Service, Repair, and Return Policies and Instructions

The information contained in this document supersedes all similar information that may be found elsewhere in this manual.

Service – Due to the sophisticated nature of the sensors and associated instrumentation provided by PCB Piezotronics, user servicing or repair is not recommended and, if attempted, may void the factory warranty. Routine maintenance, such as the cleaning of electrical connectors, housings, and mounting surfaces with solutions and techniques that will not harm the physical material of construction, is acceptable. Caution should be observed to ensure that liquids are not permitted to migrate into devices that are not hermetically sealed. Such devices should only be wiped with a dampened cloth and never submerged or have liquids poured upon them.

Repair – In the event that equipment becomes damaged or ceases to operate, arrangements should be made to return the equipment to PCB Piezotronics for repair. User servicing or repair is not recommended and, if attempted, may void the factory warranty.

Calibration – Routine calibration of sensors and associated instrumentation is recommended as this helps build confidence in measurement accuracy and acquired data. Equipment calibration cycles are typically established by the users own quality regimen. When in doubt about a calibration cycle, a good "rule of thumb" is to recalibrate on an annual basis. It is also good practice to recalibrate after exposure to any severe temperature extreme, shock, load, or other environmental influence, or prior to any critical test.

PCB Piezotronics maintains an ISO-9001 certified metrology laboratory and offers calibration services, which are accredited by A2LA to ISO/IEC 17025, with full traceability to SI through N.I.S.T. In addition to the normally supplied calibration, special testing is also available, such as: sensitivity at elevated or cryogenic temperatures, phase response, extended high or low frequency response, extended range, leak testing, hydrostatic pressure testing, and others. For information on standard recalibration services or special testing, contact your local PCB Piezotronics distributor, sales representative, or factory customer service representative.

Returning Equipment – *Following these procedures will ensure that your returned materials are handled in the most expedient manner*. Before returning any equipment to PCB Piezotronics, contact your local distributor, sales representative, or factory customer service representative to obtain a Return **Warranty, Service, Repair, and Return Policies and Instructions** Materials Authorization (RMA) Number. This RMA number should be clearly marked on the outside of all package(s) and on the packing

list(s) accompanying the shipment. A detailed account of the nature of the problem(s) being experienced with the equipment should also be included inside the package(s) containing any returned materials.

A Purchase Order, included with the returned materials, will expedite the turn-around of serviced equipment. It is recommended to include authorization on the Purchase Order for PCB to proceed with any repairs, as long as they do not exceed 50% of the replacement cost of the returned item(s). PCB will provide a price quotation or replacement recommendation for any item whose repair costs would exceed 50% of replacement cost, or any item that is not economically feasible to repair. For routine calibration services, the Purchase Order should include authorization to proceed and return at current pricing, which can be obtained from a factory customer service representative.

Contact Information – International customers should direct all inquiries to their local distributor or sales office. A complete list of distributors and offices can be found at www.pcb.com. Customers within the United States may contact their local sales representative or a factory customer service representative. A complete list of sales representatives can be found at www.pcb.com. Toll-free telephone numbers for a factory customer service representative, in the division responsible for this product, can be found on the title page at the front of this manual. Our ship to address and general contact numbers are:

PCB Piezotronics, Inc.
3425 Walden Ave.
Depew, NY14043 USA
Toll-free: (800) 828-8840
24-hour SensorLine^{SM}: (716) 684-0001
Website: www.pcb.com
E-mail: info@pcb.com

PCB工业监视和测量设备 - 中国RoHS2公布表

PCB Industrial Monitoring and Measuring Equipment - China RoHS 2 Disclosure Table

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
住房	O	O	O	O	O	O
PCB板	X	O	O	O	O	O
电气连接器	O	O	O	O	O	O
压电晶体	X	O	O	O	O	O
环氧	O	O	O	O	O	O
铁氟龙	O	O	O	O	O	O
电子	O	O	O	O	O	O
厚膜基板	O	O	X	O	O	O
电线	O	O	O	O	O	O
电缆	X	O	O	O	O	O
塑料	O	O	O	O	O	O
焊接	X	O	O	O	O	O
铜合金/黄铜	X	O	O	O	O	O
本表格依据 SJ/T 11364 的规定编制。						
O： 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。						
X： 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。 铅是欧洲RoHS指令2011/65/ EU附件三和附件四目前由于允许的豁免。						

CHINA RoHS COMPLIANCE

Component Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI Compounds (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
PCB Board	X	O	O	O	O	O
Electrical Connectors	O	O	O	O	O	O
Piezoelectric Crystals	X	O	O	O	O	O
Epoxy	O	O	O	O	O	O
Teflon	O	O	O	O	O	O
Electronics	O	O	O	O	O	O
Thick Film Substrate	O	O	X	O	O	O
Wires	O	O	O	O	O	O
Cables	X	O	O	O	O	O
Plastic	O	O	O	O	O	O
Solder	X	O	O	O	O	O
Copper Alloy/Brass	X	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement of GB/T 26572.
Lead is present due to allowed exemption in Annex III or Annex IV of the European RoHS Directive 2011/65/EU.

DOCUMENT NUMBER: 21354
*DOCUMENT REVISION: **D***
ECN: 46162

Model Number 682A14	4-20 MA DIN RAIL SIGNAL CONDITIONER/TRANSMITTER	Revision: NR ECN #: 50075

Performance	ENGLISH	SI	
Channels	1	1	
Input Signal(Vibration)	± 100 mV/g	± 10.2 mV/(m/s²)	[1]
Output Signal(DC Vibration)	4 to 20 mA	4 to 20 mA	[2]
Output Signal(AC Vibration)	100 mV/g	10.2 mV/(m/s²)	[3]
Frequency Range(- 3 dB)(Velocity)	210 to 600,000 cpm	3.5 to 10k Hz	[4][5][6]
Output Range(DC Velocity)	0 to 1.00 in/sec pk	0 to 25.4 mm/s pk	[1]
Environmental			
Temperature Range(Operating)	-13 to 158 °F	-25 to 70 °C	
Temperature Range(Storage)	-40 to 257 °F	-40 to 125 °C	
Humidity Range(Non-Condensing)	0 to 95 %	0 to 95 %	
Electrical			
Power Required	DC Power	DC Power	
DC Power	23 to 25 VDC	23 to 25 VDC	
DC Power(maximum)	100 mA	100 mA	
Settling Time	< 2 min	< 2 min	
Excitation Voltage(delivered to sensor)	19 to 21 VDC	19 to 21 VDC	
Constant Current Excitation(delivered to sensor)	3 to 5 mA	3 to 5 mA	
Output Span(± 5.0 %)(DC Vibration Current Output)	16 mA	16 mA	
Physical			
Electrical Connector(input/output)	Removable Screw Terminals	Removable Screw Terminals	
Electrical Connector(raw vibration output)	BNC Jack	BNC Jack	
Housing Material	Polyamide	Polyamide	
Size (Height x Width x Depth)	3.9 in x 0.9 in x 4.5 in	99 mm x 22.5 mm x 114.5 mm	
Weight(Maximum)	6.4 oz	127	
Screw Terminal Wire Size	24-14 AWG	24-14 AWG	
Din Rail Mount	1.38 in	35 mm	
Status Indicator(Power "on")	Green LED	Green LED	
Status Indicator(Input Fault)	Red LED	Red LED	

CE[7]

All specifications are at room temperature unless otherwise specified.
In the interest of constant product improvement, we reserve the right to change specifications without notice.
ICP® is a registered trademark of PCB Piezotronics, Inc.

OPTIONAL VERSIONS

Optional versions have identical specifications and accessories as listed for the standard model except where noted below. More than one option may be used.

NOTES:

[1]Output measurement range is based upon input from 100 mV/g ICP® accelerometer and will be scaled inversely proportional to any percentage deviation of this input.
[2]Output current voltage will fluctuate at frequencies below 5 Hz.
[3]Achieved with 100 mV/g ICP® accelerometer input.
[4]Attenuation is -40 dB/decade.
[5]The low frequency tolerance is accurate within ± 0.5 Hz of the specified frequency.
[6]The high frequency tolerance is accurate within ±1.0 kHz of specified frequency.
[7]See PCB Declaration of Conformance PS124 for details.

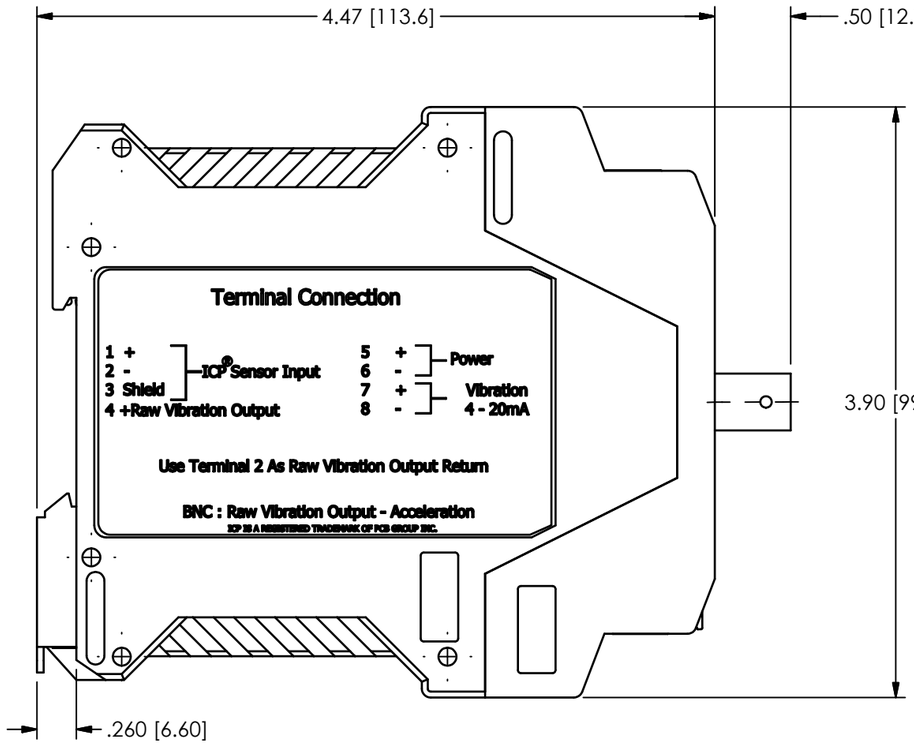
Entered: LK	Engineer: gs	Sales: MC	Approved: BAM	Spec Number:
Date: 10/30/2019	Date: 10/30/2019	Date: 10/30/2019	Date: 10/30/2019	72516

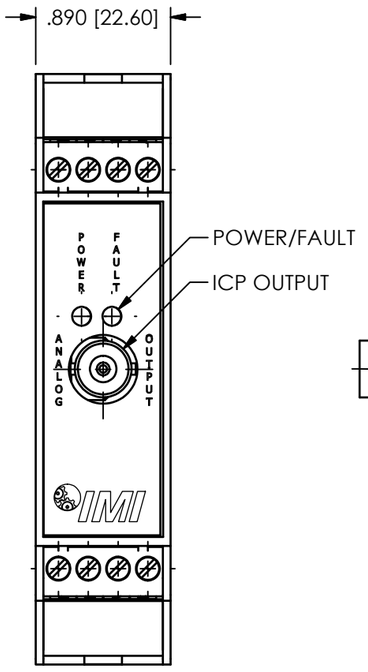
IMI SENSORS
A PCB PIEZOTRONICS DIV.
3425 Walden Avenue, Depew, NY 14043

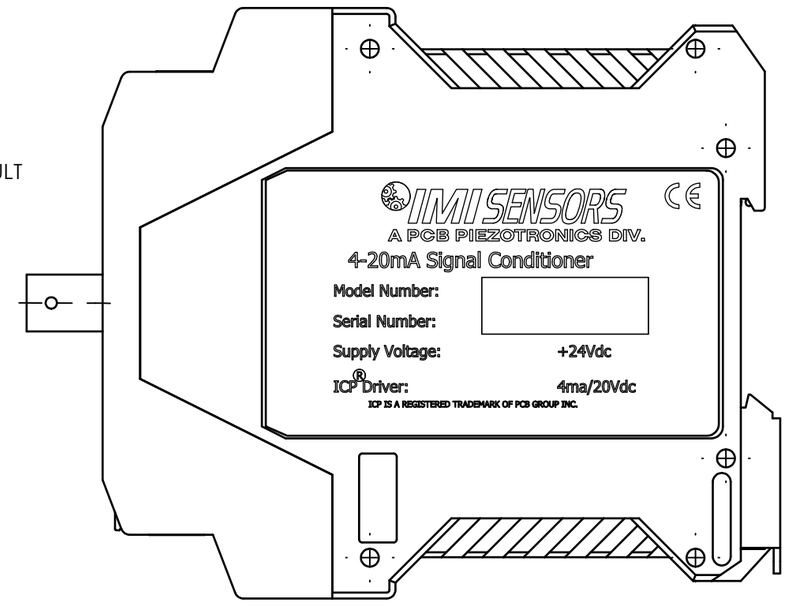
Phone: 800-959-4464
Fax: 716-684-3823
E-Mail: imi@pcb.com

68699

REVISIONS		
REV	DESCRIPTION	DIN
NR	RELEASED TO DRAFTING	48166







UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:	
DIMENSIONS IN INCHES DECIMALS XX ±.03 XXX ±.010 ANGLES ± 2 DEGREES	DIMENSIONS IN MILLIMETERS [IN BRACKETS] DECIMALS X ± 0.8 XX ± 0.25 ANGLES ± 2 DEGREES
FILLETS AND RADII .003 - .005	FILLETS AND RADII 0.07 - 0.13

DRAWN		CHECKED		ENGINEER	
KRM	5/23/18	KRM	5/23/18	GGS	5/23/18

TITLE

OUTLINE DRAWING
4-20 DIN RAIL CONDITIONER

PCB PIEZOTRONICS
3425 WALDEN AVE. DEPEW, NY 14043
(716) 684-0001 E-MAIL: sales@pcb.com

CODE IDENT. NO.	DWG. NO.
52681	68699
SCALE: FULL	SHEET 1 OF 1

IMI SENSORS
A PCB PIEZOTRONICS DIV.

SENSORS AND INSTRUMENTATION FOR MACHINE CONDITION MONITORING

Model 682A14 & 682A15 4-20mA Din Rail ICP® Signal Conditioner

CE

Operating Guide with Enclosed Warranty Information

3425 Walden Avenue, Depew, New York 14043-2495

Phone (716) 684-0003

Fax (716) 684-3823

Toll Free Line 1-800-959-4IMI

MANUAL NUMBER: 72514
MANUAL REVISION: NR
ECN NUMBER: 50075

Table of Contents

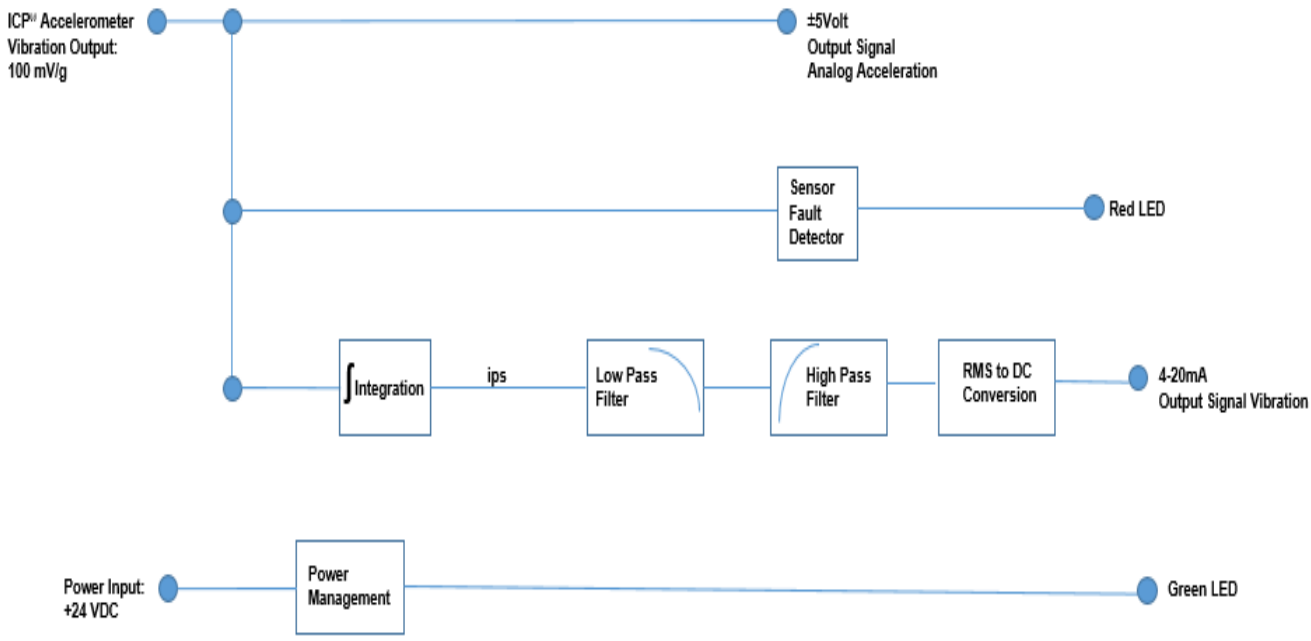
Warranty/Servicing

Introduction

Models 682A14 & 682A15 are 4-20mA din rail signal conditioners designed to interface with a 100 mV/g ICP® accelerometer.

The signal is integrated, filtered and scaled. The 4-20mA output signal is proportional to overall velocity with a measurement range of 0-1 ips rms when using the 682A14 and ips peak when using the 682A15.

Block Diagram



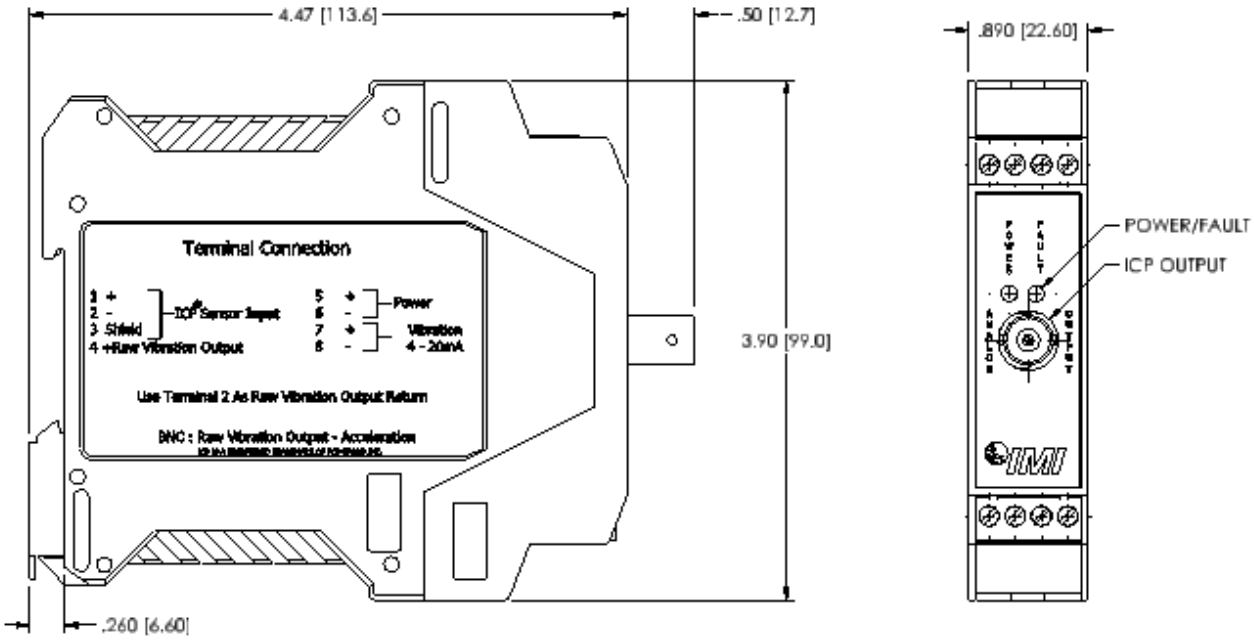
General Features

- External transmitters, signal conditioners and ICP® power supplies can be eliminated by direct connection of the sensor to the din rail signal conditioner.
- 24Vdc unregulated/20Vdc regulated (field-selectable), 4mA excitation to power sensor.
- Current (4-20mA) output signal for long-term process monitoring.
- Analog output (raw vibration) signal for conducting frequency analysis and machinery diagnostics.
- LED indicators for power and sensor fault.
- Removable terminal blocks for easy wiring.
- 35mm (1.38in) din rail mount configuration.
- Space-saving 22.5mm (0.9in.) wide design.

Installation and Wiring

Installation

Models 682A14 & 682A15 are designed to be mounted on a 35mm din rail. Do not install in a harsh area where it can be exposed to cleaning fluids or machine oils. IMI Sensors recommends mounting models 682A14 & 682A15 in a NEMA 4 enclosure, such as Model 682A00, to protect the electronics from contamination.

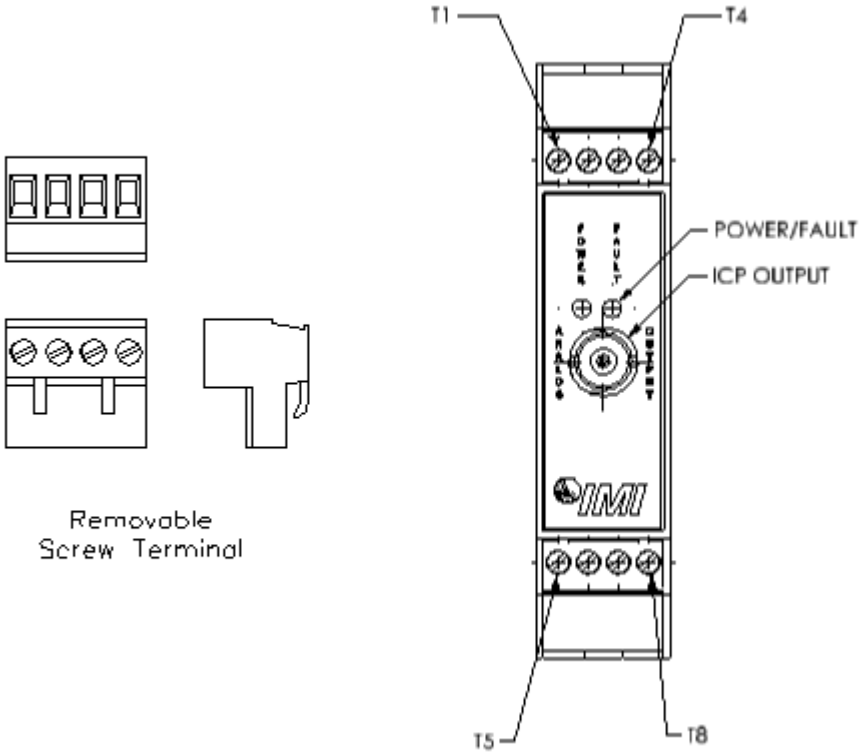


Dimension Drawing

Connector and Pinout Diagram

Models 682A14 & 682A15 use plug-in type screw terminal connectors for all input and output connections. This easy-to-assemble connection method allows devices to be exchanged easily and the electrical connection to be visibly isolated.

Strip off 8mm of insulation from the connection wire ends. Using a flat head screwdriver, remove the terminal block from the enclosure. Loosen the screw, insert the wire connection and tighten the screw. Do not exceed a torque of 0.5 N-m. Re-install the terminal block.



Pin Location Diagram

WARNING

AC and DC input signals and power supply voltages could be hazardous.
DO NOT connect live wires to screw terminal plugs.
DO NOT insert, remove, or handle screw terminal plugs with live wires connected.

Pin Descriptions:

DC Power – Pins 5 and 6:

Pin 5 + Power
Pin 6 - Power (Common**)**

ICP® Sensor Input – Pins 1, 2 and 3:

Pin 1 + ICP® Sensor Input
Pin 2 - ICP® Sensor Input
Pin 3 Shield

Analog (Raw Vibration) Output – Pins 2 and 4 or BNC Jack:

Pin 2 - Raw Vibration
Pin 4 + Raw Vibration

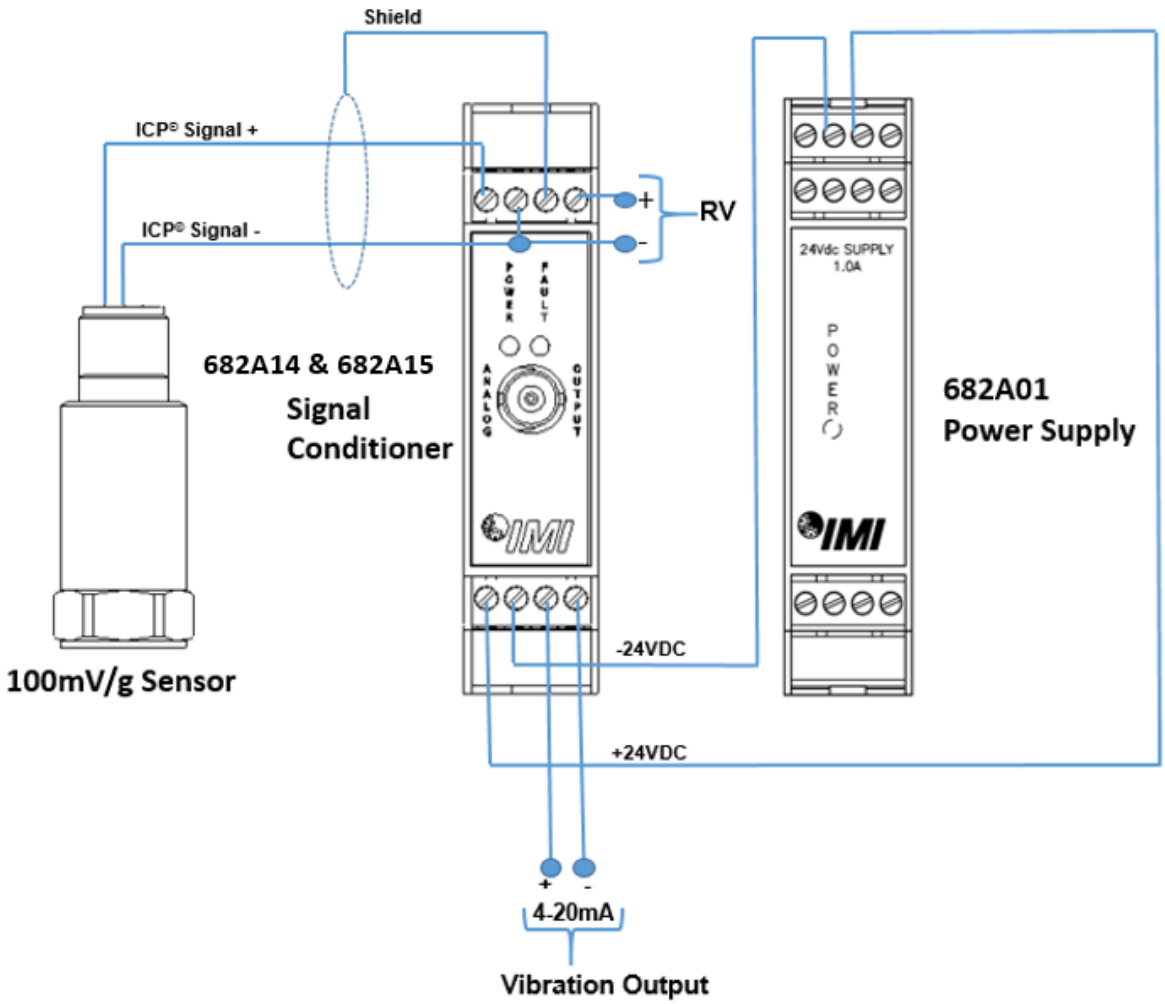
Current (4 to 20mA) Output – Pins 7 and 8:

Pin 7 + 4 to 20 mA Vibration
Pin 8 - 4 to 20 mA Vibration

Notes:

- Pin 3 is tied to the grounding tab on the back of the enclosure.
- Land the accelerometer cable's shield on Pin 3.

Typical Wiring Diagram



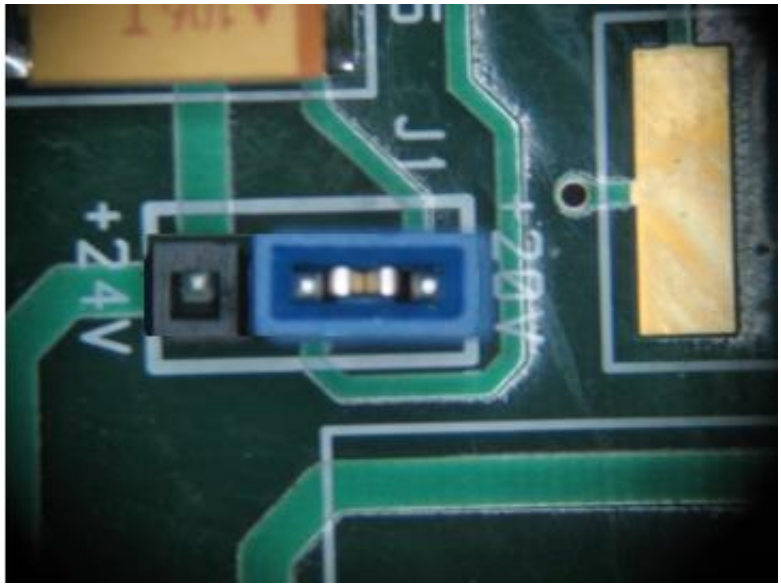
CE

To maintain conformance, Earth Ground, power supply common, input shields and output shields must be connected together.

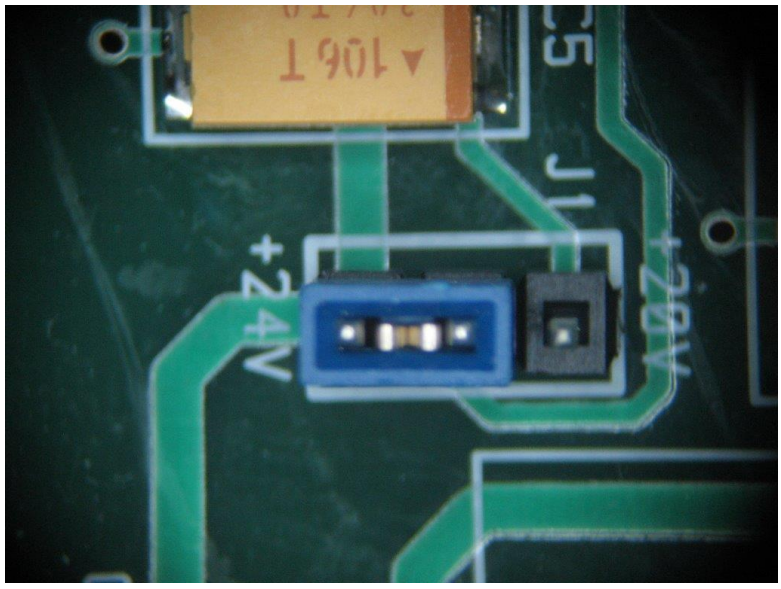
Configuring the 682A14 & 682A15

Sensor Power Jumper Configuration:

Regulated 20Vdc/4mA Power
(Factory Default)



Unregulated 24Vdc/4mA Power
(Constant Current Diode is internal to Model 682A14 & 682A15.)



Warning 1 – ESD sensitivity

The power supply/signal conditioner should not be opened by anyone other than qualified service personnel. This product is intended for use by qualified personnel who recognize shock hazards and are familiar with the safety precautions required to avoid injury.

Warning 2 – ESD sensitivity

This equipment is designed with user safety in mind; however, the protection provided by the equipment may be impaired if the equipment is used in a manner not specified by PCB Piezotronics, Inc.

Caution 1 – ESD sensitivity

Cables can kill your equipment. High voltage electrostatic discharge (ESD) can damage electrical devices. Similar to a capacitor, a cable can hold a charge caused by triboelectric transfer, such as that which occurs in the following:

- *Laying on and moving across a rug,*
- *Any movement through air,*
- *The action of rolling out a cable, and/or*
- *Contact with a non-grounded person.*

The PCB solution for product safety:

- *Connect the cables only with the AC power off.*
- *Temporarily "short" the end of the cable before attaching it to any signal input or output.*

Caution 2 – ESD sensitivity

ESD considerations should be made prior to performing any internal adjustments on the equipment. Any piece of electronic equipment is vulnerable to ESD when opened for adjustments. Internal adjustments should

therefore be done ONLY at an ESD-safe work area. Many products have ESD protection, but the level of protection may be exceeded by extremely high voltage.

Warranty

IMI instrumentation is warranted against defective material and workmanship for 1 year unless otherwise expressly specified. Damage to instruments caused by incorrect power or misapplication, is not covered by warranty. *If there are any questions regarding power, intended application, or general usage, please consult with your local sales contact or distributor.* Batteries and other expendable hardware items are not covered by warranty.

Service

Because of the sophisticated nature of IMI instrumentation, field repair is typically **NOT** recommended and may void any warranty. If factory service is required, return the instrumentation according to the "Return Procedure" stated below. *A repair and/or replacement quotation will be provided prior to servicing at no charge.* Before returning the unit, please consult a factory IMI applications engineer concerning the situation as certain problems can often be corrected with simple on-site procedures.

Return procedure

To expedite returned instrumentation, contact a factory IMI applications engineer for a RETURN MATERIAL AUTHORIZATION (RMA) NUMBER. Please have information available such as model and serial number. Also, to insure efficient service, *provide a written description of the symptoms and problems with the equipment to a local sales representative or distributor, or contact IMI if none are located in your area.*

Customers outside the U.S. should consult their local IMI distributor for information on returning equipment. For exceptions, please contact the International Sales department at IMI to request shipping instructions and an RMA. For assistance, please call (716) 684-0003, or fax us at (716) 684-3823. You may also receive assistance via e-mail at **imi@pcb.com** or visit our web site at **www.pcb.com**.

Customer Service

IMI, a division of PCB Piezotronics, guarantees **Total Customer Satisfaction**. If, at any time, for any reason, you are not completely satisfied with any IMI product, IMI will repair, replace, or exchange it at no charge. You may also choose, within the warranty period, to have your purchase price refunded.

IMI offers to all customers, at no charge, 24-hour phone support. This service makes product or application support available to our customers, day or night, seven days a week. When unforeseen problems or emergency situations arise, call the **IMI Hot Line at (716) 684-0003**, and an application specialist will assist you.

PCB PIEZOTRONICS INC.
IMI DIVISION

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Phone: (716) 684-0003 • USA Fax: (716) 684-3823 • INTL Fax: (716) 684-4703