

Piezotron® Coupler

Type 5118B2

Piezoelectric Sensor Power Supply/Coupler

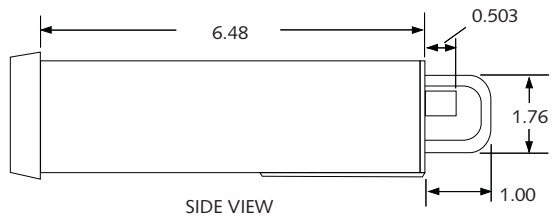
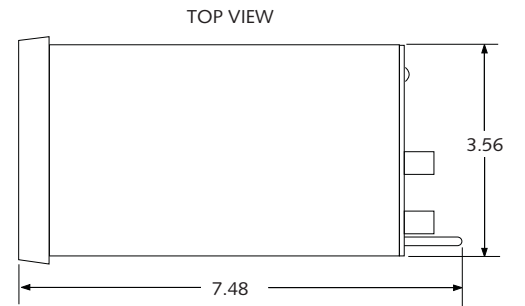
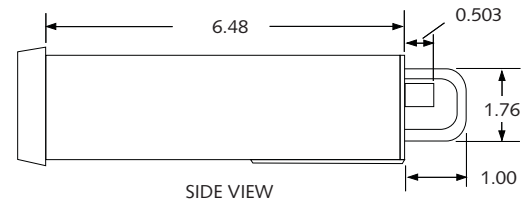
A flexible, simple to use signal conditioner that provides excitation power, signal tailoring and acts as an interface between voltage mode piezoelectric sensors and measuring instruments. Single channel unit powered by internal AA batteries or an AC/DC adaptor.

- Selectable gain and low pass, plug-in filters
- High pass filtering, panel selectable
- Monitor the condition of the sensors and cables
- Exclusive "Rapid Zero" feature
- AC, DC or battery powered
- Conforming to CE

Description

The signal conditioner provides the constant current excitation required by low impedance, voltage mode sensors with built-in electronics (i.e. Piezotron®, PiezoBeam®, K-Shear®, and Ceramic Shear) or for high impedance sensors with an external impedance converter. Sensor power is supplied by the same two-wire cable that provides the low impedance output signal. The 5118B2 decouples the DC bias voltage from the output signal and provides a 2 mA constant current source which can also be factory adjusted between 2 to 18 mA. Bias indicators display the condition of the sensor and cable. Amplifier gains of 1x, 10x and 100x are selectable from a front panel switch. High-pass filter cutoff frequencies (-3 dB) 0.006 and 0.03 Hz are also selectable by a switch on the front panel. Plug-in, low pass filters are available to limit the frequency response of the amplifier. These low pass filters can be used to attenuate unwanted frequency and/or improve signal-to noise ratio. Bias voltage is monitored and displayed with three front panel-mounted LEDs. Bias voltage in the range of 2 to 21 V is normal and results in a green "OK" LED indication. Bias voltage below 2 V or above 21 V results in a red "LOW" or "HIGH" indication. A "LOW" generally indicates a short circuit in the cable or sensor while "HIGH" means an open circuit.

The coupler warns of a low battery audibly, with an intermittent chirping sound. Battery lifetime is about 12 hours at a sensor current of 2 mA. Coupler power can be provided from three sources: four AA 1.5 volt batteries, AC-operated from a power line adaptor, or regulated DC source between 6 and 28 VDC. A unique "Rapid Zero" feature, allows the coupler to be ready for taking measurements two seconds after powering. When changing gain or filter settings, the 5118B2 is ready to use in two seconds.



Application

The primary use for the 5118B2 is to provide excitation power and signal tailoring for low impedance, voltage mode piezoelectric pressure, force and acceleration sensors. Its small size and rugged construction provides an excellent portable measurement system both in the laboratory or in the field.

5118B_000-331a-06.11

Technical Data

| Type | Units | 5118B2 | |
|-----------------------------------------------|---------|------------------|--------------------------|
| Sensor supply current | mA | 2 ⁽¹⁾ | |
| Signal voltage | V | ±5 | |
| Gain | | 1x, 10x, 100x | |
| Bandwidth: | | | |
| High pass (switch selectable) | | | |
| Frequency | -3 db | Hz | 0.03, 0.006 |
| | -5 % | Hz | 0.10, 0.02 |
| Time constant | | s | 5, 25 |
| Low pass (no filter; @ + 5 Vout) | | | |
| Gain 1x | -3 db | kHz | >100 |
| | -5 % | kHz | >40 |
| Gain 10x | -3 db | kHz | >100 |
| | -5 % | kHz | >20 |
| Gain 100x | -3 db | kHz | >30 |
| | -5 % | kHz | >12 |
| Noise (without low pass-filter): | | | |
| Gain | 1x, 10x | mVrms | <2 |
| | 100x | mVrms | <5 |
| Output impedance max. | | Ω | 100 |
| Voltage swing max. | | V | ±10 |
| Connectors input/output | | Type | BNC. neg. |
| Connector power | | Type | 2.1x5.5 mm concentric |
| Internal battery (4 each) | | Type | 1.5V AA, alkaline |
| Operating temperature (alkaline batteries) | | °F | -5 ... 125 |
| Storage (w/o batteries) | | °F | -20 ... 140 |
| External voltage source ⁽²⁾ | | VDC | 6 ... 28 |
| Weight | | lb | 1.1 |

(1) Sensor current can be set at factory for any value within 2 ... 18 mA

(2) Optional AC adapter available

Mounting

Type 5118B2 is a single unit piezoelectric sensor power supply and signal conditioner housed in a extruded aluminum case. It is primarily intended for laboratory bench top use. For permanent installations, the unit can be panel mounted using optional adapters.

| Measure | Connect | Amplify | Output | Analyze |
|-------------------------------|----------------------------------------|-----------------------------------------------------|-----------------------------------|-----------------|
| Type 8XXX... Low impedance | Type 1761B... 10-32 pos BNC pos. | Type 5118B2 Power supply / signal conditioner | Type 1511 BNC pos. BNC pos. | not supplied |

Fig. 1: Measuring chain

Optional Accessories

- | Optional Accessories | Type |
|-------------------------------------------------------------------------------|--------------|
| • Power adaptor, 115 VAC, 60 Hz | 5752 |
| • Power adaptor, 230 VAC, 50 Hz, Conforming to CE | 5757 |
| • Low-pass filter, cut-off frequency; in Hz (10, 20, 50, 100, 200, or 500) | 5326A |
| • Low-pass filter, cut-off frequency; in kHz (1, 2, 5, 10, 20) | 5327A |
| • High-pass filter, cut-off frequency; in Hz (1, 10, 100) | 5324A |
| • Panel mounting kit | 5702 |
| • Power cable (6 ft.) with mating plug to pigtailes | 704-2068-001 |

Ordering Key

Measuring Range

Power supply coupler

Type 5118B

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