



Model 682A02

ICP® Sensor Signal Conditioner

Installation and Operating Manual

**For assistance with the operation of this product,
contact the PCB Piezotronics, Inc.**

Toll-free: 716-684-0001

24-hour SensorLine: 716-684-0001

Fax: 716-684-0987

E-mail: info@pcb.com

Web: www.pcb.com





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 SensorLineSM: (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	○	○	○	○	○	○
PCB板	X	○	○	○	○	○
电气连接器	○	○	○	○	○	○
压电晶体	X	○	○	○	○	○
环氧	○	○	○	○	○	○
铁氟龙	○	○	○	○	○	○
电子	○	○	○	○	○	○
厚膜基板	○	○	X	○	○	○
电线	○	○	○	○	○	○
电缆	X	○	○	○	○	○
塑料	○	○	○	○	○	○
焊接	X	○	○	○	○	○
铜合金/黄铜	X	○	○	○	○	○
本表格依据 SJ/T 11364 的规定编制。						
○：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

PRODUCT SPECIFIC NOTES

Model 682A02

Description:

The Model 682A02 is a Din-Rail mountable, ICP® signal conditioner. Internally, it has jumpers for selections of gain and current. The gain is selectable between 1, 10, and 100; and the current of 4 or 10 mA is also jumper selectable. The unit is powered externally from a 24 VDC power supply. All connections are easily made using terminal strips on the sides of the unit.

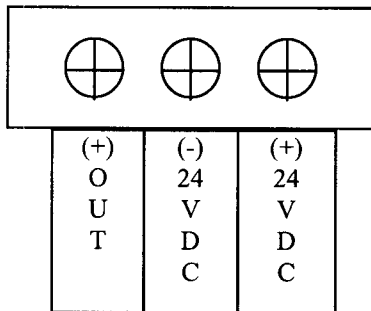
Installation and Operation:

1) Installation:

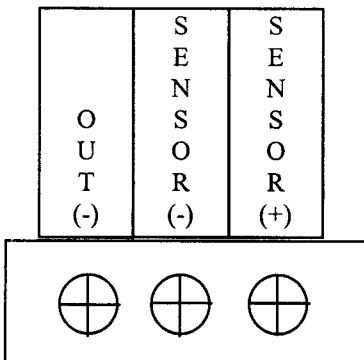
The unit snaps onto a 35 mm Din Rail for easy installation. Wires are attached by sliding a stripped conductor end into the terminal and securing in place by tightening the appropriate screw with a small screwdriver.

The jumpers can be adjusted by prying open the enclosure and moving the jumpers to the proper position for desired gain and constant current. When opening the unit, be careful not to damage the enclosure or the internal electronics. Refer to Section 3 for proper jumper selection.

2) Wiring, Terminal Strip:



- (+) **OUT:** Sensor Positive Output Signal
- (-) **24 VDC:** Negative 24 Volt Supply
- (+) **24 VDC:** Positive 24 Volt Supply



- (-) **Out:** Sensor Negative Output Signal
- (-) **Sensor:** Sensor Negative Input

(+) **Sensor:** Sensor Positive Input

3) Internal Jumper Locations:

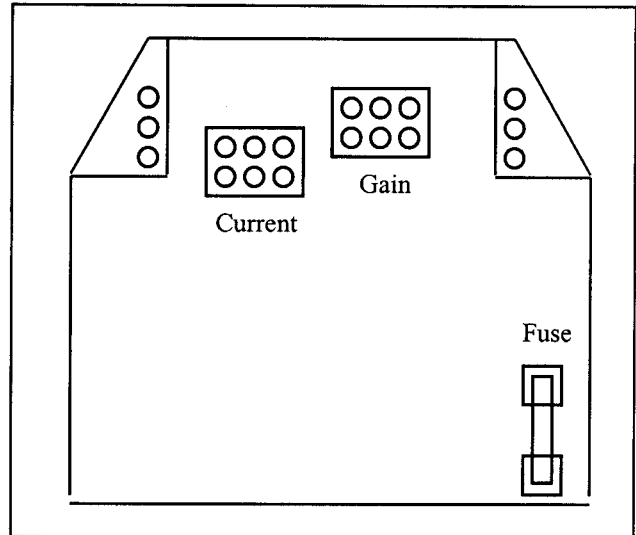


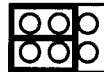
Fig. 1: Top View of Circuit Board

Jumper Configurations:

Current Selection

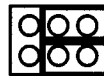


4 mA jumper configuration



10 mA jumper configuration

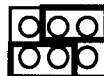
Gain Selection



Gain of 1 jumper configuration



Gain of 10 jumper configuration



Gain of 100 jumper configuration

4) Calibration:

Units are factory set with a gain of 1 and a current of 4 mA. If there are any questions concerning the products, please contact the factory.

Model Number
682A02

ICP® SIGNAL CONDITIONER

Revision: A
ECN #: 15998

ELECTRICAL CHARACTERISTICS

	ENGLISH	SI	
Excitation Voltage (±1 VDC)	18 VDC	18 VDC	[1]
Excitation Current (±1 mA)	4/10 mA	4/10 mA	[2]
Voltage Gain	1/10/100	1/10/100	[2]
Amplitude Linearity	≤2%	≤2%	
Frequency Response (±1 dB)	60 - 6,000,000 cpm	60 - 6 000 000 cpm	[3]
Noise, Gain 1:			
Broadband Electrical Noise (1-10 kHz)	50 µV	50 µV	[4]
Spectral Noise (@ 10 mA):			
10 Hz	0.8 µV/√Hz	0,8 µV/√Hz	[4]
100 Hz	0.5 µV/√Hz	0,5 µV/√Hz	[4]
1 kHz	0.5 µV/√Hz	0,5 µV/√Hz	[4]
10 kHz	0.6 µV/√Hz	0,6 µV/√Hz	[4]
Noise, Gain 10:			
Broadband Electrical Noise (1-10 kHz)	400 µV	400 µV	[4]
Spectral Noise (@ 10 mA):			
10 Hz	7.5 µV/√Hz	7,5 µV/√Hz	[4]
100 Hz	3.6 µV/√Hz	3,6 µV/√Hz	[4]
1 kHz	3.2 µV/√Hz	3,2 µV/√Hz	[4]
10 kHz	6.0 µV/√Hz	6,0 µV/√Hz	[4]
Noise, Gain 100:			
Broadband Electrical Noise (1-10 kHz)	3.5 mV	3,5 mV	[4]
Spectral Noise (@ 10 mA):			
10 Hz	80 µV/√Hz	80 µV/√Hz	[4]
100 Hz	40 µV/√Hz	40 µV/√Hz	[4]
1 kHz	32 µV/√Hz	32 µV/√Hz	[4]
10 kHz	50 µV/√Hz	50 µV/√Hz	[4]

POWER REQUIREMENTS

Voltage (±10%)	24 VDC	24 VDC
Current (maximum)	60 mA	60 mA
Fuse	1 A	1 A

ENVIRONMENTAL CHARACTERISTICS

Temperature Range	32 to 158 °F	0 to 70 °C
-------------------	--------------	------------

PHYSICAL CHARACTERISTICS

Size	3.1 x 3.3 x 0.97	78,7 x 83,8 x 24,6 mm
Weight	0.194 lb	0,088 kg
Mounting	Din Rail	Din Rail
Input/Output Connector	Terminal Strip	Terminal Strip

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.

-None-

NOTES:

- [1] If unit is used in conjunction with a sensor having a bias over 13 VDC, full scale output may be affected or sensor may not power up.
- [2] Internally jumper selectable.
- [3] 1 Hz = 60 cpm (cycles per minute).
- [4] Typical value.

SUPPLIED ACCESSORIES:

None

All specifications are at room temperature unless otherwise specified.

ICP® is a registered trademark of PCB Piezotronics, Inc.

In the interest of constant product improvement, we reserve the right to change specifications without notice.

Form DD030 Rev.E 2/20/98

Drawn: <i>[Signature]</i>	Engineer: <i>[Signature]</i>	Sales: <i>[Signature]</i>	Approved: <i>[Signature]</i>	Spec Number:
Date: 9/9/02	Date: 9/9/02	Date: 9/9/02	Date: 9/9/02	9702



3425 Walden Avenue, Depew, NY 14043

800-959-4464

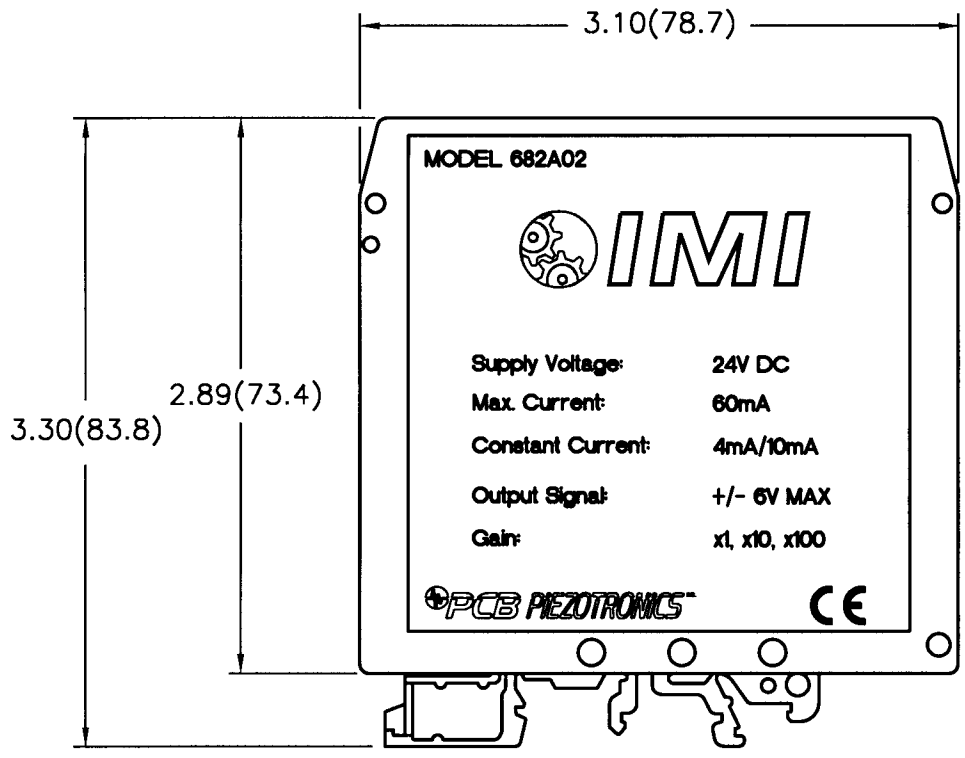
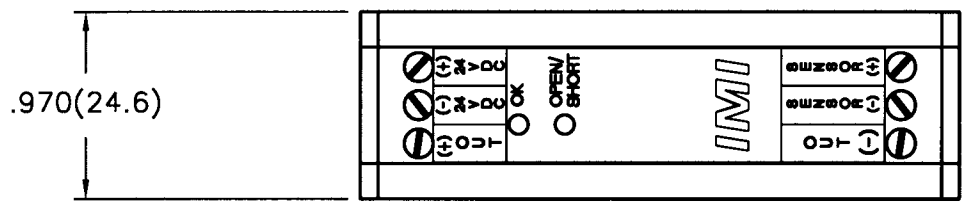
Fax (716) 684-3823

E-Mail: imisales@pcb.com

9669

PCB Piezotronics Inc. claims proprietary rights in the information disclosed hereon. Neither it nor any reproduction thereof will be disclosed to others without written consent of PCB Piezotronics Inc.

APPLICATION			REVISIONS				
NEXT ASS'Y	USED ON	VAR	REV	DESCRIPTION	ECN	DATE	APP'D



UNLESS SPECIFIED TOLERANCES		DRAWN	TW	11/3/98	MFG	R.D.	11/4/98	PCB PIEZOTRONICS™	
DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS (IN PARENTHESIS)	CHK'D	DM	11/5/98	ENGR	TC	11/4/98	3425 WALDEN AVE. DEPEW, NY 14043	
DECIMALS XX ±.01	DECIMALS XX ±0.3	APP'D	U.F.	11/5/98		BJ	11/4/98	(716) 684-0001 EMAIL: SALES@PCB.COM	
XXX ±.005	XXX ±0.13	TITLE		OUTLINE DRAWING		CODE IDENT. NO.		DWG. NO.	
ANGLES ±2 DEGREES	ANGLES ±2 DEGREES			MODEL 682A02		52681		9669	
FILLET AND RADII .003 - .005	FILLET AND RADII (0.07 - 0.13)			SIGNAL CONDITIONER		SCALE: FULL		SHEET 1 OF 1	
DD011 REV. B 03/13/98									