B-2269-2(0)

INSTRUCTION SHEET

EB3C-N Relay Barrier

(Contact signal Transducer)

To make sure of correct installation, wiring, operation, maintenance, and inspection of the EB3C-N relay barrier, read this instruction manual, manual No. **B-2270-1~8** for intrinsically safe system, and for use in Japan, additional manual No. **B-670** for the switch (intrinsically safe apparatus).

Make sure that this manual be kept at the last user of the EB3C-N relay barrier.

[Specifications]

Certification Body	Applicable Standard	Performance for Type of Protection	Manual No.
JAPAN	Recommended Practices for Explosion-Protected Electrical Installations in General Industries	[Ex ia Ga] IIC [Ex ia Da] IIIC	B-2270-1
GLOBAL/IECEx	IEC 60079-11		B-2270-2
EUROPE/ATEX UK/UKCA	EN 60079-11	II(1)G[Ex ia Ga] IIC II(1)D[Ex ia Da] IIIC	B-2270-3
USA/FM	Class 3610 ANSI/UL60079-11	AIS Cl. I,II,III Division 1, Groups A,B,C,D,E,F,G AIS Zone0,1 [AEx ia Ga]IIC,IIB,IIA	B-2270-4
USA,CAN/ UL, c-UL	UL913 UL60079-11 CSA C22.2 No.157 CSA C22.2 No.60079-11	Cl. I,II,III Division 1, Groups A,B,C,D,E,F,G Cl. I, Zone0 [AEx ia Ga]IIC	B-2270-7
CHINA/Ex-CCC	GB/T3836.4	[Ex ia Ga] IIC [Ex ia Da] IIIC	B-2270-5
KOREA/KCS	IEC 60079-11		B-2270-6
TAWAN/TS	IEC 60079-11		B-2270-8
NK	IEC 60079-11		※
KR	IEC 60079-11		※

※ : see No.B-2270-2 therefor Certificate Body not specified Manual.

Standard for equipment	IEC60947-5-1
Degree of Protection	IP20
Operating Temperature	-20 to +60°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)
Atmosphere	800 to 1100 hPa
Pollution Degree	2
Overvoltage category	II
Rated Power Voltage	100 to 240V AC, +10 or –15% , 24V DC ±10%
UL certified Rated Power Voltage	100 to 120V AC, +10 or –15% 50/60Hz 24V DC±10%(Class2 power supply)
Power Consumption	AC:(approx.)9.6VA (EB3C-R10AN at 200V AC) DC:(approx.)4.8W (EB3C-R16CDN at 24V DC)
UL certified Power Consumption	AC9.6 VA (EB3C-R10AN at 120V AC) DC5.8W(EB3C-R16CDN at 26.4V DC)
Inrush Current	AC: 10A (100V AC), 20A (200V AC) DC: 10A (24V DC)
Operation	Input ON: Output ON (1:1)
Relay Output	Contact configuration:1NO (08C and 16C:8 circuits per common) Ui = 250V AC, 125V DC, Ith = 3A (common terminal: 8A) Minimum applicable load: 0.1V DC, 0.1mA(reference value)
UL certified Relay Output	125V AC 3A, 24VDC 3A(Res.)/125VAC 3A, 24VDC 2A(Ind.) 8A max.at common terminal
Transistor Output	24V DC (30V max.), 100 mA, Voltage drop: 1.5V maximum(Ta:25°C)
	<Connector type : 24V DC (30V max.), 15 mA > Class2
Signal Input	12V DC, 10mA (n = number of lines per common) Wiring allowable resistance: Rc = 600Ω/(1+n) maximum
Dielectric Strength (1min,1mA)	Between intrinsically safe circuit and non-intrinsically safe circuit : 1527V AC Between AC power and output terminal : 1500V AC Between DC power and transistor output terminal : 1000V AC※1
Connector type Barrior Use connector	XG4A-2031(OMRON) <ACCESSORY(mating connector): XG4M-2030-T(OMRON)> Note: If you use anything other than an accessory connector, it will not be recognized as a UL certified product
Terminal Style	M3 screw terminal
Wire Size (per one terminal)	One wire : 0.5 to 2.1 mm² (AWG20 to 14) Two wires : 0.5 to 1.5 mm² (AWG20 to 16) (same size)
UL certified product Wire Size (per one terminal)	One wire : AWG16 to 14 (1.25 to 2.1 mm²) voltage rating minimum 125V,temperature minimum 75 deg.C Use Copper Conductors Only
Mounting	35mm-wide DIN rail or panel mounting (M4 screw)
Weight (approx.)	0.39 kg (EB3C-R16CDN)

※1 : Except for Conector type

[Safety Precautions]

Use the EB3C-N relay barrier only for the protection of electrical equipment used in potentially explosive atmospheres. In this instruction manual, safety precautions are categorized in order of importance to Warning and Caution.

⚠ WARNING ***Improper operation may cause severe personal injury or death.***

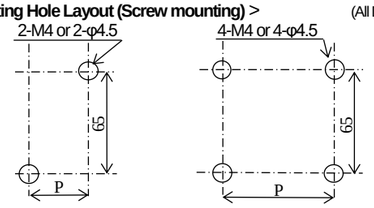
- Special expertise is required to install, wire, operate, maintain, and inspect the EB3C-N relay barrier. People without such expertise and knowledge in the installation of electrical equipment used in potentially explosive atmospheres and electric systems, relevant regulations, principle, function, and skill must not use the EB3C-N relay barrier.
- Install the EB3C-N relay barrier in non-hazardous areas.
- Make sure that the operating environment is in accordance with the specifications.

⚠ CAUTION ***Inattention might cause personal injury or damage to equipment.***

- Use the EB3C-N relay barrier within the rated values of the specifications.
- Do not use the damaged EB3C-N relay barrier, otherwise injury or fire may result.
- Indoor use
- When disposing of the EB3C-N relay barrier, do so as an industrial waste

[Installation]

< Mounting Hole Layout (Screw mounting) > (All Dimensions in mm)



Housing Size A, B, C　　Housing Size D

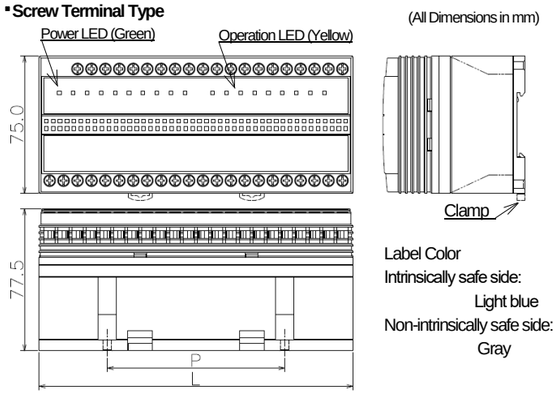
< Mounting Hole Dimensions >

Housing Size	Number of Circuits	P (mm)	L (mm)
A	1	28.0	42.0
B	2,3	51.0	65.0
C	5,6, 8 common	97.0	110.5
D	8,10, 16 common connector 16	97.0	171.5

< Outline Drawing >

▪ Screw Terminal Type

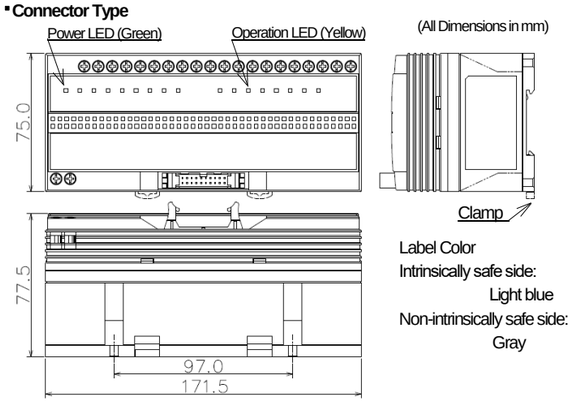
(All Dimensions in mm)



Label Color
Intrinsically safe side:
Light blue
Non-intrinsically safe side:
Gray

▪ Connector Type

(All Dimensions in mm)



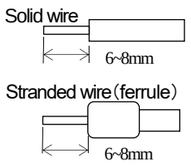
Label Color
Intrinsically safe side:
Light blue
Non-intrinsically safe side:
Gray

[Instructions]

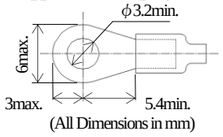
1) Mounting

- The EB3C-N relay barrier can be installed in any direction.
- Install the EB3C-N relay barrier securely to withstand vibrations.
- When mounting the EB3C-N relay barrier onto a DIN rail, make sure to press in the clamp completely. Use the BNl6 mounting clips to prevent the EB3C-N relay barrier from moving sideways.

< Stripping the Wire End >



< Applicable Crimping Terminal >



2) Terminal Wiring

- Provide IP20 for wiring of the EB3C-N relay barrier. Use shielded wires for bare crimping terminals.
- Using a ø5.5 mm or smaller screw driver, tighten the screw to a torque of 0.6 to 1.0N·m .

3) Output(Non-intrinsically safe side)

- When required, provide a short-circuit protection externally.
- Do not apply an expressively high voltage or reverse voltage, otherwise the transistor output may be damaged.

4) Power voltage

- Do not apply an expressive power, otherwise the EB3C-N relay barrier may be damaged.
- When connecting relay barriers in parallel, be sure to use the same power supply.

5) Power LED

- The power LED lights up in green when normal. If the power LED is red, stop using the barrier and replace it.

5) Extraneous Noise (EMC)

- Induction of excessive noise may cause malfunction and damage to the EB3C-N relay barrier.When the voltage limiting circuit (thyristor) inside the barrier operates due to noise, all LEDs are turned off and the output is turned off. If the voltage limiting circuit operates, it will not automatically recover, so take measures such as removing the noise source after shutting off the power supply to the barrier. If the noise has been removed, powering the barrier back on will restore normal operation.

6) Signal Input (Switches installed in hazardous areas)

- Use switches which can open/close the input voltage and current. Switches other than non-voltage/reed switches (for example, non-contact switches) cannot be used.
- Both the switch contacts and wiring must have insulation performance of 500V or more against grounding in hazardous areas.

[Wiring of Connector Type]

< Connectioith PLC (FC6A series)>

EB3C-T16CKD-CN		FC6A-N16B3		EB3C-T16CSD-CN		FC6A-N16B3	
Terminal	Output	Input	Terminal	Terminal	Output	Input	Terminal
20	A1	I0	20	20	A1	I0	20
19	A9	I10	19	19	A9	I10	19
18	A2	I1	18	18	A2	I1	18
17	A10	I11	17	17	A10	I11	17
16	A3	I2	16	16	A3	I2	16
15	A11	I12	15	15	A11	I12	15
14	A4	I3	14	14	A4	I3	14
13	A12	I13	13	13	A12	I13	13
12	A5	I4	12	12	A5	I4	12
11	A13	I14	11	11	A13	I14	11
10	A6	I5	10	10	A6	I5	10
9	A14	I15	9	9	A14	I15	9
8	A7	I6	8	8	A7	I6	8
7	A15	I16	7	7	A15	I16	7
6	A8	I7	6	6	A8	I7	6
5	A16	I17	5	5	A16	I17	5
4	C1 (+V)	COM	4	4	C1 (-V)	COM	4
3	NC	COM	3	3	NC	COM	3
2	C2 (COM(-))	NC	2	2	C2 (COM(+))	NC	2
1	NC	NC	1	1	NC	NC	1

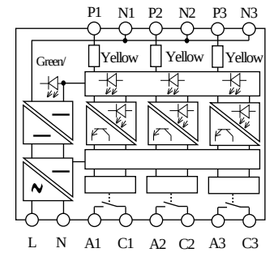
(Note) A dotted line is not related to operation.

Applicable Connector : XG4M-2030-T(OMRON)

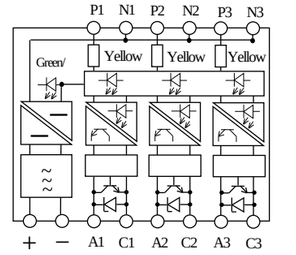
Note:

- The power supply to the PLC input module is supplied from the relay barrier, so there is no need to connect a separate power supply to the PLC input module.

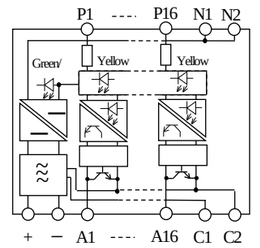
[Internal Circuit Block Diagram]



< Ex.1 AC power Relay Output>



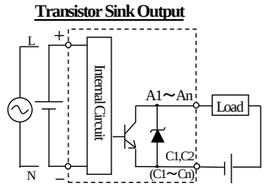
< Ex.2 DC power Transistor Output >



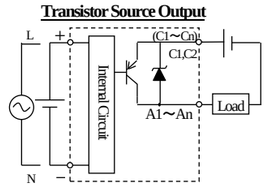
< Ex.3 Connector Type Sink output>

[Output Circuit]

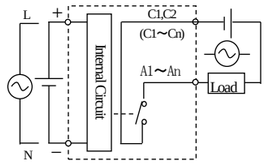
Transistor Sink Output



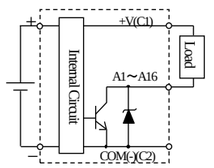
Transistor Source Output



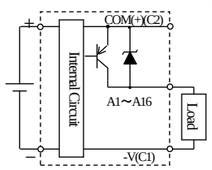
Relay Output



Connector Type Sink Output



Connector Type Source Output



Please check the instruction manual including other languages from the following URL.

URL ：https://product.idec.com/?product=EB3C-N

IDEC CORPORATION http://www.idec.com

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