

## Model 201B76

Low profile, ICP® quartz force ring, 5k lb comp., 1 mV/lb, 5-44 connector

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







# **Repair and Maintenance**

PCB guarantees Total Customer Satisfaction through its "Lifetime Warranty Plus" on all Platinum Stock Products sold by PCB and through its limited warranties on all other PCB Stock, Standard and Special products. Due to the sophisticated nature of our sensors and associated instrumentation, field servicing and repair is not recommended and, if attempted, will void the factory warranty.

Beyond routine calibration and battery replacements where applicable, our products require no user maintenance. Clean electrical connectors, housings, and mounting surfaces with solutions and techniques that will not harm the material of construction. Observe caution when using liquids near devices that are not hermetically sealed. Such devices should only be wiped with a dampened cloth—never saturated or submerged.

In the event that equipment becomes damaged or ceases to operate, our Application Engineers are here to support your troubleshooting efforts 24 hours a day, 7 days a week. Call or email with model and serial number as well as a brief description of the problem.

## Calibration

Routine calibration of sensors and associated instrumentation is necessary to maintain measurement accuracy. We recommend calibrating on an annual basis, after exposure to any extreme environmental influence, or prior to any critical test.

PCB Piezotronics is an ISO-9001 certified company whose calibration services are accredited by A2LA to ISO/IEC 17025, with full traceability to SI through N.I.S.T. In addition to our standard calibration services, we also offer specialized tests, including: sensitivity at elevated or cryogenic temperatures, phase response, extended high or low frequency response, extended range, leak testing, hydrostatic pressure testing, and others. For more information, contact your local PCB Piezotronics distributor, sales representative, or factory customer service representative.

# **Returning Equipment**

If factory repair is required, our representatives will provide you with a Return Material Authorization (RMA) number, which we use to reference any information you have already provided and expedite the repair process. This number should be clearly marked on the outside of all returned package(s) and on any packing list(s) accompanying the shipment.

## **Contact Information**

PCB Piezotronics, Inc. 3425 Walden Ave. Depew, NY14043 USA Toll-free: (800) 828-8840

24-hour SensorLine: (716) 684-0001 General inquiries: info@pcb.com Repair inquiries: rma@pcb.com

For a complete list of distributors, global offices and sales representatives, visit our website, <a href="https://www.pcb.com">www.pcb.com</a>.

# **Safety Considerations**

This product is intended for use by qualified personnel who recognize shock hazards and are familiar with the precautions required to avoid injury. While our equipment is designed with user safety in mind, the protection provided by the equipment may be impaired if equipment is used in a manner not specified by this manual.

Discontinue use and contact our 24-Hour Sensorline if:

- Assistance is needed to safely operate equipment
- Damage is visible or suspected
- Equipment fails or malfunctions

For complete equipment ratings, refer to the enclosed specification sheet for your product.

# **Definition of Terms and Symbols**

The following symbols may be used in this manual:



### DANGER

Indicates an immediate hazardous situation, which, if not avoided, may result in death or serious injury.



## **CAUTION**

Refers to hazards that could damage the instrument.



### NOTE

Indicates tips, recommendations and important information. The notes simplify processes and contain additional information on particular operating steps.

# The following symbols may be found on the equipment described in this manual:



This symbol on the unit indicates that high voltage may be present. Use standard safety precautions to avoid personal contact with this voltage.



This symbol on the unit indicates that the user should refer to the operating instructions located in the manual.



This symbol indicates safety, earth ground.



# 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

	<b>有害物</b> 质					
部件名称	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	<b>多溴</b> 联苯 (PBB)	多溴二苯醚 (PBDE)
住房	0	0	0	0	0	0
PCB板	Х	0	0	0	0	0
电气连接 <b>器</b>	0	0	0	0	0	0
压电晶 <b>体</b>	Х	0	0	0	0	0
环氧	0	0	0	0	0	0
铁氟龙	0	0	0	0	0	0
电子	0	0	0	0	0	0
厚膜基板	0	0	Х	0	0	0
电线	0	0	0	0	0	0
电缆	Х	0	0	0	0	0
塑料	0	0	0	0	0	0
焊接	Х	0	0	0	0	0
铜合金/黄铜	Х	0	0	0	0	0

## 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	0	0	0	0	0	0	
PCB Board	Х	0	0	0	0	0	
Electrical Connectors	0	0	0	0	0	0	
Piezoelectric Crystals	Х	0	0	0	0	0	
Ероху	0	0	0	0	0	0	
Teflon	0	0	0	0	0	0	
Electronics	0	0	0	0	0	0	
Thick Film Substrate	0	0	X	0	0	0	
Wires	0	0	0	0	0	0	
Cables	Х	0	0	0	0	0	
Plastic	0	0	0	0	0	0	
Solder	Χ	0	0	0	0	0	
Copper Alloy/Brass	Х	0	0	0	0	0	

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

Lead is present due to allowed exemption in Annex III or Annex IV of the European RoHS Directive 2011/65/EU.

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.

### **Model Number** 201B76

# **ICP® FORCE SENSOR**

Revision: B ECN #: 53334

201676			
Performance	ENGLISH	SI	
Sensitivity(± 15 %)	1 mV/lb	224.8 mV/kN	
Measurement Range(Compression)	5,000 lb	22.24 kN	
Maximum Static Force(Compression)	5,000 lb	22.24 kN	
Broadband Resolution(1 to 10,000 Hz)	0.10 lb-rms	0.445 N-rms	[1]
Low Frequency Response(- 5 %)	0.0003 Hz	0.0003 Hz	[2]
Upper Frequency Limit	90,000 Hz	90,000 Hz	[3]
Non-Linearity	≤ 1 % FS	≤ 1 % FS	[4]
Environmental			
Temperature Range	-65 to +250 °F	-54 to +121 ℃	
Temperature Coefficient of Sensitivity	≤ 0.03 %/°F	≤ 0.054 %/°C	
Electrical			
Discharge Time Constant	≥ 2,000 sec	≥ 2,000 sec	
Excitation Voltage	20 to 30 VDC	20 to 30 VDC	
Constant Current Excitation	2 to 20 mA	2 to 20 mA	
Output Impedance	≤ 100 Ohm	≤ 100 Ohm	
Output Bias Voltage	8 to 14 VDC	8 to 14 VDC	
Spectral Noise(1 Hz)	0.00307 lb/√Hz	0.0137 N/√Hz	[1]
Spectral Noise(10 Hz)	0.00115 lb/√Hz	0.00513 N√Hz	[1]
Spectral Noise(100 Hz)	0.000402 lb/√Hz	0.00179 N/√Hz	[1]
Spectral Noise(1,000 Hz)	0.000114 lb/√Hz	0.000509 N/√Hz	[1]
Output Polarity(Compression)	Positive	Positive	
Physical			
Preload	1,000 lb	4.448 kN	
Stiffness	16 lb/μin	2.8 kN/μm	[1]
Weight	0.25 oz	7 gm	
Housing Material	Stainless Steel	Stainless Steel	
Sealing	Hermetic	Hermetic	
Electrical Connector	5-44 Coaxial Jack	5-44 Coaxial Jack	
Electrical Connection Position	Side	Side	

### **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.

**M** - Metric Mount Supplied Accessory: Model M081A11 Mounting Stud, M5 x 0.8 x 0.730, BeCu (1) replaces Model 081A11 Supplied Accessory: Model M083A15 Pilot Bushing, M5 x 0.8 (1) replaces Model 083A15

**W** - Water Resistant Cable Electrical Connector Electrical Connection Position

Sealed Cable Side

Sealed Cable Side

#### **NOTES:**

[1]Typical.

[2]Calculated from discharge time constant.

[3]Estimated using rigid body dynamics calculations.

[4]Zero-based, least-squares, straight line method. [5]See PCB Declaration of Conformance PS023 for details.

### **SUPPLIED ACCESSORIES:**

Model 081A11 Mounting Stud, 10-32 x 0.730, BeCu (1) Model 083A15 Pilot Bushing, 10-32 (1)

Entered: ND	Engineer: MP	Sales: BS	Approved: RPF	Spec Number:
Date: 11/01/2022	Date: 11/01/2022	Date: 11/01/2022	Date: 11/01/2022	75646



AN AMPHENOL COMPANY

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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.

