

# Piezotron® Coupler

Type 5114...

## Versatile Voltage Mode Piezoelectric Sensor Power Supply/Coupler

A self contained power source that provides excitation power and acts as an interface between voltage mode piezoelectric sensors and measuring instruments. Single channel unit powered by internal 9 volt battery or an AC/DC adaptor.

- Provides constant current excitation
- Monitors condition of sensors and cables
- 3.5 digit LCD display
- AC, DC or battery powered
- Conforming to CE

### Description

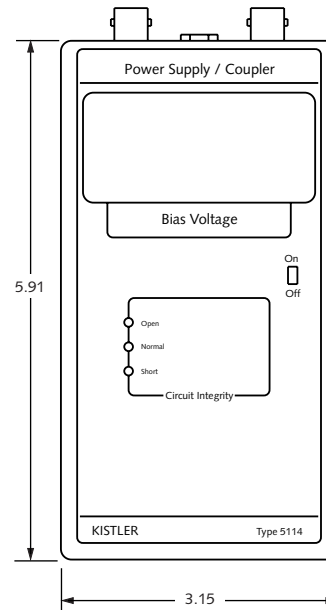
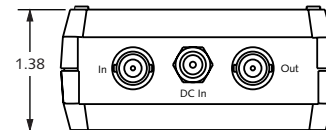
Type 5114 is a single channel signal conditioner that provides constant current excitation required by low impedance voltage mode sensors with built-in electronics (i.e. Piezotron, PiezoBeam®, K-Shear®, and Ceramic Shear) or for high impedance sensors with an external impedance converter. Sensor power is supplied by the same two-wire cable that provides the low impedance, output signal. Type 5114 decouples the DC bias voltage from the output signal.

A 3.5 digit LCD with 0.5 inch high digits indicates sensor DC bias voltage. Three light-emitting diode on the display panel indicate the basic status of the sensor circuit. Bias voltages in the range of 4 to 16 volts are normal and result in a "Normal" (green) indication; bias voltages below 4 volts (see model exception note 2) produce a "Short" (red) indication; and, a voltage above 16 volts will result in an "Open" (yellow) indication.

The unit operates from a single 9 volt battery or DC power from an external AC/DC power adapter. "LOBAT" is indicated on the LCD readout when battery replacement is required. One 9 volt battery is installed in a compartment in the bottom of the case and operates 36 hours. The meter will operate at least one hour when displaying "LOBAT". Type 5114 can also be powered by external 12 volt DC power supplied through the 2.1 mm (0.08") jack. A power "On/Off" switch is located on front of the case.

### Application

The primary use for Type 5114 is to provide excitation power low impedance, voltage mode piezoelectric pressure, force and acceleration sensors. Its small size and light weight plastic molded case provides excellent portability for a measurement system both in the laboratory or in the field.



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**Technical Data**

Specification	Unit	Type 5114
<b>Sensor</b>		
Signal voltage	V <sub>pp</sub>	20
Supply current	mA	2
Gain		1
Frequency response <sup>1)</sup> (±5%) (1 M ..... Load; 9.5 ft. total cable length and 5V <sub>pp</sub> signal level)	Hz	0.07 ... 60000
Time constant	s	10
Temperature range operating (alkaline battery)	°F	15 ... 130
Temperature range storage	°F	-5 ... 140

**Output**

Voltage	V <sub>pp</sub>	20
Impedance	Ω	<100 (in series w/47 μF)
Internal battery	Type	9 V alkaline
Battery life	hours	36
External voltage source	VDC mA	12 ... 24 20

**Connectors**

Input/output	Type	BNC neg.
External power	Type	0.08 in. jack
Weight (with battery)	grams	250

1 g = 9.80665 m/s<sup>2</sup>, 1 Inch = 25.4 mm, 1 Gramm = 0.03527 oz, 1 lbf-in = 0.113 Nm

1) Actual responses is dependent upon cable length and signal amplitude

2) Accelerometer Types 8614A500 and 8694M1 have a normal operating bias on the range of 2.5 to 5 VDC

**Optional Accessories**

- AC-DC power adapter (120 V, 60 Hz) Type 5752
- AC-DC power adapter (230 V, 50 Hz, CE certified) 5757
- Protective rubber boot 3.750.067
- Alkaline battery, 9 V 300-0092-002
- Carrying case 605-2501-01
- DC power cable (6 ft) 704-2068-001

**Ordering Key**

**Power supply/coupler - variants**

Supplied with 9V alkaline battery	-
Supplied with 9V alkaline battery AC-DC power adapter (5752), and carrying case (605-2501-001)	S1

Type 5114

Measure	Connect	Amplify	Output	Analyze
Type 87XX... Low impedance	 Type 1761B... 10-32 pos BNC pos.	 Type 5114... Power supply / signal conditioner	 Type 1511 BNC pos. BNC pos.	 not supplied

Fig. 1: Measuring chain