

INSTRUCTION SHEET

MICROSmart

FC6A Series Expansion Interface Remote module

This sheet provides brief operating instructions of the MICROSmart programmable controller. For details, see the FC6A Series MICROSmart User's Manual.

Safety Precautions

- Special expertise is required to use the MICROSmart.
- Read this instruction sheet and the user's manual to make sure of correct operation before starting installation, wiring, operation, maintenance, and inspection of the MICROSmart. Keep this instruction sheet where it can be accessed by the end user.
- All MICROSmart modules are manufactured under IDEC's rigorous quality control system, but users must add backup or failsafe provisions to control systems use the MICROSmart in applications where heavy damage or personal injury may be caused if the MICROSmart should fail.
- Install the MICROSmart according to the instructions described in this instruction sheet and the user's manual. Improper installation will result in falling, failure, or malfunction of the MICROSmart.
- Make sure that the operating conditions are as described in the user's manual. If you are uncertain about the specifications, contact IDEC before using the MICROSmart.
- In this instruction sheet, safety precautions are categorized in order of importance from 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**
Turn off the power to the MICROSmart before starting installation, removal, wiring, maintenance, or inspection on the MICROSmart. Failure to turn off the power may cause damage, electrical shocks or fire hazard.
- Emergency stop and interlocking circuits must be configured outside the MICROSmart. If such a circuit is configured inside the MICROSmart, failure of the MICROSmart may cause disorder of the control system, damage, or accidents.
- SUITABLE FOR USE IN CLASS 1, DIVISION 2, GROUPS A,B,C AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.
- Cet appareil convient uniquement à l'emploi dans des zones dangereuses de classe 1, groupes A,B,C et D; ou dans des zones non dangereuses.
- WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.
- Avertissement: risque d'explosion. Ne pas débrancher l'appareil tant que le circuit est sous tension, ou à moins d'être certain que lieu d'utilisation soit exempt de concentrations inflammables.
- THIS EQUIPMENT IS AN OPEN -TYPE DEVICE MEANT TO BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE ENVIRONMENT THAT IS ONLY ACCESSIBLE WIHT THE USE OF A TOOL OR KEY.
- Cet appareil doit être installé dans un boîtier qui est adapté à l'environnement d'utilisation et uniquement accessible avec un outil d'ouverture ou une clé.

- CAUTION**
The MICROSmart is designed for installation in equipment. Do not install the MICROSmart outside of equipment.
- Install the MICROSmart in environments as described in the user's manual. If the MICROSmart is used in places where it is subjected to high-temperature, high-humidity, condensation, corrosive gases, excessive vibrations, or excessive shocks it will result in electrical shocks, fire hazard, or malfunction.
- The environment rating for using the MICROSmart is "Pollution degree 2."
- Prevent metal fragments and pieces of wire from dropping inside the MICROSmart housing. Ingress of such fragments and chips may cause fire hazard, damage, or malfunction.
- Use wires of a proper size to meet voltage and current requirements. Tighten terminal screws to the proper tightening torque of 0.49 N·m.
- Use an IEC60127-approved fuse on the power line and output circuit to meet voltage and current requirements. (Recommended fuse: Littelfuse 5x20mm slow-blow type 218000 series/Type T) This is required when exporting equipment containing MICROSmart to Europe.
- Use an EU-approved circuit breaker. This is required when exporting equipment containing MICROSmart to Europe.
- If relays or transistors in the MICROSmart output modules should fail, outputs may remain on or off. For output signals which may cause heavy accidents, provide a monitor circuit outside of the MICROSmart.
- Do not disassemble, repair, or modify MICROSmart modules.

1 TYPE

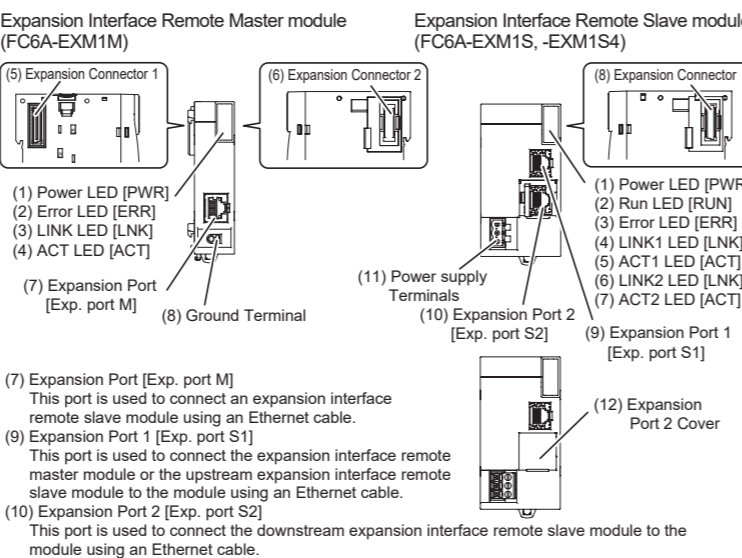
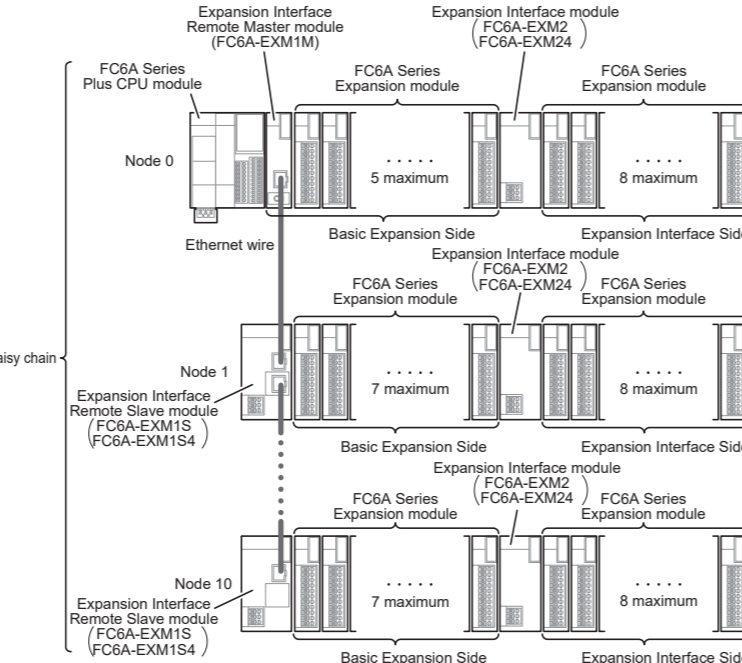
Expansion Interface Remote Master module: FC6A-EXM1M
Expansion Interface Remote Slave module: FC6A-EXM1S, FC6A-EXM1S4

2 Specification

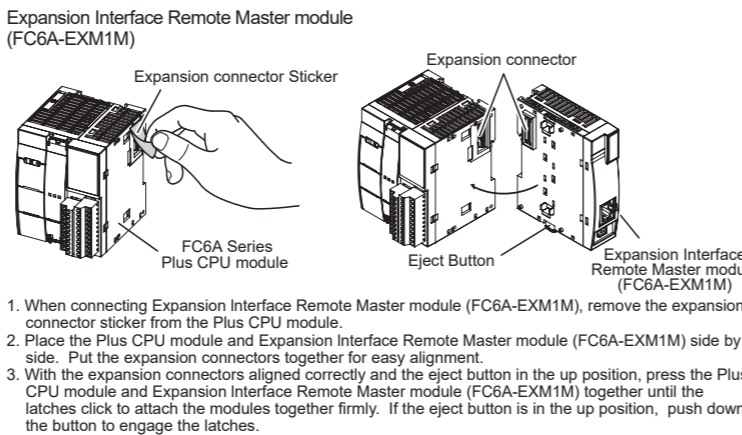
Operating Temperature: -10 to +55°C (no freezing)
Expanded Operating Temperature: -25 to -10°C, +55 to 65°C (no freezing)
* See the user's manual for details on use in Expanded Operating Temperatures.
Storage Temperature: -25 to +70°C (no freezing)
Relative/Storage Humidity: 10 to 95%RH (no condensation)
Altitude or Air Pressure: 0 to 2,000 m (1,013 to 795hPa) during operation,
0 to 3,000 m (1,013 to 701hPa) during transport,
Vibration Resistance: 5 to 8.4 Hz half amplitude 3.5 mm,
8.4 to 150 Hz, acceleration 9.8 m/s² (1 G), X, Y, Z directions, 2 hours,
Shock Resistance: 147 m/s² (15 G), 11 ms, X, Y, Z directions, 3 times
Installation Location: Inside cabinet (indoor use)
Maximum Surrounding Air Temperature: 55°C / 65°C
Temperature Code: T4
* See the user's manual for more details on the product specifications.

3 Parts Description

FC6A-D16R1CEE, -D16R4CEE, -D16P1CEE, -D16P4CEE, -D16K1CEE, -D16K4CEE, -D32P3CEE, -D32P4CEE, -D32K3CEE, -D32K4CEE (hereinafter referred to as the Plus CPU module) can be expanded with a maximum of 63 modules (I/O points: maximum 2,016 points) using expansion interface remote modules. The expansion interface remote modules are the remote master which connects to the expansion connector of the Plus CPU module and the remote slave which connects to expansion modules that are positioned away from the CPU module.
The expansion interface remote master module can be connected only to the basic expansion side of the Plus CPU module. At this time, the maximum number of expansion modules (basic expansion side) that can be connected to the remote master is five modules, but this can be increased to an additional eight expansion modules (expansion interface side) by installing the integrated expansion interface module. Expansion interface remote slave modules are daisy chained to the remote master using Ethernet cables. The group of expansion modules that are connected to the expansion connectors and communication connectors of the Plus CPU module and expansion interface remote slave modules are called as nodes. As show by the figure below, the first node that includes the Plus CPU module is called node 0, and the nodes containing remote slaves are called node 1, node 2, and up to node 10 in order from those closest to node 0. The maximum number of nodes is 11, from node 0 to node 10.
The maximum number of expansion modules (basic expansion side) that can be connected to a remote slave is seven modules, but this can be increased to an additional eight expansion modules (expansion interface side) by installing the integrated expansion interface module.



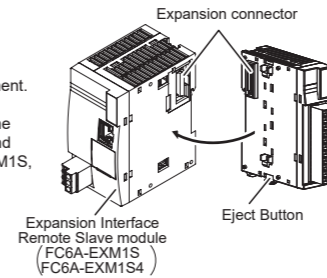
4 Connecting Modules



- When connecting Expansion Interface Remote Master module (FC6A-EXM1M), remove the expansion connector sticker from the Plus CPU module.
- Place the Plus CPU module and Expansion Interface Remote Master module (FC6A-EXM1M) side by side. Put the expansion connectors together for easy alignment.
- With the expansion connectors aligned correctly and the eject button in the up position, press the Plus CPU module and Expansion Interface Remote Master module (FC6A-EXM1M) together until the latches click to attach the modules together firmly. If the eject button is in the up position, push down the button to engage the latches.

Expansion Interface Remote Slave module (FC6A-EXM1S, -EXM1S4)

- Place the I/O module and Expansion Interface Remote Slave module (FC6A-EXM1S, -EXM1S4) side by side. Put the expansion connectors together for easy alignment.
- With the expansion connectors aligned correctly and the eject button in the up position, press the I/O module and Expansion Interface Remote Slave module (FC6A-EXM1S, -EXM1S4) together until the latches click to attach the modules together firmly. If the eject button is in the up position, push down the button to engage the latches.

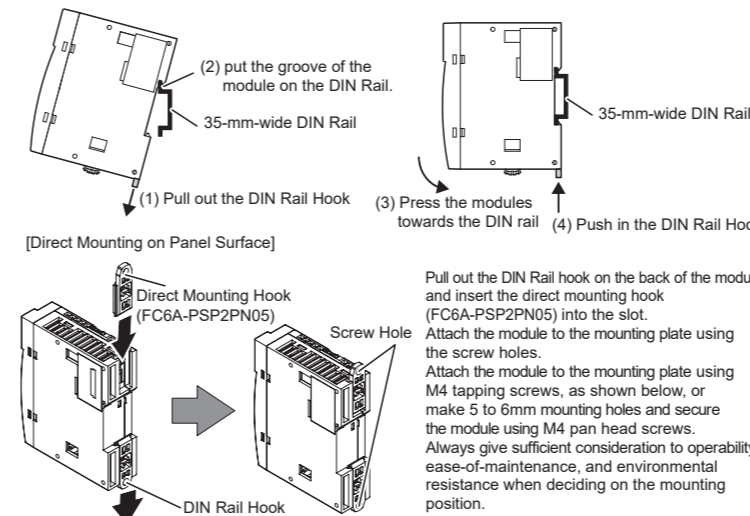


CAUTION

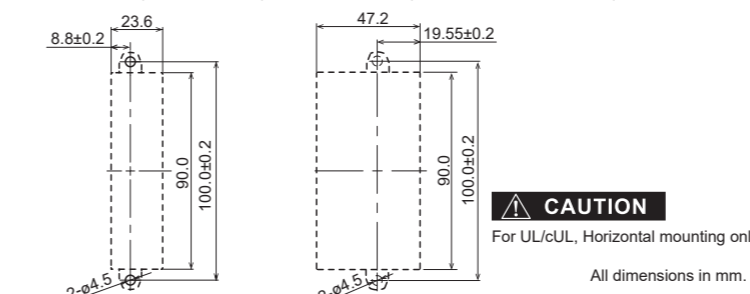
When an expansion module is not connected next, don't peel off the protection sticker.

5 Mounting Modules

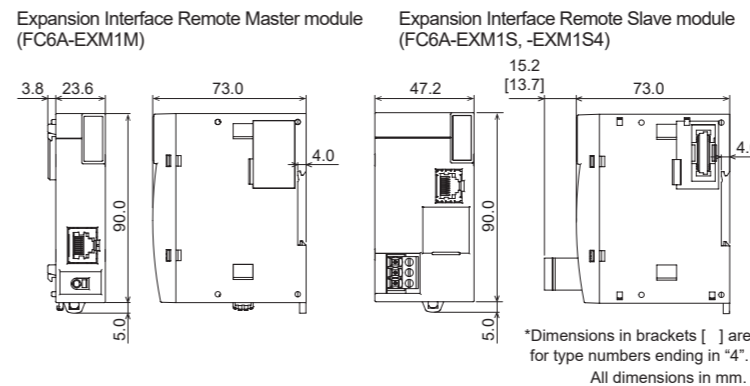
For details about mounting and removing modules, see the user's manual. [Mounting on DIN Rail] Use a 35-mm-wide DIN Rail and BNL6 mounting hooks to secure the modules.



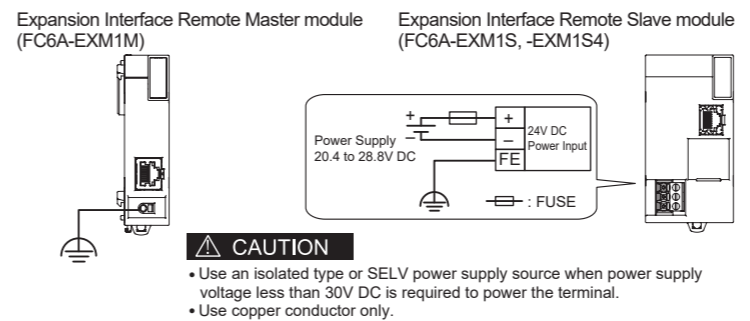
Expansion Interface Remote Master module (FC6A-EXM1M) Expansion Interface Remote Slave module (FC6A-EXM1S, -EXM1S4)



6 Dimensions



7 Wiring

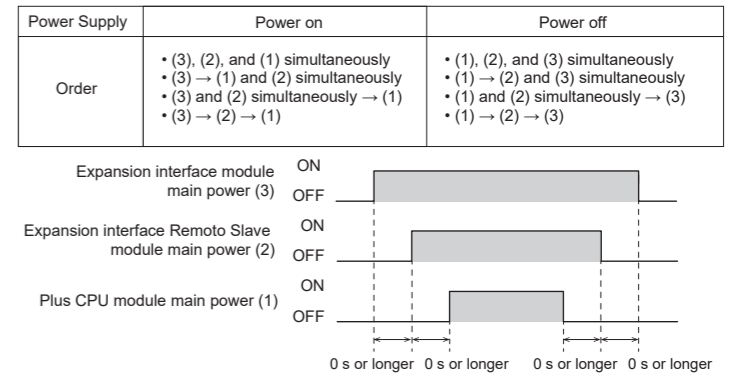


CAUTION

- Use an isolated type or SELV power supply source when power supply voltage less than 30V DC is required to power the terminal.
- Use copper conductor only.

8 Power Supply Precautions

When supplying power to the Plus CPU module ((1) in the following table), expansion interface remote slave module ((2) in the following table), and integrated expansion interface module ((3) in the following table) with different power supplies, turn the modules on and off in the order given in the following table. The Plus CPU module will not recognize expansion interface modules if the power supplies are turned on and off in the wrong order.



If there is an interruption of the power supply (power off) to an expansion interface remote slave module during operation, the outputs of all expansion modules (both basic expansion and expansion interface sides) connected to the node of the expansion interface remote slave module will turn off while the power is interrupted. When the power is restored, the expansion interface remote slave module that experienced the power interruption will be reset to its initial state, and the outputs of the expansion modules will not recover automatically. Turn on special internal relay (M8320) on the Plus CPU module to reconfigure the settings of the expansion interface remote slave module and recover the outputs of the expansion modules. During the power interruption, I/O refresh will also be stopped for the expansion modules connected to nodes located downstream from the node of the expansion interface remote slave module that has experienced the power interruption. The outputs of the expansion modules (both the basic expansion side and the expansion interface side) for which I/O refresh has been stopped will be automatically turned off after 10 seconds. However, when the power supply to the expansion interface remote slave module of the upstream node that experienced the power interruption is restored, I/O refresh for the expansion modules of downstream nodes will be automatically restarted, and the outputs of the expansion modules will be automatically restored. If there is an interruption of the power supply (power off) to an integrated expansion interface module during operation, the outputs of all expansion modules of the node that are connected to this module will turn off while the power is interrupted. When the power recovers from the interruption, the expansion modules (both the basic expansion side and the expansion interface side) are restored to their original statuses. For details, see the User's Manual.

9 Applicable Cable / Recommended Ferrule / Recommended Screwdriver / Tightening Torque

The recommended ferrule is made by Phoenix Contact or Weidmüller. To crimp the ferrules shown below, use a special crimping tool. (CRIMPFOX6 (1212034) or PZ 6 Rote L (1444050000)) To the terminal block, use the recommended screwdriver made by Phoenix Contact or Weidmüller and tighten terminal screws tightening torque.

Expansion Interface Remote Master module (FC6A-EXM1M) :	
Applied cable	Recommended ferrule
UL1007 / UL2464	AWG24 AI 0,25-8 (3203037), H 0,25/12T GE (9021020000)
	AWG22 AI 0,34-8 (3203066), H 0,34/12 TK (9025770000)
	AWG20 AI 0,5-8 (3200014), AI-TWIN 2x0,5-8 (3200933), H 0,5/14D W (9019010000), H 0,5/14D ZH W (9037380000)
	AWG18 AI 0,75-8 (3200519), AI-TWIN 2x0,75-8 (3200807), H 0,75/14D GR (9019040000), H 0,75/14D ZH GR (9037410000)
UL1015	AWG20 AI 1,5-8 (3200043), H 1,5/14D SW (9019120000)
	AWG18 AI 0,5-8 GB (1208966)
	AWG16 AI 1-8 (3200030), H 1,0/14D R (9019080000)
UL1015	AWG18 AI 1,5-8 (3200043), AI-TWIN 2x1,5-8 (3200823), H 1,5/14D SW (9019120000), H 1,5/16D ZH SW (9037470000)
	AWG16 AI 1,5-8 (3200195), H 1,5/16D SW (9019130000)
	AWG16 AI 1,5-10 (3200195), H 1,5/16D SW (9019130000)

Screwdriver	
SZS 0,6x3,5 (1205053) , SDS 0,6x3,5x100 (9008330000)	

Expansion Interface Remote Slave module (FC6A-EXM1S, -EXM1S4) :	
Applied cable	Recommended ferrule
UL1007 / UL2464	AWG24 AI 0,25-10 (3241128)
	AWG22 AI 0,34-10 (3241129)
	AWG20 AI 0,5-10 (3201275), AI-TWIN2x0,5-10 (3203309), H 0,5/16D W (9019020000), H 0,5/16D ZH W (9037390000)
	AWG18 AI 0,75-10 (3201288), AI-TWIN 2x0,75-10 (3200975), H 0,75/16D GR (9019050000), H 0,75/16D ZH GR (9037420000)
UL1015	AWG16 AI 1,5-10 (3200195), H 1,5/16D SW (9019130000)
	AWG20 AI 0,5-10 GB (3203150), H 0,5/16 DS W (9020910000)
	AWG18 AI 1-10 (3200182), H 1,0/16D R (9019100000)
AWG16 AI 1,5-10 (3200195), H 1,5/16D SW (9019130000)	

Screwdriver		Tighten torque
SZS 0,6x3,5 (1205053) , SDS 0,6x3,5x100 (9008330000)		0.49 N·m

() indicates the Type No. of PHOENIX CONTACT GmbH & Co. KG and Weidmüller Interface GmbH & Co. KG.

10 Precaution for Disposal

- Dispose of the FC6A Series MICROSmart as an industrial waste.

MICROSmart User's manual can be downloaded from <http://www.idec.com/FC6Amanuals>