Installation Manual

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Type EB3C-N Relay Barrier
For Intrinsically Safe System [Exia]IIC, [Exia]IIIC

Draw. No. B-1340-2
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Certificate No. IECEx PTB 10.0015

When installing an IDEC Type EB3C-N Relay Barrier (thereafter, called Barrier), make sure it conforms to the following drawings and descriptions as well as all applicable requirements.

IEC Standard IEC 60079-0, IEC 60079-11, IEC 60079-25, IEC 60079-14

All intrinsically safe systems must have "EB3C-N" in the part number. Barrier must be located in a safe area (non-hazardous area). The intrinsically safe apparatus, such as the Contact certificated, approved or considered to be a "simple apparatus" such as the Switch specified by standard, may be located in the hazardous area.

- **Servicing – Replacement and Repairs:** Inspection and replacement of Barrier shall not be made until power is disconnected and shall not be connected again until all replacement Barrier are properly re-assembled. All electrical components, including the interconnecting wiring, shall be kept in safe condition. Defective Barrier should be returned to the factory for repair.

Warning ! Substitution of components or unauthorized repair may impair intrinsic safety of apparatus.

- **Mounting** : All bolts, nuts, screws, and other means of fastening, including the unused wiring screws, shall be fastened in place, properly tightened and secured. Mount Barrier on a 35mm track or directly mount on a panel surface using screws.
- **Certified Barrier**: Type EB3C-abcdeN "EB3C-…N"= Series type

a = Output **R**: Relay, **T**: Transistor b = channels **01, 02, 03, 05, 06, 08, 08C, 10, 16C**(**C**: common wiring only)

c = Signal type **K**: Sink, **S**: Source (for **08C, 16C**) d = Power supply **A**: 100~240Vac, **D**: 24Vdc e = connection Blank: Terminal, **-C**: Connector

- **Rating and Parameters of I.S**.

Ta= 60°C, Um= 250V, Uo=13.2V, Io= 14.2mA, Po= 46.9mW at each channel Pn-Nn
Io=227.2mA, Po= 750mW at max 16 channels Pn-Nn

Io(mA)	14.2	28.4	42.6	56.8	71.0	85.2	99.4	113.6	127.8	142.0	156.2	170.4	184.6	198.8	213.0	227.2	Combined Lo(mH)
Po(mW)	46.9	93.8	140.6	187.5	234.3	281.2	328.1	375.9	421.8	468.7	515.5	562.4	609.2	656.1	702.9	750	
Co(μF)	0.67	0.65	0.63	0.61	0.59	0.57	0.55	0.53	0.51	0.49	0.47	0.44	0.42	0.39	-	-	1.0
	0.79	0.77	0.76	0.75	0.73	0.72	0.70	0.69	0.67	0.66	0.64	0.62	0.61	0.59	0.57	0.55	0.5
	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.93	0.92	0.91	0.90	0.88	0.87	0.86	0.85	0.84	0.2
	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.1

Note 1 Added to above table, the next values combined Lo and Co are allowable;

Io(mA)	14.2						28.4						227.2					
Lo(mH)	175*	87.5	30.0	2.5	0.55	0.25	43.5*	21.5	20.0	3.5	0.43	0.25	0.68*	0.34	0.68	0.6	0.22	0.13
Co(μF)	0.90*	0.45	0.33	0.54	0.77	0.90	0.90*	0.45	0.30	0.48	0.80	0.90	0.90*	0.45	0.45	0.49	0.80	0.90

*: Therefore, the values are allowable only at Li≤1%Lo and Ci≤1%Co of the intrinsic safe apparatus.

Note 2 The intrinsic safe apparatus and wirings shall be accordance to following formulas; for examples,

Ui ≥ Uo
Ii ≥ Io
Pi ≥ Po
Ci+Cc ≤ Co
Li+Lc ≤ Lo

- **Typical Installation**: Install Barrier must be according to the above Ratings and Parameters of I.S. and descriptions.

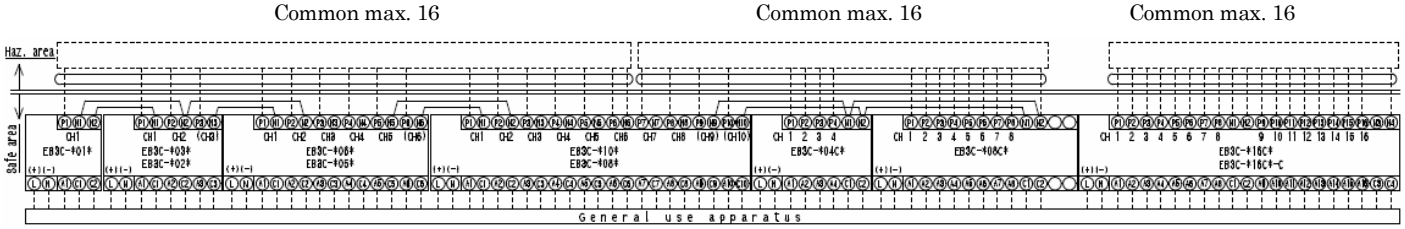
To avoid electrical shock, install Barrier in a tool-accessible enclosure.

Layout and wiring must be done to prevent the inductive or capacitive induction to the intrinsically safe circuit. For example, separate intrinsically safe circuits from non-intrinsically safe circuits, by a minimum space of 50mm or using a full height metal separator. If color-coding is required use for the intrinsic safe components and terminals, use only cables and terminals with light blue markings.

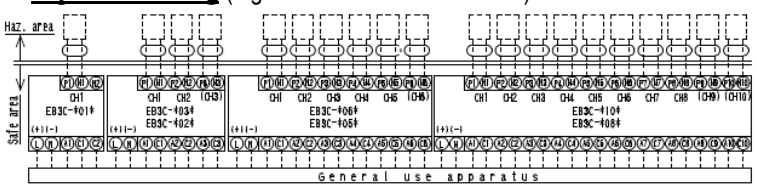
Interconnection between the Barriers to setting Common Wiring: connect two independent wires in parallel at each two " N " terminals between adjacent the Barrier inside the panel.

Example of connections: The ⬭ marks indicate the samples of single intrinsic safe circuits, and ⋯ marks indicate IS apparatus.

Common Wiring (e.g. Io=227.2mA with 16 channels)



Separate Wiring (e.g. Io=14.2mA with 1 channel)



- **Operating rating**

Power input		**EB3C-...A.**	Terminal **L - N**	100 ~ 240V AC
		EB3C-...D.	Terminal **+ - -**	24V DC
Signal	input	**EB3C-...**	Terminal **Pn - Nn**	12V DC, 10mA (source)
	output	**EB3C-R...**	Terminal / Connector **An,- Cn**	250V, 3A (but Connector 30V, 1A)
		EB3C-T…		24V DC, 100mA

Note common terminal / connector pin: 8A / 1A