



# Zener Barrier Z779

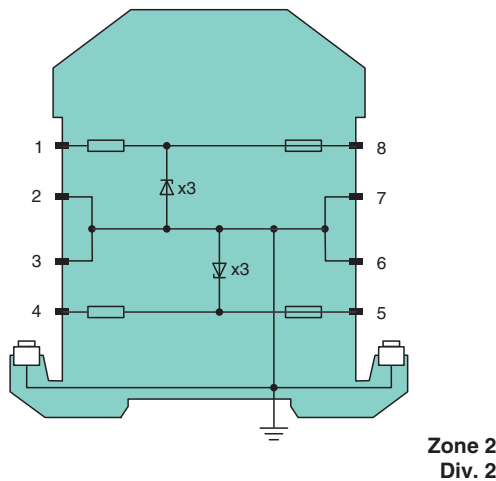
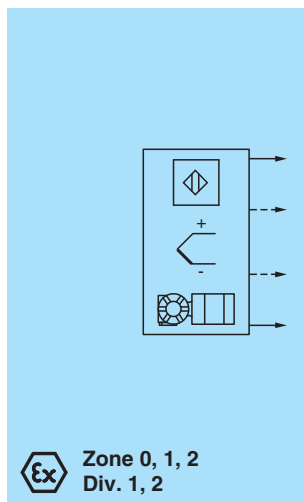
- 2-channel
- DC version, positive polarity
- Working voltage 26.5 V at 10  $\mu$ A
- Series resistance max. 327  $\Omega$
- Fuse rating 50 mA
- DIN rail mountable



## Function

The Zener Barrier prevents the transfer of unacceptably high energy from the safe area into the hazardous area. The zener diodes in the Zener Barrier are connected in the reverse direction. The breakdown voltage of the diodes is not exceeded in normal operation. If this voltage is exceeded, due to a fault in the safe area, the diodes start to conduct, causing the fuse to blow. The Zener Barrier has a positive polarity, i. e. the anodes of the zener diodes are grounded. Depending on the application, increased or decreased intrinsic safety parameters apply for serial or parallel connection. For the detailed parameters refer to the Zener Barrier certificate. Application examples can be found in the system description of the Zener Barriers.

## Connection



## Technical Data

<b>General specifications</b>	
Type	DC version, positive polarity
<b>Electrical specifications</b>	
Nominal resistance	300 $\Omega$
Series resistance	max. 327 $\Omega$
Fuse rating	50 mA
<b>Hazardous area connection</b>	
Connection	terminals 1, 2; 3, 4
<b>Safe area connection</b>	
Connection	terminals 5, 6; 7, 8
Working voltage	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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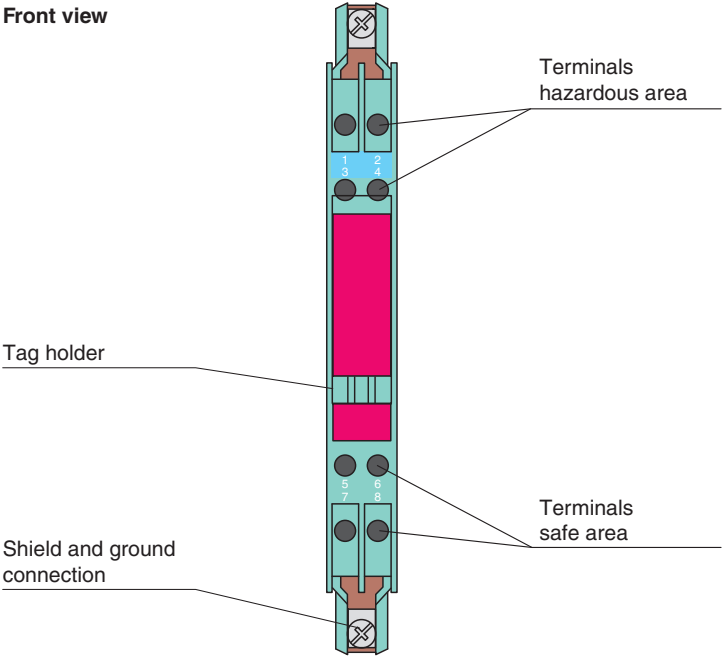
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## Technical Data

Supply loop		max. 27 V
Measurement loop		max. 26.5 V at 10 µA
<b>Conformity</b>		
Degree of protection		IEC 60529
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-25 ... 70 °C (-13 ... 158 °F)
Relative humidity		max. 75 % , without condensation
<b>Mechanical specifications</b>		
Degree of protection		IP20
Connection		screw terminals
Core cross section		max. 2 x 2.5 ... mm <sup>2</sup>
Mass		approx. 150 g
Dimensions		12.5 x 115 x 116 mm (0.5 x 4.5 x 4.6 inch) (W x H x D)
Construction type		modular terminal housing , see system description
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		BAS 01 ATEX 7005
Marking		Ⓔ II (1)GD, I (M1) [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
Voltage	U <sub>o</sub>	28 V
Current	I <sub>o</sub>	93 mA
Power	P <sub>o</sub>	650 mW
<b>Supply</b>		
Maximum safe voltage	U <sub>m</sub>	250 V
Series resistance		min. 301 Ω
Certificate		TÜV 99 ATEX 1484 X
Marking		Ⓔ II 3G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
<b>FM approval</b>		
Control drawing		116-0118
<b>UL approval</b>		
Control drawing		116-0139 (cULus)
<b>IECEX approval</b>		
IECEX certificate		IECEX BAS 09.0142 IECEX BAS 17.0091X
IECEX marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
<b>General information</b>		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

Assembly



Matching System Components

	<b>ZH-ES/LB</b>	Insertion Strip
	<b>ZH-Z.AB/NS</b>	Mounting block for DIN mounting rail
	<b>ZH-Z.AB/SS</b>	Mounting block for grounding rail
	<b>ZH-Z.AK16</b>	Connection terminal for grounding rail
	<b>ZH-Z.AR.125</b>	Spacing Roller
	<b>ZH-Z.BT</b>	Label Carrier
	<b>ZH-Z.ES</b>	Single Socket
	<b>ZH-Z.LL</b>	Ground Rail Feed
	<b>ZH-Z.NLS-Cu3/10</b>	Grounding Rail
	<b>USLKG5</b>	Terminal block for equipotential bonding

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# Instruction Manual

## 1. Marking

Zener Barrier Z040, Z041, Z042 Z705, Z710, Z713, Z715, Z715.1K, Z722, Z728, Z728.CL, Z728.H, Z755, Z757, Z763, Z764, Z765, Z772, Z778, Z779, Z779.H, Z786, Z787, Z787.H, Z788, Z788.H, Z788.R, Z789, Z796 Z810, Z810.CL, Z813, Z822, Z828, Z828.H, Z857, Z864, Z865, Z872, Z878, Z886, Z887, Z888, Z888.H, Z896 Z905, Z910, Z915, Z915.1K, Z922, Z928, Z954, Z955, Z960, Z961, Z961.H, Z964, Z965, Z966, Z966.H, Z967, Z969, Z972, Z978
ATEX certificate: BAS 01 ATEX 7005 ATEX marking: Ⓜ II (1)G [Ex ia Ga] IIC, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I ATEX certificate: TÜV 99 ATEX 1484 X ATEX marking: Ⓜ II 3G Ex nA IIC T4 Gc
IECEX certificate: IECEX BAS 09.0142 IECEX BAS 17.0091X IECEX marking: [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec IIC T4 Gc
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## 2. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.  
The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.  
Prior to using the product make yourself familiar with it. Read the instruction manual carefully.

## 3. Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location.  
For mining applications, observe laws, standards, and directives applicable to the operating location.  
The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable supplement this document. You can find this information under [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).  
For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

## 4. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.  
The device is used in control and instrumentation technology (C&I technology) for transfer of signals such as 20 mA and 10 V standard signals. The device has intrinsically safe circuits that are used for operating intrinsically safe field devices in hazardous areas.  
Use the device only within the specified ambient and operating conditions.  
The device is designed for mounting on a 35 mm DIN mounting rail according to EN 60715.  
The device is an associated apparatus according to IEC/EN 60079-11.  
The device is an electrical apparatus for hazardous areas of Zone 2.  
The device may be installed in the non-hazardous area.

## 5. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

## 6. Mounting and Installation

Do not mount a damaged or polluted device.  
Mount the device in a way that the device is protected against mechanical hazard. Mount the device in a surrounding enclosure for example.  
Do not mount the device in the dust hazardous area.  
The device fulfills a degree of protection IP20 according to IEC/EN 60529.

The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

If used in areas with higher pollution degree, the device needs to be protected accordingly.

The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC/EN 60664-1.

Observe the installation instructions according to IEC/EN 60079-14.

### Requirements for Cables and Connection Lines

Observe the permissible core cross section of the conductor.

When using stranded conductors, crimp wire end ferrules on the conductor ends.

Use only one conductor per terminal.

When installing the conductors the insulation must reach up to the terminal.

Observe the tightening torque of the terminal screws.

### Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Keep the separation distances between all non-intrinsically safe circuits and intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the respective peak values of the field device and the associated apparatus with regard to explosion protection when connecting intrinsically safe field devices with intrinsically safe circuits of associated apparatus (verification of intrinsic safety). Also observe IEC/EN 60079-14 and IEC/EN 60079-25.

If no  $L_o$  and  $C_o$  values are specified for the simultaneous appearance of lumped inductances and capacitances, the following rule applies.

- The specified value for  $L_o$  and  $C_o$  is used if one of the following conditions applies:
  - The circuit has distributed inductances and capacitances only, e. g., in cables and connection lines.
  - The total value of  $L_i$  (excluding cable) of the circuit is  $< 1\%$  of the specified  $L_o$  value.
  - The total value of  $C_i$  (excluding cable) of the circuit is  $< 1\%$  of the specified  $C_o$  value.
- A maximum of 50 % of the specified value for  $L_o$  and  $C_o$  is used if the following condition applies:
  - The total value of  $L_i$  (excluding cable) of the circuit is  $\geq 1\%$  of the specified  $L_o$  value.
  - The total value of  $C_i$  (excluding cable) of the circuit is  $\geq 1\%$  of the specified  $C_o$  value.
- The reduced capacitance for gas groups I, IIA, and IIB must not exceed the value of 1  $\mu\text{F}$  (including cable). The reduced capacitance for gas group IIC must not exceed the value of 600 nF (including cable).

If more channels of one device are connected in parallel, ensure the parallel connection is made directly at the terminals of the device. When verifying the intrinsic safety, observe the maximum values for the parallel connection.

Observe the grounding requirements for type of protection Ex i according to IEC/EN 60079-14.

Ensure that external ground connections exist, are in good condition, and are not damaged or corroded.

### Requirements for Equipment Protection Level Gc

The device must be installed and operated only in surrounding enclosures that

- comply with the requirements for surrounding enclosures according to IEC/EN 60079-0,
- are rated with the degree of protection IP54 according to IEC/EN 60529.

The device may be installed in gas groups IIC, IIB, and IIA.

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

## 7. Operation, Maintenance, Repair

Do not repair, modify, or manipulate the device.

If there is a defect, always replace the device with an original device.

### Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Ensure that external ground connections exist, are in good condition, and are not damaged or corroded.

#### **Requirements for Equipment Protection Level Gc**

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

#### **8. Delivery, Transport, Disposal**

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

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