

Wideband Zener Barriers

for acoustic emission measuring chain

Type 5252A...

High frequency Zener Safety Barrier allows usage of Type 8152C Acoustic Emission sensor and its associated coupler Type 5125C in ATEX/IS environments.

- Conforms to ATEX Directives 94/9/EC & 2014/34/EU II 1GD IEC/EN60079-11; CSA Class I, Zone 0 & Class I, Zone 20
- 6 MHz cut-off frequency
- Low capacitance
- 12 VDC Pass/13.7 VDC Clamp Voltage (Type 5252A1) or 24 VDC Pass/27.3 VDC Clamp Voltage (Type 5252A2)

Description

The Type 5252A Wideband Zener Barrier is made to operate with a cut-off frequency of >6 MHz for Type 5252A1 and >3.5 MHz for Type 5252A2. The wide bandwidth allows for the Type 5252A1 barrier to be used with the Type 8152C AE-Sensor, which has usable frequencies up to 1 MHz. The flat bandwidth response at high frequencies and low capacitance enables the barriers to be used in a wide range of other applications including digital interfaces (such as the RPM of a compressor/motor) and serial buses without signal degradation. A block diagram of the barrier is shown below. The 5252A1 and 5252A2 barriers can for example be used together with Kistler ATEX Piezoresistive Pressure Transmitters Types 4260A, 4262A and 4264A from Kistler.

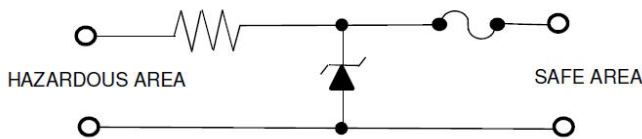
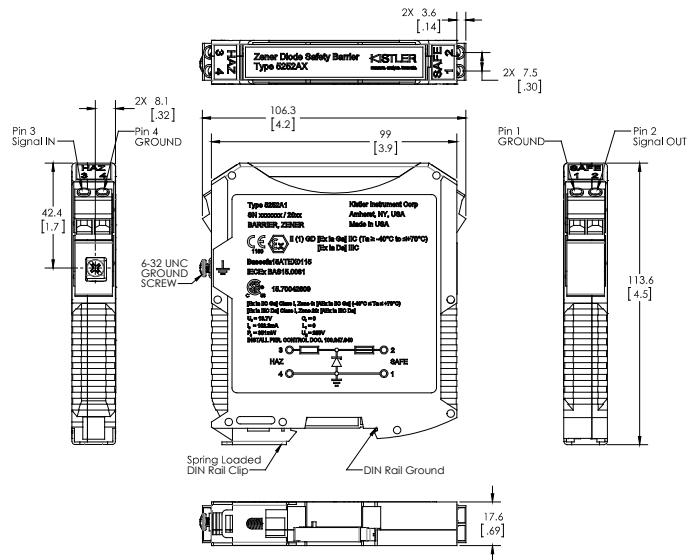


Fig. 1: Block diagram of Type 5252A... Barrier



Dimensions




Dimensions are shown in mm [in], unless otherwise noted.

Connector Pin-outs

Pin	Description
1	Signal Ground (Safe Area)
2	Signal Output (Safe Area)
3	Signal Input (Hazardous Area)
4	Sensor Ground (Hazardous Area)

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Technical data

Type number	Unit	5252A1	5252A2
Environmental			
Operating temperature range	°C °F	-40 ... 70 [-40 ... 160]	-40 ... 70 [-40 ... 160]
ATEX Hazardous Area		II (1) GD [Ex ia Ga] IIC (Ta -40 °C ... 70 °C) [Ex ia Da] IIIC Baseefa15ATEX0115 IECEX BAS15.0081	II (1) GD [Ex ia Ga] IIC (Ta -40 °C ... 70 °C) [Ex ia Da] IIIC Baseefa15ATEX0115 IECEX BAS15.0081
 15.70042609X		Class I, Zone 0 [Ex ia IIC Ga & AEx ia IIC Ga] Class I, Zone 20 (Ex ia IIIC Da & Aex ia IIIC Da]	Class I, Zone 0 [Ex ia IIC Ga & AEx ia IIC Ga] Class I, Zone 20 (Ex ia IIIC Da & Aex ia IIIC Da]
Electrical			
Input voltage	VDC	0 ... 11.8	0 ... 24
Current (max.)	mA	50	50
Capacitance (typ.)	pF	120	120
Clamp voltage (max.)	VDC	<13.7	<27.3
Clamp voltage (min.)	VDC	>11.8	>24
Attenuation @ 1 MHz (typ.)	%	-2.5% (-0.22 dB)	-4.5% (-0.40 dB)
High cut-off frequency	MHz	>6	>3.5
Low cut-off frequency	Hz	0 (DC)	0 (DC)
Construction			
Housing	material	Polyamide, UL 94 V0	Polyamide, UL 94 V0
Dimensions (L x W x H)	mm [in]	99 x 113.6 x 17.6 [3.9 x 4.5 x 0.69]	99 x 113.6 x 17.6 [3.9 x 4.5 x 0.69]
Weight	grams	125	125
Materials		RoHS Compliant per EU Directive 2011/65/EU	RoHS Compliant per EU Directive 2011/65/EU

1 g = 9.80665 m/s², 1 in = 25.4 mm, 1 Gram = 0.03527 oz, 1 lbf-in = 0.113 N-m

System configurations

The 12 V Wideband Zener Barrier (12 V => Type 5252A1) has been designed to be coupled with the Type 5125C0 or 5125C1 Non-ATEX Acoustic Emission Coupler for usage of the full bandwidth of its high frequency real-time AE output and the Type 8152C Acoustic Emission Sensor. Fig. 2 on the following page illustrates this system configuration. Fig 3. illustrates possible applications for the Type 5252A1 and 5252A2 barriers, including Kistler ATEX Pressure Transmitter Types 4260A, 4262A and 4264A. Fig 4. shows application of the Type 5252A2 barrier with any other ATEX transducers.

WARNING: Only ATEX sensors Type 8152C starting with serial number SN 4944583 and higher are compatible with the Wideband Barrier Type 5252A1.

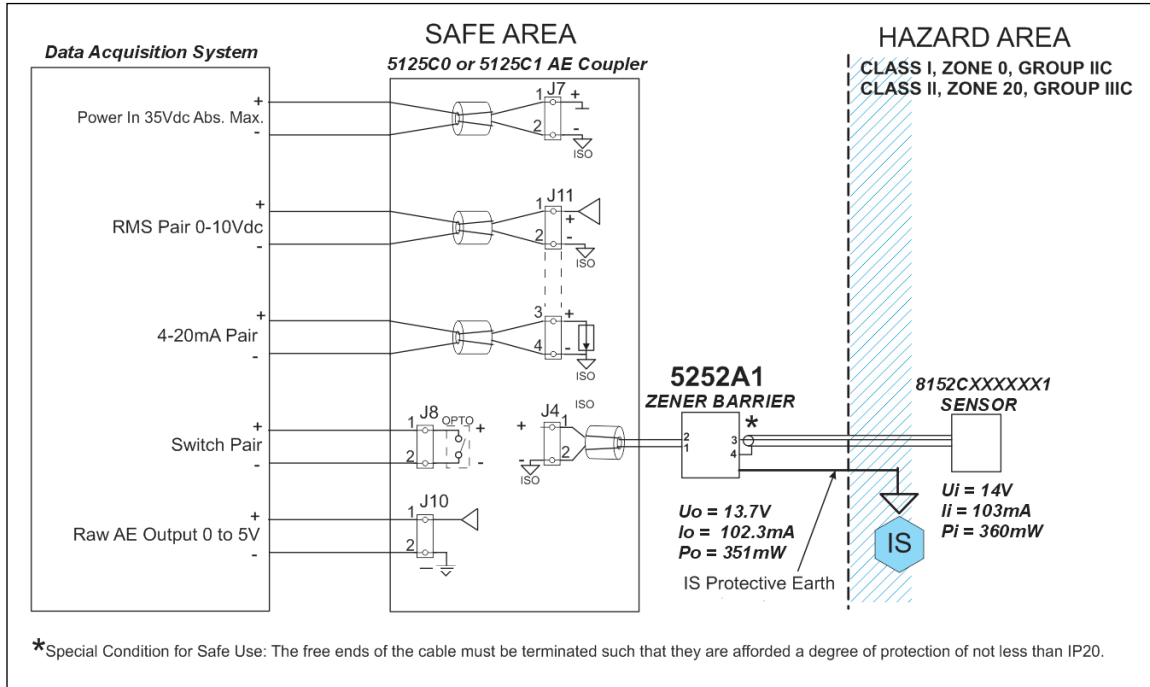


Fig. 2: Type 5252A1 Wideband Zener Barrier System with Acoustic Emission measuring chains. Type 8152C Sensor lies inside the Zone 0 Hazard Area. Type 5252A1 provides the safety barrier between sensor and Non-ATEX Type 5125C0 or 5125C1 Couplers.

WARNING: Only ATEX Sensors Type 8152C... with serial number SN 4944583 and higher are compatible with the Type 5252A1 Wideband Zener Barrier.

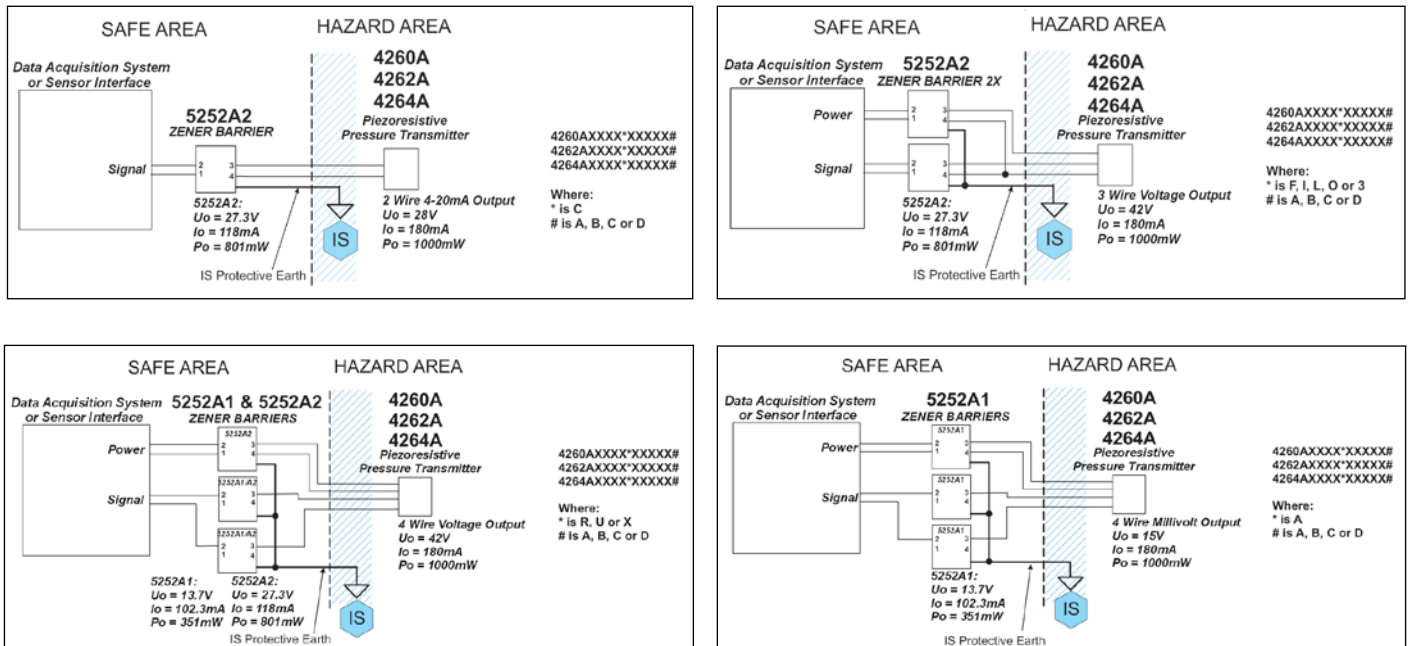


Fig. 3: Type 5252A usage with Kistler ATEX Piezoresistive Pressure Transmitters Types 4260A, 4262A and 4264A

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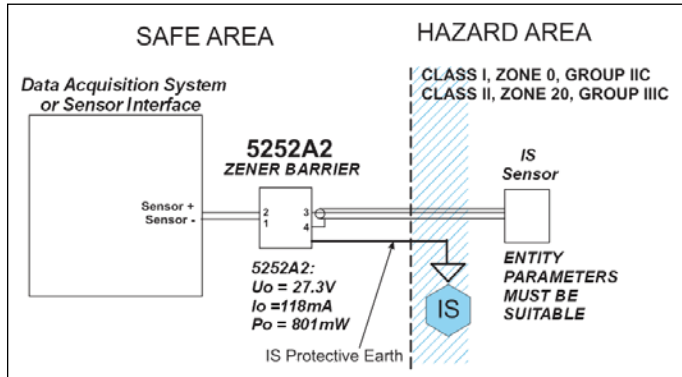


Fig. 4: Possible usage of Type 5252A2, 24 VDC Pass/27.3 VDC Clamp Voltage Wideband Zener Barrier

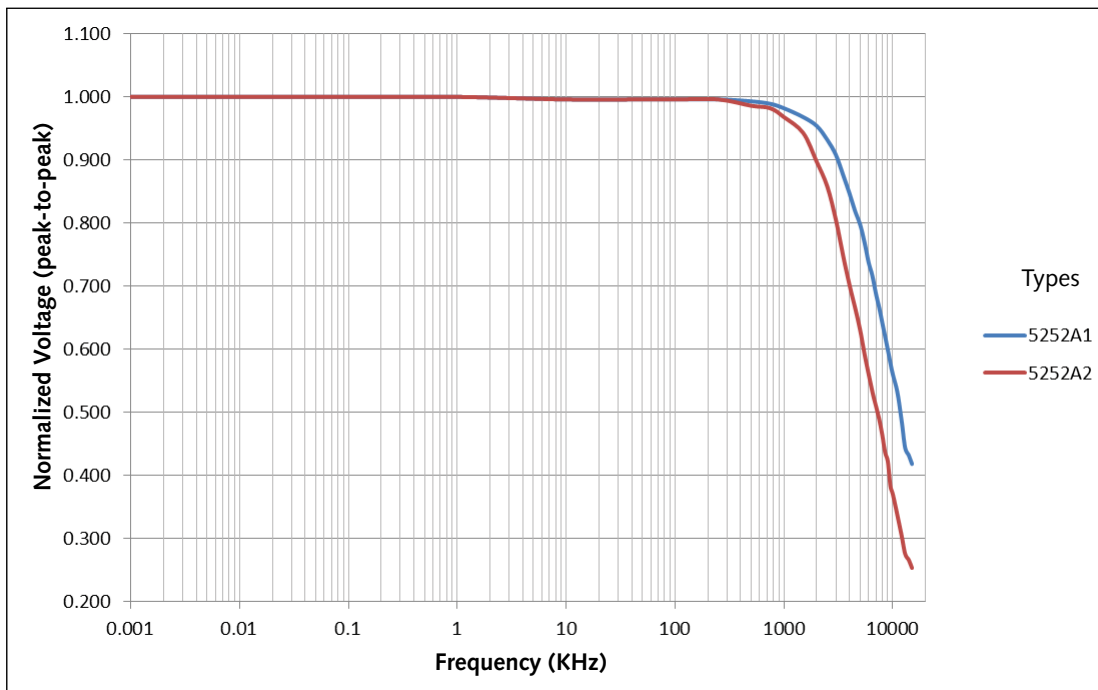


Fig. 5: Frequency response of Type 5252A... Wideband Barriers

Ordering Key

Type 5252A

Variants

13.7 VDC Clamp, 11.8 VDC Pass – for usage with ATEX Type 8152C with serial number ... and higher, and Non-ATEX Types 5125C0/C1 Coupler	1
27.3 VDC Clamp, 24 VDC Pass	2

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