

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-1340-1~8** for intrinsically safe system, and for use in Japan, additional manual No. **B-670** for the switch (contact).

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
TIIS	international explosion protecting guideline	[Ex ia] IIC	No.B-1340-1
IECEX(PTB)	IEC 60079-11	[Ex ia] IIC/[Ex ia] IIIC	No.B-1340-2
ATEX(PTB)	EN 60079-11	II (1)G[Ex ia] IIC/ II(1)D[Ex ia] IIIC	No.B-1340-3
FM	3610	[I/0]AEx[ia] /IIC ※1	No.B-1340-4
CQST	GB3836.1 GB3836.4	[Ex ia Ga]IIC	No.B-1340-5
NK	Ship's Classification	[Ex ia] IIC	※2
KCS	IEC 60079-11	[Ex ia] IIC/[Ex iaD]	No.B-1340-6
UL	UL913 UL60079-0 UL60079-11 UL61010-1	CL I Gr A,B,C,D; CL II Gr E,F,G; CL III [AEx ia] IIC	No.B-1340-7
CNS	IEC 60079-11	[Ex ia] IIC/[Ex ia] IIIC	No.B-1340-8
KR	IEC 60079-11	[Ex ia] IIC/[Ex ia] IIIC	※3

※1 : and AIS Cl. I, II, III, Div. 1, Gr. A,B,C,D,E,F,G
 ※2 : see No.B1340-1, therefore Certificate Body not specified Manual.
 ※3 : see No.B1340-2 therefore Certificate Body not specified Manual.

Standard for equipment	IEC60079-11, 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
Rated Power Voltage	100 to 240V AC, +10 or -15%, 24V DC ±10%
Power Consumption	AC: (approx.)9.6VA (EB3C-R10AN at 200V AC) DC: (approx.)4.8W (EB3C-R16CDN at 24V DC)
Inrush Current	AC: 10A (100V AC), 20A (200V AC) DC: 10A (24V DC)
Operation	Input ON: Output ON (1:1) ※4
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)
Transistor Output	24V DC (30V max.), 100 mA, Voltage drop: 1.5V maximum <Connector type : 24V DC (30V max.), 15 mA > Class2
Signal Input	12V DC, 10mA (n = number of lines per common) Wiring allowable resistance: Lw = 600Ω/(1+n) maximum
Dielectric Strength	Between intrinsically safe circuit and non-intrinsically safe circuit : 1526.4V AC ※5 Between AC power and output terminal : 1500V AC ※5 Between DC power and transistor output terminal : 1000V AC ※5※6
Connector(Barrier)	JE1H-202 (IDEC Corp.) <ACCESSORY(mating connector): JE1S-201>※7
Terminal Style	M3 screw terminal
Wire Size (per one terminal)	One wire : 0.5 to 2.0 mm ² (AWG20 to 14) Two wires : 0.5 to 1.5 mm ² (AWG24 to 16) (same size)
Mounting	35mm-wide DIN rail or panel mounting (M4 screw)
Weight (approx.)	0.39 kg (EB3C-R16CDN)

※4: When the protection circuit for the intrinsically safe explosion protection is actuated, all LEDs and all outputs turn off.

※5: Leak current less than 5mA.

※6:Except for Connector type

※7:Connector type only. If used as UL Listed product, please use "HIF3BA-20D-2.54R(HIROSE Electric)" for the mating connector.

Additional Items for UL Listing

Overvoltage category	II
Rated Voltage	100 to 120V AC, +10 or -15% 50/60Hz 24V DC±10%(Class2 power supply)
Power Consumption	AC9.6 VA (EB3C-R10AN at 120V AC) DC5.8W(EB3C-R16CDN at 26.4V DC)
Relay Output	125V AC 3A, 24VDC 3A(Res.)125VAC 3A, 24VDC 2A(Ind.) 8A max.at common terminal
Mating Connector	HIF3BA-20D-2.54R(HIROSE Electric) ※7
Wire Size (per one terminal)	One wire : AWG16 to 14 (1.25 to 2.0 mm ²) voltage rating minimum 125V,temperature minimum 70 deg.C

<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.

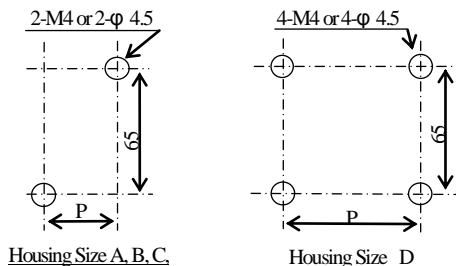
•Do not use the damaged EB3C-N relay barrier, otherwise injury or fire may result.

•Indoor use

•When disposing of the EB3C-N relay barrier, do so as an industrial waste

[Installation]

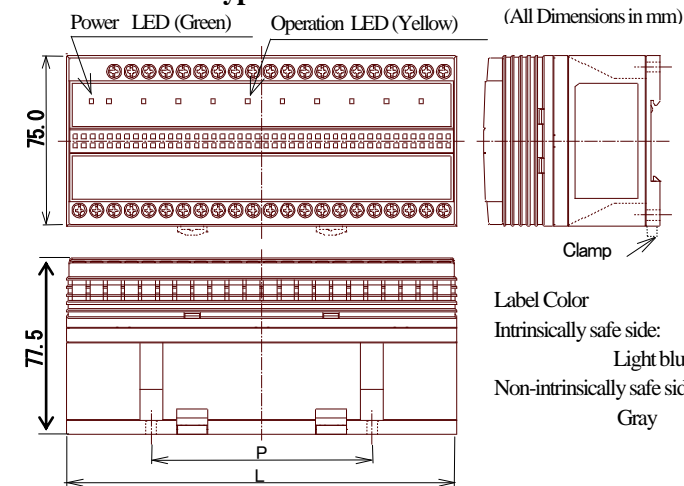
< Mounting Hole Layout (Screw mounting) > (All Dimensions in mm)



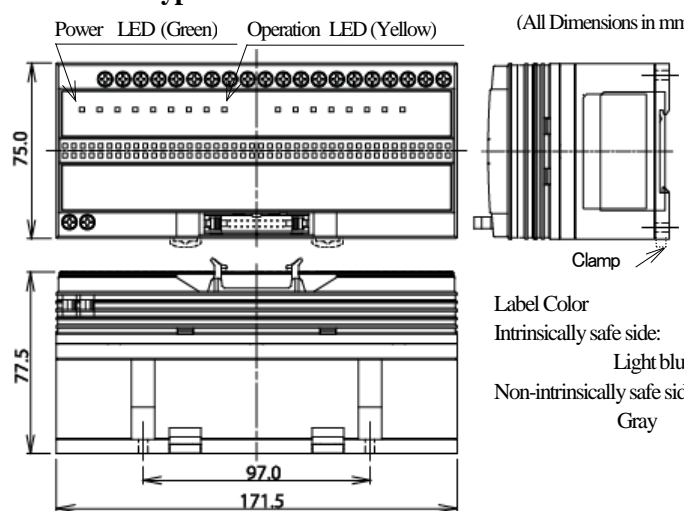
< Mounting Hole Dimensions >

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

•Screw Terminal Type



•Connector Type



[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 BN16 mounting clips to prevent the EB3C-N relay barrier from moving sideways.

2) Terminal Wiring

- Provide IP20 for wiring of the EB3C-N relay barrier. Use shielded wires for bare crimping terminals.
- Using a φ5.5 mm or smaller screw driver, tighten the screw to a torque of 0.6 to 1.0N·m.

3) Output

- When required, provide a short-circuit protection externally.
- Do not apply an expressively high voltage (clamps at 33V, 1W) or reverse voltage, otherwise the transistor output may be damaged.

4) Power

- Do not apply an expressive power, otherwise the EB3C-N relay barrier may be damaged.
- AC power type may operate at a low voltage (20V AC).

5) Signal Input

- Use switches which can open/close the input voltage and current.

6) Extraneous Noise (EMC)

- Induction of excessive noise may cause malfunction and damage to the EB3C-N relay barrier.
- When the protection circuit (thyristor) inside the DC-DC converter operates, remove noise and restart the EB3C-N relay barrier. Operation may be restored.

[Wiring of Connector Type]

< Connectioth PLC (FC4A series)>

EB3C-T16CKD-CN		FC4A-N16B3		EB3C-T16CSD-CN		FC4A-N16B3	
Terminal	Output	Input	Terminal	Terminal	Output	Input	Terminal
20	A1	X0	20	20	A1	X0	20
19	A9	X10	19	19	A9	X10	19
18	A2	X1	18	18	A2	X1	18
17	A10	X11	17	17	A10	X11	17
16	A3	X2	16	16	A3	X2	16
15	A11	X12	15	15	A11	X12	15
14	A4	X3	14	14	A4	X3	14
13	A12	X13	13	13	A12	X13	13
12	A5	X4	12	12	A5	X4	12
11	A13	X14	11	11	A13	X14	11
10	A6	X5	10	10	A6	X5	10
9	A14	X15	9	9	A14	X15	9
8	A7	X6	8	8	A7	X6	8
7	A15	X16	7	7	A15	X16	7
6	A8	X7	6	6	A8	X7	6
5	A16	X17	5	5	A16	X17	5
4	C1(+)	COM	4	4	C1(+)	COM	4
3	NC	NC	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.

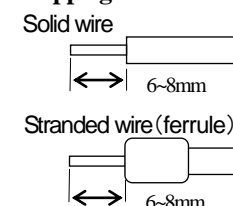
Applicable Connector : JE1S-201(IDEC CORPORATION)

Note:

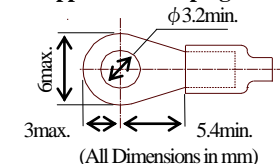
• When connecting multiple barrier in parallel, use one power supply to power the barrier.

• Do not connect terminals C1 and C2 to external devices as its power supply line.

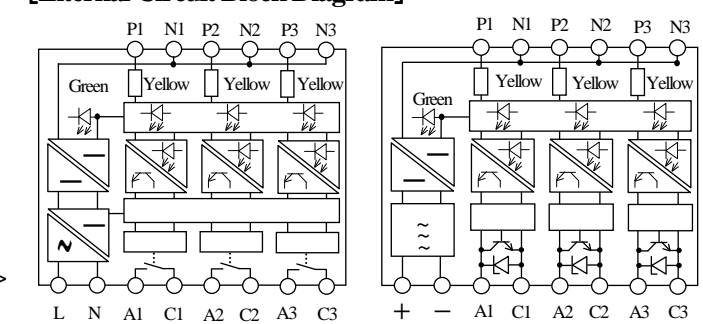
< Stripping the Wire End >



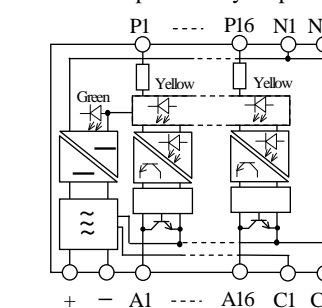
< Applicable Crimping Terminal >



[Internal Circuit Block Diagram]



< Ex.1 AC power Relay Output >



< Ex.3 Connector Type Sink output >

[Output Circuit]

