



**Model 691B44**

**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)**



## 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](mailto:info@pcb.com)  
Repair inquiries: [rma@pcb.com](mailto:rma@pcb.com)

For a complete list of distributors, global offices and sales representatives, visit our website, [www.pcb.com](http://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	0	0	0	0	0	0
PCB板	X	0	0	0	0	0
电气连接器	0	0	0	0	0	0
压电晶体	X	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	X	0	0	0
电线	0	0	0	0	0	0
电缆	X	0	0	0	0	0
塑料	0	0	0	0	0	0
焊接	X	0	0	0	0	0
铜合金/黄铜	X	0	0	0	0	0
本表格依据 SJ/T 11364 的规定编制。						
0：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

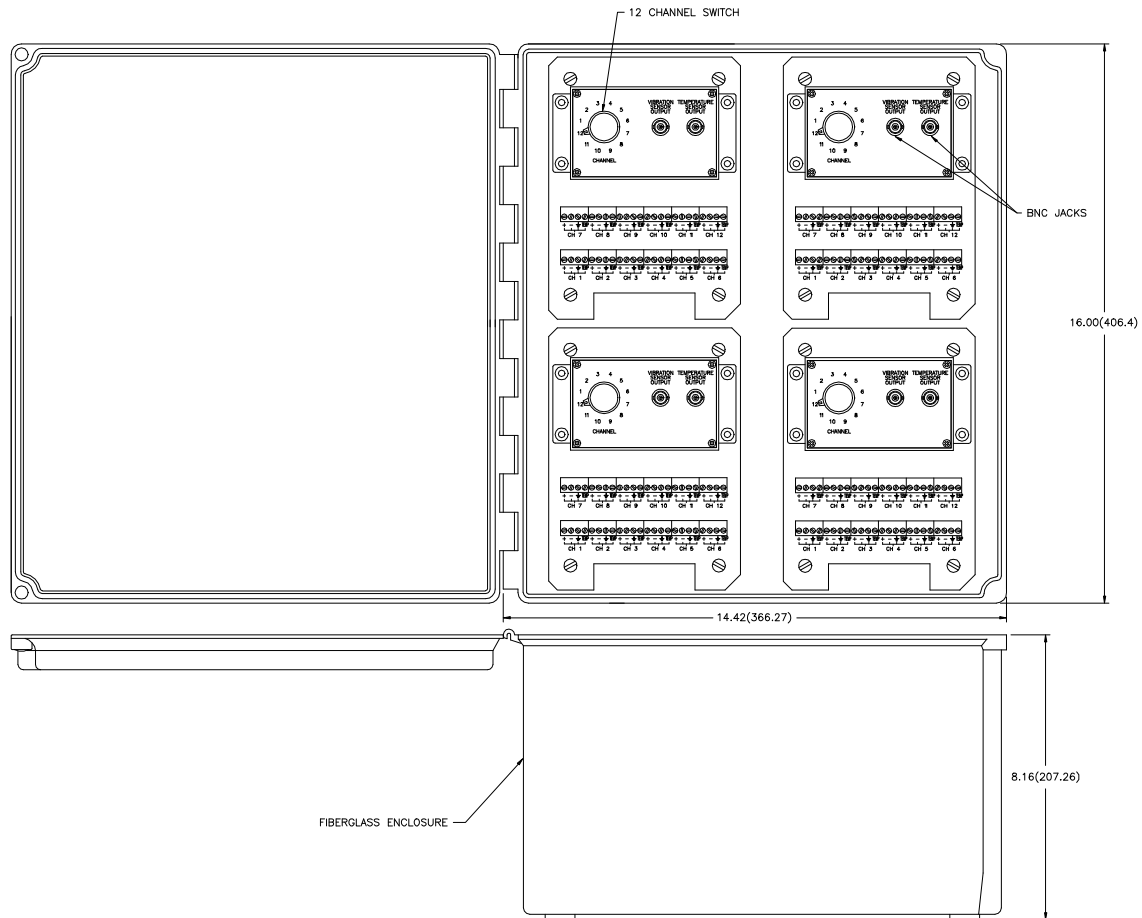
This table is prepared in accordance with the provisions of SJ/T 11364.

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.

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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**warranty/servicing**

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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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691B43	<b>12 Channels</b>
691B44	<b>24 Channels</b>
691B45	<b>36 Channels</b>
691B46	<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**

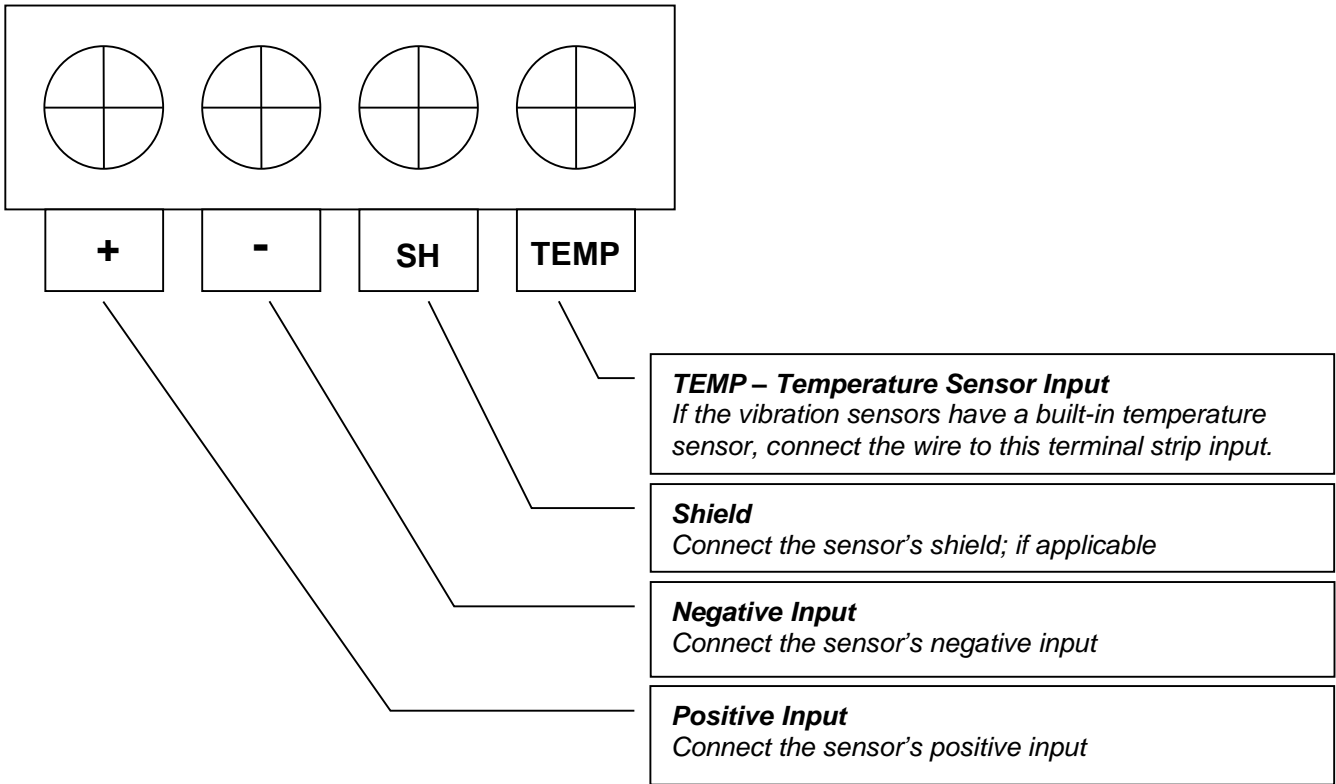
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Establish an easily accessible location for installation, keeping in mind the cabling will be coming from the bottom panel of the enclosure. Make the necessary holes in the panel for the vibration sensor cabling. Use the supplied mounting feet and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



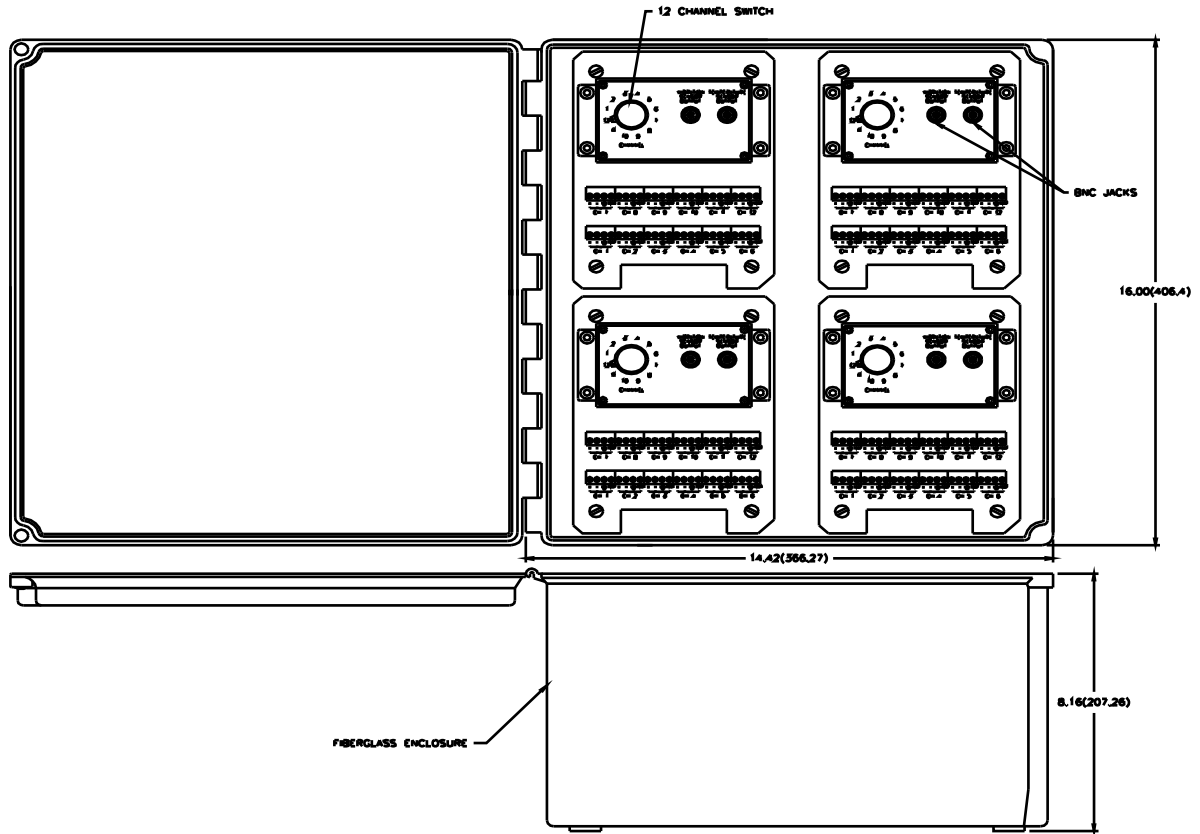
**terminal strip wiring**



**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.



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

Model Number

691B44

## VIBRATION SWITCH BOX

Revision: E

ECN #: 25503

	ENGLISH	SI
<b>Performance</b>		
Channels	24	24
<b>Environmental</b>		
Enclosure Rating	Nema 4X	IP66
<b>Physical</b>		
Electrical Connector(Output, Vibration)	BNC Jack	BNC Jack
Electrical Connector(Output, Temperature)	BNC Jack	BNC Jack
Electrical Connector(Input)	Terminal Block	Terminal Block
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	16 lb	7.3 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.

**691030** - 12 Individual Cord Grips, PGME07

**691040** - 24 Individual Cord Grips, PGME07

**691041** - 4 Individual Cord Grips, PGME29

**691042** - 4 Individual Cord Grips, PGME13

**691043** - 2 Individual Cord Grips, PGME36

**691044** - 2 Individual Cord Grips, PGME21

**691045** - 2 Conduit Fittings, 1.5 Inch.

**691046** - 4 Conduit Fittings, 1.5 Inch.

**691047** - 1 Conduit Fitting, 1.5 Inch.

**PSS** - Painted Steel

Size - Height x Width x Depth	16 in x 14 in x 6 in	406 x 356 x 203	[1]
Weight	27 lb	12.3	

**SSS** - Stainless Steel Enclosure

Size - Height x Width x Depth	16 in x 14 in x 6 in	406 x 356 x 203	[1]
Weight	25 lb	11.4	

## NOTES:

[1] Mounting kit integral to enclosure.

## SUPPLIED ACCESSORIES:

Model 080A192 4-socket terminal block (2)

Entered: <i>JH</i>	Engineer: <i>JC</i>	Sales: <i>SPJ</i>	Approved: <i>U</i>	Spec Number:
Date: <i>12-13-06</i>	Date: <i>12/13/06</i>	Date: <i>12/13/06</i>	Date: <i>12/13/06</i>	8133

  
**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		REVISIONS	
NEXT ASS'Y	USED ON	DESCRIPTION	DATE
	VAR		

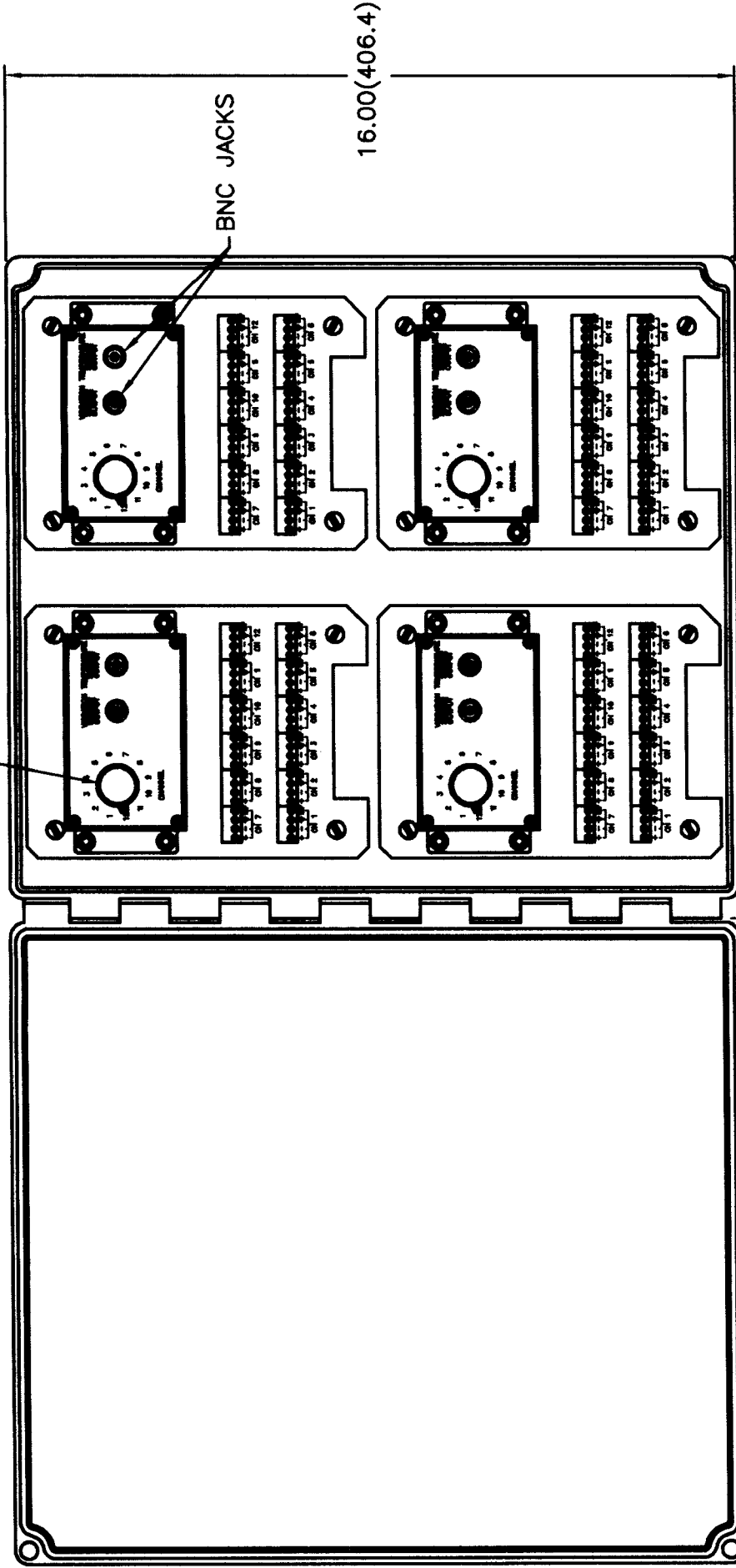
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ZONE	REV	ECN	DATE	APP'D

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)
XXX ± 0.005	DECIMALS XX ± 0.3
ANGLES ± 2 DEGREES	XXX ± 0.13
FILLETS AND RADII	ANGLES ± 2 DEGREES
.003 - .006	FILLETS AND RADII
	(0.07 - 0.13)

D0012 REV. B 03/13/96

DRAWN	TR	5/14/98	MFG	6/23/98
CHK'D	DM	6/29/98	ENGR	6/29/98
APP'D	J.C.	7/1/98		6/30/98
TITLE: OUTLINE DRAWING				
MODEL: 691B43, B44, B45, B46				
VIBRATION INTERFACE ENCLOSURE				

PCB PIEZOTRONICS	
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CODE	DWG. NO.
52681	8504
SCALE: 1.75X	SHEET 1 OF 1