

# IDEC Installation Manual

## Type EB3L-N Relay Barrier (alias Lamp Barrier)

For Intrinsically Safe System II(1)G [Ex ia Ga]IIC, II(1)D [Ex ia Da]IIC



Draw. No. B-1341-3  
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Certificate No. PTB09ATEX2046

When installing an IDEC Type EB3L-N Relay Barrier (thereafter, called Barrier), make sure it conforms to the following drawings and descriptions as well as all applicable requirements.

EN IEC 60079-0:2018, EN 60079-11:2012, EN 60079-25:2010, EN 60079-14:2014

All intrinsically safe systems must have "EB3L-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 EB3L-abcdeN "EB3L-...N"= Series type

a = Output    S: for Supper LED    b = channels    **01, 02, 03, 05, 06, 08, 08C, 10, 16C**(C: common wiring only)

c = Signal type    K: Sink, S: Source    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   | 1.0             |
| 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,

$U_i \geq U_o$   
 $I_i \geq I_o$   
 $P_i \geq P_o$   
 $C_i + C_c \leq C_o$   
 $L_i + L_c \leq L_o$

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

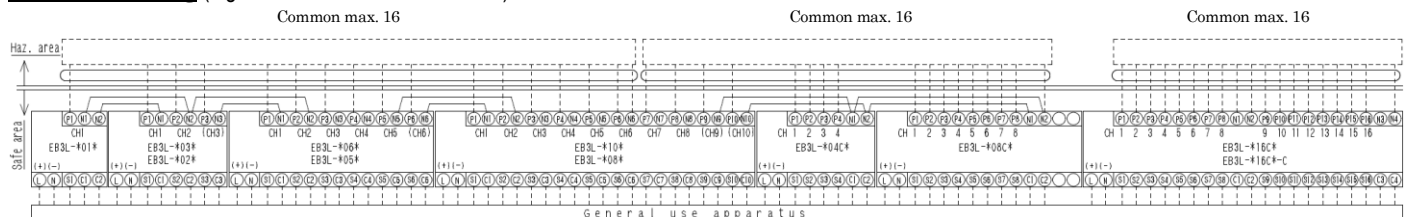
To avoid electrical shock, install Barrier in a tool-accessible enclosure.

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.

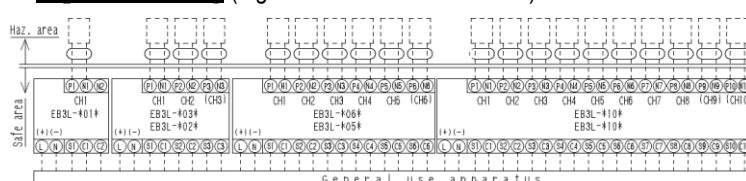
Interconnection between the Barriers to setting Common Wiring: connect two independent wires in parallel at each two " N " terminals between adjacent the Barrier inside the panel.

**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  | EB3L-...A. | Terminal L - N       | 100 ~ 240V AC         |
|              | EB3L-...D. | Terminal + -         | 24V DC                |
| Signal input | EB3L-S...  | Terminal Pn - Nn     | 12V DC, 10mA (source) |
|              | EB3L-..S.  | Terminal / Connector | 24V DC, 10mA (source) |
|              | EB3L-..K.  | An, Cn               | 24V DC, 10mA (sink)   |

## IDEC CORPORATION

Manufacturer: IDEC CORP.

2-6-64, Nishimiyahara, Yodogawa-ku, Osaka532-0004, Japan

EU Authorized Representative: APEMSAS

55, Avenue Edouard Herriot BP1, 82303 Caussade Cedex, France

**DECLARATION OF CONFORMITY**

We, IDEC CORPORATION 2-6-64, Nishimiyahara, Yodogawa-ku, Osaka532-0004, Japan

declare under our sole responsibility that the product:

Description: Lamp Barrier

Model No: EB3L-N

to which this declaration relates is in conformity with the EC Directive on the following standard(s)

or other normative document(s). In case of alteration of the product, not agreed upon by us,

this declaration will lose its validity.

Applicable EC Directive : ATEX Directive (2014/34/EU)

EMC Directive (2014/30/EU)

Applicable Standard(s) : EN60079-0, EN60079-11 (ATEX)

EN61000-6-2, EN61000-6-4 (EMC)