



**Model EX615A42**

**HIGH TEMPERATURE Industrial Accelerometer**

**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

	ENGLISH	SI	
<b>Performance</b>			
Sensitivity(± 5 %)	100 pC/g	10.2 pC/(m/s <sup>2</sup> )	[2]
Measurement Range	+/-200 g pk	+/-2000 m/s <sup>2</sup> pk	
Frequency Range(± 5 %)	5 kHz	5 kHz	[3]
Frequency Range(± 10 %)	6 kHz	6 kHz	
Resonant Frequency	>20 kHz	>20 kHz	[1]
Non-Linearity(<200 g pk)	± 1 %	± 1 %	[4]
Transverse Sensitivity	<5 %	<5 %	[5]
<b>Environmental</b>			
Overload Limit(Shock)	1000 g pk	9800 m/s <sup>2</sup> pk	
Temperature Range	-65 to +500 °F	-54 to +260 °C	
Temperature Response	See Graph	See Graph	
Temperature Response	+ .03 %/°F	+ .06 %/°C	[1]
Temperature Response	See Graph	See Graph	
Base Strain Sensitivity	0.003 g/µε	0.03 (m/s <sup>2</sup> )/µε	[1]
Enclosure Rating	IP68	IP68	
<b>Electrical</b>			
Capacitance(Pin to Pin)	11,100 pF	11,100 pF	[1]
Capacitance(with integral cable)	35 pF/ft	115 pF/m	
Insulation Resistance(at 500F)	≥ 10 <sup>7</sup> Ohm	≥ 10 <sup>7</sup> Ohm	
Insulation Resistance(at room temp)	≥ 10 <sup>9</sup> Ohm	≥ 10 <sup>9</sup> Ohm	
Electrical Isolation(Case)	>10 <sup>8</sup> Ohm	>10 <sup>8</sup> Ohm	
<b>Physical</b>			
Sensing Element	Ceramic	Ceramic	
Sensing Geometry	Shear	Shear	
Housing Material	Stainless Steel	Stainless Steel	
Sealing	Welded Hermetic	Welded Hermetic	
Size (Height x Length x Width)	.89 in x 1.58 in x 1.58 in	23 mm x 40 mm x 40 mm	
Weight(without cable)	6.7 oz	190 gm	[1]
Mounting	Through Holes (4)	Through Holes (4)	
Cable Length	10 ft	3 m	
Cable Termination	Pigtail	Pigtail	
Cable Type	Armored 3-wire, low-noise PTFE cable	Armored 3-wire, low-noise PTFE cable	
Mounting Torque	11 ft-lb	15 Nm	

**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] Conversion Factor 1g = 9.81 m/s<sup>2</sup>.

[3] 1Hz = 60 cpm (cycles per minute).

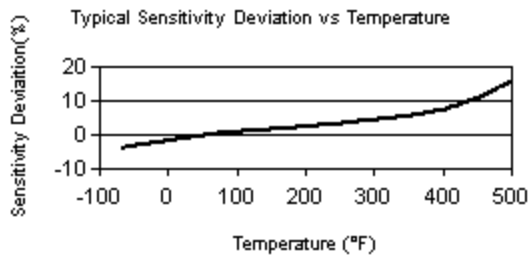
[4] Zero-based, least-squares, straight line method.

[5] Transverse sensitivity is typically ≤ 3%.

**SUPPLIED ACCESSORIES:**

Model 081C108 Mounting Screw, 1/4-28x1, Inconel (2)

Model ICS-1 NIST-traceable single-axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency (3)



Entered: LK	Engineer: PL	Sales: WDC	Approved: NJF	Spec Number:
Date: 10/21/2015	Date: 10/21/2015	Date: 10/21/2015	Date: 10/21/2015	58202



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.



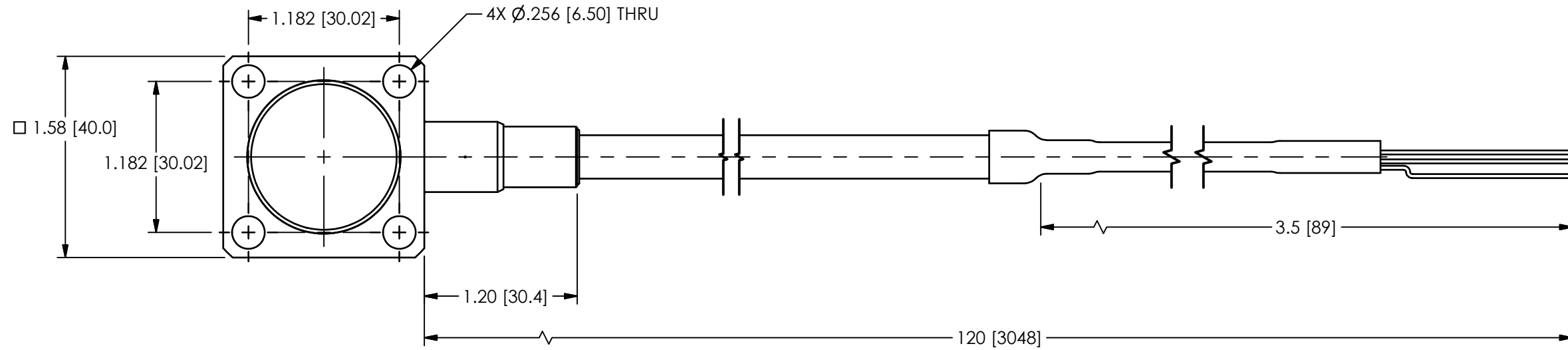
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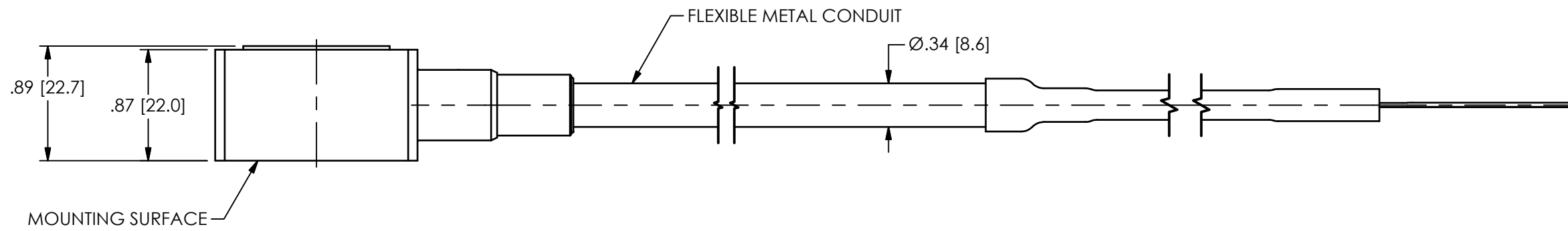
58201

REVISIONS

REV	DESCRIPTION	DIN
NR	RELEASED TO DRAFTING	43970



RED WIRE: SIGNAL POSITIVE (+)  
 GREEN WIRE: SHIELD  
 BLACK WIRE: SIGNAL NEGATIVE (-)



UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		DRAWN		CHECKED		ENGINEER			
DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS [IN BRACKETS]	BB	10/19/15	ECB	10/19/15	PML	10/19/15		
DECIMALS XX ±0.03 XXX ±0.010	DECIMALS X ±0.8 XX ±0.25	TITLE OUTLINE DRAWING MODEL 615A42 HIGH TEMPERATURE ACCELEROMETER						CODE IDENT. NO. 52681	DWG. NO. 58201
ANGLES ± 2 DEGREES	ANGLES ± 2 DEGREES							SCALE: FULL	SHEET 1 OF 1
FILLETS AND RADII .003 - .005	FILLETS AND RADII 0.07 - 0.13								



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61680

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**SCHEDULE DRAWING**  
NO MODIFICATIONS PERMITTED WITHOUT REFERENCE TO THE NOTIFIED BODY

REVISIONS		
REV	DESCRIPTION	DIN
NR	RELEASED TO DRAFTING	43970

T-CODE	AMBIENT
T2	-55°C TO 260°C
T3	-55°C TO 195°C
T4	-55°C TO 130°C
T5	-55°C TO 95°C
T6	-55°C TO 80°C

5 Ci AND Li BASED ON CABLE WITH 30 pF/ft AND .33 μH/ft WITH A MAXIMUM CABLE LENGTH OF 100ft. Ci AND Li WILL BE DECREASED WITH SHORTER CABLE LENGTHS.

4 SHIELDS TO BE EARTHED AT BARRIER END.

3 THE INSTALLER SHALL INSURE THAT THE TRANSDUCER MOUNTING STRUCTURE IS AT THE SAME GROUNDING POTENTIAL AS THE BARRIER GROUND. TOTAL EARTH LOOP IMPEDANCE SHALL BE LESS THAN ONE OHM.

2 BARRIER WILL BE MOUNTED IN AN ENCLOSURE THE SUITABILITY OF WHICH WILL BE DETERMINED BY LOCAL AUTHORITIES.

1 ENTITY APPLICATION:

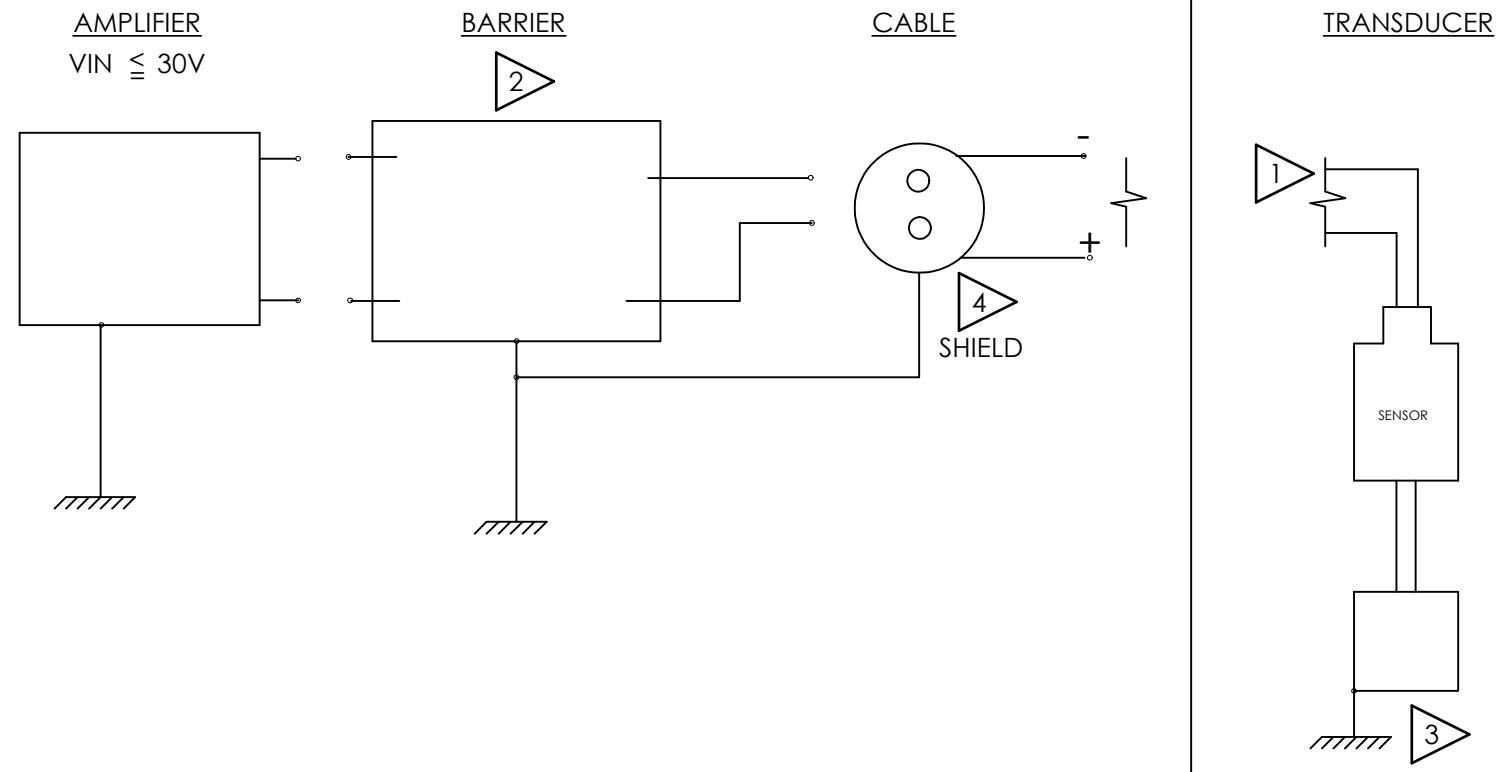
Barrier I.S. Apparatus  
 $V_{oc}/U_o < V / U_i$   
 $I_{sc}/I_o < I / I_i$   
 $C_a/C_o < C_i + C$   
 $L_a/L_o < L_i + L$

BARRIERS WITHIN THE SPECIFIED LIMITATIONS ARE PERMITTED.

ENTITY PARAMETERS:

$U_i \leq 30 \text{ V}$   
 $I_i \leq 100 \text{ mA}$   
 $P_i \leq 0.7 \text{ W}$   
 5  $C_i \leq 15 \text{ nF}$   
 5  $L_i \leq 30 \mu\text{H}$

CERTIFIED BY THE APPROPRIATE APPROVAL AUTHORITY FOR CONNECTION TO THE FOLLOWING AREAS:  
CLASS 1 DIVISION 2



UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
DECIMALS	X ± .05
	XX ± .01
	XXX ± .005
	XXXX ± .0005
ANGLES ± 2 DEGREES	
FILLETS AND RADII .003 - .005	
HEX DIMENSIONS ARE:	
	≤ .5 + .000 / - .003
	> .5 + .000 / - .005
INTERNAL THREAD DEPTH MIN.	
REMOVE ALL BURRS	
SHARP = R.000 - R.003	



DRAWN	CHECKED	ENGINEER
BB 10/19/15	ECB 10/19/15	PML 10/19/15
TITLE CSA APPROVAL 615A42 INTERCONNECTIONS		

**PCB PIEZOTRONICS™**  
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CODE IDENT. NO. 52681  
 DWG. NO. 61680

SCALE: NONE SHEET 1 OF 1

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