

## Installations of IDEC Intrinsically Safe System

### EB3S-N-2(TypeB) Sensor Barrier.

AIS / I,II,III, / 1 / A,B,C,D,E,F,G / Ta = 60°C

[I / 0] / AEx [ia] / IIC / Ta = 60°C

[I / 0] / AEx [ia] / IIB / Ta = 60°C



Hazardous (classified) locations.

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

Class I, Zone 0, AEx [ia] IIC/IIB

When installing an IDEC Intrinsically Safe System, make sure it conforms to the following drawings and descriptions as well as all applicable requirements.

The Sensor Barrier must be located in a safe area (unclassified location). They are connected to the 3 wires photoelectric switches and other, which is installed in hazardous (classified) area, and are considered as "simple equipment" or have already been approved.

### Warning

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

**To maintain intrinsic safety, the Signal input terminal (Pn-Sn-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.**

### 1 Certified Sensor Barrier

#### Type EB3S-BabcN-2

"EB3S-B...N-2"= Series type

a = Output **R** : Relay, **T** : Transistor,

b = Number of channels **01, 02, 03, 04, 05, 06**

c = Power supply **A** : 100-240V ac, **D** : 24V dc

#### Rating and Parameters of Sensor Barrier

Ta=60°C Um = 250V

Uo = 13.2V Io = 56mA Po = 185mW

Lo(mH)	45.3*	22.5	10.00	5.00	1.00	0.50
Co(μF) /IIB/IIIB	5.80*	0.99	1.90	2.30	3.50	4.30

Lo(mH)	11.3*	5.6	2.00	1.00	0.50	0.25
Co(μF) /IIC/IIIC	0.94*	0.47	0.50	0.61	0.75	0.91

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

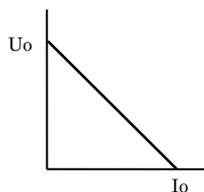


Fig.1 Voltage-Current

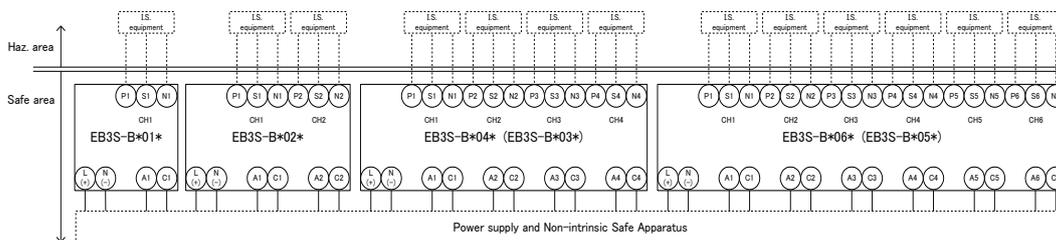


Fig.2 System configuration

### 2 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 the Sensor Barrier on a 35mm track or directly mount on a panel surface using screws.

### 3 Servicing – Replacement and Repairs

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

### 4 Typical Installation

Install the Sensor Barrier must be according to the following Ratings and Parameters of intrinsically safe and descriptions.

To avoid electrical shock, install the Sensor 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.

### 5 Note

1. Use separate 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 Sensor 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 Sensor Barrier does not use or generate more than 250Vrms or Vdc(Um=250V).
4. Install the Sensor Barrier in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classofoed) Locations " and National Electrical Code (ANSI/NFPA 70).
5. Use the Sensor Barrier at ambient temperature -20~ +60°C.
6. Dielectric Strength : Between intrinsically safe circuit and non-intrinsically safe circuit 1526.4V AC

\*No revision to this drawing without prior FM approval.

## IDEC CORPORATION

2-6-64, Nishimiyahara, Yodogawa-ku, Osaka 532-0004, Japan  
<http://www.idec.com>