



Selection Guide

Discrete Input Barrier

Model	EB3C-**A	EB3C-**D	EB3N-**D
Appearance			
Page	224		229
Explosion Protection	UL/FM: Class I, II, III Div1 / Group A, B, C, D, E, F, and G Class I, Zone 0 / [AExia] II C CSA: Class I Div 1 / Group A, B, C, D NEMKO: [Exia] II C CQST: [Exia] II C GOST-R: [Exia] II C TIIS: Discrete input barrier [Exia] IIC Switch (EB9Z-A) [Exia] IICT6 Switch (EB9Z-A1) [Exia] IIBT6 NK: [Exia] II C KOSHA: [Exia] II C		UL: Class I, Zone 0, [AExia] II C Class I, II, III, Div. 1, Groups A, B, C, D, E, F and G IEC Ex: [Exia] II C PTB: II (1) G [Exia] II C II (1) D [ExiaD] CQST: [Exia] II C TIIS: [Exia] II C
Degree of Protection	IP20	IP20	IP20
Number of Channels	Relay Output: 1,2,3,5,6,8,10 Transistor Output: 1,2,3,5,6,8,10,16	1, 2, 3, 5, 6, 8, 10, 16	EB3N-□2ND: 2 safety circuits EB3N-□2R5D: 2 safety circuits, 5 auxiliary circuits
Power Voltage	100 to 240V AC (UL rating: 100- 120VAC)	24V DC	24V DC
Output	Relay Transistor (Sink/Source)	Relay Transistor (Sink/Source)	Relay
Connection	Screw Terminal	Screw Terminal, Connector	Screw Terminal
Mounting	35-mm-wide DIN rail Panel mounting	35-mm-wide DIN rail Panel mounting	35-mm-wide DIN rail / Panel mounting
Size (excluding projections)	42W×75H×77.5D (1 channel) 65W×75H×77.5D (2, 3 channels) 110.5W×75H×77.5D (5, 6, 8 channels (common)) 171.5W×75H×77.5D (8, 10 channels)	42W×75H×77.5D (1 channel) 65W×75H×77.5D (2, 3 channels) 110.5W×75H×77.5D (5, 6, 8 channels (common)) 171.5W×75H×77.5D (8, 10, 16 channels (common))	65.0W×75.0H×77.5D (EB3N-□2ND) 110.5W×75.0H×77.5D (EB3N-□2R5D)
Weight (approx.)	380g (EB3C-R10A)	390g (EB3C-R16CD)	220g (EB3N-□2ND) 300g (EB3N-□2R5D)

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Discrete Output Barrier

Model	EB3L-**A	EB3L-**D
Appearance		
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Explosion Protection	UL/FM: Class I, II, III Div1 / Group A, B, C, D, E, F, and G Class I, Zone 0 / [AExia] II C CSA: Class I Div 1 / Group A, B, C, D NEMKO: [Exia] II C CQST: [Exia] II C GOST-R: [Exia] II C TIIS: Discrete output barrier [Exia] II C NK: [Exia] II C KOSHA: [Exia] II C	
Degree of Protection	IP20	IP20
Number of Channels	1, 2, 3, 5, 6, 8, 10	1, 2, 3, 5, 6, 8, 10, 16
Power Voltage	100 to 240V AC (UL rating: 100 ~ 120V AC)	24V DC
Input	Transistor input (sink) Transistor input (source)	Transistor input (sink) Transistor input (source)
Connection	Screw Terminal	Screw Terminal, Connector
Mounting	35-mm-wide DIN rail Panel mounting	35-mm-wide DIN rail Panel mounting
Size (excluding projections)	42W×75H×77.5D (1 channel) 65W×75H×77.5D (2, 3 channels) 110.5W×75H×77.5D (5, 6, 8 channels) 171.5W×75H×77.5D (8, 10 channels)	42W×75H×77.5D (1 channel) 65W×75H×77.5D (2, 3 channels) 110.5W×75H×77.5D (5, 6, 8 channels) 171.5W×75H×77.5D (8, 10, 16 channels (common))
Weight (approx.)	360g (EB3L-S10SA)	360g (EB3L-S16CSD)

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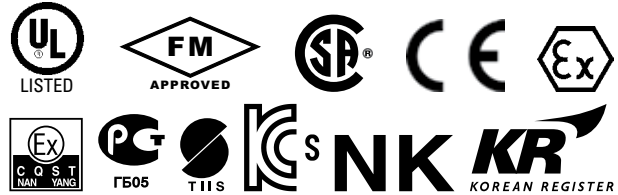
Barriers

Intrinsically Safe: EB3C Discrete Input Barriers

Key features:

Explosion Protection	
Discrete Input Barriers:	[Exia] II C

- IEC60079 compliant
- Dry-contact switches can be connected to the EB3C
- 8- and 16-circuit types are available in common wiring types, ideal for connection to PLCs (DC voltage only)
- Universal AC power voltage (100 to 240V AC) or 24V DC power (UL rating: 100 ~ 120V AC)
- No grounding required
- IDEC's original spring-up terminals minimizes wiring time
- Installation: 35-mm-wide DIN rail mounting or direct panel mounting
- Global usage
 USA: UL/FM
 Canada: CSA
 Europe: CE marking, ATEX
 China: CQST
 Russia: GOST-R
 Japan: TIIS
 Korea: KOSHA
- Ship class: NK (Japan), KR (Korea)



Dry Contact Switches

Dry-contact switches can be connected to the EB3C.



Common Wiring for PLC Inputs

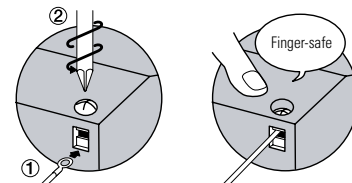
8- and 16-circuit types are available in common wiring types, ideal for connection to PLCs (DC voltage only).

Connector Type

MIL connector on the non-hazardous side

- Easy connection to PLCs
- Wiring is cut by 90% (compared with IDEC's 16-circuit EB3C)
- Various 20-pin MIL connectors can be connected

Spring-up Fingersafe Terminals Reduce Wiring Time



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Part Numbers

Discrete Input Barriers

Power Voltage	Number of Channels	Connection to Non-intrinsically Safe Circuit	Input Wiring Method	Output	Part Number	
100 to 240V AC (UL rating: 100 ~ 120V AC)	1	Screw Terminal	Separate/Common Wiring Compatible	Relay	EB3C-R01A	
	2				EB3C-R02A	
	3				EB3C-R03A	
	5				EB3C-R05A	
	6				EB3C-R06A	
	8				EB3C-R08A	
	10				EB3C-R10A	
	8				Common Wiring Only	EB3C-R08CA
	1		Separate/Common Wiring Compatible	Transistor (Sink/Source)	EB3C-T01A	
	2				EB3C-T02A	
	3				EB3C-T03A	
	5				EB3C-T05A	
	6				EB3C-T06A	
	8				EB3C-T08A	
	10				EB3C-T10A	
	8				Common Wiring Only	Transistor
	16		Source	EB3C-T16CKA*		
	8		EB3C-T08CSA			
	16			EB3C-T16CSA		
	24V DC		1	Screw Terminal	Separate/Common Wiring Compatible	Relay
2		EB3C-R02D				
3		EB3C-R03D				
5		EB3C-R05D				
6		EB3C-R06D				
8		EB3C-R08D				
10		EB3C-R10D				
8		Common Wiring Only	EB3C-R08CD			
16		EB3C-R16CD				
1		Separate/Common Wiring Compatible	Transistor (Sink/Source)		EB3C-T01D	
2					EB3C-T02D	
3					EB3C-T03D	
5					EB3C-T05D	
6					EB3C-T06D	
8					EB3C-T08D	
10					EB3C-T10D	
8					Common Wiring Only	Transistor
16		Source	EB3C-T16CKD*			
8		EB3C-T08CSD				
16			EB3C-T16CSD			
16	Connector Wiring	Sink	EB3C-T16CKD-C*			
16		Source	EB3C-T16CSD-C			

 *Note: These models are NOT Listed by UL

Accessories

Item	Part Number	Description
DIN Rail	BAP1000	Steel (1m long, 7.5mm high)
	BNDN1000	Aluminum (1m long, 10.5mm high)
End Clip	BNL6	Medium DIN rail end clip

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Specifications

Explosion-Protection and Electrical Specifications

Explosion Protection		See Certification Numbers table below		
Degree of Protection		IP20 (IEC60529)		
Installation Location	Discrete Input Barrier	Safe indoor place (non-hazardous area)		
	Non-intrinsically Safe Circuit	250V AC 50/60Hz, 250V DC 125V AC 50/60Hz, 125V DC (UL rating)		
Intrinsically Safe Circuits	Wiring Method	1-channel Separate Wiring	16-channel Common Wiring	
	Rated Operating Voltage	12V DC $\pm 10\%$		
	Rated Operating Current	10 mA DC $\pm 20\%$		
	Maximum Output Voltage (Uo)	13.2V DC		
	Maximum Output Current (Io)	14.2 mA	227.2 mA	
	Maximum Output Power (Po)	46.9 mW	750 mW	
	Maximum External Inductance (Lo)*	175 (125) mH	0.68 (0.68) mH	
	Maximum External Capacitance (Co)*	900 (740) nF		
	Allowable Wiring Resistance (Rw)	300 Ω	600/(n+1) Ω (n = number of common channels)	
	Maximum Channels per Common Line	–	16	
Non-intrinsically Safe Circuits	Relay Output	Contact Configuration	1NO	
		Rated Insulation Voltage (Ui)	250V AC (UL rating: 125V AC), 125V DC	
		Thermal Current (Ith)	3A (common terminal: 8A)	
		Contact Allowable Power	Resistive Load	AC: 750 VA, DC: 72W
			Inductive Load	AC: 750 VA (cos ϕ = 0.3 to 0.4) DC: 48W (L/R = 7 ms)
		Rated Load	Resistive Load	250V AC 3A, 24V DC 3A
			Inductive Load	250V AC 3A (cos ϕ = 0.3 to 0.4) 24V DC 2A (L/R = 7 ms)
	Minimum Applicable Load	0.1V DC, 0.1 mA (reference value)		
	Contact Resistance	50 m Ω		
	ON Time	12 ms maximum (rated voltage)		
	OFF Time	10 ms maximum (rated voltage)		
	Mechanical Life	20,000,000 operations minimum (at 18,000 operations/hour, without load)		
	Electrical Life	100,000 operations minimum (at 1,800 operations/hour, rated load)		
	Short-circuit Protection	None		
Transistor Output	Rated Voltage	24V DC		
	Maximum Voltage	30V DC		
	Maximum Current	100 mA (connector type: 15 mA)		
	Leakage Current	0.1 mA maximum		
	Voltage Drop	1V maximum		
	Clamping Voltage	33V (1W)		
	Inrush Current	0.5A maximum (1 sec)		
ON Time	0.1 ms maximum (resistive load)			
OFF Time	0.4 ms (typical) (resistive load)			
Short-circuit Protection	None			

General Specifications

	AC	DC
Rated Voltage	100 to 240V AC (UL rating: 100 ~ 120V AC)	24V DC
Allowable Voltage Range	85 to 264V AC (UL rating: 85 ~ 125V AC)	21.6 to 26.4V DC
Rated Frequency	50/60 Hz (allowable range: 47 to 63 Hz)	—
Inrush Current	10A (100V AC) 20A (200V AC)	10A
Dielectric Strength (1 minute, 1 mA)	Between intrinsically safe circuit and non-intrinsically safe circuit: 1500V AC Between AC power and output terminal: 1500V AC Between DC power and transistor output terminal: 1000V AC	
Operating Temperature	–20 to +60°C (no freezing)	
Storage Temperature	–20 to +60°C (no freezing)	
Operating Humidity	45 to 85% RH (no condensation)	
Atmosphere	800 to 1100 hPa	
Pollution Degree	2 (IEC60664)	
Insulation Resistance	10 M Ω minimum (500V DC megger, between the same poles as the dielectric strength)	
Vibration Resistance	Damage Limits	Panel mounting: 10 to 55 Hz, amplitude 0.75 mm DIN rail mounting: 10 to 55 Hz, amplitude 0.35 mm
	Operation Extremes (relay output only)	Panel mounting: 10 to 55 Hz, amplitude 0.5 mm DIN rail mounting: 10 to 55 Hz, amplitude 0.35 mm
Shock Resistance	Damage Limits	Panel mounting: 500 m/s ² (3 times each on X, Y, Z) DIN rail mounting: 300 m/s ² (3 times each on X, Y, Z)
	Terminal Style	M3 screw terminal
Mounting	35-mm-wide DIN rail or panel mounting (M4 screw)	
Power Consumption (approx.)	9.6 VA (EB3C-R10A at 200V AC) 4.8 W (EB3C-R16CD at 24V DC)	
Weight (approx.)	390g (EB3C-R16CD)	

Certification Numbers

Certification Organization	Explosion Protection	Certification Number
UL/FM	Class I, II, III Div. 1 Groups A, B, C, D, E, F and G	3015417 UL file: E234997
	Class I, Zone 0 AEx [ia] IIC	
CSA	Class I Div. 1 Groups A, B, C, D	166730
NEMKO	[Exia] II C	Nemko 02ATEX279
TIIS Japan	Relay barrier: [Exia] II C	TC15753
Class NK	[Exia] II C	02T606
GOST-R	[Exia] II C	POCC JP.FB05.B02067
KOSHA	[Exia] II C	11-AV4B0-0457
CQST	[Exia] II C	CNEx10.2445



Class NK is Japan Shipping agency approval, Class KR is Korean shipping agency approval.

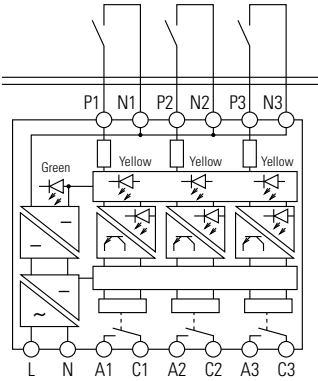


Values in () are those approved by TIIS (Technology Institution of Industrial Safety, Japan).
Note: Um = 125V AC for UL ratings

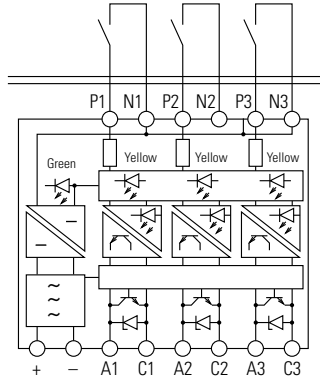
Circuit Diagrams

Internal Circuit Block Diagrams

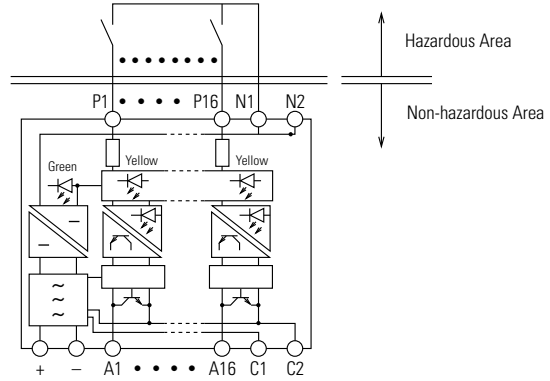
AC Power, Relay Output Type



DC Power, Transistor Output Type



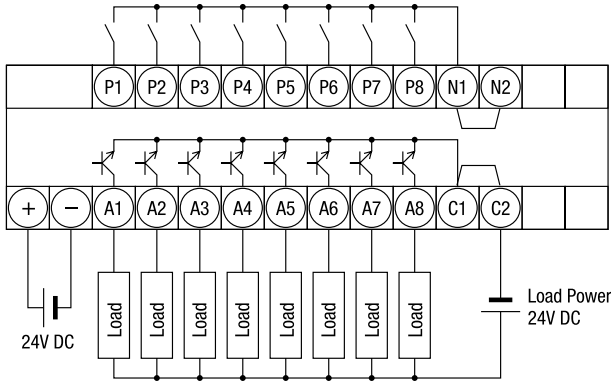
Connector Wiring, Sink Output Type



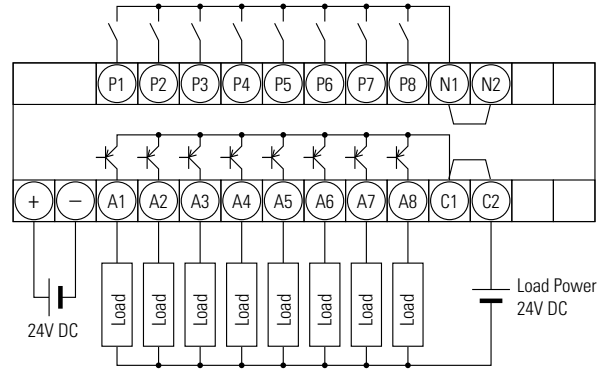
Wiring Examples

External Wiring Examples

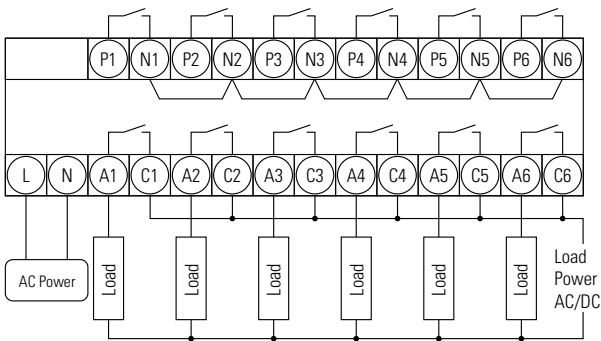
Transistor Sink Output Type (Ex.: EB3C-T08CKD)



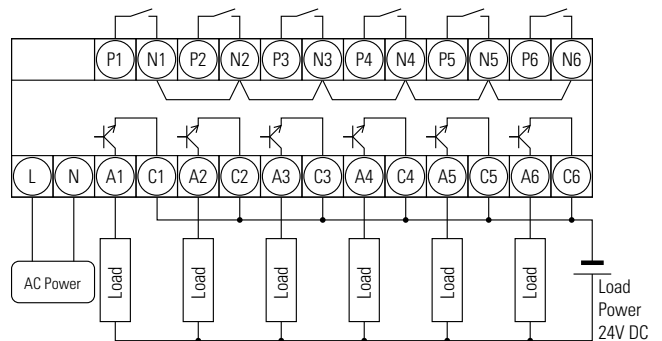
Transistor Source Output Type (Ex.: EB3C-T08CSD)



Relay Output Type (Ex.: EB3C-R06A)



Transistor Output Type (Ex.: EB3C-T06A)



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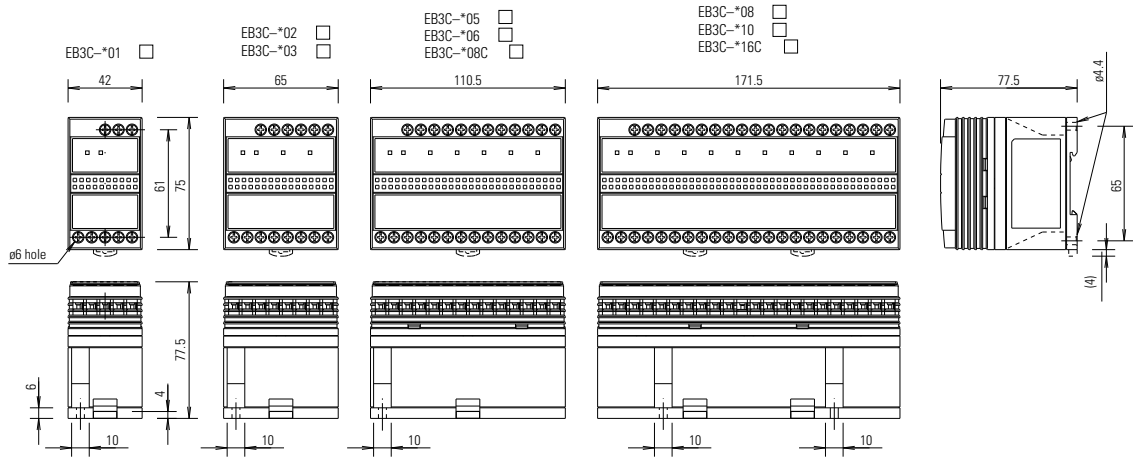
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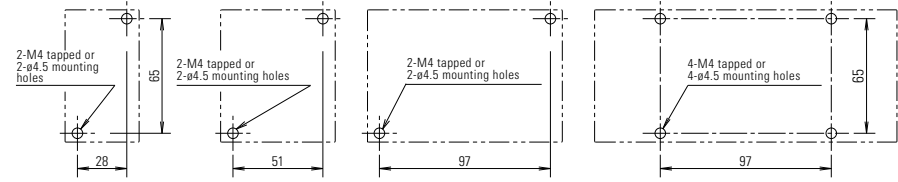
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Dimensions (mm)

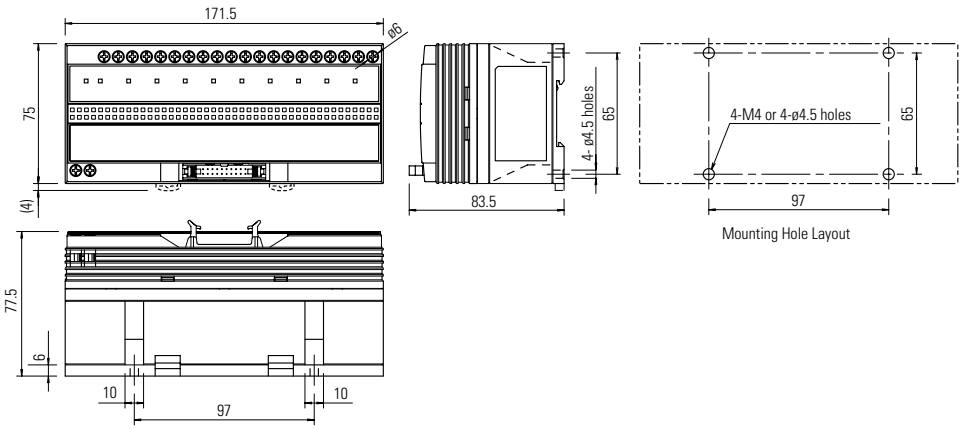


Mounting Hole Layout (Screw Mounting)

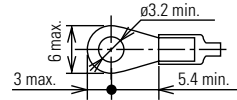


Connector

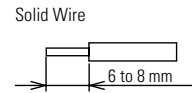
EB3C-T16C □-C



Applicable Crimping Terminal



Stripping the Wire End



Stranded Wire (Ferrule)

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