IDEC Installation Manual

6-64, Nishi-Miyahara 2-Chome, Yodogawa-ku,
Osaka 532-0004, Japan www.idec.com

Installations of IDEC Intrinsically Safe System

Type EB3C-N-2 Relay Barrier

FM APPROVED

Draw.No.B-2270-4 (0)
Rev.B
Nov.01, 2022

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

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-2" 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 or unauthorized repair may impair intrinsic safety of apparatus.
To maintain intrinsic safety, the Signal input terminal (Pn-Nn) may only be connected to intrinsically safe circuits where both the wiring and the connected equipment maintain 500 V isolation to the hazardous area earthing/bonding connections.

・**Certified Barrier**: Type EB3C-abcdeN-2 "EB3C-…N-2"= 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	374.9	421.8	468.6	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)	176*	88.0	2.50	1.60	0.84	0.48	0.25	44.0*	22.0	3.50	1.40	0.76	0.45	0.25	0.68*	0.68	0.60	0.42	0.30	0.22	0.15
Co(μF)	0.94*	0.47	0.55	0.60	0.70	0.80	0.94	0.94*	0.47	0.48	0.60	0.70	0.80	0.93	0.94*	0.45	0.49	0.60	0.70	0.80	0.94

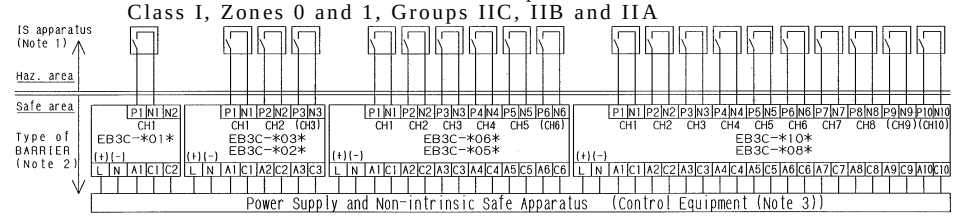
*: Therefore, the values are allowable only at Li<1%Lo or Ci<1%Co of the intrinsic safe apparatus.

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

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



・**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

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
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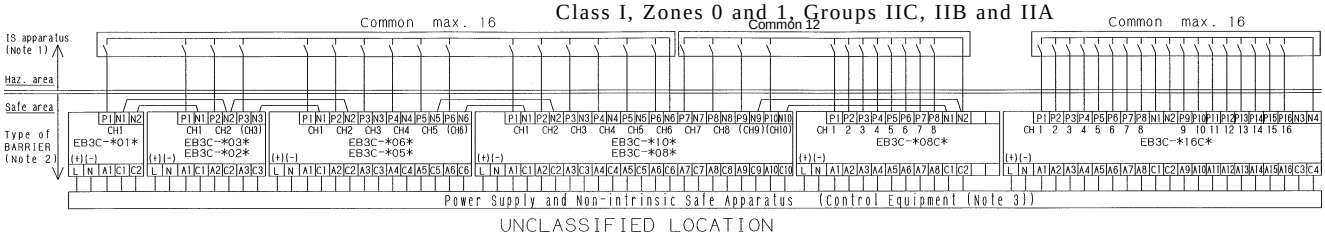

・**Dielectric Strength**: Between intrinsically safe circuit and non-intrinsically safe circuit 1526.4V AC.

Notes

1. 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).
2. Install the EB3C-N-2 relay barrier in compliance with the enclosure, mounting, spacing, and segregation requirements of the ultimate application.
3. Make sure that the control equipment connected to the EB3C-N-2 relay barrier does not use or generate more than 250 Vrms or 250Vdc (Um = 250V).
4. Install the EB3C-N-2 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).
5. 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-2 on a 35mm track or directly on a panel surface using screws.
6. 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.