Model 485B36

USB, Dual-channel, ICP® Sensor Signal Conditioner

Installation and Operating Manual

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

Toll-free: 800-828-8840
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, www.pcb.com.

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

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.

Model 485B36
USB Powered Dual Channel ICP® Sensor Signal Conditioner

Model 485B36 is a pocket sized dual channel ICP sensor signal conditioner that requires no batteries for operation. The 485B36 is powered by the Universal Serial Bus (USB) port commonly found on both desktop and notebook computers.

Connect ICP sensors to the 485B36 using standard BNC jacks. The 485B36 conditions the input signals and outputs the low impedance voltage signals on a 1/8" (3.5mm) stereo jack. The 485B36 includes the 009M130 cable for direct connection to a PC sound card and the 009M131 cable to adapt the 485B36 for input to BNC connectors on other data acquisition devices.

NOTE: Like other standard PCB® ICP sensor signal conditioners, this unit contains NO ANTI-ALIAS (AI) FILTERING or analog to digital converter (ADC). Be sure to use with a data acquisition system (such as commercial Dynamic Signal Analyzers – DSA) that has been designed with appropriate anti-alias components (SAR ADC with AI filters or Delta Sigma ADC with pre-filtering) to protect against measurement errors from out of measurement band signal inputs. The 485B36 design inherently generates some very high frequency noise (out of band about 450 kHz) from the DC-DC converter used for the step-up voltage. A DSA with proper AI protection will have no problems attenuating this. However, when using with a simple digitization board (ADC only with no low pass AI filter), consult your measurement card vendor to discuss how care must be taken to ensure no out of band input signal components exist or how to facilitate the addition of an appropriately selected anti-alias filter. If you are adding your own AI filters and using both channels also consider whether the channel to channel phase match of the filters is important to your application. For more information suggested reading includes: http://www.dspguide.com/pdfbook.htm and http://en.wikipedia.org/wiki/Anti-aliasing_filter

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AS9100 CERTIFIED ISO 9001 CERTIFIED A2LA ACCREDITED to ISO 17025

Manual Number: 35153
Manual Revision: A-ECO 32818

Printed in the U.S.A.

Model Number **485B36**	# USB, DUAL-CHANNEL, ICP® SENSOR SIGNAL CONDITIONER	Revision: B ECN #: 43617

Performance	**ENGLISH**	**SI**	
Channels	2	2	
Input Range	± 5 V	± 5 V	
Frequency Range(± 2 %)	2 to 50,000 Hz	2 to 50,000 Hz	[2]
Frequency Range(± 5 %)	1 to 50,000 Hz	1 to 50,000 Hz	[2]
Non-Linearity	± 1 %	± 1 %	
Voltage Gain(± 0.5 %)	1:1	1:1	
Phase Response(± 5 °)	5 to 50,000 Hz	5 to 50,000 Hz	[2]
Phase Response(± 10 °)	1 to 50,000 Hz	1 to 50,000 Hz	[2]
Environmental			
Temperature Range(Operating)	+32 to +122 °F	0 to +50 °C	
Electrical			
Excitation Voltage(To Sensor)	18.5 to 20.5 VDC	18.5 to 20.5 VDC	
Constant Current Excitation(To Sensor)	3.8 to 5.8 mA	3.8 to 5.8 mA	
DC Offset	<80 mV	<80 mV	
Spectral Noise(1 Hz)	150 nV/√Hz	150 nV/√Hz	[1]
Spectral Noise(10 Hz)	50 nV/√Hz	50 nV/√Hz	[1]
Spectral Noise(100 Hz)	35 nV/√Hz	35 nV/√Hz	[1]
Spectral Noise(1000 Hz)	270 nV/√Hz	270 nV/√Hz	[1]
Spectral Noise(10,000 Hz)	210 nV/√Hz	210 nV/√Hz	[1]
Broadband Electrical Noise(1 to 10,000 Hz)(Gain x1)	6 µV/rms	6 µV/rms	[1]
Power Required	DC power	DC power	
Total Harmonic Distortion(at 100 Hz with full-scale input)	0.75 %	0.75 %	[1]
DC Power	5 VDC	5 VDC	
Crosstalk	<-92 dB	<-92 dB	
Current Consumption	69 mA	69 mA	[1]
Output Impedance(Parallel)	1.1 MOhm	1.1 MOhm	[1]
Output Impedance(Series)	2.2 µF	2.2 µF	[1]
Physical			
Electrical Connector(Input, sensor)	BNC Jack	BNC Jack	
Electrical Connector(Output, scope)	3.5 mm Stereo Jack	3.5 mm Stereo Jack	
Electrical Connector(External Power, DC)	Integral Cable with USB Plug Termination	Integral Cable with USB Plug Termination	
Size (Depth x Height x Width)	1.33 in x 1.18 in x 3.67 in	3.4 cm x 3.0 cm x 9.3 cm	
Weight	2.5 oz	70 gm	[1]

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 Group, 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]Typical.
[2]Un-buffered output, read out device input impedance affects discharge time constant and low frequency response of unit.

SUPPLIED ACCESSORIES:

Model 009M130 Output cable 3.5mm stereo jack to 3.5mm stereo jack, 1ft long. (1)
Model 009M131 Cable output 3.5mm stereo jack to 2 phono plugs/BNC adaptors, 3ft long. (1)

Entered: AP	Engineer: CPH	Sales: ML	Approved: JWH	Spec Number:
Date: 3/17/2015	Date: 3/17/2015	Date: 3/17/2015	Date: 3/17/2015	**24305**

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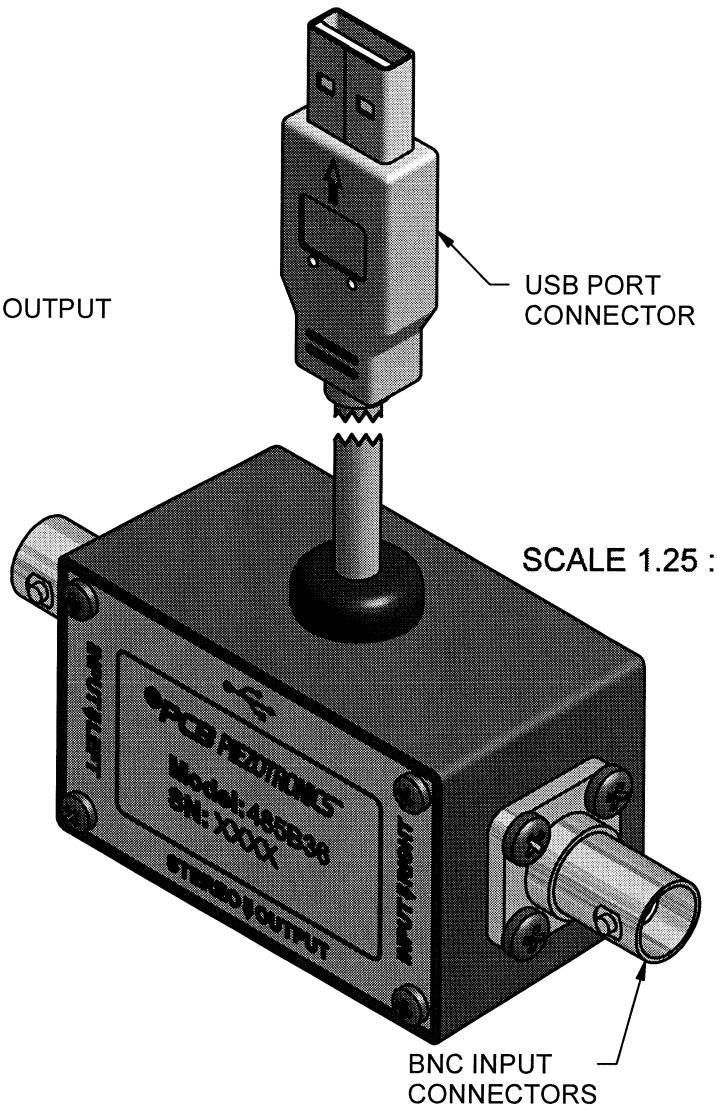
29117

APPLICATION		
NEXT ASS'Y	USED ON	VAR

REVISIONS			
REV	DESCRIPTION	ECN	APP'D
A	REVISED PER ECN	22146	DM 6/9/05



SCALE 1.25 : 1

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	MDF	5/11/05	MFG	DJB	6/9/05
CHK'D	DM	6/9/05	ENGR	CCL	6/9/05
APP'D	[signature]	6/10/05	SALES	VR	6/16/5

TITLE
OUTLINE DRAWING MODEL 485B36 DUAL CHANNEL SIGNAL CONDITIONER

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CODE IDENT. NO.	DWG. NO.	
52681	29117	
SCALE: FULL	SHEET 1 OF 1	