P	0 - 999	R/W	
Parameter 37	P37	P	0 - 1	R/W	*1*2
Operation mode	OP	OP	0	R/W	
Output frequency	OF	OF	0	R	*3
Output current	OC	OC	0	R	
Output voltage	OV	OV	0	R	
Alarm description (1, 2)	E12	E12	0	R	
Alarm description (3, 4)	E34	E34	0	R	
Alarm description (5, 6)	E56	E56	0	R	
Alarm description (7, 8)	E78	E78	0	R	
Run command	RC	RC	0	R/W	*4
Inverter status monitor	ISM	ISM	0	R	
Set frequency read (RAM)	SFRR	SFRR	0	R	*3
Set frequency read (E2PROM)	SFRE	SFRE	0	R	*3
Set frequency write (RAM)	SFWR	SFWR	0	R/W	*3 *4
Set frequency write (E2PROM)	SFWE	SFWE	0	R/W	*3 *4
Inverter reset	IR	IR	0	R/W	*4
Alarm definition batch clear	EC	EC	0	R/W	*4
All parameter clear	PACL	PACL	0	R/W	*4
Link parameter expansion setting	LPES	LPES	0	R/W	*5
Second parameter changing	SPC	SPC	0	R/W	

*1 Use this device for parameter 37.

*2 This device is handled as a 32-bit device by combining addresses 0 and 1.

*3 This Device is only available for 4 digits data.

*4 Only the write data becomes valid on this device. When used for display, the device always becomes "0".

*5 The Link parameter expansion setting may be changed from the MICRO/I for reading and writing parameters.



For details regarding parameters and write data, refer to the instruction manual provided with the Mitsubishi inverter.

18 FUJI

18.1 Connection Table

18.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G-SI/-5S	HG1F/2F/2S/3F/4F	Touch
FLEX-PC								
NB1, NB2, NB3, NJ-CPU-E4, NJ-CPU-A8*1, NJ-CPU-B16, NS	Not required (Connects to CPU unit)	RS232C Connection Diagram 2 (refer to P450)	None	FLEX-PC (CPU)	X	X	X	---
		RS422/485 4-wire Connection Diagram 1 (refer to P447)						
NB1, NB2, NB3	NB-RS1-AC/DC	RS232C Connection Diagram 3 (refer to P452)	None/ Hardware	FLEX-PC (LINK)				
		RS422/485 4-wire Connection Diagram 4 (refer to P454)						
NJ-CPU-E4, NJ-CPU-A8*1, NJ-CPU-B16	NJ-RS2*1, NJ-RS4*1	RS232C Connection Diagram 3 (refer to P452)						
		RS422/485 4-wire Connection Diagram 4 (refer to P454)						
NS	NS-RS1	RS232C Connection Diagram 3 (refer to P452)						
		RS422/485 4-wire Connection Diagram 4 (refer to P454)						

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
MICREX-F								
F55	NV1L-RS2	RS232C Connection Diagram 5 (refer to P457)	None	MICREX-F	X	X	X	---
F70	NC1L-RS2	RS232C Connection Diagram 5 (refer to P457)						
	NC1L-RS4	RS422/485 4-wire Connection Diagram 6 (refer to P460)						
F80H, F120H, F120S, F140S, F150S	FFU120B	RS232C Connection Diagram 5 (refer to P457)						
		RS422/485 4-wire Connection Diagram 6 (refer to P460)						
F30, F50, F50H, F55, F60, F70, F70S, F80H*1, F81, F120H, F120S, F140S, F150S, F250	FFK120A-C10*1	RS232C Connection Diagram 5 (refer to P457)						
		RS422/485 4-wire Connection Diagram 6 (refer to P460)						
MICREX-SX								
NP1PH-08, NP1PH-16, NP1PS-32, NP1PS-32R, NP1PS-74R, NP1PS-117R, NP1PS-245R, NP1PS-74D, NP1PM-48R, NP1PM-48E, NP1PM-256E, NP1PM-256H, NP1PU-048E*1, NP1PU-256E	Not required (Connect to CPU unit loader connection con- nector) FUJI NP4H-CB2 + NW0H-CNV	RS232C Connection Diagram 7(refer to P463)	None	MICREX-SX	X	X	X	---
	NP1L-RS1*1	RS232C Connection Diagram 8(refer to P465)						
		RS422/485 4-wire Connection Diagram 9(refer to P467)						
	NP1L-RS2	RS232C Connection Diagram 8(refer to P465)						
NP1L-RS4	RS422/485 4-wire Connection Diagram 9(refer to P467)							

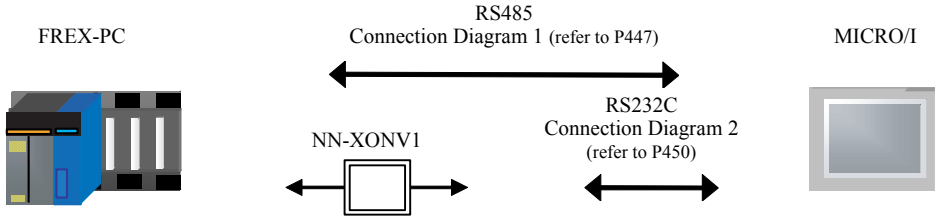
System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
NP1PH-08, NP1PH-16, NP1PS-32, NP1PS-32R, NP1PS-74R, NP1PS-117R, NP1PS-245R, NP1PS-74D, NP1PM-48R, NP1PM-256H	NP1L-ET1	Ethernet	-	MICREX-SX (Ethernet)	X	X	X	X
NP1PM-48E, NP1PM-256E, NP1PU-048E ^{*1} , NP1PU-256E	Not required (Connect to the Ethernet Port)							
	NP1L-ET1							

*1 This PLC was used to test & verify communications.

18.2 System Configuration

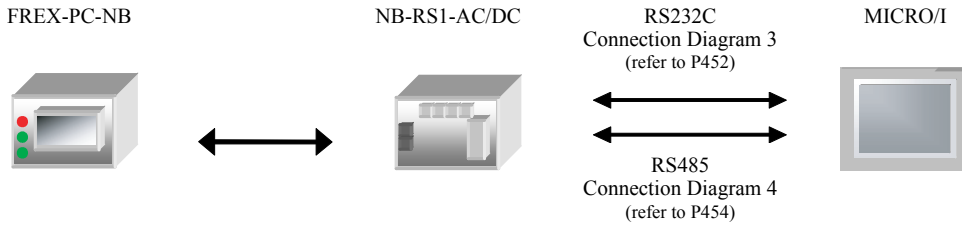
This is the system configuration for the connection of FUJI PLCs to the MICRO/I.

18.2.1 FLEX-PC Series (Loader Port)

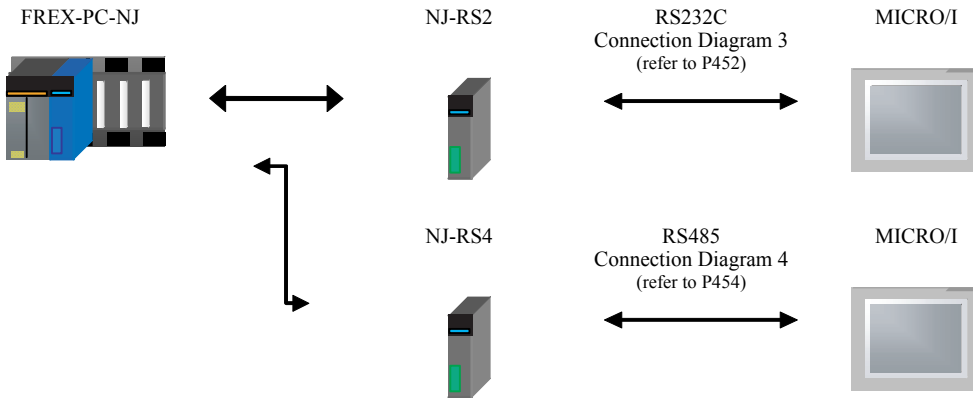


18.2.2 FLEX-PC Series (Interface Module)

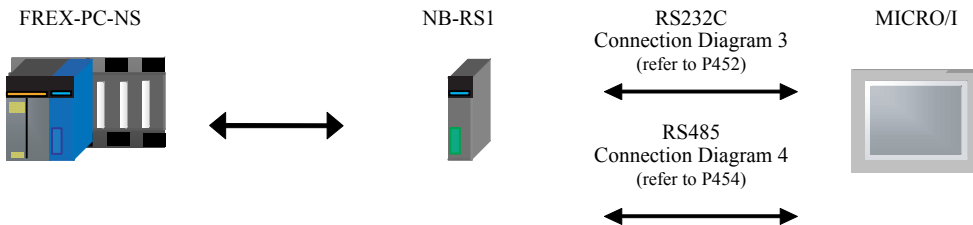
- NB Series



- NJ Series



- NS Series



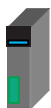
18.2.3 MICREX-F Series (Interface Card)

- F55

MICREX-F F55



NV1L-RS2



RS232C
Connection Diagram 5
(refer to P457)



MICRO/I

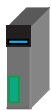


- F70

MICREX-F F70



NC1L-RS2



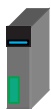
RS232C
Connection Diagram 5
(refer to P457)



MICRO/I



NC1L-RS4



RS485 4-wire
Connection Diagram 6
(refer to P460)



MICRO/I

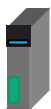


- F80H/F120H/F120S/F140S/F150S

MICREX-F



FFU-120B



RS232C
Connection Diagram 5
(refer to P457)



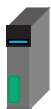
MICRO/I



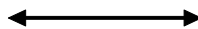
MICREX-F



FFU-120B



RS485 4-wire
Connection Diagram 6
(refer to P460)

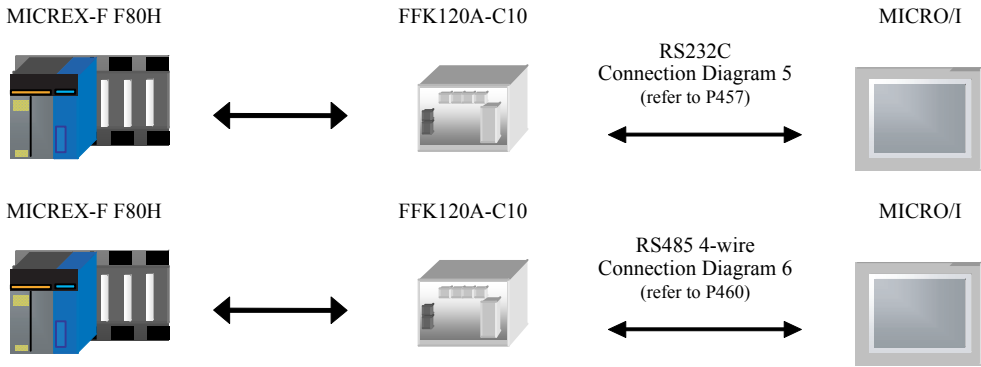


MICRO/I

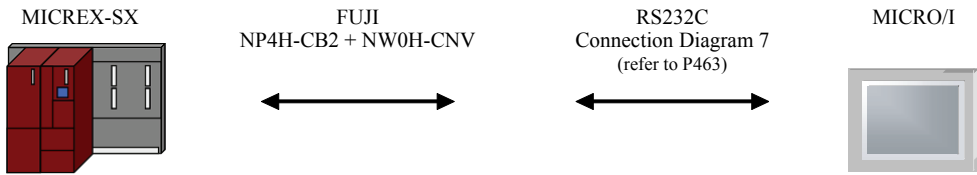


18.2.4 MICREX-F Series (Interface Module)

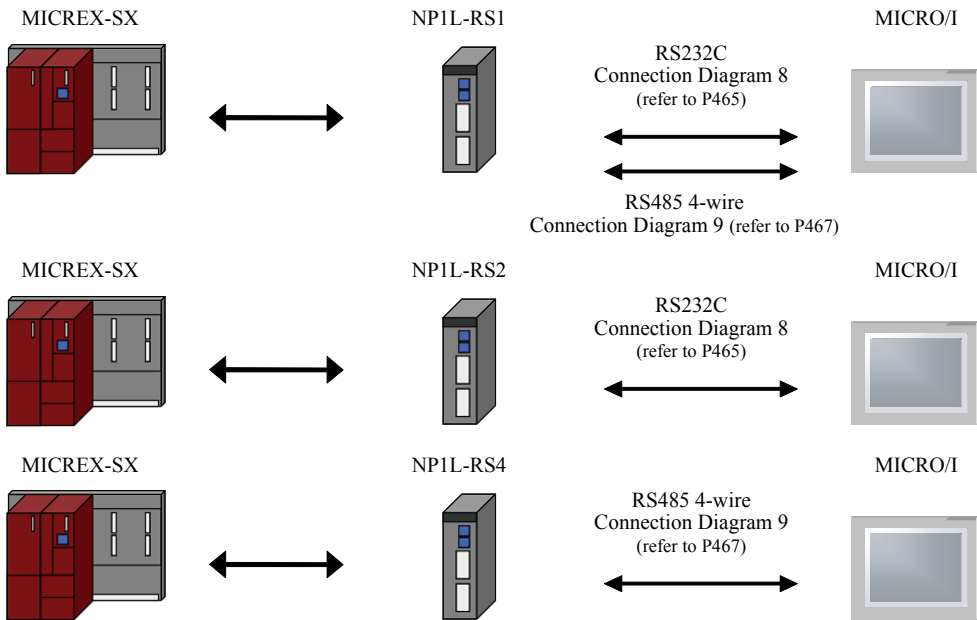
- F30/F50/F50H/F55/F60/F70/F70S/F80H/F81/F120H/F120S/F140S/F150S



18.2.5 MICREX-SX Series (Connect to the CPU unit loader connection connector)

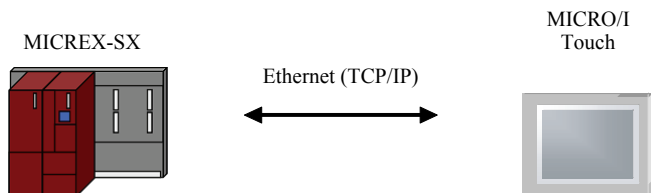


18.2.6 MICREX-SX Series (Interface Module)

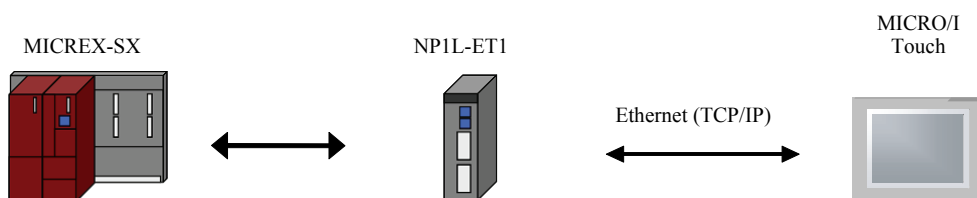


18.2.7 MICREX-SX Series (Connect to the CPU unit Ethernet Port)

- NP1PM-48E / NP1PM-256E / NP1PU-048E / NP1PU-256E



18.2.8 MICREX-SX Series (Ethernet Module)



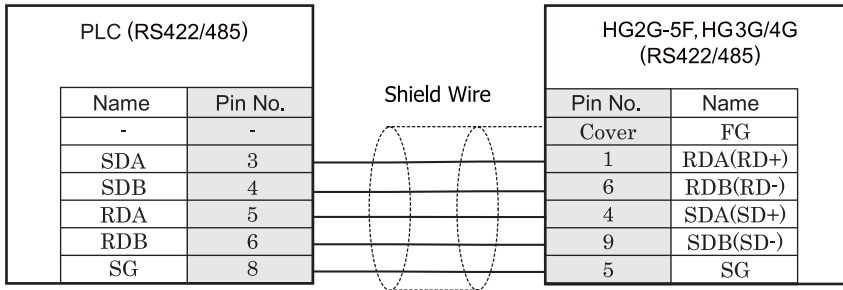
18.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

18.3.1 Connection Diagram 1: FLEX-PC series (Loader Port) - MICRO/I

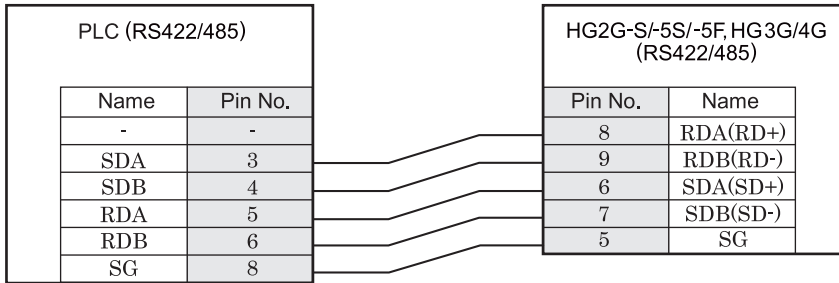
HG2G-5F, HG3G/4G (Connector)



Modular jack 8 Pin

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

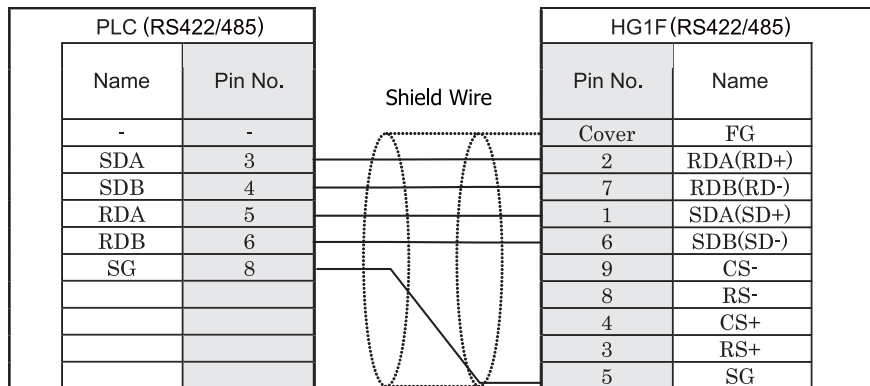


Modular jack 8 Pin

Terminal

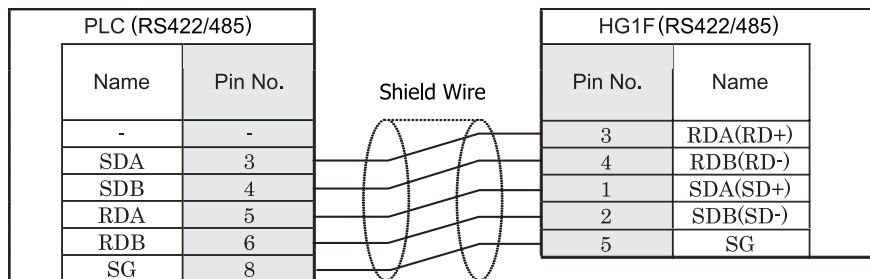


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Modular jack 8 Pin

D-sub, 9P connector socket type

HG1F (Terminal)

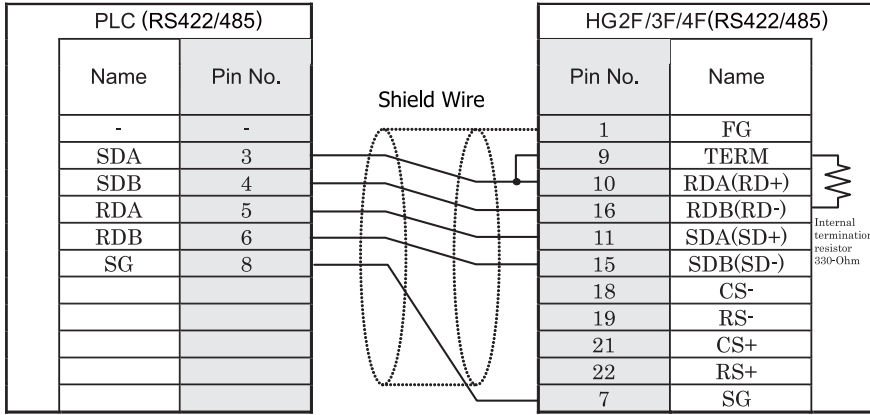
Modular jack 8 Pin

Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

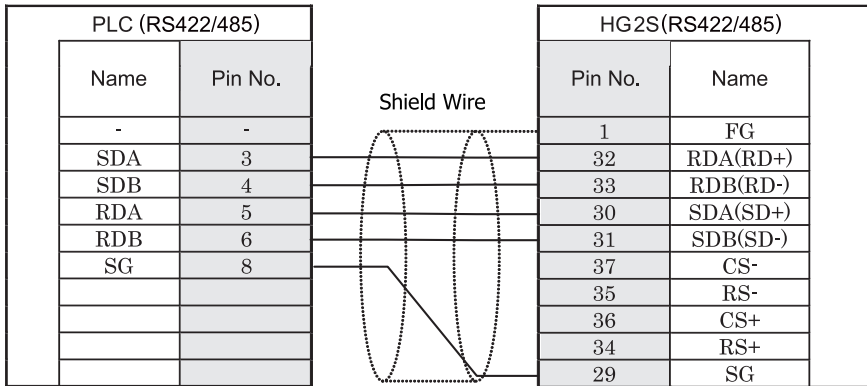
HG2F/3F/4F



Modular jack 8 Pin

D-sub, 25P connector socket type

HG2S



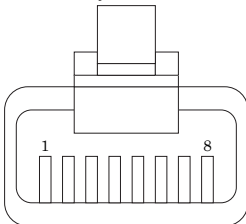
Modular jack 8 Pin

D-sub, 37P connector plug type



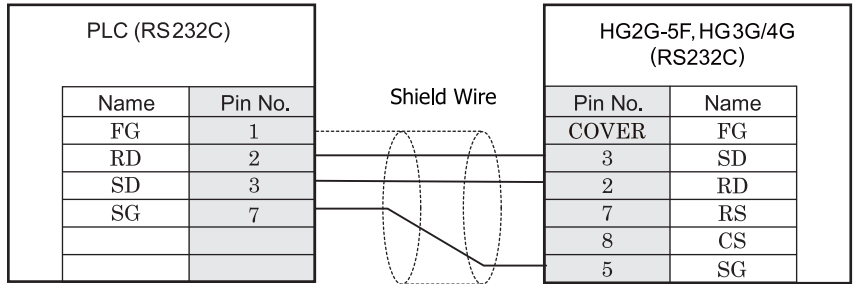
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

Connector Pin Layout for PLC side Modular jack



18.3.2 Connection Diagram 2: FLEX-PC series (Loader Port) + NN-CONV1 - MICRO/I

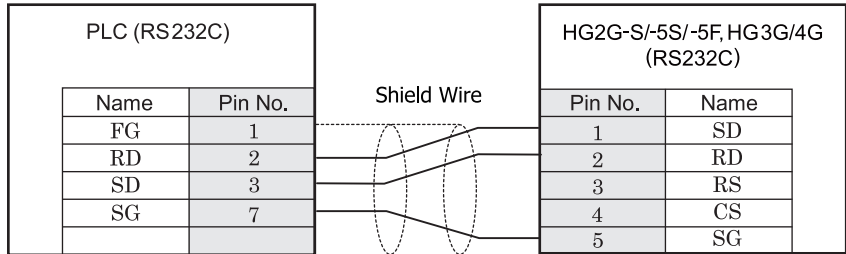
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector plug type

D-sub, 9P connector plug type

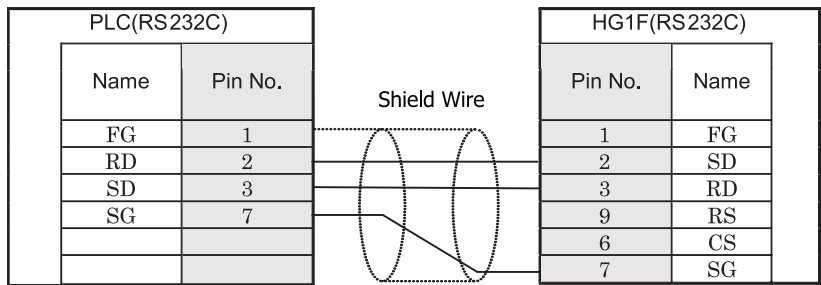
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 25P connector plug type

Terminal

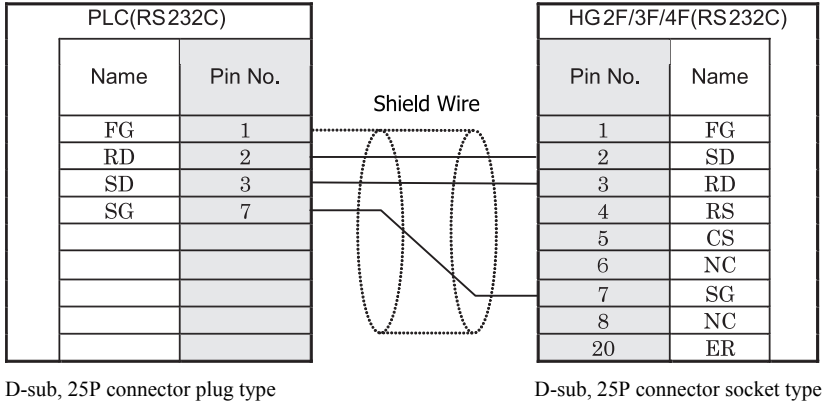
HG1F (Connector)



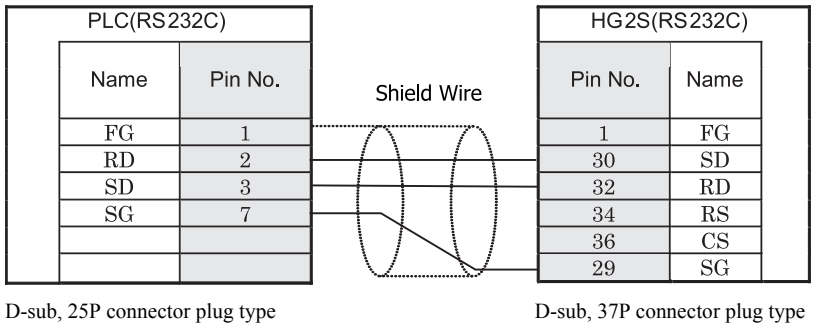
D-sub, 25P connector plug type

D-sub, 9P connector socket type

HG2F/3F/4F

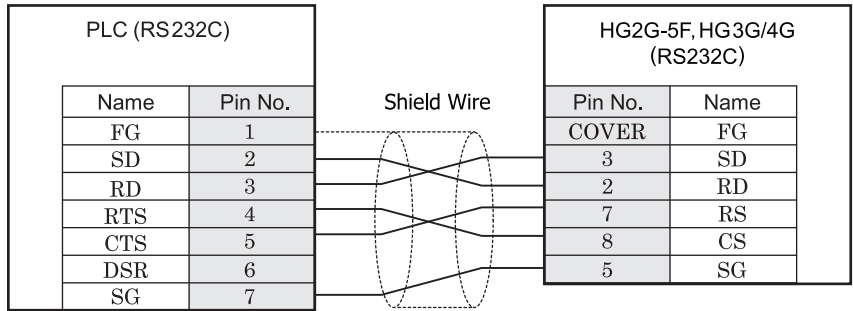


HG2S



18.3.3 Connection Diagram 3: FLEX-PC Series (Link Module RS232C Port) - MICRO/I

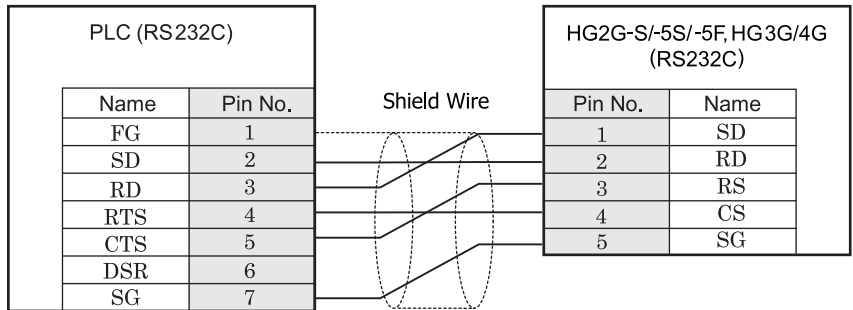
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector plug type

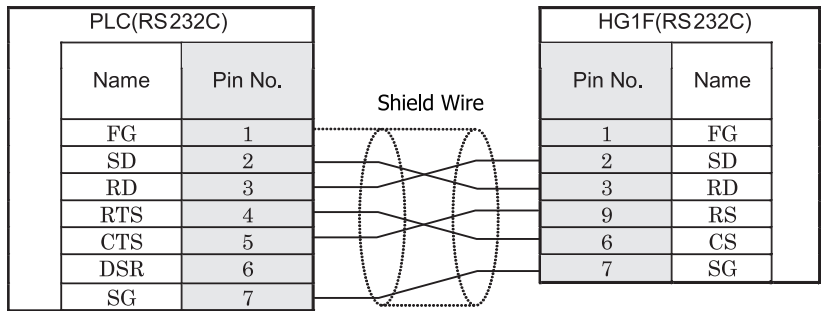
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 25P connector socket type

Terminal

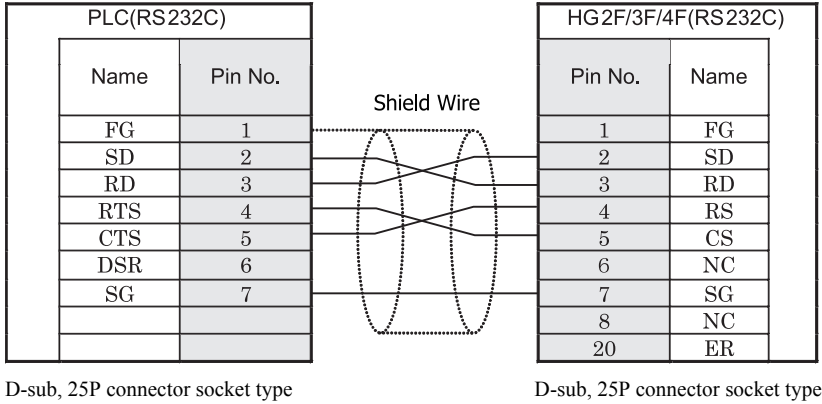
HG1F (Connector)



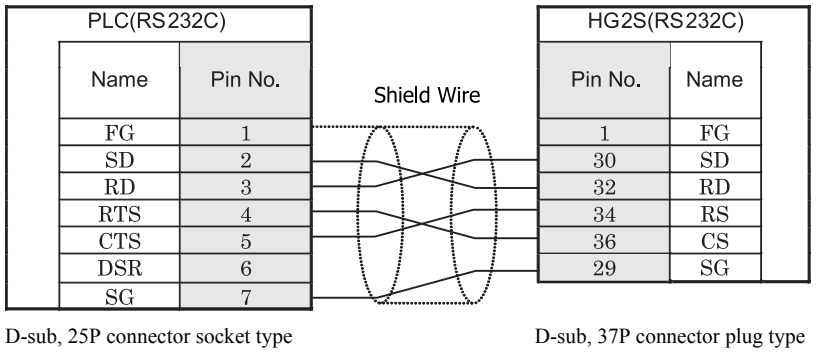
D-sub, 25P connector socket type

D-sub, 9P connector socket type

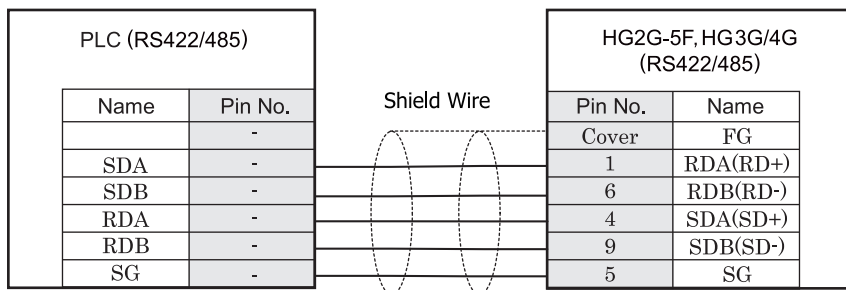
HG2F/3F/4F



HG2S

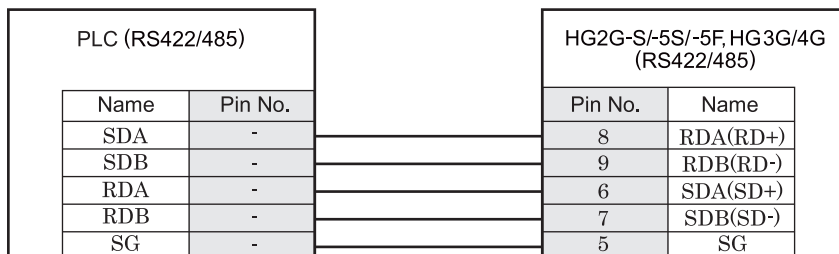


18.3.4 Connection Diagram 4: FLEX-PC Series (Link Module RS485 Port) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

Screw terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

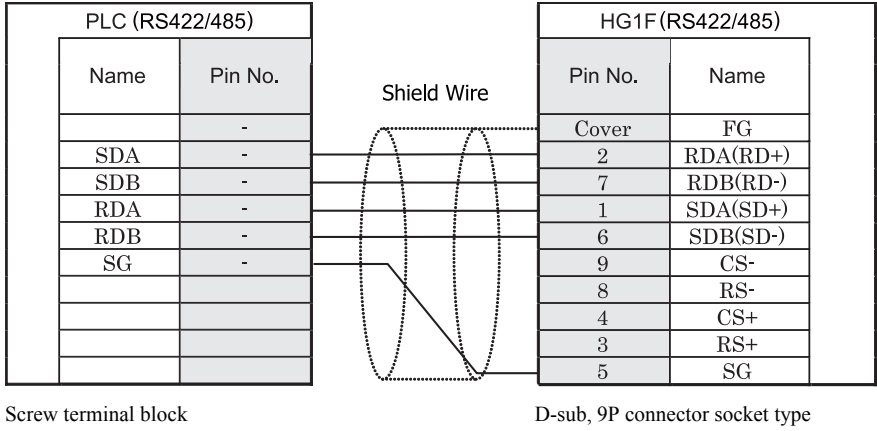
Screw terminal block

Terminal

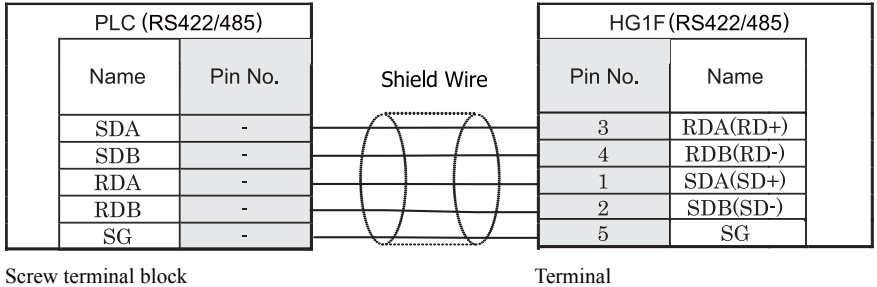


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

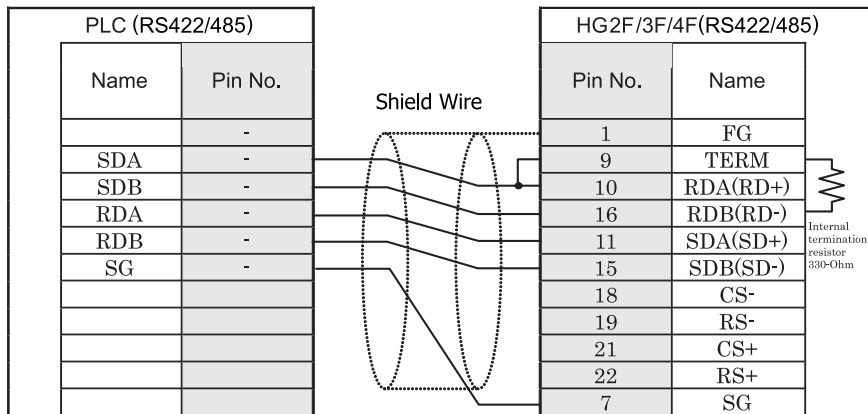
HG1F (Connector)



HG1F (Terminal)

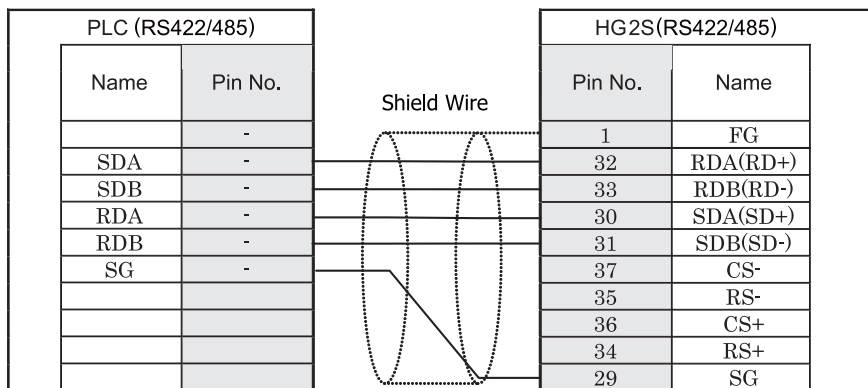


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

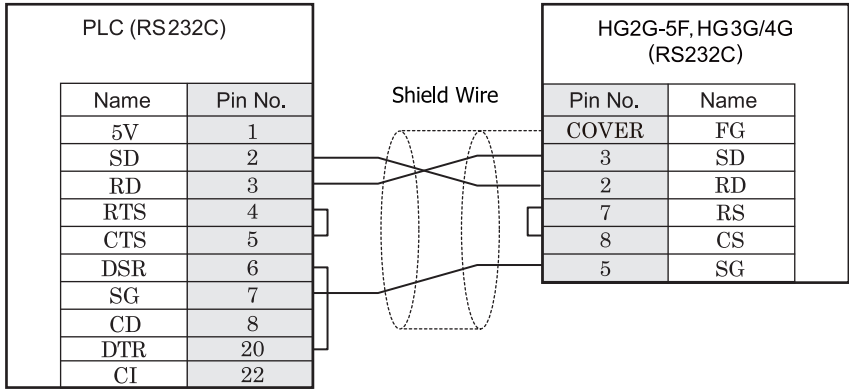
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

18.3.5 Connection Diagram 5: MICREX - F Series (RS232C Port) - MICRO/I

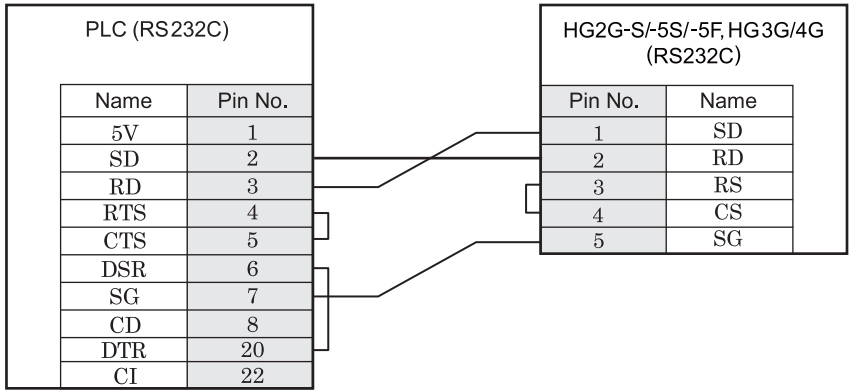
HG2G-5F, HG3G/4G (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector plug type

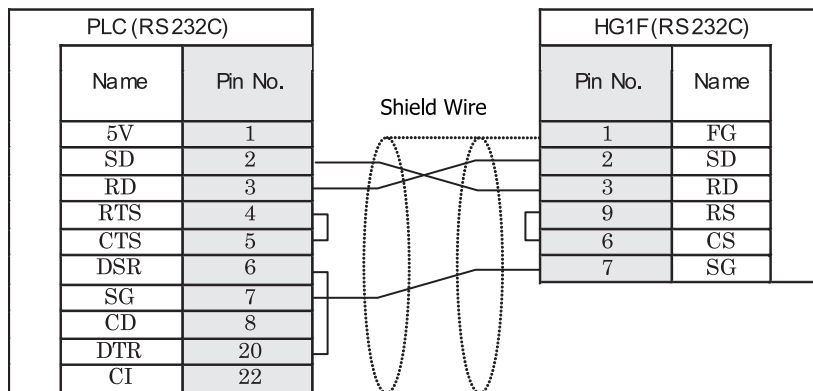
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 25P connector socket type

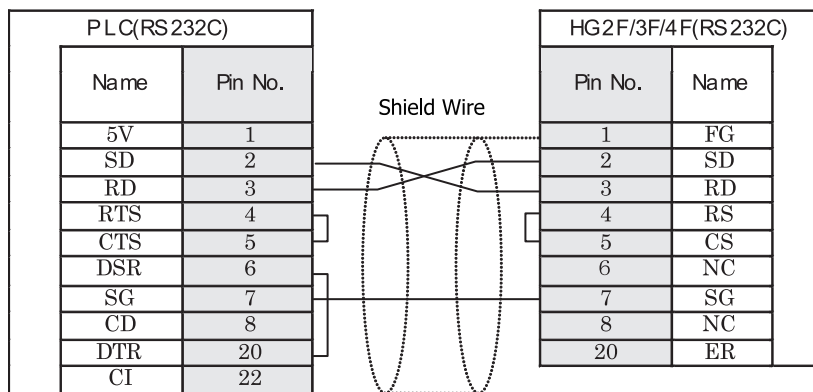
Terminal

2 Connection to a PLC

HG1F (Connector)

D-sub, 25P connector socket type

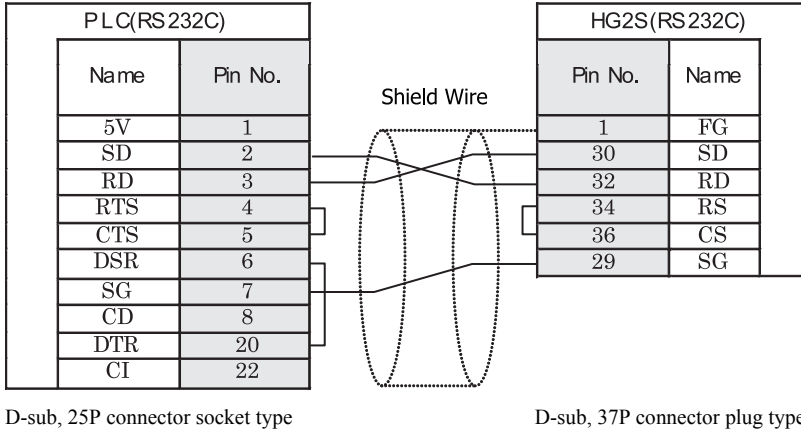
D-sub, 9P connector socket type

HG2F/3F/4F

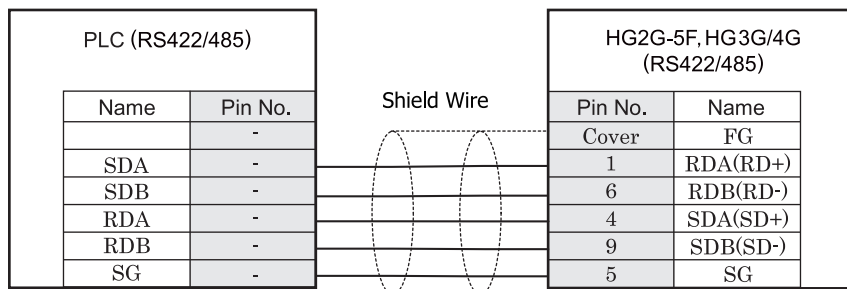
D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

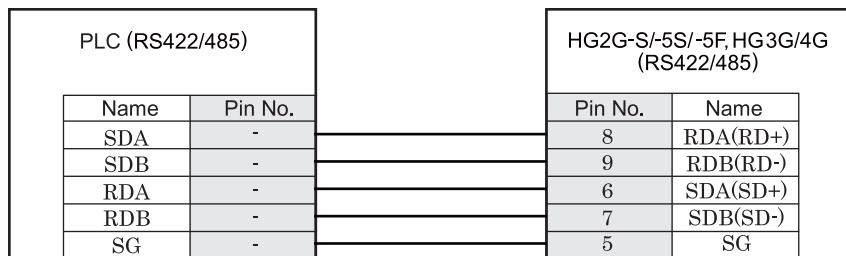


18.3.6 Connection Diagram 6: MICREX-F Series (RS485 Port) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

Screw terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

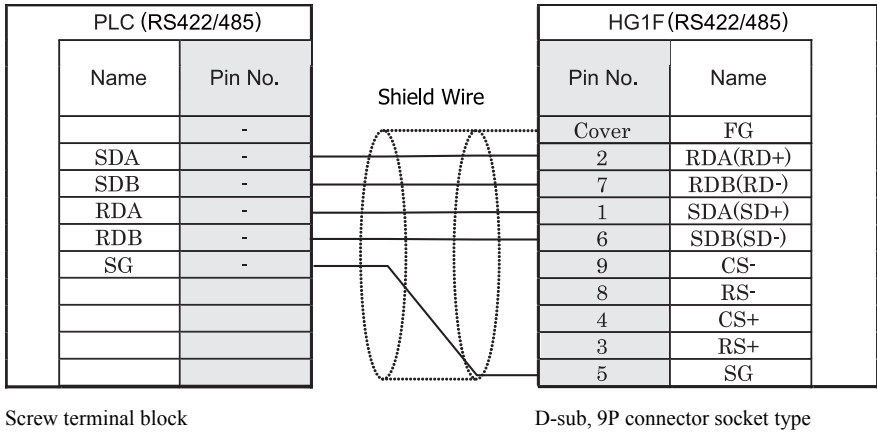
Screw terminal block

Terminal

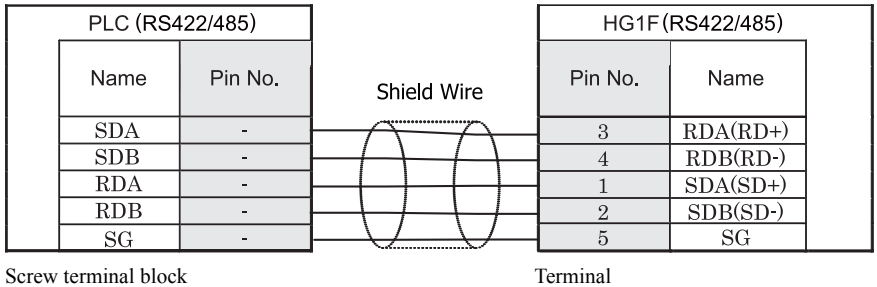


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

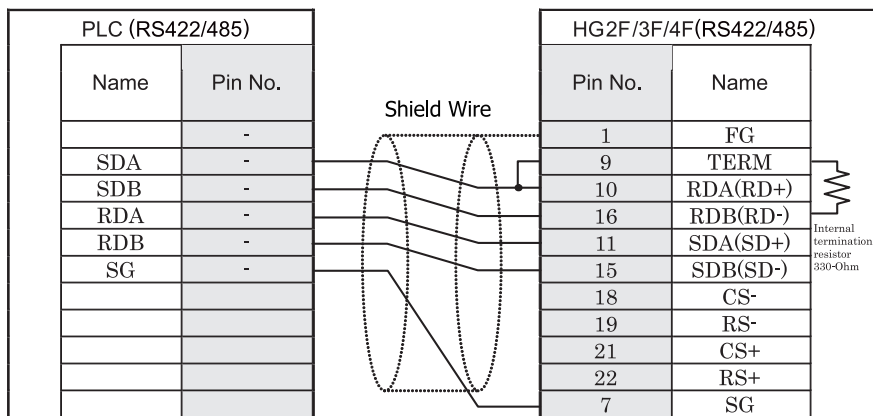
HG1F (Connector)



HG1F (Terminal)

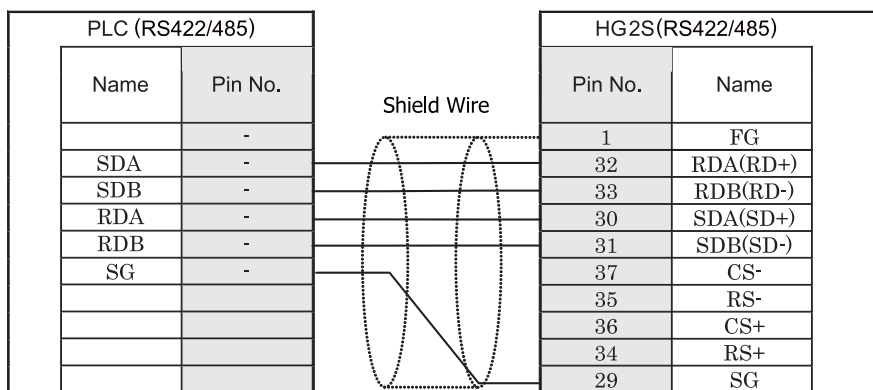


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

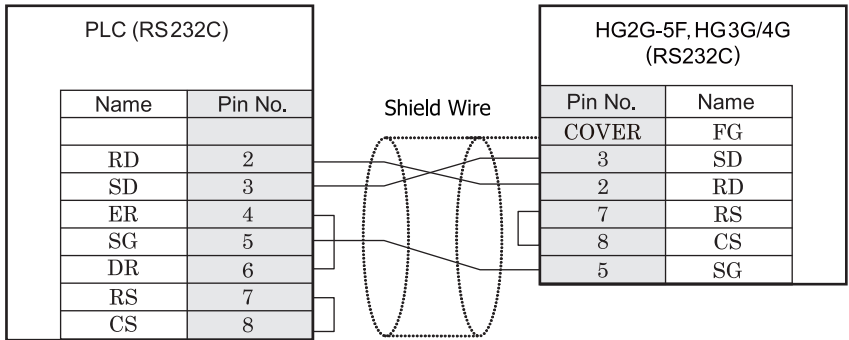
D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

18.3.7 Connection Diagram 7: MICREX-SX series (Loader connection connector)

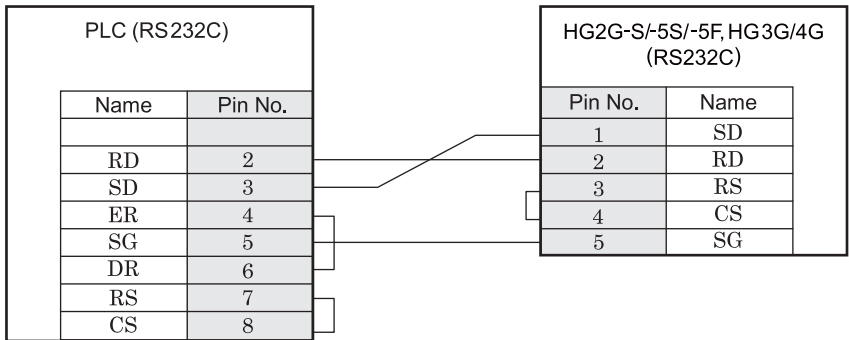
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

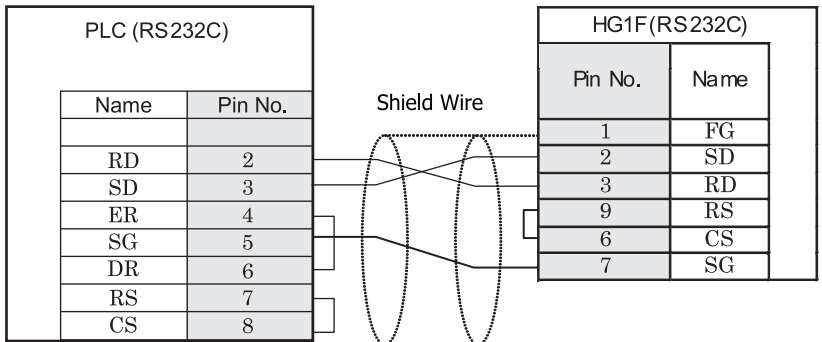
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector socket type

Terminal

HG1F (Connector)

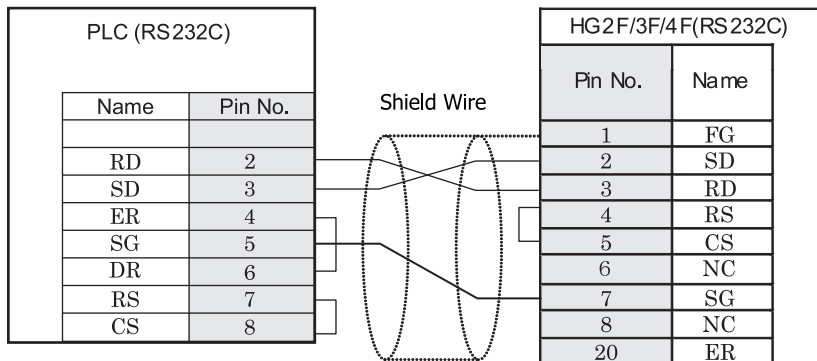


D-sub, 9P connector socket type

D-sub, 9P connector socket type

2 Connection to a PLC

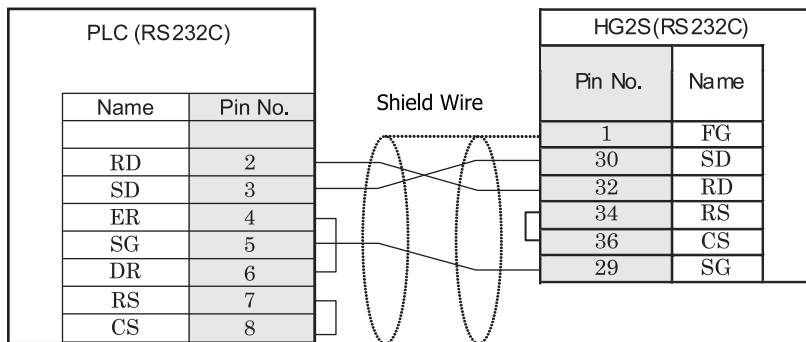
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

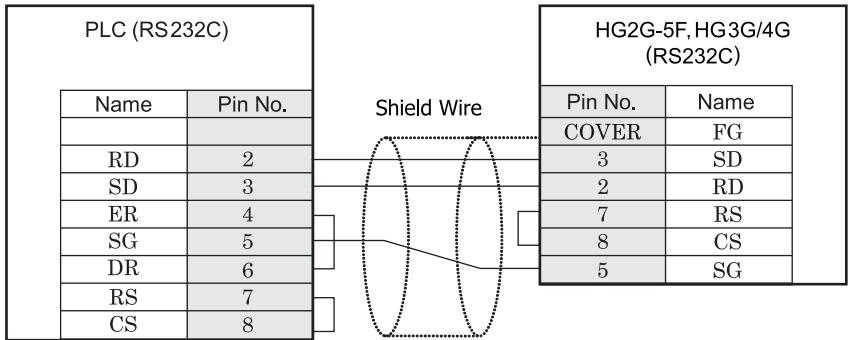


D-sub, 9P connector socket type

D-sub, 37P connector plug type

18.3.8 Connection Diagram 8: MICREX-SX series (RS232C Port)

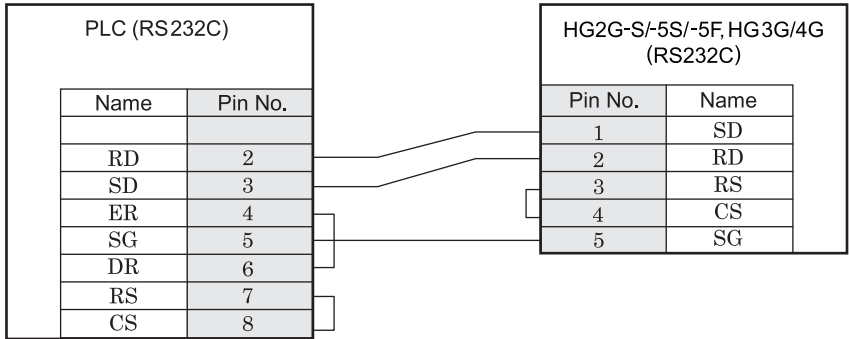
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

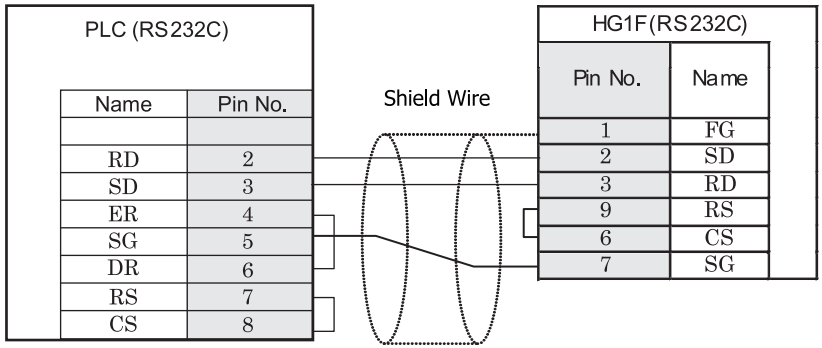
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



D-sub, 9P connector socket type

Terminal

HG1F (Connector)

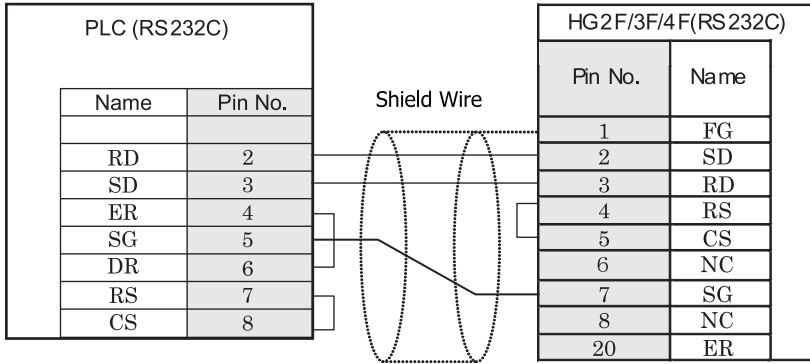


D-sub, 9P connector socket type

D-sub, 9P connector socket type

2
Connection to a PLC

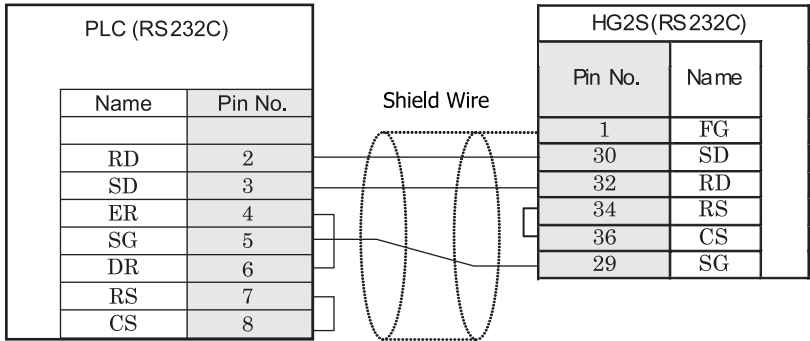
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

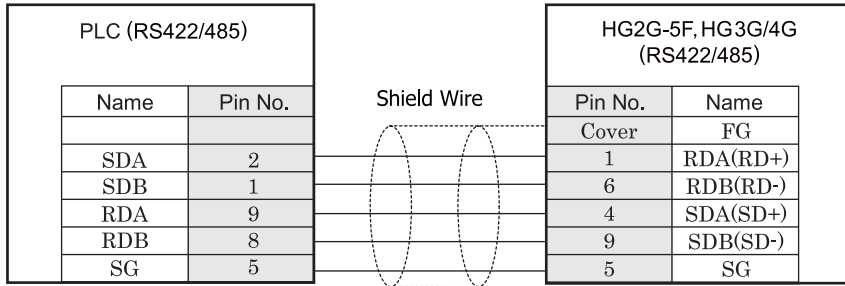


D-sub, 9P connector socket type

D-sub, 37P connector plug type

18.3.9 Connection Diagram 9: MICREX-SX series (RS485 Port)

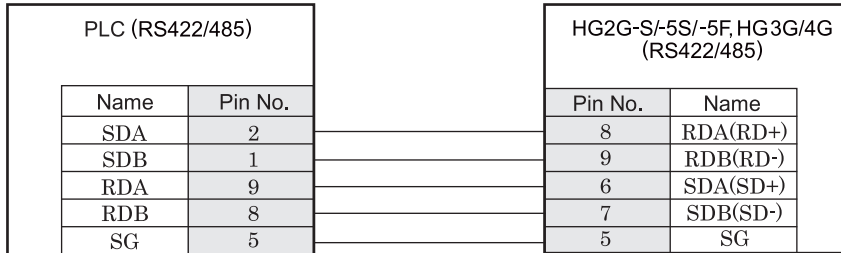
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

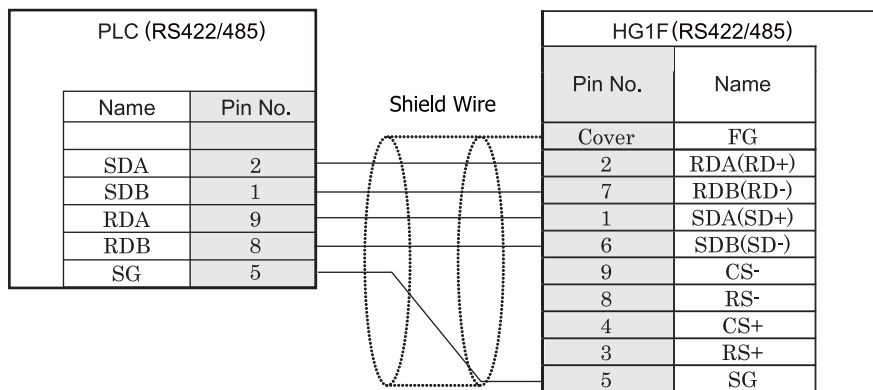


D-sub, 9P connector plug type

Terminal

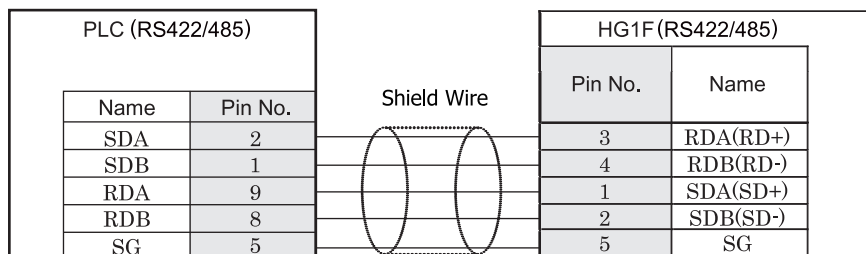


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG1F (Terminal)

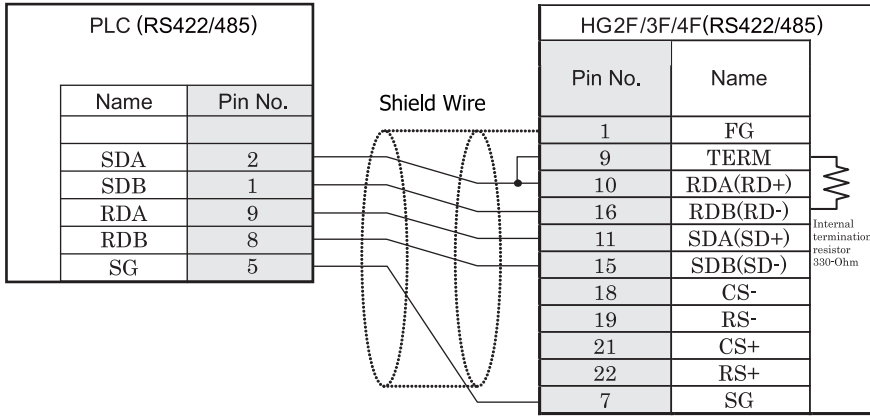
D-sub, 9P connector plug type

Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

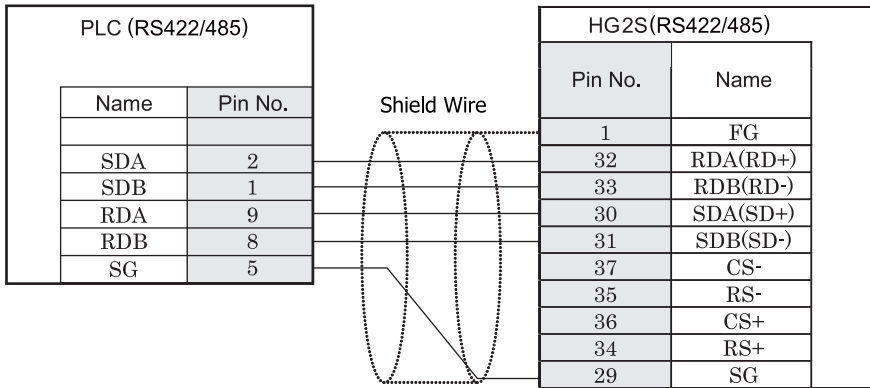
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

18.4 Environment Settings

Allowed communication settings for FLEX-PC, MICREX-F and MICREX-SX are as follows.

18.4.1 FLEX-PC (CPU)

FUJI FLEX-PC (CPU) to MICRO/I settings

Items		Details
Interface		RS232C, RS485 4-wire
Baud Rate (bps)	Use the same settings as for the MICRO/I.	19200
Data Bits		8
Stop Bits		1
Parity		Odd
Flow Control		None

18.4.2 FLEX-PC (Link)

FUJI FLEX-PC (Link Module) to MICRO/I settings

Items		Details	
Interface		RS232C	RS485 4-wire
Operation Modes *1		Command-setting-type start-stop synchronization non sequenced format	
Baud Rate (bps)	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600 or 19200	
Data Bits		7 or 8	
Stop Bits		1 or 2	
Parity		None, Odd or Even	
Flow Control		None or Hardware	
Station Number		-	0-99(DEC)

*1 Set up the mode switch of Interface Module as below.

RS232C: Mode switch is No.1.

RS485: Mode switch is No.3.



Refer to the FLEX-PC user's manual for the details of communication setting.

- FLEX-PC Communication Setting

When you would like to set up the communication setting with the initialization file, refer to the following setup.

Set up item of 4, 5, 6, and 7 as well as MICRO/I settings.

No	Item	0	1	2	3	4	5	6	7
1	Transmission type	Non sequenced format							
2	Mode		Setting						
3	Received Message No.	0							
4	Baud Rate			1200	2400	4800	9600	19200	
5	Data bit size	7	8						
6	Parity bit	None	Odd	Even					
7	Stop bit size	1		2					
8	DCE/DTE mode		DTE						
9	CTS/RTS control		Constantly ON						
10	DSR/DTR control	Constantly ON							
11	Transmission conditions			None					
13	Transmission code	JIS							
14	Code conversion		Yes						
15	Received data byte size	0							
16	Start code		STX						
17	End code			CR					
18	Start code 1,2	0							
19	End code 1,2	0							
20	BCC		Setting1						
21	Position (range)	TEXT							
22	Calculation formula			EOR					
23	Code	Transmission code							
24	Timer								

18.4.3 MICREX-F Interface Card/ Module

Items		Details	
Interface		RS232C	RS485 4-wire
Operation Modes *1		Command-setting-type start-stop synchronization non sequenced format	
Baud Rate (bps)	Use the same settings as for the MICRO/I.	1200/2400/4800/9600/19200/38400/57600/115200	
Data Bits		7/8*2	
Stop Bits		1/2*2	
Parity		None/Odd/Even *2	
Flow Control		None/Hardware	
Station Number		0	0 – 99(DEC)

*1 Set up the mode switch of Interface Card/Module as below.

RS232C: Mode switch is No.1.

RS485: Mode switch is No.3.

*2 Set Character configuration switch to the following.

Switch Number		Configuration
8	Clear method	By switch
7	Parity bit ON/OFF	Same as MICRO/I
6	Parity bit Odd/Even	Same as MICRO/I
5	Data bit	Same as MICRO/I
4	Stop bit	Same as MICRO/I



Refer to the MICREX-F user's manual for the details of communication setting

18.4.4 MICREX-SX series (connecting to the CPU unit loader connection connector or using the Interface Module.)

Items		Details
Interface		RS232C, RS485
Baud Rate (bps)	Use the same settings as for the MICRO/I.	38400
Data Bits		8
Stop Bits		1
Parity		Even
Flow Control		None



- The communication settings are fixed.
- When you connect to the Interface Module, set the RS232C or RS485 operation mode as loader setting. Set up the mode switch of Interface Module as below.
RS232C: Mode switch is No.1. or No.3
RS485: Mode switch is No.2. or No.3.

18.4.5 MICREX-SX series (connecting to the Ethernet port or using the Ethernet module.)

1. MICRO/I settings

Item	Setting
IP Address (MICRO/I)	Set the IP address of MICRO/I in Communication Interface tab.
Subnet Mask	Set the subnet mask of MICRO/I in Communication Interface tab.
Default Gateway	Set the default gateway of MICRO/I in Communication Interface tab.
IP Address (PLC)	Set the IP address of PLC in Host I/F Network tab.
Port Number (PLC)	Set the port number of PLC in Host I/F Network tab. The default is 507.

2. PLC Settings

Item	Setting
IP Address	Set the IP address of PLC.
Subnet mask	Set the subnet mask of PLC .
Default Gateway	Set the default gateway of PLC.

18.5 Usable Devices

18.5.1 FREX-PC

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Int. Relay (bit)	M	M	0 - 3FF	R/W	Hex
Input Relay (bit)	X	X	0 - 7FF	R	Hex
Output Relay (bit)	Y	Y	0 - 7FF	R/W	Hex
Exp. Int. Relay (bit)	EM	M	400 - 1FFF	R/W	Hex
Latch Relay (bit)	L	L	0 - 3FF	R/W	Hex
Exp. Latch Relay (bit)	EL	L	400 - 1FFF	R/W	Hex
Step Relay (bit)	S	S	0 - 3FF	R/W	Hex
Spec. Relay (bit)	SM	SM	8000 - 81FF	R/W	Hex
Timer (Relay)	T	T	0 - 3FF	R	Hex
Counter (Relay)	C	C	0 - 1FF	R	Hex

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Data Register	D	D	0 - 2FFF	R/W	Hex
Input Relay (word)	WX	X	0 - 7F	R	Hex
Output Relay (word)	WY	Y	0 - 7F	R/W	Hex
Int. Relay (word)	WM	M	0 - 3F	R/W	Hex
Exp. Int. Relay (word)	WEM	M	40 - 1FF	R/W	Hex
Latch Relay (word)	WL	L	0 - 3F	R/W	Hex
Exp. Latch Relay (word)	WEL	L	40 - 1FF	R/W	Hex
Step Relay (word)	WS	S	0 - 3F	R/W	Hex
Spec. Relay (word)	WSM	M	800 - 81F	R/W	Hex
Timer (Current Value)	TN	T	0 - 3FF	R	Hex
Counter (Current Value)	CN	C	0 - 1FF	R	Hex
Spec. Register	SD	D	8000 - 837F	R/W	Hex
Link Register	W	W	0 - 3FFF	R/W	Hex
File Register	R	R	0 - 7FFF	R/W	Hex

18.5.2 MICREX-F

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
In.Output Relay (bit)	B	B	0 - 511F	R/W	Hex
Int.Relay (bit)	M	M	0 - 511F	R/W	Hex
Keep Relay (bit)	K	K	0 - 63F	R/W	Hex
Edge Relay (bit)	D	D	0 - 63F	R/W	Hex
Spec.Relay (bit)	F	F	0 - 125F	R	Hex
Link Relay (bit)	L	L	0 - 511F	R/W	Hex
Ann.Relay (bit)	A	A	0 - 45F	R/W	Hex

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
InOut Relay (word)	WB	WB	0 - 511	R/W	Dec
Di.InOut Relay (word)	W24	W24	0 - 159	R/W	Dec
Int.Relay (word)	WM	WM	0 - 511	R/W	Dec
Keep Relay (word)	WK	WK	0 - 63	R/W	Dec
Edge Relay (word)	WD	WD	0 - 63	R/W	Dec
Link Relay (word)	WL	WL	0 - 511	R/W	Dec
Spec.Relay (word)	WF	WF	0 - 125	R	Dec
Ann.Relay (word)	WA	WA	0 - 45	R/W	Dec
FileMemo.0 (word)	W30	W30	0 - 4095	R/W	Dec
FileMemo.1 (word)	W31	W31	0 - 4095	R/W	Dec
FileMemo.2 (word)	W32	W32	0 - 4095	R/W	Dec
FileMemo.3 (word)	W33	W33	0 - 4095	R/W	Dec
FileMemo.4 (word)	W34	W34	0 - 4095	R/W	Dec
FileMemo.5 (word)	W35	W35	0 - 4095	R/W	Dec
FileMemo.6 (word)	W36	W36	0 - 4095	R/W	Dec
FileMemo.7 (word)	W37	W37	0 - 4095	R/W	Dec
DataMemo (16bit)	BD	WBD	0 - 4095	R/W	Dec
DataMemo (32bit)	BD	BD	0 - 4095	R/W	Dec
Timer0.01S(Curr.Value)	TR	TR	0 - 511	R/W	Dec
Timer0.1S(Curr.Value)	W9	W9	0 - 511	R/W	Dec
Timer0.01S(Set.Value)	TS	TS	0 - 511	R/W	Dec
Counter(Curr.Value)	CR	CR	0 - 255	R/W	Dec
Counter(Set.Value)	CS	CS	0 - 255	R/W	Dec
FileMemo.0(32bit)	W30	DW30	0 - 4095	R/W	Dec
FileMemo.1(32bit)	W31	DW31	0 - 4095	R/W	Dec
FileMemo.2(32bit)	W32	DW32	0 - 4095	R/W	Dec
FileMemo.3(32bit)	W33	DW33	0 - 4095	R/W	Dec
FileMemo.4(32bit)	W34	DW34	0 - 4095	R/W	Dec
FileMemo.5(32bit)	W35	DW35	0 - 4095	R/W	Dec
FileMemo.6(32bit)	W36	DW36	0 - 4095	R/W	Dec
FileMemo.7(32bit)	W37	DW37	0 - 4095	R/W	Dec

18.5.3 MICREX-SX

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input memory* ¹	-	%IW	-	-	-
Output memory* ¹	-	%QW	-	-	-
Standard memory	MW1	%MW1	0 - 2490367	R/W	Dec
Retained memory	MW3	%MW3	0 - 425983	R/W	Dec
System memory	MW10	%MW10	0 - 511	R/W	Dec

*1 The virtual addresses for I/O memory differs according to the system configuration.

To read and write to the I/O memory area, handle this with indirect access through the standard memory in the MICREX-SX.

19 Toshiba

19.1 Connection Table

19.1.1 Compatible Protocols

System (CPU unit)		Link Unit	WindO/I-NV2 Settings			Product Series			
			Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
PROSECT									
T1	T1-16, T1-28, T1-40	Not required (Connects to CPU unit)	RS232C Connection Diagram 4 (refer to P491)	None/ Hardware	PROSECT	X	X	X	---
		CU111	RS422/485 4-wire Connection Diagram 5 (refer to P493)						
T1S	T1-40S	Not required (Connects to CPU unit)	RS232C Connection Diagram 4 (refer to P491)						
			RS422/485 4-wire Connection Diagram 3 (refer to P488)						
		CU111	RS422/485 4-wire Connection Diagram 5 (refer to P493)						
T2* ¹	PU224* ¹	Not required (Connects to CPU unit)	RS422/485 4-wire* ¹ Connection Diagram 1 (refer to P483)						
T2E* ¹	PU234E* ¹	Not required (Connects to CPU unit)	RS232C* ¹ Connection Diagram 2 (refer to P486)						
			CM231E	RS422/485 4-wire Connection Diagram 5 (refer to P493)					
			CM232E* ¹	RS232C* ¹ Connection Diagram 2 (refer to P486)					
T2N	PU215N, PU235N, PU245N	Not required (Connects to CPU unit)	RS232C Connection Diagram 2 (refer to P486)						
			RS422/485 4-wire Connection Diagram 7 (refer to P498) RS232C Connection Diagram 6 (refer to P496)						
T3, T3H	PU315 PU325 PU325H PU326H	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 1 (refer to P483)						

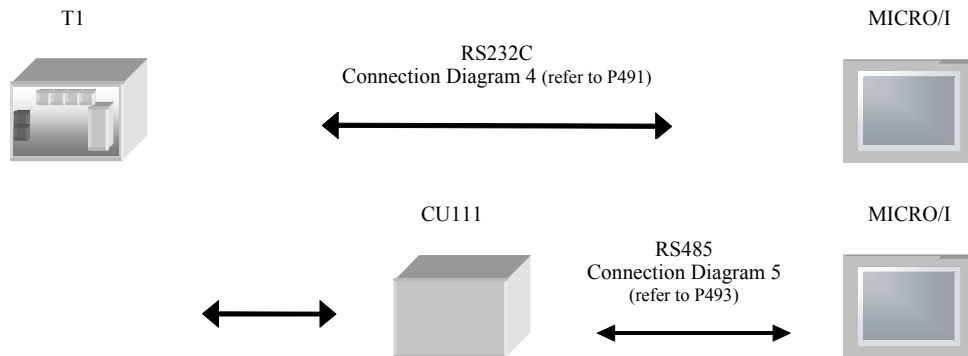
System (CPU unit)		Link Unit	WindO/I-NV2 Settings			Product Series			
			Interface	Flow Contro	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
V									
S2T, S2E, L1, S2, S3*1	PU672T PU662T PU612E L1PU11H L1PU12H S2PU82 S2PU72 S2PU32 S2PU22 S3PU65 S3PU55*1 S3PU45 S3PU21	Not required (Connects to CPU unit)	RS422/485 4-wire Connection Diagram 1 (refer to P486)	None/ Hardware	PROSECT	X	X	X	---

*1 This PLC was used to test & verify communications.

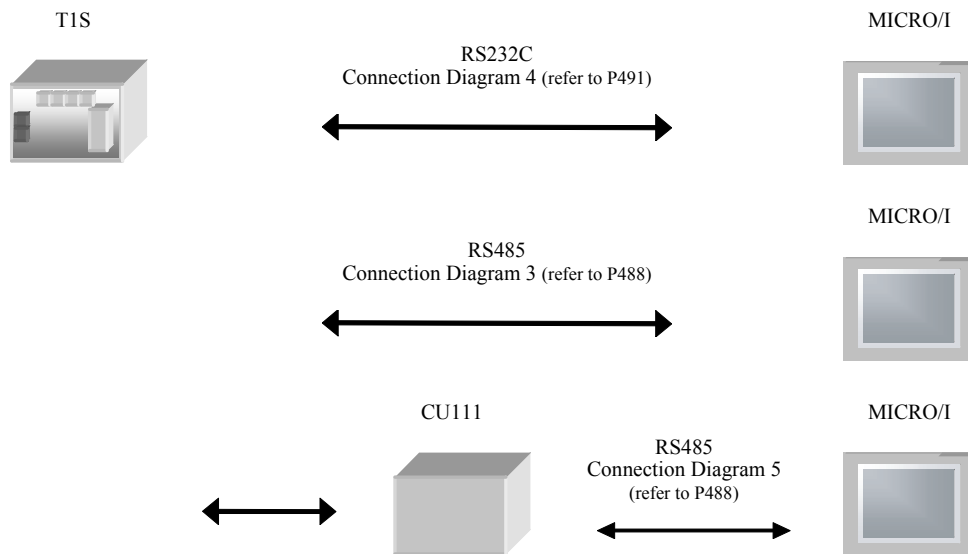
19.2 System Configuration

This is the system configuration for the connection of Toshiba PLCs to the MICRO/I.

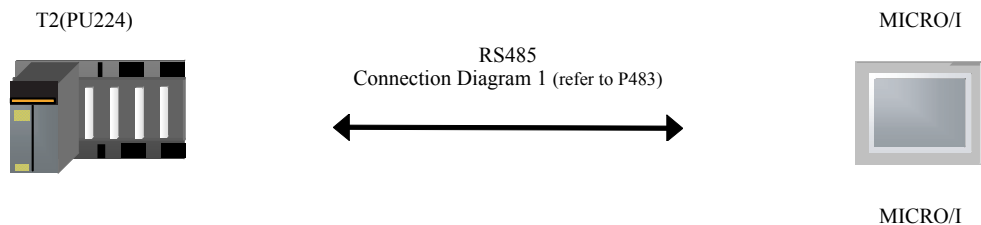
19.2.1 PROSEC T Series T1



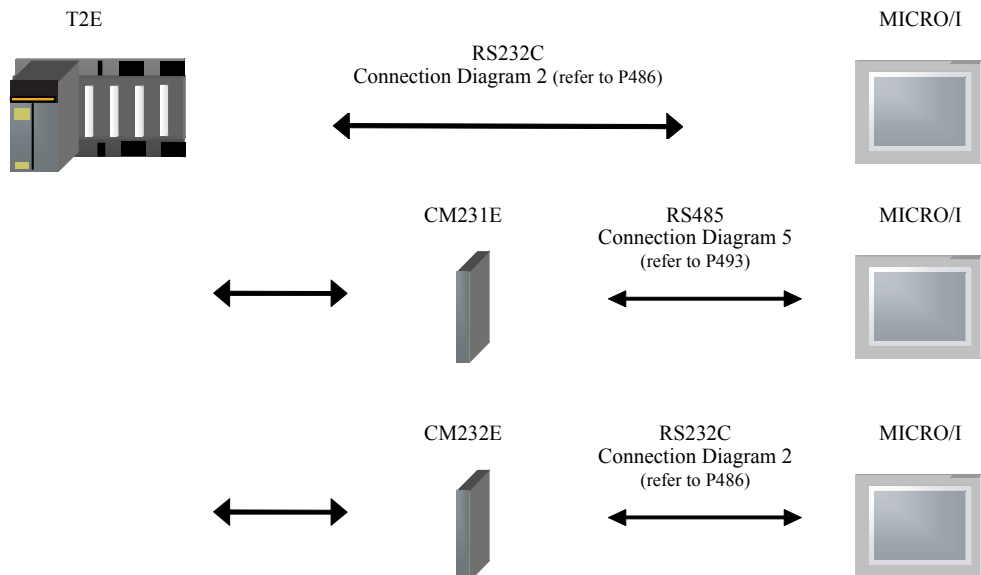
19.2.2 PROSEC T Series T1S



19.2.3 PROSEC T Series T2 (PU224)

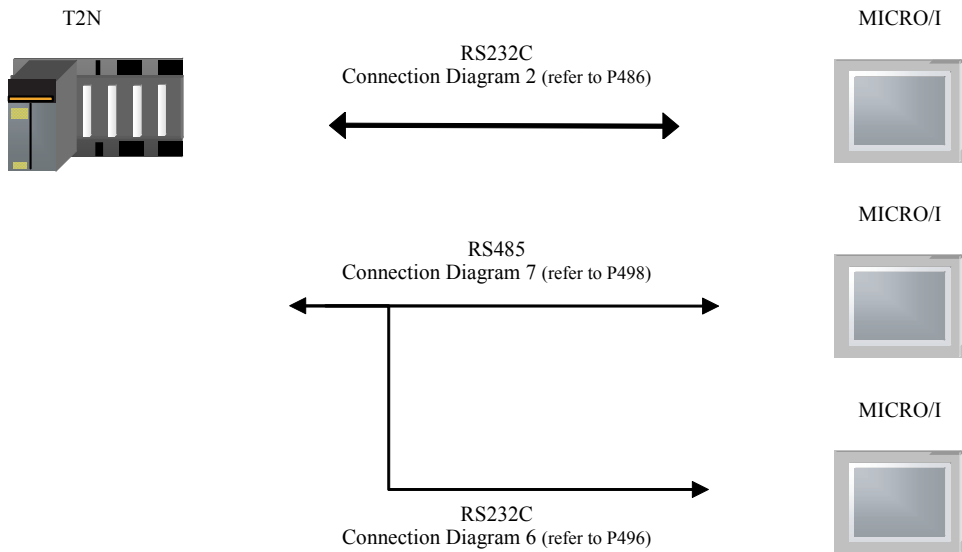


19.2.4 PROSEC T Series T2E

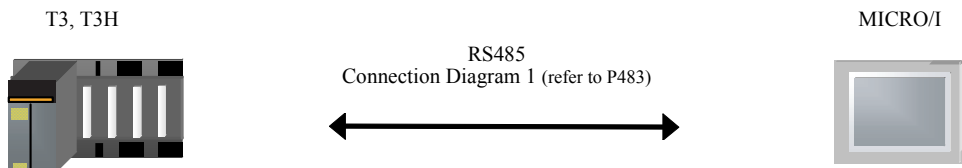


2
Connection to a PLC

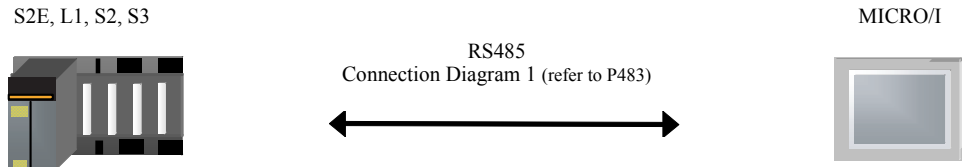
19.2.5 PROSEC T Series T2N



19.2.6 PROSEC T Series T3, T3H



19.2.7 Series S2T, S2E, L1, S2, S3



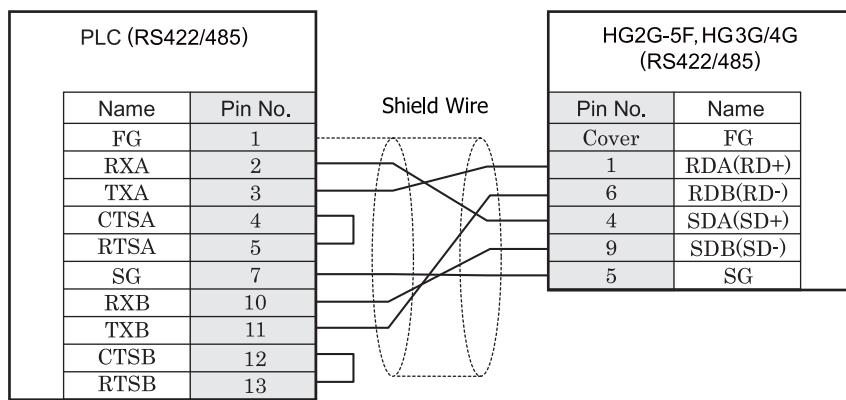
19.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

19.3.1 Connection Diagram 1: RS485 D-sub 15P - MICRO/I

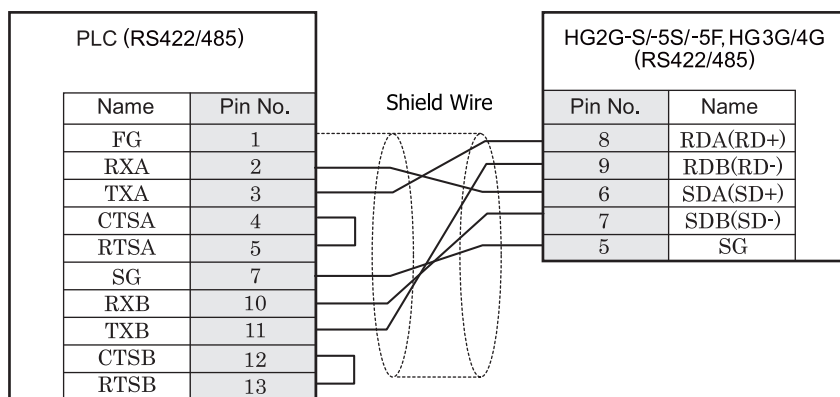
HG2G-5F, HG3G/4G (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

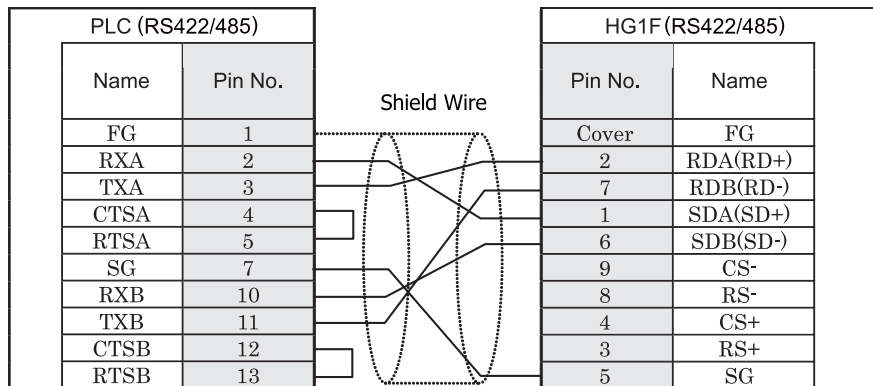


D-sub, 15P connector socket type

Terminal

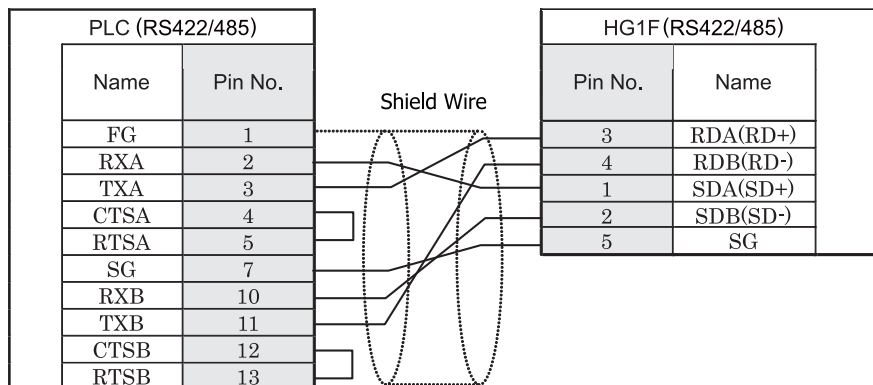


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 15P connector socket type

D-sub, 9P connector socket type

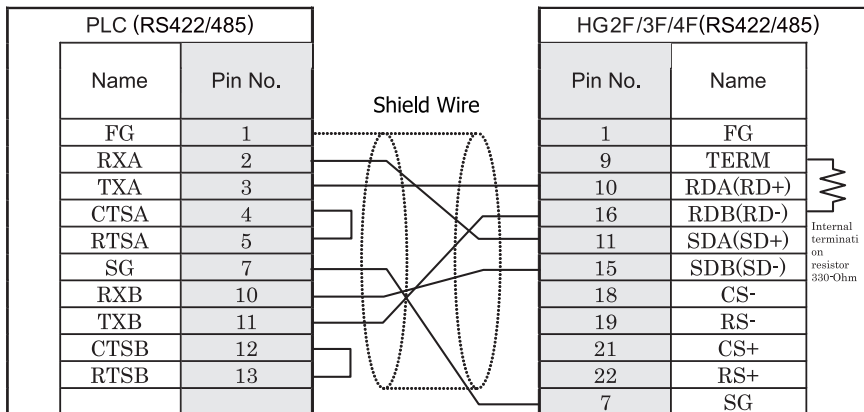
HG1F (Terminal)

D-sub, 15P connector socket type

Terminal

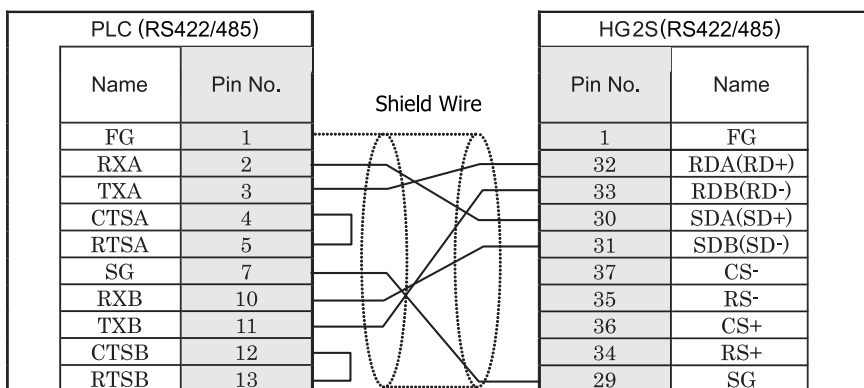


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

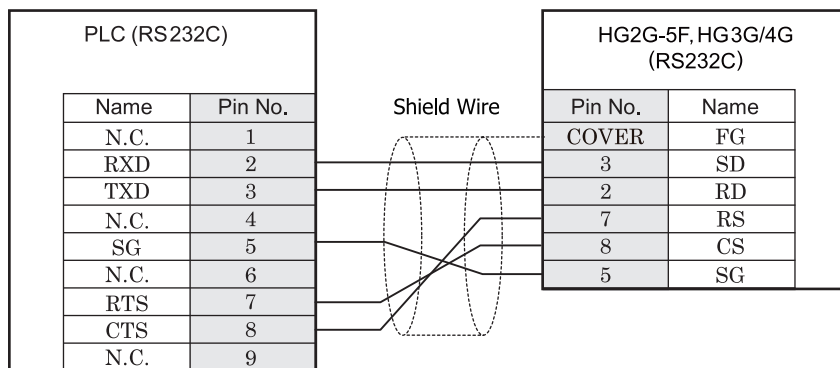
D-sub, 15P connector socket type

D-sub, 37P connector plug type



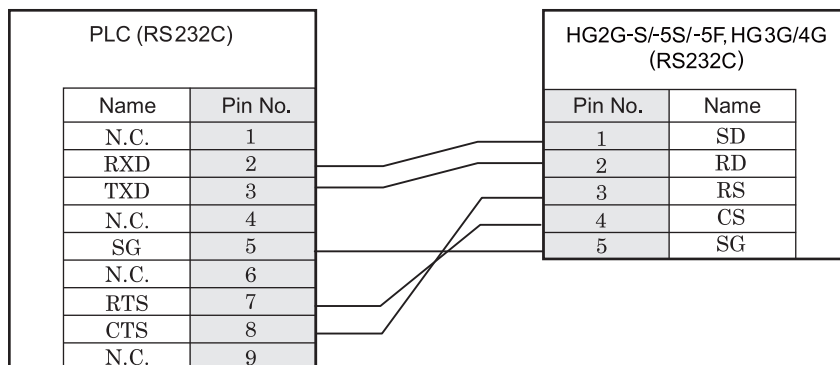
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

19.3.2 Connection Diagram 2: RS232C D-sub 9P - MICRO/I

HG2G-5F, HG3G/4G (Connector)

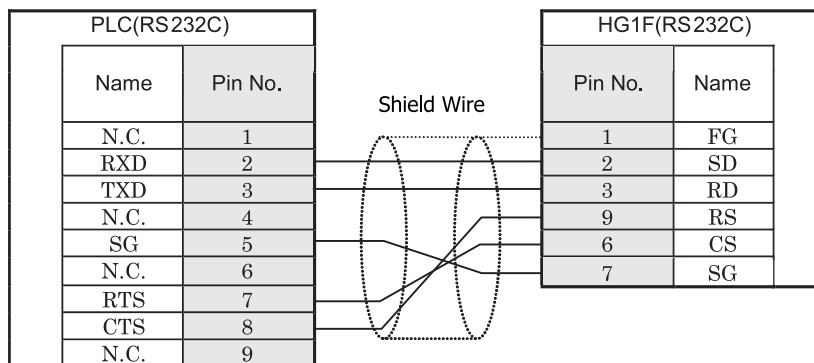
D-sub, 9P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

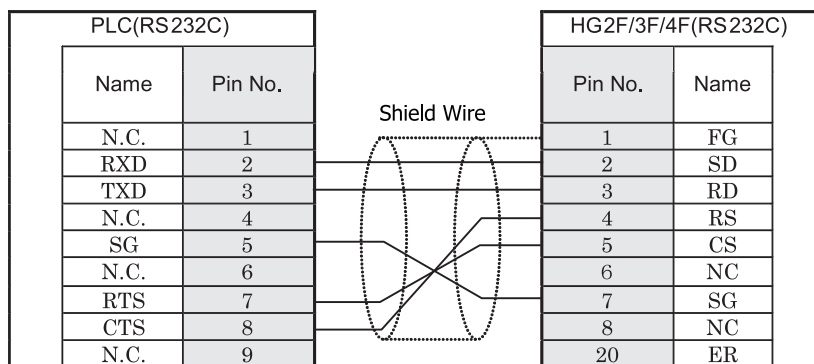
D-sub, 9P connector socket type

Terminal

HG1F (Connector)

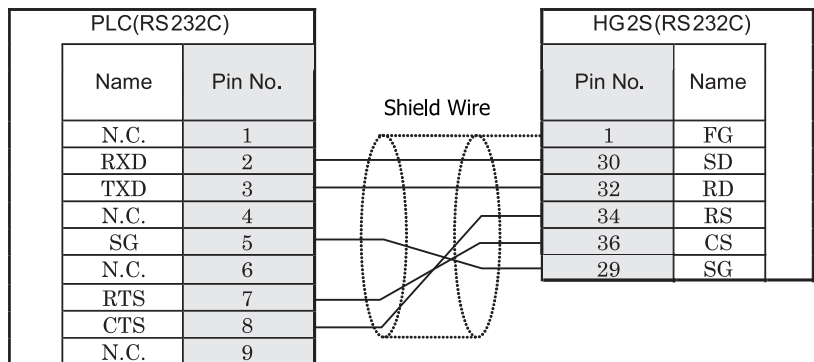
D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector socket type

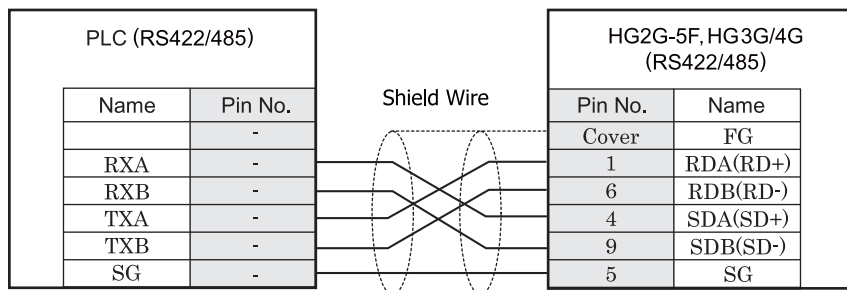
D-sub, 25P connector socket type

HG2S

D-sub, 9P connector socket type

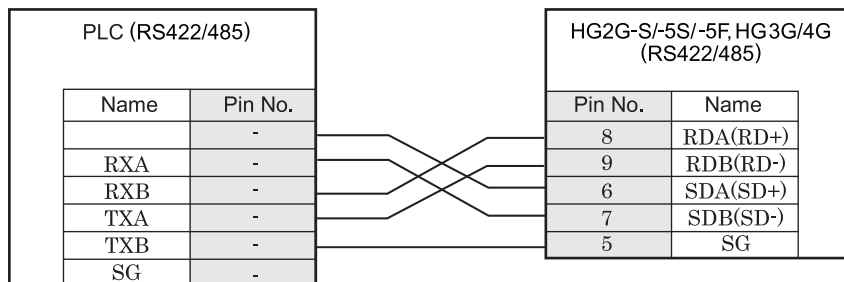
D-sub, 37P connector plug type

19.3.3 Connection Diagram 3: T1S RS485 Terminal Block - MICRO/I

HG2G-5F, HG3G/4G (Connector)

Terminal block

D-sub, 9P connector plug type

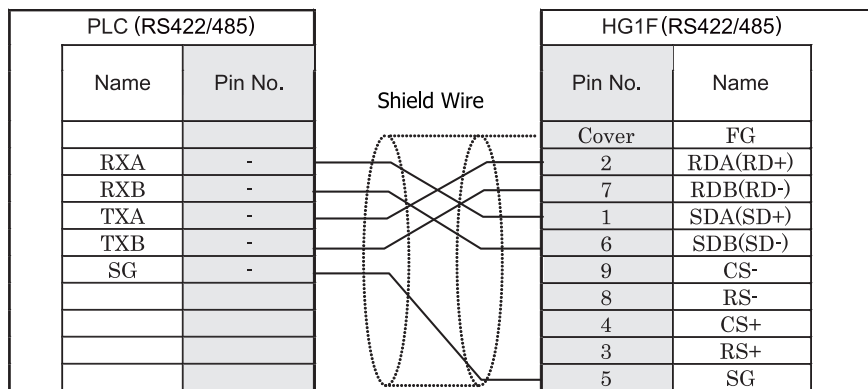
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Terminal block

Terminal

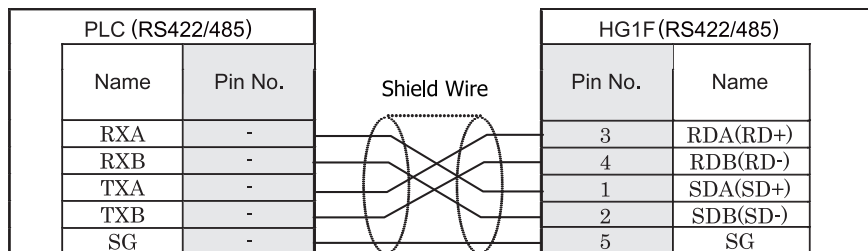


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Terminal block

D-sub, 9P connector socket type

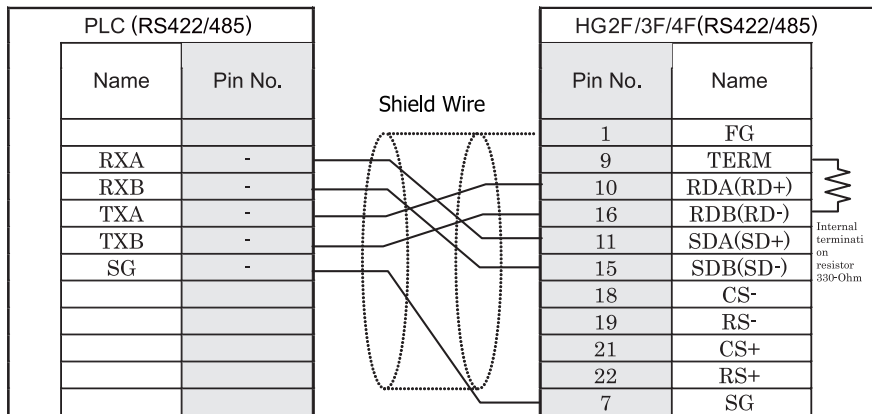
HG1F (Terminal)

Terminal block

Terminal

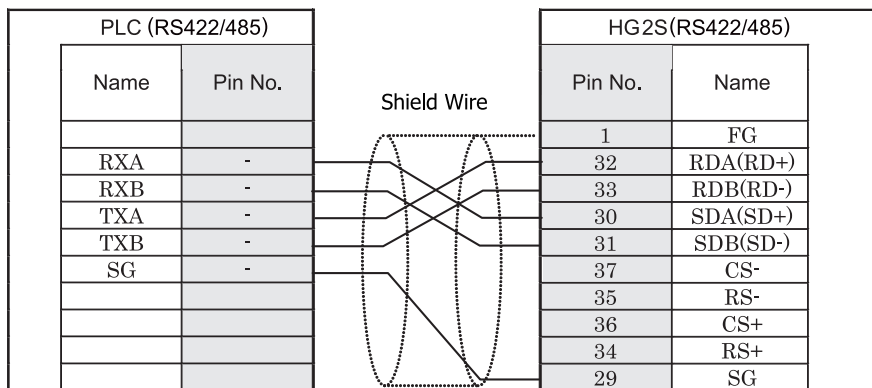


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Terminal block

D-sub, 25P connector socket type

HG2S

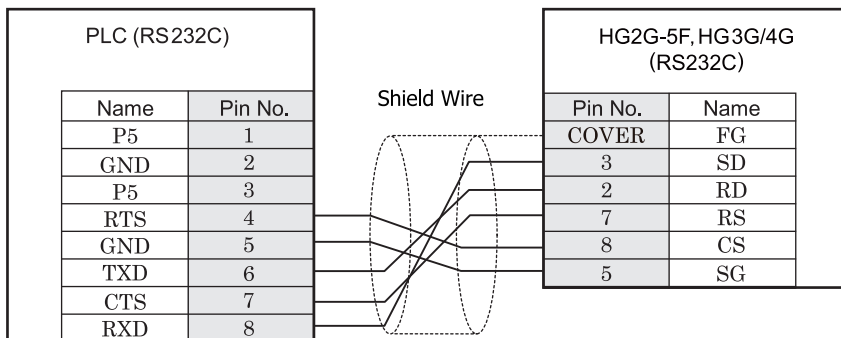
Terminal block

D-sub, 37P connector plug type



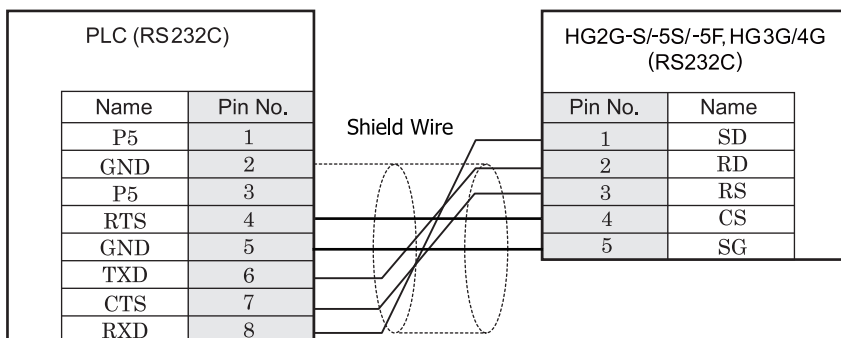
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

19.3.4 Connection Diagram 4: T1,T1S RS232C Din connector 8P - MICRO/I

HG2G-5F, HG3G/4G (Connector)

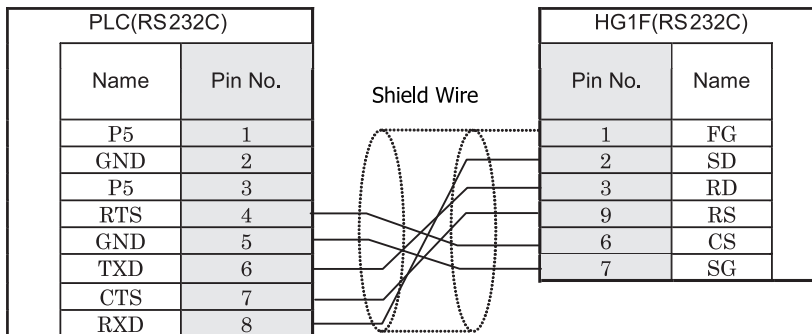
Din connector 8P socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

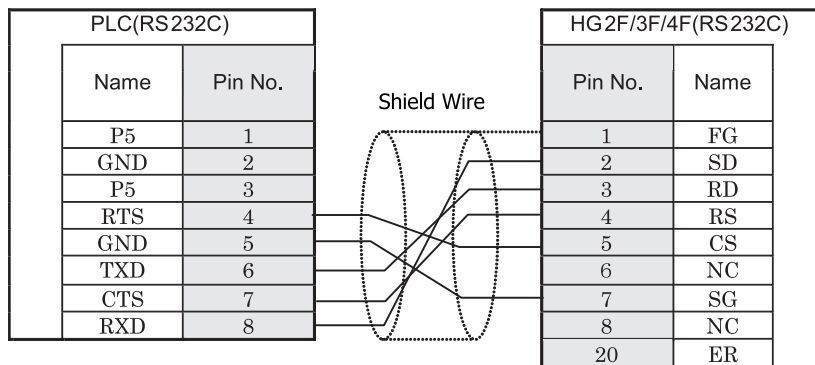
Din connector 8P socket type

Terminal

HG1F (Connector)

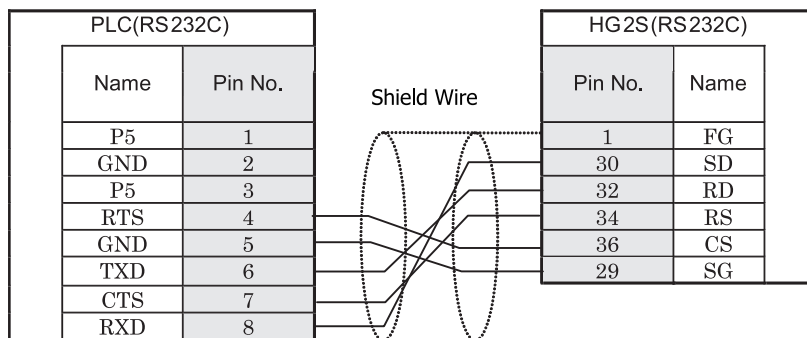
Din connector 8P socket type

D-sub, 9P connector socket type

HG2F/3F/4F

Din connector 8P socket type

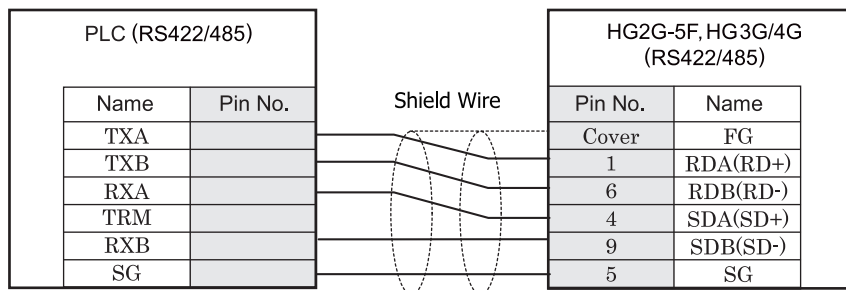
D-sub, 25P connector socket type

HG2S

Din connector 8P socket type

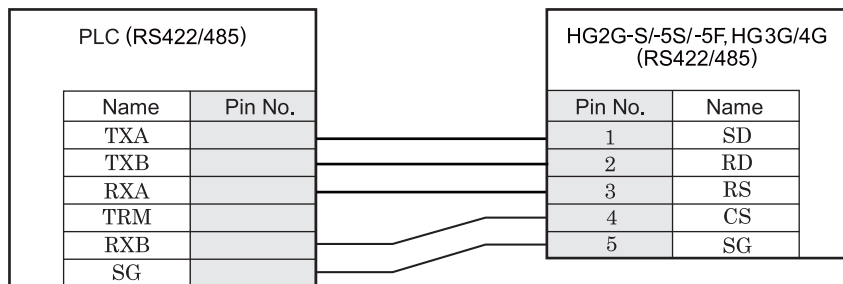
D-sub, 37P connector plug type

19.3.5 Connection Diagram 5: RS485 Terminal Block - MICRO/I

HG2G-5F, HG3G/4G (Connector)

Terminal block

D-sub, 9P connector plug type

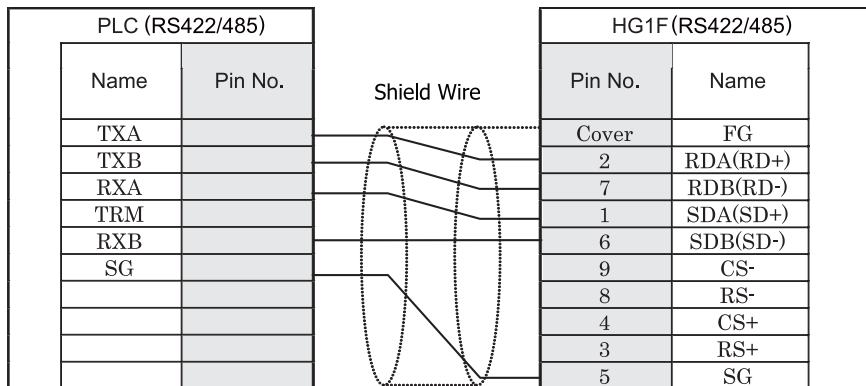
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Terminal block

Terminal

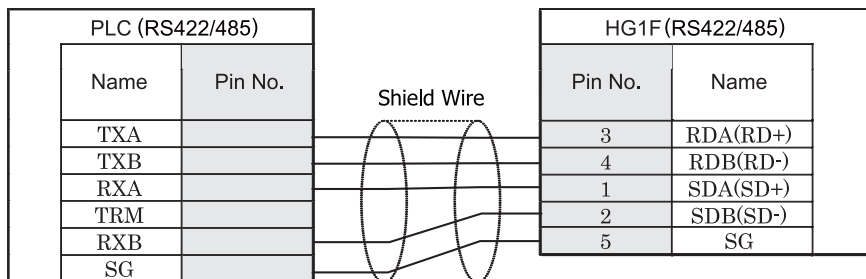


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Terminal block

D-sub, 9P connector socket type

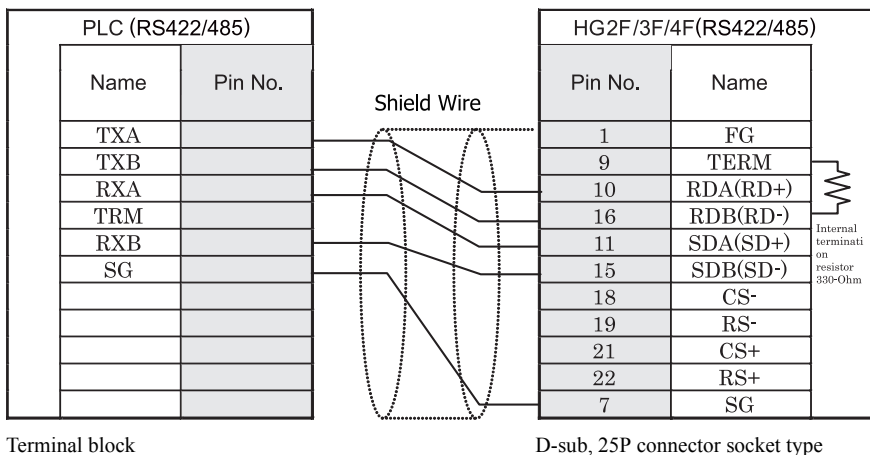
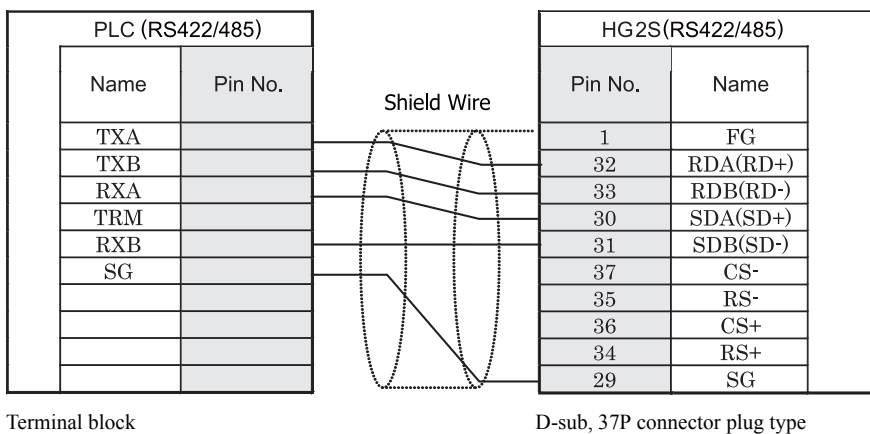
HG1F (Terminal)

Terminal block

Terminal

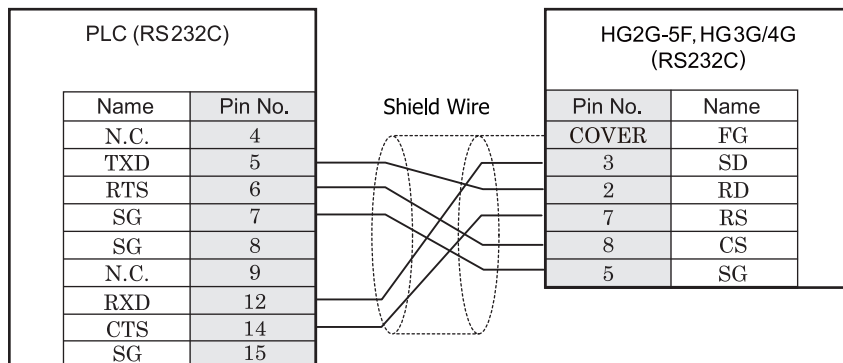


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F**HG2S**

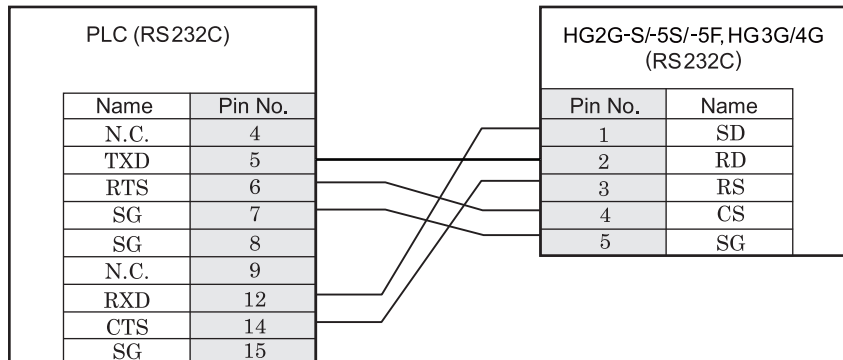
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

19.3.6 Connection Diagram 6: T2N RS232C D-sub 15Pin connector(RS232C, RS485) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

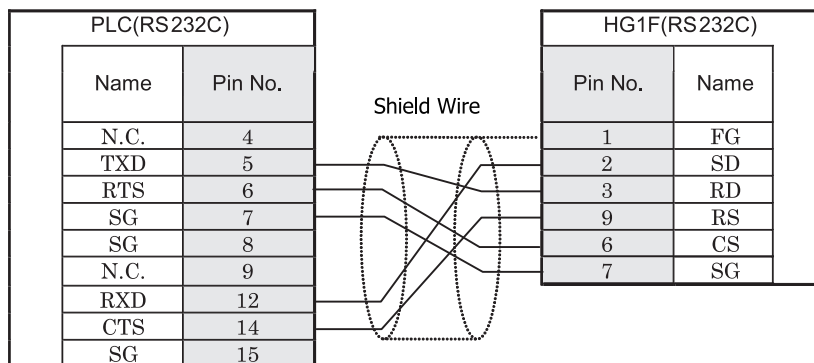
D-sub, 15P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

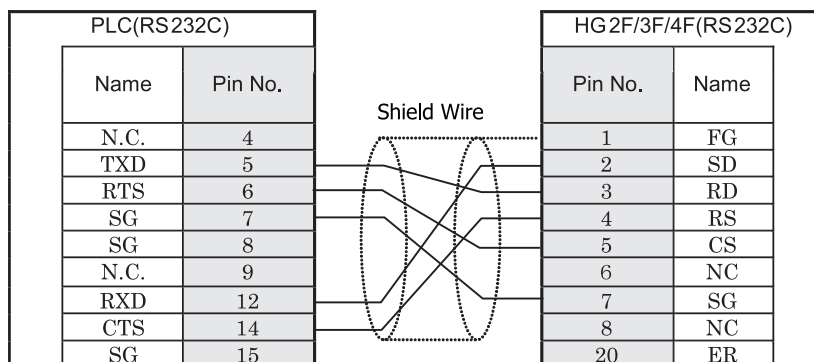
D-sub, 15P connector socket type

Terminal

HG1F (Connector)

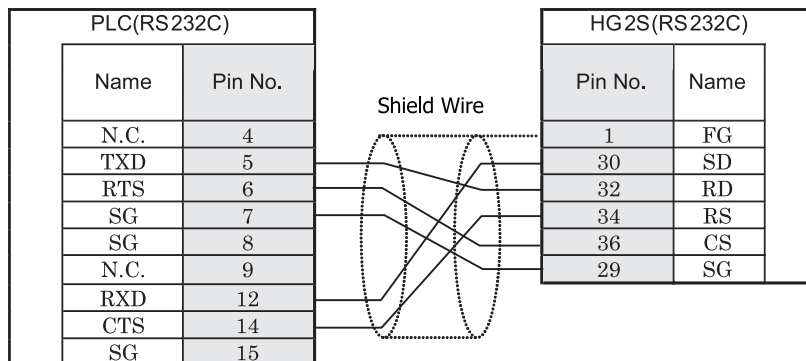
D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 15P connector socket type

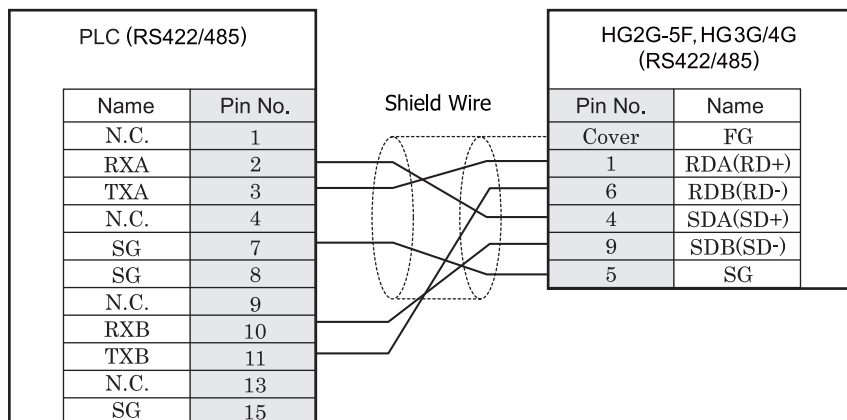
D-sub, 25P connector socket type

HG2S

D-sub, 15P connector socket type

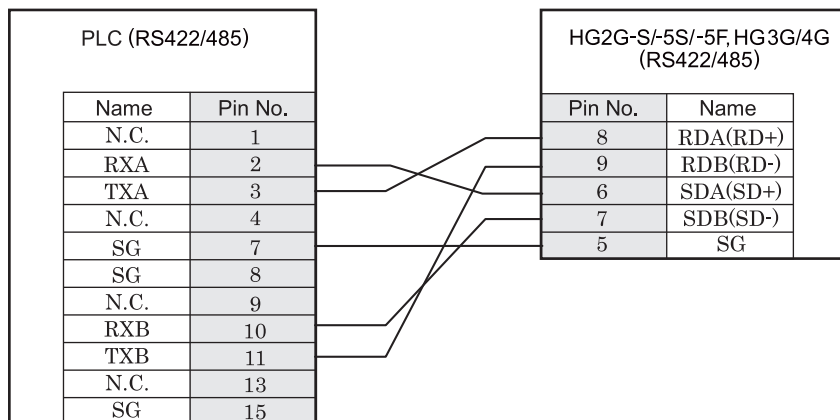
D-sub, 37P connector plug type

19.3.7 Connection Diagram 7: T2N RS485 D-sub 15Pin connector(RS232C, RS485) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 15P connector socket type

D-sub, 9P connector plug type

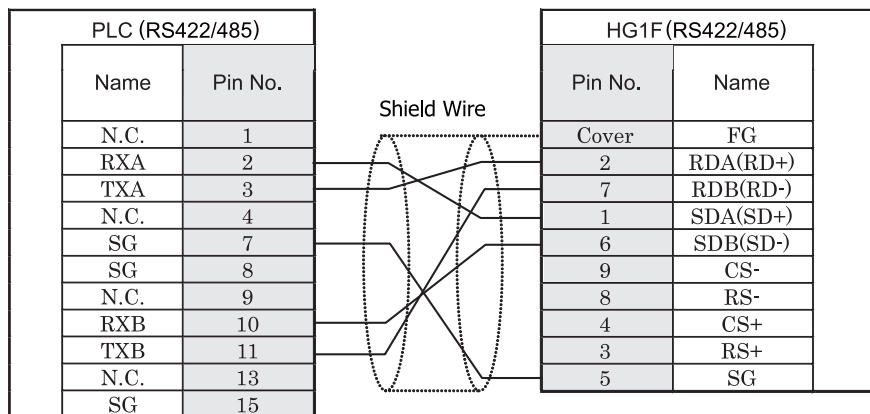
HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 15P connector socket type

Terminal

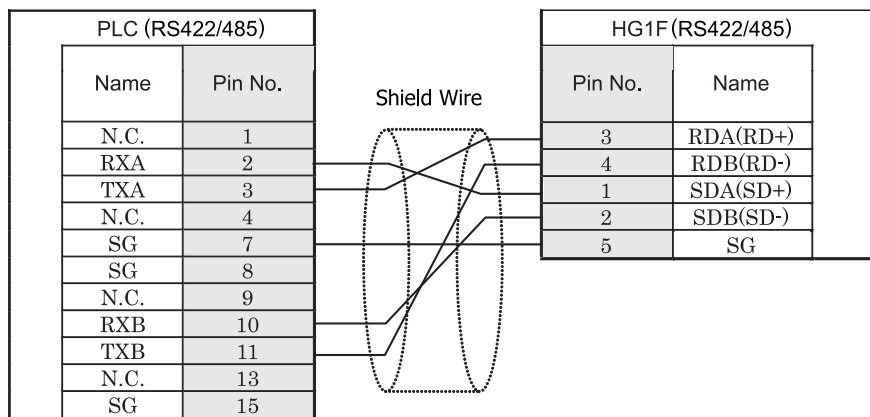


There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

D-sub, 15P connector socket type

D-sub, 9P connector socket type

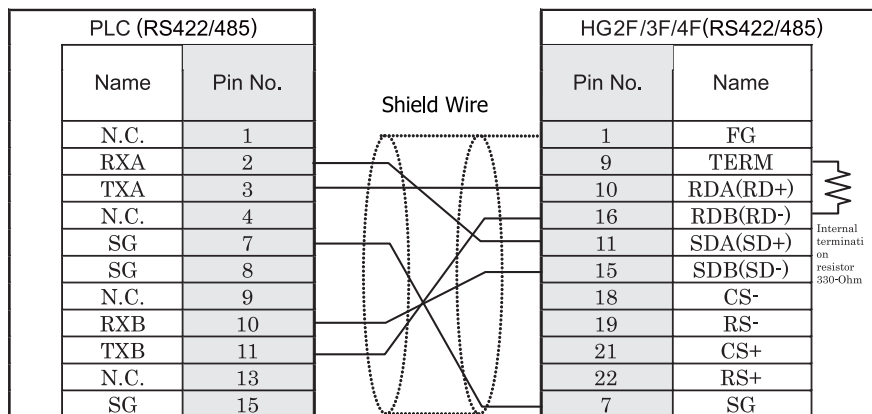
HG1F (Terminal)

D-sub, 15P connector socket type

Terminal

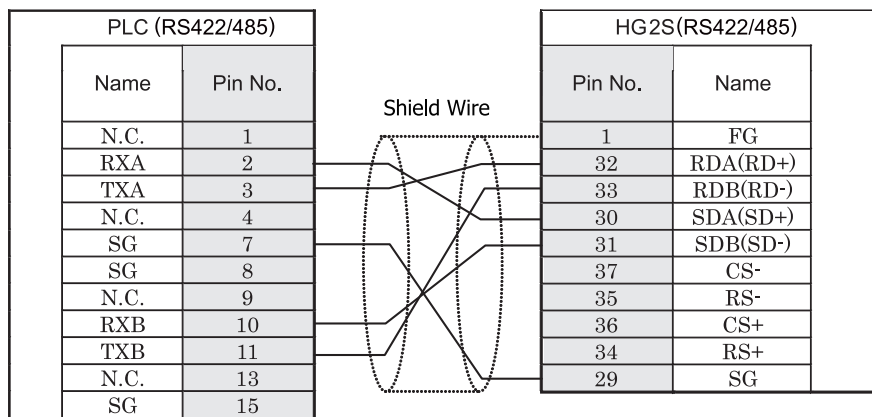


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

D-sub, 15P connector socket type

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

19.4 Environment Settings

Refer to the followings to configure the communication port between PLC (PROSEC T Series or V Series) and MICRO/I. Attend to the limitation of the configuration. It depends on the CPU unit and Link unit.

19.4.1 Toshiba PROSEC T Series, V Series

Items	Details
Interface	RS232C, RS485 2-wire, RS485 4-wire
Slave Number	01- 32 (DEC)
Baud Rate [bps]	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data Bits	7 or 8
Parity	None, Odd or Even
Stop Bits	1 or 2
Flow Control	None/Hardware
PLC Model	Check:PROSEC Series Uncheck: EX100 Series



Refer to the PROSC T Series and V Series user's manual for the details of communication setting.

19.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input device	X	X	0 - 8191F	R	*1
Output device	Y	Y	0 - 8191F	R/W	*1
Auxiliary device	R	R	0 - 4095F	R/W	*1
Special device	S	S	0 - 511F	R/W	*1
Timer device	TS	T.	0 - 999	R	DEC
Counter device	CS	C.	0 - 511	R	DEC
Link device	Z	Z	0 - 999F	R/W	*1
Link relay	L	L	0 - 255F	R/W	*1

*1 Set the first digit to HEX and another digit to DEC.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input register	XW	XW	0 - 8191	R	DEC
Output register	YW	YW	0 - 8191	R/W	DEC
Auxiliary register	RW	RW	0 - 4095	R/W	DEC
Special register	SW	SW	0 - 511	R/W	DEC
Timer register	T	T	0 - 999	R	DEC
Counter register	C	C	0 - 511	R	DEC
Data register	D	D	0 - 8191	R/W	DEC
Link register	W	W	0 - 2047	R/W	DEC
Link relay register	LW	LW	0 - 255	R/W	DEC
File register	F	F	0 - 32767	R/W	DEC

19.6 The mapping table of devices between PROSEC T Series and V Series

When you use V Series PLCs, refer to the following table and replace a device name from PROSEC T Series to V Series.

V Series (S controller)			T Series (Computer Link)	
Variable name		Symbol	Device Name	Symbol
System register	Device	S	Special device	S
	Register	SW	Special register	SW
Data register	Device	D	Auxiliary device	R
	Register	DW	Auxiliary register Data register	RW D
I/O variable	Device	IX	Input device	X
		QX	Output device	Y
	Register	IW	Input register	XW
		QW	Output register	YW
User register	Register	Variable name	File register	F



- V Series (S controller) has some variables to keep compatibility with PROSEC T Series.
Computer Link protocol of V Series can communicate those variables with the symbol of T Series.
- Refer to the PROSEC T Series and V Series user's manual for the details of communication setting.

20 LS Industrial Systems

20.1 Connection Table

20.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
MASTER-K								
K10S1	Not required (Connects to CPU unit)	RS232C Connection Diagram 1 (refer to P507)	None	MASTER-K	X	X	X	---
K80S, K120S, K200S,	Not required (Connects to CPU unit)	RS232C Connection Diagram 2 (refer to P509)						
K80S*1	G7L-CUEB*1	RS232C Connection Diagram 3 (refer to P511)						
	G7L-CUEC	RS422/485 4-wire Connection Diagram 4 (refer to P513)						
K200S	G6L-CUEB	RS232C Connection Diagram 3 (refer to P511)						
	G6L-CUEC	RS422/485 4-wire Connection Diagram 4 (refer to P513)						
K300S*1	G4L-CUEA*1	RS232C Connection Diagram 3 (refer to P511)						
		RS422/485 4-wire Connection Diagram 4 (refer to P513)						

*1 This PLC was used to test & verify communications.

20.2 System Configuration

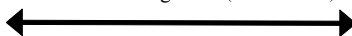
This is the system configuration for the connection of LS Industrial Systems PLCs to the MICRO/I.

20.2.1 MASTER-K K10S1 (Loader Port)

MASTER-K
K10S1



RS232C
Connection Diagram 1 (refer to P507)

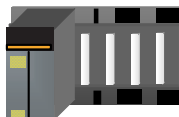


MICRO/I



20.2.2 MASTER-K K80S, K120S, K200S (Loader Port)

MASTER-K
K80S
K120S
K200S



RS232C
Connection Diagram 2 (refer to P509)



MICRO/I



20.2.3 MASTER-K K80S (Interface Module)

MASTER-K K80S



G7L-CUEB



RS232C
Connection Diagram 3
(refer to P511)



MICRO/I



G7L-CUEC



RS485 4-wire
Connection Diagram 4
(refer to P513)

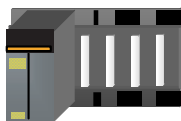


MICRO/I



20.2.4 MASTER-K K200S (Interface Module)

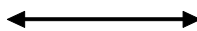
MASTER-K K200S



G6L-CUEB



RS232C
Connection Diagram 3
(refer to P511)



MICRO/I



G6L-CUEC



RS485 4-wire
Connection Diagram 4
(refer to P513)

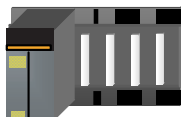


MICRO/I



20.2.5 MASTER-K K300S (Interface Module)

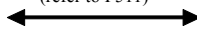
MASTER-K K300S



G4L-CUEA



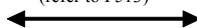
RS232C
Connection Diagram 3
(refer to P511)



MICRO/I



RS485 4-wire
Connection Diagram 4
(refer to P513)



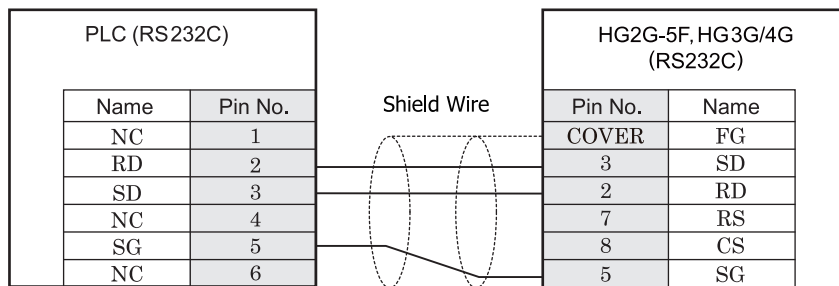
20.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

20.3.1 Connection Diagram 1: MASTER-K K10S1 (Loader Port) - MICRO/I

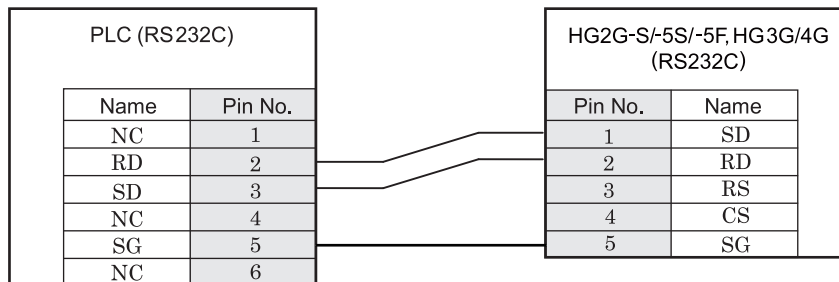
HG2G-5F, HG3G/4G (Connector)



Mini Din 6Pin

D-sub, 9P connector plug type

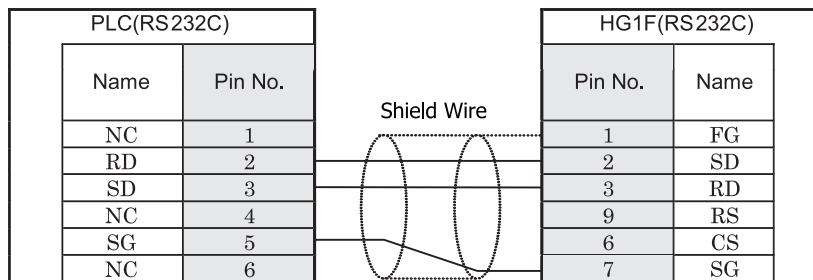
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Mini Din 6Pin

Terminal

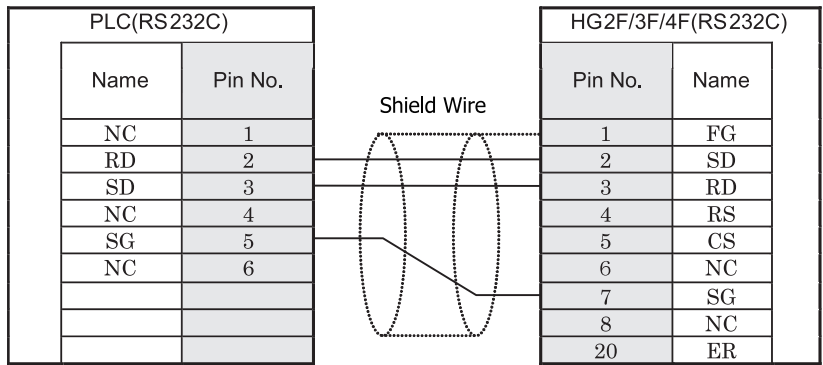
HG1F (Connector)



Mini Din 6Pin

D-sub, 9P connector socket type

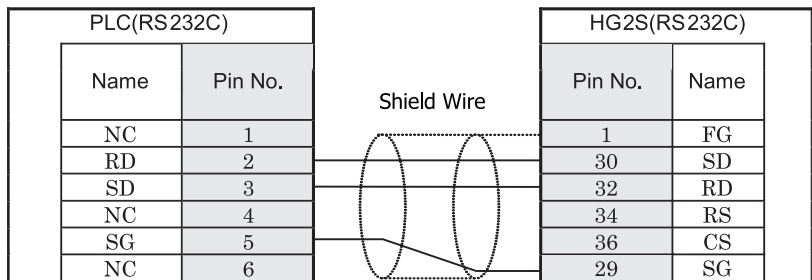
HG2F/3F/4F



Mini Din 6Pin

D-sub, 25P connector socket type

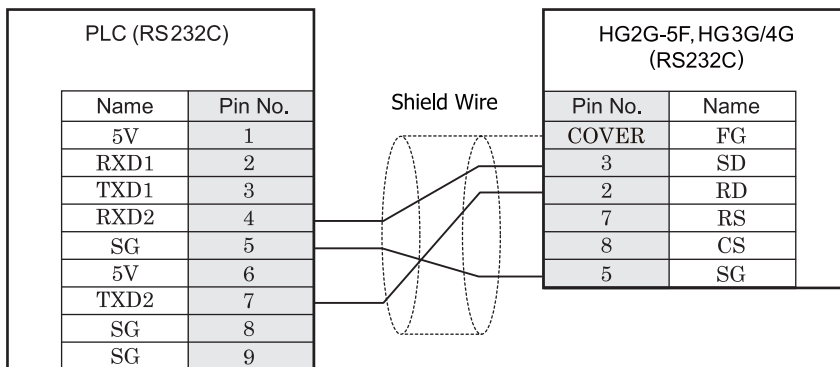
HG2S



Mini Din 6Pin

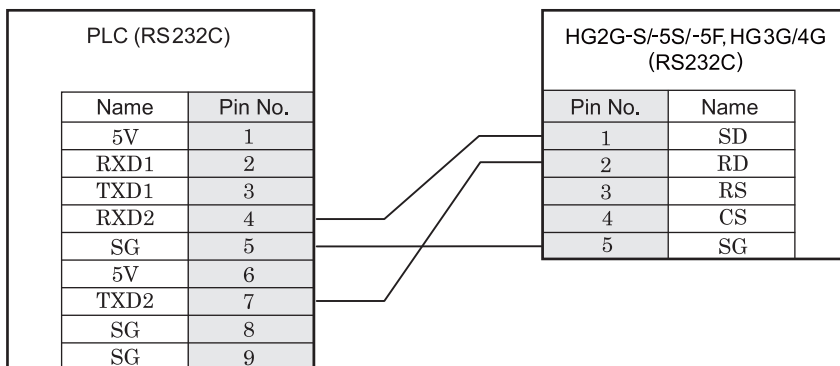
D-sub, 37P connector plug type

20.3.2 Connection Diagram 2: MASTER-K K80S, 120S, 200S (Loader Port) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector plug type

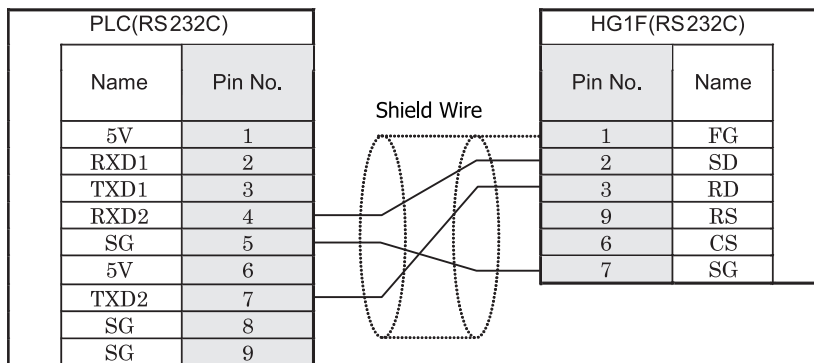
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector plug type

Terminal

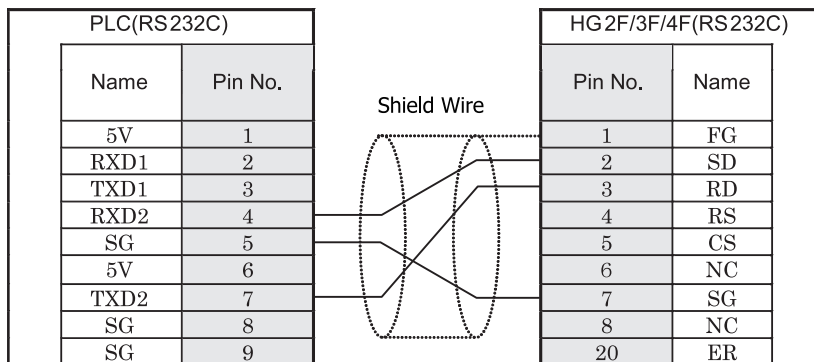
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

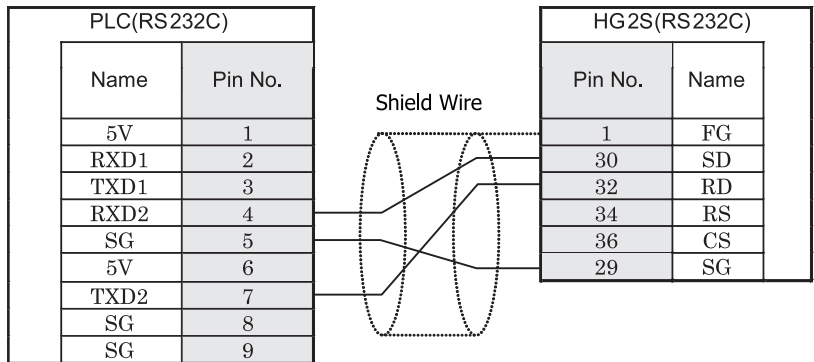
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

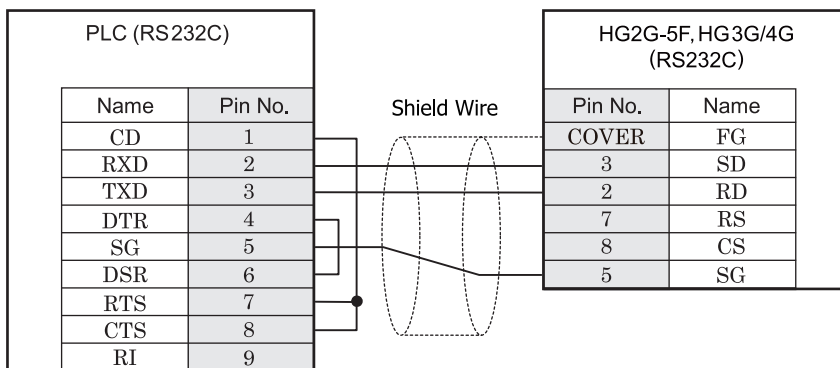
HG2S



D-sub, 9P connector plug type

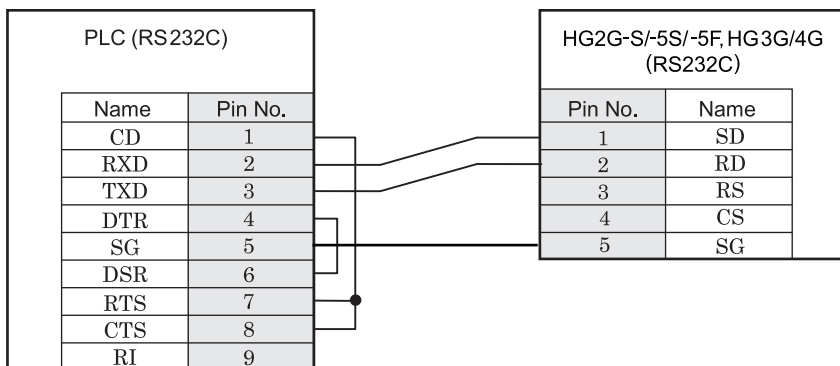
D-sub, 37P connector plug type

20.3.3 Connection Diagram 3: MASTER-K (Interface Module RS232C Port) - MICRO/I

HG2G-5F, HG3G/4G (Connector)

D-sub, 9P connector socket type

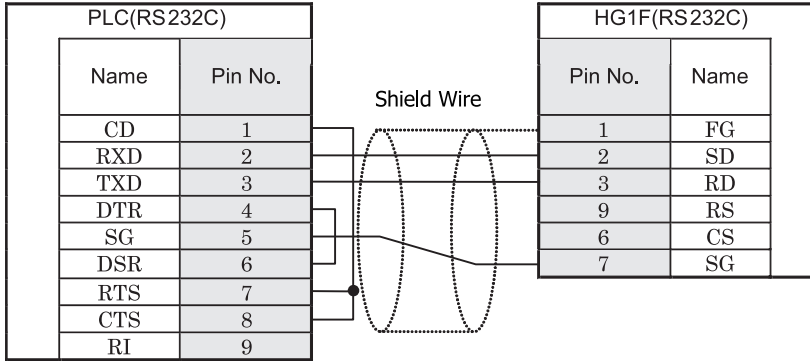
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

D-sub, 9P connector socket type

Terminal

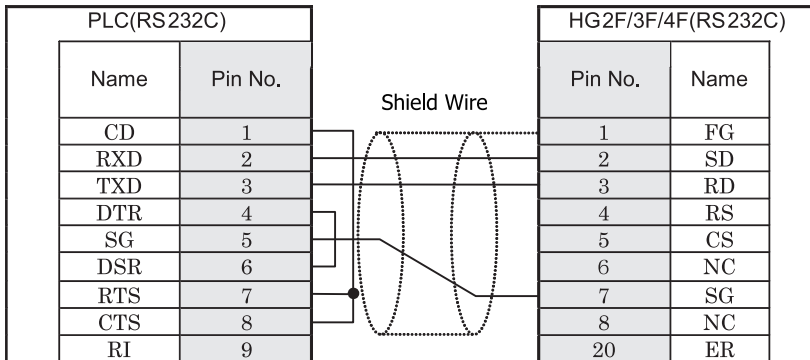
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

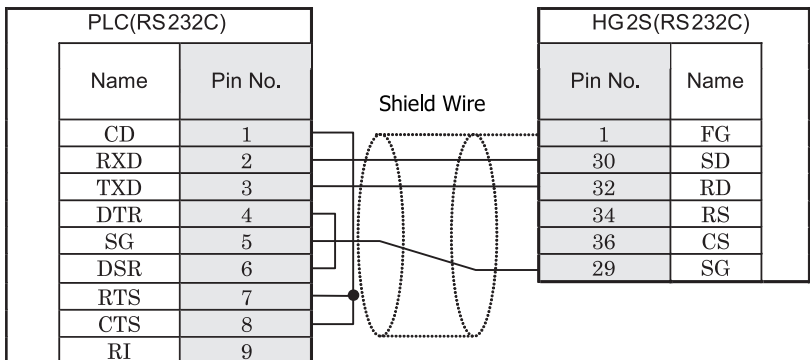
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

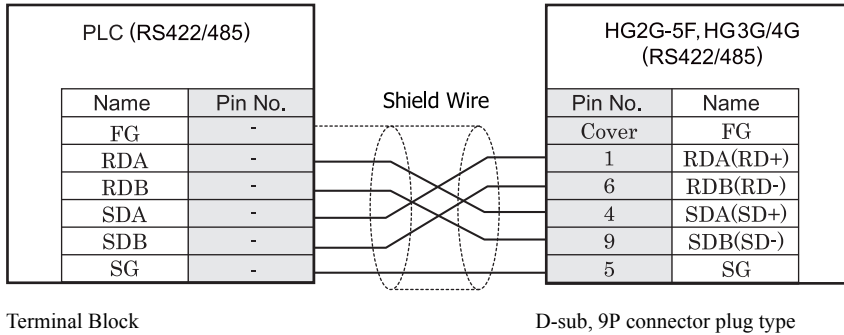
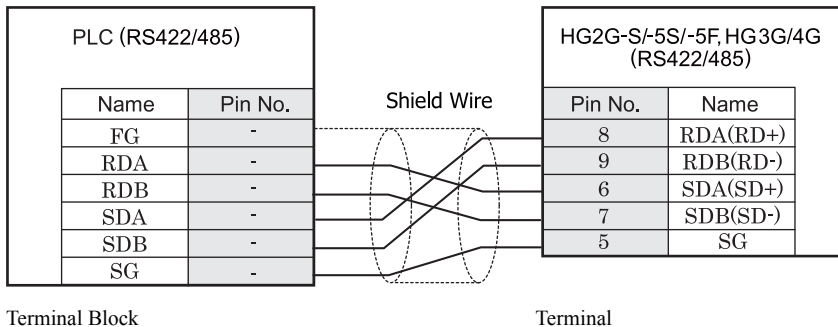
HG2S



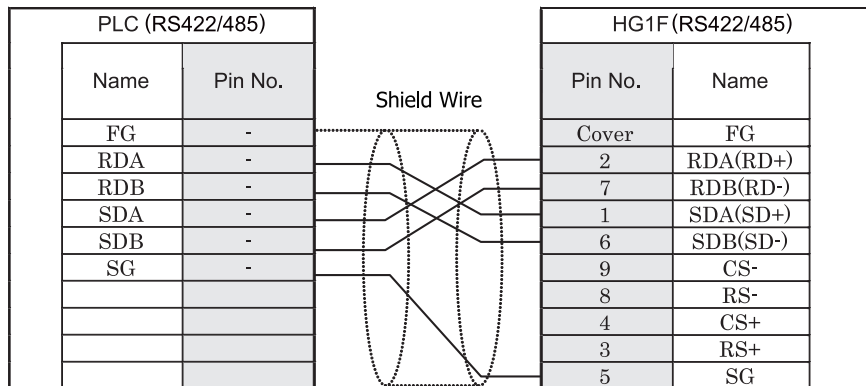
D-sub, 9P connector socket type

D-sub, 37P connector plug type

20.3.4 Connection Diagram 4: MASTER-K (Interface Module RS485 Port) - MICRO/I

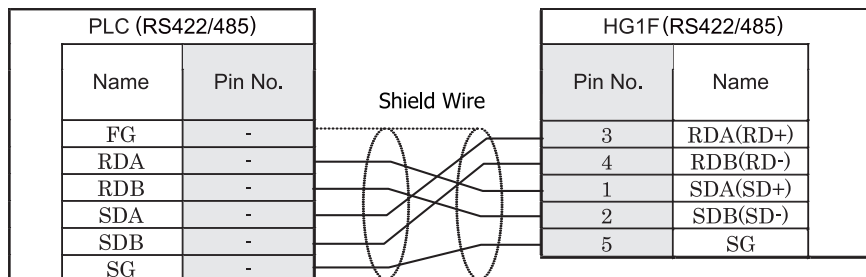
HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G** (Terminal)

There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG1F (Connector)

Terminal Block

D-sub, 9P connector socket type

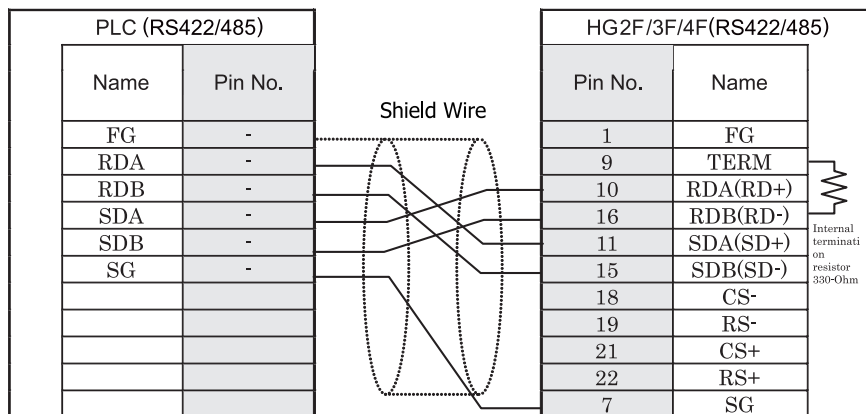
HG1F (Terminal)

Terminal Block

Terminal

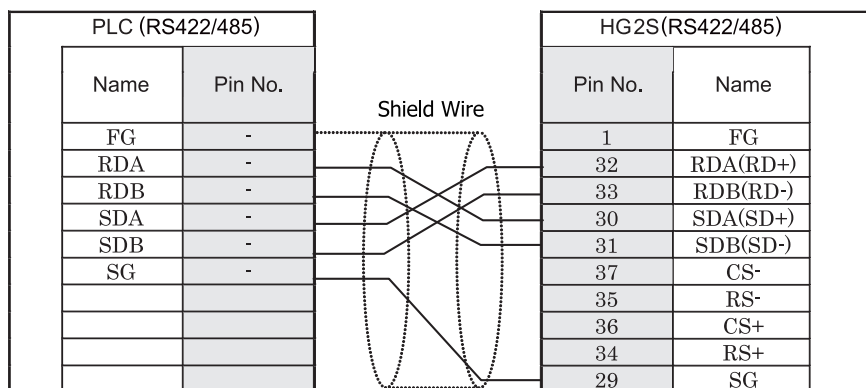


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Terminal Block

D-sub, 25P connector socket type

HG2S

Terminal Block

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

20.4 Environment Settings

Refer to the followings to configure the communication port between PLC (PROSEC T Series or V Series) and MICRO/I. Attend to the limitation of the configuration. It depends on the CPU unit and Link unit.

20.4.1 LG Industrial Systems MASTER-K K10S1, K80S, K120S, K200S (Loader Port)

Items	Details
Interface	RS232C
Baud Rate [bps]	38400
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

20.4.2 LG Industrial Systems MASTER-K K80S, K200S, K300S (Interface Module)

Items	Details
Interface	RS232C, RS485 4-wire
Baud Rate [bps]	1200, 2400, 4800, 9600, 19200 or 38400
Data Bits	7 or 8
Parity	None, Odd or Even
Stop Bits	1 or 2
Flow Control	None or Hardware
Station No.	00 - 1F(HEX)



Refer to the MASTER-K Series user's manual for details of communication settings.

20.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
I/O Relay (bit)	P	P	0 - 31F	R/W	HEX
Auxiliary Relay (bit)	M	M	0 - 191F	R/W	HEX
Keep Relay (bit)	K	K	0 - 31F	R/W	HEX
Link Relay (bit)	L	L	0 - 63F	R/W	HEX
Special Relay (bit)	F	F	0 - 63F	R	HEX
Timer (Contact)	TS	T	0 - 255	R/W	DEC
Counter (Contact)	CS	C	0 - 255	R/W	DEC

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
I/O Relay (word)	WP	P	0 - 31	R/W	DEC
Auxiliary Relay (word)	WM	M	0 - 191	R/W	DEC
Keep Relay (word)	WK	K	0 - 31	R/W	DEC
Link Relay (word)	WL	L	0 - 63	R/W	DEC
Special Relay (word)	WF	F	0 - 63	R	DEC
Timer (Current Value)	T	T	0 - 255	R/W	DEC
Counter (Current Value)	C	C	0 - 255	R/W	DEC
Data Register	D	D	0 - 4999	R/W	DEC

21 VIGOR

21.1 Connection Table

21.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
VB								
V0, VB1*1, VB2	Not required (Connects to CPU unit)	RS232C Connection Diagram 1 (refer to P520)	None	VB/VH	X	X	X	---
	VB-485A	RS422/485 2-wire Connection Diagram 2 (refer to P522)						
	VB-CADP	RS232C Connection Diagram 3 (refer to P525)						
		RS422/485 2-wire Connection Diagram 4 (refer to P527)						
	VB-232	RS232C Connection Diagram 5 (refer to P530)						
	VB-485	RS422/485 2-wire Connection Diagram 6 (refer to P532)						
VH								
VH	Not required (Connects to CPU unit)	RS232C Connection Diagram 1 (refer to P520)	None	VB/VH	X	X	X	---
	VB-485A	RS422/485 2-wire Connection Diagram 2 (refer to P522)						
	VB-CADP	RS232C Connection Diagram 3 (refer to P525)						
		RS422/485 2-wire Connection Diagram 4 (refer to P527)						
	VB-232	RS232C Connection Diagram 5 (refer to P530)						
	VB-485	RS422/485 2-wire Connection Diagram 6 (refer to P532)						

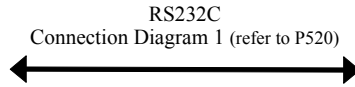
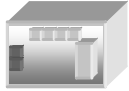
*1 This PLC was used to test & verify communications.

21.2 System Configuration

This is the system configuration for the connection of VIGOR PLCs to the MICRO/I.

21.2.1 VB0, VB1, VB2, VH (Programming Tool Communication Port)

VB0, VB1, VB2, VH



MICRO/I



21.2.2 VB0, VB1, VB2, VH (VB-485A)

VB0, VB1, VB2, VH



VB-485A



RS485
Connection Diagram 2
(refer to P522)



MICRO/I



21.2.3 VB0, VB1, VB2, VH (VB-CADP)

VB0, VB1, VB2, VH



VB-CADP



RS232C
Connection Diagram 3
(refer to P525)



MICRO/I



VB-CADP



RS485 2-wire
Connection Diagram 4
(refer to P527)

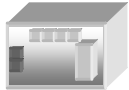


MICRO/I



21.2.4 VB0, VB1, VB2, VH (VB-232)

VB0, VB1, VB2, VH



VB-232



RS232C
Connection Diagram 5
(refer to P530)



MICRO/I



21.2.5 VB0, VB1, VB2, VH (VB-485)

VB0, VB1, VB2, VH



VB-485



RS485
Connection Diagram 6
(refer to P532)



MICRO/I



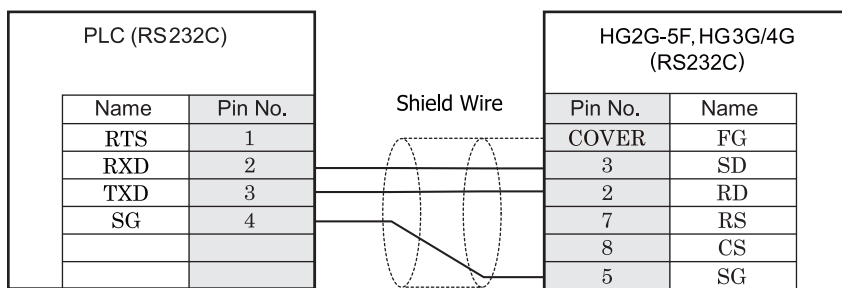
21.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

21.3.1 Connection Diagram 1: VB0, VB1, VB2, VH (Programming Tool Communication Port)

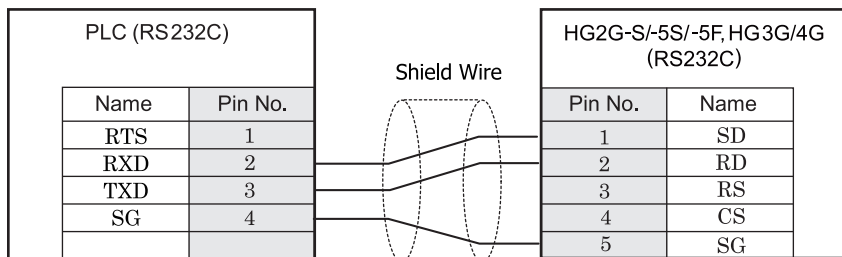
HG2G-5F, HG3G/4G (Connector)



A type connector

D-sub, 9P connector plug type

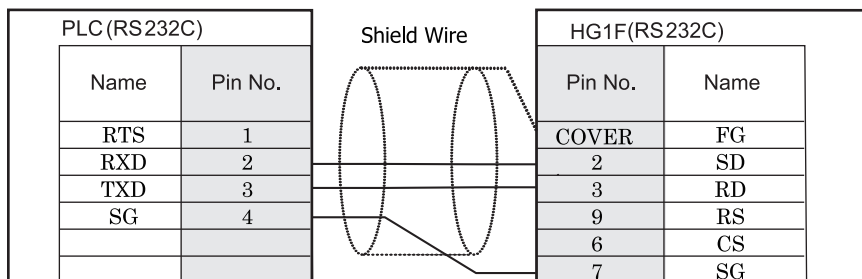
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



A type connector

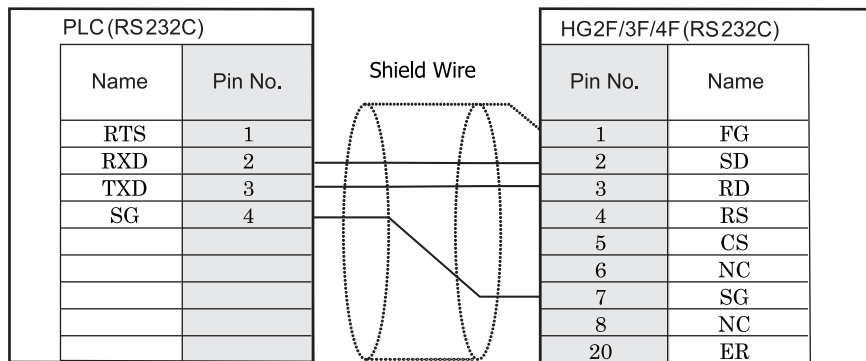
Terminal

HG1F (Connector)



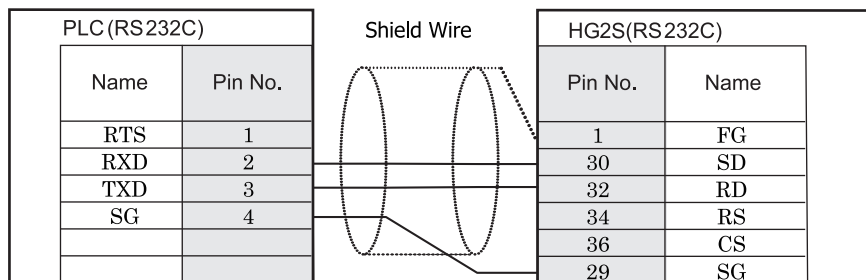
A type connector

D-sub, 9P connector socket type

HG2F/3F/4F

A type connector

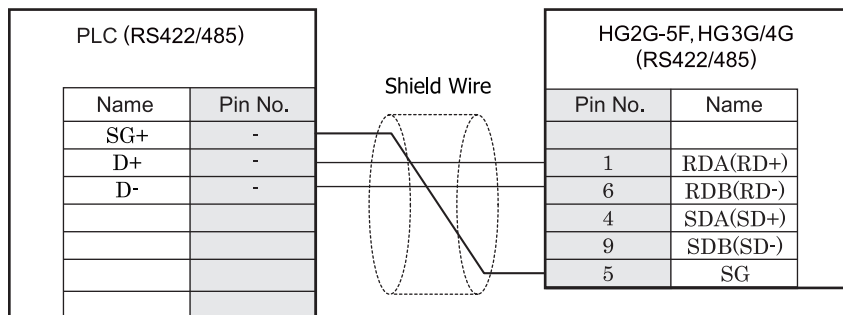
D-sub, 25P connector socket type

HG2S

A type connector

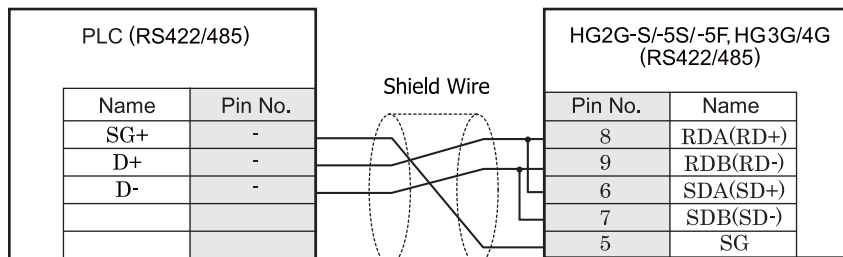
D-sub, 37P connector plug type

21.3.2 Connection Diagram 2: VB0, VB1, VB2, VH (VB-485A)

HG2G-5F, HG3G/4G (Connector)

Screw down terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

Screw down terminal block

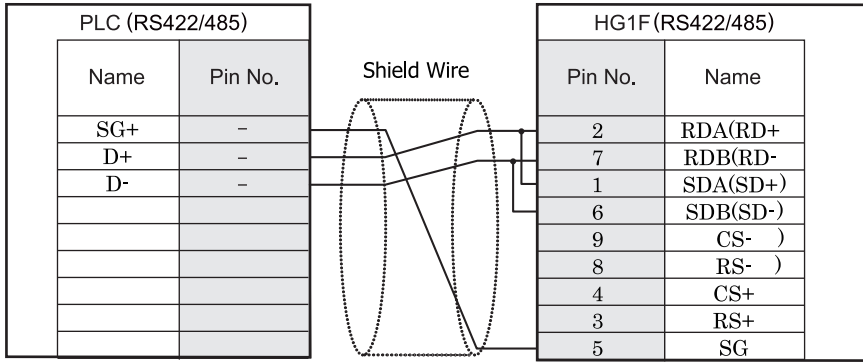
Terminal



HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.

If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

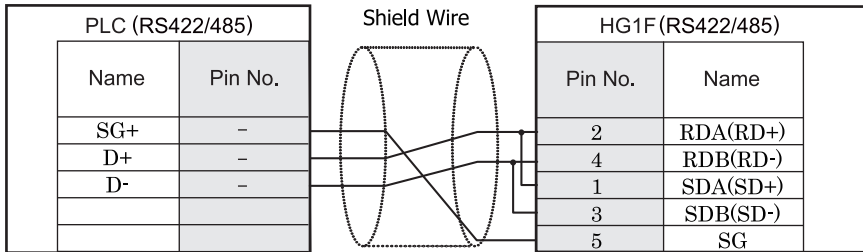
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

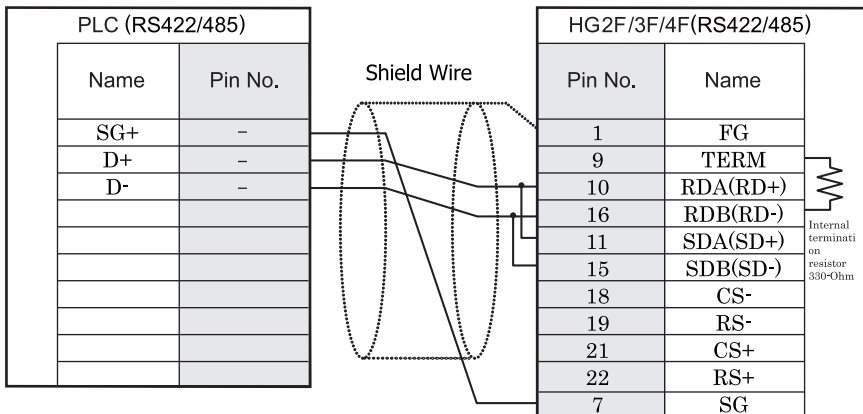
HG1F (Terminal)



Screw down terminal block

Terminal

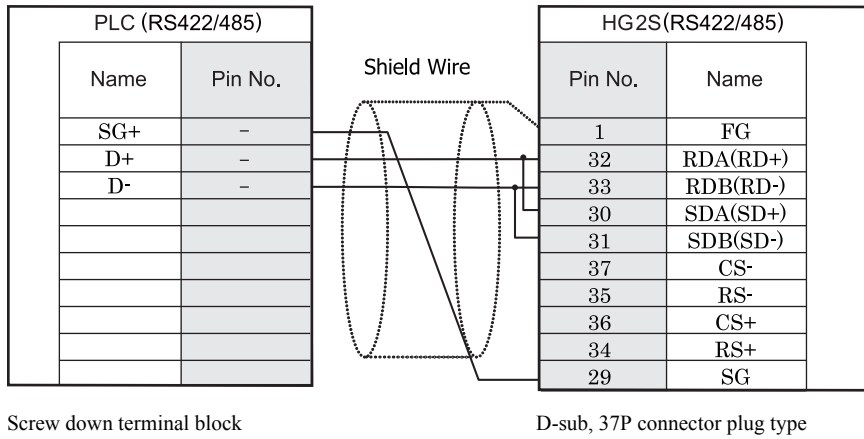
HG2F/3F/4F



Screw down terminal block

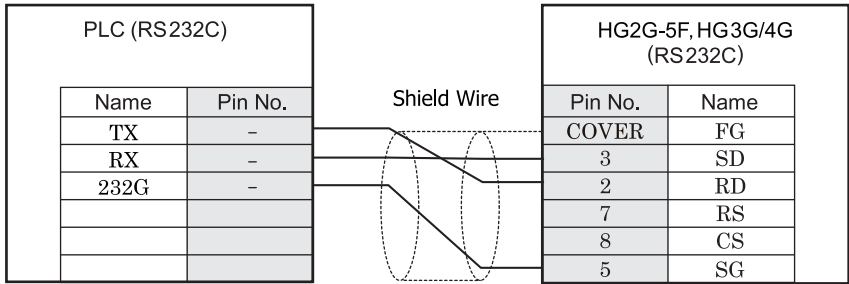
D-sub, 25P connector socket type

Internal termination resistor 330-Ohm

HG2S

21.3.3 Connection Diagram 3: VB0, VB1, VB2, VH (VB-CADP) - RS232C

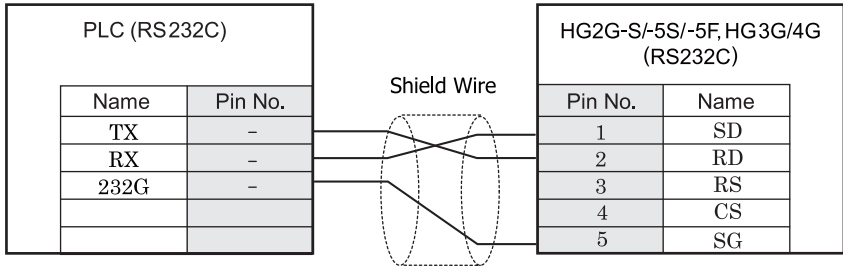
HG2G-5F, HG3G/4G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

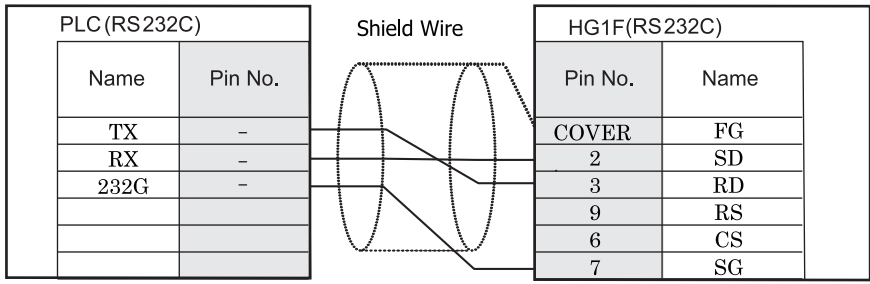
HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw down terminal block

Terminal

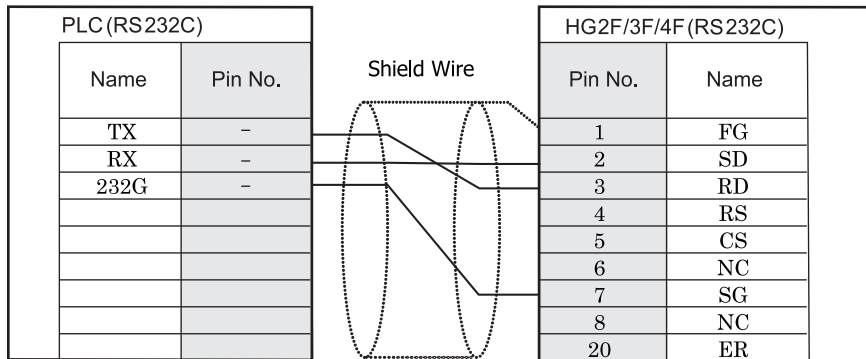
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

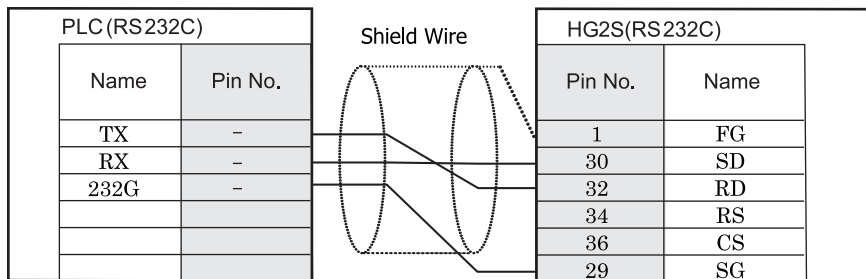
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S

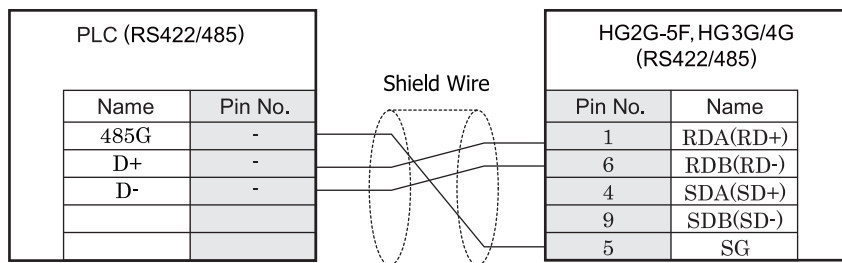


Screw down terminal block

D-sub, 37P connector plug type

21.3.4 Connection Diagram 4: VB0, VB1, VB2, VH (VB-CADP) - RS485

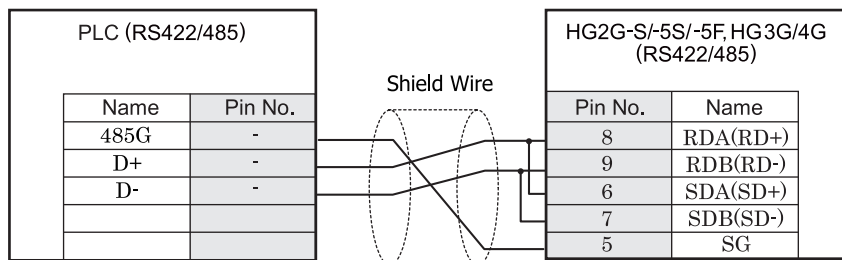
HG2G-5F, HG3G/4G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)



Screw down terminal block

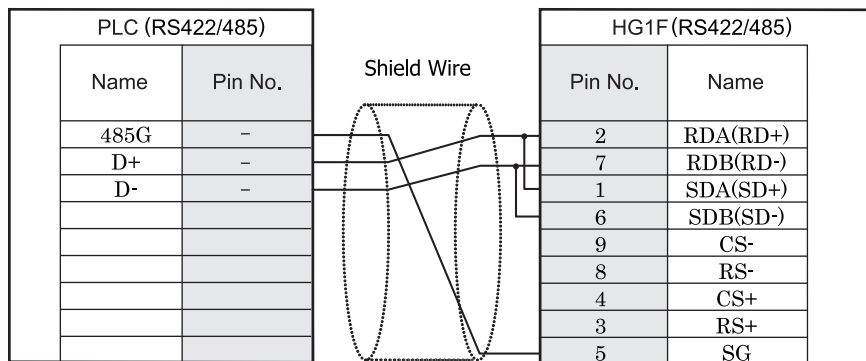
Terminal



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4

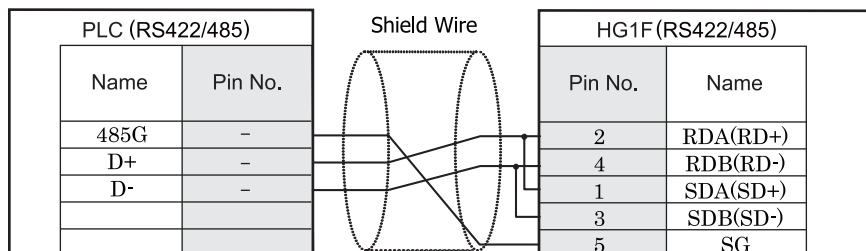
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.

If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

HG1F (Connector)

Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

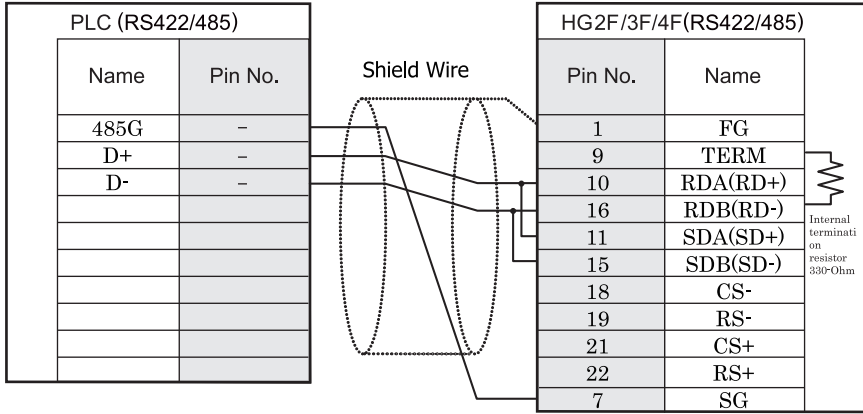
Screw down terminal block

Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

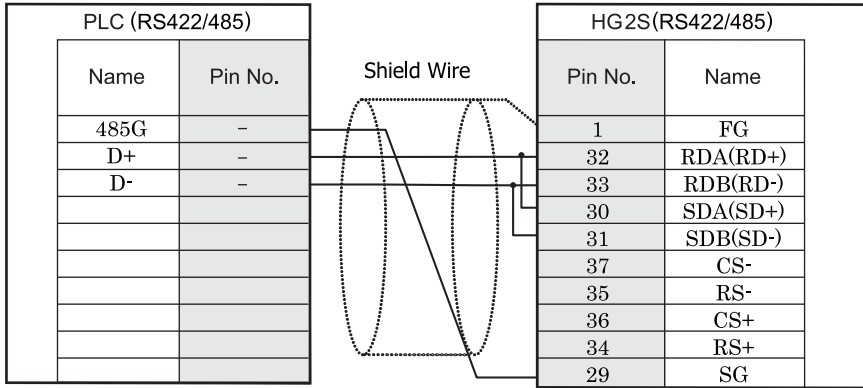
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S



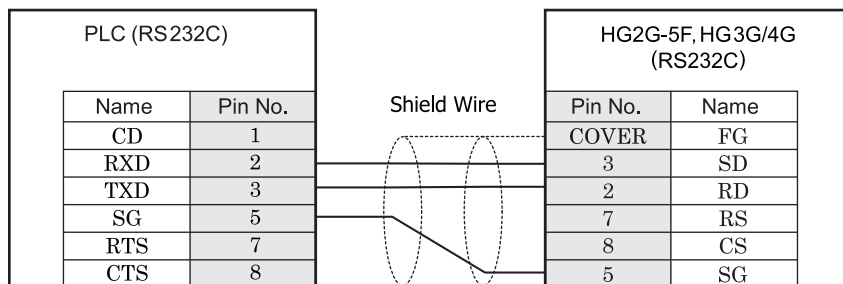
Screw down terminal block

D-sub, 37P connector plug type



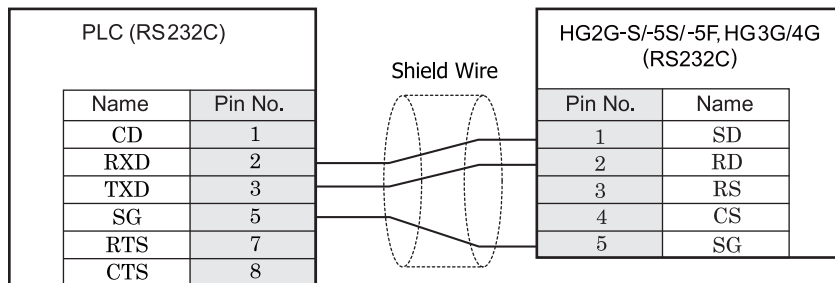
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

21.3.5 Connection Diagram 5: VB0, VB1, VB2, VH (VB-232)

HG2G-5F, HG3G/4G (Connector)

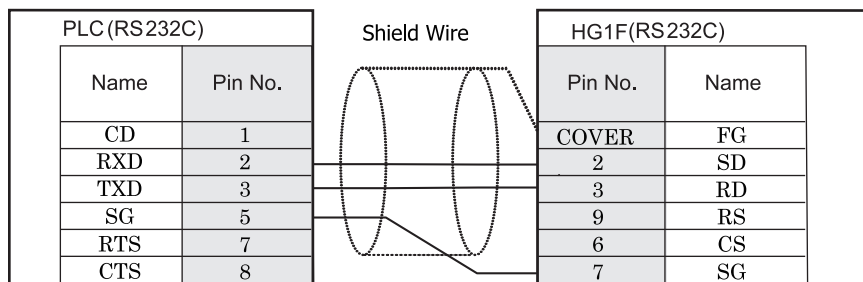
D-sub, 9P connector socket type

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

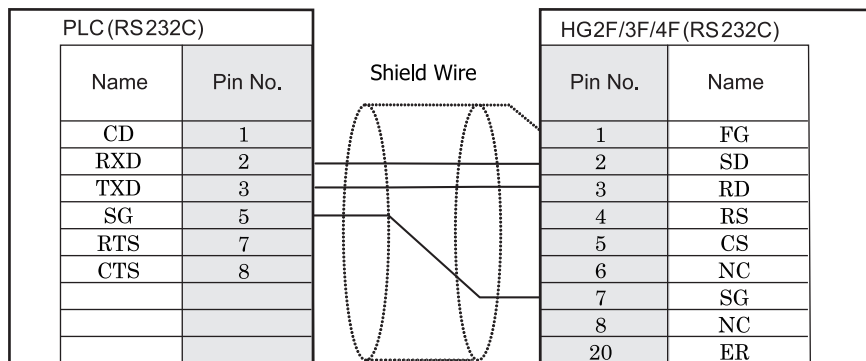
D-sub, 9P connector socket type

Terminal

HG1F (Connector)

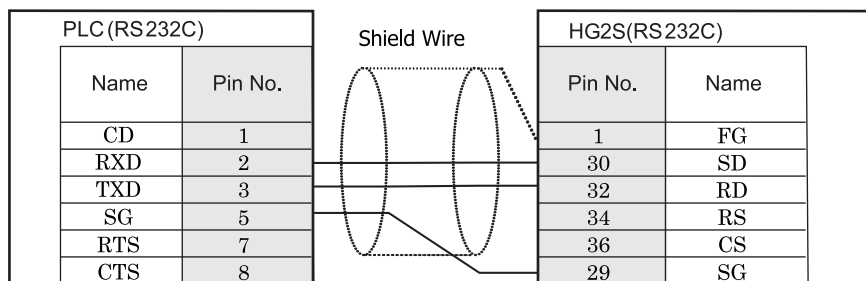
D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

D-sub, 9P connector socket type

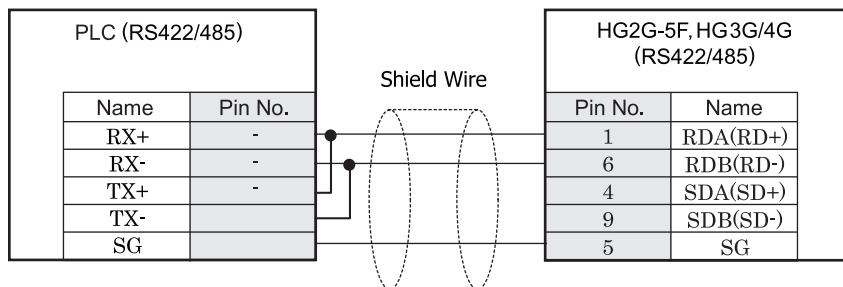
D-sub, 25P connector socket type

HG2S

D-sub, 9P connector socket type

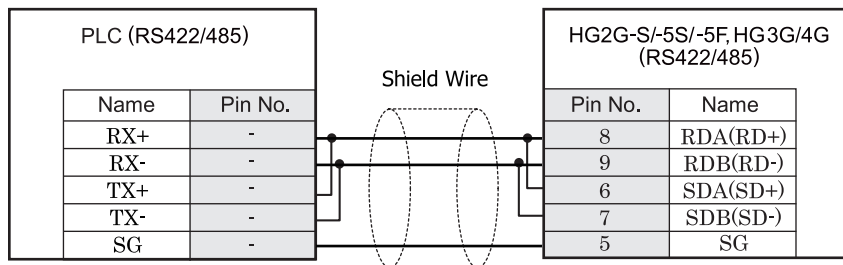
D-sub, 37P connector plug type

21.3.6 Connection Diagram 6: VB0, VB1, VB2, VH (VB-485)

HG2G-5F, HG3G/4G (Connector)

Screw down terminal block

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

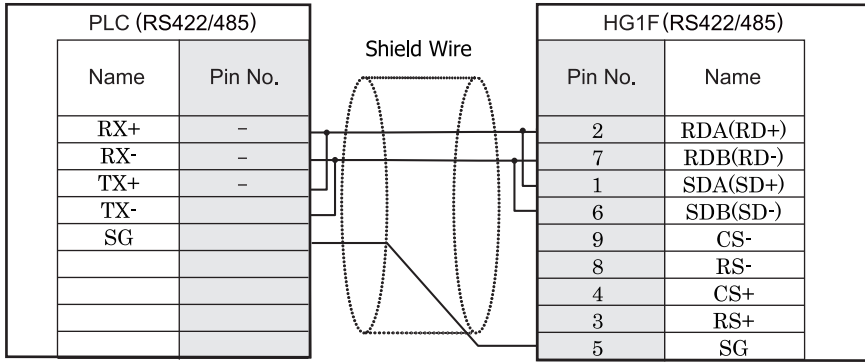
Screw down terminal block

Terminal



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.

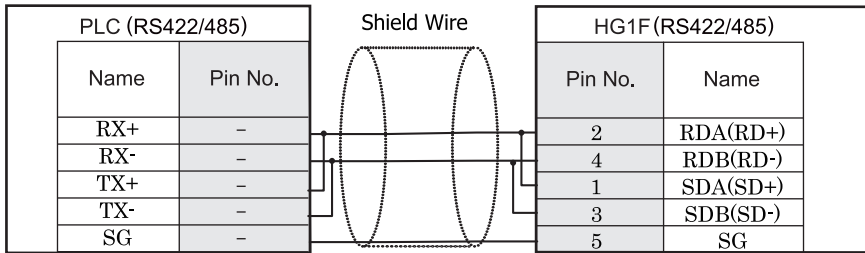
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

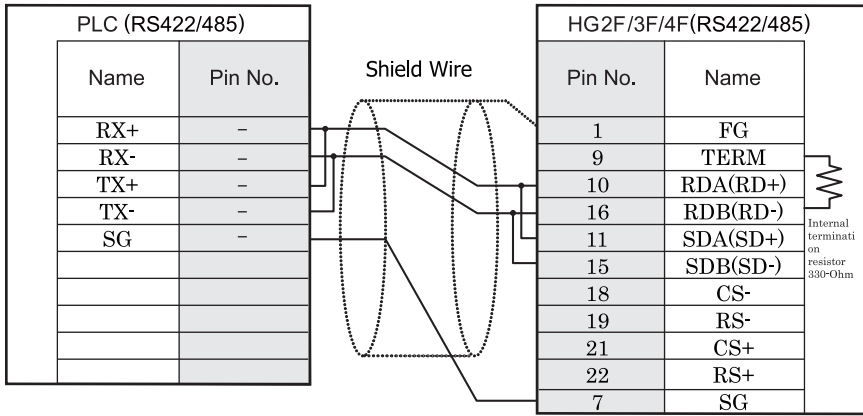


Screw down terminal block

Terminal

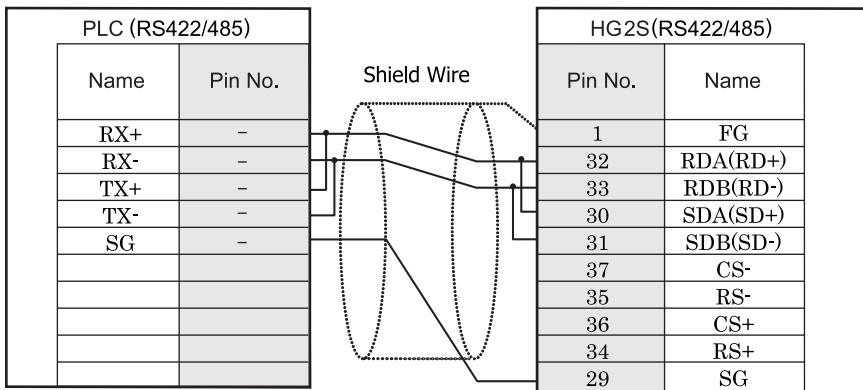


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

Screw down terminal block

D-sub, 25P connector socket type

HG2S

Screw down terminal block

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

21.4 Environment Settings

The communication port settings for VB/VH series and MICRO/I host port are as follows.

21.4.1 VB/VH Series (Communication Port for Programming Tool)

Items		Details
Interface		RS232C
Baud Rate [bps]	Use the same settings as for the MICRO/I.	19200 (fixed)
Data Bits		7 (fixed)
Parity		Even
Stop Bits		1 (fixed)
Flow Control		None
Station Number		0 (fixed)

21.4.2 VB/VH Series (VB-485A, VB-232 or VB-485)

Items		Details
Interface		RS232C, RS485 4-wire
Baud Rate [bps]	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600, 19200 or 38400
Data Bits		7
Parity		Even
Stop Bits		1
Flow Control		None
Station Number		0 - 255(DEC)

21.4.3 VB/VH Series (VB-CADP)

Items		Details	
Port		CP2	CP3
Interface		RS232C, RS485	RS485
Baud Rate [bps]	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600, 19200 or 38400	19200
Data Bits		7	7
Parity		Even	Even
Stop Bits		1	1
Flow Control		None	None
Station Number		0 - 255(DEC)	0 - 99(DEC)



Refer to the VB/VH Series user's manual for details of communication settings.

21.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay(Bit)	X	X	0 - 777	R	OCT
Output Relay(Bit)	Y	Y	0 - 777	R/W	OCT
Auxiliary Relay(Bit)	M	M	0 - 5119	R/W	DEX
Step Relay	S	S	0 - 999	R/W	DEX
Special Relay	SM	M	9000 - 9255	R/W	DEX
Timer Contact	T	T	0 - 255	R	DEX
Timer Coil	TC	T	0 - 255	R	DEX
Counter Contact	C	C	0 - 255	R	DEX
Counter Coil	CC	C	0 - 255	R	DEX

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
Input Relay(Word)	WX	X	0 - 769	R	OCT
Output Relay(Word)	WY	Y	0 - 760	R/W	OCT
Auxiliary Relay(Word)	WM	M	0 - 5104	R/W	DEX
Step Relay(Word)	WS	S	0 - 992	R/W	DEX
Special Relay(Word)	WSM	M	9000 - 9240	R/W	DEX
Data Register	T	D	0 - 8191	R/W	DEX
Special Register	SD	D	9000 - 9255	R/W	DEX
Timer Current Value	TCV	T	0 - 255	R/W	DEX
16 Bit Counter Current Value	CCV	C	0 - 199	R/W	DEX
32 Bit Counter Current Value	DCCV	C	2000 - 2551	R/W	DEX



Device Address 992 in Step Relay (Word) only contains 8bits because the maximum device address of Step Relay (Bit) is 999.

22 Emerson

22.1 Connection Table

22.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/ 2F/ 2S/ 3F/ 4F	Touch
FloBoss								
FloBoss107* ¹ ROC800* ²	Not required	RS422/485 2-wire Connection Diagram 1 (refer to P538)	None	ROC Protocol	X	X	---	---
		RS232C Connection Diagram2 (refer to P539)						

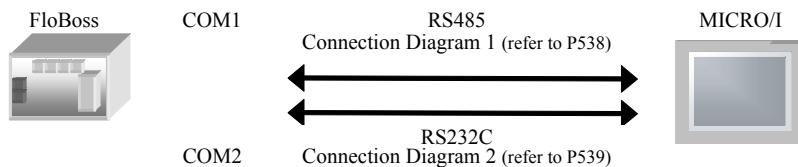
*1 This PLC was used to test & verify communications.

*2 When enabling the check box to "Input TLP" on the Device Address Settings dialog box, allows expansion of these TLPs to support the ROC Plus Protocol.

22.2 System Configuration

This is the system configuration for the connection of Emerson PLCs to the MICRO/I.

22.2.1 FloBoss



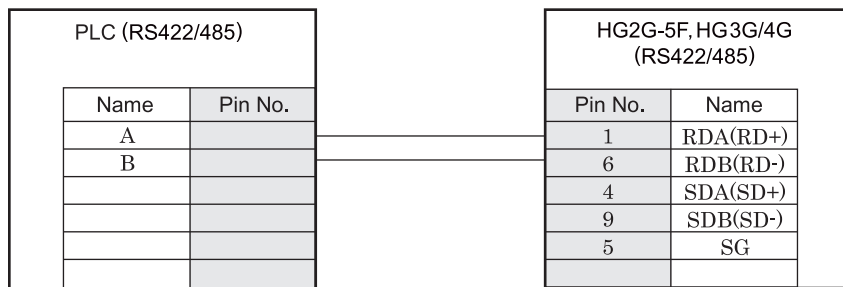
22.3 Connection Diagram



The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

22.3.1 Connection Diagram 1: FloBoss (COM1, RS485)

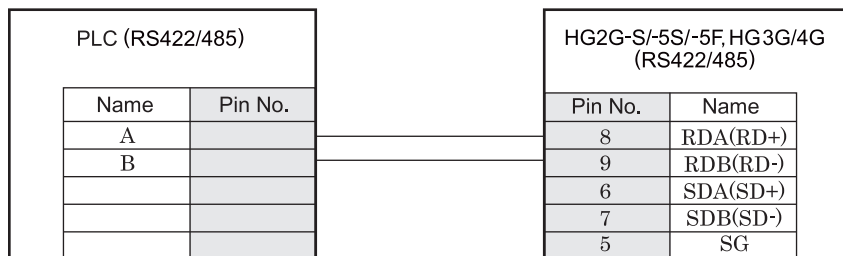
HG2G-5F, HG3G/4G (Connector)



Terminal

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G (Terminal)

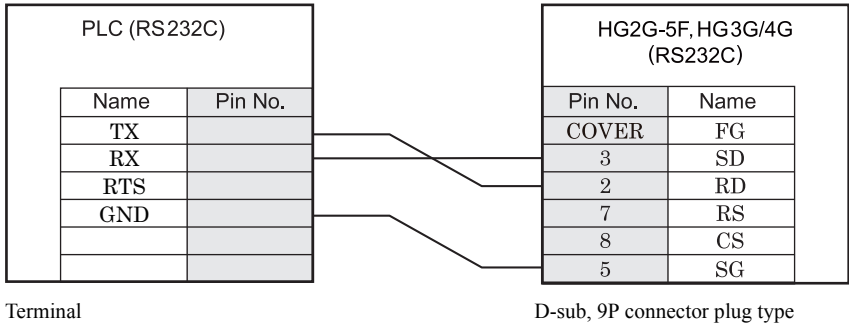


Terminal

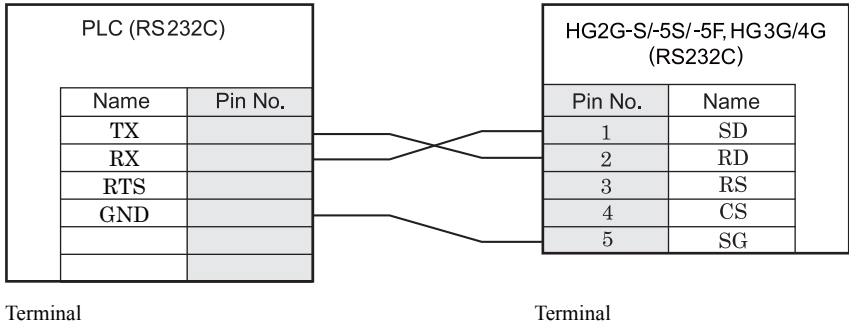
Terminal

22.3.2 Connection Diagram 2: FloBoss (COM2, RS232C)

HG2G-5F, HG3G/4G (Connector)



HG2G-S/-5S/-5F, HG3G/4G (Terminal)



2
Connection to a PLC

22.4 Environment Settings

The communication port settings for FloBoss series and MICRO/I host port are as follows.

22.4.1 Connecting with FloBoss COM1 (RS485) or COM2 (RS232C)

Items		Details
Interface		RS232C, RS485
Baud Rate [bps]	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Data Bits		7, 8
Stop Bits		1, 2
Parity		None, Even or Odd
Flow Control		None
HMI Group No.		Set the Group No. of MICRO/I.
HMI Unit No.		Set the Unit No. of MICRO/I.
Controller Group No.		Set the Group No. of FloBoss in Host I/F Network tab.
Controller Unit No.		Set the Unit No. of FloBoss in Host I/F Network tab.

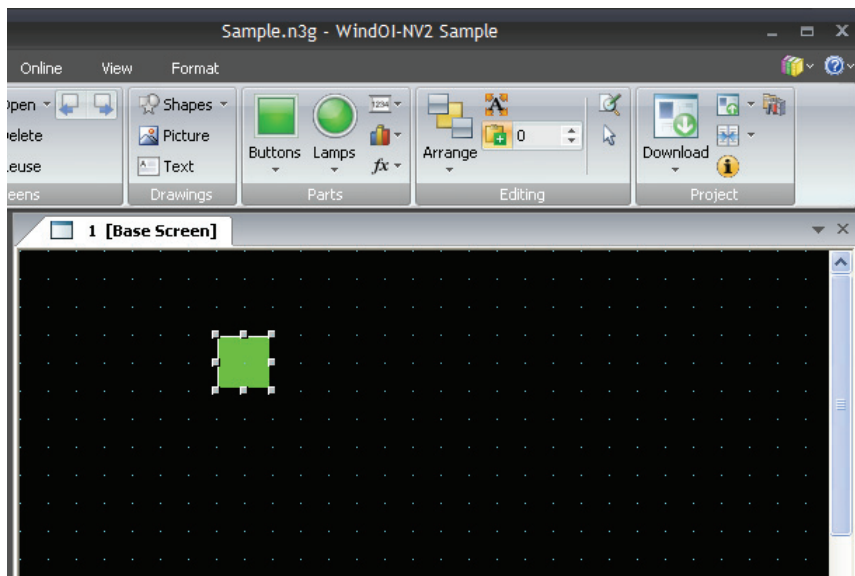
22.5 Usable Devices

When the Emerson ROC Protocol host I/F driver is selected, check the usable PLC devices in the Device Address Settings dialog box.

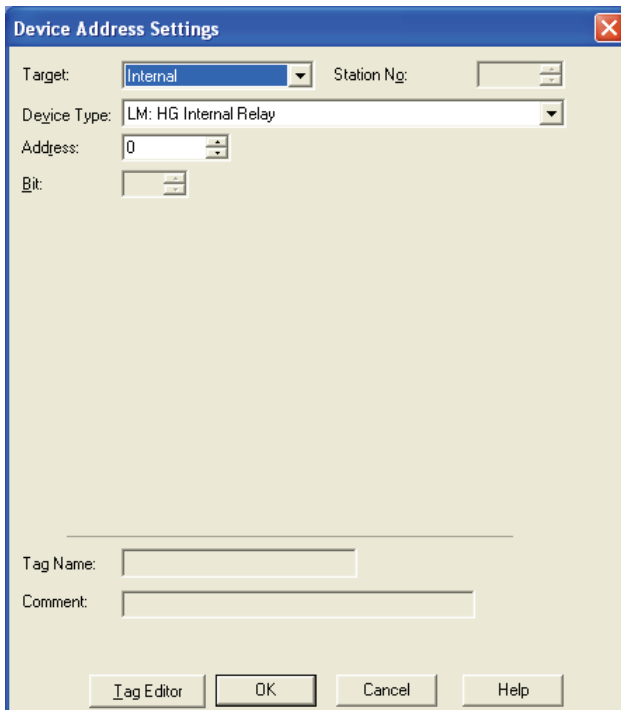
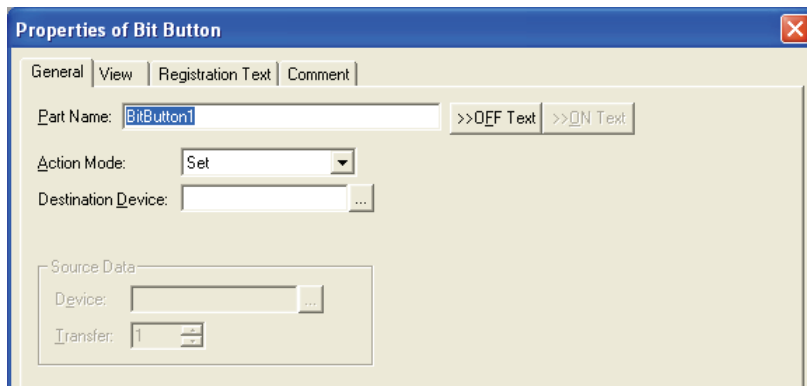
Click [...] for the option to configure device addresses to display the Device Address Settings dialog box.

Example: To set a PLC device to the Bit Button.

1. Place the Bit Button on the screen and double click to edit it.
The Properties dialog box will be displayed.



2. Click [...] to the right of the Destination Device text box.
The Device Address Settings dialog box will be displayed.



3. Under Target, select Host.

Device Address Settings

Target: Internal Station Ng: []

Device Type: Host Internal

Address: 0

Bit: []

4. Configure the Emerson ROC Device Address.

Device Address Settings

Target: Host Station Ng: 0

Point Type: Parameter:

0 - Configurable Opcode	0 - Sequence/Revision #
1 - Discrete Inputs	1 - Data1
2 - Discrete Outputs	2 - Data2
3 - Analog Inputs	3 - Data3
4 - Analog Outputs	4 - Data4
5 - Pulse Inputs	5 - Data5
7 - AGA Flow Parameters	6 - Data6
8 - History Parameters	7 - Data7
10 - AGA Flow Calculation Values	8 - Data8
12 - Clock	9 - Data9
13 - Flags	10 - Data10
14 - Comm Ports	11 - Data11
15 - System Variables	12 - Data12
16 - ...	13 - Data13

Location: 0 Data Type: FL[255]

TLP: 0,0,0

Input TLP

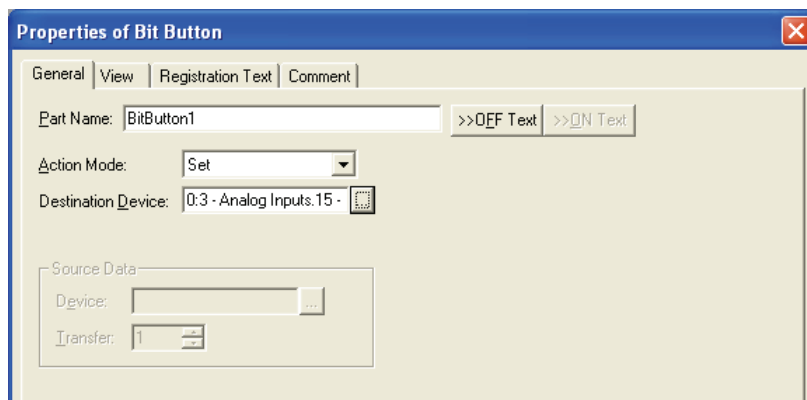
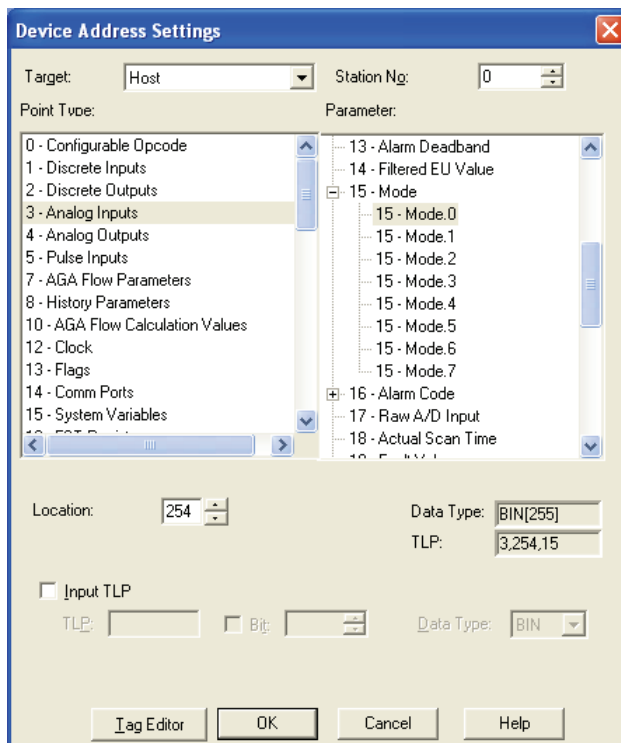
TLP: [] Bit: [] Data Type: BIN

Tag Editor OK Cancel Help

5. Two methods to select the T (Type), L (Location), P (Parameter) for Emerson ROC device:

- How to select the [Point Type], [Parameter] and [Location]:

- 1) The selected Device Address is displayed in the Destination Device.





- The following shows the way to set TLP Selection which is selected in Emerson ROC software.

Emerson ROC	WindO/I-NV2	Details
Point Type	Point Type	Select Point Type which you selected in Emerson ROC software from Point Type box.
Logical Number	Location	Find number of Logical Number (which is shown in middle of TLP) which you selected in Emerson ROC software and input it in Location box
Parameter	Parameter	Select Parameter which you selected in Emerson ROC software form Parameter box.

- Device for Emerson ROC is based on ROC Protocol Specifications Manual (Form Number A4199, Part Number D301053X012, November 2011).

2

Connection to a PLC

- **How to enter the TLP manually:**

- 1) Select the [Input TLP] check box in the Device Address Settings dialog. The [Point Type], [Parameter], and [Location] settings are disabled and the [TLP], [Bit], and [Data Type] settings are enabled.

- 2) Configure [TLP], [Bit], and [Data Type].
 - In [TLP], enter the values in the order of Point Type, Location and Parameter, and separate each one with a comma.
 - When Bit Device must be configured, select the Bit check box and enter a value.

Input TLP
 TLP:
 Bit:
 Data Type:

- 3) Click the [OK] button.

The configured Device Address is displayed in the Destination Device text box.

Properties of Bit Button
 General | View | Registration Text | Comment
 Part Name: >>OFF Text >>ON Text
 Action Mode:
 Destination Device:
 Source Data:
 Device:
 Transfer:



The order of TLP in the Emerson ROC device address differs in the following ways:

- Device Address Settings dialog in example, shows.22,5,3 in TLP text box (Point Type,Location,Parameter)
- Emerson ROC device address composed of the entered TLP, Bit, and Data Type information.
(e.g. 0:22.3[5]:UINT8 in Destination Device text box. The TLP order is 22,3,5 (Point Type,Parameter,Location).)

23 Hitachi Industrial Equipment Systems

23.1 Connection Table

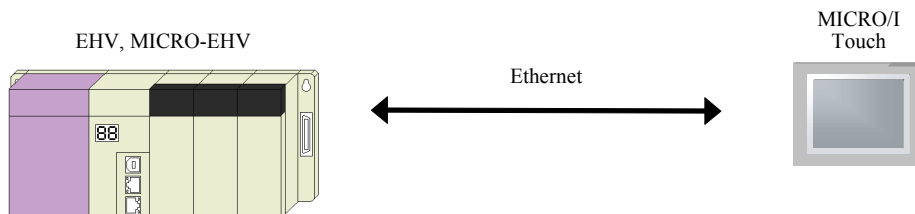
23.1.1 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
H Series								
CPU2-03H CPU2-07H CPU2-10H CPU2-20H CPU3-40H	LAN-ETH2	Ethernet	-	EH (Ethernet)	X	X	---	X
EH-150								
EH-CPU448 EH-CPU516 EH-CPU548 EH-CPU308A EH-CPU316A EH-CPU448A	EH-ETH2	Ethernet	-	EH (Ethernet)	X	X	---	X
EHV								
EHV-CPU16 EHV-CPU32 EHV-CPU64 EHV-CPU128*1	Not required (connects to Ethernet port) EH-ETH2	Ethernet	-	EH (Ethernet)	X	X	---	X
Web Controller								
EH-WD10DR EH-WA23DR EH-WD23DR	Not required (connects to Ethernet port)	Ethernet	-	EH (Ethernet)	X	X	---	X
MICRO-EH								
EH-A20 EH-D20 EH-A40 EH-D40 EH-A64 EH-D64	EH-OBETH	Ethernet	-	EH (Ethernet)	X	X	---	X
MICRO-EHV								
MVH-A40 MVH-D40 MVH-A64 MVH-D64	Not required (connects to Ethernet port)	Ethernet	-	EH (Ethernet)	X	X	---	X

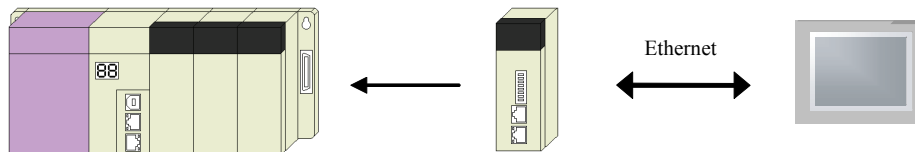
*1 This PLC was used to test & verify communications.

23.2 System Configuration

23.2.1 H/EH/EHV Series (Ethernet)



- | | | |
|----------|---|----------|
| H Series | + | LAN-ETH2 |
| EH150 | + | EH-ETH2 |
| EHV | + | EH-ETH2 |
| MICRO-EH | + | EH-OBETH |



23.3 Environment Settings

23.3.1 H/EH/EHV Series: in case using Ethernet Port or Ethernet Unit setting

1. MICRO/I settings

Item	Setting
IP Address (MICRO/I)	Set the IP address of MICRO/I in Communication Interface tab.
Subnet Mask	Set the subnet mask of MICRO/I in Communication Interface tab.
Default Gateway	Set the default gateway of MICRO/I in Communication Interface tab.
IP Address (PLC)	Set the IP address of PLC in Host I/F Network tab.
Port Number (PLC)	Set the port number of PLC in Host I/F Network tab. The default is 3004.

2. PLC Settings

Item	Setting	
CPU Communication Settings (IP Address)	IP Address	Set the IP address of PLC.
	Subnet mask	Set the subnet mask of PLC .
	Default Gateway	Set the default gateway of PLC.
	Communication speed / Method	AUTO 100M/ Full Duplex 100M/ Half Duplex 10M/ Full Duplex 10M/ Half Duplex
CPU Communication Settings (Ethernet Communication Settings(Task Code))	Port Number	Setting Port Number.
	Protocol	TCP/IP
	Time Out	Setting Toimeout time.



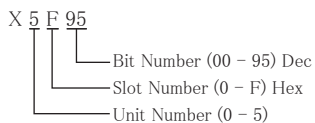
This Host I/F Driver does not support CPU Link and Remote communication.

23.4 Usable Devices

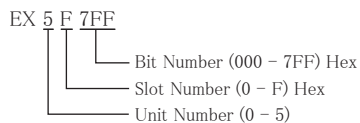
Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
External Input (Bit)	X	X	0 - 5F95	R	*1
External Output (Bit)	Y	Y	0 - 5F95	R/W	*1
Internal Output (Bit)	R	R	0 - FFF	R/W	Hex
Data Area M (Bit)	M	M	0 - 7FFFF	R/W	Hex
Timer Counter (Contact)	TCS	TC	0 - 2559	R	Dec
Counter Clear	CL	CL	0 - 2559	R/W	Dec
Extension External Input (Bit)	EX	EX	0 - 5F7FF	R	*2
Extension External Output (Bit)	EY	EY	0 - 5F7FF	R/W	*2

*1 Please specify following ranges.



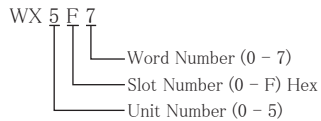
*2 Please specify following ranges.



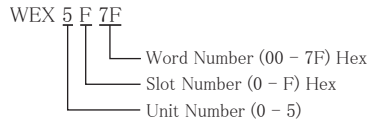
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I	PLC			
External Input (Word)	WX	WX	0 - 5F7	R	*1
External Output (Word)	WY	WY	0 - 5F7	R/W	*1
Internal Output (Word)	WR	WR	0 - FFFF	R/W	Hex
Data Area WM (Word)	WM	WM	0 - 7FFF	R/W	Hex
Timer Counter (Current)	TC	TC	0 - 2559	R/W	Dec
Data Area WN	WN	WN	0 - 1FFFF	R/W	Hex
Extension External Input (Word)	WEX	WEX	0 - 5F7F	R	*2
Extension External Output(Word)	WEY	WEY	0 - 5F7F	R/W	*2

*1 Please specify following ranges.



*2 Please specify following ranges.



Chapter 3 O/I Link Communication

1 O/I Link Communication

1.1 Outline

O/I Link Communication is used for performing 1:N communication (where one PLC is connected to multiple MICRO/I and Touch units). Construct a Master/Slave network (hereafter called an O/I Link) using the MICRO/I and Touch units, and perform PLC Link Communication with the PLC using the Master MICRO/I or Touch (hereafter called Master). The Slave MICRO/I and Touch units (hereafter called Slaves) can read from and write to the PLC devices via the Master.

Up to one Master and 15 Slaves can be connected, and as is the case with PLC Link Communication, no special communication program is required in the PLC.

With just a simple setting change, screen data being used with PLC Link Communication can be used as is with a MICRO/I or Touch setup as a Master or Slave.



HG2G-S/-5S/-5F, HG3G/4G and Touch use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G and Touch can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.2 Operation

With O/I Link Communication a MICRO/I and Touch can read data from and write data to external devices.

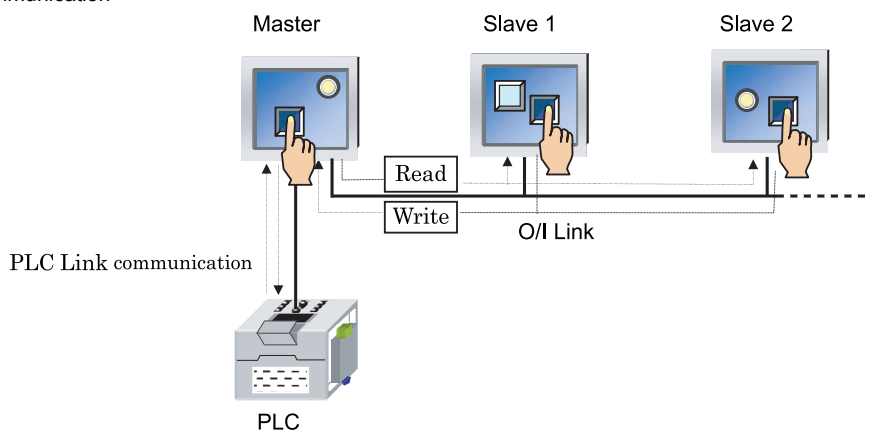
- **Reading from the PLC**

The Master MICRO/I or Touch unit reads data directly from the PLC devices set in the currently displayed screen, and Slave MICRO/I or Touch units read data from the PLC devices set in the currently displayed screen via the Master. Display parts (such as Numerical Displays and Pilot Lamps) in the MICRO/I or Touch are updated with the latest data at all times.

- **Writing to the PLC**

When data input parts (such as bit and word button parts) in the MICRO/I or Touch are operated, they directly write to the PLC, and if they are in a Slave screen they write to the PLC via the Master.

O/I Link Communication



1.3 Required Optional Parts

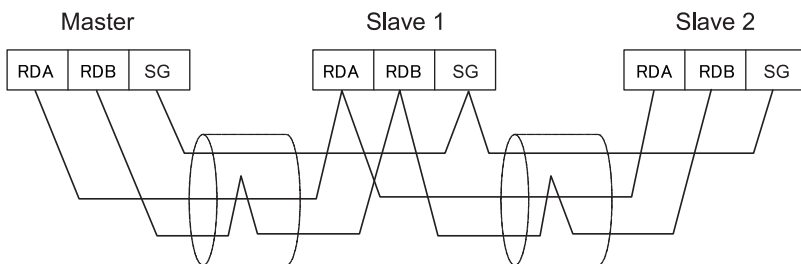
A HG2G-S/-5S, HG1F/2F/3F/4F must be equipped with an HG9Z-2G1 O/I Link Unit in order to be able to perform O/I Link communication. Refer to the O/I Link Unit installation, WindO/I-NV2 User's Manual or SmartAXIS Touch User's Manual for details regarding connection to the HG2G-S/-5S, HG1F/2F/3F/4F and wiring.

- HG9Z-2G1

1.4 O/I Link Wiring Diagram

1.4.1 Connect between HG2G-5F, HG3G/4G

Wiring Diagram

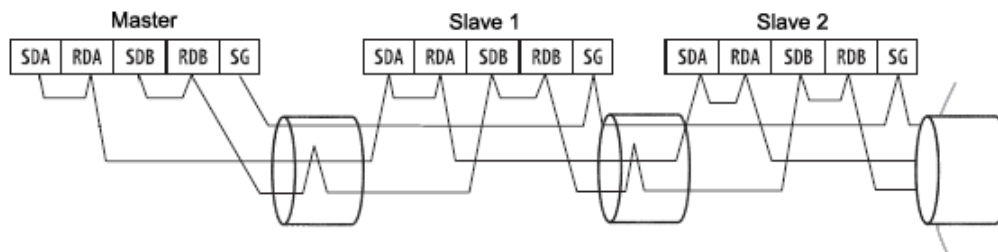


- HG2G-S/-5S/-5F, HG3G/4G and Touch use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G and Touch can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

- When connect COM1 of the HG2G-5F, HG3G/4G and the SERIAL1 of the HG2G-S/-5S, set the terminating resistor OFF.

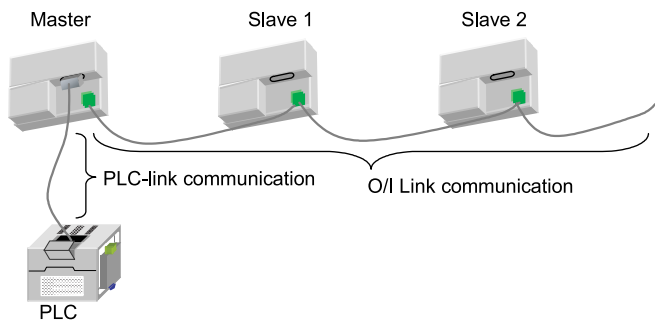
1.4.2 Connection between the Touch

Wiring Diagram

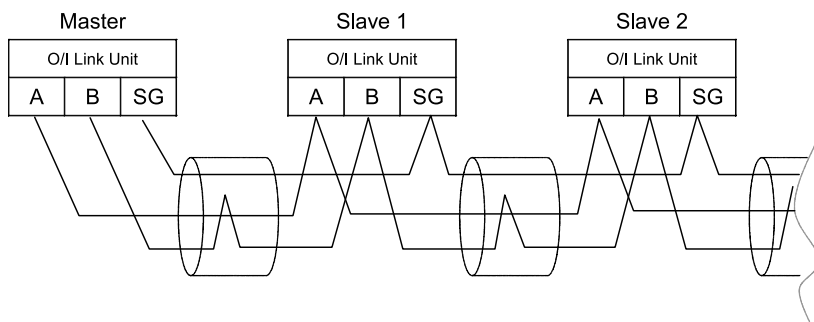


HG2G-S/-5S/-5F, HG3G/4G and Touch use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G and Touch can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.4.3 Connect between HG2G-S/-5S + O/I Link Unit

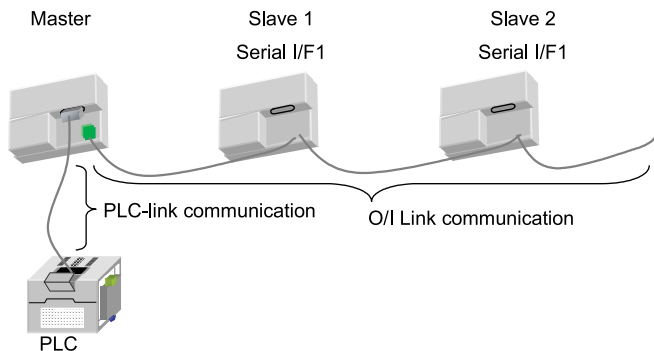


Wiring Diagram

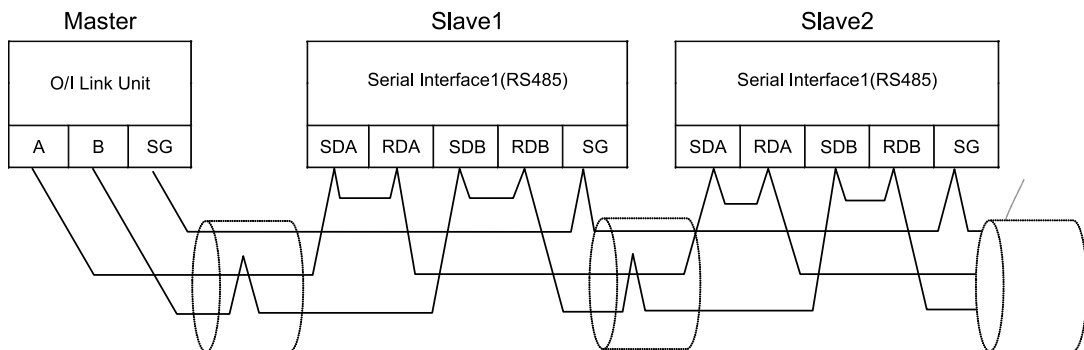


HG2G-S/-5S/-5F, HG3G/4G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.4.4 Connect between HG2G-S/-5S+O/I Link Unit (Master) and HG2G-S/-5S serial interface1 (Slave)



Wiring Diagram



3

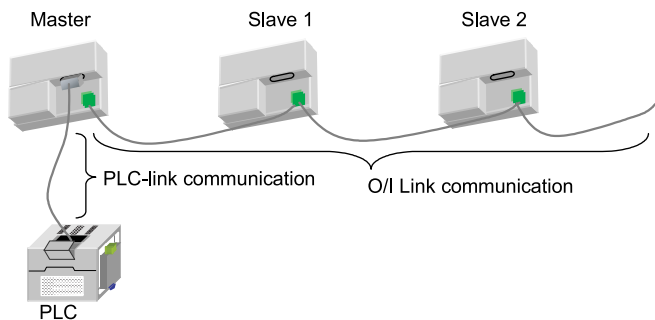
O/I Link Communication



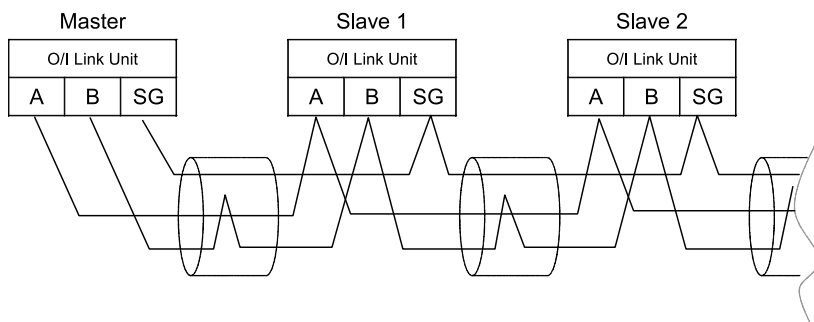
- HG2G-S/-5S/-5F, HG3G/4G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

- The HG2G-S/-5S serial interface1 can only be operated as a slave.

1.4.5 Connect between HG1F/2F/3F/4F + O/I Link Unit

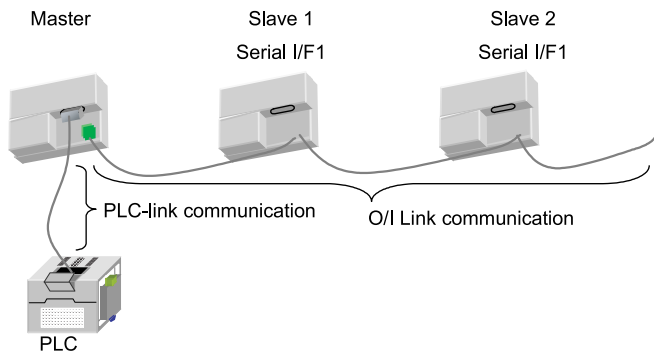


Wiring Diagram

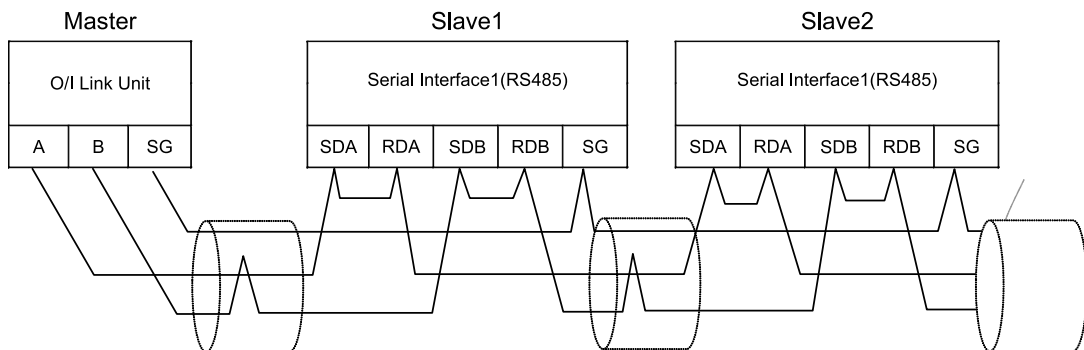


HG2G-S/-5S/-5F, HG3G/4G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.4.6 Connect between HG1F/2F/3F/4F+O/I Link Unit (Master) and HG1F/2F/3F/4F serial interface1 (Slave)



Wiring Diagram



3

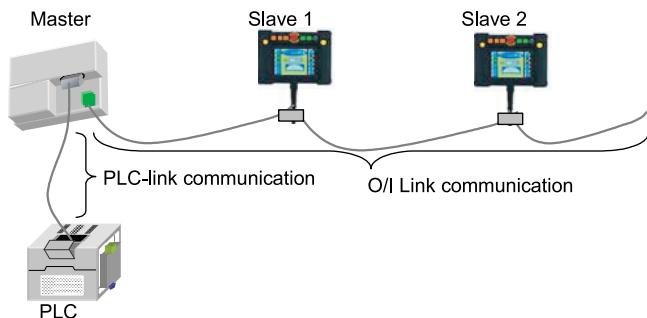
O/I Link Communication



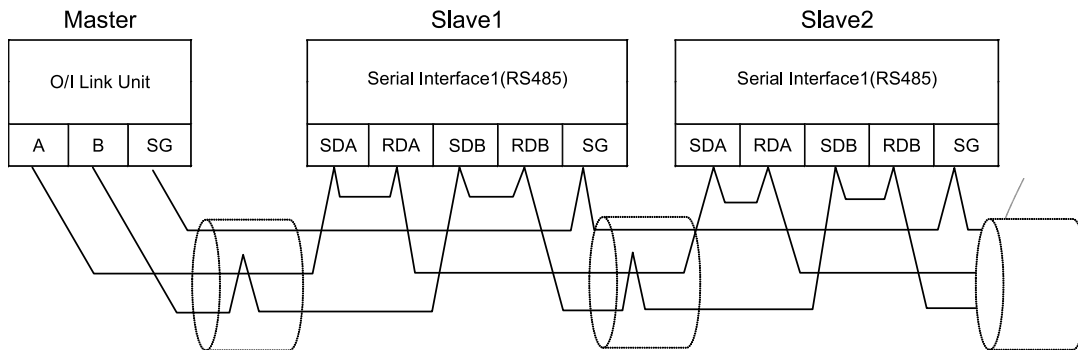
- HG2G-S/-5S/-5F, HG3G/4G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G-S/-5S/-5F, HG3G/4G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

- The HG1F/2F/2S/3F/4F serial interface1 can only be operated as a slave.

1.4.7 Connect between HG1F/2F/3F/4F+O/I Link Unit (Master) and HG2S serial interface1 (Slave)



Wiring Diagram



The HG2S can only be operated as a slave.

2 O/I Link Communication Settings

To use the O/I Link Communication, you must set the necessary items in the O/I Link tab of the **Configuration - System Setup - Project** dialog box. (Refer to the WindO/I-NV2 User's Manual or SmartAXIS Touch User's Manual.)

Dialog Box Name - Tab Name	Setting	Description
Project Settings - O/I Link	O/I Link Station	Set the MICRO/I or Touch connected to the PLC as the master, and the other MICRO/I or Touch as slaves (1 to 15). Make sure that the settings do not overlap.
	Slave Station	MICRO/I or Touch that are connected to the master MICRO/I or Touch (i.e. the one whose O/I Link Type is registered as Master) must be registered as slaves (1 to 15). Select the checkbox.

In addition, make the following settings for the PLC Link Communication.

Dialog Box Name - Tab Name	Setting	Master	Slave 1 to 15
Project Settings - Host I/F Driver or Communication Driver	Manufacturer	Use the same setting for all MICRO/I or Touch.	
	Host I/F Driver, Communication Driver		
	Connection Type		
	Transmission Wait	Set it according to the environment.	Setting not required.
	Time Out		
	Retry Cycles		
Other	Match to the setting of the PLC that you will use.		
Project Settings - Communication Interface	SERIAL 1/COM1	<p>The use of Serial 1 depends on the following selected O/I type .:</p> <p>HG2G-5F, HG3G/4G series:</p> <p>Serial 1 maybe selected as the "O/I Link Master" for O/I Link communication, or select "Host Communication" as the communication interface for PLC communication.</p> <p>HG2G-S/-5S, HG1F/2F/3F/4F series:</p> <p>Select "Host Communication".</p> <p>Touch:</p> <p>Select the External Device Communication.</p>	Select "O/I Link Slave" as the interface used for O/I Link communication.

Dialog Box Name - Tab Name	Setting	Master	Slave 1 to 15
Project Settings - Communication Interface	SERIAL 2/COM2	<p>The use of Serial 2 depends on the following selected O/I type :</p> <p>HG2G-5F, HG3G/4G series:</p> <p>Serial 2 maybe selected as the “O/I Link Master” for O/I Link communication, or select “Host Communication” as the communication interface for PLC communication.</p> <p>HG2G-S/-5S, HG1F/2F/3F/4F series:</p> <p>Not Supported.</p> <p>Touch:</p> <p>Select the O/I Link Master as the communication interface for th O/I Link communication and the External Device Communication as the communication interface for External Device communication.</p>	<p>The use of Serial 2 depends on the following selected O/I type.</p> <p>HG2G-5F, HG3G/4G series:</p> <p>Select “O/I Link Slave” for O/I Link communication.</p> <p>HG2G-S/-5S, HG1F/2F/3F/4F series:</p> <p>Not Supported.</p> <p>Touch:</p> <p>Select the O/I Link Slave as the communication interface for the O/I Link Communication</p>
	O/I Link	<p>Using the O/I Link adaptor depends on the selected O/I type:</p> <p>HG2G-5F, HG3G/4G series:</p> <p>Not available.</p> <p>HG2G-S/-5S, HG1F/2F/3F/4F series:</p> <p>Select “O/I Link Master”.</p> <p>Touch:</p> <p>Not Supported.</p>	<p>Using the O/I Link adaptor depends on the selected O/I type:</p> <p>HG2G-5F, HG3G/4G series:</p> <p>Not available.</p> <p>HG2G-S/-5S, HG1F/2F/3F/4F series:</p> <p>Select “O/I Link Slave” as the interface used for O/I Link communication.</p> <p>Touch:</p> <p>Not Supported.</p>
	Baud Rate	Match to the setting of O/I Link slave.	Match to the setting of O/I Link master.
	Project Settings - System	Start Time	Set it according to the environment.
	Use System Area	When Use System Area is selected, we recommend that you make the setting so that there is no overlap. Overlap between system areas can affect operation.	
	Use System Areas 3, 4		
	Watch Dog		
	Device		
	Time	Set according to your application.	

3 Communication Service

The Master is equipped with registers for changing the slave connection settings and for monitoring the online status of the slaves. In addition, the slaves are equipped with a register that can be used to monitor the polling period of the master.



Online status indicates that the master and a slave are communicating normally, and offline status indicates that either the master is not communicating with a slave or there is a problem with the communication.

3.1 Slave Registration Setting Register (LSD102 in the master)

This register can be used to change the slave connection settings. You can freely add and remove slaves using this master register. The configuration of the register is given below.

Slaves whose corresponding bit is “1” are registered.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Always
102	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

After power is applied or the screen data is downloaded, the slaves to be used are cleared in accordance with the connection settings made using WindO/I-NV2 or WindO/I-NV3. To add or remove slaves, set their corresponding bits to 1 or 0 respectively.

3.2 Slave Online Data Register (LSD104 in the master)

This register can be used to monitor the online status of the slaves registered to the O/I Link. The configuration of the register is given below.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Always
104	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Bits corresponding to online slaves are 1, and bits corresponding to offline slaves or slaves not selected for connection are 0.



If the values of the data for the slave registration setting and the slave online data register are not the same, either the registered slave does not exist, or there is some problem with the slave connection. Check the wiring and the settings.

3.3 O/I Link Polling Period Register (LSD101 in the slaves)

This register stores the value of the polling period from the master in 10 msec steps. Use it to provide an indication of the response time from the master.

3.4 Slave Error information Register(LSD106 in the master)

When the communication error occurred between master and any slave, the bit of each slave turns on for one scan time.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Slave	Always
106	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

4 Communication Status Confirmation

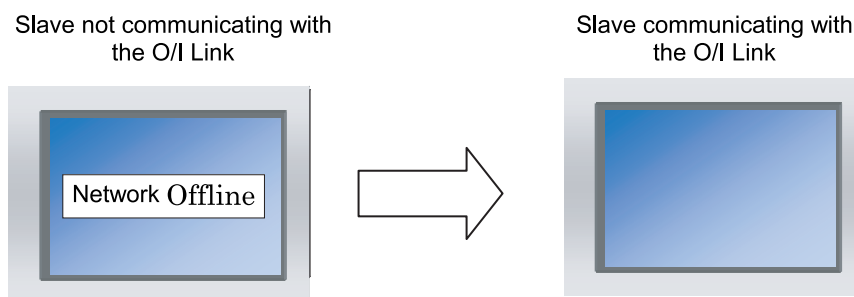
4.1 Master Error Processing

The master does not display O/I Link errors. To monitor for errors, compare LSD102 and LSD104. If they are different, it indicates that there is a communication problem.

In the case of PLC Link communication with the PLC, errors are displayed and the error information is written to the System Area.

4.2 Slave Error Processing

When a slave is not engaged in O/I Link communication with the master, Network Offline is displayed in the center of the screen. The screen is cleared when communication starts.



4.3 Status of a Slave in the O/I Link

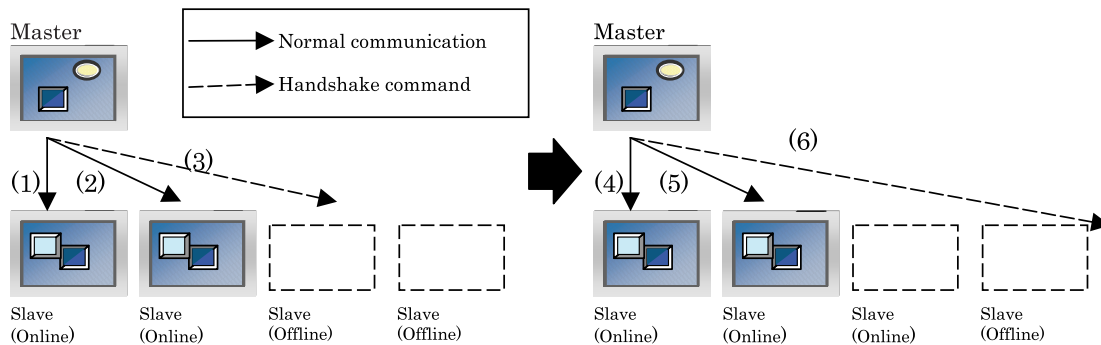
If a slave unit does not exist or fails to engage in normal communication even though the slave is registered in the Slave Registration Setting Register (LSD102 in the master), the status of the slave is referred to as “offline” status.

Conversely, the status of the slave in which normal communication is executed is referred to as “online” status.

When a slave unit is in offline status, the master always monitors the slave status if it is online. In one cycle, the master searches for one slave unit in the offline status after the master completes the communications with all slave units in online status. Two sets of O/I cycle periods are required in order to recognize two slave units in offline status.

Fig. When 2 slave units are in offline status:

The numbers in () indicate the processing sequence.



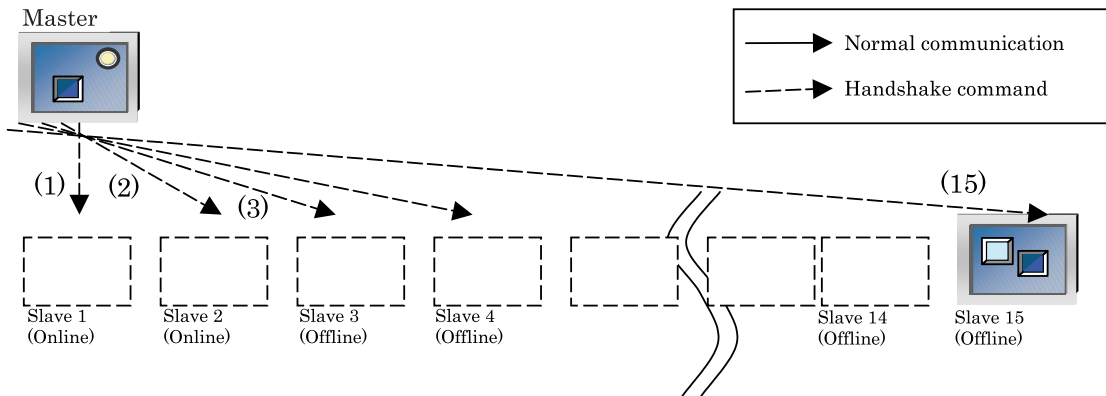
The Time Out duration for the command that detects the presence/absence of a slave (hereafter referred to as a handshake command) is set to 30 msec on the master.

When there are one or more slave units in the offline status, the total scanning time of the O/I Link will increase by 30 msec. Even when 15 slave units are in offline status, the increase will remain at 30 msec.

After power is turned on, the master sends handshake commands to the registered slave units in the ascending sequence and launches normal communication starting with the slave units that send back the response.

When 15 slave units are registered, and only the 15th slave actually exist, the master sends handshake commands sequentially starting from the 1st slave unit until it recognizes the 15th slave unit. The whole sequence takes approximately 420 msec (30 msec x 14).

After the data transmission with the 15th slave unit is completed, the master registers the slave to LSD102 and performs normal communications with Slave 15. During the communication, the master sends a handshake command to one slave unit in offline status per one O/I Link scanning.



4.4 Slave changes status from Online to Offline in the O/I Link

When a slave does not respond during normal communication between the master and a slave, the master aborts the processing and starts communicating with the next slave unit. During the next O/I Link cycle, the master will again send a command to the slave unit with which the error occurred during the previous cycle. If the slave does not respond again, the slave will set to the offline state and will be deleted from Slave online information register (LSD104 in the master).

5 Notice to O/I link

5.1 Runtime System Software Version of the MICRO/I or Touch

The O/I Link communication will not function if the MICRO/I or Touch with runtime system software version 1.7 and above are used with older version of the software, 1.6x or earlier.

5.2 Communication Traffic Volume of the O/I Link Network

The network scanning time which includes the time to retrieve data from PLC and also to communicate to O/I link depends on the amount of communication on the network.

When there is a lot of traffic on the network, scanning may take more time, as a result it may cause O/I to operate slow.

At the worst case, O/I is not able to complete scanning, and displays an error message, "Network Off-line".

Please follow instructions below to improve performance. These instructions should reduce amount of communication on the network.

Item	Measure
When Base Screen or Popup Screen is switched frequently.	Please modify the settings so that Screen isn't switched frequently.
When monitoring schedule is set shorter than the time needed for scanning network.	Please consider the time needed for network scanning before setting schedule for alarm log and parts. We strongly recommend only using alarm log setting on Master.
When there are many devices per screen.	Please reduce number of devices set per screen.



You can check the scanning time on the network by LSD6 of the master O/I and LSD101 of the slave O/I.

5.3 Notice of the case of HG1F

- Can not use the function of using serial I/F2 (user communication, printer) and O/I Link at the same time in HG1F.
- O/I Link communication is stop, when put the maintenance cable into the serial I/F2 in HG1F.

6 Result on the Performance Evaluation of the MICRO/I

Evaluation of O/I Link performance with the MICRO/I is conducted in the following conditions.

6.1 Conditions

PLC	PLC Link compatible MELSEC-Q Series	Baud Rate: 115200 bps
O/I Link	No. of units: 16 Total cable length: 200 m	Baud Rate: 115 kbps

6.1.1 When devices of the same type are set for Slave 1 to 15

For master unit, enable System Area 1 to 4 (12 words data).

For the Slave 1 to 15, enable System Area 1 to 4(12 words data) and 50 words data which are same as each Slaves.

O/I Link Polling Period (LSD101 in the slaves)	220 msec
Read scan of PLC device (LSD6 in the master)	150 msec ^{*1}

*1. Since the master performs lump communication for the devices used redundantly with the slave units, the communication time can be reduced.

6.1.2 When devices of different types are set for Slave 1 to 15

For master unit, enable System Area 1 to 4 (12 words data).

For the Slave 1 to 15, enable System Area 1 to 4(12 words data) and 50 words data which are different from each Slaves.

O/I Link Polling Period (LSD101 in the slaves)	250 msec
Read scan of PLC device (LSD6 in the master)	1360 msec



The above measurement results vary depending on the Host I/F Driver or Communication Driver.
Use the values as a rough guide. Also make sure to evaluate the performance before constructing a system.

Chapter 4 DM Link Communication

1 Outline

1.1 Outline

With the DM Link communication, devices such as PLCs, PCs, and board computers (hereafter referred to as external device) read from and write to dedicated DM Link memory (hereafter referred to as data memory) in the MICRO/I or Touch. Over the serial interface, when one external device is communicating with one MICRO/I or Touch using this communication method it is called DM Link 1:1 communication, and when one external device is communicating with multiple MICRO/I or Touch units, it is called DM Link 1:N communication. When external devices and the MICRO/I are communicating using DM Link communication over the Ethernet interface (UDP protocol), it is called DM Link Ethernet (UDP) communication.

Each methods use a special protocol developed by IDEC that does not require the external device to run a communications program. DM Link Ethernet (UDP) Communication is only supported with HG2G-5F, HG3G/4G.

1.2 DM Link Communication

Using DM Link communication, the external device can read from and write to the MICRO/I or Touch data memory. Conversely, of course, the MICRO/I or Touch can display and modify the contents of its data memory.

1.2.1 Reading Data from the External Device

By operating data input parts placed in the MICRO/I or Touch, it is possible to modify the contents of the data memory and then read this memory using the external device.

1.2.2 Writing Data to the External Device

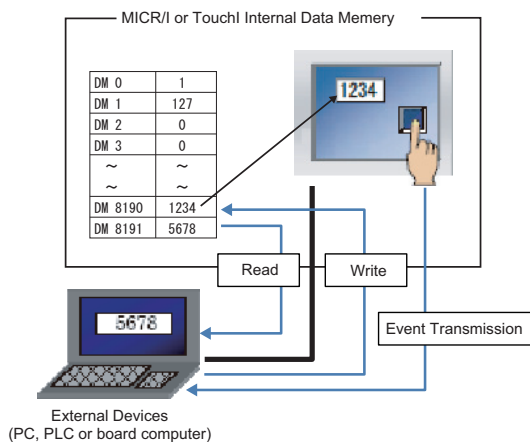
The external device can write to the MICRO/I or Touch data memory and thereby modify the content of display parts in the MICRO/I or Touch.

1.2.3 Event Transmission from the MICRO/I or Touch

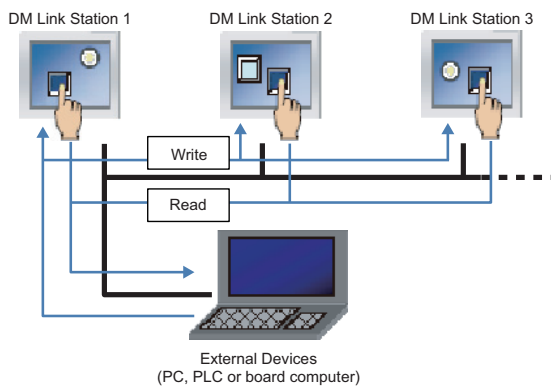
When values are written to the data memory on the MICRO/I or Touch, there is a function to send the values from the MICRO/I or Touch. This is called Event Transmission.

Event transmission is not supported with DM Link 1:N communication and DM Link Ethernet (UDP) communication.

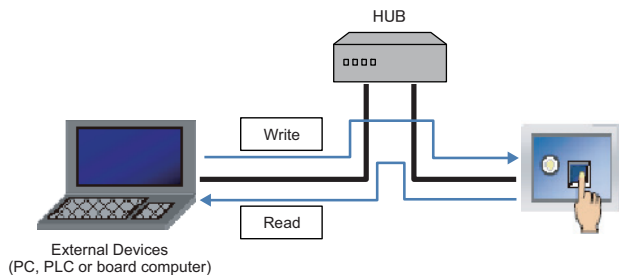
DM Link 1:1 Communication



DM Link 1:N Communication



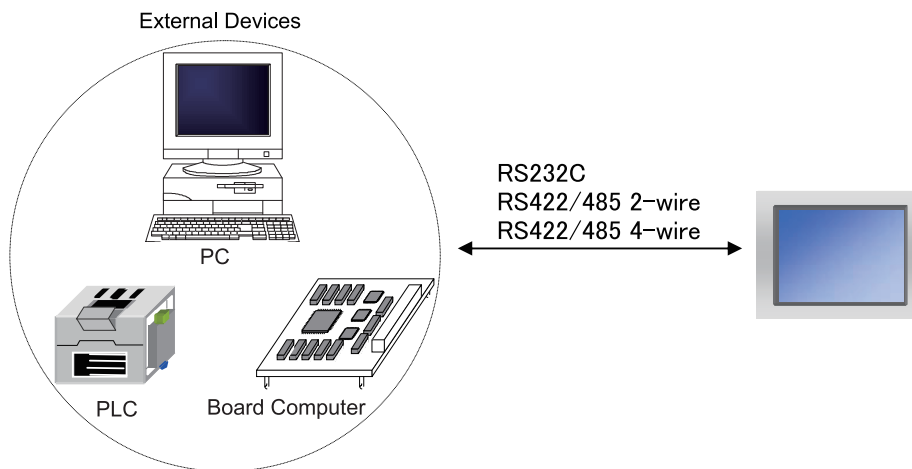
DM Link Ethernet (UDP) Communication



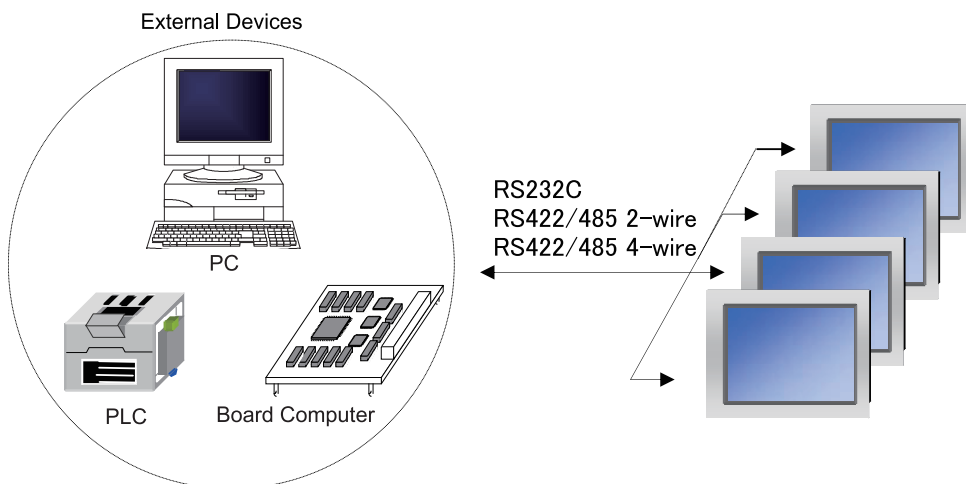
2 System Configuration

The system configuration for the DM Link communication is shown below.

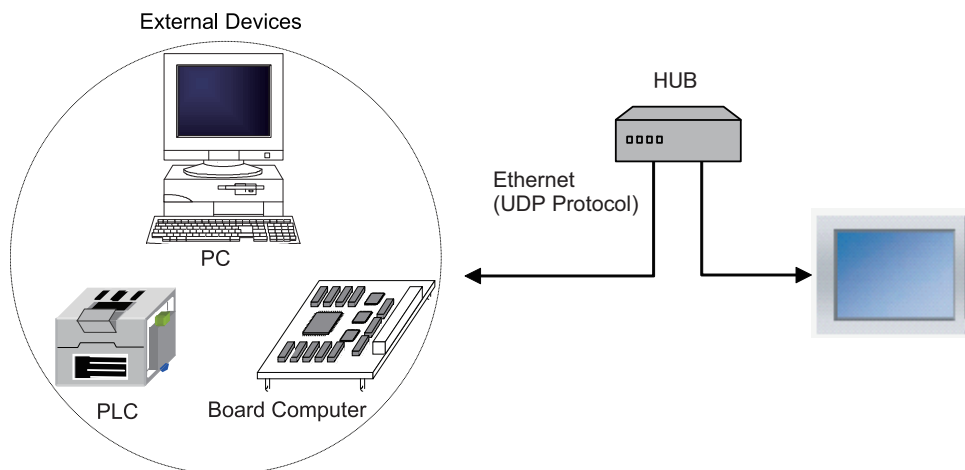
2.1 DM Link 1:1 Communication



2.2 DM Link 1:N Communication



2.3 DM Link 1:N Communication



- When using an RS232C connection with DM Link 1:N communication, only one MICRO/I or Touch unit can be connected.
- When constructing a system using RS422/485, design the circuit so that when the external device receiver input is not connected, the receiver output is in the mark state.

3 Wiring

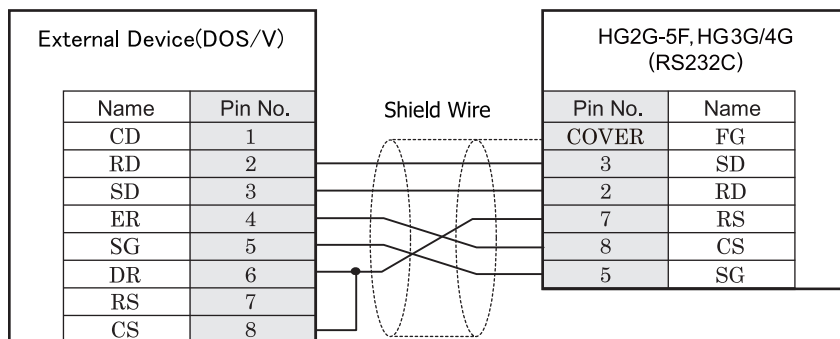
The following is an example of wiring for use with DM Link communication.

3.1 RS232C

3.1.1 With Hardware

External Device: DOS/V Personal Computer System.

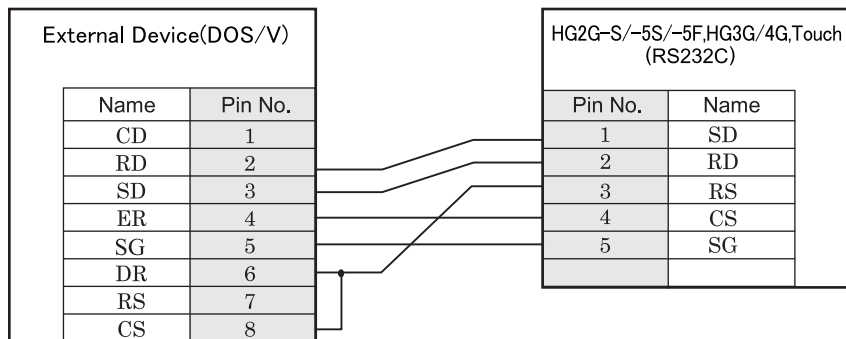
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector

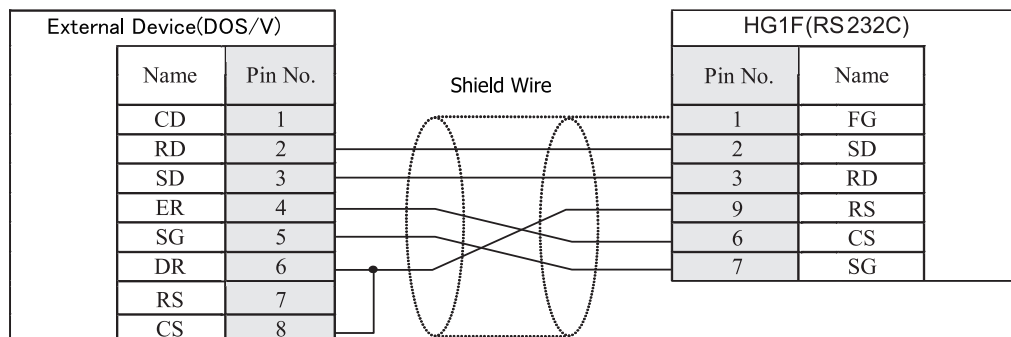
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



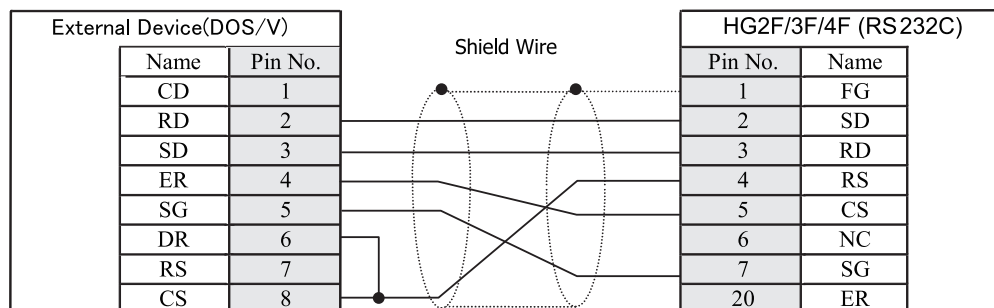
D-sub, 9P connector

Terminal

HG1F (Connector)

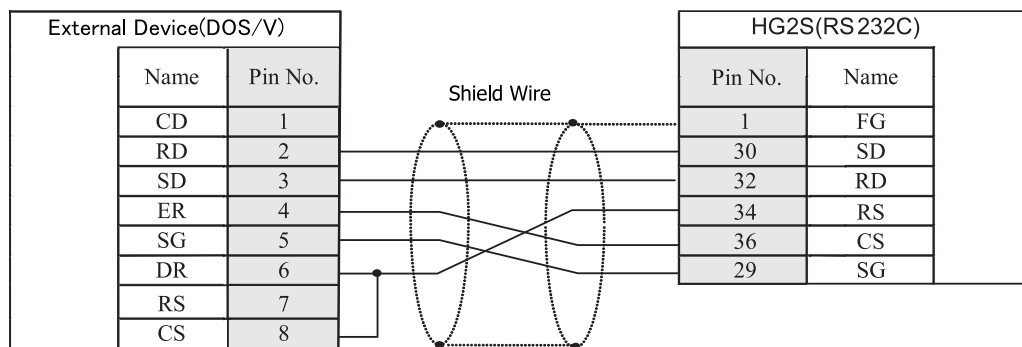
D-sub, 9P connector

D-sub, 9P connector type

HG2F/3F/4F

D-sub, 9P connector

D-sub, 25 connector type

HG2S

D-sub, 9P connector

D-sub, 37P connector plug type

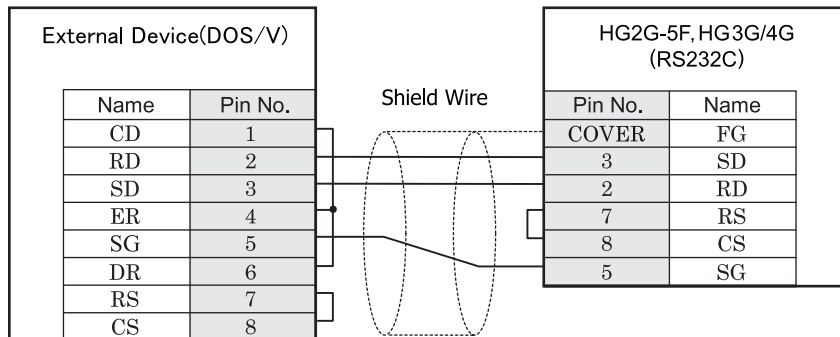


The pin numbers are for a typical personal computer. Be sure to check the pin arrangement for the external device that you will be using.

3.1.2 Without Hardware

External Device: DOS/V Personal Computer System.

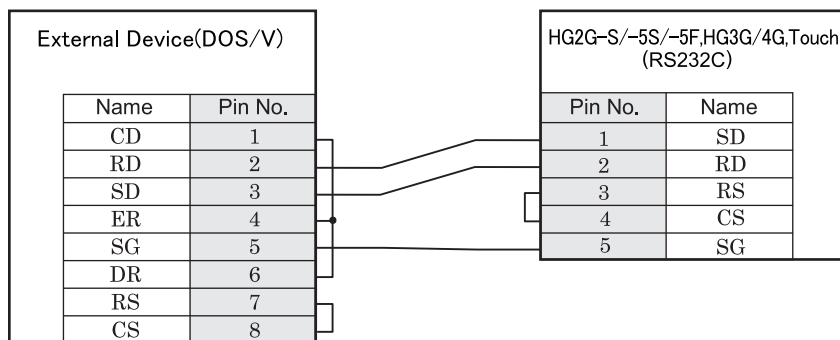
HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

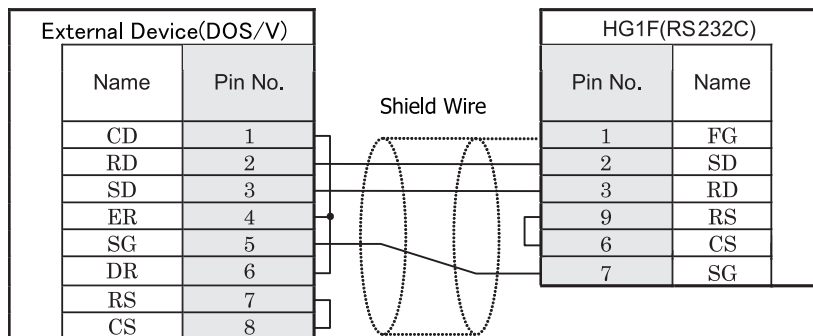
HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



D-sub, 9P connector plug type

Terminal

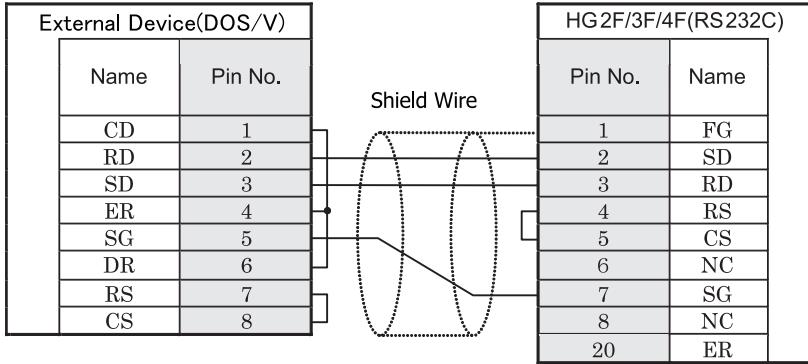
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector type

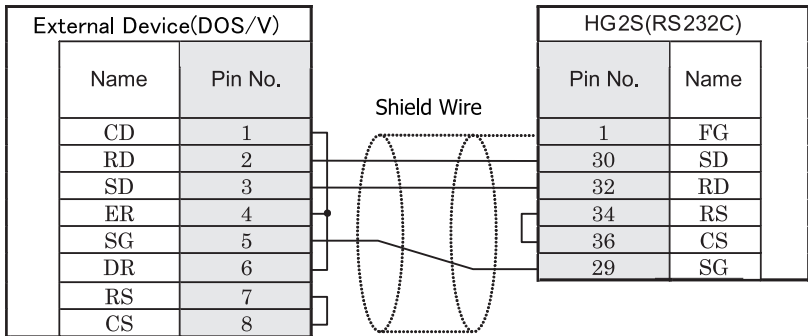
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector plug type

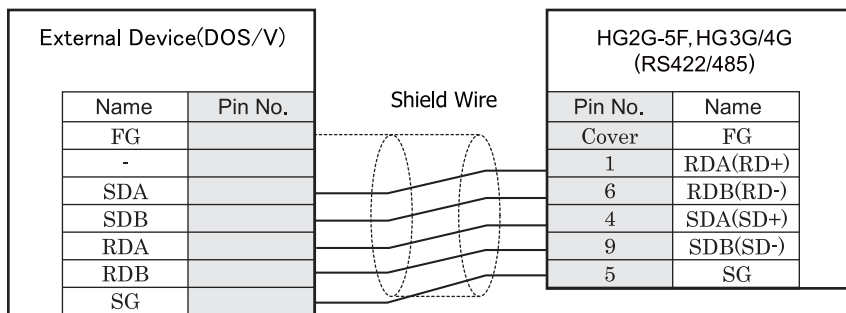


The pin numbers are for a typical personal computer. Be sure to check the pin arrangement for the external device that you will be using.

3.2 RS422/485

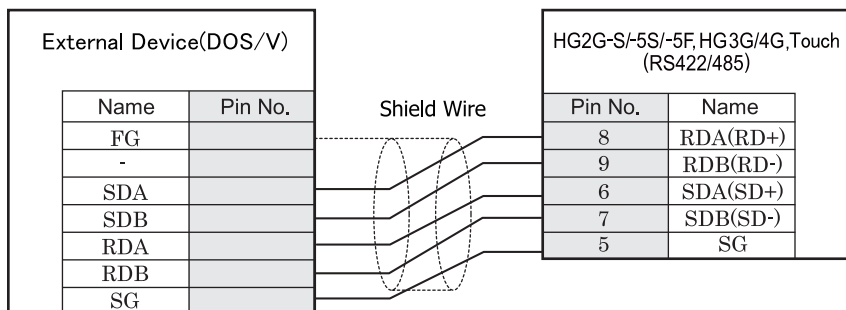
3.2.1 4-wire

HG2G-5F, HG3G/4G (Connector)



D-sub, 9P connector plug type

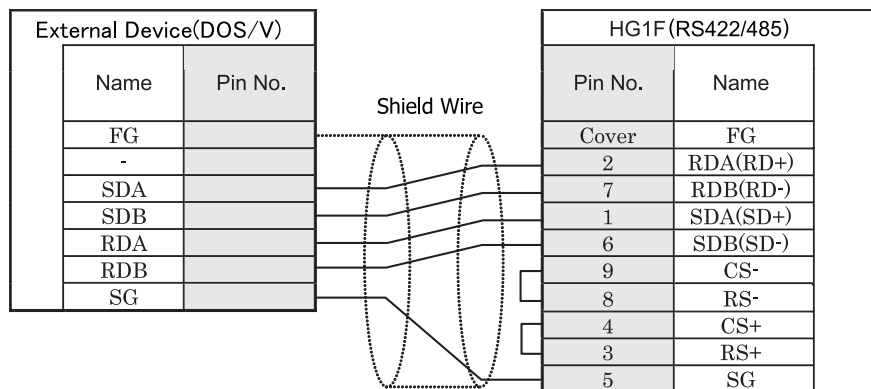
HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



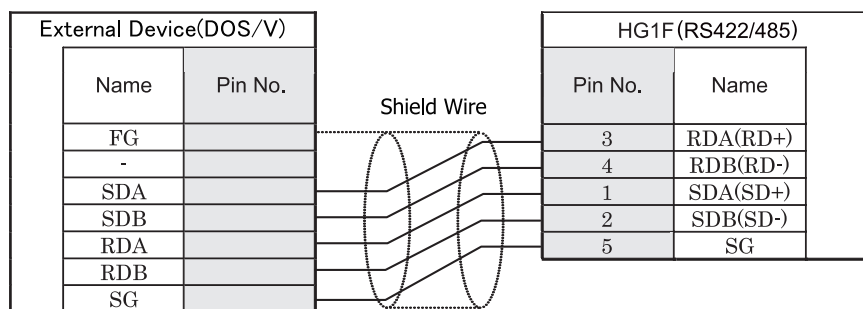
Terminal



- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)

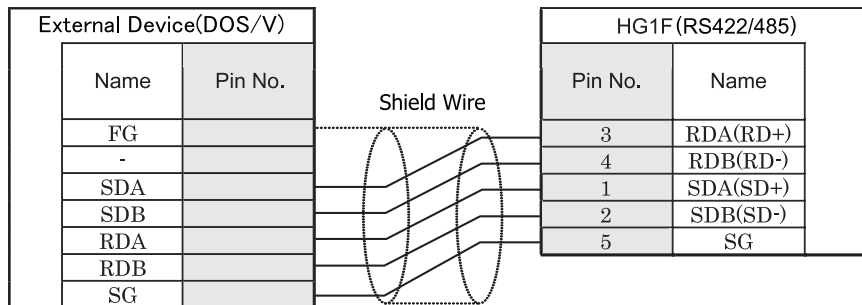
D-sub, 9P connector type

HG1F (Terminal)

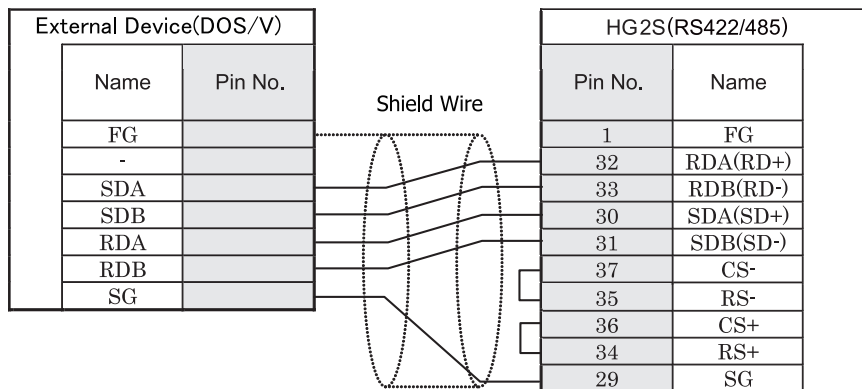
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 25P connector type

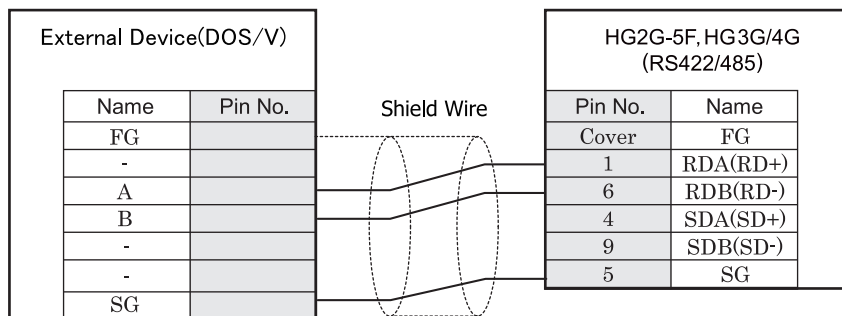
HG2S

D-sub, 37P connector plug type

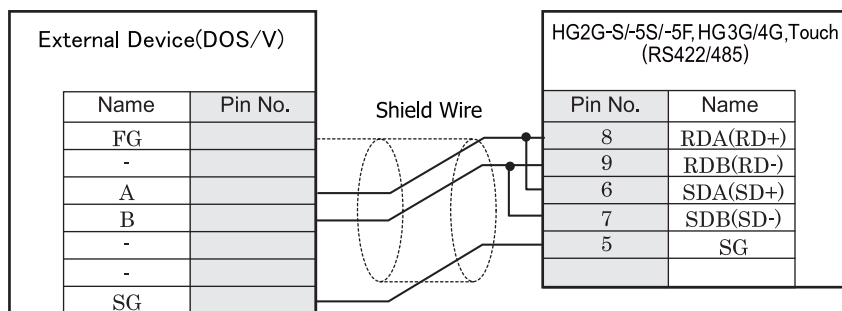


There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.2.2 2-wire

HG2G-5F, HG3G/4G (Connector)

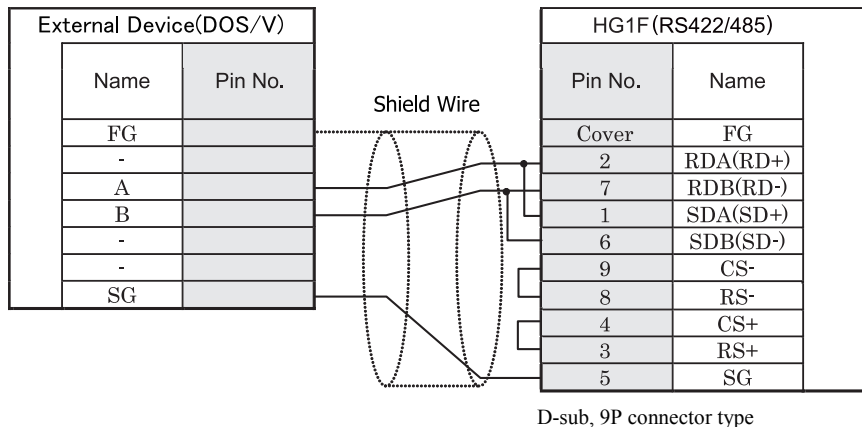
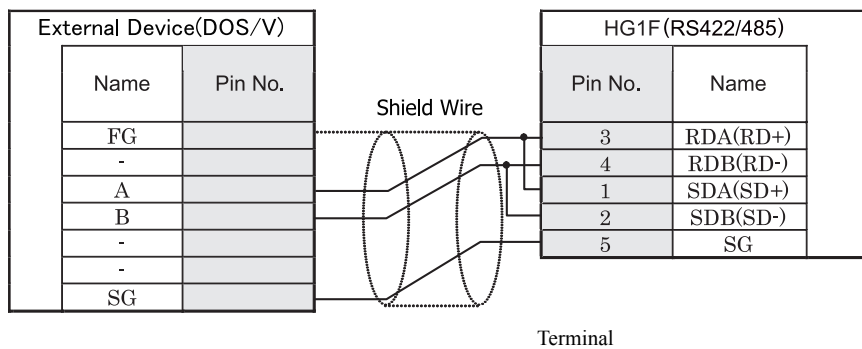
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

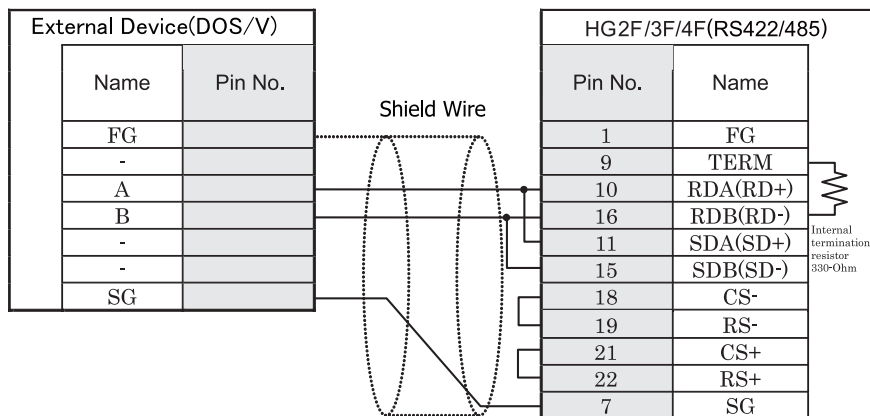
Terminal



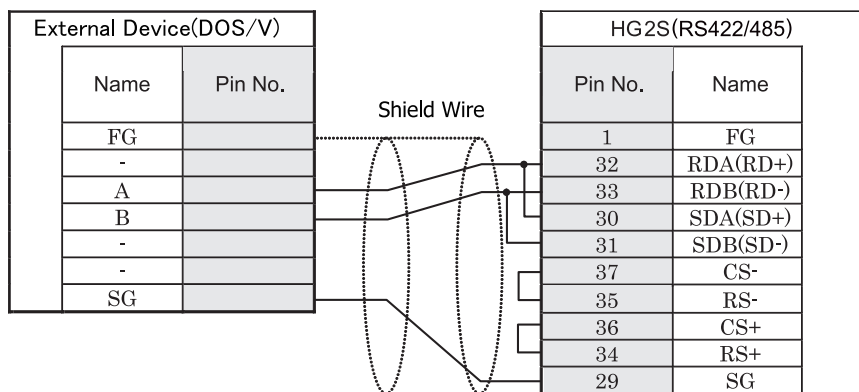
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F

D-sub, 25P connector type

HG2S

D-sub, 37P connector plug type



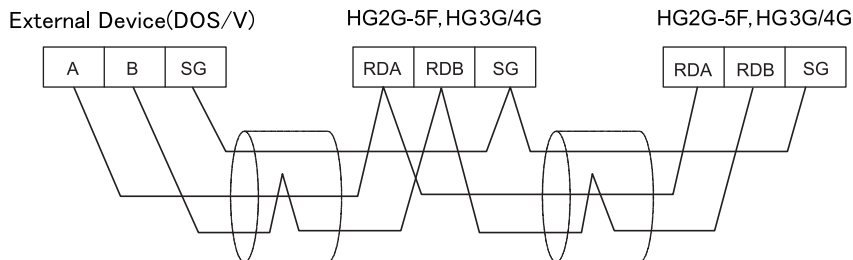
There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.2.3 RS422/485 2-wire (DM Link 1:N Communication: N=2)

In the following diagram, only describe the terminal name.

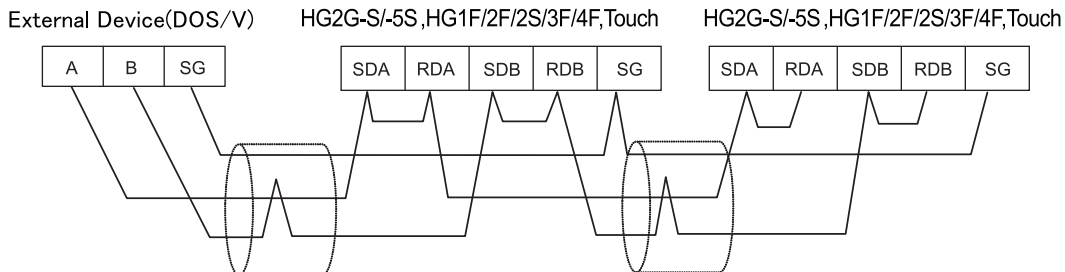
Refer to Chapter 4 "3.2.2 2-wire" on page 581 for the correspondence between the terminal name and the pin number

HG2G-5F, HG3G/4G Wiring Diagram



If more than one MICRO/I or Touch are connected to an external device, select "RS422/485 2-wire" as "Serial Interface".

HG2G-S/-5S, HG1F/2F/2S/3F/4F, Touch Wiring Diagram



- There is no pin number corresponding to TERM on the HG1F/HG2S. When inserting a termination resistor, use a terminator switch or communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- If more than one MICRO/I or Touch are connected to an external device, select "RS422/485 2-wire" as "Serial Interface".
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

4 Communication Specifications

4.1 Communication Method

The communication method varies depending on the interface selected.

4.1.1 DM Link 1:1 Communication

Interface	Communication Method
RS232C	Full Duplex
RS422/485 2-wire	Half Duplex
RS422/485 4-wire	Full Duplex

4.1.2 DM Link 1:N Communication

Interface	Communication Method
RS232C	Half Duplex
RS422/485 2-wire	
RS422/485 4-wire	

4.1.3 DM Link Ethernet (UDP) Communication

Interface	Protocol
Ethernet	UDP/IP

4.2 Communication Conditions

4.2.1 DM Link 1:1 Communication / DM Link 1:N Communication

Item	Setting
Synchronization	Asynchronous
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200bps
Data Bits	7 or 8 bits
Stop Bits	1 or 2 bits
Parity	Even, Odd or None

4.3 Flow control

The following choices are available for the flow control method.

4.3.1 DM Link 1:1 Communication

Interface	Flow Control
RS232C	Hardware/None
RS422/485 2-wire	None
RS422/485 4-wire	

4.3.2 DM Link 1:N Communication

Interface	Flow Control
RS232C	Hardware/None
RS422/485 2-wire	None
RS422/485 4-wire	

5 Data Memory (DM) Allocation

With the DM Link communication, DM0 to DM13 and DM16 to DM8191 are the user area that you can freely use. DM14 and DM15 are allocated as the event data transmission control area.

However, event transmission is not supported with DM Link 1:N communication and DM Link Ethernet (UDP) communication. The address range of DM Link Ethernet (UDP) communication is DM16 to DM8191. DM0 to DM15 cannot be used.

Data Memory	Description
DM0 to 11	User Area (Event Transmission can be available)
DM12, 13	User Area (Event Transmission is not available)
DM14	D0 to D11 Event Transmission enable/disable setting
DM15	Event area start address setting
DM16 to 8191	User Area

5.1 System Area

If you allocate DM for use as the system area, make the start address for the system area DM0 or after DM16 to avoid the overlapping DM14 and DM15. For further details regarding the system area, refer to the WindO/I-NV2 User's Manual or SmartAXIS Touch User's Manual.

5.2 D0 to D11 Event Transmission (DM14)

You can set whether or not DM0 to DM11 are to perform event transmission. When the value in DM14 is 1, system area event transmission is performed, and when it is 0, it is not performed. After power up the value in DM14 is set to 0. Use this in the case that DM0 to DM11 is specified as the system area.

5.3 Event Area Setting (DM15)

Specify the start address for the event area in DM15. The area after the specified address is then allowed to be used for event data transmission. For example, if the value 256 is written to DM15, the area from DM256 to DM8191 becomes the event area, and if the data in this area changes an event data transmission is performed. After power up, the value in DM15 is 512.

Event data transmission is not performed in the following cases:

- (1) When a value equal to or larger than 8192 is written to DM15.
- (2) When DM Link 1:N communication is selected.
- (3) When the serial interface is RS422/485 2-wire.
- (4) When data in the event area is modified by a write command from the external device.

5.4 User Area (DM16 to DM8191)

You can freely make use of the area from DM16 to DM8191. Use this area to exchange data with the external device.

6 DM Link Communication Settings

The settings required in WindO/I-NV2 or WindO/I-NV3 for the using the DM Link communication are located in the **Configuration - System Setup - Project** dialog box. (Refer to 1.3 and 1.4 in Chapter 2 of the WindO/I-NV2 User's Manual or SmartAXIS Touch User's Manual. Set the items in the following table in accordance with the external device that you will be using.

6.1 DM Link 1:1 Communication / DM Link 1:N Communication

Dialog Box Name - Tab Name	Setting Name	Description
Project Settings - Host I/F Driver or Communication Driver	Manufacturer	Select IDEC HG System or IDEC System.
	Host I/F Driver Communication Driver	Select DM Link 1:1 for DM Link 1:1 communication and DM Link 1:N for DM Link 1:N Communication.
	Transmission Wait	Set the time after which the MICRO/I or Touch sends a response command to the external device after receiving a command from the external device. The actual time until the response is sent is greater than the Transmission wait time and less than the Transmission wait time +10msec.
	Retry Cycles	This setting is not required.
	Time Out	
	With BCC	Select the checkbox if you want to perform BCC checking.
	Max Event Transmission Words (Only DM Link 1:1)	Set the max number of words for event transmission.
	Protocol (Only DM Link 1:1)	Select the number of protocol format. 0: Basic protocol format 1: Protocol format 1(Add an error code and "CR" to "ACK", "NAK" in Basic protocol format.) 2: Type 2 (follows the Basic protocol format, but ETX cannot be added when the BCC check is appended) Type 2 can only be selected for HG2G-S/-5S/-5F, HG3G/4G.
DM LINK No. (Only DM Link 1:N)	Set the DM Link station number.	
Project Settings - Communication Interface	Protocol	Select Host Communication.
	Baud Rate	Select the same setting used for the external device. (1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200bps)
	Data Bits	Select the same setting used for the external device. (7 or 8 bits)
	Stop Bits	Select the same setting used for the external device (1 or 2 bits)
	Parity	Select the same setting used for the external device. (Even, Odd or None)
	Serial Interface	Select the serial interface that you will be using. (RS232C, RS422/485 2-wire or RS422/485 4-wire)
	Flow Control	Select either Hardware or None.

Dialog Box Name - Tab Name	Setting Name	Description
Project Settings - System	Start Time	Set this to 0.
	Use System Area	Select this if you want to use the system area.
	Device	Specify the system area start Device address.
	Use System Areas 3, 4	Select this if you want to use the system areas 3 and 4.
	Watch Dog	If you select Watch Dog, set the Write Device and the Time (write interval). If you will transmit from the MICRO/I or Touch to the external device, set a write device for the Event Transmission area.
	Device	
	Time	

6.2 DM Link Ethernet (UDP) Communication

Dialog Box Name - Tab Name	Setting Name	Description
Project Settings - Host I/F Driver	Manufacturer	Select IDEC HG System .
	Host I/F Driver	Select DM Link Ethernet (UDP) Communication.
	Transmission Wait	Set the time after which the MICRO/I sends a response command to the external device after receiving a command from the external device. The actual time until the response is sent is greater than the Transmission wait time and less than the Transmission wait time +10msec.
	Retry Cycles	This setting is not required.
	Time Out	
Project Settings - Communication Interface	Protocol	Select Host Communication.
	IP Address	Set the IP address for MICRO/I.
	Subnet Mask	Set the subnet mask for MICRO/I.
	Default Gateway	Set the default gateway for MICRO/I.
Project Settings - Host Port Extension	Port Number	Select the port number used for the communication.
Project Settings - System	Start Time	Set this to 0.
	Use System Area	Select this if you want to use the system area.
	Device	Specify the system area start Device address.
	Use System Areas 3, 4	Select this if you want to use the system areas 3 and 4.
	Watch Dog	If you select Watch Dog, set the Write Device and the Time (write interval).
	Device	
	Time	

7 DM Link 1:1 Communication Format

With DM Link 1:1 communication, the following communication format is used.

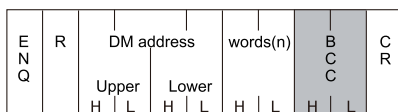
- Command (Response)
 - Read
 - Write
 - Transmission Control
 - Clear
- Event
 - Event Transmission

7.1 Read

This command is used by the external device to read the MICRO/I or Touch data memory. One command can read a maximum of 255 words of data.

7.1.1 Command

Format

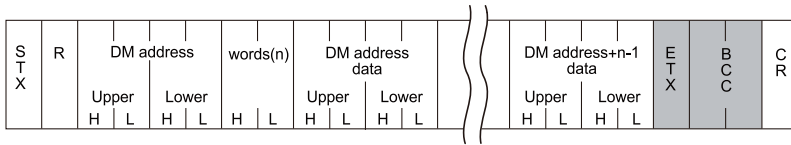


Detailed description

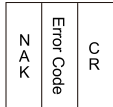
Command	Code	Description	Bytes
ENQ	05h	Command start	1
R	52h	Read Command	1
DM Address		Starting DM address for read. The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.1.2 Response

Format: Normal response



Format: Error response



Detailed description: Normal response

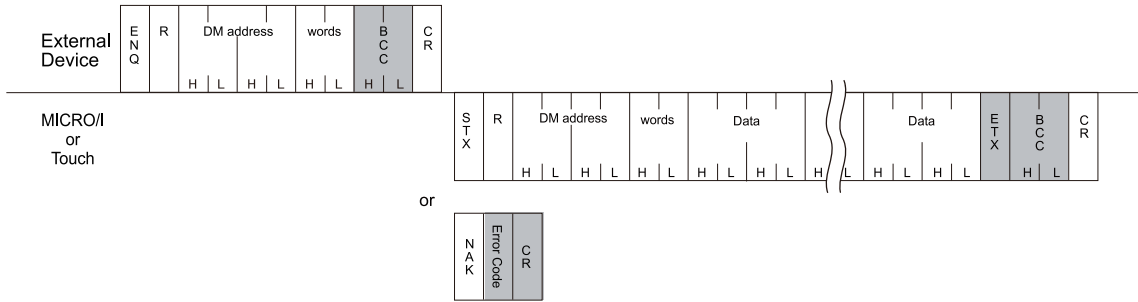
Command	Code	Description	Bytes
STX	02h	Response start	1
R	52h	Read response	1
DM address		Starting DM address for read. The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
Data		DM address data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
ETX	03h	Only required when 'with BCC' is set. (However, this is not added when Type 2 is selected for the Protocol.) At the end of the response data.	1
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.1.3 Response Command

Detailed description: Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Error Code		Refer to 10 Error Processing. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

7.1.4 Read Sequence



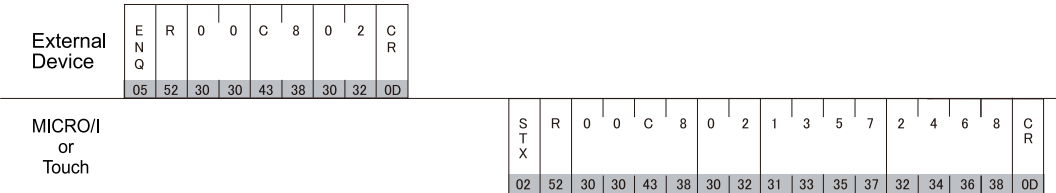
Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

7.1.5 Read Communication Example

- To read the two words of data in DM200 and DM201 (without BCC, Basic protocol format)

If the data in DM200 is 4951 (1357h), and the data in DM201 is 9320 (2468h) the sequence is as follows.

The DM address 200 (00C8h) is converted and expressed as ASCII code.



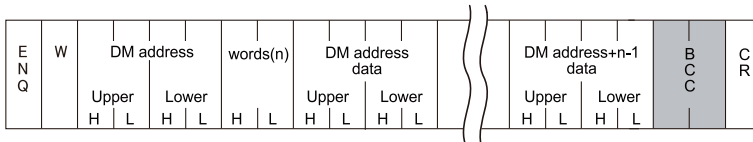
*The shaded part of the command is ASCII code.

7.2 Write

This command is used by the external device to write data to the MICRO/I or Touch data memory. One command can write a maximum of 255 words of data.

7.2.1 Command

Format

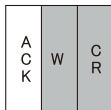


Detailed description

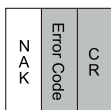
Command	Code	Description	Bytes
ENQ	05h	Command start	1
W	57h	Write Command	1
DM Address		DM address to begin writing from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to write The hexadecimal value expressed using ASCII code.	2
Data		DM ADDRESS DATA. The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.2.2 Response

Format: Normal response



Format: Error response



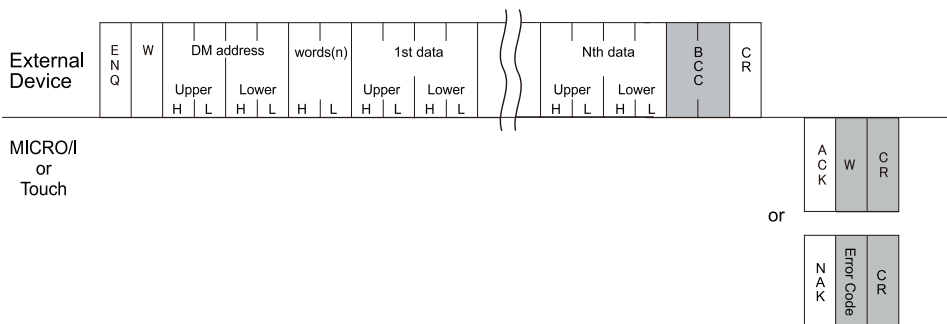
Detailed description: Normal response

Command	Code	Description	Bytes
ACK	06h	Write completed normally.	1
W	57h	Write response. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

Detailed description: Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Error Code		Refer to 10 Error Processing. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

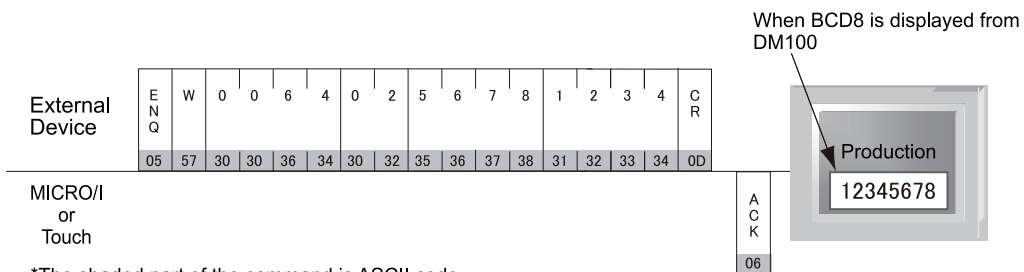
7.2.3 Write Sequence



Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

7.2.4 Write Communication Example

- Write 22136 (5678h) to DM100 and 4660 (1234h) to DM101 (without BCC, Basic protocol format)



7.3 Transmission Control

The external device command controls the transmission from the MICRO/I or Touch. The commands are Transmission Prohibited and Transmission Allowed. The Transmission Control commands are the same as the general X-ON and X-OFF commands. Therefore, you can use DM Link 1:1 Communication with an external device that can perform X-ON and OFF control without making any settings.

7.3.1 Stop Transmission Command

Format

D C 3

Detailed description

Command	Code	Description	Bytes
DC3	13h	Stop Transmission	1



- After the MICRO/I or Touch receives the DC3 command it sends up to a maximum of 15 bytes of data and then transmission is stopped.
- While transmission is stopped the MICRO/I or Touch can store up to 1023 bytes of transmission data. If Event Transmission occurs that would cause this number to be exceeded, the MICRO/I or Touch stops operating until the data is output.
- There is no response to the Transmission Prohibited command.

7.3.2 Transmission Allowed Command

Format

D C 1

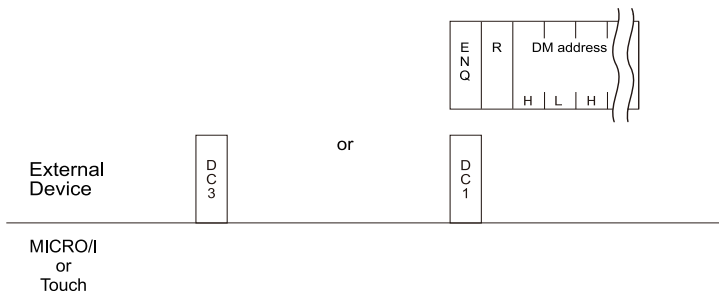
Detailed description

Command	Code	Description	Bytes
DC1	11h	Transmission Allowed	1



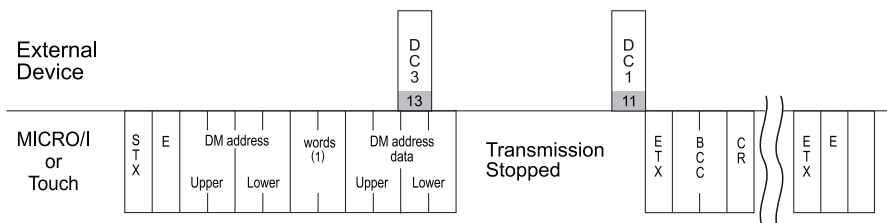
- After the MICRO/I or Touch receives DC1, it sends out all event data transmissions that were generated while transmission was stopped.
- There is no response to the Transmission Allowed command.
- When the ENQ (Start Command, 05h) is received, the MICRO/I or Touch also enters the Transmission Allowed state.
- After receiving ENQ, the MICRO/I or Touch sends out all event data transmissions generated while transmission was stopped.
- After receiving ENQ, the MICRO/I or Touch receive buffer is cleared.

7.3.3 Transmission Control Sequence

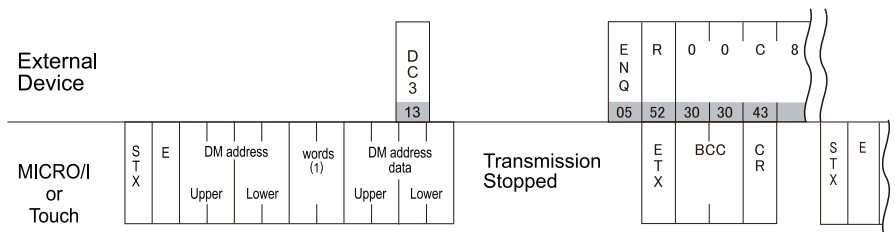


7.3.4 Transmission Control Communication Example

Example 1: Transmission stopped by DC3 and started by DC1



Example 2: Transmission stopped by DC3 and started by ENQ



*The shaded part of the command is ASCII code.

7.4 Clear Command

This external device command clears the MICRO/I or Touch receive buffer.

7.4.1 Command

Format

E
O
T

Detailed description

Command	Code	Description	Bytes
EOT	04h	Clear the receive buffer	1



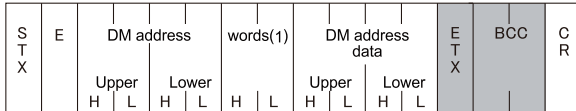
When the MICRO/I or Touch receives the EOT command, all data received prior to receiving it is cleared.

7.5 Event Transmission

This is used to perform Event Transmission when a value in the MICRO/I or Touch data memory is changed

7.5.1 Command

Format



Detailed description

Command	Code	Description	Bytes
STX	02h	Command start	1
E	45h	Event Transmission command	1
DM Address		Event Transmission address. The hexadecimal value expressed using ASCII code.	4
Words		Event Transmission words. The hexadecimal value expressed using ASCII code.	2
Data		DM Address data. The hexadecimal value expressed using ASCII code.	4
ETX	03h	Only required when "with BCC" is set. (However, this is not added when Type 2 is selected for the Protocol.) Command end of the event transmission data.	1
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

4

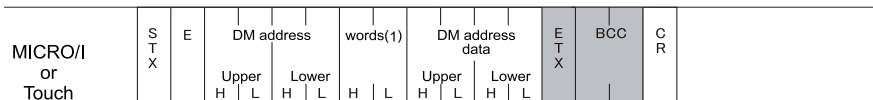
DM Link Communication



- Number of Event Transmission words should not be larger than the number of Max Event Transmission Words. If Max Event Transmission Words is 0, then Event Transmission Words is set to 1.
- The Max Event Transmission Words setting is set from 0 to 255.

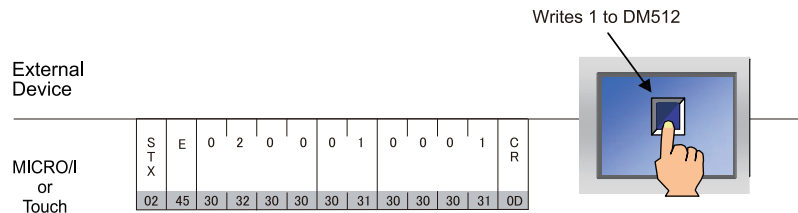
7.5.2 Event Data Transmission Sequence

External Device



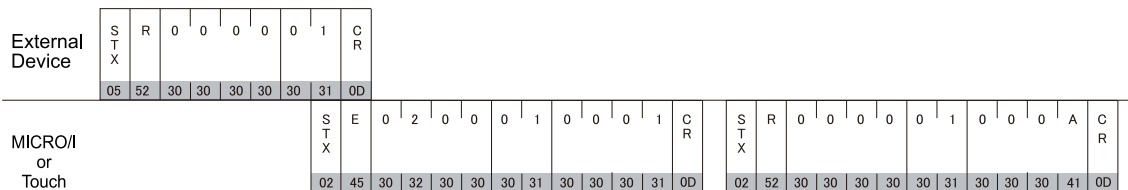
7.5.3 Event Data Transmission Communication Example

Example 1: Write 1 to DM512 (without BCC)



*The shaded part of the command is ASCII code.

Example 2: When the above example occurred in the middle of a read (without BCC)



*The shaded part of the command is ASCII code.

8 DM Link 1:N Communication Format

The communication format with DM Link 1:N Communication is as follows.

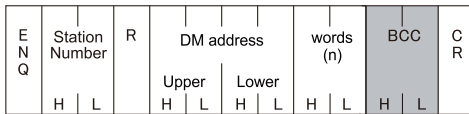
- Command (Response)
 - Read
 - Write
 - Clear

8.1 Read

The Read command is used by the external device to read the MICRO/I or Touch data memory. One command can read a maximum of 255 words of data.

8.1.1 Command

Format

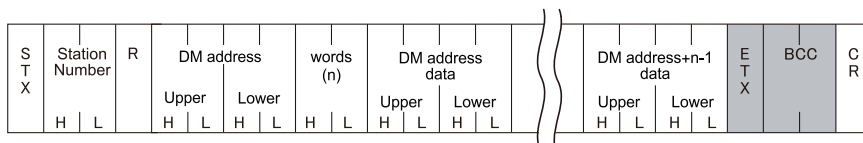


Detailed description

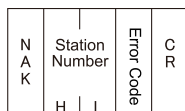
Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Station Number		DM Link Station Number expressed in ASCII.	2
R	52h	Read Command	1
DM address		DM address to start reading from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

8.1.2 Response

Format: Normal response



Format: Error response



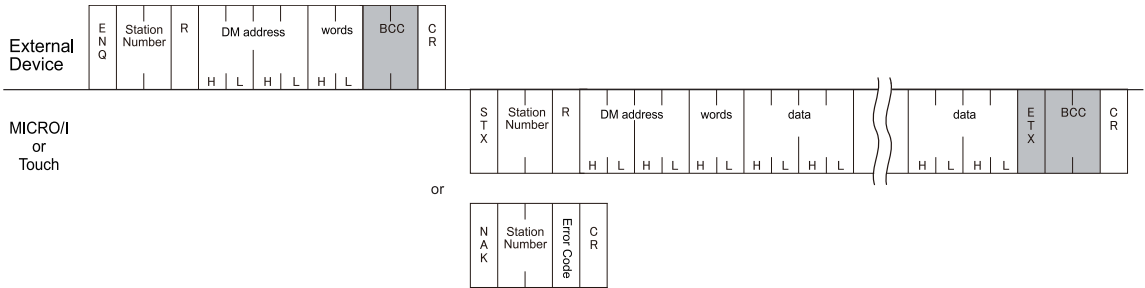
Detailed description: Normal response

Command	Code	Description	Bytes
STX	02h	Response start	1
Station Number		DM Link Station Number expressed in ASCII.	2
R	52h	Read response	1
DM address		DM address to start reading from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
ETX	03h	Only added when 'with BCC' is set. End of the response data.	1
BCC		Only added when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

Detailed description: Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Station Number		DM Link Station Number expressed in ASCII.	2
Error Code		Refer to 10 Error Processing.	1
CR	0Dh	End	1

8.1.3 Read Sequence



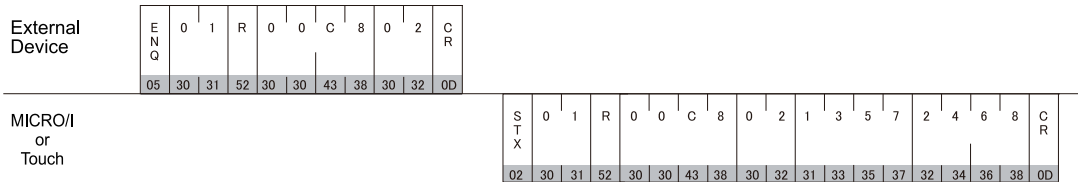
Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

8.1.4 Read Communication Example

- Read the two words of data from DM200 and DM201 of DM Link Station Number 1 (without BCC)

If the data in DM200 is 4951 (1357h), and the data in DM201 is 9320 (2468h) the sequence is as follows.

The DM address 200 (00C8h) is converted to ASCII code and stored.



*The shaded part of the command is ASCII code.

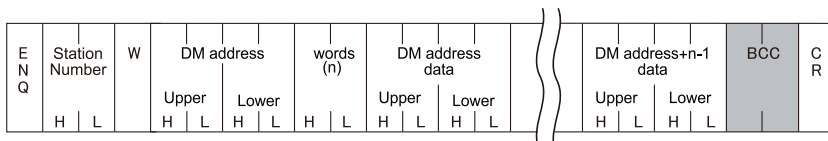
8.2 Write

This command is used by the external device to write data to the MICRO/I or Touch data memory.

One command can write a maximum of 255 words of data.

8.2.1 Command

Format



Detailed description

Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Station Number		DM Link Station Number expressed in ASCII.	2
W	57h	Write Command	1
DM Address		DM address to start writing from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to write The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
BCC		Only added when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

8.2.2 Response

Format: Normal response

A C K	Station Number		W	C R
	H	L		

Format: Error response

N A K	Station Number		Error Code	C R
	H	L		

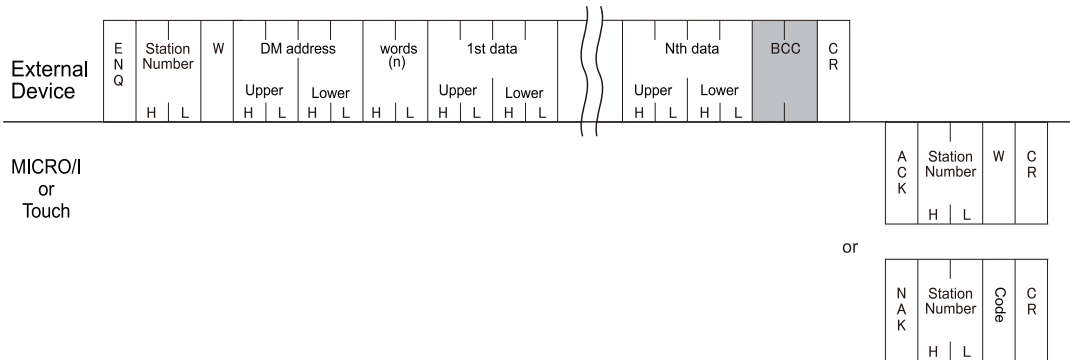
Detailed description: Normal response

Command	Code	Description	Bytes
ACK	06h	Write finished correctly.	1
Station Number		DM Link Station Number expressed in ASCII.	2
W	57h	Write response	1
CR	0Dh	End	1

Detailed description: Error response

Transmission Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Station Number		DM Link Station Number expressed in ASCII.	2
Error code		Refer to 10 Error Processing.	1
CR	0Dh	End	1

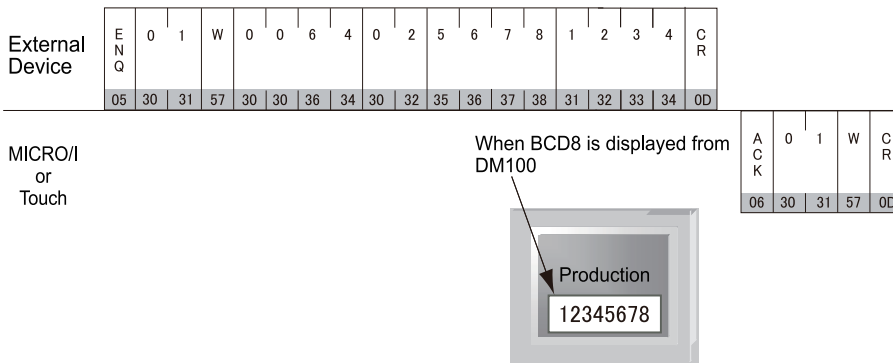
8.2.3 Write Sequence



Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

8.2.4 Write Communication Example

- Write 22136 (5678h) to DM100 and 4660 (1234h) to DM101 (without BCC, Basic protocol format)



*The shaded part of the command is ASCII code.

8.3 Clear

This command is used by the external device to clear the MICRO/I or Touch receive buffer.

8.3.1 Command

Format

E O T

Detailed description

Command	Code	Description	Bytes
EOT	04h	Clear receive buffer	1



When the MICRO/I or Touch receives the EOT command, all data received prior to receiving it is cleared.

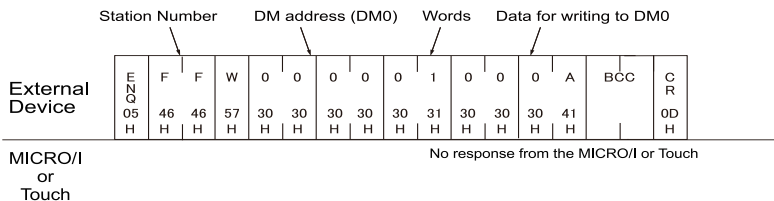
8.4 Station Number

With DM Link 1:N Communication, the MICRO/I or Touch receives commands when the station number is its own station number, FFh or 00h. The operations that take place are given in the following table.

Station Number	Operation
The station number of the MICRO/I or Touch	Reads from or writes to the data memory and returns a response. This is used in normal operation.
FFh	Writes to the data memory, but does not return a response. This is used to write to all connected MICRO/I or Touch units at one time.
00h	Reads from the data memory, and returns a response. This is used for monitoring.

8.4.1 Communication Example

Example: Write Ah to DM0 (with BCC)



9 DM Link Ethernet (UDP) Communication

The communication format with DM Link Ethernet (UDP) Communication is as follows.

- Command (Response)
 - Read
 - Write

9.1 Read

The Read command is used by the external device to read the MICRO/I data memory.

One command can read a maximum of 255 words of data.

The MICRO/I returns a response to the device (command source IP address and port number) that sent the command.

9.1.1 Command

Format

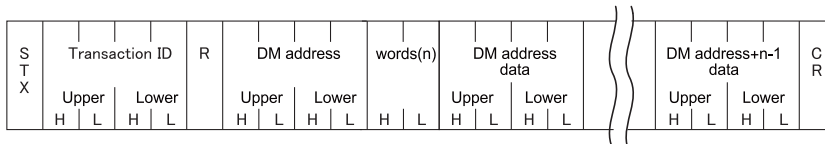
E N Q	Transaction ID				R	DM address				words(n)		C R
	Upper		Lower			Upper		Lower		H	L	
	H	L	H	L		H	L	H	L			

Detailed description

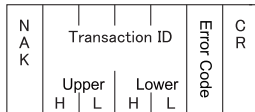
Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Transaction ID		MICRO/I sets an ID on the external device side. Specify the ID in a range from 0000h to FFFFh with the hexadecimal value expressed using ASCII code.	4
R	52h	Read Command	1
DM address		DM address to start reading from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
CR	0Dh	End	1

9.1.2 Response

Format: Normal response



Format: Error response



Detailed description: Normal response

Command	Code	Description	Bytes
STX	02h	Response start	1
Transaction ID		MICRO/I stores the Transaction ID which is set by the external device. The hexadecimal value expressed using ASCII code.	4
R	52h	Read response	1
DM address		DM address to start reading from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
CR	0Dh	End	1

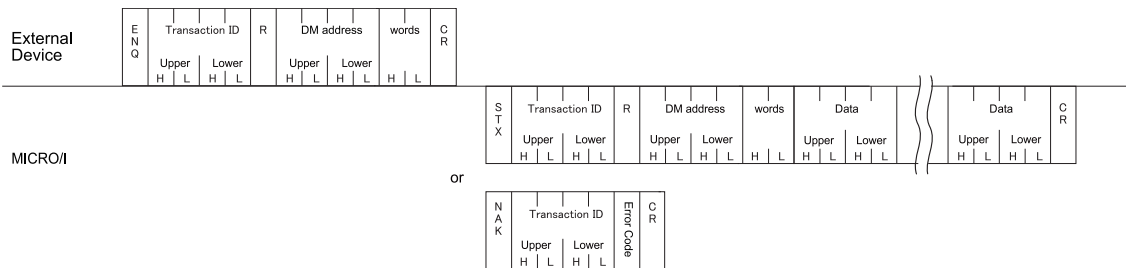
Detailed description: Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Transaction ID		MICRO/I stores the Transaction ID which is set by the external device. The hexadecimal value expressed using ASCII code.	4
Error Code		Added for an error response. (Refer to Chapter 4 "11 Error Codes" on page 615)	1
CR	0Dh	End	1



The external device can use the Transaction ID to determine the corresponding command for a received response.

9.1.3 Read Sequence



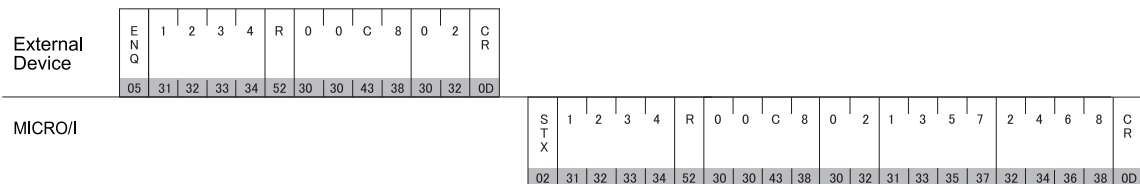
Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

9.1.4 Read Communication Example

- Read the two words of data from DM200 and DM201

If the data in DM200 is 4951 (1357h), the data in DM201 is 9320 (2468h), and the Transaction ID is 1234h the sequence is as follows.

The DM address 200 (00C8h) is converted to ASCII code and stored.



*The shaded part of the command is ASCII code.

9.2 Write

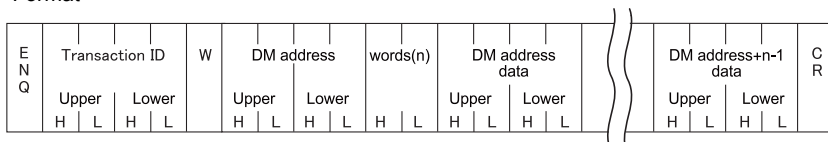
This command is used by the external device to write data to the MICRO/I data memory.

One command can write a maximum of 255 words of data.

The MICRO/I returns a response to the device (command source IP address and port number) that sent the command.

9.2.1 Command

Format

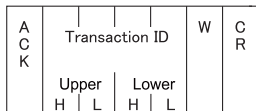


Detailed description

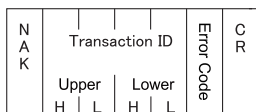
Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Transaction ID		MICRO/I sets an ID on the external device side. Specify the ID in a range from 0000h to FFFFh with the hexadecimal value expressed using ASCII code.	4
W	57h	Write Command	1
DM Address		DM address to start writing from The hexadecimal value expressed using ASCII code.	4
Words		Number of words to write The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
CR	0Dh	End	1

9.2.2 Response

Format: Normal response



Format: Error response



Detailed description: Normal response

Command	Code	Description	Bytes
ACK	06h	Write finished correctly.	1
Transaction ID		MICRO/I stores the Transaction ID which is set by the external device. The hexadecimal value expressed using ASCII code.	4
W	57h	Write response	1
CR	0Dh	End	1

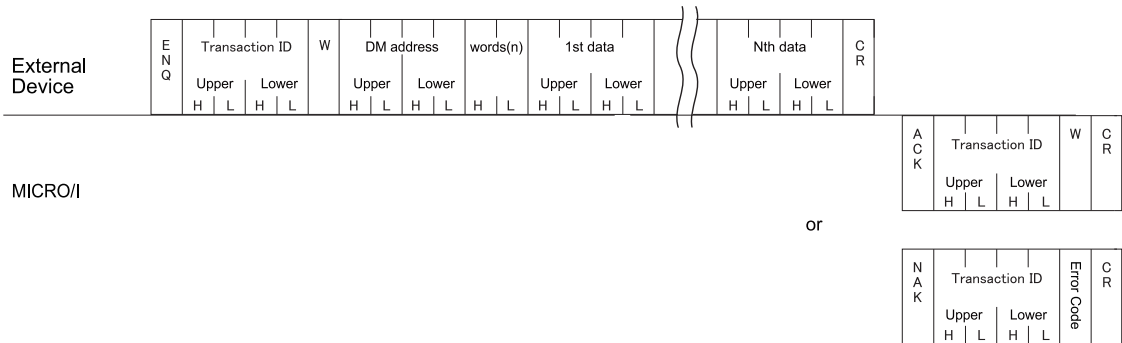
Detailed description: Error response

Transmission Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Transaction ID		MICRO/I stores the Transaction ID which is set by the external device. The hexadecimal value expressed using ASCII code.	4
Error code		Added for an error response. (Refer to Chapter 4 "11 Error Codes" on page 615)	1
CR	0Dh	End	1



The external device can use the Transaction ID to determine the corresponding command for a received response.

9.2.3 Write Sequence



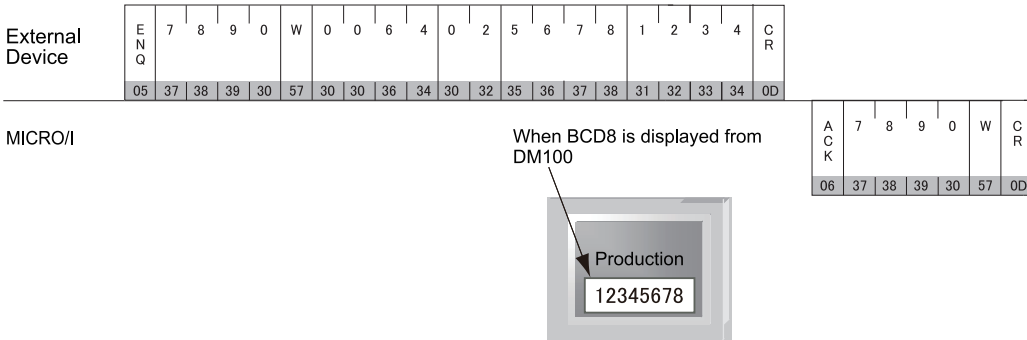
Do not transmit the following command until the external device receives the response of a command which transmitted to the display machine or serves as a timeout.

9.2.4 Write Communication Example

- Write 22136 (5678h) to DM100 and 4660 (1234h) to DM101

If the Transaction ID is 7890h the sequence is as follows.

The DM address 100 (0064h) is converted to ASCII code and stored.



*The shaded part of the command is ASCII code.

11 Error Codes

- When a command that starts with the ENQ (05h) code and ends with CR (0Dh) code is received, but the content is not valid, an error response is returned. For DM Link Ethernet (UDP), a response is returned if ENQ(05h), CR(0Dh), and the Transaction ID are correct.
- The error response codes are as follows.

Error Code	Type	Error Description
'2' (32h)	BCC	BCC doesn't match (when "with BCC" is set)
'3' (33h)	Command	A command other than 'W' or 'R' was received (with the exception of the Clear command)
'4' (34h)	Address	Invalid DM address (DM Link 1:1 Communication, DM Link 1:N Communication: Outside DM0 to DM8191 DM Link Ethernet (UDP) Communication: Outside DM16 to DM8191)
'5' (35h)	No. of Words	Invalid number of words specified (outside the range 1 to 255 or the DM address + No. of words - 1 exceeds 8191)
'6' (36h)	Received Bytes	Received bytes invalid (the number of words of data did not exist)



The error code is a code appended to a negative acknowledgment when DM LINK(1:N), DM Link Ethernet (UDP) or 1 is selected in Protocol of DM LINK(1:1). Not used when 0 is selected in DM LINK(1:1).

11.1 Response Time

The MICRO/I or Touch replies to commands from the external device within 10msec plus the transmission wait. However, the delay may occur when the screen image is updating.

With DM Link Ethernet (UDP) communication, when commands are simultaneously received from multiple external devices, the response processing is performed in order from the received commands. However, when a command is continuously received, it may no longer be possible to respond correctly.

If there was no response from the MICRO/I, retry sending command on the external device side after an amount of time longer than "2 seconds + transmission wait time" has elapsed.

Chapter 5 Modbus

1 Connection Table

Selecting Modbus RTU Master or Modbus TCP Client for the Host I/F Driver or Communication Driver allows the user to use the 1: N Communication function.

- 1: N Communication function (Chapter 6 1: N Communication Function)

1.1 Compatible Protocols

Protocol	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
	Interface	Flow Control	Host I/F Driver Communication Driver	HG2G-5F, HG3G/4G	HG2G-S/-5S	HG1F/2F/2S/3F/4F	Touch
Modbus RTU Master	RS232C, RS422/485 2-wire, RS422/485 4-wire	Hardware, None	Modbus RTU Master	X	X	X	X
Modbus ASCII Master	RS232C, RS422/485 2-wire, RS422/485 4-wire	Hardware, None	Modbus ASCII Master				
Modbus TCP Client	Ethernet	-	Modbus TCP Client				
Modbus TCP Server	Ethernet	-	Modbus TCP Server				
Modbus RTU Slave	RS232C, RS422/485 2-wire, RS422/485 4-wire	Hardware, None	Modbus RTU Slave	X	---	---	X

Refer to Chapter 5 "6 Modbus TCP Server/Modbus RTU Slave Function" on page 638



Modbus TCP Client or Modbus TCP Server cannot be used as Host I/F Driver by MICRO/I equipped with the Ethernet interface.

1.2 Compatible PLCs

System (CPU unit)	Link Unit	WindO/I-NV2, WindO/I-NV3 Settings			Product Series			
		Interface	Flow Control	Host I/F Driver, Communication Driver	HG2G-5F, HG3G/4G	HG2G -S/-5S	HG1F/2F/2S/3F/4F	Touch
Schneider Twido								
TWD LC*A 10DRF	Not required (connects to CPU unit directly)	RS422/485 2-wire Connection Diagram 2 (refer to P630)	Hardware	Modbus RTU Master, Modbus ASCII Master	X	X	X	X
TWD LC*A 16DRF, TWD LC*A 24DRF, TWD LCA* 40DRF	Not required (connects to CPU unit directly)	RS422/485 2-wire Connection Diagram 2 (refer to P630)						
	TWD NAC 232D	RS232C Connection Diagram 1 (refer to P627)						
	TWD NAC 485D	RS422/485 2-wire Connection Diagram 2 (refer to P630)						
	TWD NAC 485T	RS422/485 2-wire Connection Diagram 3 (refer to P633)						
TWD LMDA 20DTK, TWD LMDA 20DUK, TWD LMDA 20DRT, TWD LMDA 40DTK, TWD LMDA 40DUK	Not required (connects to CPU unit directly)	RS422/485 2-wire Connection Diagram 2 (refer to P630)						
	TWD NOZ 485D	RS422/485 2-wire Connection Diagram 2 (refer to P630)						
	TWD NOZ 232D	RS232C Connection Diagram 1 (refer to P627)						
	TWD NOZ 485T	RS422/485 2-wire Connection Diagram 3 (refer to P633)						
	TWD XCP ODM +TWD NAC 232D	RS232C Connection Diagram 1 (refer to P627)						
	TWD XCP ODM +TWD NAC 485D	RS422/485 2-wire Connection Diagram 2 (refer to P630)						
	TWD XCP ODM +TWD NAC 485T	RS422/485 2-wire Connection Diagram 3 (refer to P633)						
Schneider Momentum								
171CCC96020	Not required (connects to Ethernet Port*1)	(Ethernet) *1	-	Modbus TCP Client	X	X	X	X

*1 This PLC was used to test & verify communications.

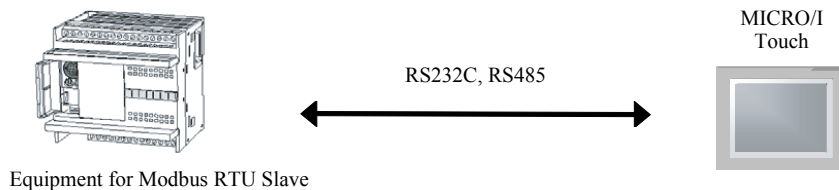


Modbus TCP Client cannot be used as Host I/F Driver by MICRO/I equipped with the Ethernet interface.

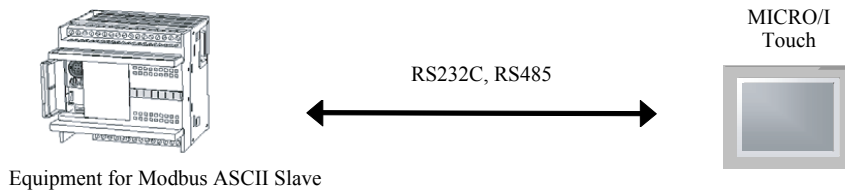
2 System Configuration

This is the system configuration for the connection of Schneider PLCs to the MICRO/I or Touch.

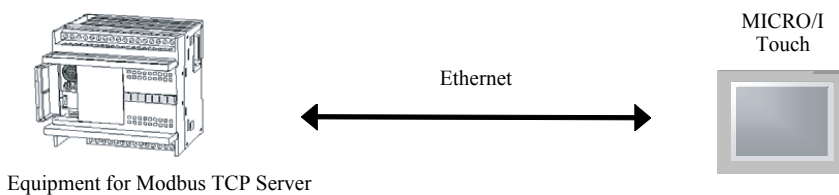
2.1 Modbus RTU Master



2.2 Modbus ASCII Master

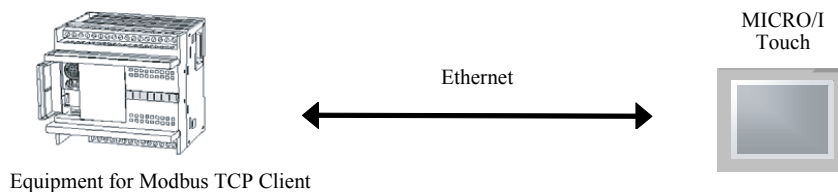


2.3 Modbus TCP Client



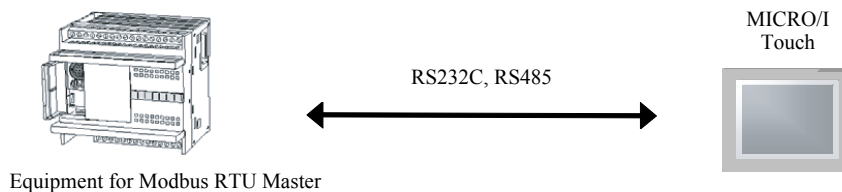
- Use a crossover cable to connect the MICRO/I or Touch and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

2.4 Modbus TCP Server



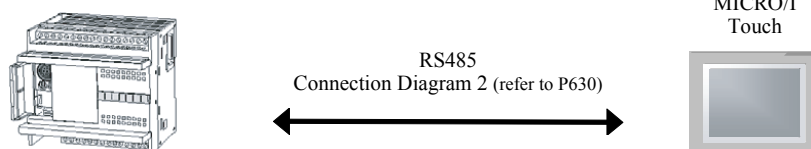
- Use a crossover cable to connect the MICRO/I or Touch and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.

2.5 Modbus RTU Slave



2.6 Twido

- Serial Port on CPU module

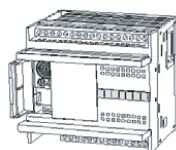


TWD LC*A 10DRF
 TWD LC*A 16DRF
 TWD LC*A 24DRF
 TWD LCA* 40DRF
 TWD LMDA 20DTK
 TWD LMDA 20DUK
 TWD LMDA 20DRT
 TWD LMDA 40DTK
 TWD LMDA 40DUK



In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C115).

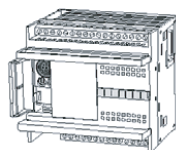
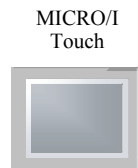
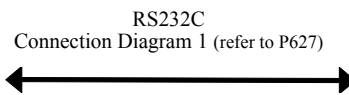
- Compact Controller + Communication Adapter



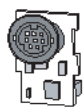
TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF



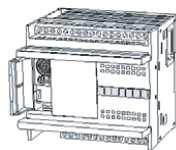
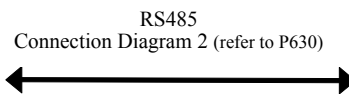
TWDNAC232D
(Communication Adapter)



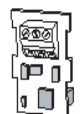
TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF



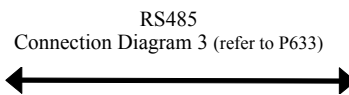
TWDNAC485D
(Communication Adapter)



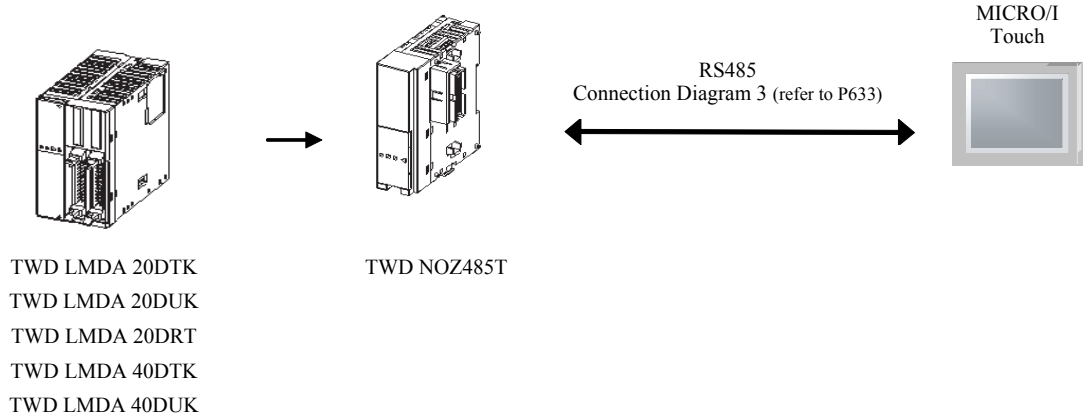
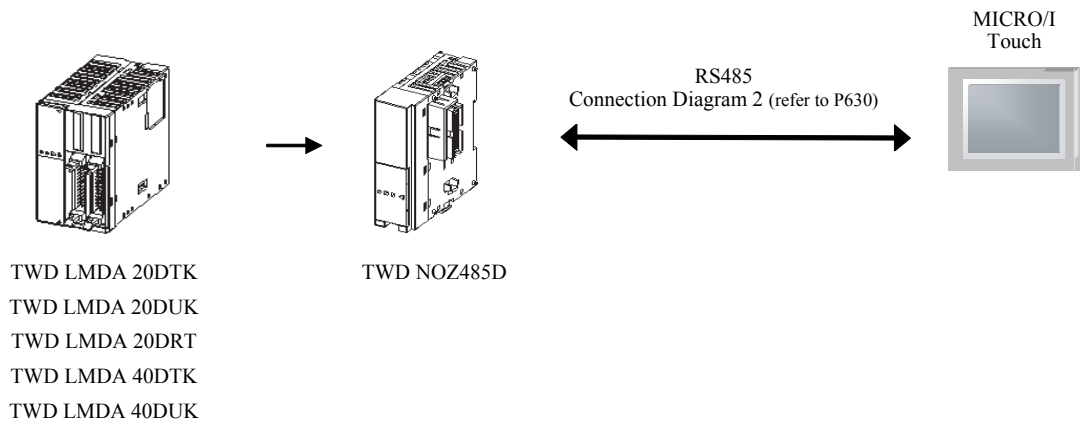
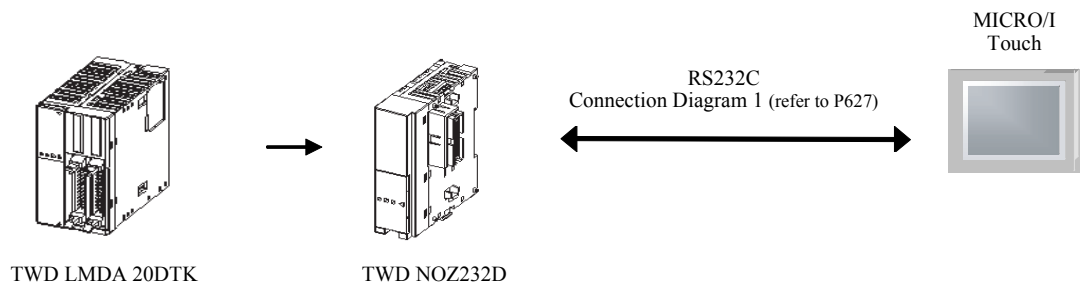
TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF



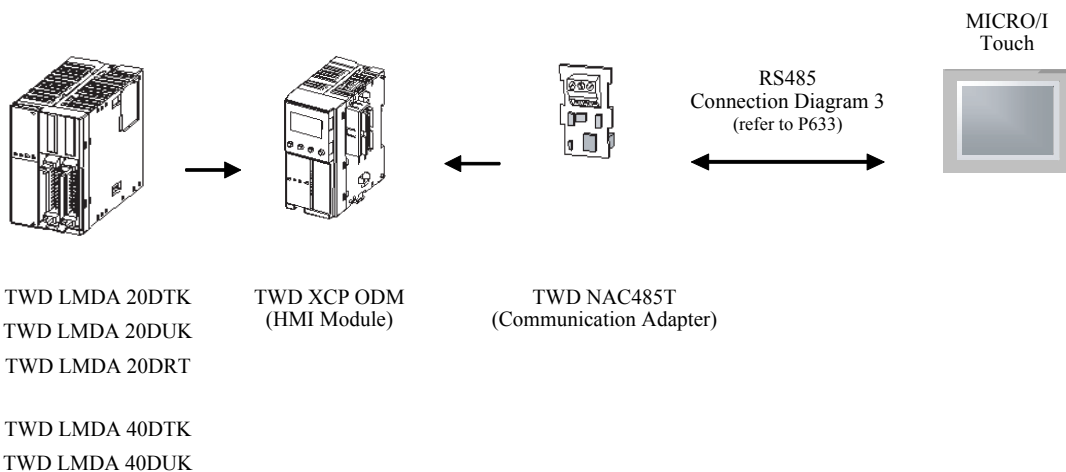
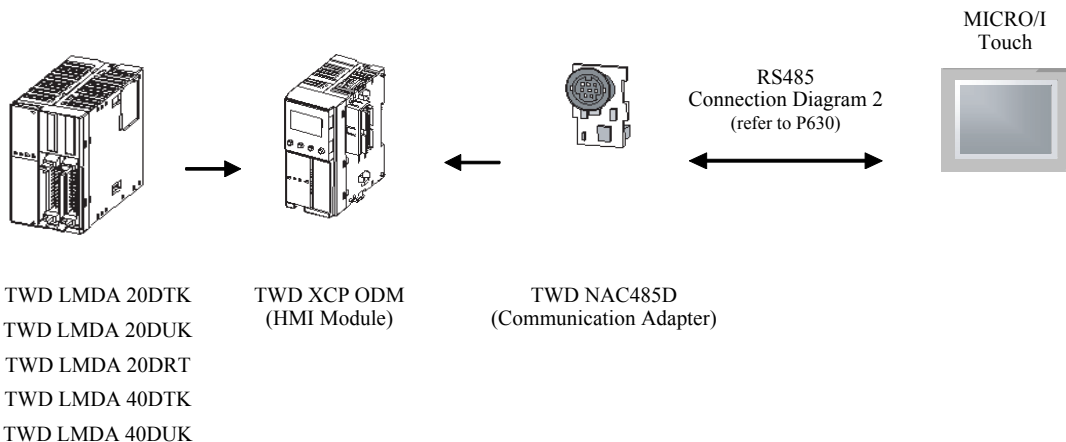
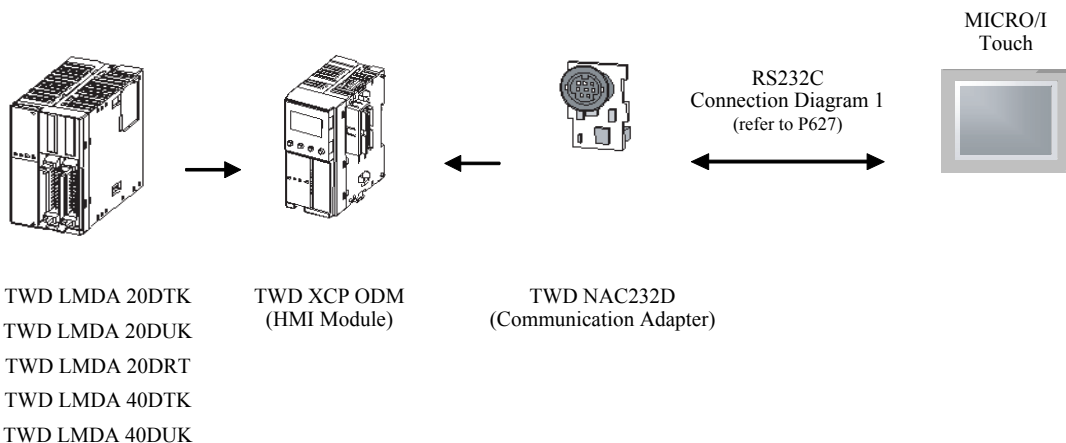
TWDNAC485T
(Communication Adapter)



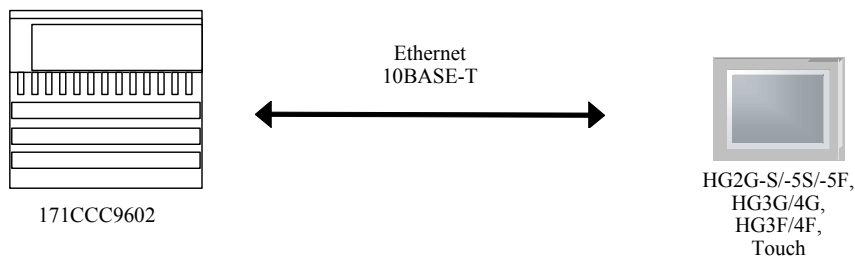
• Module Controller + Communication Module



- Module Controller + HMI Module + Communication Adapter



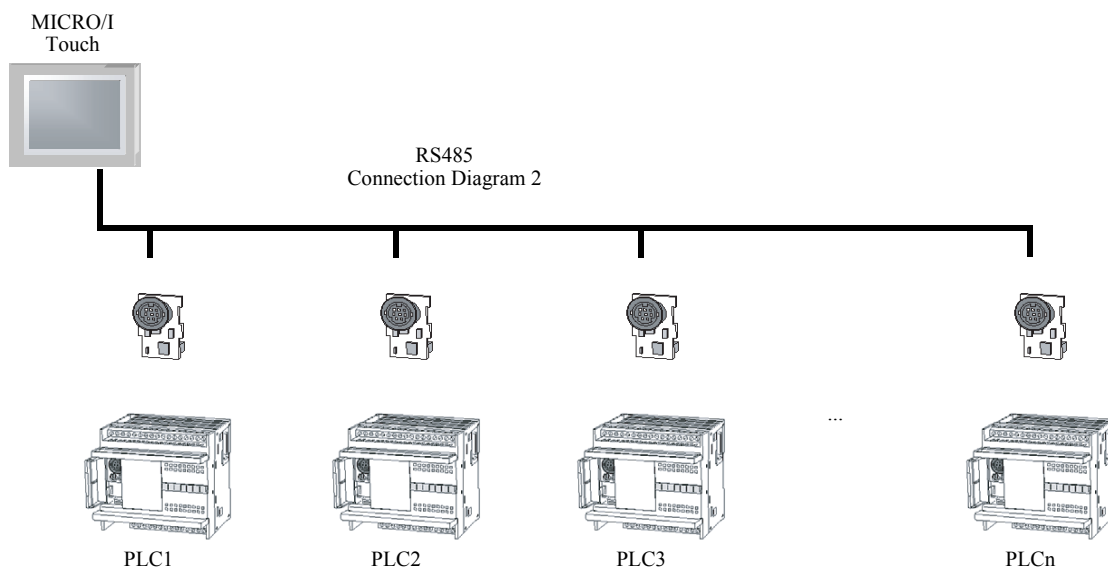
2.7 Momentum (MODBUS/TCP Client)



- Use a crossover cable to connect the MICRO/I or Touch and PLC directly.
- When using a hub (Ethernet switch), use a cable that can be used with the hub.
- Please avoid using for the long distance communication because this driver may be used in the control network in the same factory only.

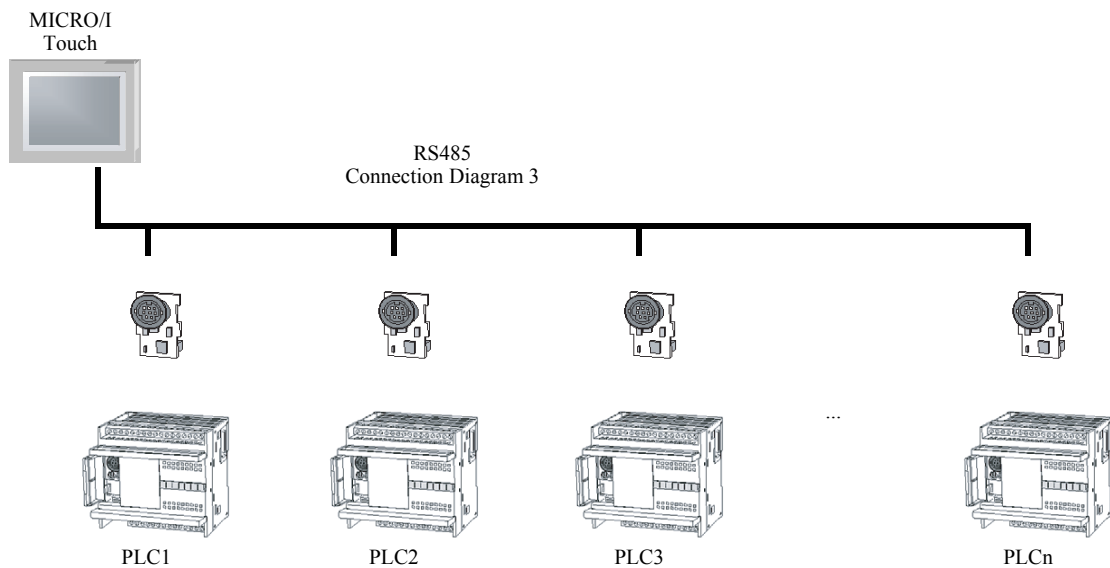
2.8 1: N Communication-TWDL CAA16DRF/TWDLCAA24DRF +TWDNAC485D (Communication board)

The 1: N communication can be established by using the following connection.



2.9 1: N Communication- TWDLCAA16DRF/TWDLCAA24DRF +TWDNAC485T (Communication board)

The 1: N communication can be established by using the following connection.



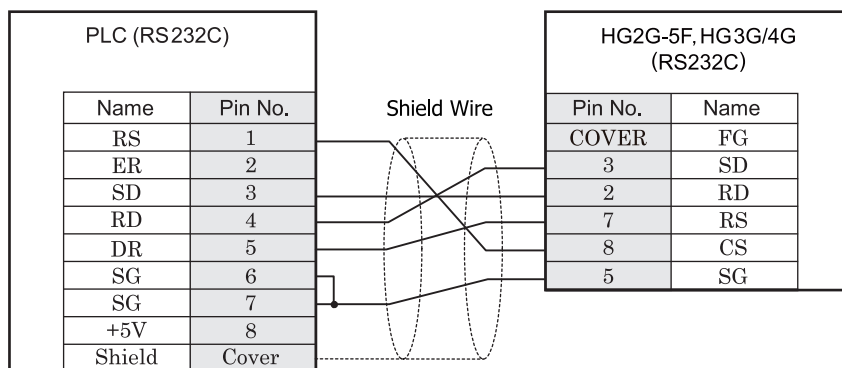
3 Connection Diagram



For details regarding wiring and termination resistors, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.1 Connection Diagram 1: TWDNAC232D to MICRO/I or Touch

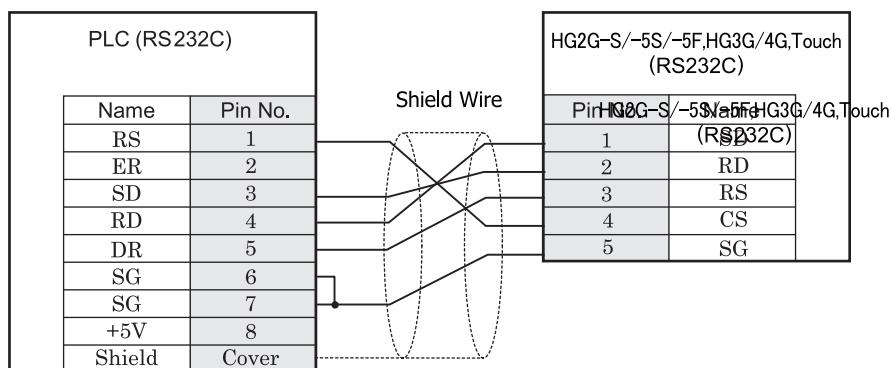
HG2G-5F, HG3G/4G (Connector)



Mini Din 8P

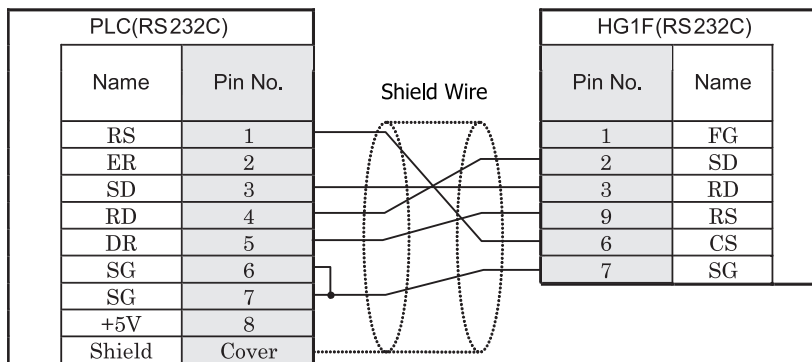
D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)



Mini Din 8P

Terminal

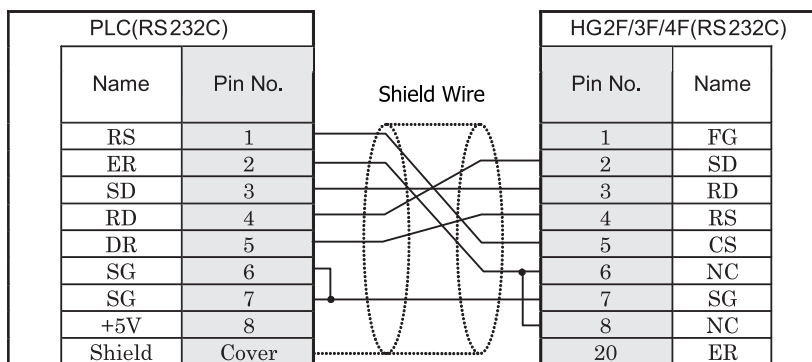
HG1F (Connector)

Mini Din 8P

D-sub, 9P connector socket type



In case of HG1F a connection cable is available. (part number: HG9Z-XC183).

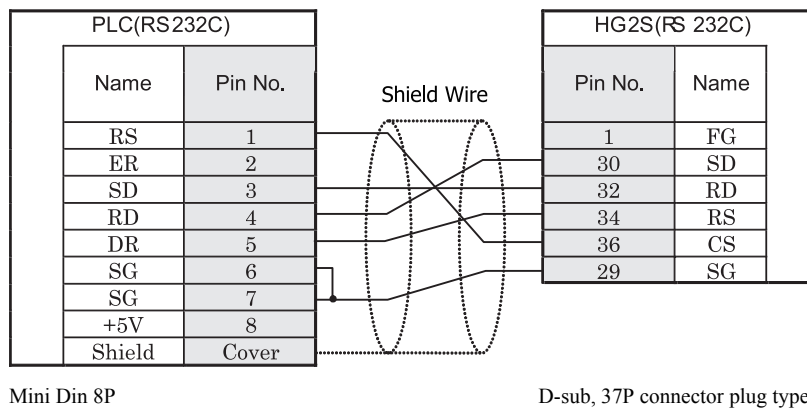
HG2F/3F/4F

Mini Din 8P

D-sub, 25P connector socket type

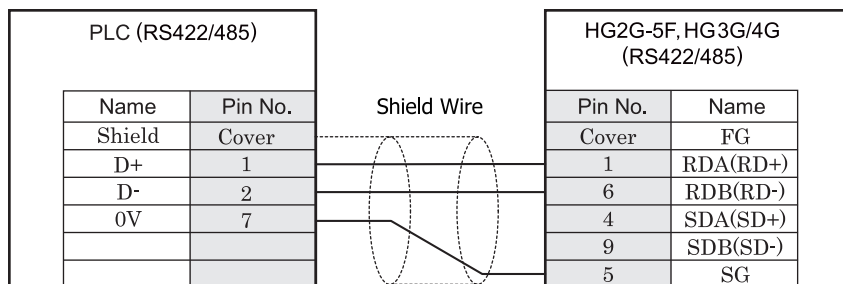


- In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C125).
- The connection diagram 1 is not same as HG9Z-3C125. But both diagrams are available. Refer to Chapter 7 "1.4 PLC connection cable: HG9Z-3C125" on page 671 about the connection diagram of HG9Z-3C125.

HG2S

3.2 Connection Diagram 2: TWDNAC485D to MICRO/I or Touch

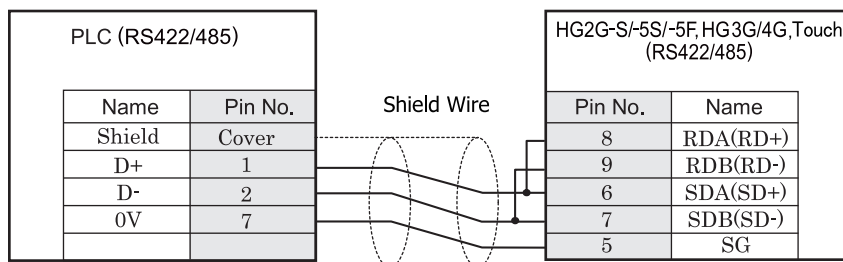
HG2G-5F, HG3G/4G (Connector)



Mini Din 8P

D-sub, 9P connector plug type

HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

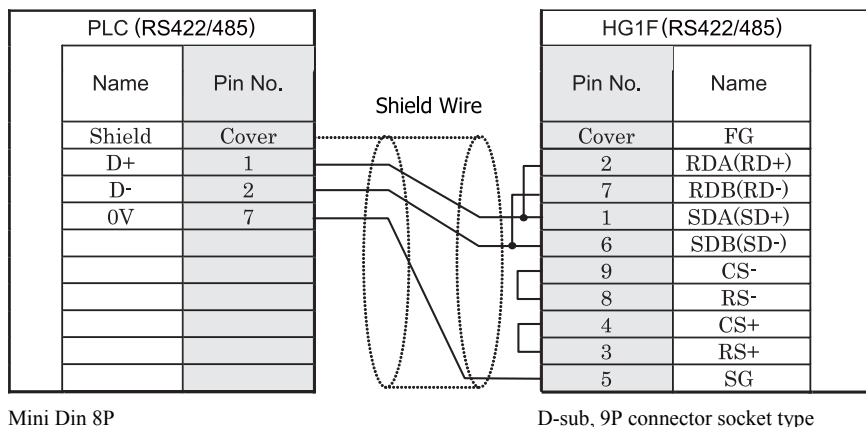
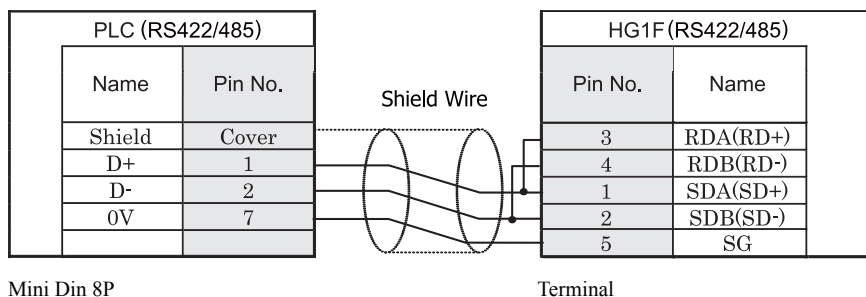


Mini Din 8P

Terminal



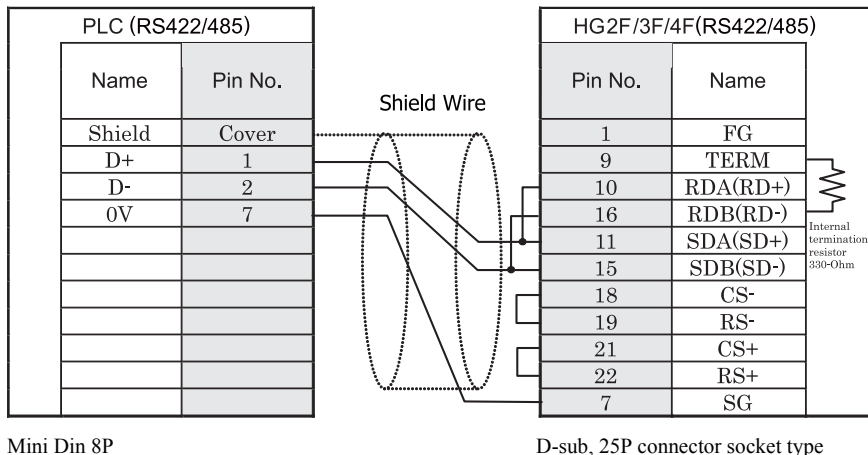
- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)**HG1F** (Terminal)

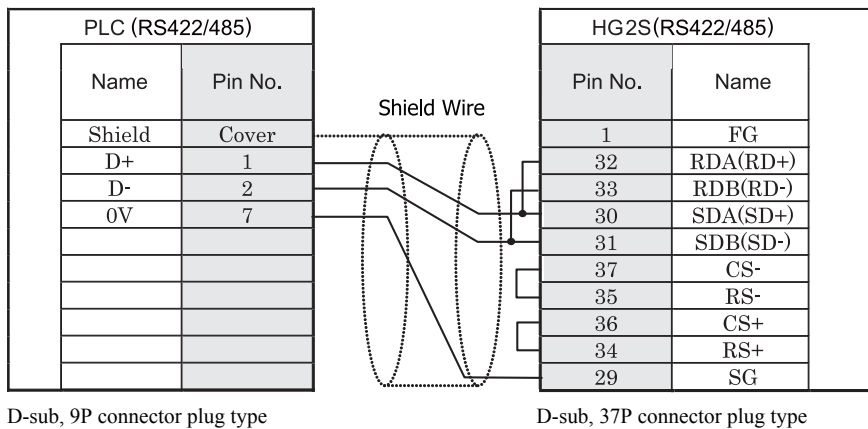
There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.



When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

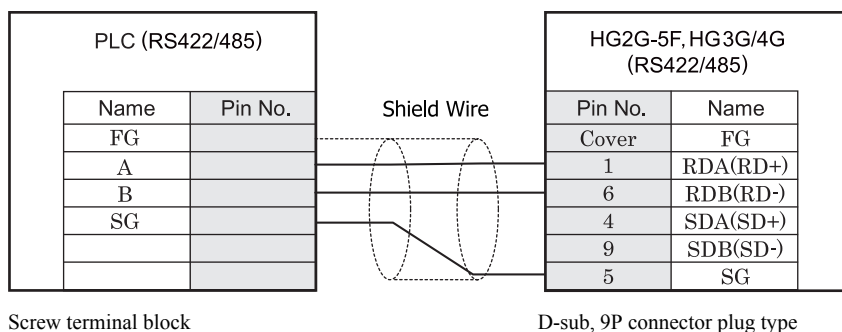
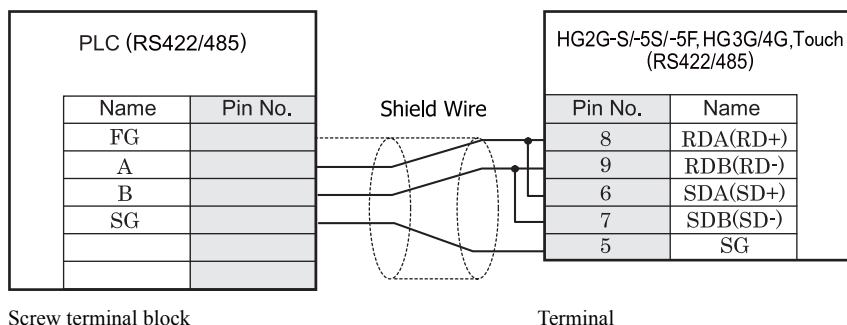
HG2F/3F/4F


In case of HG2F/3F/4F a connection cable is available. (part number: HG9Z-3C115).

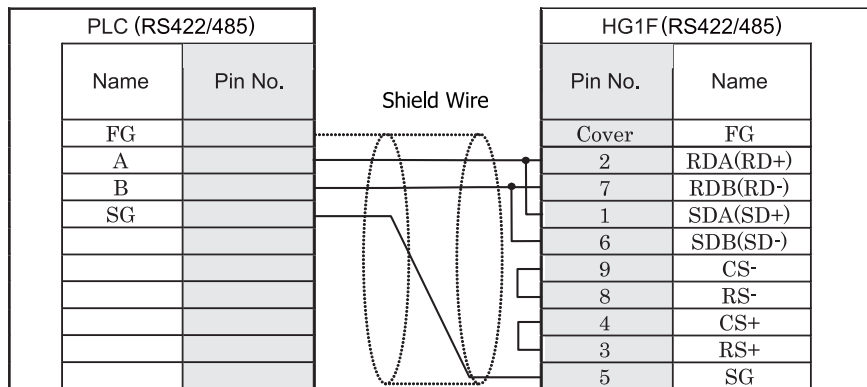
HG2S

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

3.3 Connection Diagram 3: TWDNAC485T to MICRO/I or Touch

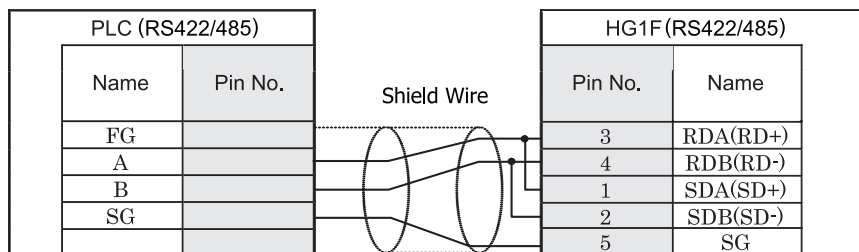
HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G, Touch** (Terminal)

- 
 - There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
 If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)

Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

Screw terminal block

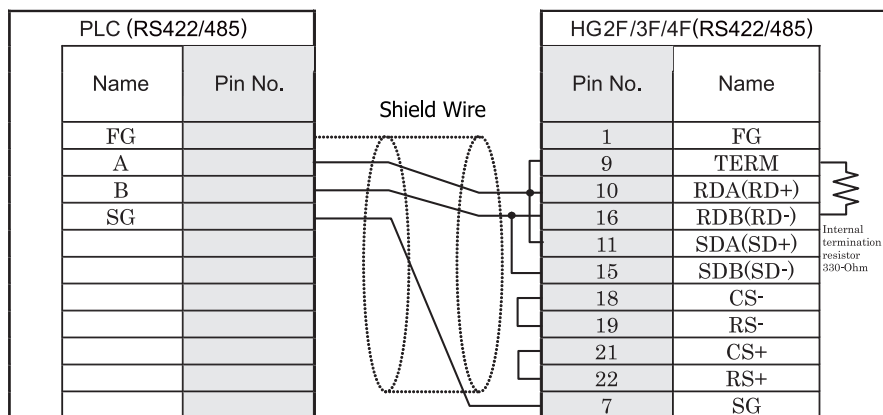
Terminal



There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

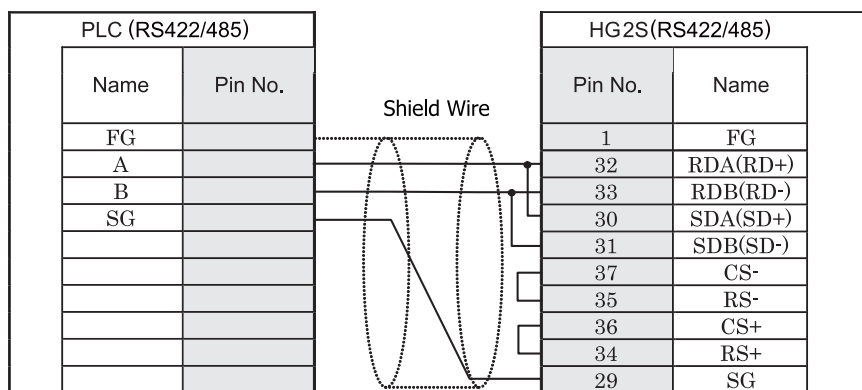


When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE.

HG2F/3F/4F

Screw terminal block

D-sub, 25P connector socket type

HG2S

Screw terminal block

D-sub, 37P connector plug type



There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

4 Environment Settings

4.1 Twido

Items	Details	
Interface	The same setting as MICRO/I or Touch	RS232C, RS485 2-wire
Slave Address *1		1 - 247(DEC)
Baud Rate (bps)		1200, 2400, 4800, 9600, 19200 or 38400
Data Bits		7 or 8
Parity		None, Even or Odd
Stop Bits		1 or 2
Flow Control		Hardware
Use No.0 as Broadcast		0: Disable, 1: Enable
Use function6 instead of function16	Use function6 for writing to HR	

*1 Set a decimal number for the Slave Address.

4.2 Momentum (Modbus TCP Client)

Items	Items	Details
Interface		-- *1
Slave Address		-- *1
Baud Rate (bps)		-- *1
Data Bits		-- *1
Parity		-- *1
Stop Bits		-- *1
Unit ID*2	The same setting as MICRO/I or Touch	1 - 247(DEC)
Destination Address *3		IPv4 Typed IP address
Port Number *3		0 to 32767 *4

*1 These settings will be ignored since it is using the Ethernet port.

*2 Set a decimal number for the unit ID.

*3 Destination Address and Port Number cannot be changed from the system menu of MICRO/I or Touch . Please change it using WindO/I-NV2, WindO/I-NV3 software.

*4 If "0" is set, this driver will set "502" (the number of Modbus TCP default port) automatically.

5 Usable Devices

5.1 Modbus RTU Master, Modbus ASCII Master, Modbus TCP Client

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Coil	C	C	1 - 65536	R/W	Dec
Inputs Status	I	I	100001 - 165536	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Holding Registers	HR	HR	400001 - 465536	R/W	Dec
Inputs Registers	IR	IR	300001 - 365536	R	Dec

5.2 Twido (Modbus RTU Master)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Coil	C	%M	1 - 256	R/W	Dec
Inputs Status	I	%M	100001 - 100256	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Holding Registers	HR	%MW	400001 - 401500	R/W	Dec
Inputs Registers	IR	%MW	300001 - 301500	R	Dec

5.3 Momentum (Modbus TCP Client)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Coil	C	-	1 - 65536	R/W	Dec
Inputs Status	I	-	100001 - 165536	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	MICRO/I, Touch	PLC			
Holding Registers	HR	-	400001 - 465536	R/W	Dec
Inputs Registers	IR	-	300001 - 365536	R	Dec

6 Modbus TCP Server/Modbus RTU Slave Function

6.1 Overview of the Modbus TCP Server, Modbus RTU Slave Function

6.1.1 Overview

The Modbus TCP Server, Modbus RTU Slave function performs that PC or PLC (refers to as an external device) can read and write the MICRO/I or Touch communication devices via the Ethernet or Serial cable.

The read/write of a device is performed using the Modbus TCP protocol (Modbus TCP Server function) or Modbus RTU protocol (Modbus RTU Slave function).

For Modbus TCP Server, a maximum of four external devices can be simultaneously connected to the MICRO/I or Touch.

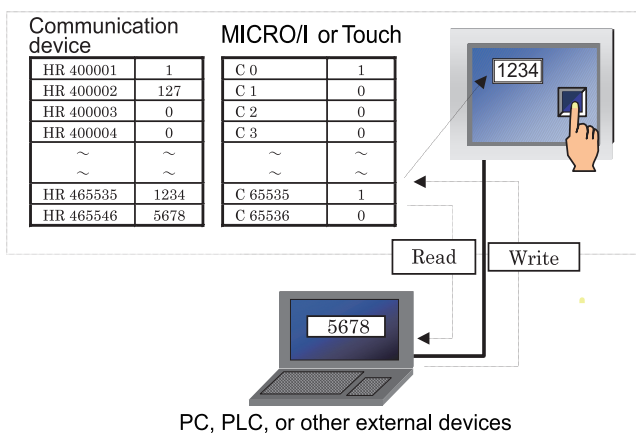
6.1.2 Operation of the Communication

The external device is capable of reading/writing to the MICRO/I or Touch communication devices. It is also possible to read or write communication devices from the MICRO/I or Touch.

6.1.3 Read/Write from the External Device

The external device is capable of reading or writing the data in the communication device value at the any timing.

Conceptual Diagram of Communication

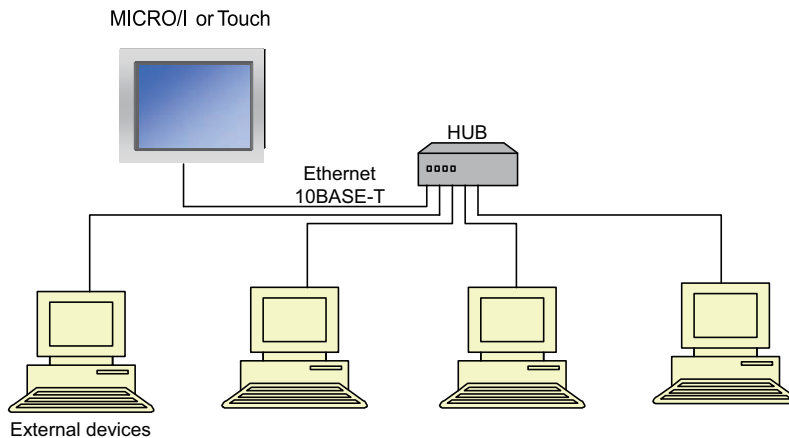


Modbus communication is the open protocol. For detail information, visit the web site at <http://www.modbus.org/>.

6.2 Modbus TCP Server function system configuration

6.2.1 System Configuration

The following is the system configuration.



- Up to 4 external devices can communicate with a single MICRO/I or Touch unit at one time.
- The MICRO/I or Touch unit and an external device can be directly connected on a 1:1 basis by bypassing a hub. In this case, use a crossing cable for the connection.

6.2.2 Wiring

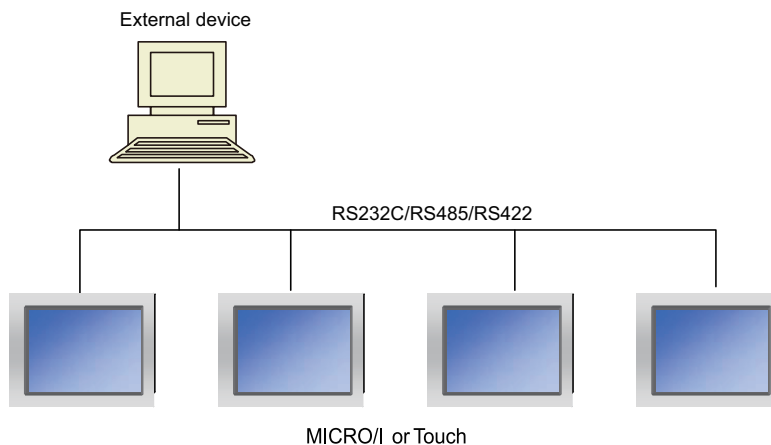
Make sure to use commercially available 10BASE-T ready cables for connecting the devices.

Use a straight cable when using a hub, and use a crossing cable when directly connecting to the MICRO/I or Touch and an external device.

6.3 Modbus TCP Slave function system configuration

6.3.1 System Configuration

The following is the system configuration.



6.3.2 Wiring

Wire according to the external device.

6.4 Devices

The following devices are available for Modbus TCP Server function, Modbus RTU Slave function.

Bit Device

Device Name	Device Symbol	Address Range		MICRO/I or Touch Read/Write	External Device Read/Write	Address Gradual
		HG2G-S/-5S/-5F, HG3G/4G, Touch	HG1F/2F/2S/3F/4F			
Coil Status	C	1 - 4096	1 - 65536	R/W	R/W	Decimal
Input Status	I	100001 - 104096	100001 - 165536	R/W	R	Decimal

Word Device

Device Name	Device Symbol	Address Range		MICRO/I or Touch Read/Write	External Device Read/Write	Address Gradual
		HG2G-S/-5S/-5F, HG3G/4G, Touch	HG1F/2F/2S/3F/4F			
Holding Register	HR	400001 - 404096	400001 - 465536	R/W	R/W	Decimal
Input Register	IR	300001 - 304096	300001 - 365536	R/W	R	Decimal

All devices are general-purpose devices intended for nonspecific purposes.

6.5 Settings

6.5.1 Settings of the Modbus TCP Server Function

The settings of the Modbus TCP Server communication can be configured in the **Configuration - System Setup - Project** dialog boxes in WindO/I-NV2 or WindO/I-NV3. The following table lists the configurable settings. Configure the settings according to the external device to be used.

Dialog Box - Tab	Settings	Description
Project Settings - Host I/F Driver or Communication Driver	Manufacturer	Select "Modicon".
	Host I/F Driver Communication Driver	Select "Modbus TCP Server".
	Refuse Access From Unknown Clients	Check this box to refuse access from devices other than the specified external device (client).
Project Settings - Communication Interface	Protocol	When using the O/I Link, select "Enable".
Project Settings - Host Port Extension	Time Out	Enter the duration after which timeout occurs if request is not sent from the external device (in units of seconds).
	Port Number	Select the port number used for the communication.
	Processing Interval	Enter the interval in units of milliseconds at which the MICRO/I or Touch performs communication processing. When the speed of other operations of the MICRO/I or Touch seems slow this is due to a large amount of communications, therefore, set a large value here to maybe increase the communication processing speed.
	Client Address 1- 4	When "Refuse Access From Unknown Clients" is checked, specify the IP address of the external device (client) from which access will be accepted. When the number of accessible external devices is three or less, then "0.0.0.0" to the address for unused client.

6.5.2 Settings of the Modbus RTU Slave Function

The settings of the Modbus RTU Slave communication can be configured in the **Configuration - System Setup - Project** dialog boxes in WindO/I-NV2 or WindO/I-NV3. The following table lists the configurable settings. Configure the settings according to the external device to be used.

Dialog Box - Tab	Settings	Description
Project Settings - Host I/F Driver or Communication Driver	Manufacturer	Select "Modicon".
	Host I/F Driver Communication Driver	Select "Modbus RTU Slave".
	Slave address	Set the MICO/I or Touch slave address.
Project Settings - Communication Interface	Protocol	When using the O/I Link, select "Enable".

6.6 Modbus TCP Server Function Communication Format

This chapter describes the communication format of the Modbus TCP communication.

The Modbus TCP communication supports Class 0 and Class 1 functions of the OPEN Modbus TCP SPECIFICATION Release1.0. For details about the communication methods, refer to the OPEN Modbus TCP SPECIFICATION Release1.0 as well as this manual.

6.6.1 Preparations for Communication

The Modbus TCP Server performs communications using the TCP. Make sure to establish a connection with the specified port of the MICRO/I or Touch with TCP before executing reading/writing of devices.

6.6.2 Basic Format

The following table lists the basic format of communications. The same format applies to both requests and responses. Data is processed as a byte sequences.

Byte	Description
Byte 0	Transaction ID ^{*1} . The same value is returned from the server. The value is normally "0".
Byte 1	Transaction ID ^{*1} . The same value is returned from the server. The value is normally "0".
Byte 2	Protocol ID ^{*2} . The value is always "0".
Byte 3	Protocol ID ^{*2} . The value is always "0".
Byte 4	Message length ^{*3} (high byte). The value is always "0". (Since the message is 256 bytes at maximum.)
Byte 5	Message length ^{*3} (low byte). The length of the following message.
Byte 6	Unit ID ^{*4}
Byte 7	Function code ^{*5}
Byte 8-	Data ^{*6}

*1 The data included in a request is returned from the server without changes. The client (external device) sends a different Transaction ID for each request, and identifies the response by checking the Transaction ID of a response. Enter "0" to not check the Transaction ID.

*2 The number indicating the Modbus TCP protocol, and is always "0".

*3 Indicates the length of the following message in units of bytes.

*4 ID used for identifying devices. The ID is not used with the MICRO/I or Touch. When the ID is used in a request, the returned data is unchanged.

*5 Numbers assigned for functions such as reading and writing.

*6 Data required for each processing.

6.7 Modbus RTU Slave Function Communication Format

This chapter describes the communication format of the Modbus RTU communication.

The Modbus RTU communication supports Class 0 and Class 1 functions of the MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b3. For details about the communication methods, refer to the MODBUS over Serial Line Specification and Implementation Guide V1.02 as well as this manual.

6.7.1 Basic Format

The following table lists the basic format of communications. The same format applies to both requests and responses. Data is processed as a byte sequences.

	Description
Idle	3.5 characters* ¹
Byte 0	Slave address Specify the HG slave address.
Byte 1	Function code* ²
Byte 2-	Data* ³
Byte n-1	CRC* ⁴
Byte n	
Idle	3.5 characters

*1 Idle means no data flowing on the communication line.

Modbus RTU communication requires a minimum of 3.5-character-long idle time between frames to determine the beginning of a frame.

*2 Numbers assigned for functions such as reading and writing.

*3 Data required for each processing.

*4 CRC is calculated by the following method.

CRC

Modbus RTU communication uses CRC.

Calculating the CRC-16 (cyclic redundancy checksum)

Calculate the BCC using CRC-16 for the range from the slave number to the byte immediately before the BCC.

The generation polynomial is: $X^{16} + X^{15} + X^2 + 1$.

1. Take the exclusive OR (XOR) of FFFFh and the first 1-byte data at the slave number.
2. Shift the result by 1 bit to the right. When a carry occurs, take the exclusive OR (XOR) of A001h, then go to step 3.
If not, directly go to step 3.
3. Repeat step 2, shifting 8 times.
4. Take the exclusive OR (XOR) of the result and the next 1-byte data.
5. Repeat step 2 through step 4 up to the byte immediately before the BCC.
6. Swap the higher and lower bytes of the result of step 5, and store the resultant CRC-16 to the BCC (CRC) position.

6.8 Modbus TCP/Modbus RTU shared protocol format

6.8.1 Reference Numbers

Reference numbers are used to specify a device address with the Modbus TCP.

The reference number is obtained by subtracting 1 from the 1st to 5th value of the device address, and is expressed in hexadecimal format.

The following table lists the address of each device and the corresponding reference number.

Address	Reference No.	Address	Reference No.	Address	Reference No.	Address	Reference No.
C 1	0000	I 100001	0000	HR 400001	0000	IR 300001	0000
C 2	0001	I 100002	0001	HR 400002	0001	IR 300002	0001
...
C 65535	FFFE	I 165535	FFFE	HR 465535	FFFE	IR 365535	FFFE
C 65536	FFFF	I 165536	FFFF	HR 465536	FFFF	IR 365536	FFFF

6.8.2 Functions

The MICRO/I or Touch supports the following functions.

Function code	Function name	Description
3	Read multiple registers	Reading of Holding Register (HR) consecutively
16 (10Hex)	Write multiple registers	Writing to Holding Register (HR) consecutively
1	Read coils	Reading of Coil (C) consecutively
2	Read discrete inputs	Reading of Input Relay (I) consecutively
4	Read input registers	Reading of Input Register (IR) consecutively
5	Write coil	Writing to a single Coil (C)
6	Write single register	Writing to a single Holding Register (HR)
7	Read exception status	Reading of exception status (0 to 7th bit of HR400001)*1

*1 This function is not supported in Modbus RTU Slave function.

The following section describes the details of the functions.

The communication example listed for each function is only for the function code.

The following communication examples are listed for each function code.

When use the following examples, also refer to the above basic format.(6.6.2 "Basic Format" (P.642), 6.7.1 "Basic Format" (P.643))

If Modbus TCP is selected, add byte 0 to byte6 before the following examples, if Modbus RTU is selected, add the slave address as byte 0 and CRC as last byte.

1. FC3 Read multiple registers - Reading of Holding Register (HR) consecutively

Request

Modbus TCP	Modbus RTU	Description
Byte 1	Byte 1	Byte 1
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Number of read words (1 to 125 words)

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 03
Byte 8	Byte 2	Number of bytes of the response (number of read words x 2)
From Byte 9	From Byte 3	Read data

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 83 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Reading of HR400001 (1 word). The read value is 1234 (HEX).

03 00 00 00 01 => 03 02 12 34

2. FC16 Write multiple registers - Writing to Holding Register (HR) consecutively

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 10 (HEX)
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Number of write words (1 to 100 words)
Byte 12	Byte 6	Number of write bytes (2 x number of write words)
From Byte 13	From Byte 7	Write data

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 10(HEX)
Byte 8-9	Byte 2-3	Reference No.
From Byte 10	From Byte 4	Number of write words

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 90 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Writing to HR400001 (1 word). The write value is 1234 (HEX).

10 00 00 00 01 02 12 34 => 10 00 00 00 01

3. FC1 Read coils - Reading of Coil (C) consecutively

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 01
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Number of read bits (1 to 2000 bits)

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 01
Byte 8	Byte 2	Number of bytes for the response ((number of read bits +7)/8)
From Byte 9	From Byte 3	Read data

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 81 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Reading of C1. 1 bit. The read value is 1.

01 00 00 00 01 => 01 01 01

Data sequence of read value

When two or more data are read out, the read data are arranged starting from the lowest address by 8 bits (1 byte). Within any 1 byte, data in the lower address is set to the lower bit. The data in the unread bit becomes "0".

For example, when reading an 11-bit data as shown below, the read value becomes 21 03.

Address	Data	Remarks
C 1	1	Data for the 1st byte Bit pattern= 00100001 = 21 (HEX)
C 2	0	
C 3	0	
C 4	0	
C 5	0	
C 6	1	
C 7	0	
C 8	0	
C 9	1	Data for 2nd byte Bit pattern 00000011 = 03 (HEX)
C 10	1	
C11	0	
C12	0	
C13	0	
C14	0	
C15	0	
C16	0	

4. FC2 Read discrete inputs - Reading of Input Relay (I) consecutively

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=02
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Number of read bits (1 to 2000 bits)

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=02
Byte 8	Byte 2	Number of bytes for the response ((number of read bits+7)/8)
From Byte 9	From Byte 3	Read data

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=82 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Reading of I100001. 1 bit. The read value is 1.

02 00 00 00 01 => 02 01 01

Data sequence of read value

The data sequence for the read value is similar to that of FC1 Read Coils.

5. FC4 Read input registers - Reading of Input Register (IR) consecutively

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=04
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Number of read words (1 to 125 words)

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=04
Byte 8	Byte 2	Number of bytes for the response (number of read words x 2)
From Byte 9	From Byte 3	Read data

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=84 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Reading of IR300001 (1 word). The read value is 1234 (HEX).

04 00 00 00 01 => 04 02 12 34

6. FC5 Write coil - Writing to a single Coil (C)

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=05
Byte 8-9	Byte 2-3	Reference No.
Byte 10	Byte 4	Write value (FF when write value is 1, and 00 when write value is 0)
Byte 11	Byte 5	Fixed value 00

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=05
Byte 8-9	Byte 2-3	Reference No.
Byte 10	Byte 4	Write value (FF when write value is 1, and 00 when write value is 0)
Byte 11	Byte 5	Fixed value 00

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=85 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Writing of C1 (1 bit). The write value is 1.

05 00 00 FF 00 => 05 00 00 FF 00

7. FC6 Write single register - Writing to a single Holding Register (HR)

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 06 (HEX)
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Write data

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code) = 06 (HEX)
Byte 8-9	Byte 2-3	Reference No.
Byte 10-11	Byte 4-5	Write data

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=86 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Example

Writing to HR400001. The write value is 1234 (HEX).

06 00 00 12 34 => 06 00 00 12 34

8. FC7 Read exception status -Reading of exception status (Bit 0 to 7 of HR400001)

Request

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=07 (HEX)

Normal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)=07 (HEX)
Byte 8	Byte 2	Value of exception status

Abnormal response

Modbus TCP	Modbus RTU	Description
Byte 7	Byte 1	FC (Function code)= 87 (HEX)
Byte 8	Byte 2	Exception code 01 or 02

Communication example

Reading of exception status. The read value is 34 (HEX).

07 => 07 34

The Read exception status function reads the data from the device holding special status information using the Modbus protocol. Since the MICRO/I or Touch does not have special registers, the exception status is read by bit 0 to 7 of HR400001.

This function is not supported in Modbus RTU Slave function.

6.8.3 Exception code

The following table describes the exception codes that are sent upon an abnormal response.

Exception code	Name	Description
01	ILLEGAL FUNCTION	Indicates that a function code that is not defined by the Modbus protocol or a function code that is not supported by the MICRO/I or Touch is designated.
02	ILLEGAL DATA ADDRESS	The address information included in the data is invalid. For example, when reading the number of read words starting from the starting reference No. for the read, this exception code is sent if the data exceeds the maximum address of the device.
03	ILLEGAL DATA VALUE	The value of the data is invalid. This exception code is also sent when the number of data is invalid.

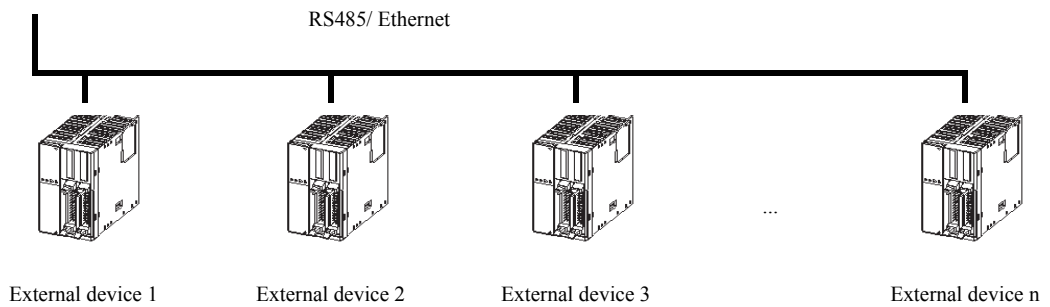
Chapter 6 1: N Communication (Multi-drop)

1 About 1: N Communication (Multi-drop)

1.1 Outline

Two or more external devices can be connected to a single MICRO/I or Touch to perform PLC Link communication.

MICRO/I, Touch



2 Communication Drivers Supporting 1: N Communication

The table below lists the Host I/F Drivers or Communication Drivers supporting 1: N communication.

2.1 Compatible Communication Drivers

Manufacturer	Host I/F Driver or Communication Driver
IDEC	OpenNet, MicroSmart, SmartAXIS Pro/Lite(RS232C/485)
	OpenNet, MicroSmart, SmartAXIS Pro/Lite(Ethernet)
Mitsubishi	MELSEC-FX (LINK)
	MELSEC-Q/QnA (Ethernet), MELSEC-FX3U (Ethernet)
Omron	SYSMAC-CS1/CJ Series (Ethernet)
Allen-Bradley	Ethernet/IP, LogixDF1(Full Duplex), Ethernet/IP(Logix Native Tag)
Koyo Electronics	DirectLogic 205/405, DirectLogix(Ethernet)
Modicon	Modbus RTU Master, Modbus ASCII Master
	Modbus TCP Client
Keyence	KV(Ethernet)
YASKAWA ELECTRIC CORPORATION	MP2000(Ethernet)
YOKOGAWA	FA-M3(Ethernet)
FUJI	MICREX-SX(Ethernet)
Emerson	ROC Protocol
SIEMENS	S7-1200(Ethernet)
Hitachi Industrial Equipment Systems	EH(Ethernet)



Touch does not support the drivers provided Allen-Bradley and Emerson.

3 Settings of the 1: N Communication

3.1 Initial Setting

When creating a project or converting the Host I/F, set the “Connection Type” to “1: N Communication”.



“Connection Type” can only be changed with the Communication Driver supporting 1: N Communication.

3.2 External Device Settings

3.2.1 Common setting

When 1: N Communication is specified, configure the device setting according to the format below. This applies to the external device settings only.

{Station No.} {Delimiter} {Device Symbol} {Space} {Device Address}

Note: {Delimiter} is a colon “:”

Example) 1: D 1000

3.2.2 Ethernet communication driver

In case of Ethernet communication driver, attach IP address and Port number for PLC to Station number.

Configure communicated PLC information on **Host I/F Network** in **Project Settings**.

3.2.3 Settings when a communication error occurs

Configure the operation settings in the event of a host communication error or communication error.

When the HG2G-S/-5S/-5F, HG3G/4G is selected as O/I type or Touch is selected as Product Series and 1:N Communications is selected as the Connection of the Host I/F Driver or Communication Driver, then these settings are displayed in the **Host I/F Driver** tab or **Communication Driver** tab on the **Project Settings** dialog box.

Item	Setting
Ignore communication errors and continue operation	Specifies whether or not to stop MICRO/I or Touch operation if a communication error occurs.
Display error message	Specifies whether or not to display an error message (host communication error or communication error) if operation continues after a communication error occurs. If "Ignore communication errors and continue operation" is enabled, an Ack (acknowledge) button is displayed in the error message (host communication error). If it is disabled, the Ack (acknowledge) button is not displayed in the error message.
Auto retry	Specifies whether or not to automatically try connecting the MICRO/I or Touch to the Station No. when the communication error occurred. To retry manually, either write 1 in the 2nd bit (initialization) of the device address set under "Batch monitor error information for all Station No.'s" (mentioned later) or write 1 in the 1st bit (connection settings) of the device addresses assigned to the relevant Station No.'s set under "Individually monitor error information for each Station No.'". The communication for the other PLC stations stop while retrying the disconnecting PLC station.
Batch monitoring the communication error information for all Station Numbers	Specifies the device address that stores communication error information for all Station No.'s. It is only possible to set HG internal registers or HMI devices. The following kind of information is stored as error information: (For details, refer to "Communication error information" on page 658.) <ul style="list-style-type: none"> - Initialization - Conditions under which the error occurred - Read error log - Write error log
Monitoring communication error information for each station, individually	Specifies the device address that stores communication error information for each Station No. It is only possible to set HG internal registers or HMI devices. Take care to avoid redundant addresses when using this setting, as this error information occupies up to 256 devices. The following kind of information is stored as error information: (For details, refer to "Communication error information for each Station Number" on page 659.) <ul style="list-style-type: none"> - Connection settings - Conditions under which the error occurred - Read error log - Write error log

Communication error information

It is possible to check the conditions of the communication and the error log. It is also possible to initialize the connection status for each Station No.

Bit	15 - 8	7	6	5	4	3	2	1	0
Function	Reserved	Write error log	Read error log	Reserved	Conditions under which the error occurred	Reserved	Reserved	Initialization	Reserved
Read/Write		R	R		R		R	R/W	

- Bit 1: Initialization

Writing 1 initializes all values related to error information and communication error information for each Station No. When the value turns to 0 after 1 is written, this indicates that initialization is complete.

When “Auto retry” is disabled, communication is not made with the Station No. where the communication error occurred, but if this bit is used for initialization, communication is resumed with all Station No.'s.

- Bit 4: Conditions under which the error occurred

If an error is occurring at a Station No., this bit turns to 1.

When the system recovers from the communication error, it automatically turns to 0. It is always 0 when “Auto retry” is disabled. When the Bit 0 (connection settings) of the “Communication error information for each Station No.” settings is 0, the conditions under which the error occurred at each Station No. are not reflected in this bit.

- Bit 6: Read error log

If a read error occurs on a device used on the MICRO/I or Touch, 1 is written.

It will not change to 0 even after the system recovers from the read error. To make it 0, write 1 in the Bit 1 (initialization).

- Bit 7: Write error log

If a write error occurs on a device used on the MICRO/I or Touch, 1 is written.

It will not change to 0 even after the system recovers from the write error. To make it 0, write 1 in the Bit 1 (initialization).

Communication error information for each Station Number

The “Communication error Information” setting stores all communication error information. To refer to error information for each Station No., use this setting. “Communication error information for each Station No.” occupies the same number of devices as the set number of words for each Host I/F Driver or Communication Driver, starting with the set device first.

Bit	15 - 8	7	6	5	4	3	2	1	0
Function	Reserved	Write error log	Read error log	Reserved	Conditions under which the error occurred	Reserved	Reserved	Reserved	Connection settings
Read/Write		R	R		R		R		R/W

- Bit 0: Connection settings

Instructs whether or not to communicate with the relevant Station No.

Communication is made if this bit is 1. Communication is not made if this bit is 0.

When the power is turned on, the default value of this bit is 1.

When “Auto retry” is enabled, this bit is always 1.

When “Auto retry” is disabled, this bit is 0 if a communication error occurs.

- Bit 4: Conditions under which the error occurred

This bit turns to 1 when an error is occurring at a relevant Station No.

When the system recovers from the communication error, it automatically turns to 0.

- Bit 6: Read error log

If a read error occurs at a relevant Station No., 1 is written.

It will not change to 0 even after the system recovers from the read error. To make it 0, write 1 in the Bit 1 (initialization) of the communication error information.

- Bit 7: Write error log

If a write error occurs at a relevant Station No., 1 is written.

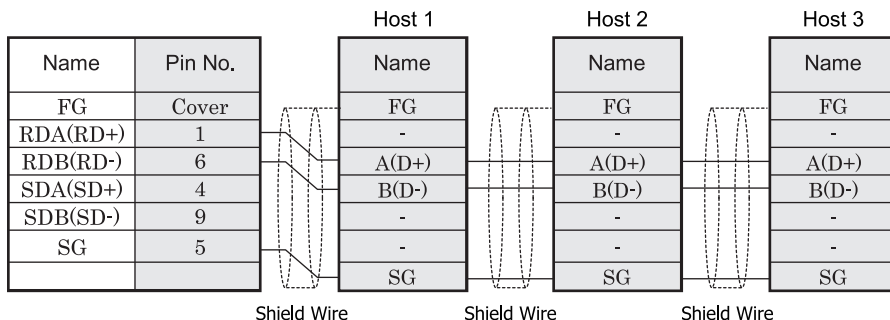
It will not change to 0 even after the system recovers from the write error. To make it 0, write 1 in the Bit 1 (initialization) of the communication error information.

3.3 Connection Diagram

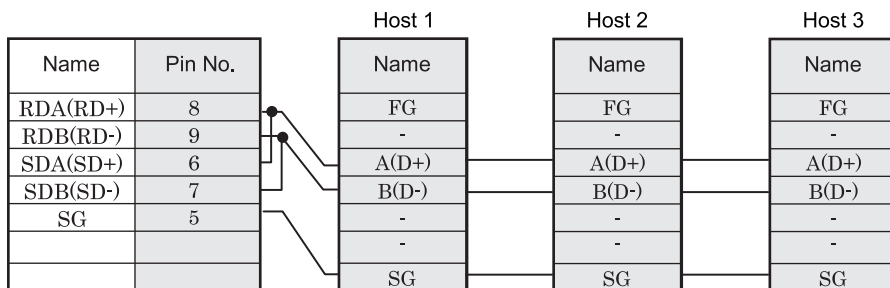
For the wiring diagram between the PLC and MICRO/I or Touch, refer to the PLC manual for PLC pin-outs. For connecting two or more PLC units with the MICRO/I or Touch, refer to the diagram below.

3.3.1 RS422/485 2-wire system

HG2G-5F, HG3G/4G (Connector)

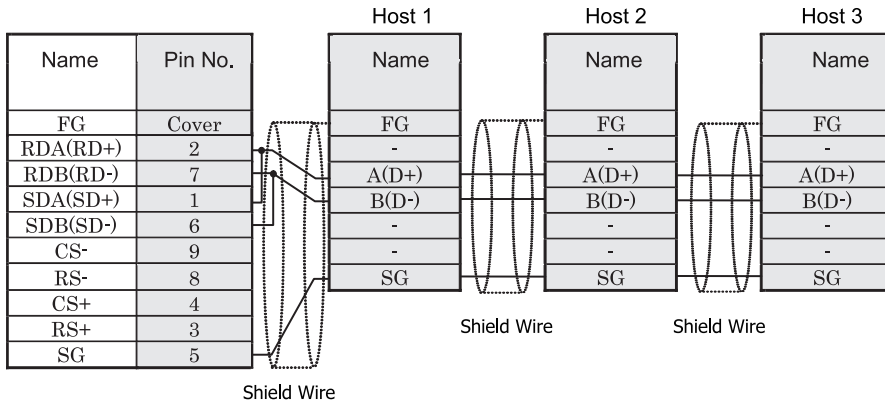


HG2G-S/-5S/-5F, HG3G/4G, Touch (Terminal)

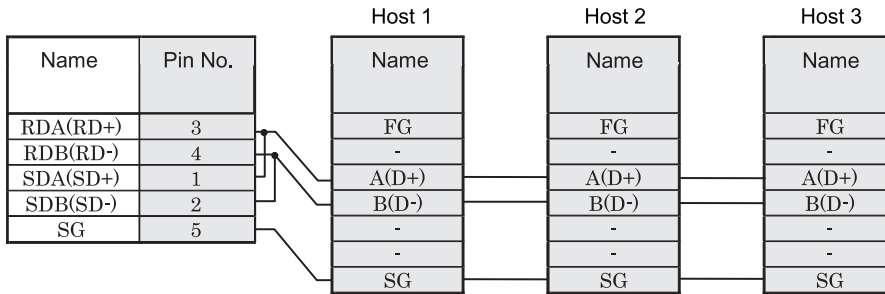


- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4
- HG2G-5F, HG3G/4G Series uses only RDA and RDB when using RS422/485 2-wire, you don't need to connect SDA or SDB.
If connecting COM1 on the HG2G-5F, HG3G/4G to the external device, do not insert terminating resistor to the external device. If terminating resistor can not be removed, use COM2 on the HG2G-5F, HG3G/4G instead of COM1.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

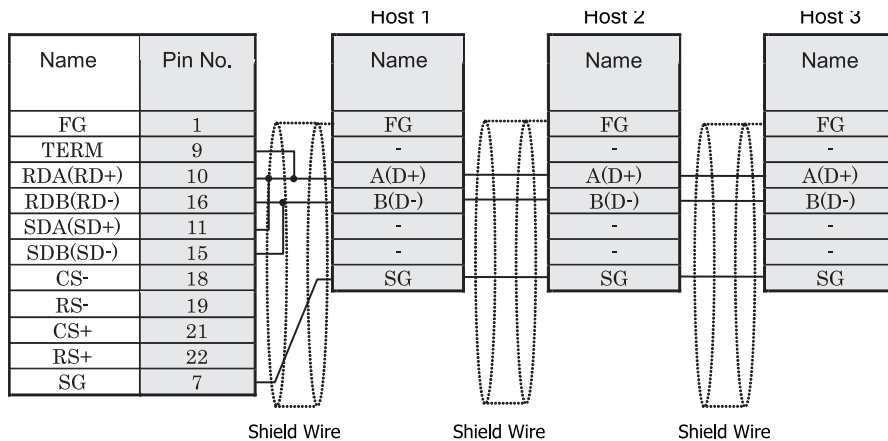
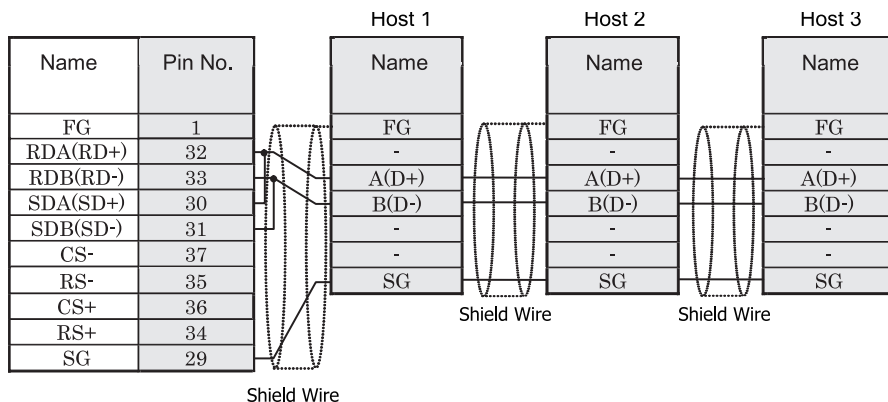
HG1F (Connector)



HG1F (Terminal)

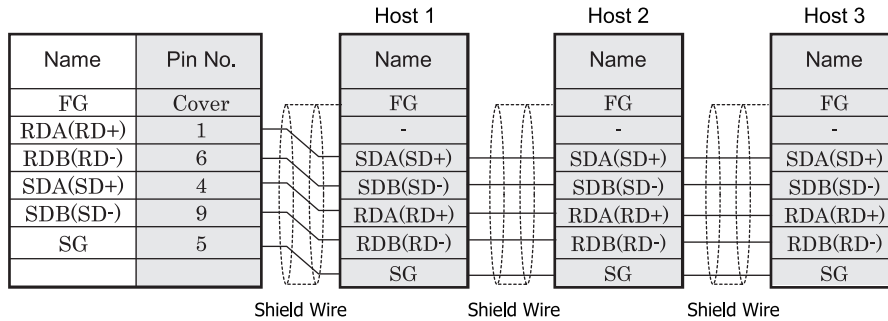
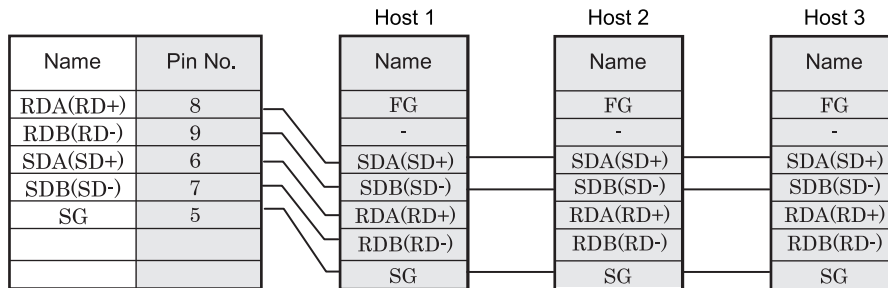


There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

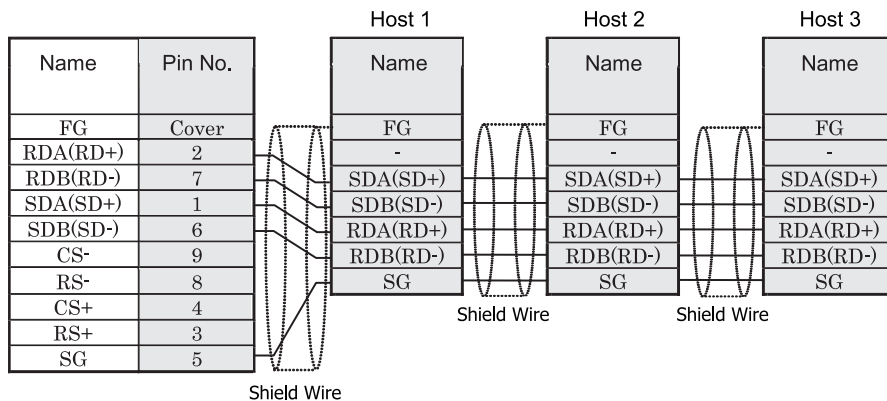
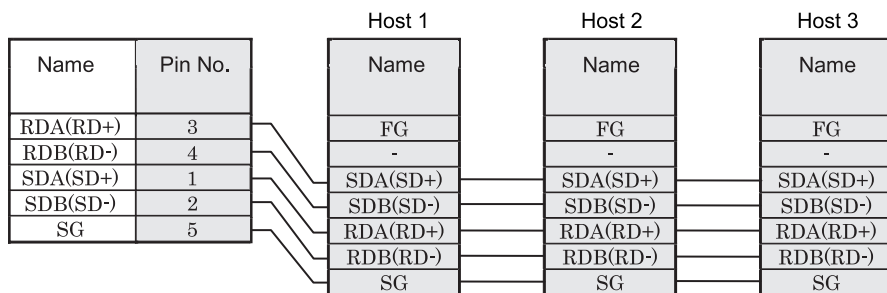
HG2F/3F/4F**HG2S**

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

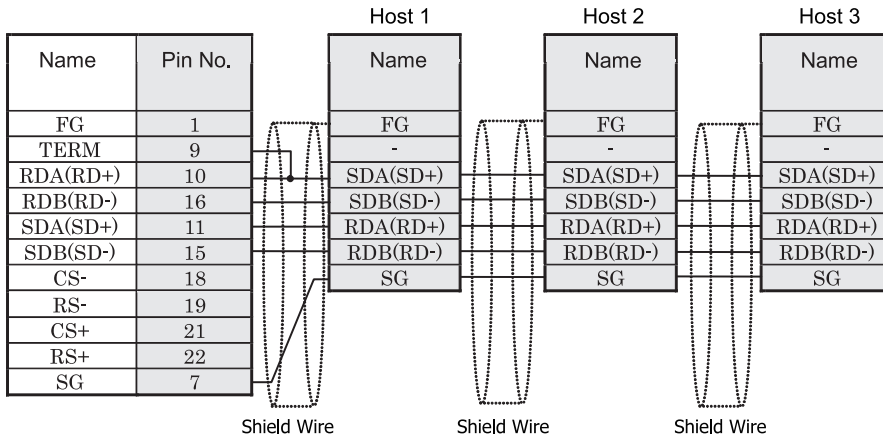
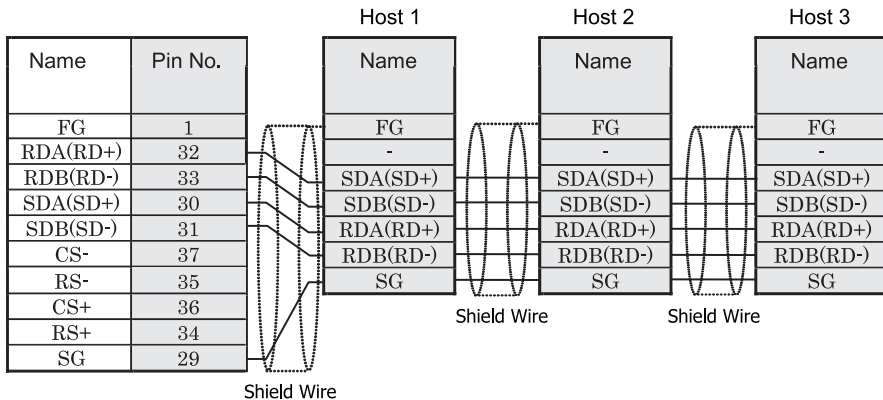
3.3.2 RS422/485 4-wire system

HG2G-5F, HG3G/4G (Connector)**HG2G-S/-5S/-5F, HG3G/4G, Touch** (Terminal)

- There is no pin number corresponding to TERM on the HG2G-S/-5S/-5F, HG3G/4G. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.
- Touch has no pin number corresponding to TERM. When a termination resistor is necessary, insert one with suitable resistance value between pin 8 (RDA) and pin 9 (RDB).

HG1F (Connector)**HG1F** (Terminal)

There is no pin number corresponding to TERM on the HG1F. When inserting a termination resistor, use a terminator switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

HG2F/3F/4F**HG2S**

There is no pin number corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Settings for PLC Link Communication" on page 4.

4 1:N Communication Operation

4.1 1:N Communication Operation

When 1:N Connection is selected as Connection in the Select/Change Host I/F Driver dialog box or Select/Change Communication Driver dialog box, multiple external devices (PLCs, etc.) can be connected to a single MICRO/I or Touch. These instructions describe operation when a host communication error or communication error occurs during 1:N communication. When using HG1F/2F/2S/3F/4F communication with the MICRO/I is stopped as soon as a host communication error occurs. When using HG2G-S/-5S/-5F, HG3G/4G or Touch, it is possible to set the specific action to be taken when a host communication error or communication error occurs. For details about settings, refer to Chapter 6 "3.2.3 Settings when a communication error occurs" on page 657.

4.1.1 When "Ignore communication errors and continue operation" is disabled

When "Ignore communication errors and continue operation" is enabled, if the MICRO/I or Touch fails to connect to the target external device, an error message and the Station No. of the external device that failed to connect are displayed, and MICRO/I or Touch operation stops.

Settings	Action when MICRO/I or Touch fails to connect to the external device
None	Displays an error message and stops operation. An Ack (acknowledge) button is not displayed in the error message. The error message is displayed until communication with the PLC recovers.

4.1.2 When "Ignore communication errors and continue operation" is enabled

When "Ignore communication errors and continue operation" is enabled, if the MICRO/I or Touch fails to connect to the external device, it does not stop operation. Information related to communication errors is stored in the devices set in "Batch monitor error information for all Station No.'s" and "Individually monitor error information for each Station No."

Reading from an external device under the conditions in which a communication error occurred

The device value of an external device that caused a communication error is maintained as the last read value until the displayed screen changes. When the screen changes, all device values of the external device that caused the communication error turn to 0.

Writing to an external device under the conditions in which a communication error occurred

If data is written to an external device that is experiencing a communication error, values displayed on the MICRO/I or Touch are changed, but are not written to the external device. Values displayed on the MICRO/I or Touch are maintained until the screen changes, but are initialized to 0 when the screen changes. Values written on the MICRO/I or Touch during a communication error are not written to the external device even after the MICRO/I or Touch has recovered from the communication error.

Options when using "Ignore communication errors and continue operation"

When "Ignore communication errors and continue operation" is enabled, several options become available. This section describes what these optional settings do.

Settings	Action when MICRO/I or Touch fails to connect to the external device	
Display error message	Enable	An error message is displayed, but operation continues(Host communication error or communication error). The error message does not automatically close even if the connection with the external device recovers. To close the error message, press the Ack (acknowledge) button that is displayed on the error message itself.
	Disable	No error message is displayed (Host communication error or communication error), and operation continues.
Auto retry	Enable	MICRO/I or Touch automatically tries to reconnect if a communication error occurs.
	Disable	MICRO/I or Touch does not try to reconnect if a communication error occurs.In this case, the bit 1 (connection settings) of the device set in "Individually monitor error information for each Station No." automatically turns to 0.

5 Restrictions

Note the following restrictions when performing 1: N communication.

- **Maximum number of units to be connected**

Using RS485 : 31 units

Using Ethernet

HG2G-5F, HG3G/4G : 32units

HG2G-S/-5S, HG1F/2F/2S/3F/4F, Touch : 16 units

(May vary depending on the PLC type. Refer to the manual of your PLC for details.)

- **Maximum number of source devices at one time**

The maximum number of devices (including O/I Link) that can be read at one time is 8192. Devices exceeding this limit cannot be read out.

- **Precautions for using the Simulation Mode**



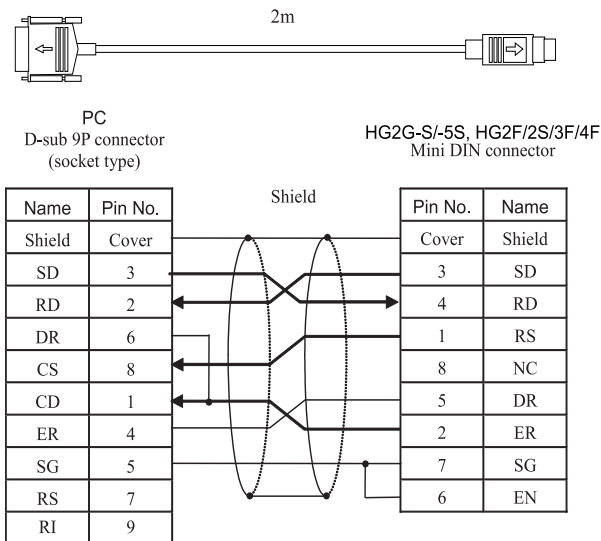
When the communication setting on the HG1F/2F/2S/3F/4F is set to 1:1, the external device values are retained even after the screen is changed. However, if set to 1:N, or when using the HG2G-S/-5S/-5F, HG3G/4G, Touch, the external device values are not retained.

Chapter 7 Communication Cables

1 Communication Cables

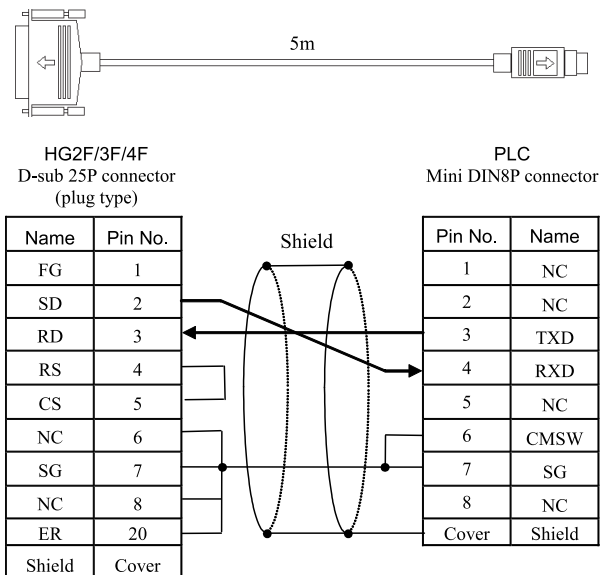
1.1 Maintenance Cable: HG9Z-XCM22

Connection cable for the HG2G-S/-5S, HG1F/2F/2S/3F/4F maintenance port and DOS/V-family personal computers.



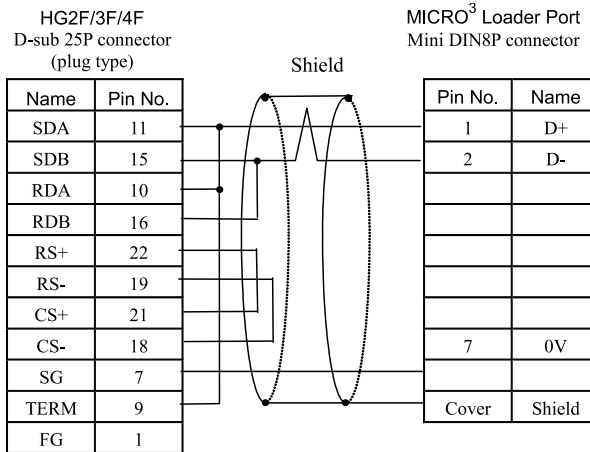
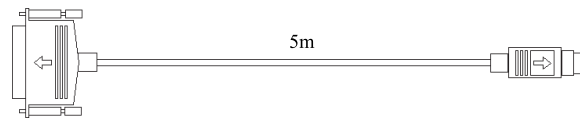
1.2 PLC connection cable: FC4A-KC2C

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC MICROSmart.



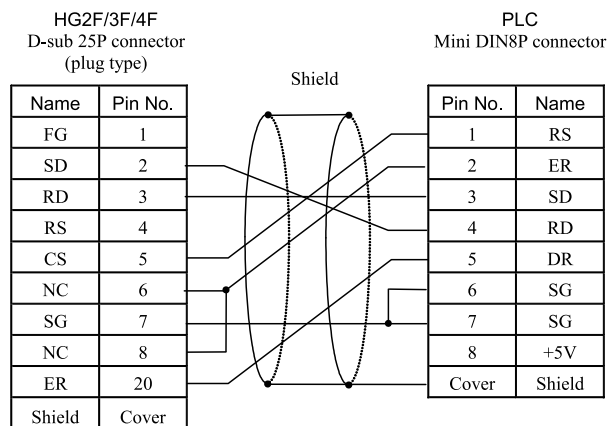
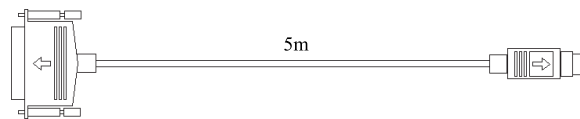
1.3 PLC connection cable: HG9Z-3C115

Direct connection cable for the HG2F/3F/4F SIO1 and the Schneider Twido Serial Port on CPU module.



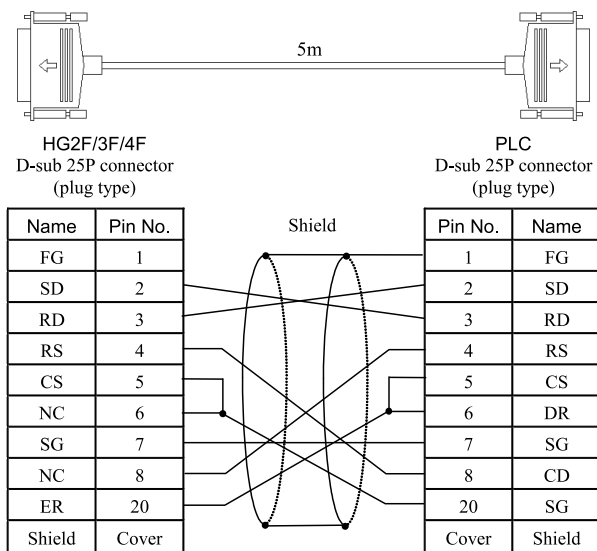
1.4 PLC connection cable: HG9Z-3C125

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC OpenNet Controller, MicroSmart.



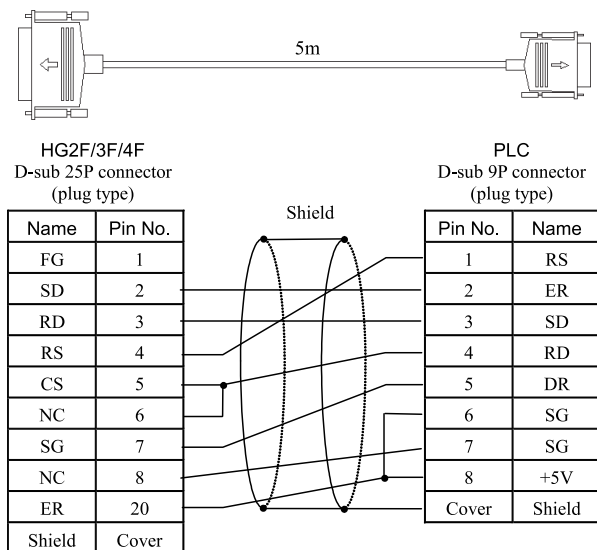
1.5 PLC connection cable: HG9Z-3C135

Connection cable for the HG2F/3F/4F and PLC (RS232C, D-sub 25P, Mitsubishi and Omron Link Units).



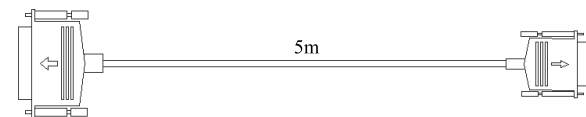
1.6 PLC connection cable: HG9Z-3C145

Connection cable for the HG2F/3F/4F and PLC (RS232C, D-sub 9P, Mitsubishi Link Units).



1.7 PLC connection cable: HG9Z-3C155

Connection cable for the HG2F/3F/4F and PLC (RS232C, D-sub 9P, Omron CPU Unit RS232C I/F).



HG2F/3F/4F
D-sub 25P connector
(plug type)

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	9
Shield	Cover

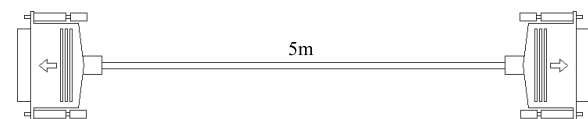
PLC
D-sub 9P connector
(plug type)

Pin No.	Name
1	FG
2	SD
3	RD
4	RS
5	CS
6	
7	
8	
9	SG
Cover	Shield

Shield

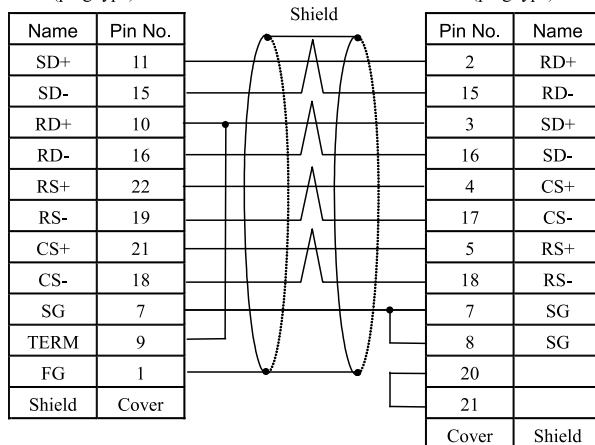
1.8 PLC connection cable: HG9Z-3C165

Connection cable for the HG2F/3F/4F and Mitsubishi A and FX Series Programming Port.

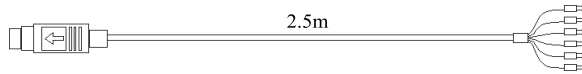


HG2F/3F/4F
D-sub 25P connector
(plug type)

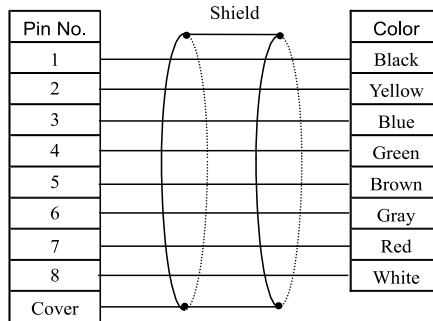
PLC
D-sub 25P connector
(plug type)



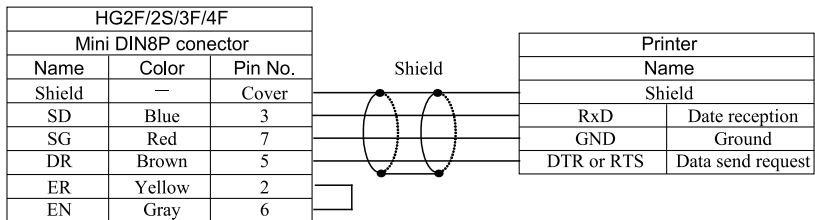
1.9 Printer/ External devices/ PLC connection cable: FC2A-KP1C



Mini DIN8P connector



Please perform the following wiring when HG2F/2S/3F/4F be connected with the printer.
Refer to the printer instruction manual for details.



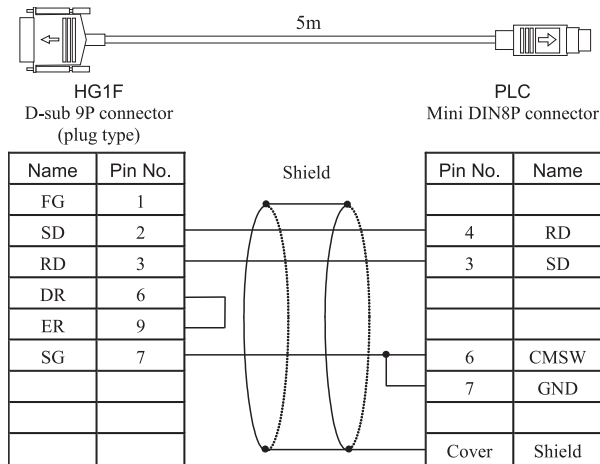
Refer to "1.19 PLC connection cable: HG9Z-XC275" (P.680) in this chapter when the HG2G-S/-5S/-5F, HG3G/4G be connected with the PLC.



Terminate any unused wires properly to make sure that these wires do not contact other wires or metal parts electrically.

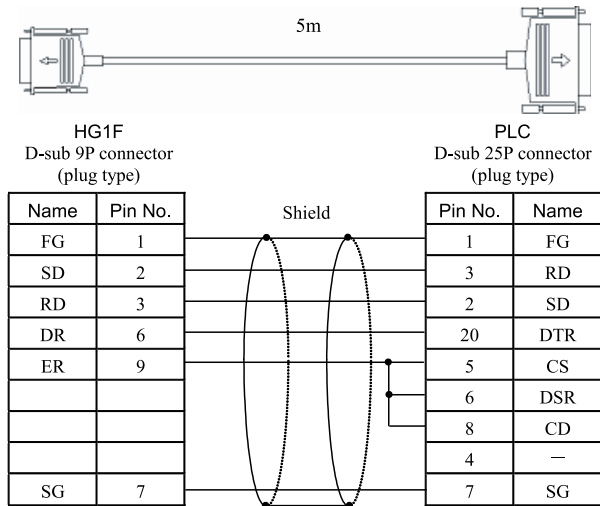
1.10 PLC connection cable: FC4A-KC1C

Direct connection cable for the HG1F (RS232C type) SIO1 and the IDEC MICROSmart Programming Port.



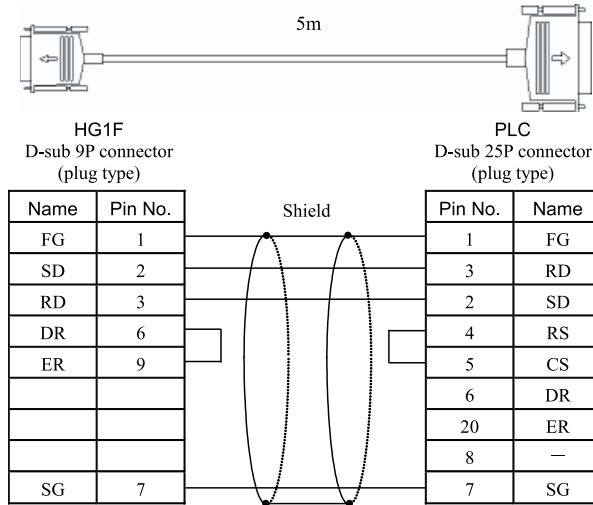
1.11 PLC connection cable: HG9Z-XC145

Direct connection cable for the HG1F (RS232C type) SIO1 and PLC (RS232C, D-sub 25P, Mitsubishi Computer Link Unit).



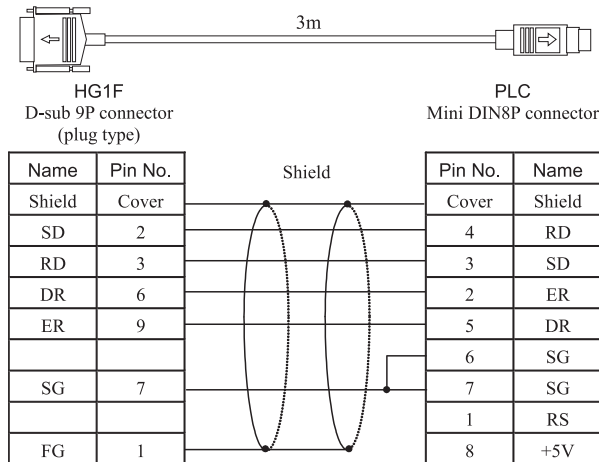
1.12 PLC connection cable: HG9Z-XC155

Direct connection cable for the HG1F (RS232C type) SIO1 and PLC (RS232C, D-sub 25P, Omron Host Link Unit).



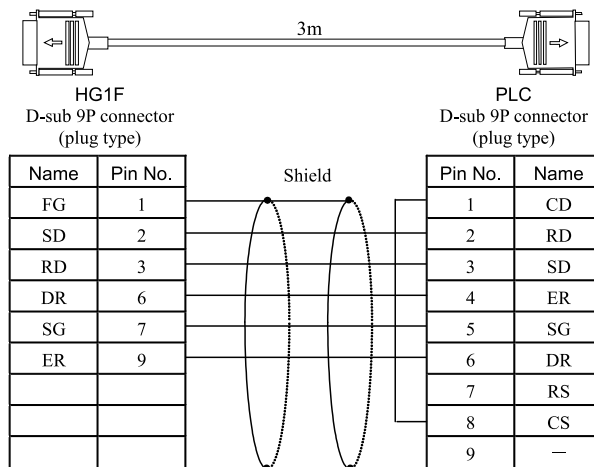
1.13 PLC connection cable: HG9Z-XC183

Direct connection cable for the HG1F (RS232C type) SIO1 and the IDEC OpenNet Controller and MICROSmart Port2.



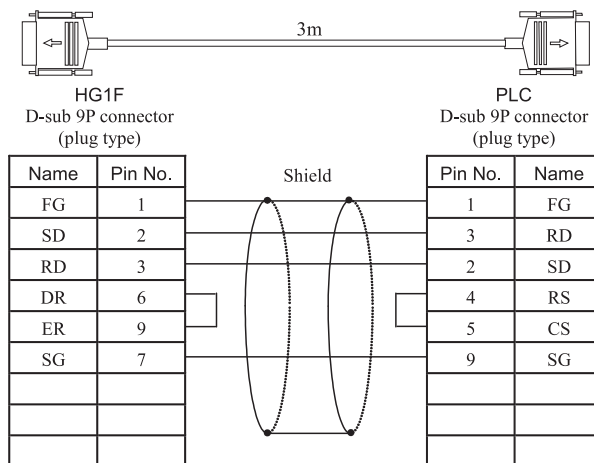
1.14 PLC connection cable: HG9Z-XC203

Direct connection cable for the HG1F (RS232C type) SIO1 and PLC (RS232C, D-sub 9P, Mitsubishi Computer Link Unit).



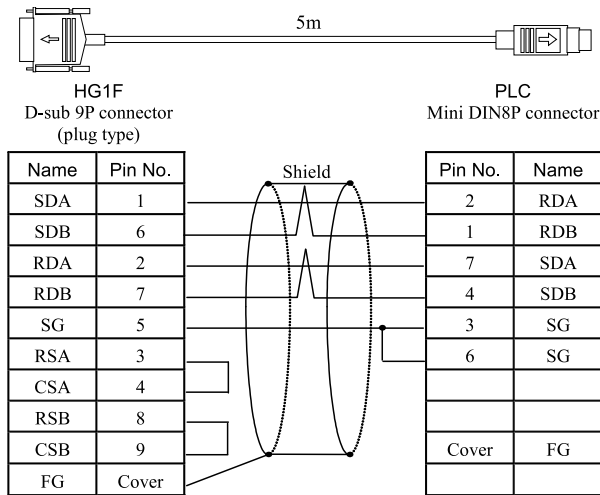
1.15 PLC connection cable: HG9Z-XC213

Direct connection cable for the HG1F (RS232C type) SIO1 and PLC (RS232C, D-sub 9P, Omron CPU Unit RS232C I/F except for C20H/28H/40H).



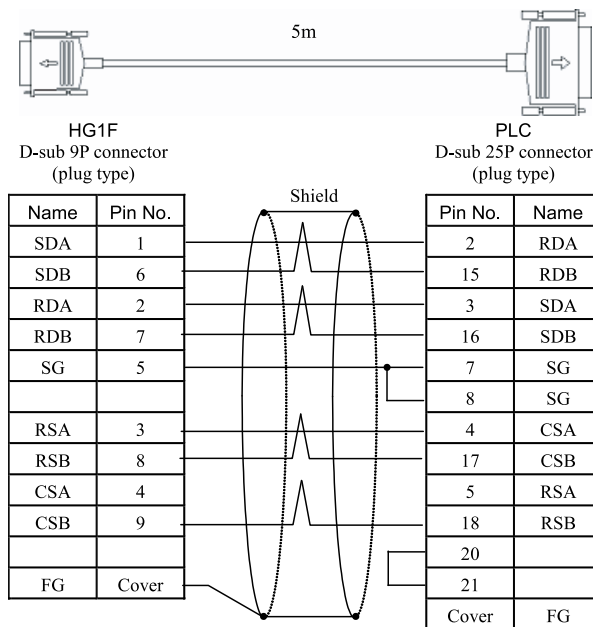
1.16 PLC connection cable: HG9Z-XC245

Direct connection cable for the HG1F (RS422/485 type) SIO1 and the Mitsubishi FX Series.



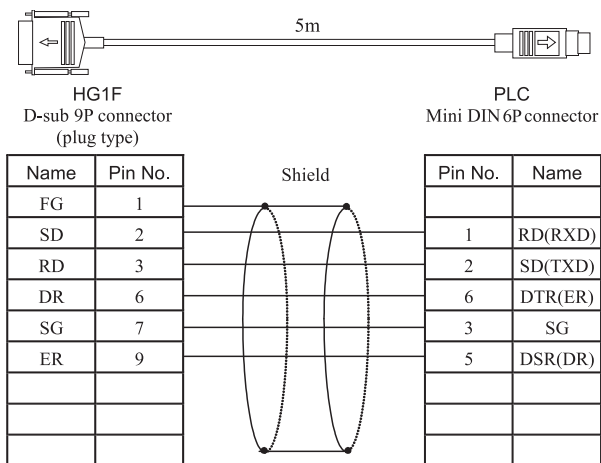
1.17 PLC connection cable: HG9Z-XC255

Direct connection cable for the HG1F (RS422/485 type) SIO1 and the Mitsubishi A/QnA Series.



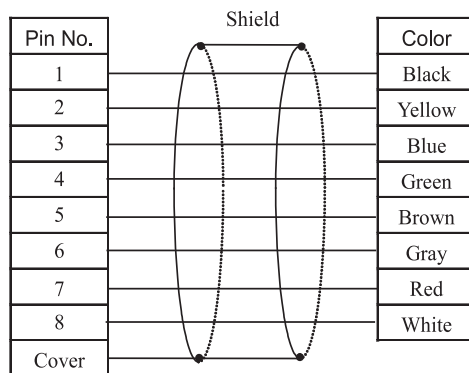
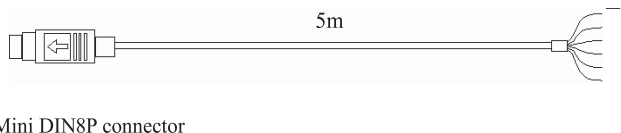
1.18 PLC connection cable: HG9Z-XC265

Direct connection cable for the HG1F (RS232C type) SIO1 and the Mitsubishi Q Series.

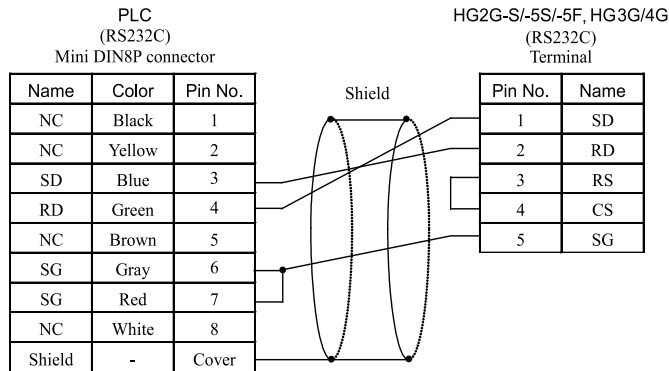


1.19 PLC connection cable: HG9Z-XC275

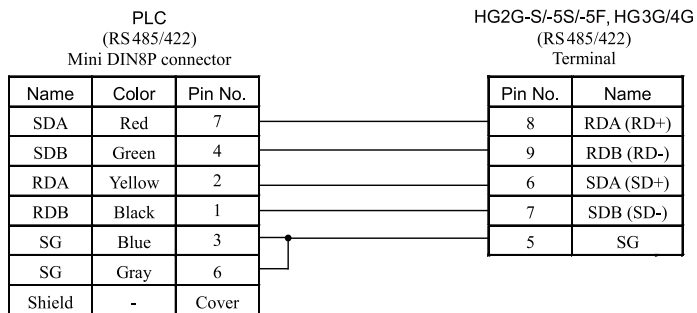
Communication cable for the HG2G-S/-5S/-5F, HG3G/4G (RS232C type) Serial 1 and the IDEC MICROSmart or the Mitsubishi FX Series.



The following wiring is for the HG2G-S/-5S/-5F, HG3G/4G and the IDEC MICROSmart.



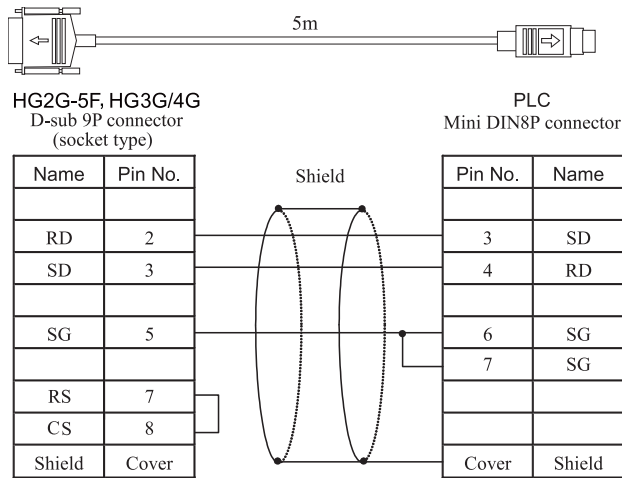
The following wiring is for the HG2G-S/-5S/-5F, HG3G/4G and the Mitsubishi FX Series (except the FX3U and FX3UC-32MT-LT).



- Terminate any unused wires properly to make sure that these wires do not contact other wires or metal parts electrically.
- Please do not use the communication cable part number HG9Z-XC275 for FX3U/FX3UC-32-MT-LT of the MELSEC-FX Series described in this manual because the Mini Din connector interferes with the housing of the PLC.

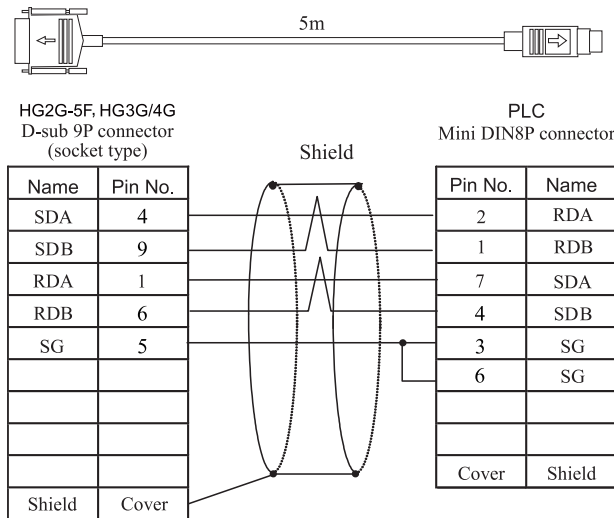
1.20 PLC connection cable: HG9Z-XC295

Direct connection cable for the HG2G-5F, HG3G/4G Serial Interface (COM1) and the IDEC MICROSmart Programming Port.



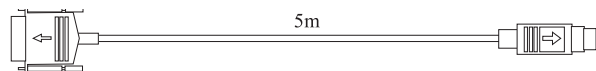
1.21 PLC connection cable: HG9Z-XC305

Direct connection cable for the HG2G-5F, HG3G/4G Serial Interface (COM1) and the Mitsubishi FX Series.



1.22 PLC connection cable: HG9Z-XC315

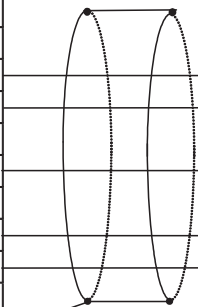
Direct connection cable for the HG2G-5F, HG3G/4G Serial Interface (COM1) and the Mitsubishi Q Series.



HG2G-5F, HG3G/4G
D-sub 9P connector
(socket type)

Name	Pin No.
RD	2
SD	3
SG	5
RS	7
CS	8
Shield	Cover

Shield



PLC
Mini DIN 6P connector

Pin No.	Name
2	SD(TXD)
1	RD(RXD)
3	SG
5	DSR(DR)
6	DTR(ER)
Cover	Shield

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