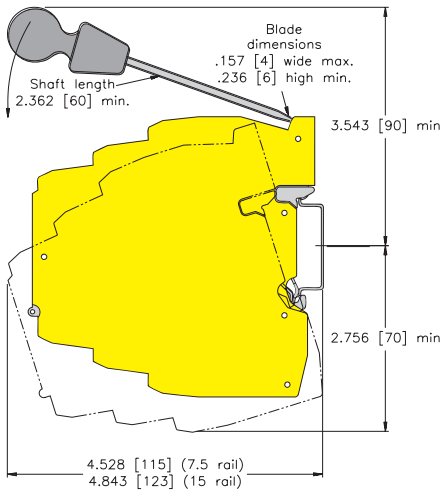
Clearances for mounting and removing barriers



Mounting details

TURCK MZ Series barriers pack closely together on DIN rails, permitting up to 132 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: 7.4 mm

MZGT ground terminals: 10 mm each

MZSP insulating spacer: 14.7 mm (minimum of 2)

1) barriers and accessories cannot be mounted directly above an MZSP 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 MZSP spacers, the distance between spacers should not exceed 500 mm for 15 mm high-profile rail and 333 mm for 7.5 mm low-profile rail.

There is a provision to terminate a cable screen or ground return on the third terminal (6 or 3) on MZ Series barriers. Spare cores may be secured on the MZDB dummy barrier.

Grounding

MZ 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.

Specifications

Ambient temperature limits

-20° to 60°C (FM/CSA) continuous working
-20° to 40°C (BASEEFA) continuous working

Humidity limits

5 to 95% RH

Case flammability

UL94: V-2

Terminations

Terminals accommodate conductors up to 2.5 mm^2
Hazardous-area terminals are identified as dark blue

Color coding of barrier type (label on top surface)

Red . . . . . Positive polarity (+)
Black . . . . . Negative polarity (-)
Grey . . . . . Non-polarized
White . . . . . MZDB dummy barrier

Weight

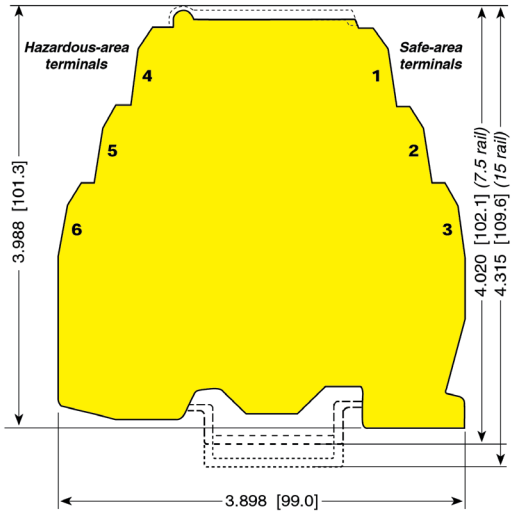
100 g approximately

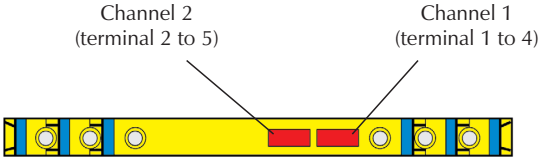
Mounting and grounding

Achieved by clamping onto standard 35 mm "top-hat" DIN-rail: 7.5 mm (low profile) or 15 mm (high profile).

EMC compliance

EN 50 081-2/EN 50 082-2, generic emission/ immunity standards. These refer to appropriate IEC/CISPR standards.



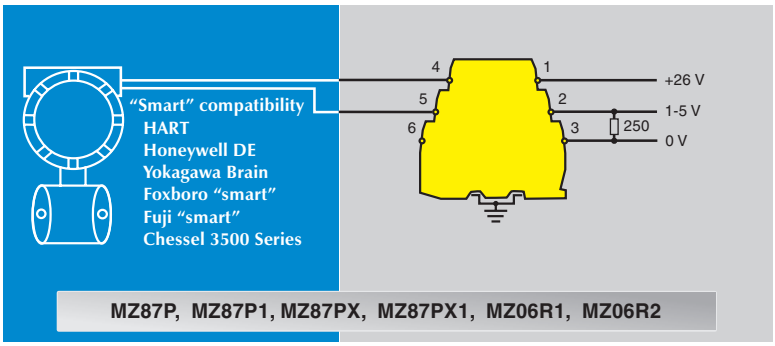


Shunt-Diode Safety Barrier Applications

Application 1

2-Wire Transmitters, 4-20 mA

The MZ87P / MZ87P1, or the higher power MZ87PX / MZ87PX1, are recommended for use with conventional or 'smart' 4-20 mA transmitters supplied by a closely regulated supply. These provide up to 14.2 V at 20 mA to a transmitter and field wires as well as 5 V for the typical 250 Ω load. The MZ06R1/MZ60R2 is recommended for applications supplied by an unregulated supply (up to 35 V). It provides 16 V to the transmitter and field wires at 20 mA as well as 5 V to the measurement load.

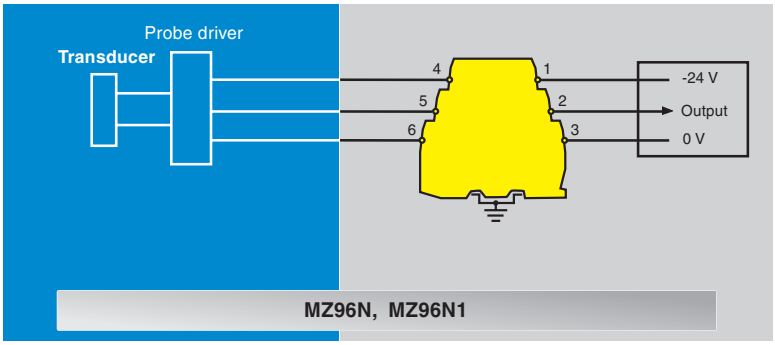


Application 2

Vibration Probes

Vibration monitoring equipment is almost exclusively powered by a -24 VDC power supply.

The negatively polarized dual channel MZ96N / MZ96N1 is recommended for use in these applications.

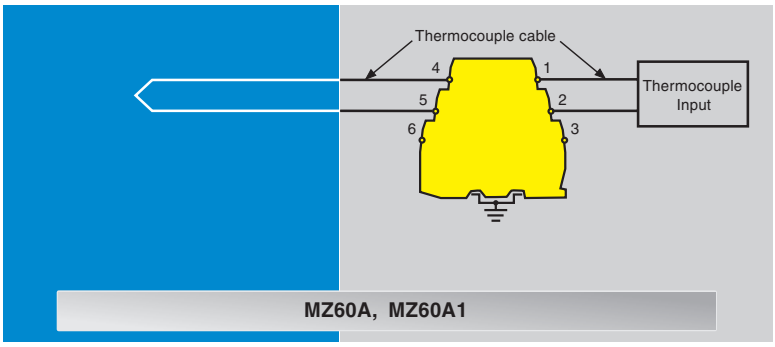


Application 3

Thermocouples and mV Sources

The MZ60A / MZ60A1 is recommended for use with thermocouples and other mV sources.

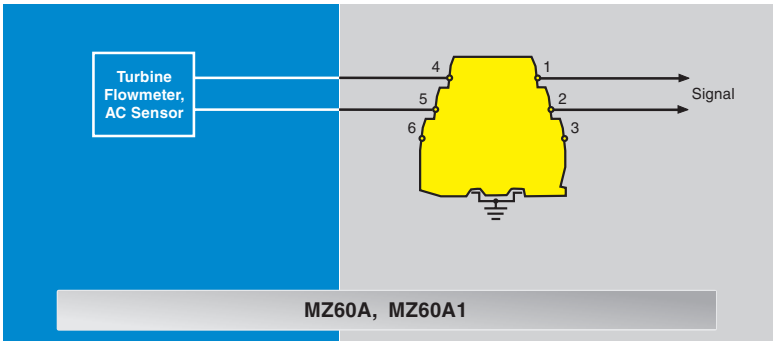
This dual- channel alternating potential barrier provides at least 7 V of 'float' for these low-level signals.

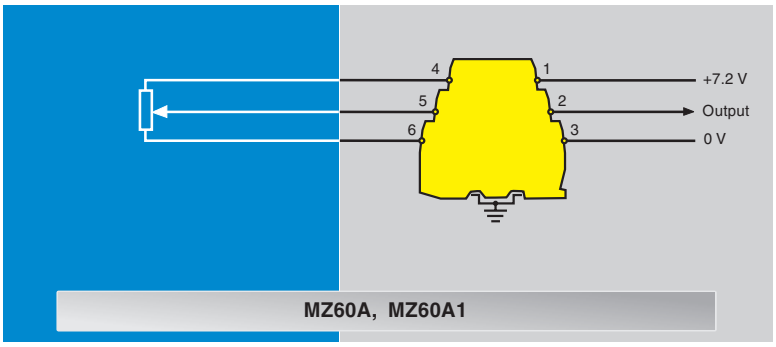


Application 4

Turbine Flowmeters and AC Sensors

The MZ60A / MZ60A1 is recommended for use with many low-level AC sensors, turbine flowmeters, photocells, etc.

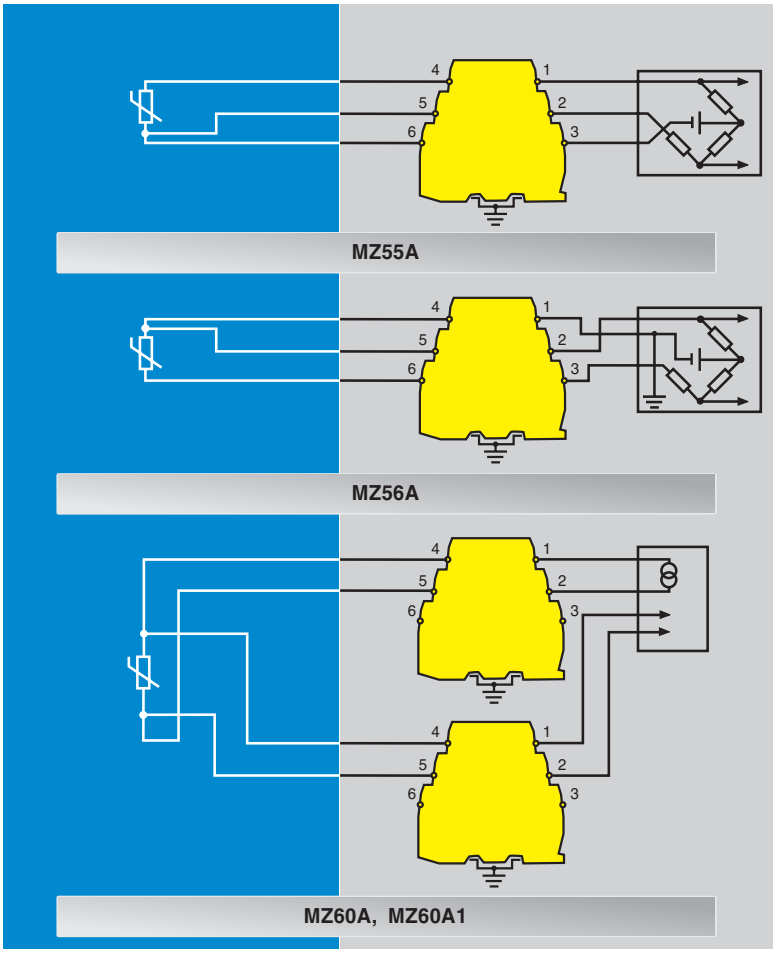




Application 5

Potentiometers

The MZ60A / MZ60A1 is the simplest choice for use with slidewire displacement transducers and other devices that are essentially potentiometers.



Application 6

RTDs

A dual-channel MZ55A is the most economical choice for 3-wire RTDs. This barrier is suitable for use with a floating bridge - the two leads from the bridge arms are protected by the barrier with the third lead (supply return) being grounded by the barrier. The barrier has a low end-to-end resistance of only 24 Ω/channel to minimize span changes. Its channels track within 0.15 Ω between -20 and +60°C to minimize zero shift with temperature.

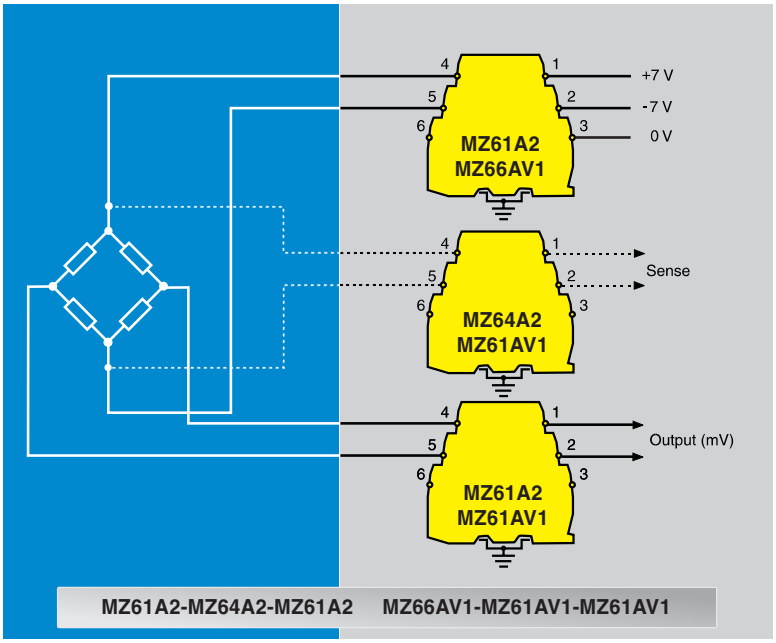
If the bridge circuit is grounded, a third barrier channel is needed. The three-channel MZ56A provides this configuration. This barrier also provides additional accuracy when used with an ungrounded bridge, a configuration that cancels the small errors due to barrier leakage. Channels 2 (terminals 2-5) and 3 (terminals 3-6) track within 0.15 Ω between -20° and +60°C. 4-wire constant-current circuits do not need matched barrier resistance. These circuits can be protected more economically by two MZ60A / MZ60A1 barriers. If the loop resistance presents problems for the monitoring equipment, two MZ55A barriers may be used in the same configuration.

Applications

Application 7

Single Strain Gauge Bridges

This connection, using two or three barriers, is safe for Groups A-G. With the MZ61A2, the circuit is powered from a 14 V, 230 Ω source. If the bridge resistance is 230 Ω, the bridge voltage is 7 V. If the bridge resistance is 350 Ω, the bridge voltage is 8.4 V.
An MZ64A2 may be used to sense the bridge supply voltage.
An MZ61A2 is used for the signal return.
Alternately, if an MZ66AV1 is used for the bridge supply, the bridge voltage is 12.3 V for a 350 Ω bridge. In this case, MZ61AV1 barriers are used for the sense and signal lines.

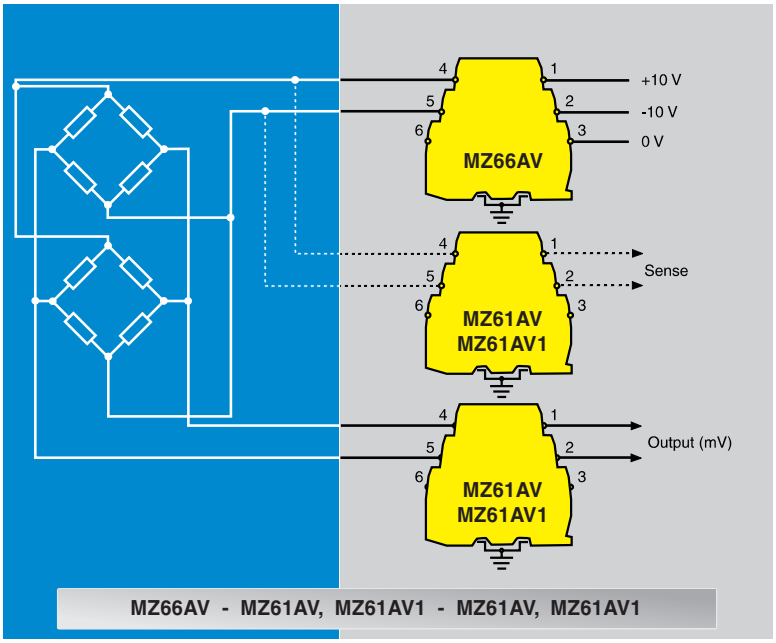


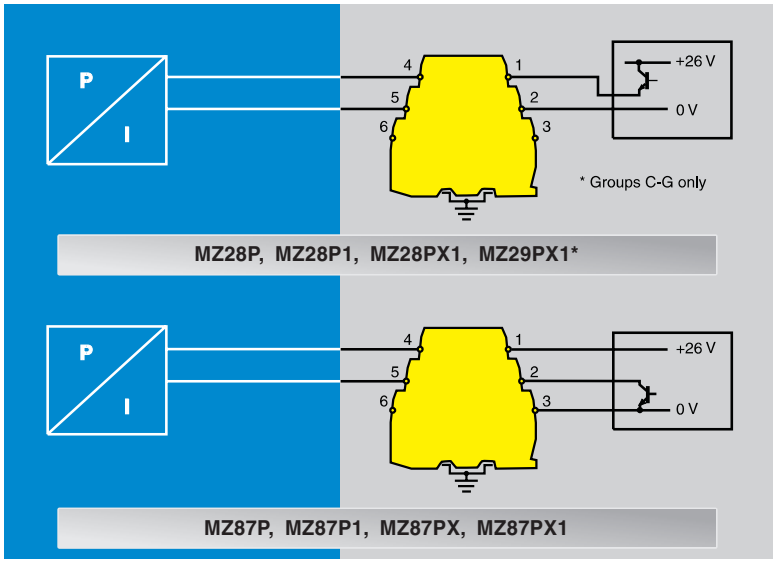
Application 8

Multiple Strain Gauge Bridges

Often there is a need to monitor two or more load cells in parallel. The resultant higher current produces higher voltage drops. The lower end-to-end resistance of the MZ66AV is an advantage in these systems.
The MZ66AV supplies power to the bridges and two MZ61AV or MZ61AV1barriers are used for the sense and signal lines.
For systems using 350 Ω bridges, the following voltages are available to the system from a +10 V supply:

1 bridge: 12.8 V
2 bridges: 9.4 V
3 bridges: 7.5 V
4 bridges: 6.2 V

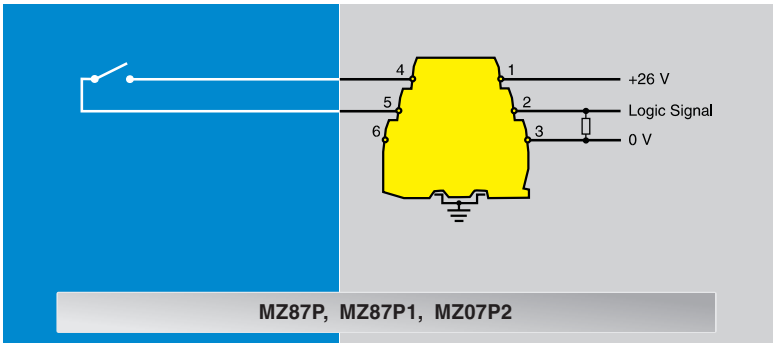




Application 9

Controller Outputs (I/P Converters)

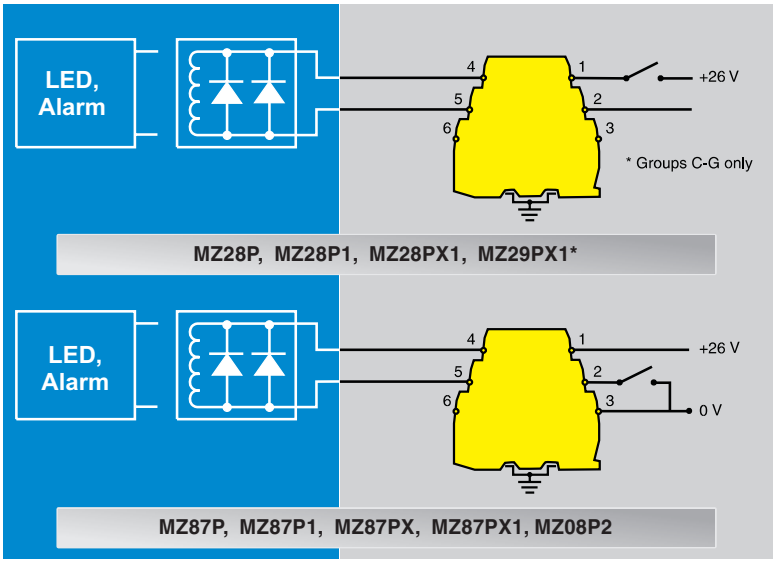
The single-channel MZ28P / MZ28P1 is the recommended choice for most controller outputs. Its end-to-end resistance of 332 / 342 Ω, producing voltage drops of 6.7 V / 6.9 V at 20 mA, is compatible with most modern equipment. Higher-power versions are also available: the MZ28PX1 (275 Ω, 5.5 V drop) is suitable for Group A-G locations; the MZ29PX1 (211 Ω, 4.2 V drop) is suitable for Group C-G locations. For controllers in which the control element is located in the return leg, the dual-channel MZ87P / MZ87P1 is recommended, as the 26 V return channel allows the control signal to be completely turned off. Its voltage drop is 8.2 V / 8.6 V at 20 mA. A higher-power version, the MZ87PX / MZ87PX1 (6.72 V / 7.24 V drop) is also available and is suitable for Group A-G locations.



Application 10

Discrete Inputs (Dry Contacts)

The dual-channel MZ87P / MZ87P1 is the recommended choice in systems with a closely regulated supply.
The active MZ07P2 is recommended when the supply is not closely regulated (up to 35 V).



Application 11

Discrete Outputs (Solenoid Valves, LEDs, Alarms, etc.)

The MZ28P / MZ28P1 is recommended for systems in which the control switch is in the supply leg.
Higher- powered versions are available: the MZ28PX1 is suitable for Group A-G locations: the MZ29PX1 is suitable for Group C-G locations.

For systems in which the control switch is in the return leg, the dual-channel MZ87P / MZ87P1 is recommended, or alternately, the higher-power MZ87PX / MZ87PX1.
For systems without closely regulated supply voltage, the MZ08P2 is recommended.