

# **Piezotron Coupler**

# Amplifier for accelerometers

Rugged coupler for powering Piezotron, or other sensors with constant current supply (two-wire system). Gain, filters and integration time constant of the built-in optional RMS converter are designed as plug-in modules. This allows the best possible adaptation to the particular monitoring function. The Type 5127 is designed for use in industrial applications.

- · Built-in optional RMS converter and limit monitor
- Amplifier for Piezotron and PiezoBeam sensors
- Plug-in filter elements
- Rugged case, vibration-proof construction
- IP 65 protection
- Conforming to CE

#### Description

The coupler is suited for low impedance sensors with integrated electronics (Piezotron, PiezoBeam, IEPE compatible) or for high impedance sensors with an external impedance converter. The gain can be set with a jumper to either 1x or 10x. The amplifier has two series connected second order filters, designed as plug-in elements. The type of filter (high-pass or low-pass) as well as the frequency limit are freely selectable. A bandpass filter is obtained by the series connection of one high-pass and one low-pass filter. The time constant of the optional RMS converter can be selected. The limit switch is set with a potentiometer. The switching threshold set point can be monitored at the "Limit" output with a DVM or an oscilloscope. The output of the limit switch is electrically isolated by an optocoupler. The following output signals are present at the 8-pole round connector: Two analog output signals Out (Filter), Out (RMS) and a digital output signal (Limit Switch).

#### Application

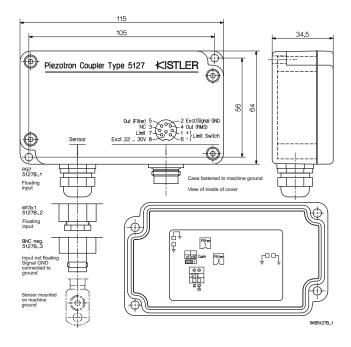
The coupler is especially suited for use in industrial environments. The plug-in filters and the adjustable gain allow adaptation to prevailing operating conditions.

#### Connection

The connecting cable is fixed either via the BNC plug or directly to the terminals inside the Piezotron coupler according to the drawing on the back of the top cover. The coupler can be supplied with a PG 7 or M13  $\times$  1 connection to provide a

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leak-tight connection according to the type of protective cable or a BNC neg. connector. The power input and signal outputs are connected to an 8-pole round connector DIN 45326. Pin assignment is indicated on the case cover.

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#### Technical data

TypeUnitsTemperature range, operating°CVibration (20 2 000Hz)gpkShock (1 ms)gHousing/BasemateriaSealing – housing/connectortypeWeight nom.gramsConnection, input, output (shielded)typeSensor connectiontypeOut (Filter)HzFrequency range – 5% (no Filter)HzFrequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mV(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/deeBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)HzFrequency range – 3 dB (no filter)HzAccuracy crest factor <2%	5127         060         10         200         Aluminum         IP65         270         8-pin         PG7/M13x1/ BNC neg.         0.130 000         0.0390 000
Vibration (20 2 000Hz)gpkShock (1 ms)gHousing/BasemateriaSealing – housing/connectortypeWeight nom.gramsConnection, input, output (shielded)typeSensor connectiontypeOut (Filter)HzFrequency range – 5% (no Filter)HzFrequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/deeBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Hz	10         200         Aluminum         IP65         270         8-pin         PG7/M13x1/ BNC neg.         0.1 30 000
Shock (1 ms)       g         Housing/Base       materia         Sealing – housing/connector       type         Weight nom.       grams         Connection, input, output (shielded)       type         Sensor connection       type         Out (Filter)       Hz         Frequency range – 5% (no Filter)       Hz         Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (no Filter)       Hz         Accuracy       %         Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)       Hz	200 Aluminum IP65 270 8-pin PG7/M13x1/ BNC neg.
Housing/BasematerialSealing – housing/connectortypeWeight nom.gramsConnection, input, output (shielded)typeSensor connectiontypeOut (Filter)Frequency range – 5% (no Filter)Frequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentImpedanceΩOffset(0 dB)mV(20 dB)NoisemVFilter (plug-in)Filter characteristicSlopedB/dedBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	Aluminum           IP65           270           8-pin           PG7/M13x1/ BNC neg.           0.1 30 000
Sealing – housing/connectortypeSealing – housing/connectortypeWeight nom.gramsConnection, input, output (shielded)typeSensor connectiontypeOut (Filter)HzFrequency range – 5% (no Filter)HzFrequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/deeBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Hz	IP65 270 8-pin PG7/M13x1/ BNC neg. 0.1 30 000
Weight nom.       grams         Connection, input, output (shielded)       type         Sensor connection       type         Out (Filter)       Hz         Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Accuracy       %         Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)	270 8-pin PG7/M13x1/ BNC neg. 0.1 30 000
Connection, input, output (shielded)typeConnection, input, output (shielded)typeSensor connectiontypeOut (Filter)Frequency range – 5% (no Filter)HzFrequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mV(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/dedBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Hz	8-pin PG7/M13x1/ BNC neg.
Sensor connection       type         Out (Filter)       Hz         Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Accuracy       %         Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)	PG7/M13x1/ BNC neg.
Out (Filter)         Frequency range – 5% (no Filter)         Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Accuracy       %         Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass HP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)	BNC neg.
Frequency range – 5% (no Filter)HzFrequency range – 3 dB (no Filter)HzFrequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mV(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/dedBandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Hz	
Frequency range – 3 dB (no Filter)       Hz         Frequency range – 3 dB (with filter)       Hz         Accuracy       %         Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)	
Frequency range – 3 dB (with filter)HzAccuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mV(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/dedBandpass HP (Type 5324A0)Bandpass LP (Type 5327A30)KHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	0.03 90 000
Accuracy%OutputRangeVCurrentmAImpedanceΩOffset(0 dB)mV(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/deeBandpass HP (Type 5324A0)kHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Frequency range – 3 dB (no filter)Hz	
Output       Range       V         Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dec         Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)         KHz       Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	0.03 30 000
Current       mA         Impedance       Ω         Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dee         Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)         KHz       Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	5
Impedance     Ω       Offset     (0 dB)     mV       (20 dB)     mV       Noise     mVpp       Current for Piezotron sensor     mA       Input voltage     V       Filter (plug-in)       Filter characteristic       Slope     dB/ded       Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)     kHz       Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)     Hz	0 ±10
Offset       (0 dB)       mV         (20 dB)       mV         Noise       mVpp         Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dec         Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)         KHz       Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	0 ±5
(20 dB)mVNoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)Filter characteristicSlopedB/dedBandpass HP (Type 5324A0)Bandpass LP (Type 5327A30)KHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	10
NoisemVppCurrent for Piezotron sensormAInput voltageVFilter (plug-in)VFilter characteristicSlopeBandpass HP (Type 5324A0)Bandpass LP (Type 5327A30)Bandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	<±20
Current for Piezotron sensor       mA         Input voltage       V         Filter (plug-in)       Filter characteristic         Slope       dB/dec         Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)         KHz       Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	<±30
Input voltageVFilter (plug-in)Filter characteristicSlopeBandpass HP (Type 5324A0)Bandpass LP (Type 5327A30)KHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	<20
Filter (plug-in)         Filter characteristic         Slope       dB/ded         Bandpass HP (Type 5324A0)         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	3.8 (±0.6)
Filter characteristic         Slope       dB/ded         Bandpass HP (Type 5324A0)         Bandpass LP (Type 5327A30)       kHz         Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)       Hz	0 20
SlopedB/dedBandpass HP (Type 5324A0)Bandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	
Bandpass HP (Type 5324A0)       Bandpass LP (Type 5327A30)       kHz       Out (RMS) (Option: Type 5127B1X)       Frequency range – 3 dB (no filter)       Hz	Butterworth
Bandpass LP (Type 5327A30)kHzOut (RMS) (Option: Type 5127B1X)Frequency range – 3 dB (no filter)Hz	40
Out (RMS) (Option: Type 5127B1X)         Frequency range – 3 dB (no filter)         Hz	Filterbridge – No Filtering
Frequency range – 3 dB (no filter) Hz	30
Accuracy crest factor <2 %	0.03 90 000
Integration TC (Type 5328A25 standard) ms	5
Output Voltage V	5 25
Current mA	
Impedance $\Omega$	25
Offset mV	25 0 10
Noise mVpp	25 0 10 0 5

Limit switch (Option: Type 5127B1X)		
OctoCoupler output		
off max.	V	30
on max.	mA	7
Delay, nom.	S	1.3
Hysteresis	mV	40
Adjustment range	V	0 12
Supply		
Voltage	VDC	22 30
Current	mA	<50

<ul> <li>Included Accessories</li> <li>8-pole cable jack DIN 45326</li> <li>Filter bridge (no filtering)</li> <li>Low pass filter 30 kHz</li> <li>Integration time constant, 25 ms for Type 5127B1</li> </ul>	<b>Type</b> 1500A57 5324A0 5327A30 5328A25
<ul> <li>Optional Accessories</li> <li>Adapter cable 8-pole cable connector/</li> <li>2. DNG and (45, 0, 1/DMG &amp; fills) and</li> </ul>	<b>Type</b> 1500A31

•	Adapter cable 8-pole cable connector/	1500A31
	3xBNC pos./AE-Out/RMS & filter) and	
	3x banana plugs (Ext. supply/GND/Case)	
•	Vibration sensor	8141A

### Ordering key

		Type 5127B	
Output Options			$\uparrow \uparrow$
Without RMS converter	0		
With RMS converter	1		
	t		
With PG7 gland	1		
With coupling M13x1	2	┨	
With BNC neg. Socket	3		

### Ordering key

Filter		Туре 5324А
1 Hz High-pass filter	1	
10 Hz High-pass filter	10	]
100 Hz High-pass filter	100	]

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#### Ordering key Type 5325A Filter 1 kHz High-pass filter 1

#### Ordering key

Filter	
10 Hz Low-pass filter	10
20 Hz Low-pass filter	20
30 Hz Low-pass filter	30
50 Hz Low-pass filter	50
100 Hz Low-pass filter	100
150 Hz Low-pass filter	150
200 Hz Low-pass filter	200
300 Hz Low-pass filter	300
500 Hz Low-pass filter	500

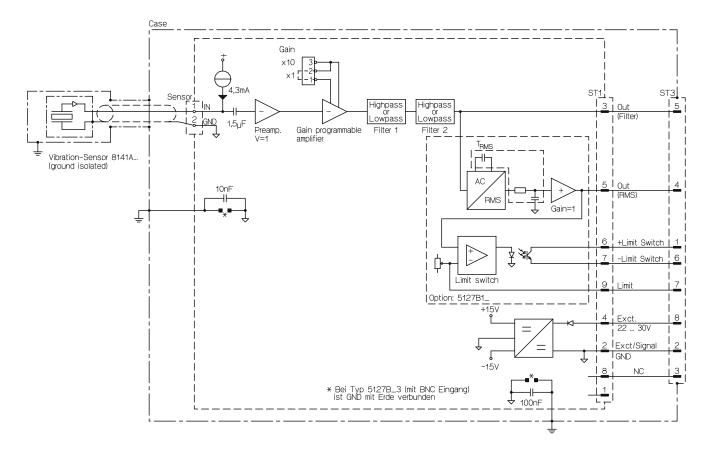
Туре 5326А

## Ordering key

#### Type 5327A Filter 1 kHz Low-pass filter 1 2 kHz Low-pass filter 2 3 kHz Low-pass filter 3 5 kHz Low-pass filter 5 10 kHz Low-pass filter 10 20 kHz Low-pass filter 20 30 kHz Low-pass filter 30

#### Ordering key

Filter		Type 5328A
0.12 ms integration time constant	0.12	]
1.2 ms integration time constant	1.2	
12 ms integration time constant	12	]
25 ms integration time constant	25	
120 ms integration time constant	120	]



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