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TURCK

Interface MZB
Reference Guide

A Global Leader in Industrial Automation

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Content

MZB Series Overview

The MZB Series of intrinsically safe shunt diode safety barriers includes a wider product range for more flexibility in more applications.

The high packing density of the MZB series provides a compact solution when space is at a premium, with as little as 6.3 mm required per channel. This series is an expanded and enhanced version of the popular MZ series, which has been a market leader for over 10 years. The newer, state-of-the-art MZB series of shunt diode safety barriers offers the most technologically advanced design of its kind.

The MZB series is based on a simple principle: each channel is fitted with two stages of pulse tested Zener diodes and an infallible terminating resistor. In the event of an electrical fault (such as an overvoltage) in the non-hazardous of the barrier, the Zener diodes limit the voltage available to the hazardous area circuits and a series resistance limits the current. The device also contains a fuse in the circuitry that will rupture in the event of a continuous application of energy in excess of the intended design criteria for the loop.

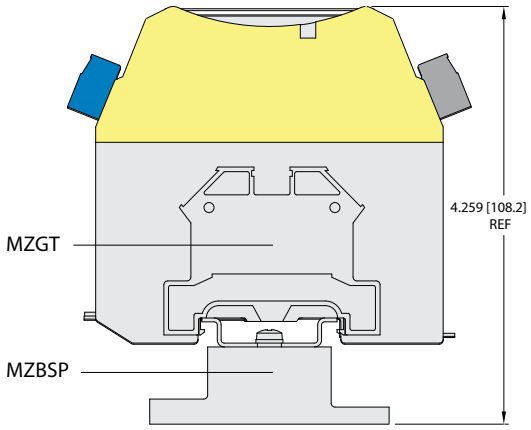
Mounting Details

The MZB series barriers pack closely together on DIN rails, permitting up to 73 barriers per meter of rail. A few factors need to be considered when calculating how many barriers will fit onto a given length of rail.

On the DIN rail, allow space for:

Barrier packing pitch: 12.6 mm
MZGT ground terminals: 10 mm each (min 2)
MZBSP insulating spacer: 14.7 mm (min 2)

1. Barriers and accessories cannot be mounted directly above an MZBSP spacer when using a 7.5 mm rail. If the space above the spacer is needed, use a high-profile (15 mm) rail or low-profile screws, M6 x 16 with 1 mm heads.
2. To maintain rigidity of the DIN-rail when using MZBSP spacers, the distance between spacers should not exceed 500 mm for 15 mm high-profile rail and 300 mm for 7.5 mm low-profile rail.



Grounding

MZB Series barriers must be securely grounded in order to perform their intended function. One connection is required, two are recommended using a 12 AWG minimum conductor. The resistance of the connection between barrier ground and ground electrode must be < 1 ohm. Ground Electrode is defined in the NEC, Article 250, or by other appropriate jurisdictional authority.

Accessories

DIN 35S Track P/M (M6943000)
The MZB series barriers mount easily and quickly onto standard DIN rails (35 X 7.5 mm), which also act as the intrinsically safe ground. Made of steel with chromated cadmium finish, the DIN rail withstands use in potentially corrosive atmospheres. Supplied in 1 meter lengths.

MZBSP Insulating Spacer (K1078)
Attaches to the base of a DIN rail at either end or at intervals (depending upon DIN-rail length) to isolate the IS ground from panel ground.

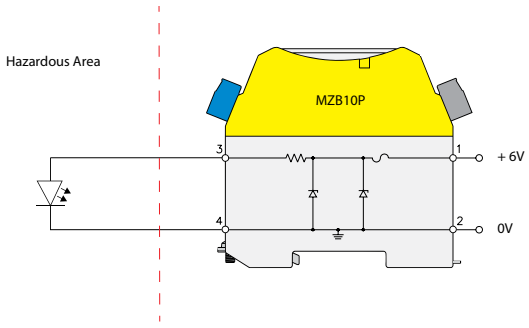
MZGT Ground Terminal (K1036)
Provides connections for routing the IS ground from the DIN rail to an appropriate ground electrode. Two recommended per discrete length of DIN rail.

Single Channel DC

Positive Potential Barriers

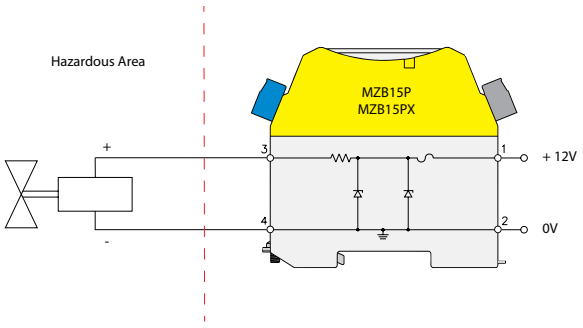
Wiring Diagrams

1



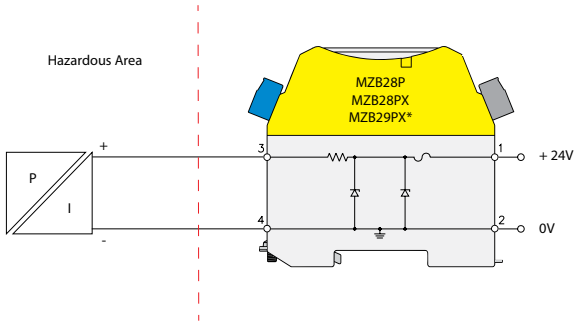
6V Discrete (on/off) Outputs, Audible/Visible Alarms (LED's)

2



12V Discrete (on/off) Outputs, Audible/Visible Alarms (LED's), Solenoids

3



24V Discrete (on/off) Outputs, Audible/Visible Alarms (LED's), Solenoids, I/P transducers

General Specifications

Approvals:	CSA, FM, UL
Ambient Temperature:	-20 to 60 °C Storage
Humidity Limits:	5 to 95% RH
Weight:	140 g Approx.
Mounting and Earthing:	35 mm Top Hat DIN Rail
Screw Terminations:	Accomodates Up to 2.5 mm² (13 AWG) Conductors

Single Channel DC

Positive Potential Barriers

	Entity Parameters				Barrier Specifications				Groups AB/CE/DFG			
Part Number/ ID Number	Voc (Volts)	Isc (mA)	Ro (ohms)	Po (Watts)	End-To-End Resistance (Max)	Vwkg @ 10µA	Voltage (Max)	Fuse Rating (mA)	Co (µF)	Lo (mH)	Lo/Ro (µH/ohms)	Wiring Diagram
MZB10P K1053	10	200	50	0.5	75	6	7	50	3/20/100	0.91/2.72/7.25 0.91	74/310/627	1
MZB15P K1054	15	150	100	0.56	119	12	13.1	100	0.58/3.55/14	1.45/7.22/14	66/263/544	2
MZB15PX K1055	15	291	51	1.09	64	12.6	13.7	100	0.58/3.55/14	0.33/0.99/2.64	28/140/280	2
MZB28P K1056	28	93	300	0.65	333	25.9	26.5	50	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444	3
MZB28PX K1057	28	119	234.6	0.83	252	24.9	25.9	100	0.083/0.65/2.15	2.5/7.53/20	44/168/354	3
MZB29PX K1058	28	170	164	1.19	184	24.9	25.9	100	*/0.65/2.15	*/5.65/11.34	*/127/260	3

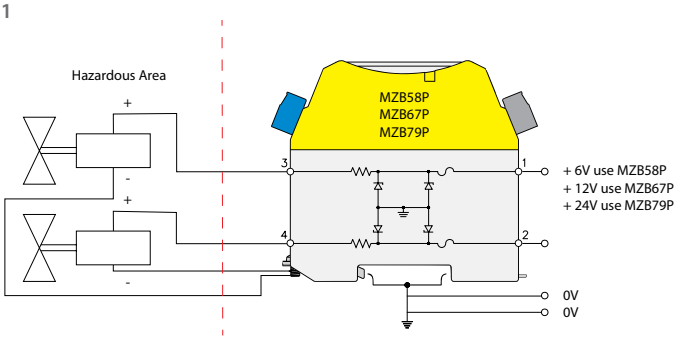
* Not permitted for groups AB

Dual Channel DC

Positive Potential, Diode Return Barriers

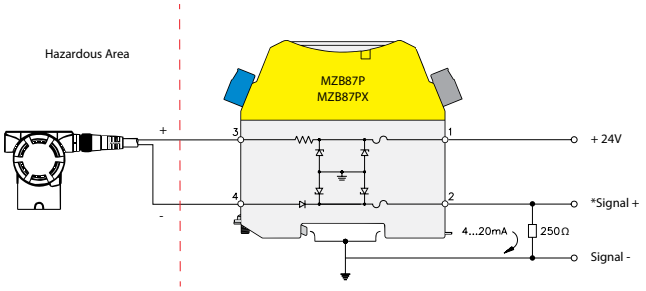
Wiring Diagrams

1



Discrete (on/off) Outputs, Audible/Visible Alarms (LED's), Solenoids

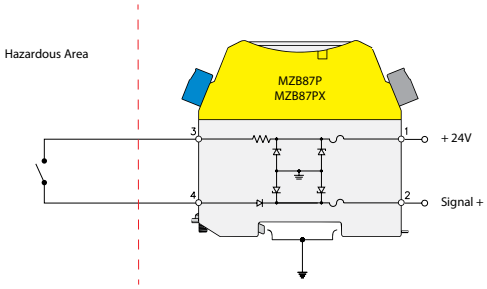
2



*Passive current output (current sink mode) for connection to active current circuits (max 2V output due to diode)

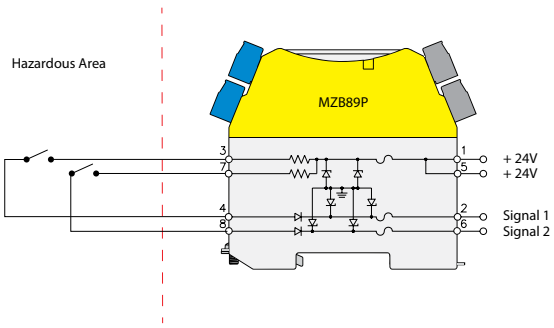
Transmitters

3



Controller Outputs, Switches

4



Switch Inputs, SIgnal Returns

General Specifications

Approvals:	CSA, FM, UL
Ambient Temperature:	-20 to 60 °C Storage
Humidity Limits:	5 to 95% RH
Weight:	140 g Approx.
Mounting and Earthing:	35 mm Top Hat DIN Rail
Screw Terminations:	Accomodates Up to 2.5 mm² (13 AWG) Conductors

Dual Channel DC

Positive Potential, Diode Return Barriers

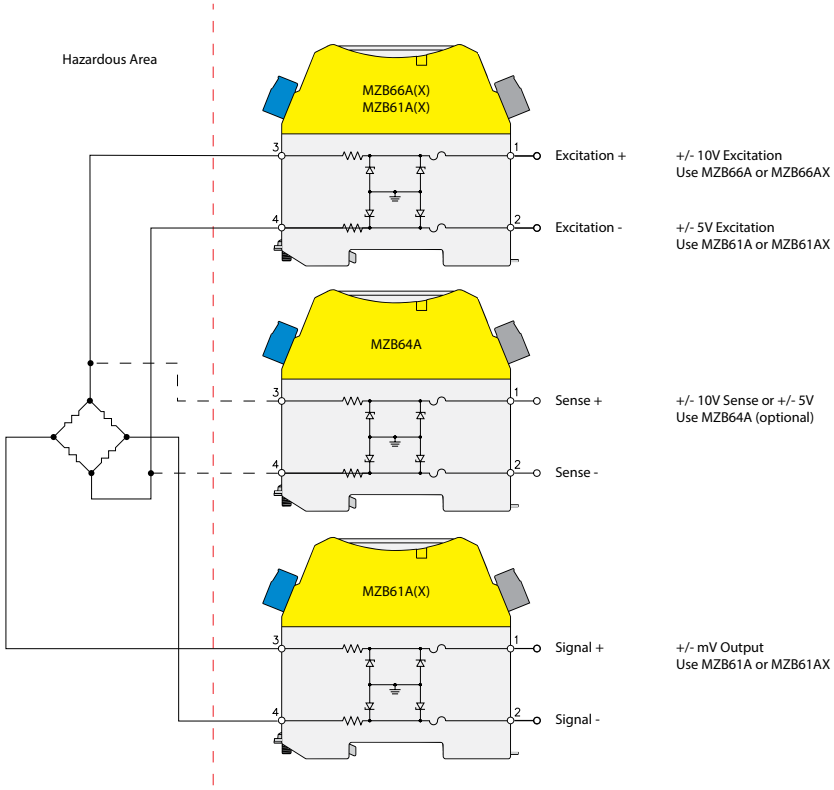
	Entity Parameters				Barrier Specifications							Groups AB/CE/DFG			
					End-To-End Resistance (Max)										
Part Number/ ID Number	Voc (Volts)	Isc (mA)	Ro (ohms)	Po (Watts)	CH1	CH2	CH3	CH4	Vwkg @ 10µA	Voltage (Max)	Fuse Rating (mA)	Co (µF)	Lo (mH)	Lo/Ro (µH/ ohms)	Wiring Diagram
MZB58P K1065	7.5	750	10	1.4	17	17	NA	NA	6	7.3	200	11.1/174/1000	0.07/0.20/0.54	26/77/206	1
MZB67P K1073	15	150	100	0.56	119	119	NA	NA	12	13.1	100	0.58/3.55/14	1.45/7.22/14	66/263/544	1
MZB79P K1074	28	93	300	0.65	333	333	NA	NA	25.9	26.5	50	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444	1
MZB87P K1075	28	93	300	0.65	300	Diode, 0.9V + 26	NA	NA	26.6	27.2	50	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444	2,3
MZB87PX K1076	28	119	234.6	0.835	253	Diode, 0.9V + 21	NA	NA	26.4	27.2	80	0.083/0.65/2.15	2.5/7.53/20	44/168/354	2,3
MZB89P K1077	28	46.5	600	0.33	651	651	Diode, 0.9V +26	Diode, 0.9V +26	26.6	27.7	50	0.083/0.65/2.15	16/63/133	106/393/781	4

Dual Channel AC

Alternating Potential, Higher Level

Wiring Diagrams

1



Single Load Cell or Strain Gauge Bridge (Signal)

Example

To calculate bridge voltage:

$$V_{bridge} = V_{supply} \mathbf{X} \left(\frac{R_{bridge}}{\mathbf{2X}\ R_{end\text{-}to\text{-}endmax} + R_{bridge}} \right)$$

Using MZB66A with 350 ohm bridge @ +10V excitation then, V_{bridge} = 5V

General Specifications

Approvals:	CSA, FM, UL
Ambient Temperature:	-20 to 60 °C Storage
Humidity Limits:	5 to 95% RH
Weight:	140 g Approx.
Mounting and Earthing:	35 mm Top Hat DIN Rail
Screw Terminations:	Accomodates Up to 2.5 mm² (13 AWG) Conductors

Dual Channel AC

Alternating Potential, Higher Level

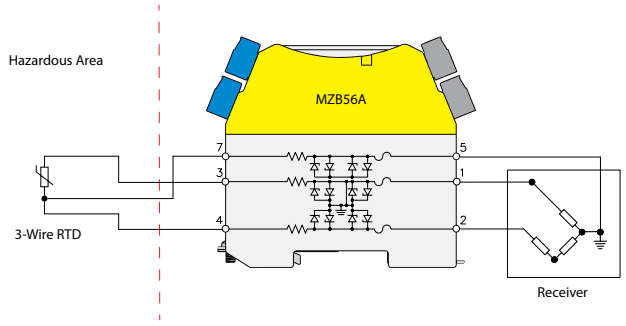
	Entity Parameters				Barrier Specifications					Groups AB/CE/DFG			
					End-To-End Resistance (Max)								
Part Number/ ID Number	Voc (Volts)	Isc (mA)	Ro (ohms)	Po (Watts)	CH1	CH2	Vwkg @ 10µA	Voltage (Max)	Fuse Rating (mA)	Co (µF)	Lo (mH)	Lo/Ro (µH/ ohms)	Wiring Diagram
MZB61A K1067	9	100	90	0.225	107	107	6	7	100	4.9/40/500	3.72/15/500	163/616/1299	1
MZB61AX K1068	9	26	351	0.58	378	378	6.8	7.5	50	4.9/40/500	54/208/419	613/2382/2778	1
MZB64A K1069	12	12	1000	0.036	1050	1050	10	10.9	50	1.41/9/36	240/932/1000	1000/1000/1000	1
MZB66A K1071	12	80	150	0.24	174	174	10	10.6	50	1.41/9/36	5.8/23/48	151/556/1174	1
MZB66AX K1072	12	157	76.4	0.471	92	92	9.6	10.5	100	1.41/9/36	1.47/4.4/11	78/313/644	1

Three and Dual Channel AC

Alternating Potential, Higher Level to Lower Level, Star Connected

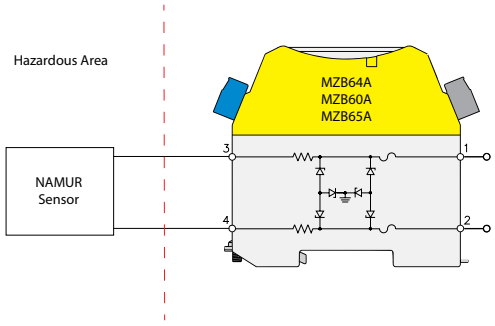
Wiring Diagrams

1



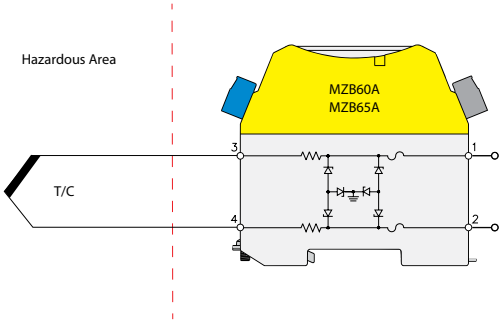
3-wire (grounded) RTD

2



NAMUR Signal

3



Thermocouple

General Specifications

Approvals:	CSA, FM, UL
Ambient Temperature:	-20 to 60 °C Storage
Humidity Limits:	5 to 95% RH
Weight:	140 g Approx.
Mounting and Earthing:	35 mm Top Hat DIN Rail
Screw Terminations:	Accomodates Up to 2.5 mm^2 (13 AWG) Conductors

Three and Dual Channel AC

Alternating Potential, Higher Level to Lower Level, Star Connected

	Entity Parameters				Barrier Specifications						Groups AB/CE/DFG			
					End-To-End Resistance (Max)									
Part Number/ ID Number	Voc (Volts)	Isc (mA)	Ro (ohms)	Po (Watts)	CH1	CH2	CH3	Vwkg @ 10µA	Voltage (Max)	Fuse Rating (mA)	Co (µF)	Lo (mH)	Lo/Ro (µH/ ohms)	Wiring Diagram
MZB56A K1064	3	300	10	0.225	19	19	19	0.7	2.7	250	100/1000/1000	0.46/1.37/3.66	145/722/1442	1
MZB60A K1066	10	200	50	0.5	75	75	NA	6	6.7	50	3/20.2/100	0.91/2.72/7.25	74/310/627	2,3
MZB65A K1070	15	150	100	0.56	124	124	NA	12	12.5	50	0.58/3.55/14	1.45/7.22/14	66/263/544	2,3

Notes

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Literature and Media questions or concerns?
Contact Turck USA Marketing – tusa.marketing@turck.com

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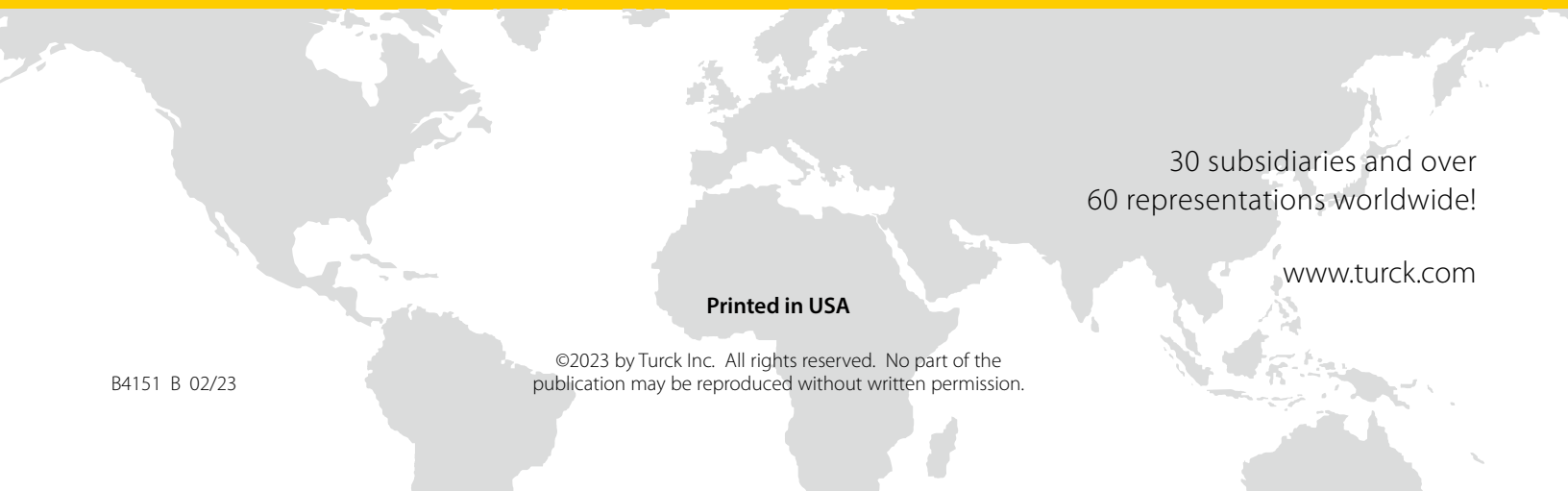

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B4151 B 02/23