

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM16US0364X
3. **Equipment:** EB3C Relay Barrier, EB3L Lamp Barrier,
(Type Reference and Name)
4. **Name of Listing Company:** Idec Corporation
5. **Address of Listing Company:** 2-6-64, Nishimiyahara, Yodogawa-Ku, Osaka, Japan
6. The examination and test results are recorded in confidential report number:
3047250 dated 25th June 2013
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:
FM Class 3600:2011, FM Class 3610:2010, FM Class 3810:2005, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-11:2014
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**
Associated Intrinsically Safe for connection to Class I,II and III, Division 1, Groups A, B, C, D, E, F and G; Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F and G per Control Drawing B-1738-2, Entity, and AEx ia for Class I, Zone 0, Group IIC per Control Drawing B-1738-2, Entity; Associated Apparatus for connection to Class I, Zone 0, Group IIC per Control Drawing B-1340-4, B-1341-4, B-1338, B-1339-4; Indoor (IP20) Hazardous (Classified) locations.

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

1 November 2016

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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SCHEDULE



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11. The marking of the equipment shall include:

EB3C series, EB3L series: Class I, II, III Division 1, Groups A, B, C, D, E, F and G, Ta = 60°C
Class I, Zone 0. Group IIC, Ta = 60°C

EB3S-A series, EB3I-B series: Class I, II, III Division 1, Groups A, B, C, D, E, F and G, Ta = 60°C
Class I, Zone 0. Group IIC, Ta = 60°C
Class I, Zone 0. Group IIB, Ta = 60°C

EB3P-Z series: Class I, II, III Division 1, Groups A, B, C, D, E, F and G, T6, Ta = 60°C
Class I, Zone 0. Group IIB, T6, Ta = 60°C

12. **Description of Equipment:**

General – The Barriers are associated intrinsically safe apparatus for connection to passive intrinsically safe circuits. The Barriers can provide up to 16 intrinsically safe circuits. A photocoupler is used to isolate between intrinsically safe and non-intrinsically safe circuits by means of relay contacts, transistor or MOSFET type switches. The buzzer containing a piezoelectric device is used in combination with the EB3L Lamp barrier or the similar barrier that has equivalent intrinsically safe characteristics and ratings.

Ratings – See Entity Parameters below.

EB3C-abcdeN Relay Barrier

AIS / I,II,III, / 1 / ABCDEFG / Ta = 60°C - B-1340-4; Entity
[I/0] / AEx [ia] / IIC / Ta = 60°C - B-1340-4; Entity

- a = Output: R (Relay), T (Transistor) or M (MOSFET).
- b = Number of Channels 01, 02, 03, 04C, 05, 06, 08, 08C, 10 and 16C.
- c = Signal Type: K (Sink) or S (Source) for 04C, 08C and 16C only.
- d = Power Supply: A (100-240VAC) or D (24VDC).
- e = Connection Type: Blank (Terminal) or -C (Connector)

C = Common Wiring Only

Entity Parameters:

	Voc (V)	Isc (mA)	Vt (V)	It (mA)	Po (mW)	Ca (µF)	La (mH)
Any One Channel, i.e. Ch 1	13.2	14.2	-	-	46.9	0.47	87.5
Up to Sixteen Channels	-	-	13.2	227.2	750	0.49	0.60

EB3L-abcdeN Lamp Barrier

AIS / I,II,III, / 1 / ABCDEFG / Ta = 60°C - B-1341-4; Entity
[I/0] / AEx [ia] / IIC / Ta = 60°C - B-1341-4; Entity

- a = Output: S (LED)
- b = Number of Channels 01, 02, 03, 04C, 05, 06, 08, 08C, 10 and 16C.

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c = Signal Type: K (Sink) or S (Source).
 d = Power Supply: A (100-240VAC) or D (24VDC).
 e = Connection Type: Blank (Terminal) or -C (Connector)

C = Common Wiring Only

Entity Parameters:

	Voc (V)	Isc (mA)	Vt (V)	It (mA)	Po (mW)	Ca (μF)	La (mH)
Any One Channel, i.e. Ch 1	13.2	14.2	-	-	46.9	0.47	87.5
Up to Sixteen Channels	-	-	13.2	227.2	750	0.49	0.60

EB3S-AabcN (Type A) Sensor Barrier

AIS / I,II,III, / 1 / ABCDEFG / Ta = 60°C - B-1338-4; Entity
 [I/O] / AEx [ja] / IIC / Ta = 60°C - B-1338-4; Entity
 [I/O] / AEx [ja] / IIB / Ta = 60°C - B-1338-4; Entity

a = Output: R (Relay) or T (Transistor).
 b = Number of Channels 01, 02, 03 and 04.
 c = Power Supply: A (100-240VAC) or D (24VDC).

Entity Parameters:

	Voc (V)	Isc (mA)	Vt (V)	It (mA)	Po (mW)
Any one Channel	8.7	123	-	-	406

	IIC	IIB
La (mH)	1.0	0.5
Ca (uF)	0.82	7.2

EB3S-BabcN (Type B) Sensor Barrier

AIS / I,II,III, / 1 / ABCDEFG / Ta = 60°C - B-1339-4; Entity
 [I/O] / AEx [ja] / IIC / Ta = 60°C - B-1339-4; Entity
 [I/O] / AEx [ja] / IIB / Ta = 60°C - B-1339-4; Entity

a = Output: R (Relay) or T (Transistor).
 b = Number of Channels 01, 02, 03, 04, 05 and 06.
 c = Power Supply: A (100-240VAC) or D (24VDC).

Entity Parameters:

	Voc (V)	Isc (mA)	Vt (V)	It (mA)	Po (mW)
Any one Channel	13.2	56	-	-	185

	IIC	IIB
La (mH)	0.35	0.35
Ca (uF)	0.82	4.8

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EB3P-ZabcdN. Buzzer.

IS / I,II,III / 1 / ABCDEFG / T6 / Ta = 60°C – B-1738-2; Entity

I / 0 / AEx ia / IIC / T6 / Ta = 60°C - B-1738-2; Entity

Entity Parameters:

	V_{Max} (V)	I_t (mA)	P_i (mW)	C_i (μF)	L_i (mH)
Buzzer	13.2	14.2	46.9	0.26	80

a = Construction: U (U series).

b = Fitting size: N (30mm dia.).

c = Rated voltage: 12 (12V).

d = Operation: F (Intermittent sound) or C (Continuous sound).

13. Specific Condition of Use:

The equipment shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application including access only by the use of tool.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
25 th June 2013	Original Issue.
1 st November 2016	<u>Supplement 1:</u> Report Reference: – RR206968 dated 1 st November 2016 Description of the Change: Added the EB3P-Z series buzzer. ANSI/ISA 60079-0 and ANSI/ISA 60079-11 updated to the most recent editions. Changed certificate (formerly 3047250coc) to the new template.

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