

Installations of IDEC Intrinsically Safe System



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Type EB3C-N Relay Barrier

AIS / I,II,III, / 1 / A,B,C,D,E,F,G / Ta = 60°C
[I / 0] / AEx [ia] / IIC / Ta = 60°C

When installing an IDEC Relay Barrier, make sure it conforms to the following drawings and descriptions as well as all applicable requirements. The Relay Barrier must have "EB3C-N" in the part number.

The Relay Barrier must be located in a safe area (unclassified location).

Intrinsically safe apparatuses such as switches approved or considered to be "simple apparatuses" may be located in a hazardous (classified) area.

Warning! *Substitution of components may impair intrinsic safety*

• **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)	Note 2 The intrinsic safe apparatus and wirings shall be in accordance to following formulas; for examples, $U_i \geq U_o$ $I_i \geq I_o$ $P_i \geq P_o$ $C_i + C_c \leq C_o$ $L_i + L_c \leq L_o$	
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(for examples at 2channels)					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)	0.94*	0.47	0.33	0.54	0.77	0.90	0.94*	0.47	0.30	0.48	0.80	0.90	0.94*	0.47	0.45	0.49	0.80	0.90

*: Therefore, the values are allowable only at $L_i \leq 1\%L_o$ and $C_i \leq 1\%C_o$ of the intrinsic safe apparatus.

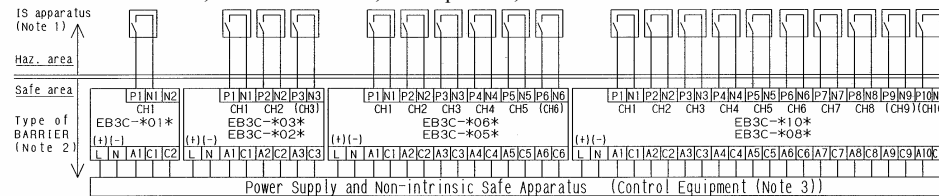
Wiring Example (IS terminals: Pn = +, Nn = -)

Channel separate wiring (any one channel)

HAZARDOUS (CLASSIFIED) LOCATION

Class I, II and III, Division 1, Groups A, B, C, D, E, F and G

Class I, Zones 0 and 1, Groups IIC, IIB and IIA

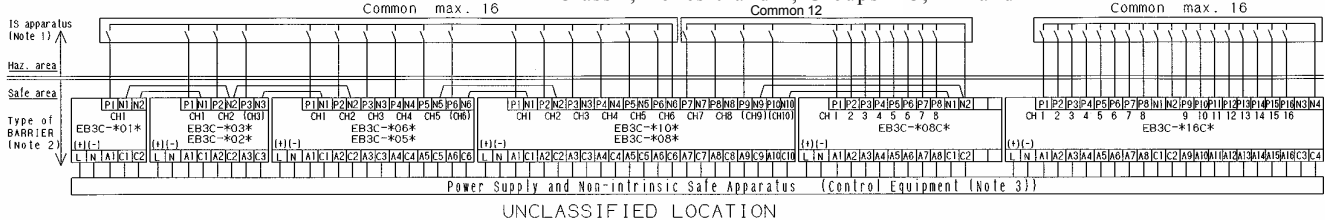


Channel common wiring (Common max. 16 between any Pn(+) terminals and any Nn(-) terminal)

Note: To set up common wiring, connect two "N" terminals between adjoining Relay Barriers in parallel.

HAZARDOUS (CLASSIFIED) LOCATION Class I, II and III, Division 1, Groups A, B, C, D, E, F and G

Class I, Zones 0 and 1, Groups IIC, IIB and IIA



Notes

- Use intrinsically safe equipment that is FM Approved or simple apparatus (a device which will neither generate nor store more than 1.5V, 0.1A, 25mW such as switches, thermocouples, LED's and RTD's).
- Install the EB3C-N relay barrier in compliance with the enclosure, mounting, spacing, and segregation requirements of the ultimate application.
- Make sure that the control equipment connected to the EB3C-N relay barrier does not use or generate more than 250 Vrms or Vdc (Um = 250V).
- Install the EB3C-N relay barrier in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and National Electrical Code (ANSI/NFPA 70).
- Make sure that all bolts, nuts, screws, and other means of fastening, including the unused wiring screws, are fastened in place, properly tightened and secured. Mount the EB3C-N on a 35mm track or directly on a panel surface using screws.
- Make the layout and wiring so as to prevent the electromagnetic or electrostatic inductions to the intrinsically safe circuit. For example, separate the intrinsically safe circuit from the non-intrinsically safe circuit by a minimum space of 50 mm or using a full height metal separator. If color-coding is required for the intrinsic safe components and terminals, use only cables and terminals with light blue markings.

* No revision to this drawing without prior FM approval.