ZSB-409A User Manual

Introduction:

The ZSB-409A is a 3-channel dc positive polarity zener safety barrier for use in intrinsic safety applications. The 3-channel design has one 24 V dc channel and two 10 V dc channels. The space saving design mounts on standard 35 mm DIN-Rail. The ZSB-409A provides for the safe operation of an intrinsically safe electrical apparatus installed in a hazardous gas or dust environment classified as Zone 0, 1, 2, 20, 21, or 22 for ATEX/IECEx, and Class I, II, or III for UL/cUL.

Safety Instructions:

1. Installation of this product must be conducted in accordance with relevant installation regulations for explosive atmospheres, local and national electrical codes, and the product Control Drawing No. Ex05121109.
2. If the ZSB-409A is used in a manner not specified, the protection provided by the ZSB-409A may be impaired.
3. Any external circuit connected to the safe area terminals of the ZSB-409A shall have a UL 61010-1 compliant double/reinforced isolation to mains supplying that circuit.
4. The ZSB-409A is intended for limited energy input application only when used with the input ratings as specified in this manual.

Installation and Maintenance:

The ZSB-409A safety barrier is designed for easy installation onto DIN-Rail. To install the safety barrier on DIN-Rail hook the hazardous area side of the barrier over the flange of the DIN-Rail. Push down on the safe area side of the barrier until it snaps into place. To remove the safety barrier from the DIN-Rail insert a flat blade screwdriver into the metal clip on the safe area side of the barrier. Push the metal clip outwards until the safety barrier is released from the DIN-Rail.

The ZSB-409A safety barrier must be connected to a suitable ground. The safety barrier is fitted with an insulated wire having a cross-sectional area of at least 4 mm^2 for making the ground connection. The total ground path resistance must not exceed 1 ohm. Additional ground connections may also be made by connecting to one or more of the safety barrier's ground terminals.

The ZSB-409A safety barrier is intended for indoor or outdoor use in locations where the temperature does not exceed the specified range (T_a) of the safety barrier. The safety barrier must be installed in a safe area; typically in racks or control cabinets with an appropriate level of protection from dust and liquids. Refer to Control Drawing No. Ex05121109 for further information on installation.

If the outer housing of the safety barrier requires cleaning use a damp cloth and a mild detergent diluted with water. CAUTION: DO NOT WET OR CONTAMINATE THE ELECTRONICS.

Servicing:

The ZSB-409A zener safety barrier has no serviceable parts and requires no adjustments or calibration in the field. If service is required please contact your local distributor or Migatron Corporation.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

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Specifications:

Safe Area Terminal Connections

Channel #	Terminals	Supply Voltage maximum (V dc)	Supply Current maximum (mA)
1	7 & GND	25.5	89
2	5 & GND	10.4	5
3	6 & GND	10.4	5

GND = Safe Area ground terminals are 8, 13, 14, 15, & 16

Table 1

The maximum voltage U_m applied to a non-intrinsically safe apparatus or an intrinsically safe associated apparatus/equipment is 250 V rms or dc.

Entity Parameters: See Control Drawing No. Ex05121109

Connections: cage terminals, each maximum 12 AWG solid/stranded wire type Cu, torque 5-7 Lb. In.

Ambient Temperature: -40°C ≤ T_a ≤ +60°C (-40°F ≤ T_a ≤ +140°F)

Humidity: 0 – 95% Non-Condensing

Housing Material: Polyamide

Protection: Model ZSB-409A must be installed inside an end-use enclosure with suitable ratings for the environment, with at least an ingress protection rating of IP20.

Pollution Degree: 2

Altitude: 5000 m

Dimensions: Length = 99 mm, Width = 22.5 mm, Height = 114.5 mm

Explosion Protection:

Process Control Equipment [Exia] Associated Apparatus/Associated Equiment/Appareillage Connexe provides intrinsically safe circuits for equipment in hazardous locations, as listed below, when installed per Control Drawing No. Ex05121109.

Canada and USA (UL/cUL Listed File # E226209)

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

Standards: UL 913, 7th Ed., Rev. 2011-09-23 referencing UL 60079-0, 4th Ed., Rev. 2005-08-15 and UL 60079-11, 5th Ed., Rev. 2011-05-05
CSA C22.2 No. 157-92, Rev. 2003-06 (Reaffirmed 2012)

Europe (CENELEC) (Certificate # DEMKO 13 ATEX 1214149X)

CE 0539

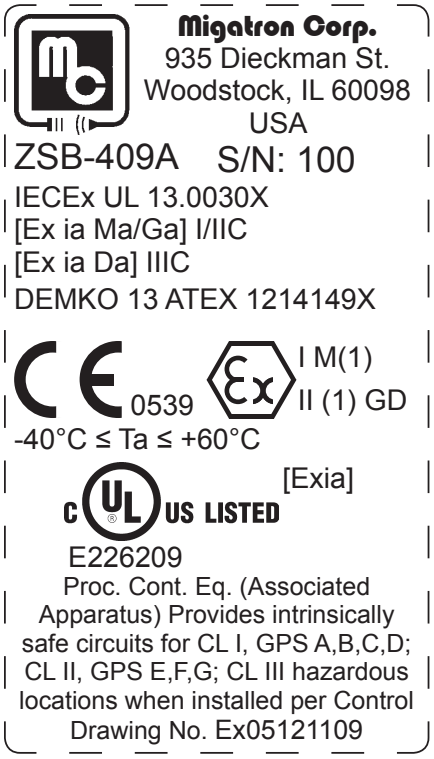
Ex I M(1) [Ex ia Ma] I
Ex II (1) G [Ex ia Ga] IIC
Ex II (1) D [Ex ia Da] IIIC

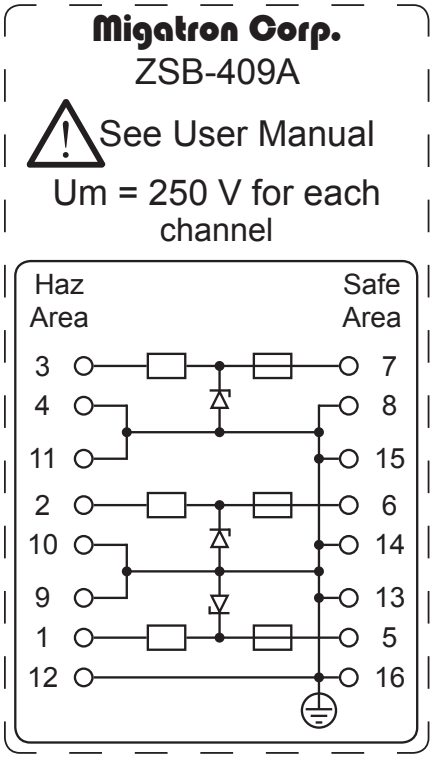
Standards: EN 50303:2000
EN 60079-0:2012
EN 60079-11:2012
EN 60079-26:2007

IECEx (Certificate # IECEx UL 13.0030X)

[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC

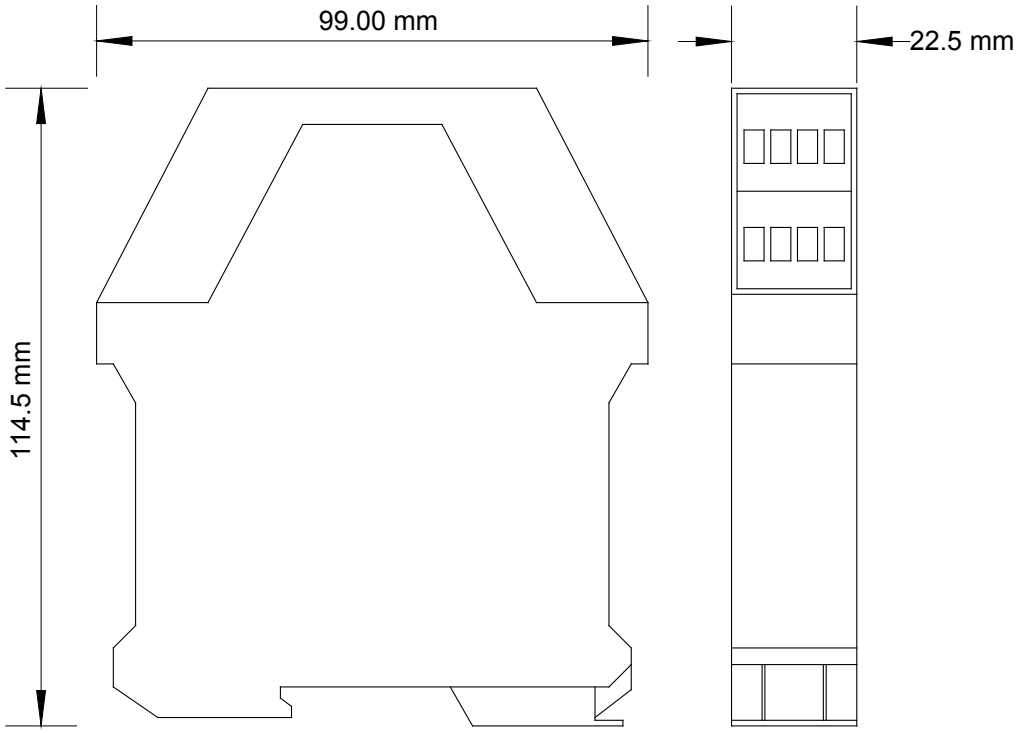
Standards: IEC 60079-0, 6th Ed., 2011-06 + Corr. 1
IEC 60079-11, 6th Ed., 2011-06 + Corr. 1
IEC 60079-26, 2nd Ed., 2006-08 + Corr. 1





Marking Label

Terminal Identification



Enclosure Dimensions