



**Model 691B46**

**Switch Box**

**Installation and Operating Manual**

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

**Toll-free: 800-959-4464  
24-hour SensorLine: 716-684-0001  
Fax: 716-684-3823  
E-mail: [imi@pcb.com](mailto:imi@pcb.com)  
Web: [www.imi-sensors.com](http://www.imi-sensors.com)**





<b>Warranty, Service, Repair, and Return Policies and Instructions</b>
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**The information contained in this document supersedes all similar information that may be found elsewhere in this manual.**

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

**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 insure 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 insure 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.

**Warranty** – All equipment and repair services provided by PCB Piezotronics, Inc. are covered by a limited warranty against defective material and workmanship for a period of one year from date of original purchase. Contact

PCB for a complete statement of our warranty. Expendable items, such as batteries and mounting hardware, are not covered by warranty. Mechanical damage to equipment due to improper use is not covered by warranty. Electronic circuitry failure caused by the introduction of unregulated or improper excitation power or electrostatic discharge is not covered by warranty.

**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](http://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](http://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<sup>SM</sup>: (716) 684-0001  
Website: [www.pcb.com](http://www.pcb.com)  
E-mail: [info@pcb.com](mailto: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.

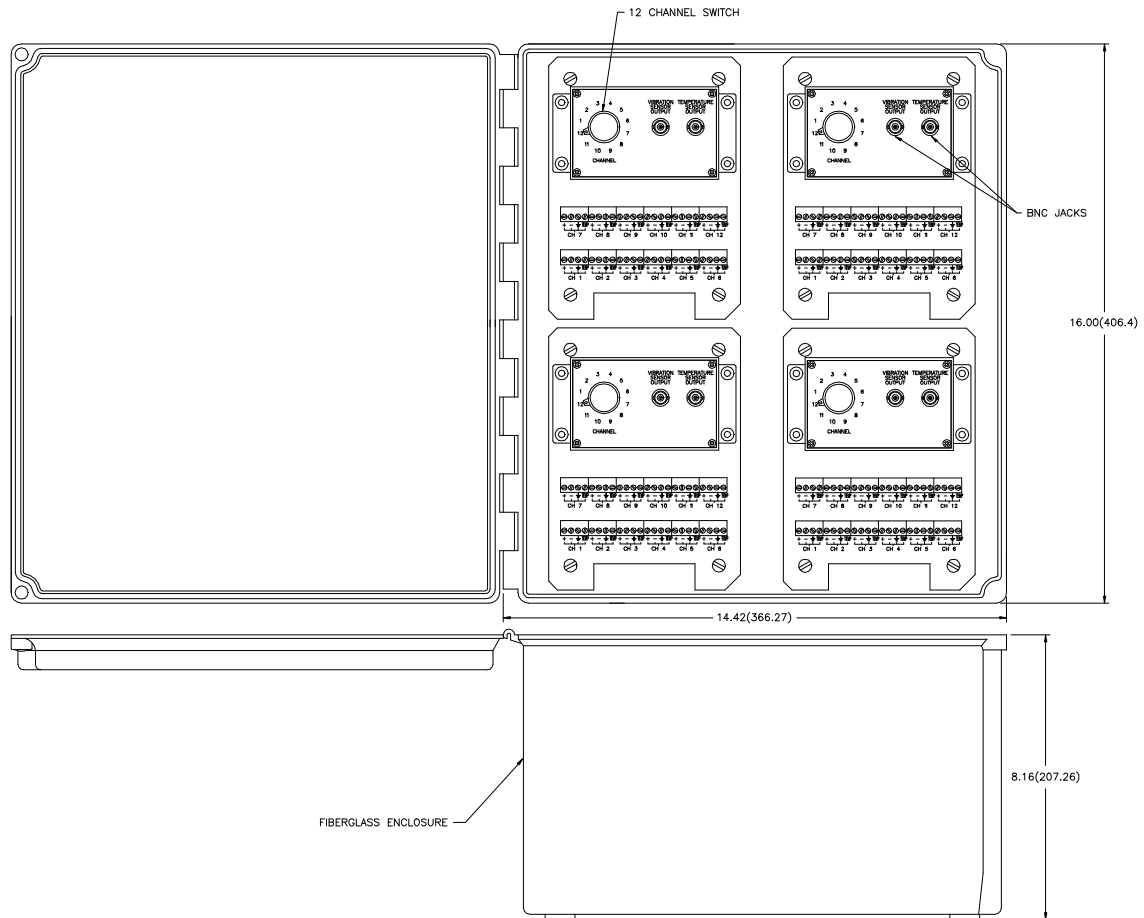
Lead is present due to allowed exemption in Annex III or Annex IV of the European RoHS Directive 2011/65/EU.

DOCUMENT NUMBER: 21354

DOCUMENT REVISION: C

ECN: 45605

The 691B43, 691B44, 691B45 & 691B46 Series Vibration Switch Boxes



**Operating Guide with Enclosed Warranty Information**

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Toll Free Line 1-800-959-4IMI

MANUAL NUMBER: 18421  
 MANUAL REVISION: NR

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**introduction**

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The Models 691B43, 691B44, 691B45 and 691B46 Series Vibration Switch Boxes provide terminal strip input with the convenience of BNC outputs. They are used in conjunction with commercially available data collectors and analyzers. They provide inputs and switched outputs for vibration sensors with built-in temperature sensors. This series provides expandability up to 48 channels by offering field-installable, 12-channel switch panel modules which may be ordered as the 691B40. A few specifications are listed below for easy reference.

**Specifications**

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<i>691B43</i>	<b>12 Channels</b>
<i>691B44</i>	<b>24 Channels</b>
<i>691B45</i>	<b>36 Channels</b>
<i>691B46</i>	<b>48 Channels</b>
<i>Input Connectors</i>	<b>4 Socket Terminal Strip</b>
<i>Output Connector – Temperature</i>	<b>BNC Jack</b>
<i>Output Connector - Vibration</i>	<b>BNC Jack</b>

**description**

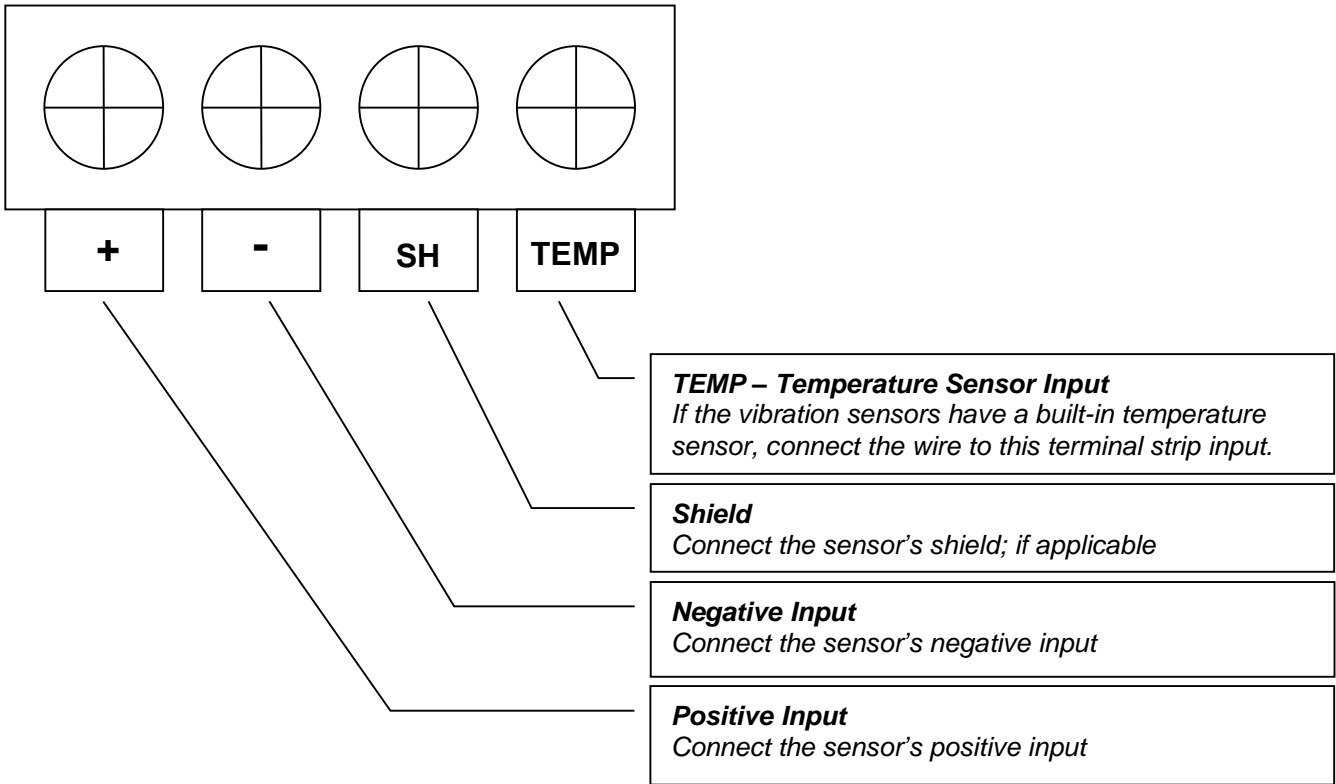
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Establish an easily accessible location for installation, keeping in mind the cabling will be coming from the bottom panel of the enclosure. Make the necessary holes in the panel for the vibration sensor cabling. Use the supplied mounting feet and hardware to install the unit.

*Note: Be very careful when punching and/or drilling the enclosure as not to damage the internal metal, terminal strips and printed circuit boards.*



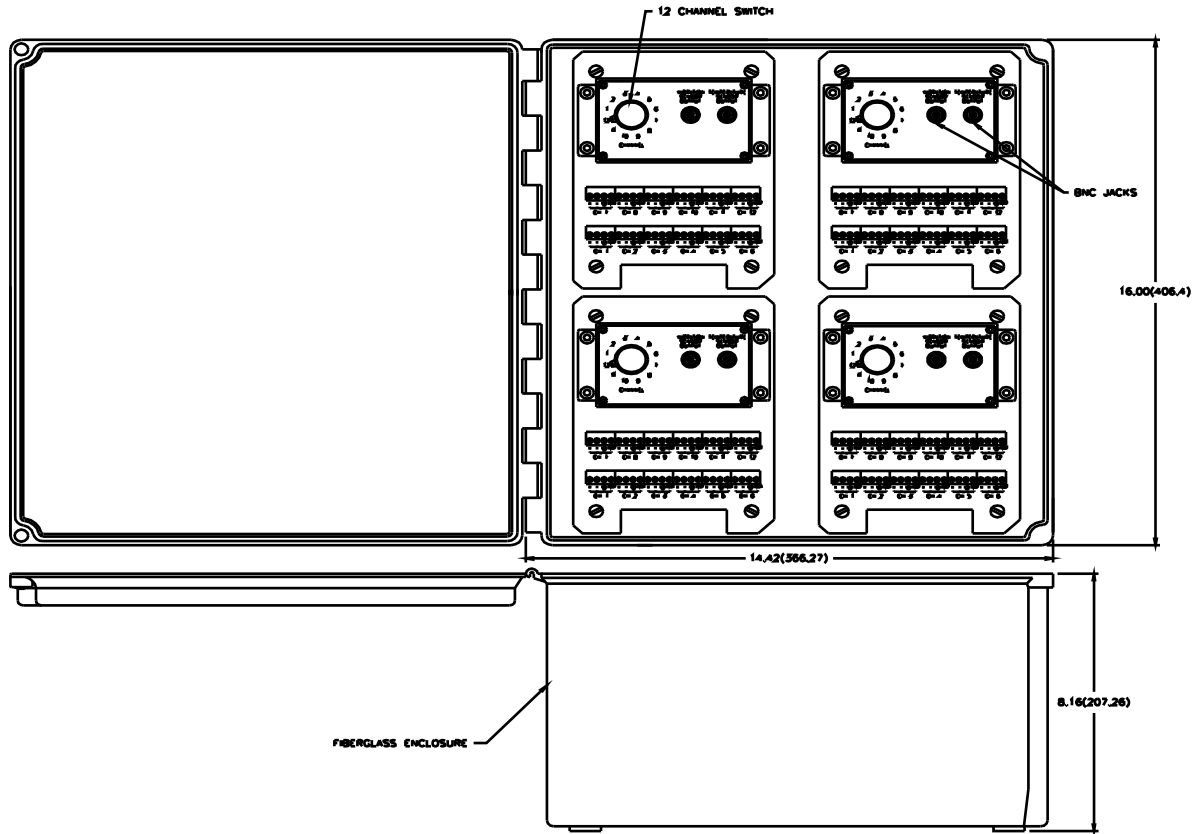
**terminal strip wiring**



**grounding the enclosure**

The enclosure is made of a non-conductive material. To ground the internal shielding system (ground planes on PC board, mounting panel and switch enclosure), an external earth ground wire must be connected. To do this, the bottom, left, inner-mounting hole has a ground lug included. Simply attach the external ground wire to the ground lug. This will earth ground all the shields and the inner metal pieces. This will not ground the (-) input of the vibration sensors, since they are isolated from the shield.

figure 1 – grounding the enclosure



**calibration**

The 691B43, 691B44, 691B45 and 691B46 do not need any calibration since they are only switch boxes. If there are any questions concerning these products, please contact the factory.

**warning 1 – ESD sensitivity**

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**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**

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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**

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**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**

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**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**

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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**

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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**

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*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](mailto:imi@pcb.com) or visit our web site at [www.pcb.com](http://www.pcb.com).

**customer service**

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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.



3425 Walden Avenue, Depew, NY 14043-2495  
Phone: (716) 684-0003 • USA Fax: (716) 684-3823 • INTL Fax: (716) 684-4703

**ICP**® is a registered trademark of PCB Piezotronics, Incorporated,  
which uniquely identifies PCB sensors that incorporate built-in microelectronics.

Model Number

691B46

## VIBRATION SWITCH BOX

Revision: D

ECN #: 16103

**Performance**Channels ENGLISH 48 SI 48**Environmental**

Enclosure Rating Nema 4X IP66

**Physical**

Electrical Connector (Input) Terminal Block Terminal Block

Electrical Connector (Output, Vibration) BNC Jack BNC Jack

Electrical Connector (Output, Temperature) BNC Jack BNC Jack

Housing Material Fiberglass Fiberglass

Size (Height x Width x Depth) 16 in x 14 in x 8 in 406 mm x 356 mm x 203 mm

Weight 18 lb 8.2 kg

*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.

**691060** - 46 Individual Cord Grips, PGME07**691061** - 8 Individual Cord Grips, PGME29**691062** - 8 Individual Cord Grips, PGME13**691063** - 4 Individual Cord Grips, PGME36**691064** - 4 Individual Cord Grips, PGME21**691065** - 4 Conduit Fittings, 1.5 Inch.**691066** - 8 Conduit Fittings, 1.5 Inch.**PSS** - Painted Steel [1]

Size (Height x Width x Depth) 16 in x 14 in x 6 in 406 mm x 356 mm x 203 mm

Weight 29 lb 13.2 kg

**SSS** - Stainless Steel Enclosure [1]

Size (Height x Width x Depth) 16 in x 14 in x 6 in 406 mm x 356 mm x 203 mm

Weight 27 lb 12.3 kg

**NOTES:**

[1] Mounting kit integral to enclosure.

**OPTIONAL ACCESSORIES:**

Model 080A192 (4)

Entered: <i>JJC</i>	Engineer: <i>JJC</i>	Sales: <i>AK</i>	Approved: <i>me</i>	Spec Number:
Date: <i>10/10/02</i>	Date: <i>10/10/02</i>	Date: <i>10/16/02</i>	Date: <i>10/21/02</i>	8131

**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

APPLICATION	
NEXT ASS'Y	USED ON
	VAR

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.

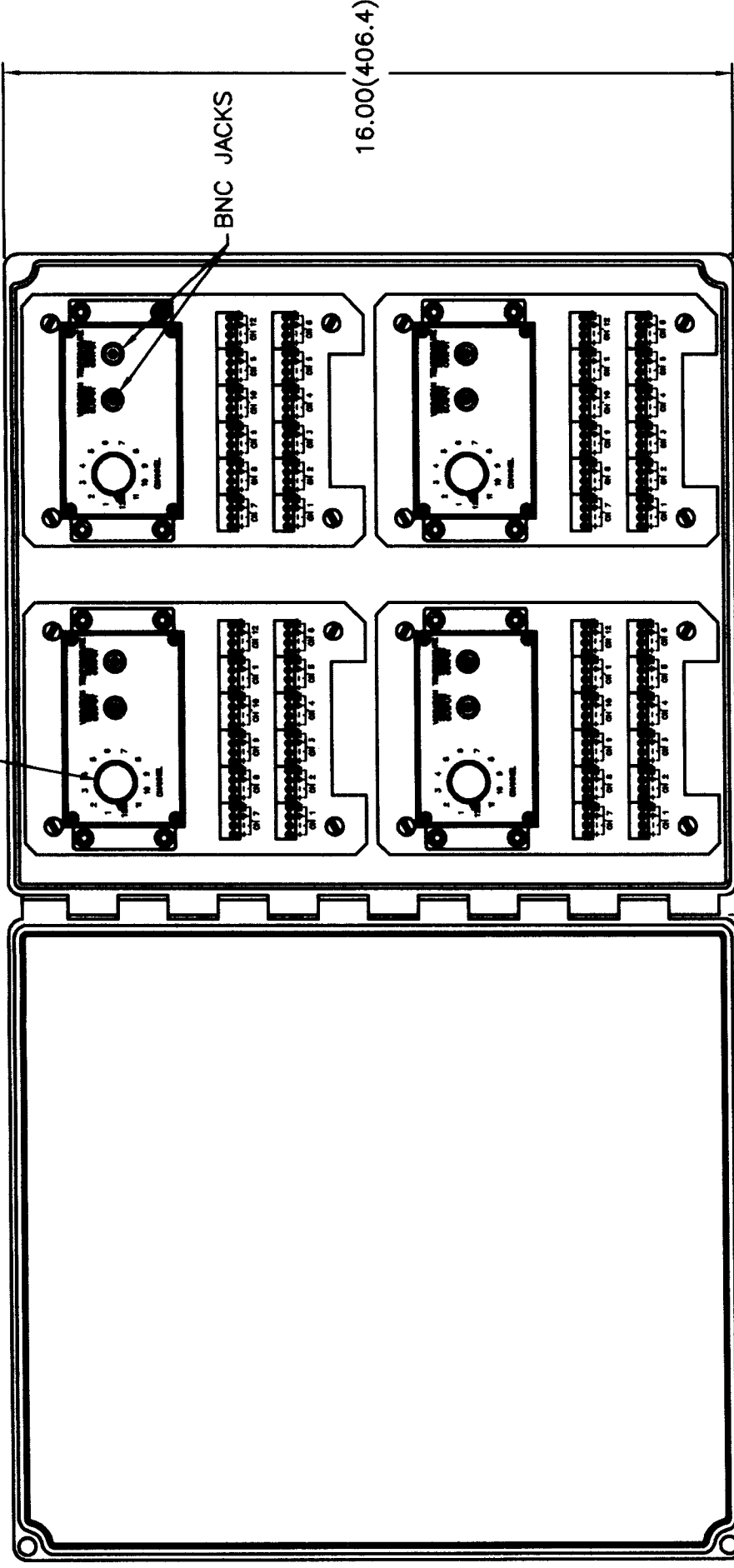
REVISIONS			
ZONE	REV	DESCRIPTION	ECN

DATE	APP'D

8504

12 CHANNEL SWITCH

BNC JACKS



FIBERGLASS ENCLOSURE

NOTE: 691B43 - 12 CHANNEL  
 691B44 - 24 CHANNEL  
 691B45 - 36 CHANNEL  
 691B46 - 48 CHANNEL

UNLESS SPECIFIED TOLERANCES	
DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS
DECIMALS XX ±0.01	(IN PARENTHESES) XX ±0.3
XXX ±.005	XXX ±0.13
ANGLES ±2 DEGREES	ANGLES ±2 DEGREES
FILLETS AND RADI	FILLETS AND RADI
.003 - .006	(0.07 - 0.13)

D0012 REV. B 03/13/96

DRAWN	TAL	5/24/98	MFG	BKS	6/23/98
CHK'D	BMM	6/29/98	ENGR	JLC	6/29/98
APP'D	J.C.	7/1/98			
TITLE	OUTLINE DRAWING				
	MODEL 691B43,B44,B45,B46				
	VIBRATION INTERFACE ENCLOSURE				

3425 WALDEN AVE. DEPEN, NY 14043 (716) 694-0001 EMAIL: SALES@PCB.COM	
CODE	DWG. NO.
52681	8504
SCALE: 1.75X	SHEET 1 OF 1