



Model 691C42/691020

Vibration Switch Box

Installation and Operating Manual

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

Toll-free: 800-959-4464

24-hour SensorLine: 716-684-0001

Fax: 716-684-3823

E-mail: imi@pcb.com

Web: www.imi-sensors.com





Service, Repair, and Return Policies and Instructions
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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:

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3425 Walden Ave.
Depew, NY14043 USA
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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

Models (PS)(SS)691C41(T) & (PS)(SS)691C42(T) Rotary Switch Boxes



Operating Guide with Enclosed Warranty Information

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MANUAL NUMBER: 65521
MANUAL REVISION: NR
ECO 47778



Table of Contents

Introduction..... Page 3

Installation Page 4

Grounding the Enclosure Page 4

Input Wiring Page 5

Output Wiring Page 6

Using the Enclosure Page 6

Calibrating the Enclosure Page 6

ESD Warning Information..... Page 7

Warranty/Service

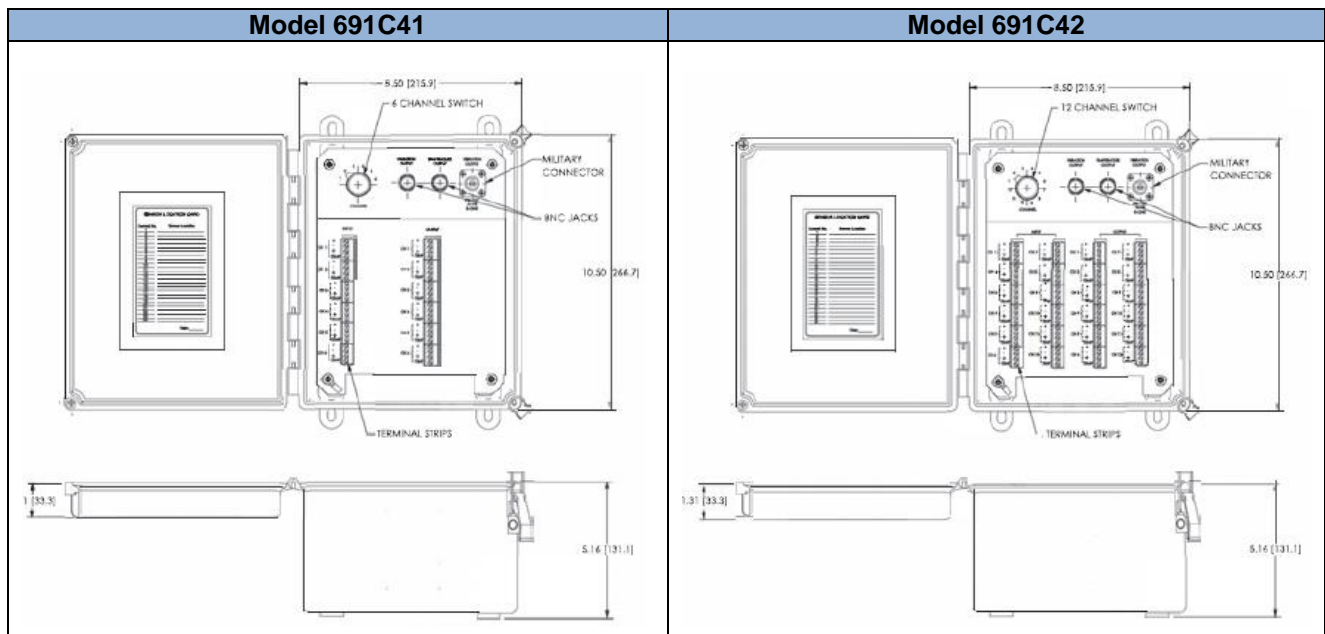
Warranty, Service & Return Procedure Page 8

Customer Service..... Page 9

Introduction

Models 691C41 and 691C42 are rotary switch boxes that provide terminal strip inputs for sensor cable termination with the convenience of BNC & military connectors for switched outputs and terminal strips for continuous outputs. They are typically used in conjunction with third-party data collectors and analyzers. The boxes provide simultaneous vibration and temperature inputs on every channel so that they can be used in conjunction to temperature output (TO) sensors (accelerometers with a built-in temperature sensor that provide simultaneous vibration and temperature signals). Specifications and drawings are below for reference:

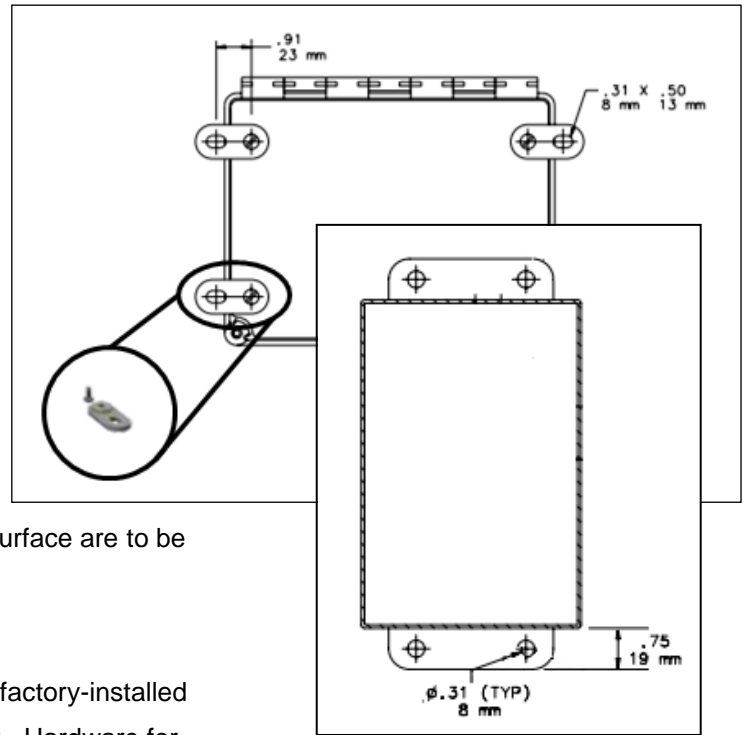
Model Number	691C41	691C42
Channel Count	6	12
Input Connector	4-socket screw terminal strip per channel	
Continuous Output Connector	4-socket screw terminal strip per channel	
Switched Output Connector Number	3	
Switched Output Connector #1 Type	2-pin MIL connector OR 3-pin MIL connector (T suffix)	
Switched Output Connection #1 Output	Vibration (2-pin) OR Vibration & Temp (T suffix)	
Switched Output Connector #2 Type	BNC Jack	
Switched Output Connector #2 Output	Vibration	
Switched Output Connector #3 Type	BNC Jack	
Switched Output Connector #3 Output	Temperature	
Enclosure Rating	NEMA 4X (IP66)	
Housing Material	Fiberglass Painted Steel (PS prefix) Stainless steel (SS prefix)	
Size (excluding latch & mounting access)	10"H x 8"W x 6"D	



Installation

Establish an easily accessible location for installation.

Fiberglass rotary switch boxes include four polyester mounting brackets and four stainless steel attachment screws that are shipped loose to facilitate enclosure mounting. There are positioning indents on the back of the box in each corner. Once the mounting brackets are positioned properly, they should then be fastened to the box with the provided screws. Hardware for fastening the mounting brackets to the installation surface are to be provided in the field.



Painted steel and stainless steel boxes include two factory-installed mounting brackets on the top and bottom of the box. Hardware for fastening the mounting brackets to the installation surface are to be provided in the field.

Box may or may not have shipped from factory with factory-installed connection ports. If box did ship from factory with factory-installed connection ports, ensure that box is mounted with connection ports facing down. The factory-installed connection port options are listed in the table below.

	(6) PGME07 Cord Grips	(12) PGME07 Cord Grips	(1) PGME29 Cord Grip	(2) PGME29 Cord Grips	(6) PGME07 Cord Grips & (1) PGME29 Cord Grip	(6) PGME07 Cord Grips & (1) PGME29 Cord Grip	(1) 1.5" Conduit Fitting	(2) 1.5" Conduit Fittings
	/691010	/691020	/691011	/691071	/691004	/691000	/691013	/691026
(PS)(SS)691C41(T)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
(PS)(SS)691C42(T)	No	Yes	Yes	Yes	No	Yes	Yes	Yes

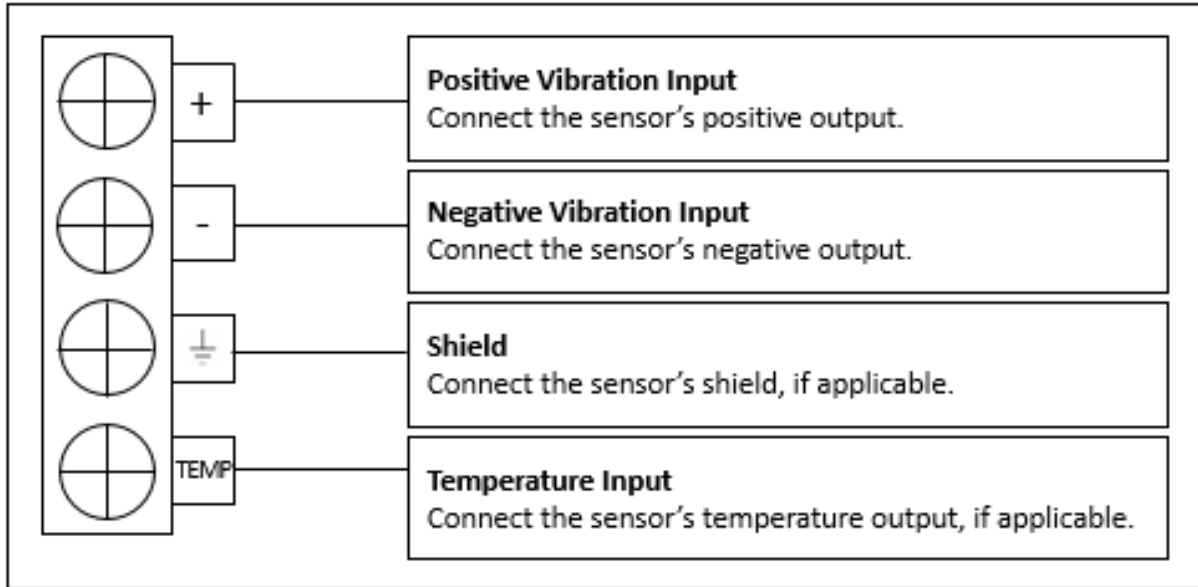
If the box did not ship from factory with factory-installed connections ports, drill/punch the necessary holes in the bottom of box for the input and output cabling. Be very careful when drilling/punching holes in the box as to not damage the internal metal, terminal strips and printed circuit boards. Also, take every possible precaution to prevent water entrainment into the box.

Grounding the Enclosure

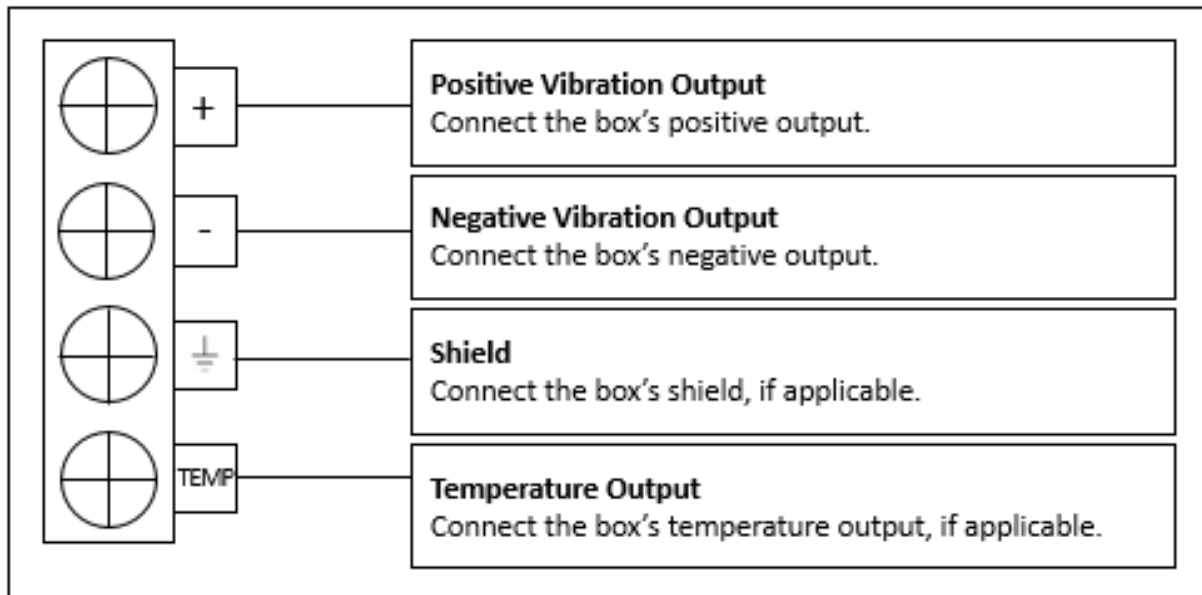
To ground the internal shielding system (ground planes on PC Board, mounting panel and switch enclosure), an external earth ground wire must be connected. To do this, the bottom, right, inner-mounting hole has a double nut included. Unscrew the nut and insert ground wire between the washers and screw nut tightly down again. 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.

Input Wiring

Sensor cables should be routed through connection ports and then connected to their respective channel's terminal strip per the diagram below. If connection ports are cord grips, cord grips should then be tightened to maintain the enclosure's ingress protection rating.



Output Wiring



Using the Enclosure

When collecting data from the enclosure using the BNC and/or MIL connectors and a data collector, connect the data's collector connector to its appropriate connector mate in the box and modulate the switch to the appropriate channel. If the output terminals are not being used, then the data collector must provide power for the sensor in order to for a signal to be obtained. If the output terminals are being used, then the sensor is already being powered and the data collector does not need to provide power.

Calibrating the Enclosure

The models do not require calibration. If there are any questions concerning the products, please contact the factory.

Warning 1 – ESD Sensitivity

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

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.

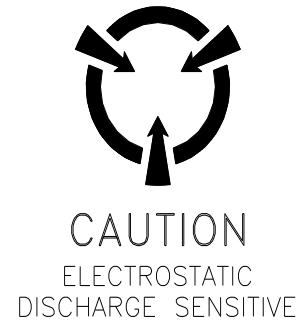
Caution 1 – ESD Sensitivity

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**

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

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

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

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 or visit our web site at www.pcb.com.

Customer Service

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 691C42	VIBRATION SWITCH BOX	Revision: A ECN #: 48403
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	<u>ENGLISH</u>	<u>SI</u>
Performance		
Channels	12	12
Environmental		
Enclosure Rating	Nema 4X	IP66
Physical		
Electrical Connector(Output, Vibration)	BNC Jack	BNC Jack
Electrical Connector(Output, Temperature)	BNC Jack	BNC Jack
Electrical Connector(Output, Vibration)	2-Pin Mil	2-Pin Mil
Electrical Connector(Input)	Terminal Block	Terminal Block
Electrical Connector(Output, vibration, Temperature)	Terminal Block	Terminal Block
Housing Material	Fiberglass	Fiberglass
Size (Height x Width x Depth)	10 in x 8 in x 6 in	254 mm x 203 mm x 152 mm
Weight	5.2 lb	2.4 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.*

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.		
691000 - 12 Individual PGME07 Cord Grips, 1 Individual PGME29 Cord Grip		
691011 - 1 Individual Cord Grip, PGME29		
691013 - 1 Conduit Fitting, 1.5 Inch.		
691020 - 12 Individual Cord Grips, PGME07		
691026 - 2 Conduit Fittings, 1.5 Inch		
691071 - 2 Individual Cord Grips, PGME29		
PS - Painted Steel		
Enclosure Rating	IP65	Nema 12
Weight	7 lb	3.2 kg
Size - Height x Width x Depth	10 in x 8 in x 6 in	254 mm x 203 mm x 152 mm
SS - Stainless Steel Enclosure		
Weight	8.8 lb	4.0 kg
Size - Height x Width x Depth	10 in x 8 in x 4 in	254 mm x 203 mm x 101 mm

NOTES:
[1] See PCB Declaration of Conformance PS152 for details.

SUPPLIED ACCESSORIES:
Model 080A192 4-socket terminal block (1)

Entered: LK	Engineer: RB	Sales: MC	Approved: BAM	Spec Number:
Date: 7/3/2018	Date: 7/3/2018	Date: 7/3/2018	Date: 7/3/2018	64792



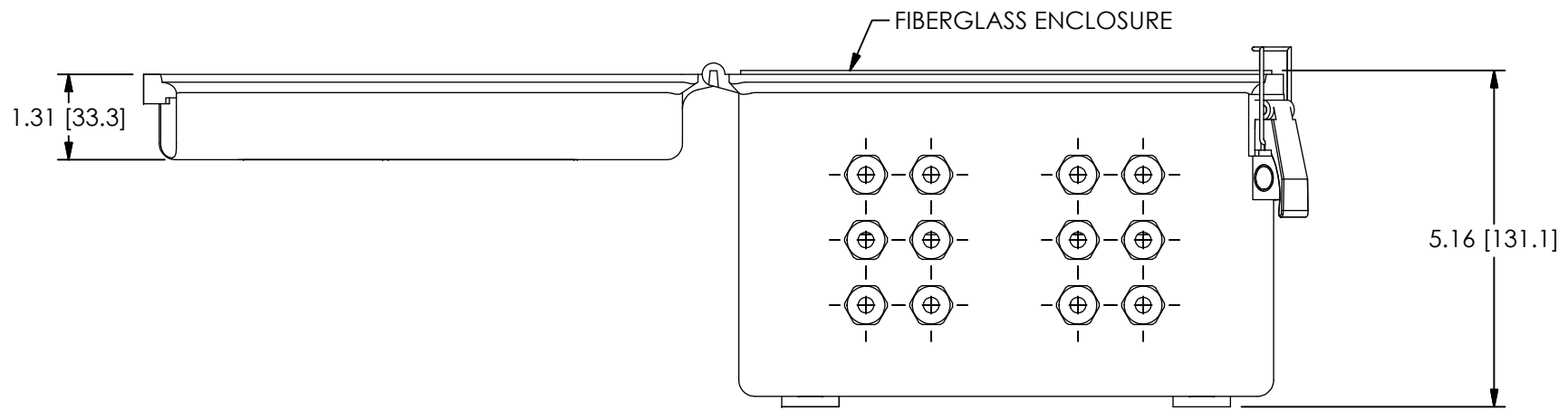
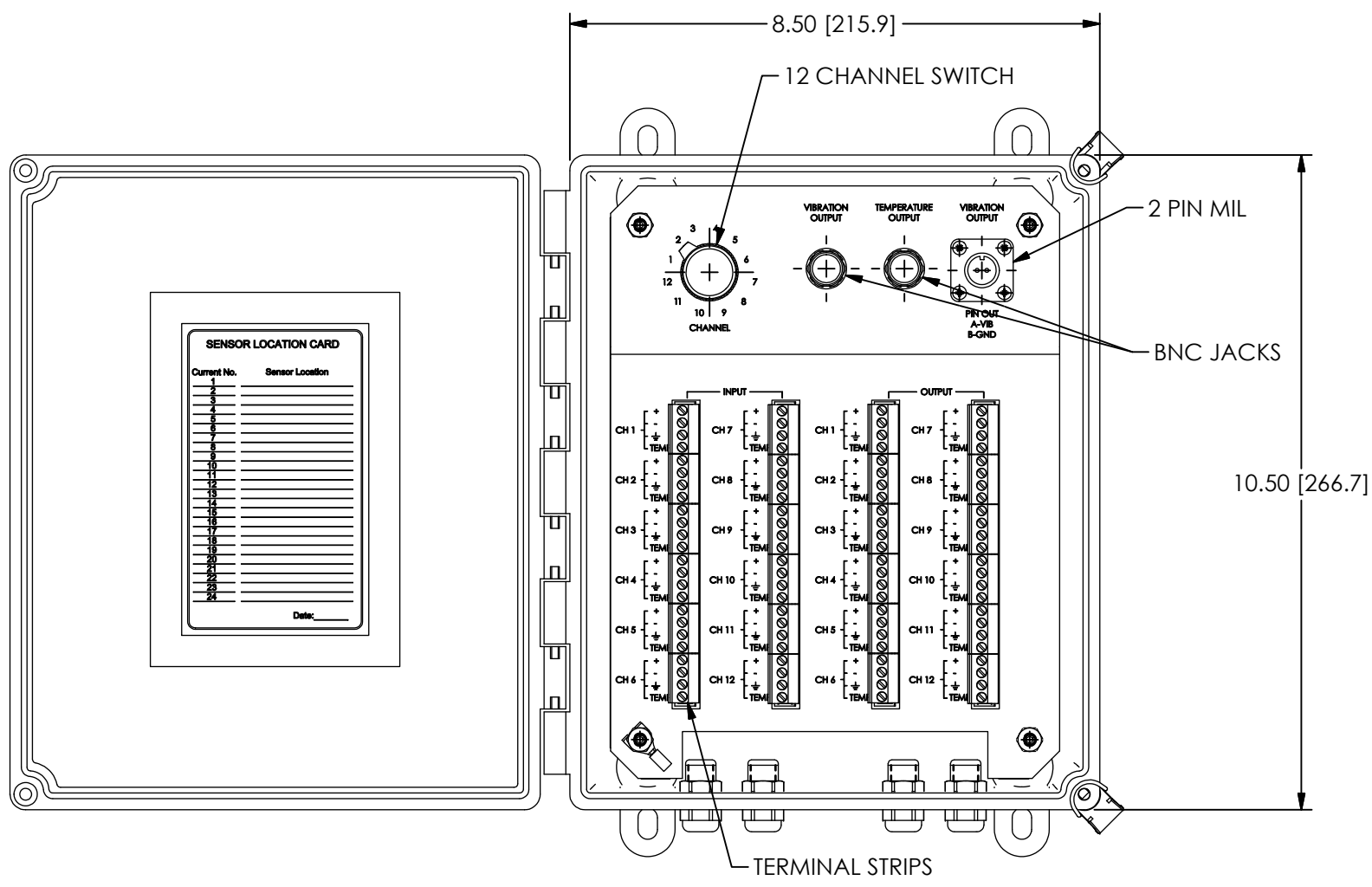
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65585

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REVISIONS		
REV	DESCRIPTION	DIN
A	UPDATE SCREEN PRINT	47778



UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		DRAWN		CHECKED		ENGINEER	
DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS [IN BRACKETS]	KSR	2/19/18	KSR	2/19/18	RMB	2/19/18
DECIMALS XX ±0.03 XXX ±0.010	DECIMALS X ±0.8 XX ±0.25	TITLE OUTLINE DRAWING MODEL 691C42/ 691020 12 CHANNEL SWITCH BOX					
ANGLES ± 2 DEGREES	ANGLES ± 2 DEGREES						
FILLETS AND RADII .003 - .005	FILLETS AND RADII 0.07 - 0.13	CODE IDENT. NO. 52681		DWG. NO. 65585		3425 WALDEN AVE. DEPEW, NY 14043 (716) 684-0001 E-MAIL: sales@pcb.com	
		SCALE: .375X		SHEET 1 OF 1			



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CODE IDENT. NO. 52681
DWG. NO. 65585

SCALE: .375X SHEET 1 OF 1