



Model 102M206
ICP® Pressure Sensor
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



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 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

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. 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:

PCB Piezotronics, Inc.
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E-mail: info@pcb.com

**OPERATION MANUAL FOR
ICP® PRESSURE SENSORS
Models 102A02, A05, A07, A09
Models 112A21, A22, A23**

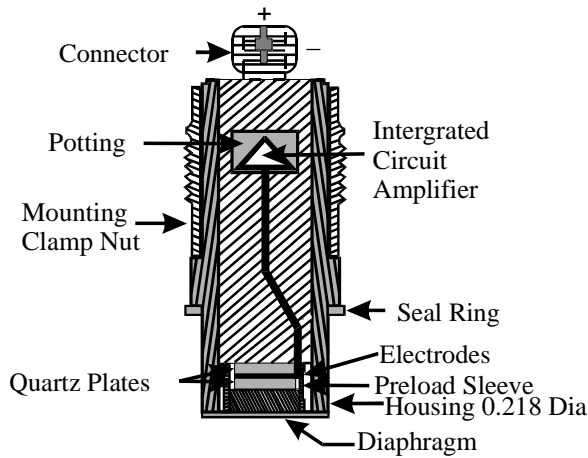
1.0 INTRODUCTION

The series of miniature pressure sensors described by this operating guide is designed for low pressure, high resolution applications and features acceleration compensation.

Uses include monitoring of low pressure hydraulic and pneumatic phenomena in the presence of shock and vibration such as on jet engines, compressors, turbines and other operating machinery, high intensity sound and turbulence measurements, and many other industrial R & D applications.

2.0 DESCRIPTION

This series is comprised of six sensor models having high sensitivities, but differing in mechanical configuration.

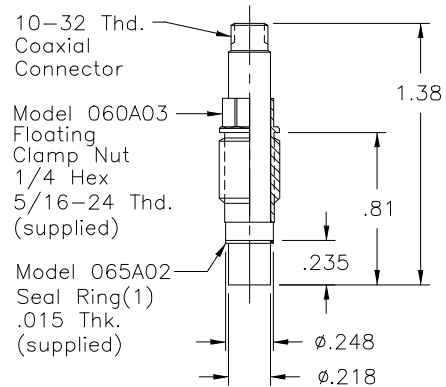


Typical ICP® Probe Style Sensor

Each model utilizes the basic ICP® pressure probe as shown in above figure. The pressure probe consists of the Model 112A high sensitivity acceleration-compensated quartz element and an IC source follower amplifier joined together as an inseparable assembly.

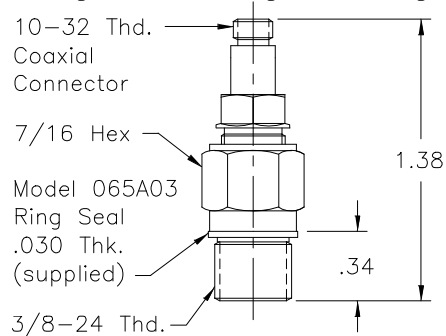
Refer to "General Guide to ICP® Instrumentation" G-0001B for a complete treatment of the ICP® concept.

Models 112A21, 112A22 and 112A23 are in the basic probe configuration as shown in Figure 1, and are installed with a hollow clamp nut with 5/16-24 external threads. The housings of these models are at electrical ground potential.



Series 111: Probe Style Sensor

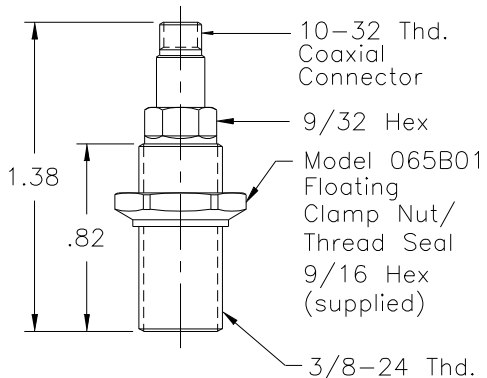
The Model 102A05 utilizes the same basic pressure probe, mounted in a 3/8-24 threaded mounting adaptor with shoulder seal. The probe is assembled into the adaptor at the factory in an "off ground" configuration, i.e., the probe body is electrically insulated from the external mounting adaptor body. Do not attempt to disassemble probe and adaptor.



Model 102A05 Thread Mount Design, Ground-Isolated Sensor

**OPERATION MANUAL FOR
ICP® PRESSURE SENSORS
Models 102A02, A05, A07, A09
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Models 102A02, 102A07, and 102A09 utilize the same inner probe design but in a 3/8-24 threaded adaptor with floating clamp nut to allow adjustment of diaphragm depth where it is necessary to adapt to various wall thicknesses. These models are supplied only in low pressure (100 and 50 psi) versions and are also "off ground".



102A's: Thread Mount with Floating Clamp Nut, Ground-Isolated Sensor

3.0 INSTALLATION

This manual contains outline and installation information for your specific model in this series. Prepare mounting ports in accordance with the installation drawing for the specific model, paying particular attention to sealing surfaces. These surfaces must be smooth and free from chatter marks, nicks and other irregularities which could preclude a pressure-tight seal.

Seals are provided with each sensor and should always be used. Extra seals for all standard models are in stock at the factory. Replace seals when they become unserviceable.

In some cases, e.g., where flash temperatures such as those generated by combustion processes are present, it may be necessary to thermally insulate the diaphragm to minimize spurious signals generated by these effects.

Common black vinyl electrical tape has been found to be an effective insulating material in many cases. One or more layers may be used across the end of the diaphragm without affecting response or sensitivity.

A silicone rubber coating approximately .010" thick has also been proven effective in many applications. General Electric RTV type 106 silicone rubber is recommended. Apply the rubber coating and allow to cure in accordance with the manufacturer's instructions.

Although ICP® sensors have low output impedance and in general are not affected by moisture, in extreme environments it is good practice to protect cable connections with shrink tubing.

It is not necessary to use low-noise coaxial cable with this sensor series. In fact, a Model 070A09 solder connector adaptor that allows the use of ordinary two-wire cable is desired.

4.0 OPERATION

It is only necessary to supply the sensor with a 2 to 20 mA constant current at +20 to +30 VDC through a current-regulating diode or equivalent circuit. (See Guide G-0001B for powering and signal utilization information pertaining to all ICP® instrumentation).

Most of the signal conditioners manufactured by PCB have an adjustable current feature allowing a choice of input currents from 2 to 20 mA. In general, for lowest noise (best resolution) choose the low current ranges and for driving long cables (to several thousand feet) use the higher current, up to 20 mA maximum.

To operate system using a PCB signal conditioner:

1. Switch power on.
2. Wait several minutes for the IC amplifier to turn on and stabilize.
3. Proceed with measurements.

4.1 OPERATING CONSIDERATION FOR MODEL 112A23

The Model 112A23 features a low-noise amplifier which, based on a peak-to-peak broadband noise factor of 50 μ V, results in a resolution of .001 psi.

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Defined for practical purposes as the minimum readout signal, the resolution is based on the sensitivity of 50 mV/psi and a low noise amplifier of 50 μ V peak noise.

Thus, $50 \mu\text{V}/50\text{mV} = .001$ psi resolution

The output bias voltage of the Model 112A23 is 5.0 volts, half the bias voltage of most PCB pressure sensors. This will cause the bias monitor meter on PCB power supplies to read at the low end of the green band.

5.0 POLARITY

This sensor series produces a positive-going output voltage for increasing pressure input.

6.0 LOW FREQUENCY RESPONSE

The low frequency response of an ICP® system is determined by:

1. The discharge time constant of the sensor, and,
2. If AC-coupled at power unit, the coupling time constant.

Consult Section 7.0 in Guide G-0001B for detailed explanation of low frequency characteristics of ICP® instruments.

7.0 CALIBRATION

Piezoelectric sensors are dynamic devices, but static calibration methods may be employed if discharge time constants are sufficiently long. Generally, static methods are not employed below several hundred seconds discharge time constant.

To employ static methods, directly couple the sensor to the DVM readout using a T-connector from the XD4R jack or use the Model 484B in the "calibrate" mode. Apply pressure with dead weight tester and take readings quickly. Release pressure after each calibration point.

For the shorter discharge time constant series, a rapid pressure step must be generated by a pneumatic pressure pulse calibrator or dead weight tester and readout is by recorder or storage oscilloscope.

PCB offers a complete recalibration service. Consult factory for details.

**OPERATION MANUAL FOR
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8.0 MAINTENANCE

The miniature size sealed construction precludes field maintenance. Should service be required, return unit to factory with note describing problem.

®ICP is a registered trademark of PCB Piezotronics

Model Number

102M206

ICP® PRESSURE SENSOR

Revision: K

ECN #: 31847

Performance	ENGLISH	SI	
Measurement Range(for ±5V output)	50 psi	344.8 kPa	
Sensitivity(± 15 %)	100 mV/psi	14.503 mV/kPa	
Maximum Pressure	4 kpsi	27,580 kPa	[8]
Resolution	1 mpsi	0.0069 kPa	[9]
Resonant Frequency	≥ 250 kHz	≥ 250 kHz	
Rise Time(Reflected)	≤ 2 μ sec	≤ 2 μ sec	
Low Frequency Response(-5 %)	0.5 Hz	0.5 Hz	
Non-Linearity	≤ 1.0 % FS	≤ 1.0 % FS	[10]
Environmental			
Acceleration Sensitivity	<0.002 psi/g	<0.0014 kPa/(m/s ²)	
Temperature Range(Operating)	-65 to +250 °F	-54 to +121 °C	
Temperature Coefficient of Sensitivity	≤ 0.10 %/°F	≤ 0.18 %/°C	
Maximum Flash Temperature	3000 °F	1649 °C	
Maximum Shock	20,000 g pk	196,133 m/s ² pk	
Hazardous Area Approval	ATEX CSA (C-US) NRTL - Canadian Standards Association	ATEX CSA (C-US) NRTL - Canadian Standards Association	[1][2][3] [4][5][6][7]
Electrical			
Output Polarity(Positive Pressure)	Positive	Positive	
Discharge Time Constant(at room temp)	≥ 1.0 sec	≥ 1.0 sec	
Excitation Voltage	20 to 28 VDC	20 to 28 VDC	
Constant Current Excitation	2 to 20 mA	2 to 20 mA	
Output Impedance	<100 ohm	<100 ohm	
Output Bias Voltage	8 to 14 VDC	8 to 14 VDC	
Electrical Isolation	10 ⁸ ohm	10 ⁸ ohm	
Physical			
Sensing Geometry	Compression	Compression	
Sensing Element	Quartz	Quartz	
Housing Material	Stainless Steel	Stainless Steel	
Diaphragm	316L Stainless Steel	316L Stainless Steel	[11]
Sealing	Welded Hermetic	Welded Hermetic	
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	
Weight	0.6 oz	17.0 gm	

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] Ex ia IIC T4.
 [2] Ex nL IIC T4.
 [3] Ex nA IIC T4.
 [4] AEx ia IIC T4, DIV1 CL1 GR A-D
 [5] Ex ia IIC T4, DIV1 CL1 GR A-D
 [6] AEx nA IIC T4, DIV2 CL1 GR A-D
 [7] Ex nL IIC T4, DIV2 CL1 GR A-D
 [8] Due to high sensitivity, the static pressure should be applied and removed very slowly. Rate should prevent more than 10 Volt change in output until Output Bias Voltage returns to normal (approximately 15 times discharge time constant).
 [9] Typical.
 [10] Zero-based, least-squares, straight line method.
 [11] Diaphragm with ablative coating.
 [12] See PCB Declaration of Conformance PS059 for details.



[12]



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.

Entered: LH Engineer: BAV Sales: RWM Approved: APB Spec Number:

Date: 1-25-09 Date: 1-14-09 Date: 1-18-09 Date: 1-18-09 4739

PCB PIEZOTRONICS™
 PRESSURE DIVISION
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 Fax: 716-686-9129
 E-Mail: pressure@pcb.com

Model Number

102M206

ICP® PRESSURE SENSOR

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ECN #: 31847

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Output Polarity(Positive Pressure)	Positive	Positive	
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Sensing Element	Quartz	Quartz	
Housing Material	Stainless Steel	Stainless Steel	
Diaphragm	316L Stainless Steel	316L Stainless Steel	[11]
Sealing	Welded Hermetic	Welded Hermetic	
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	
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PRESSURE DIVISION
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ATEX Approved Sensors
Pressure Sensors
(Models 1xxAyyy, 1xxByyy, and 1xxMyyy)

English

This sensor has been approved for Hazardous Locations Directive 94/9/EC, Ex ia IIC T4 and Ex nL IIC T4 and Ex nA IIC T4.

For safe use:

- All applicable local electrical laws must be followed
- The supply electrical parameters must not exceed any of the following values:
 - o $U_o \leq 30V$, $I_o \leq 200mA$, $P_o \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Ambient operating temperature range:
 - o $-54^\circ C$ to $+121^\circ C$
- For Ex ia IIC T4 installations, the apparatus must only be connected to a certified associated intrinsically safe equipment and this combination must be compatible as regards intrinsic safety rules.

Deutsch

Dieser ist genehmigt worden für Gefährliche Orte Direktive 94/9/EC, Ex ia IIC T4 und Ex nL IIC T4 und Ex nA IIC T4.

Für sicheren Gebrauch:

- Alle zutreffenden örtlichen elektrischen Gesetze müssen gefolgt werden
- Die Versorgung elektrische Parameter müssen kein von den Folgenden Werten überschreiten:
 - o $U_o \leq 30V$, $I_o \leq 200mA$, $P_o \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Umgebungsbedienungstemperaturbereich:
 - o $-54^\circ C$ to $+121^\circ C$
- Für Ex ia IIC T4 Installationen muss der Apparat nur zu einen bescheinigten verbundenen inner sicheren Ausrüstungen verbunden werden und diese Kombination muss vereinbar sein, während innere Sicherheitsregeln betrachtet.

Français

Ce détecteur a été approuvé pour les Emplacements Hasardeux Directif 94/9/EC, Ex ia IIC T4 et Ex nL IIC T4 et Ex nA IIC T4.

Pour l'usage sûr :

- Toutes lois électriques, locales et applicables doivent être suivies
- La provision les paramètres électriques ne doivent pas dépasser n'importe quel des valeurs suivantes :
 - o $U_o \leq 30V$, $I_o \leq 200mA$, $P_o \leq 1W$, $C \leq 5nF$, $L \approx 0$
- La gamme de température d'opération Ambiante :
 - o $-54^\circ C$ to $+121^\circ C$
- Pour les installations de Ex ia IIC T4, l'appareil doit être seulement connecté à un équipement intrinsèquement sûr, associé et certifié et cette combinaison doit être compatible comme considère des mesures de sécurité intrinsèques.

Italiano

Questo sensore è stato approvato per le Posizioni Pericolose Direttivo 94/9/EC, Ex ia IIC T4 ed Ex nL IIC T4 ed Ex nA IIC T4.

Per l'uso sicuro:

- Tutte le leggi applicabili, locali elettriche devono essere seguite
- La provvista i parametri elettrici non devono eccedere qualunque dei valori seguenti: seguenti:
 - o $U_o \leq 30V$, $I_o \leq 200mA$, $P_o \leq 1W$, $C \leq 5nF$, $L \approx 0$
- la gamma di temperatura di funzionamento di Ambiente:
 - o $-54^\circ C$ to $+121^\circ C$
- Per le installazioni di Ex ia IIC T4, il dispositivo deve essere soltanto collegato a un'apparecchiatura certificata, associata intrinsecamente sicura e questa combinazione deve essere compatibile considera come le regole di sicurezza intrinseche.

Español

Este sensor se ha aprobado para Ubicaciones Peligrosas Directivas 94/9/EC, Ex ia IIC T4 y Ex nL IIC T4 y Ex nA IIC T4.

Para el uso seguro:

- Todas leyes eléctricas, locales y aplicables se deben seguir
- El suministro los parámetros eléctricos no deben exceder cualquiera de los siguientes valores:
 - o $U_o \leq 30V$, $I_o \leq 200mA$, $P_o \leq 1W$, $C \leq 5nF$, $L \approx 0$
- El Ambiente que opera la gama de la temperatura:
 - o $-54^\circ C$ to $+121^\circ C$
- Para instalaciones de Ex ia IIC T4, el aparato sólo debe ser conectado a un equipo intrinsecamente seguro, asociado y certificado y esta combinación debe ser compatible considera como las reglas intrínsecas de la seguridad.

Drawing Number: 31663
Revision: C
Ecn Number: 28707

Русский

Этот датчик был одобрен для Опасной Директивы 94/9/EC Местоположений, Ex ia IIC T4 и Ex nL IIC T4 и Ex nA IIC T4.

Для безопасного использования:

- Все применимые местные электрические законы должны сопровождаться
- Поставка электрические параметры не должна превысить ни одной из следующих ценностей:
 - o $U_0 \leq 30V$, $I_0 \leq 200mA$, $P_0 \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Окружающий операционный температурный диапазон:
 - o $-54^{\circ}C$ to $+121^{\circ}C$
- Поскольку Ex ia IIC T4 сооружения, аппарат должен только быть связан с гарантированным связанным свойственно безопасным оборудованием, и эта комбинация должна быть совместимой, что касается свойственных правил безопасности.

Norsk

Denne sensoren godkjenner for Farlige Plasseringer Direktiv 94/9/EC, Ex ia IIC T4 og Ex nL IIC T4 og Ex nA IIC T4.

For sikker bruk:

- Alle anvendelige lokale elektriske lover fulgt
- Forsyningen elektriske parametre må ikke overskride noe av de følgende verdiene:
 - o $U_0 \leq 30V$, $I_0 \leq 200mA$, $P_0 \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Omgivende betjeningsav temperaturrekkevidde:
 - o $-54^{\circ}C$ to $+121^{\circ}C$
- For Ex ia IIC T4 installasjoner, apparatet bare bli koplet til et sertifisert tilknyttet indre sikkert utstyr og denne kombinasjonen må være forenelig med hensyn til indre sikkerhetsregel.

Nederlands

Deze sensor is voor Gevaarlijke Locaties Leidinggevende 94/9/EC, Ex ia IIC T4 en Ex nL IIC T4 en Ex nA IIC T4 goedgekeurd worden.

Voor veilige gebruik:

- Alle toepasbare plaatselijke elektrische wetten moeten gevolgd worden
- De aanbod elektrische parameters moeten de volgende waarde niet overschrijden:
 - o $U_0 \leq 30V$, $I_0 \leq 200mA$, $P_0 \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Het omgevend bediening temperatuur bereik:
 - o $-54^{\circ}C$ to $+121^{\circ}C$
- Voor Ex ia IIC T4 installaties, moet het apparaat enkel aan een gecertificeerde geassocieerde intrinsiek veilige uitrusting worden aangesloten en deze combinatie moet compatibel zijn als intrinsieke veiligheidsregels beschouwt.

Português

Este sensor foi aprovado para a Diretiva 94/9/EC de Posições Arriscada, Ex ia IIC T4 e Ex nL IIC T4 e Ex nA IIC T4.

Para uso seguro:

- Todas as leis elétricas locais aplicáveis devem ser seguidas
- O estoque parâmetros elétricos não devem exceder qualquer dos seguintes valores:
 - o $U_0 \leq 30V$, $I_0 \leq 200mA$, $P_0 \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Variedade de temperatura operacional ambiente:
 - o $-54^{\circ}C$ to $+121^{\circ}C$
- Para instalações Ex ia IIC T4, o aparelho só deve ser ligado a um associado equipamento seguro certificado, intrinsecamente e esta combinação deve ser compatível como considera regras intrínsecas de segurança.

Svensk

Den här sensoren er blitt gillat för Riskabel Lokaliseringarna Direktiv 94/9/ EC Ex ia IIC T4 och Ex nL IIC T4 och Ex nA IIC T4.

För kassaskåp använda :

- All användbar lokal elektrisk lag måste bli följde efter
- Tillförselen som elektriska parametar inte måste överskrida några av värderar efter:
 - o $U_0 \leq 30V$, $I_0 \leq 200mA$, $P_0 \leq 1W$, $C \leq 5nF$, $L \approx 0$
- Omgivande opera- temperatur ställa i rad :
 - o $-54^{\circ}C$ to $+121^{\circ}C$
- För installationer Ex ia IIC T4 måste apparaturen endast förbindas till en tillhörande i sitt innersta väsen kassaskåputrustning för auktoriserad revisor, och denna kombination måste vara kompatibel, som hälsningar inneboende säkerhet härskar.

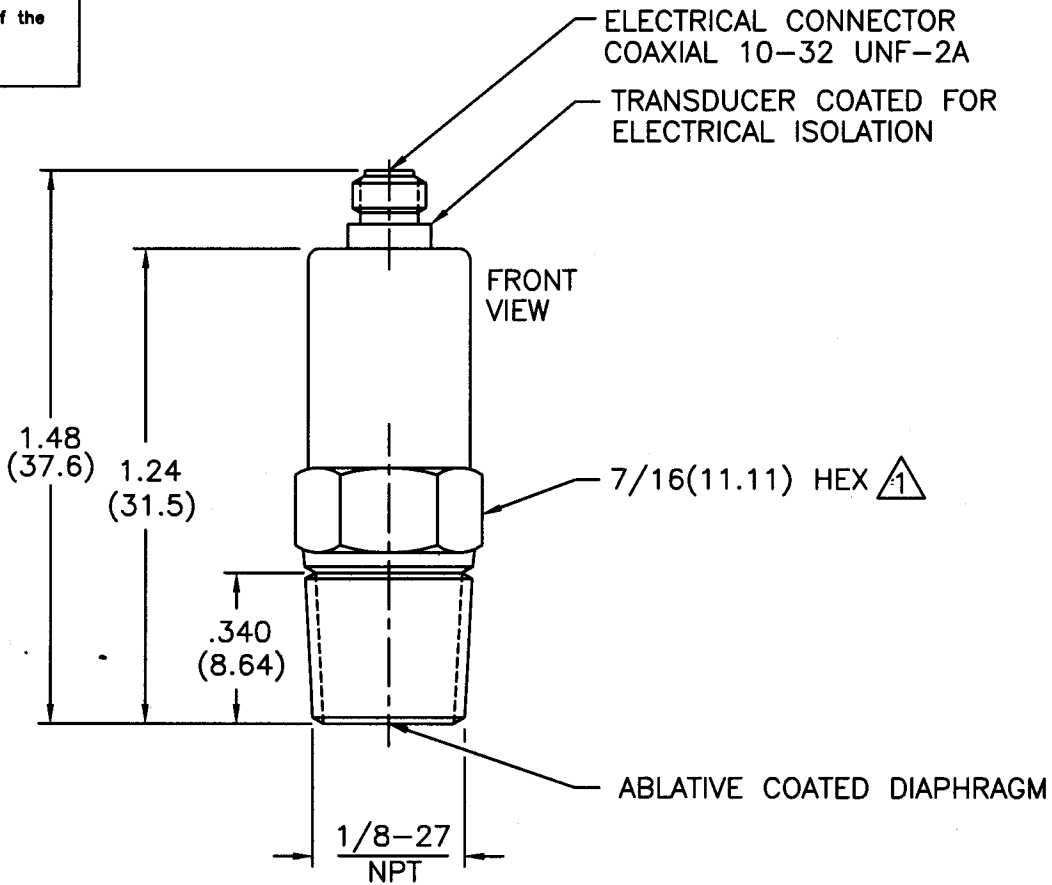
Drawing Number: 31663

Revision: C

Ecn Number: 28707

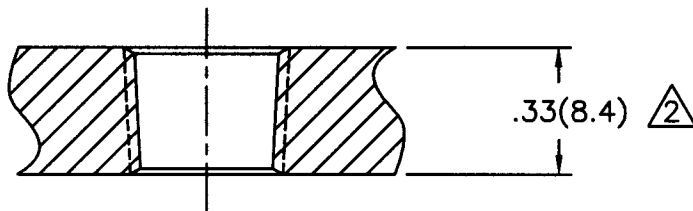
4741	APPLICATION			REVISIONS				
	NEXT ASS'Y	USED ON	VAR	REV	DESCRIPTION	ECN	DATE	APP'D
				E	REVISED PER ECR	17898	7/8/03	DM1/5

Related Drawing
No modifications permitted without the approval of the authorized person



MOUNTING HOLE PREPARATION:

DRILL $\phi .343(\phi 8.71)$
THRU
TAP 1/8-27 NPT
THRU



- $\triangle 2$ ABOVE INSTALLATION IS FOR WALL THICKNESS OF .33(8.4). \square $\phi .750(\phi 19.05)$ FOR THICKER WALLS TO CLEAR 7/16(11.11) HEX SOCKET WRENCH.
- $\triangle 1$ RECOMMENDED MOUNTING TORQUE ON 7/16(11.11) HEX 5 FOOT POUNDS (7 NEWTON METERS).

UNLESS SPECIFIED TOLERANCES		DRAWN	ECB	7/8/03	MFG	PZL	7/25/03	 3425 WALDEN AVE. DEPEW, NY 14043 (716) 684-0001 EMAIL: SALES@PCB.COM	
DIMENSIONS IN INCHES	DIMENSIONS IN MILLIMETERS [IN BRACKETS]	CHK'D	esm	7/25/03	ENGR	RF	7/24/03		
DECIMALS XX $\pm .01$ XXX $\pm .005$	DECIMALS X ± 0.3 XX ± 0.13	APP'D	DM1/5	7/25/03	SALES	Jmm	7/25/03		
ANGLES ± 2 DEGREES	ANGLES ± 2 DEGREES	TITLE					INSTALLATION DRAWING MODEL 102M206 PRESSURE SENSOR	CODE IDENT. NO. 52681	DWG. NO. 4741
FILLETS AND RADII .003 - .005	FILLETS AND RADII [0.07 - .013]	DD011 REV. C 01/21/03					SCALE: 2X	SHEET 1 OF 1	



LCIE

1 ATTESTATION D'EXAMEN DE TYPE

- 2 **Appareil ou système de protection destiné à être utilisé en atmosphères explosibles (Directive 94/9/CE)**
- 3 **Numéro de l'attestation d'examen de type
LCIE 06 ATEX 6103 X**
- 4 **Appareil ou système de protection :**
Transmetteur de pression
Type : 1xxAyyy, 1xxByyy, 1xxMyyy
- 5 **Demandeur :** PCB Piezotronics Inc.
Adresse : 3425 Walden avenue
Depew, New York 14043
USA
- 7 **Cet appareil ou système de protection et ses variantes éventuelles acceptées sont décrits dans l'annexe de la présente attestation et dans les documents descriptifs cités en référence.**
- 8 **Le LCIE certifie que cet appareil ou système de protection est conforme aux exigences essentielles de sécurité et de santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994.**

Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 60051173/551969.
- 9 **Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :**
 - EN 60079-0 (2004)
 - EN 60079-15 (2005)
- 10 **Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que cet appareil ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.**
- 11 **Cette attestation d'examen de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à l'annexe III de la directive 94/9/CE.**
Des exigences supplémentaires de la directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection. Ces dernières ne sont pas couvertes par la présente attestation.
- 12 **Le marquage de l'appareil ou du système de protection doit comporter les informations détaillées au point 15.**

1 TYPE EXAMINATION CERTIFICATE

- 2 **Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)**
- 3 **Type Examination Certificate number
LCIE 06 ATEX 6103 X**
- 4 **Equipment or protective system :**
Pressure transmitter
Type : 1xxAyyy, 1xxByyy, 1xxMyyy
- 5 **applicant :** PCB Piezotronics Inc.
Address : 3425 Walden avenue
Depew, New York 14043
USA
- 7 **This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.**
- 8 **LCIE certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II of the Directive 94/9/EC of the European Parliament and Council of 23 March 1994.**

The examination and test results are recorded in confidential report N° 60051173/551969.
- 9 **Compliance with the Essential Health and Safety Requirements has been assured by compliance with :**
 - EN 60079-0 (2004)
 - EN 60079-15 (2005)
- 10 **If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.**
- 11 **This type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with annex III to the directive 94/9/EC.**

Further requirements of the Directive apply to the manufacture and supply of this equipment or protective system. These are not covered by this certificate.
- 12 **The marking of the equipment or protective system shall include Informations as detailed at 15.**

Fontenay-aux-Roses, le 13 novembre 2006



Marc GILLAUX

Le responsable de certification ATEX
ATEX certification manager

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LCIE 33, av du Général Leclerc
Laboratoire Central BP 8
des Industries Electriques 92206 Fontenay-aux-Roses cedex
Une société de Bureau Veritas France

Tél : +33 1 40 95 60 60 Société Anonyme
Fax : +33 1 40 95 86 56 au capital de 15 745 964 €
contact@lcie.fr RCS Nanterre B 408 363 174
www.lcie.fr

Page 1 sur 2
03-Anneze III_typ_app - rev0.DOC

36115-C
ECO#: 34407



L C I E



13 ANNEXE

14 ATTESTATION D'EXAMEN DE TYPE

LCIE 06 ATEX 6103 X

15 DESCRIPTION DE L'APPAREIL OU DU SYSTEME DE PROTECTION

Transmetteur de pression
Type : 1xxAyyy, 1xxByyy, 1xxMyyy

Ce matériel est composé d'un ensemble piézoélectrique, d'un amplificateur de charge et d'un connecteur. L'ensemble est monté dans une enveloppe métallique.

Paramètres spécifiques du ou des modes de protection concernés :

$U \leq 30 \text{ V}$, $I \leq 200 \text{ mA}$, $P \leq 1 \text{ W}$, $C \leq 5 \text{ nF}$, $L \approx 0$

Le marquage doit être :

PCB Piezotronics Inc.
Adresse : ...
Type : 1xxAyyy, 1xxByyy ou 1xxMyyy
N° de fabrication : ...
Année de fabrication : ...
 II 3 G
Ex nA IIC T4
LCIE 06 ATEX 6103 X
Tamb. : - 54°C à + 121°C

L'appareil doit également comporter le marquage normalement prévu par les normes de construction qui le concerne.

16 DOCUMENTS DESCRIPTIFS

Dossier de certification N° 35706 du 16/10/2006.
Ce document comprend 22 rubriques (25 pages).

17 CONDITIONS SPECIALES POUR UNE UTILISATION SÛRE

Les paramètres électriques d'alimentation ne doivent pas excéder les valeurs mentionnées au paragraphe 15.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Couvertes par les normes listées au point 9.

19 VERIFICATIONS ET ESSAIS INDIVIDUELS

Néant.

13 SCHEDULE

14 TYPE EXAMINATION CERTIFICATE

LCIE 06 ATEX 6103 X

15 DESCRIPTION OF EQUIPMENT OR PROTECTIVE SYSTEM

Pressure transmitter
Type : 1xxAyyy, 1xxByyy, 1xxMyyy

This apparatus is made of a piezo-crystal assembly, a charge amplifier and a connector. The assembly is mounted inside a metallic enclosure.

Specific parameters of the mode(s) of protection concerned :

$U \leq 30 \text{ V}$, $I \leq 200 \text{ mA}$, $P \leq 1 \text{ W}$, $C \leq 5 \text{ nF}$, $L \approx 0$

The marking shall be :

PCB Piezotronics Inc.
Address : ...
Type : 1xxAyyy, 1xxByyy or 1xxMyyy
Serial number : ...
Year of manufacturing : ...
 II 3 G
Ex nA IIC T4
LCIE 06 ATEX 6103 X
Tamb. : - 54°C to + 121°C

The equipment shall also bear the usual marking required by the manufacturing standards applying to such equipment.

16 DESCRIPTIVE DOCUMENTS

Certification file N° 35706 dated 16/10/2006.
This file includes 22 items (25 pages).

17 SPECIAL CONDITIONS FOR SAFE USE

The supply electrical parameters shall not exceed the values mentioned in paragraph 15.

18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

Covered by standards listed at 9.

19 ROUTINE VERIFICATIONS AND TESTS

None.



EC Declaration of Conformity PS 059
In Accordance with ISO/IEC 17050

Manufacturer: PCB Piezotronics, Inc. 3425 Walden Avenue Depew, New York 14043 USA	Authorized European Representative: PCB Piezotronics Europe GmbH PO Box 1148 D-52473 Linnich, Germany
--	--

Certifies that type of equipment: Pressure Transmitter(s)

Whose Product Models Include: 1xxAyy, 1xxByy, 1xxMyy Series

Note: "xx," is a place holder for two numbers.
"yy," is a place holder for two numbers.
For example:

These letters and numbers are included in the model numbers of the series. For details see the related data sheets.

This declaration is applicable to all Pressure Transmitter(s) of the above series which have the CE & (EX) ATEX mark on their data sheets and where those data sheets refer to this declaration of conformity. The data sheets for all model numbers referenced above, which include the CE & (EX) ATEX mark on such data sheets and refer to this Declaration of Conformity are hereby incorporated by reference into this Declaration.

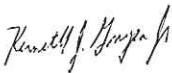
Conform to the following EC Directive(s) when installed per product documentation:	2004/108/EC 94/9/EC	EMC directive ATEX
--	------------------------	-----------------------

Standards to which Conformity is Declared:

Harmonized Standards	EN61326-1:2006 EN61326-2-3: 2006 EN61010-1:2001 EN60079-0 (2006) EN60079-11 (2007)	Electrical Equipment for Measurement, Control and Laboratory Use- EMC Electrical Equipment for Measurement, Control and Laboratory Use- EMC Safety Standard General Explosive Atmosphere Intrinsic safe, I
Emissions Test Standards	EN 55011 (2007)	Industrial, scientific and medical(ISM) radio frequency equipment Electromagnetic disturbance characteristics- Limits and methods of Measurement Class B
Immunity Test Standards	EN 61000-4-2:2001 EN 61000-4-3:2006 EN 61000-4-4:2004 EN 61000-4-5:2005 EN 61000-4-6:2006 EN 61000-4-8:2001	Electrostatic discharge (ESD) Radiated, radio-frequency, electromagnetic field immunity Electrical fast transient (EFT) / Burst immunity Surge immunity Immunity to RF conducted line disturbances Power frequency magnetic field immunity
Test Reports	EMC Reports Safety Reports	GM29034c GM29035s
	ATEX Cert	LCIE 03 ATEX 6279 X/03 Ex ia IIC T4, II 1G
Notified Body Name		Laboratoire Central des Industries Electriques (0081)
Notified Body's Address		FONTENAY-AUX-ROSES (Head Office) 33, avenue du Général Leclerc FR- 92260 Fontenay-aux-Roses Tel. : + 33 1 40 95 60 60 Fax : + 33 1 40 95 86 56

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) Standard(s)

Place: Depew, NY Date: 07/07/2010

Signature: 
 Name: Kenneth J. Gonyea Jr.
 Title: V.P. Manufacturing



LCIE

1 ATTESTATION D'EXAMEN DE TYPE

2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles Directive 94/9/CE

3 Numéro de l'attestation d'examen de type LCIE 05 ATEX 6111 X

4 Appareil ou système de protection : Transmetteur de pression Type : 1xxAyyy, 1xxByyy ou 1xxMyyy

5 Demandeur : PCB Piezotronics Inc.

6 Adresse : 3425 Walden Avenue Depew, New York 14043 USA

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.

8 Le LCIE certifie que cet appareil est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils de catégorie 3 destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans notre rapport confidentiel N° 60037418-537028.

9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité au document suivant : -EN 50021 (1999).

10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à la directive 94/9/CE. Des exigences supplémentaires de cette directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection.

12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :

II 3 G EEx nL IIC T4

Fontenay-aux-Roses, le 31 août 2005

1 TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC

3 Type Examination Certificate number LCIE 05 ATEX 6111 X

4 Equipment or protective system : Pressure transmitter Type : 1xxAyyy, 1xxByyy or 1xxMyyy

5 Applicant : PCB Piezotronics Inc.

6 Address : 3425 Walden Avenue Depew, New York 14043 USA

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 LCIE certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to the directive. The examination and test results are recorded in confidential report No. 60037418-537028.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with : -EN 50021 (1999).

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This Type Examination Certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive applies to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following :

II 3 G EEx nL IIC T4

Le Directeur de l'organisme certificateur Manager of the certification body

[Signature]

Timbre sec / Dry seal

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LCIE Laboratoire Central des Industries Electriques Une société de Bureau Veritas

33, av du Général Leclerc BP 8 92256 Fontenay-aux-Roses cedex France

Tél : +33 1 40 95 60 60 Fax : +33 1 40 95 86 56 contact@lcie.fr www.lcie.fr Société Anonyme au capital de 15 745 984 € RCS Nanterre B 408 363 174



L C I E

(A1) ANNEXE

(A1) SCHEDULE

(A2) ATTESTATION D'EXAMEN DE TYPE

(A2) TYPE EXAMINATION CERTIFICATE

LCIE 05 ATEX 6111 X

LCIE 05 ATEX 6111 X

(A3) Description de l'équipement ou du système de protection :

(A3) Description of Equipment or Protective System :

Transmetteur de pression
Type : 1xxAyyy, 1xxByyy ou 1xxMyyy

Pressure transmitter
Type : 1xxAyyy, 1xxByyy or 1xxMyyy

Ce matériel est composé d'un ensemble piézoélectrique, d'un amplificateur de charge et d'un connecteur. L'ensemble est monté dans une enveloppe métallique.

This apparatus is made of a piezo-crystal assembly, a charge amplifier and a connector. The assembly is mounted inside a metallic enclosure.

Le marquage est le suivant :

Marking is as follow :

PCB Piezotronics Inc.
Adresse : ...
Type : 1xxAyyy, 1xxByyy ou 1xxMyyy
N° de fabrication : ...
Année de fabrication : ...
II 3 G
EEx nL IIC T4
LCIE 05 ATEX 6111 X
Tamb. : - 54°C à + 121°C

PCB Piezotronics Inc.
Address : ...
Type : 1xxAyyy, 1xxByyy or 1xxMyyy
Serial number : ...
Year of manufacturing : ...
II 3 G
EEx nL IIC T4
LCIE 05 ATEX 6111 X
Tamb. : - 54°C to + 121°C

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné.

The equipment must also bear the usual marking required by the manufacturing standards applying to such equipments.

Paramètres spécifiques du ou des modes de protection concerné(s) :

Specific parameters of the concerned protective mode(s) :

$U \leq 30 \text{ V}$ $C \leq 5 \text{ nF}$
 $I \leq 200 \text{ mA}$ $L \approx 0$
 $P \leq 1 \text{ W}$

$U \leq 30 \text{ V}$ $C \leq 5 \text{ nF}$
 $I \leq 200 \text{ mA}$ $L \approx 0$
 $P \leq 1 \text{ W}$

(A4) Documents descriptifs :

(A4) Descriptive documents :

Dossier technique N°30362 Rév. NC du 4 mai 2005.
Ce document comporte 22 rubriques (25 pages).

Technical file No. 30362 Rev. NC dated May 4th, 2005.
This file includes 22 items (25 pages).

(A5) Conditions spéciales pour une utilisation sûre :

(A5) Special conditions for safe use :

Les paramètres électriques d'alimentation ne doivent pas excéder les valeurs mentionnées au paragraphe (A3).

The supply electrical parameters shall not exceed the values mentioned in paragraph (A3).

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé :

(A6) Essential Health and Safety Requirements :

Conformité à la norme européenne EN 50021 (1999).

Conformity to the European standard EN 50021 (1999).

Vérifications et épreuves individuelles :

Individual examinations and tests :

Néant.

Néant.



LCIE

1 AVENANT D'ATTESTATION D'EXAMEN CE DE TYPE

2 Appareil ou système de protection destiné à être utilisé en atmosphères explosibles (Directive 94/9/CE)

3 Numéro de l'avenant :

LCIE 05 ATEX 6111 X / 01

4 Appareil ou système de protection :

Transmetteur de pression

Type : 1xxAyyy, 1xxByyy, 1xxMyyy

5 Demandeur : PCB PIEZOTRONICS Inc.

15 DESCRIPTION DE L'AVENANT

- Certification suivant les normes EN 60079-0 (2004) et EN 60079-15 (2005)
- Mise à jour des schémas.

Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 60051509/552320.

Paramètres spécifiques du ou des modes de protection concerné(s) :

Inchangés.

Le marquage doit être :

Modifié comme suit : Ex nL IIC T4

16 DOCUMENTS DESCRIPTIFS

Dossier de certification N° 30362 rev.A du 19/09/2006. Ce dossier comprend 22 rubriques (25 pages).

17 CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Inchangées.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Modifiées comme suit :

Conformité aux normes Européennes EN 60079-0 (2004) et EN 60079-15 (2005).

19 VERIFICATIONS ET ESSAIS INDIVIDUELS

Inchangées.

Fontenay-aux-Roses, le 13 novembre 2006

1 SUPPLEMENTARY EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)

3 Supplementary certificate number :

LCIE 05 ATEX 6111 X / 01

4 Equipment or protective system :

Pressure transmitter

Type : 1xxAyyy, 1xxByyy, 1xxMyyy

5 Applicant : PCB PIEZOTRONICS Inc

15 DESCRIPTION OF THE SUPPLEMENTARY CERTIFICATE

- Certification following the EN 60079-0 (2004) and EN 60079-15 (2005) standards.
- Update drawings.

The examination and test results are recorded in confidential report N° 60051509/552320.

Specific parameters of the mode(s) of protection concerned:

Unchanged.

The marking shall be :

Modified as follows : Ex nL IIC T4

16 DESCRIPTIVE DOCUMENTS

Certification file N° 30362 rev.A dated 19/09/2006. This file includes 22 items (25 pages).

17 SPECIAL CONDITIONS FOR SAFE USE

Unchanged.

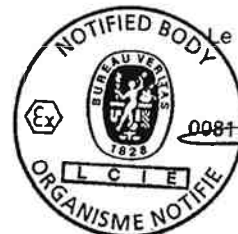
18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

Modified as follows :

Conformity to the European standards EN 60079-0 (2004) and EN 60079-15 (2005).

19 ROUTINE VERIFICATIONS AND TESTS

Unchanged.



Le responsable de certification ATEX
ATEX certification manager

Marc BILLAUX

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Page 1 sur 1
01A-Annexe III_CE_typ_app_av - rev1.DOC

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des Industries Electriques
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Fax : +33 1 40 95 86 56
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www.lcie.fr

Société Anonyme
au capital de 15 745 984 €
RCS Nanterre B 408 363 174



EC Declaration of Conformity PS 059
In Accordance with ISO/IEC 17050

Manufacturer: PCB Piezotronics, Inc. 3425 Walden Avenue Depew, New York 14043 USA	Authorized European Representative: PCB Piezotronics Europe GmbH PO Box 1148 D-52473 Linnich, Germany
--	--

Certifies that type of equipment: Pressure Transmitter(s)

Whose Product Models Include: 1xxAyy, 1xxByy, 1xxMyy Series

Note: "xx," is a place holder for two numbers.
"yy," is a place holder for two numbers.
For example:

These letters and numbers are included in the model numbers of the series. For details see the related data sheets.

This declaration is applicable to all Pressure Transmitter(s) of the above series which have the CE & (EX) ATEX mark on their data sheets and where those data sheets refer to this declaration of conformity. The data sheets for all model numbers referenced above, which include the CE & (EX) ATEX mark on such data sheets and refer to this Declaration of Conformity are hereby incorporated by reference into this Declaration.

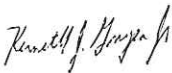
Conform to the following EC Directive(s) when installed per product documentation:	2004/108/EC 94/9/EC	EMC directive ATEX
--	------------------------	-----------------------

Standards to which Conformity is Declared:

Harmonized Standards	EN61326-1:2006 EN61326-2-3: 2006 EN61010-1:2001 EN60079-0 (2006) EN60079-11 (2007)	Electrical Equipment for Measurement, Control and Laboratory Use- EMC Electrical Equipment for Measurement, Control and Laboratory Use- EMC Safety Standard General Explosive Atmosphere Intrinsic safe, I
Emissions Test Standards	EN 55011 (2007)	Industrial, scientific and medical(ISM) radio frequency equipment Electromagnetic disturbance characteristics- Limits and methods of Measurement Class B
Immunity Test Standards	EN 61000-4-2:2001 EN 61000-4-3:2006 EN 61000-4-4:2004 EN 61000-4-5:2005 EN 61000-4-6:2006 EN 61000-4-8:2001	Electrostatic discharge (ESD) Radiated, radio-frequency, electromagnetic field immunity Electrical fast transient (EFT) / Burst immunity Surge immunity Immunity to RF conducted line disturbances Power frequency magnetic field immunity
Test Reports	EMC Reports Safety Reports	GM29034c GM29035s
	ATEX Cert	LCIE 03 ATEX 6279 X/03 Ex ia IIC T4, II 1G
Notified Body Name		Laboratoire Central des Industries Electriques (0081)
Notified Body's Address		FONTENAY-AUX-ROSES (Head Office) 33, avenue du Général Leclerc FR- 92260 Fontenay-aux-Roses Tel. : + 33 1 40 95 60 60 Fax : + 33 1 40 95 86 56

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) Standard(s)

Place: Depew, NY Date: 07/07/2010

Signature: 
 Name: Kenneth J. Gonyea Jr.
 Title: V.P. Manufacturing



LCIE

1 ATTESTATION D'EXAMEN CE DE TYPE

2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles Directive 94/9/CE

3 Numéro de l'attestation d'examen CE de type LCIE 03 ATEX 6279 X

4 Appareil ou système de protection : Transmetteur de pression Type : 102Mbox

5 Demandeur : PCB PIEZOTRONICS Inc.

6 Adresse : 3425 Walden Avenue Depew, New York 14043 U.S.A.

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.

8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans nos rapports confidentiels N° 41086010.

9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité aux documents suivants : -EN 50014 (1997) + amendements 1 et 2, -EN 50020 (2002).

10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à la directive 94/9/CE. Des exigences supplémentaires de cette directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection.

12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :

II 1 G EEx ia IIC T4

Fontenay-aux-Roses, le 22 juillet 2003

1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC

3 EC type Examination Certificate number LCIE 03 ATEX 6279 X

4 Equipment or protective system : Pressure transmitter Type : 102Mbox

5 Applicant : PCB PIEZOTRONICS Inc.

6 Address : 3425 Walden Avenue Depew, New York 14043 U.S.A.

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article 9 of the Directive 94/9/EC of the European Parliament and Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in confidential reports No. 41086010.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with : -EN 50014 (1997) + amendments 1 and 2, -EN 50020 (2002).

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC Type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive applies to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following :

II 1 G EEx ia IIC T4

Le Directeur de l'organisme certificateur Manager of the certification body

Handwritten signature and stamp: Timbre sec / Dry seal

de

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Page 1/3

LCIE Laboratoire Central des Industries Electriques Une société de Bureau Veritas 33, av du Général Leclerc BP 8 92266 Fontenay-aux-Roses cedex France

Tél : +33 1 40 95 60 60 Fax : +33 1 40 95 86 56 contact@lcie.fr www.lcie.fr Société anonyme à directoire et conseil de surveillance au capital de 15 745 984 € RCS Nanterre B 408 363 179

23497-F ECO#: 34407



(A1) ANNEXE

(A1) SCHEDULE

(A2) ATTESTATION D'EXAMEN CE DE TYPE

(A2) EC TYPE EXAMINATION CERTIFICATE

LCIE 03 ATEX 6279 X

LCIE 03 ATEX 6279 X

(A3) Description de l'équipement ou du système de protection :

(A3) Description of Equipment or Protective System :

Transmetteur de pression
Type : 102Mxxx

Pressure transmitter
Type : 102Mxxx

Ce matériel est composé d'un ensemble piézoélectrique, d'un amplificateur de charge et d'un connecteur.
L'ensemble est monté dans une enveloppe métallique.

This apparatus is made of a piezo-crystal assembly, a charge amplifier and a connector.
The assembly is mounted inside a metallic enclosure.

Le marquage est le suivant :

Marking is as follow :

PCB
Adresse : ...
Type : 102Mxxx (1)
N° de fabrication : ...
Année de fabrication : ...
⊕ II 1 G
EEx ia IIC T4
LCIE 03 ATEX 6279 X
T.amb. : -54°C à +121°C

PCB
Address : ...
Type : 102Mxxx (1)
Serial number : ...
Year of manufacturing : ...
⊕ II 1 G
EEx ia IIC T4
LCIE 03 ATEX 6279 X
T.amb. : -54°C to +121°C

(1) Suivant le modèle

(1) According to the model

Le marquage CE est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système approuvé de qualité (0081 pour le LCIE).

The CE marking shall be accompanied by the identification number of the notified body responsible for surveillance of the approved quality system (0081 for LCIE).

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné.

The equipment must also bear the usual marking required by the manufacturing standards applying to such equipments.

Paramètres électriques relatifs à la sécurité :

Electrical parameters relative to safety :

U_i = 30 V
I_i = 200 mA
P_i = 1 W
L_i = 0
C_i = 5 nF

U_i = 30 V
I_i = 200 mA
P_i = 1 W
L_i = 0
C_i = 5 nF



(A1) **ANNEXE (suite)**

(A1) **SCHEDULE (continued)**

(A2) **ATTESTATION D'EXAMEN CE DE TYPE**

(A2) **EC TYPE EXAMINATION CERTIFICATE**

LCIE 03 ATEX 6279 X

LCIE 03 ATEX 6279 X

(A4) Documents descriptifs :

(A4) Descriptive documents :

Dossier technique N° 23208 Rév. NC du 18 juin 2003.
Ce document comporte 19 rubriques (21 pages).

Technical file No. 23208 Rev. NC dated June 18th, 2003.
This file includes 19 items (21 pages).

(A5) Conditions spéciales pour une utilisation sûre :

(A5) Special conditions for safe use :

Ce matériel est un appareil de sécurité intrinsèque, il peut être placé en atmosphère explosible.
Le matériel ne doit être raccordé qu'à un matériel associé de sécurité intrinsèque certifié et cette association doit être compatible du point de vue sécurité intrinsèque.
Les caractéristiques électriques du matériel associé de sécurité intrinsèque ne doivent excéder aucune des valeurs suivantes :
 $U_0 \leq 30 \text{ V}$, $I_0 \leq 0,2 \text{ A}$, $P_0 \leq 1 \text{ W}$

This equipment is an intrinsically safe apparatus, it can be mounted in explosive atmosphere.
The apparatus must be only connected to a certified associated intrinsically safe equipment and this combination must be compatible regarding intrinsic safety rules.
Electrical parameters of associated intrinsically safe equipment shall not exceed any of the following values :
 $U_0 \leq 30 \text{ V}$, $I_0 \leq 0,2 \text{ A}$, $P_0 \leq 1 \text{ W}$

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé :

(A6) Essential Health and Safety Requirements :

Conformité aux normes européennes EN 50014 (1997 + amendements 1 et 2) et EN 50020 (2002).

Conformity to the European standards EN 50014 (1997 + amendments 1 and 2) and EN 50020 (2002).

Vérifications et épreuves individuelles :

Individual examinations and tests :

L'appareil est dispensé d'épreuve individuelle.

The equipment is not submitted to routine test.



L C I E

(A1) **ATTESTATION D'EXAMEN CE DE TYPE
LCIE 03 ATEX 6279 X du 22 juillet 2003**

(A1) **EC TYPE EXAMINATION CERTIFICATE
LCIE 03 ATEX 6279 X dated July 22th, 2003**

AVENANT 03 ATEX 6279 X / 01

VARIATION 03 ATEX 6279 X / 01

(A2) **DESIGNATION DE L'EQUIPEMENT OU DU SYSTEME DE
PROTECTION :**

(A2) **DESIGNATION OF EQUIPMENT OR PROTECTIVE
SYSTEM :**

Capteurs de pression
Type : 102Mxxx Series
Construit par : PCB Piezotronics Inc.

Pressure Sensors
Type : 102Mxxx Series
Manufactured by : PCB Piezotronics Inc.

(A3) **OBJET DE L'AVENANT, DESCRIPTION DE L'APPAREIL
OU SYSTEME DE PROTECTION :**

(A3) **SUBJECT OF THE VARIATION, DESCRIPTION OF
EQUIPMENT OR PROTECTIVE SYSTEM :**

Modification de l'assemblage de l'amplificateur 21760
Ajout d'un assemblage amplificateur 28040 avec schema
28041

Modification of amplifier 21760 assembly
Add of amplifier 28040 assembly with 28041 schematic
diagram

Marquage : Inchangé

Marking : Unchanged

(A4) **DOCUMENTS DESCRIPTIFS :**

(A4) **DESCRIPTIVE DOCUMENTS :**

Dossier technique N° 23208 Rév A du 1 octobre 2004.
Ce document comprend 22 rubriques (25 pages).

Technical file N° 23208 Rev A dated October 1st, 2004.
This file includes 22 items (25 pages).

(A5) **CONDITIONS SPECIALES POUR UNE UTILISATION
SURE :**

(A5) **SPECIAL CONDITIONS FOR SAFE USE :**

Inchangées

Unchanged

(A6) **EXIGENCES ESSENTIELLES EN CE QUI CONCERNE LA
SECURITE ET LA SANTE :**


(A6) **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS :**

Inchangées

Unchanged

Fontenay-aux-Roses, le 25 novembre 2004

Le Directeur de l'organisme certificateur
Manager of the certification body


Michel BRÉNON
Timbre sec / Dry seal
Société Anonyme
au capital de 15 745 984 €

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LCIE

(A1) **ATTESTATION D'EXAMEN CE DE TYPE
LCIE 03 ATEX 6279 X du 22 juillet 2003**

(A1) **EC TYPE EXAMINATION CERTIFICATE
LCIE 03 ATEX 6279 X dated July 22nd, 2003**

AVENANT 03 ATEX 6279 X/02

VARIATION 03 ATEX 6279 X/02

(A2) DESIGNATION DE L'EQUIPEMENT OU DU SYSTEME
DE PROTECTION :

(A2) NAME OF EQUIPMENT OR PROTECTIVE SYSTEM :

Transmetteur de pression
Type : 1xxAyyy, 1xxByyy ou 1xxMyyy

Pressure transmitter
Type : 1xxAyyy, 1xxByyy or 1xxMyyy

Construit par :
PCB PIEZOTRONICS Inc.

Manufactured by :
PCB PIEZOTRONICS Inc.

(A3) OBJET DE L'AVENANT, DESCRIPTION DE
L'APPAREIL OU DU SYTEME DE PROTECTION :

(A3) SUBJECT OF THE VARIATION, DESCRIPTION OF
EQUIPMENT OR PROTECTIVE SYSTEM :

- Modification du type pour permettre de mieux définir les
différentes variantes

-Modification of the type to more accurately define variations.

Le marquage est modifié comme suit :

The marking is modified as follows :

Type : 1xxAyyy, 1xxByyy ou 1xxMyyy

Type : 1xxAyyy, 1xxByyy or 1xxMyyy

Paramètres spécifiques du ou des modes de protection
concerné(s) :

Specific parameters of the mode of protection concerned :

Inchangés.

Unchanged.

(A4) DOCUMENTS DESCRIPTIFS :

(A4) DESCRIPTIVE DOCUMENTS :

Dossier technique N°23208 Rév. B daté du 4 mai 2005.
Ce document comprend 3 rubriques (4 pages).

Technical file No. 23208 Rev. B dated May 4th, 2005.
This file includes 3 items (4 pages).

(A5) CONDITIONS SPECIALES POUR UNE UTILISATION
SURE :

(A5) SPECIAL CONDITIONS FOR SAFE USE :

Inchangées.

Unchanged:

(A6) EXIGENCES ESSENTIELLES EN CE QUI
CONCERNE LA SECURITE ET LA SANTE :

*(A6) ESSENTIAL HEALTH AND SAFETY REQUI-REMENTS :

Inchangées.

Unchanged.

Fontenay-aux-Roses, le 31 août 2005

Le Directeur de l'organisme certificateur
Manager of the certification body

P/O

Timbre sec/Dry seal

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Page 1/1

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Société Anonyme
au capital de 15 745 984 €
RCS Nanterre B 408 363 174

1-01



LCIE



1 AVENANT D'ATTESTATION D'EXAMEN CE DE TYPE

2 Appareil ou système de protection destiné à être utilisé en atmosphères explosibles (Directive 94/9/CE)

3 Numéro de l'avenant :
LCIE 03 ATEX 6279 X / 03

4 Appareil ou système de protection :
Transmetteur de pression
Type : 1xxAyyy, 1xxByyy, 1xxMyyy

5 Demandeur : PCB PIEZOTRONICS Inc.

15 DESCRIPTION DE L'AVENANT

- Certification suivant les normes EN 60079-0 (2004) et EN 60079-11 (2006)
- Mise à jour des schémas.

Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 60051175/551970.

Paramètres spécifiques du ou des modes de protection concerné(s) :

Inchangés.

Le marquage doit être :

Modifié comme suit : Ex ia IIC T4

16 DOCUMENTS DESCRIPTIFS

Dossier de certification N° 23208 rev.C du 19/09/2006. Ce dossier comprend 22 rubriques (25 pages).

17 CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Inchangées.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Modifiées comme suit :
Conformité aux normes Européennes EN 60079-0 (2004) et EN 60079-11 (2006).

19 VERIFICATIONS ET ESSAIS INDIVIDUELS

Inchangées.

Fontenay-aux-Roses, le 13 novembre 2006

1 SUPPLEMENTARY EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)

3 Supplementary certificate number :
LCIE 03 ATEX 6279 X / 03

4 Equipment or protective system :
Pressure transmitter
Type : 1xxAyyy, 1xxByyy, 1xxMyyy

5 Applicant : PCB PIEZOTRONICS Inc

15 DESCRIPTION OF THE SUPPLEMENTARY CERTIFICATE

- Certification following the EN 60079-0 (2004) and EN 60079-11 (2006) standards.
- Update drawings.

The examination and test results are recorded in confidential report N° 60051175/551970.

Specific parameters of the mode(s) of protection concerned:

Unchanged.

The marking shall be :

Modified as follows : Ex ia IIC T4

16 DESCRIPTIVE DOCUMENTS

Certification file N° 23208 rev.C dated 19/09/2006. This file includes 22 items (25 pages).

17 SPECIAL CONDITIONS FOR SAFE USE

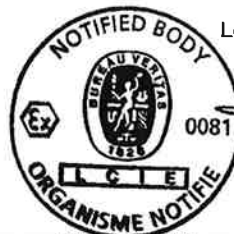
Unchanged.

18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

Modified as follows :
Conformity to the European standards EN 60079-0 (2004) and EN 60079-11 (2006).

19 ROUTINE VERIFICATIONS AND TESTS

Unchanged.



Le responsable de certification ATEX
ATEX certification manager

Marc GILLAUD

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Page 1 sur 1
01A-Annexe III_CE_typ_app_ev - rev1.DOC

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LCIE



EC Declaration of Conformity PS 059
In Accordance with ISO/IEC 17050

Manufacturer: PCB Piezotronics, Inc. 3425 Walden Avenue Depew, New York 14043 USA	Authorized European Representative: PCB Piezotronics Europe GmbH PO Box 1148 D-52473 Linnich, Germany
--	--

Certifies that type of equipment: Pressure Transmitter(s)

Whose Product Models Include: 1xxAyy, 1xxByy, 1xxMyy Series

Note: "xx," is a place holder for two numbers.
"yy," is a place holder for two numbers.
For example:

These letters and numbers are included in the model numbers of the series. For details see the related data sheets.

This declaration is applicable to all Pressure Transmitter(s) of the above series which have the CE & (EX) ATEX mark on their data sheets and where those data sheets refer to this declaration of conformity. The data sheets for all model numbers referenced above, which include the CE & (EX) ATEX mark on such data sheets and refer to this Declaration of Conformity are hereby incorporated by reference into this Declaration.

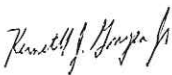
Conform to the following EC Directive(s) when installed per product documentation:	2004/108/EC 94/9/EC	EMC directive ATEX
--	------------------------	-----------------------

Standards to which Conformity is Declared:

Harmonized Standards	EN61326-1:2006 EN61326-2-3: 2006 EN61010-1:2001 EN60079-0 (2006) EN60079-11 (2007)	Electrical Equipment for Measurement, Control and Laboratory Use- EMC Electrical Equipment for Measurement, Control and Laboratory Use- EMC Safety Standard General Explosive Atmosphere Intrinsic safe, I
Emissions Test Standards	EN 55011 (2007)	Industrial, scientific and medical(ISM) radio frequency equipment Electromagnetic disturbance characteristics- Limits and methods of Measurement Class B
Immunity Test Standards	EN 61000-4-2:2001 EN 61000-4-3:2006 EN 61000-4-4:2004 EN 61000-4-5:2005 EN 61000-4-6:2006 EN 61000-4-8:2001	Electrostatic discharge (ESD) Radiated, radio-frequency, electromagnetic field immunity Electrical fast transient (EFT) / Burst immunity Surge immunity Immunity to RF conducted line disturbances Power frequency magnetic field immunity
Test Reports	EMC Reports Safety Reports	GM29034c GM29035s
	ATEX Cert	LCIE 03 ATEX 6279 X/03 Ex ia IIC T4, II 1G
Notified Body Name		Laboratoire Central des Industries Electriques (0081)
Notified Body's Address		FONTENAY-AUX-ROSES (Head Office) 33, avenue du Général Leclerc FR- 92260 Fontenay-aux-Roses Tel. : + 33 1 40 95 60 60 Fax : + 33 1 40 95 86 56

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) Standard(s)

Place: Depew, NY Date: 07/07/2010

Signature: 
 Name: Kenneth J. Gonyea Jr.
 Title: V.P. Manufacturing



CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1420405 (LR 103016-10)

Master Contract: 184981

Project: 1844878

Date Issued: 2006/10/23

Issued to: Industrial Monitoring Instr. (IMI)

A Div. of PCB Piezotronics, Inc.
3425 Walden Ave
Depew, NY 14043
USA
Attention: Richard Furner

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'



Issued by: Ron Wildish

Authorized by: Patricia Pasemko, Operations Manager

PRODUCTS

CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - - For Hazardous Locations - Certified to US Standards

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations

Class I, Div. 1, Groups A, B, C and D:

Exia IIC T4; Class I, Zone 0:

AEx ia IIC T4; Class I, Zone 0:

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.

PCB Cont. No. 23498-C



Certificate: 1420405 (LR 103016-10)

Master Contract: 184981

Project: 1844878

Date Issued: 2006/10/23

- Models 1xxAyyy, 1xxByyy and 1xxMyyy Pressure Sensors, input rated 28 Vdc max, 20 mA max; intrinsically safe with entity parameters of: $V_{max}/U_i = 30V$, $I_{max}/I_i = 200mA$, $L_i = 0$, $C_i = 5 nF$; when installed per installation Dwg. 21869; Temp. Code T4 @ Max Ambient 121 Deg C.

Notes:

1. The "xx" in the model number denotes frequency response.
2. The "yyy" in the model number denotes minor mechanical mounting variations, variations in pressure range and variations in low frequency response.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 142-M1987 - Process Control Equipment

CAN/CSA-C22.2 No. 157-92 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

UL Std No. 913 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III, Division 1, Hazardous Locations

UL Std No. 916 - Energy Management Equipment

CAN/CSA-E60079-0:02 - Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements

CAN/CSA-E60079-11:02 - Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety "i"

ANSI/UL 60079-0:02 - Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements

ANSI/UL 60079-11:02 - Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety "i"

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations

CLASS 2258 83 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations - CERTIFIED TO U.S. STANDARDS

Ex nL IICT4; Class I, Zone 2:

AEx nA IICT4; Class I, Zone 2:

Class I, Div. 2, Groups A, B, C, D:

- Models 1xxAyyy, 1xxByyy and 1xxMyyy Pressure Sensors, input rated 28 Vdc max, 20 mA max; non-incendive,



CSA INTERNATIONAL

Certificate: 1420405 (LR 103016-10)

Master Contract: 184981

Project: 1844878

Date Issued: 2006/10/23

with entity parameters of: $V_{max}/U_i = 30V$, $I_{max}/I_i = 200mA$, $L_i = 0$, $C_i = 5 nF$; when installed per installation Dwg. 21869; Temp. Code T4 @ Max Ambient 121 Deg C.

Notes:

1. The "xx" in the model number denotes frequency response.
2. The "yyy" in the model number denotes minor mechanical mounting variations, variations in pressure range and variations in low frequency response.
3. For Canadian Installations, sensor case must be bonded to ground according to Section 18-182 of the CEC, Part 1.
4. For US Installations, sensor case must be bonded to ground according to Article 501.16 of the NEC.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 142-M1987 - Process Control Equipment

CSA Std. C22.2 No. 213-M1987 - Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

UL Std No. 916 - Energy Management Equipment

FM Std. No. 3600-1998 - Electrical Equipment for Use in Hazardous (Classified) Locations – General Requirements

FM Std. No. 3611-1999 - Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III, Divisions 1 and 2, Hazardous (Classified) Locations

CAN/CSA-E60079-15:02 - Electrical apparatus for Explosive Gas Atmospheres - Part 15: Type of Protection "n"

ANSI/UL 60079-15:02 - Electrical apparatus for Explosive Gas Atmospheres - Part 15: Electrical Apparatus with Type of Protection "n"



Supplement to Certificate of Compliance

Certificate: 1420405

Master Contract: 184981

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1844878	2006/10/23	Update to cover minor drawing Revisions.
1697653	2005/08/04	Update to Include Zone 0, Zone 2, and Div. 2 Certification; model # change to 1xxAyyy, 1xxByyy and 1xxMyyy.
1612847	2004/11/09	Update of report to cover modifications to existing Amplifier, and addition of new Amplifier

History

1420405; June 20, 2003; Update to include entire 102Mxxx Seires. Delisting of model 100M34.

LR 103164-15; Nov. 5, 1998; Update to cover report corrections.

LR 103164-10; Mar. 25, 1998; Original Certification – Models 102M206 and 100M34.