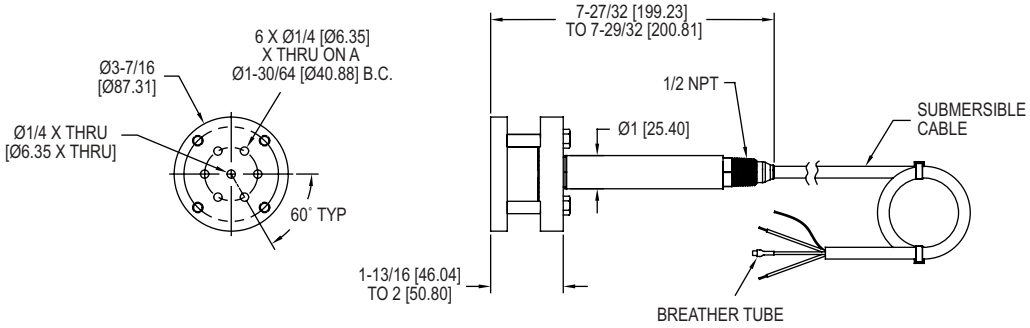
Series PBLTX Submersible Level Transducer

Specifications - Installation and Operating Instructions



The **Series PBLTX Submersible Level Transducer** is manufactured for years of trouble free service in the harshest applications. The PBLTX measures the height of liquid above its position in the tank referenced to atmospheric pressure. The transducer consists of a piezoresistive sensing element, encased in a 316 SS housing. Perfect for wastewater and slurry applications with features to protect the unit from these demanding applications. Large diameter 316 SS diaphragm seal is non-clogging and damage resistant to floating solids.

Comes equipped with a 270-pound tensile strength, shielded, vented cable. Ventilation tube in the cable automatically compensates for changes in atmospheric pressure above the tank. The vent is protected with a maintenance free filter eliminating particulate or water droplets from entering the transducer.

Intrinsic Safety Approval Classification
The PBLTX is UL listed for use in Hazardous (Classified) Locations. The protection method is by Intrinsic Safety, "ia". It was investigated by UL under UL Standard 913 8th Edition, CAN/CSA C22.2 No. 60079-0:15 and CAN/CSA C22.2 No. 60079-11:14.

Hazardous (Classified) Location Intrinsically Safe For:
Class I Div. 1 Groups A,B,C,D
Class II Div. 1 Groups E,F,G
Class III Div. 1
Class I Zone 0 AEx ia IIC T4 Ga
Zone 20 AEx ia IIIC T135°C Da
Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da
Ta = -20°C to 80°C (ETFE Cable)
Ta = -20°C to 65°C (Polyurethane Cable)
Install in accordance with Control Drawing 001833-44.
See Control Drawing 001833-44 for Entity Parameters.

ATEX: EU Type Certificate NO. DEMKO 18 ATEX 2080
ATEX STANDARDS: EN 60079-0, EN 60079-11
ATEX CLASSIFICATION: CE 2813 Ex II 1 G Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤ 80°C (ETFE Cable)) (-20°C ≤ Tamb ≤ 65°C (Polyurethane Cable))
CE 2813 Ex II 1 D Ex ia IIIC T135°C Da (-20°C ≤ Tamb ≤ 80°C (ETFE Cable)) (-20°C ≤ Tamb ≤ 65°C (Polyurethane Cable))
IECEx Certificate of Conformity: IECEx UL 18.0086
IECEx STANDARDS: IEC 60079-0, IEC 60079-11.
IECEx CLASSIFICATION: Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤ 80°C (ETFE Cable)) (-20°C ≤ Tamb ≤ 65°C (Polyurethane Cable))
Ex ia IIIC T135°C Da (-20°C ≤ Tamb ≤ 80°C (ETFE Cable)) (-20°C ≤ Tamb ≤ 65°C (Polyurethane Cable))
UKCA Ex: CERTIFICATE UL21UKEX2364
UKCA Ex STANDARDS: EN 60079-0, EN 60079-11
UKCA Ex CLASSIFICATION: II 1 G Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤80°C
Install in accordance with Control drawing 001833-47
SEE CONTROL DRAWING 001833-47 FOR ENTITY PARAMETERS.

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Body: 316 SS, 316L SS; Cable: Polyether polyurethane or ETFE; Seals: Fluoroelastomer.
Accuracy: ±0.25% FS.
Temperature Limit: ETFE cable equipped -4 to 176°F (-20 to 80°C); Polyurethane cable equipped -4 to 149°F (-20 to 65°C).
Compensated Temperature Range: -4 to 176°F (-20 to 80°C).
Thermal Effect: Less than ±.02%/ FS/°F.
Pressure Limit: 2X FS.
Power Requirement: 10-28 VDC.
Output Signal: 4-20 mA DC, 2-wire.
Response Time: 50 msec.
Max. Loop Resistance: 900 Ω.
Electrical Connection: Wire pigtail.
Mounting Orientation: Suspended in tank below level being measured. Can be placed on the bottom of the tank on its side.
Weight: 3.8 lb (1.7 kg) to 4.3 lb (2.0 kg).
Compliance: CE, UKCA, See Intrinsic Safety Approval Classification.

⚠ WARNING Use with approved safety barriers using entity evaluation.

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⚠ CAUTION Do not exceed specified supply voltage ratings. Permanent damage not covered by warranty will result. This device is not designed for 120 or 240 VAC operation. Use only on 10-28 VDC.

INSTALLATION

1. **Location:** Select a location where the temperature of the transducer will be between -4 and 176°F (-20 to 80°C) for ETFE cable or -4 and 149°F (-20 to 65°C) for polyurethane cable. Distance from the receiver is limited only by total loop resistance.

2. **Position:** The transducer is not position sensitive. However all standard models are originally calibrated with the unit in a position with the diaphragm downward. Although they can be used at other angles, for best accuracy it is recommended that units be installed in the position calibrated at the factory.

3. **Mounting:** The transducer can be mounted via several methods. It can be suspended from the electrical cable, it can be placed resting on the bottom of the tank in either horizontal or vertical orientation, or it can be attached to a pipe or hang wire by the 1/2″ NPT male connection on the top of the housing.

4. **Wire Length:** The maximum length of wire connecting the transducer and receiver is a function of wire size and receiver resistance. Wiring should not contribute more than 10% of the receiver resistance to total loop resistance. For extremely long runs (over 1000 feet), choose receivers with higher resistance to minimize the size and cost of connecting leads. Where wiring length is under 100 feet, wire as small as 22 AWG can be used.

5. **Wiring:** An external power supply delivering 10-28 VDC with minimum current capability of 40 mA DC (per transducer) is required to power the control loop. See Figure A for connection of the power supply, transducer and receiver. The range of appropriate receiver load resistance (RL) for the DC power supply voltage available is expressed by the formula:

$$\text{RL Max} = \frac{\text{Vps} - 10\ \text{V}}{20\ \text{mA DC}}$$

Shielded cable is recommended for control loop wiring.

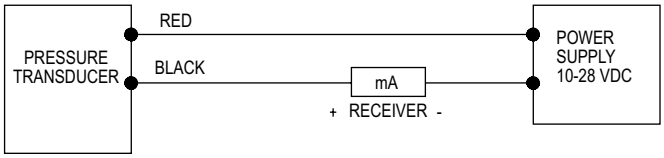


Figure A

Black wire is negative [-] and red wire is positive [+] in Figure B.

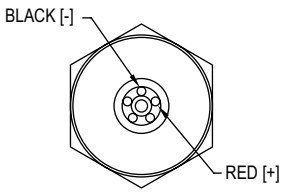


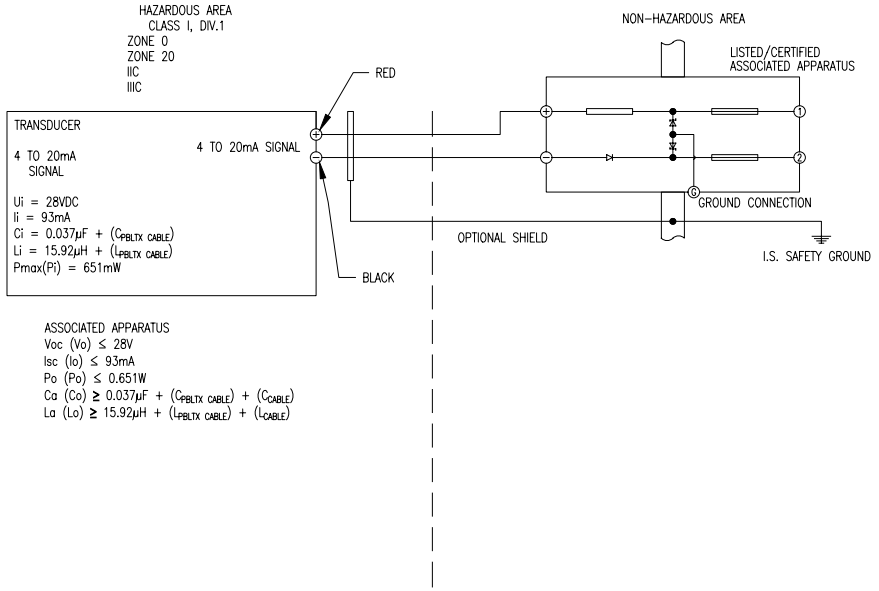
Figure B

MAINTENANCE

After final installation of the pressure transducer and its companion receiver, no routine maintenance is required. A periodic check of system calibration is suggested. The Series PBLTX transducers are not field repairable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

001833-44

NOTES:
1. SELECTED ASSOCIATED APPARATUS MUST BE THIRD PARTY LISTED AS PROVIDING INTRINSICALLY SAFE CIRCUITS FOR THE APPLICATION, AND NOT EXCEED THE ENTITY PARAMETERS LISTED IN THIS DRAWING.
2. ASSOCIATED APPARATUS OUTPUT CURRENT MUST BE LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE–CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN–CIRCUIT VOLTAGE AND SHORT–CIRCUIT CURRENT.
3. CAPACITANCE AND INDUCTANCE OF THE FIELD WIRING FROM THE INTRINSICALLY SAFE TRANSDUCER TO THE ASSOCIATED APPARATUS SHALL BE CALCULATED AND MUST INCLUDE THE SYSTEM CALCULATIONS AS SHOWN WITHIN THIS DRAWING. TOTAL CAPACITANCE IS CALCULATED BY ADDING BOTH ($C_{PBLTX\ CABLE}$) AND (C_{CABLE}) TO Ci, WHERE ($C_{PBLTX\ CABLE}$) IS THE CAPACITANCE OF FACTORY WIRING PROVIDED WITH THE PBLTX AND (C_{CABLE}) IS CAPACITANCE OF ANY ADDITIONAL END USER CABLE THAT IS WIRED TO THE PBLTX. TOTAL INDUCTANCE IS CALCULATED BY ADDING BOTH ($L_{PBLTX\ CABLE}$) AND (L_{CABLE}) TO Li, WHERE ($L_{PBLTX\ CABLE}$) IS THE INDUCTANCE OF FACTORY WIRING PROVIDED WITH THE PBLTX AND (L_{CABLE}) IS THE INDUCTANCE OF ANY ADDITIONAL END USER CABLE THAT IS WIRED TO THE PBLTX. WHEN PROVIDED WITH POLYURETHANE CABLE, THE CAPACITANCE ($C_{PBLTX\ CABLE}$) IS 96 pF/FT (315pF/M) AND INDUCTANCE ($L_{PBLTX\ CABLE}$) IS 346nH/FT (1.135µF/M). WHEN PROVIDED WITH ETFE CABLE, THE CAPACITANCE ($C_{PBLTX\ CABLE}$) 162pF/FT (532 pF/M) AND INDUCTANCE ($L_{PBLTX\ CABLE}$) IS 340 nH/FT (1.116µH/M). WHERE CABLE CAPACITANCE AND INDUCTANCE PER UNIT LENGTH ARE NOT KNOWN, THE CAPACITANCE OF 60pF/FT (200pF/M) AND INDUCTANCE OF 0.2µH/FT (1.0 µH/M) MAY BE USED. PLEASE NOTE THAT THE PBLTX CABLE LENGTH IS SPECIFIED WITHIN THE NOMENCLATURE, SEE ITEM "ccc" FOR LENGTH AND ITEM "d" FOR UNIT OF LENGTH. THIS LENGTH WILL NEED TO BE MULTIPLIED BY THE CORRECT PARAMETER ($C_{PBLTX\ CABLE}$) AND ($L_{PBLTX\ CABLE}$) SPECIFIED ABOVE, BASED ON THE CABLE PROVIDED, SEE NOMENCLATURE ITEM "e" FOR THE DEVICE'S CABLE TYPE.
4. TRANSDUCERS MUST BE INSTALLED TO THE MANUFACTURER'S CONTROL DRAWING AND ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) FOR INSTALLATION IN THE UNITED STATES OR SECTION 18 OF THE CANADIAN ELECTRICAL CODE (CSA C22.1) FOR INSTALLATION IN CANADA OR OTHER LOCAL INSTALLATION CODES, AS APPLICABLE.
5. THE ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION INSTRUCTIONS MUST BE FOLLOWED WHEN INSTALLING THE EQUIPMENT.
6. THE CABLE USED IN THIS DEVICE HAS A VENT TUBE. THEREFORE THE CABLE ATTACHED TO THE PBLTX SHALL BE TERMINATED IN THE HAZARDOUS AREA.
7. NO REVISIONS TO THIS DRAWING WITHOUT PRIOR APPROVAL BY UL.



ASSOCIATED APPARATUS
Voc (Vo) ≤ 28V
Isc (Io) ≤ 93mA
Po (Po) ≤ 0.651W
Ca (Co) ≥ 0.037µF + ($C_{PBLTX\ CABLE}$) + (C_{CABLE})
La (Lo) ≥ 15.92µH + ($L_{PBLTX\ CABLE}$) + (L_{CABLE})

ZONE AND DIVISION ENTITY PARAMETERS ARE SHOWN AS: DIVISION (ZONE)

Ⓒ = CRITICAL DIMENSION
STANDARD TOLERANCES UNLESS NOTED:
ALL DECIMAL DIMENSIONS ± .005
ALL ANGLES ± 1°

NO.	CHANGES	BY/DATE
2	UPDATING STANDARDS FOR AGENCY PER ECR–048314	KAS 12–10–21
1	GENERAL REVISION AS REQUESTED BY UL PER ECR #43410	RBS 6–20–18
0	INITIAL RELEASE ND–005145	AMS 02–28–18

DATE 02–12–18
DWN BY AMS
CHKD DGH
APPD LR
ACAD2002

NAME: PBLTX I.S. CONTROL DRAWING

MATERIAL
FINISH

DWYER INSTRUMENTS, INC.
MICHIGAN CITY, INDIANA 46360 U.S.A.

FR. NO. 001833–44

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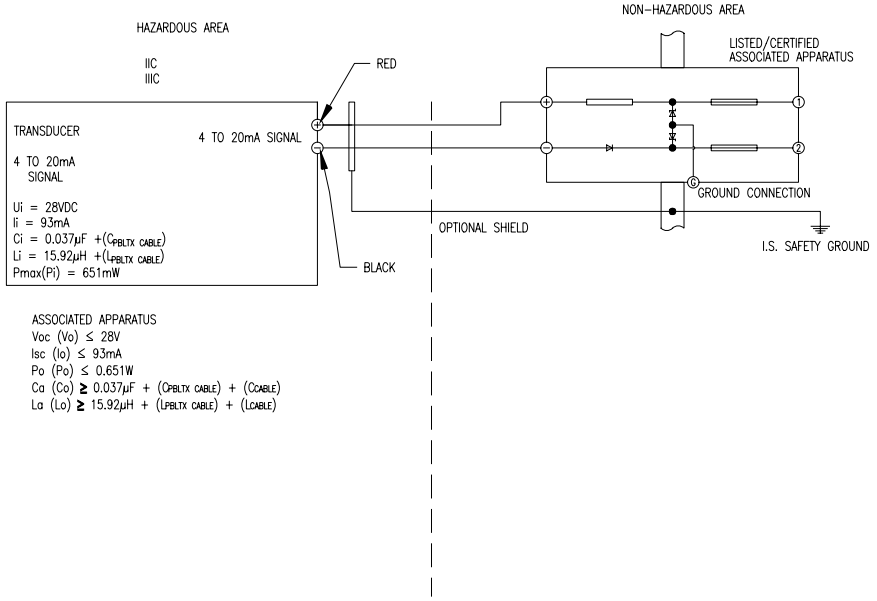
e-mail: info@dwyermail.com

001833-47

NOTES:
1. SELECTED ASSOCIATED APPARATUS MUST BE THIRD PARTY LISTED AS PROVIDING INTRINSICALLY SAFE CIRCUITS FOR THE APPLICATION, AND NOT EXCEED THE ENTITY PARAMETERS LISTED ON THIS DRAWING.
2. CAPACITANCE AND INDUCTANCE OF THE FIELD WIRING FROM THE INTRINSICALLY SAFE TRANSDUCER TO THE ASSOCIATED APPARATUS SHALL BE CALCULATED AND MUST INCLUDE THE SYSTEM CALCULATIONS AS SHOWN WITHIN THIS DRAWING. TOTAL CAPACITANCE IS CALCULATED BY ADDING BOTH ($C_{PBLTX\ CABLE}$) AND (C_{CABLE}) TO Ci, WHERE ($C_{PBLTX\ CABLE}$) IS THE CAPACITANCE OF FACTORY WIRING PROVIDED WITH THE PBLTX AND (C_{CABLE}) IS CAPACITANCE OF ANY ADDITIONAL END USER CABLE THAT IS WIRED TO THE PBLTX. TOTAL INDUCTANCE IS CALCULATED BY ADDING BOTH ($L_{PBLTX\ CABLE}$) AND (L_{CABLE}) TO Li, WHERE ($L_{PBLTX\ CABLE}$) IS THE INDUCTANCE OF FACTORY WIRING PROVIDED WITH THE PBLTX AND (L_{CABLE}) IS THE INDUCTANCE OF ANY ADDITIONAL END USER CABLE THAT IS WIRED TO THE PBLTX. WHEN PROVIDED WITH POLYURETHANE CABLE, THE CAPACITANCE ($C_{PBLTX\ CABLE}$) IS 96 pF/FT (315pF/M) AND INDUCTANCE ($L_{PBLTX\ CABLE}$) IS 346nH/FT (1.135µF/M). WHEN PROVIDED WITH ETFE CABLE, THE CAPACITANCE ($C_{PBLTX\ CABLE}$) 162pF/FT (532 pF/M) AND INDUCTANCE ($L_{PBLTX\ CABLE}$) IS 340 nH/FT (1.116µH/M). WHERE CABLE CAPACITANCE AND INDUCTANCE PER UNIT LENGTH ARE NOT KNOWN, THE CAPACITANCE OF 60pF/FT (200pF/M) AND INDUCTANCE OF 0.2µH/FT (1.0 µH/M) MAY BE USED. PLEASE NOTE THAT THE PBLTX CABLE LENGTH IS SPECIFIED WITHIN THE NOMENCLATURE, SEE ITEM "ccc" FOR LENGTH AND ITEM "d" FOR UNIT OF LENGTH. THIS LENGTH WILL NEED TO BE MULTIPLIED BY THE CORRECT PARAMETER ($C_{PBLTX\ CABLE}$) AND ($L_{PBLTX\ CABLE}$) SPECIFIED ABOVE, BASED ON THE CABLE PROVIDED, SEE NOMENCLATURE ITEM "e" FOR THE DEVICE'S CABLE TYPE.
3. THE ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION INSTRUCTIONS MUST BE FOLLOWED WHEN INSTALLING THE EQUIPMENT.
4. WARNING – ALL FIELD WIRING SHALL BE SUITABLE FOR AN AMBIENT TEMPERATURE RANGE OF –20° TO 80°C.
5. THE CABLE USED IN THIS DEVICE HAS A VENT TUBE. THEREFORE THE CABLE ATTACHED TO THE PBLTX SHALL BE TERMINATED IN THE HAZARDOUS AREA.
6. NO REVISIONS TO THIS DRAWING WITHOUT PRIOR APPROVAL BY UL/DEMKO.
7. TRANSDUCER MUST BE INSTALLED IN ACCORDANCE TO IEC/EN 60079-14 OR ANY LOCAL INSTALLATION CODES/REQUIREMENTS.



CD = CRITICAL DIMENSION
STANDARD TOLERANCES UNLESS NOTED:
ALL DECIMAL DIMENSIONS ± .005
ALL ANGLES ± 1°

NO.	CHANGES	BY/DATE
3	UPDATING STANDARDS FOR AGENCY PER ECR-048314	KAS 12-10-21
2	ADDED ATEX CONFIGURATION PER ECR #045704	JEO 12-10-19
1	GENERAL REVISION AS REQUESTED BY UL PER ECR #43410	RBS 6-20-18
0	INITIAL RELEASE ND-005145	AMS 02-28-18

DATE 02-14-18
DWN BY AMS
CHKD DGH
APPD LR

NAME: PBLTX I.S. CONTROL DRAWING ATEX/IECEx

MATERIAL

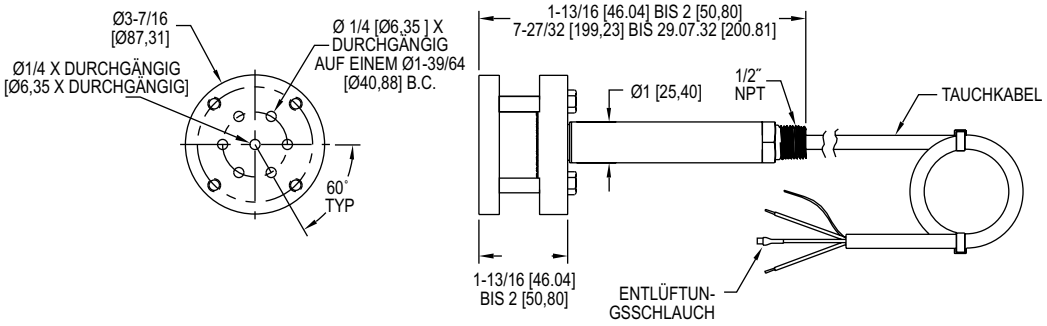
FINISH

DWYER INSTRUMENTS, LLC.
MICHIGAN CITY, INDIANA 46360 U.S.A.

FR. NO. 001833-47

Tauchpegelwandler der Serie PBLTX

Technische Daten – Installation und Betriebsanleitung



Tauchpegelwandler der Serie PBLTX werden für jahrelange problemlose Wartung in härtesten Anwendungen hergestellt. Der PBLTX misst den Flüssigkeitsstand über seiner Position im Tank mit Bezug auf den atmosphärischen Druck. Der Wandler besteht aus einem piezoresistiven Sensorelement, das in einem Gehäuse aus 316 Edelstahl integriert ist. Perfekt geeignet für Abwasser- und Gülleanwendungen mit Funktionen zum Schutz des Geräts bei diesen anspruchsvollen Anwendungen. Die 316 Edelstahl-Membrandichtung mit großem Durchmesser ist verstopfungsfrei und widerstandsfähig gegen schwimmende Feststoffe.

Wird mit einem abgeschirmtem, entlüfteten Kabel mit einer Zugfestigkeit von 270 lb (122 kg) geliefert. Der Entlüftungsschlauch im Kabel kompensiert automatisch Änderungen des atmosphärischen Drucks oberhalb des Tanks. Die Entlüftungsöffnung ist durch einen wartungsfreien Filter geschützt, der das Eindringen von Partikeln oder Wassertröpfchen in den Wandler verhindert.

Klassifizierung der Zulassung für Eigensicherheit
Der PBLTX ist UL-gelistet für den Einsatz an gefährlichen (klassifizierten) Standorten. Die Schutzmethode erfolgt durch Eigensicherheit, "ia". Er wurde von UL gemäß UL-Norm 913 8. Ausgabe, CAN/CSA C22.2 Nr. 60079-0:15 und CAN/CSA C22.2 Nr. 60079-11:14 untersucht.

Für die folgenden Gefahrenbereiche (klassifiziert) eigensicher:
Klasse I Div. 1 Gruppen A,B,C,D
Klasse II Div. 1 Gruppen E,F,G
Klasse III Div. 1
Klasse I Zone 0 AEx ia IIC T4 Ga
Zone 20 AEx IA IIIC T135 °C Da
Ex ia IIC T4 Ga
Ex ia IIIC T135 °C Da
Ta = -20 °C bis 80 °C (ETFE-Kabel)
Ta = -20 °C bis 65 °C (Polyurethan-Kabel)
Gemäß Kontrollzeichnung 001833-44 installieren.
Siehe Kontrollzeichnung 001833-44 für Entitätsparameter.

ATEX: EU-Typenzulassung NO. DEMKO 18 ATEX 2080
ATEX-NORMEN: EN 60079-0, EN 60079-11
ATEX-KLASSIFIZIERUNG: CE 2813 Ex II 1 G Ex ia IIC T4 Ga (-20 °C ≤ Tamb ≤ 80 °C [ETFE-Kabel]) (-20 °C ≤ Tamb ≤ 65 °C [Polyurethankabel])
CE 2813 Ex II 1 D Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C [ETFE-Kabel]) (-20 °C ≤ Tamb ≤ 65 °C [Polyurethankabel])
IECEx-Konformitätszertifikat: IECEx UL 18.0086
IECEx-NORMEN: IEC 60079-0, IEC 60079-11
IECEx-KLASSIFIZIERUNG: Ex ia IIC T4 Ga (-20 °C ≤ bei Tamb bei ≤ 80 °C [ETFE-Kabel]) (-20 °C ≤ Tamb ≤ 65 °C [Polyurethankabel])
Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C [ETFE-Kabel]) (-20 °C ≤ Tamb ≤ 65 °C [Polyurethankabel])
UKCA Ex-Konformitätszertifikat: CERTIFICATE UL21UKEX2364
UKCA Ex-NORMEN: EN 60079-0, EN 60079-11
UKCA Ex-KLASSIFIZIERUNG: II 1 G Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤80°C
Gemäß Kontrollzeichnung 001833-47 installieren
SIEHE KONTROLLZEICHNUNG 001833-47 FÜR ENTITÄTSPARAMETER.

TECHNISCHE DATEN

Wartung: Kompatible Flüssigkeiten.
Benetzte Materialien: Körper: 316 Edelstahl, 316L Edelstahl; Kabel: Polyether-Polyurethan oder ETFE; Dichtungen: Fluorelastomer.
Genauigkeit: ±0,25 % FS.
Temperaturgrenze: ETFE-Kabel ausgestattet für -4 bis 176 °F (-20 bis 80 °C); Polyurethankabel ausgestattet für -4 bis 149 °F (-20 bis 65 °C).
Kompensierter Temperaturbereich: -4 bis 176 °F (-20 bis 80 °C).
Thermische Wirkung: Weniger als ±0,02 %/FS/ °F.
Druckbereich: 2X FS.
Leistungsbedarf: 10−28 VDC.
Ausgangssignal: 4−20 mA DC, zwei Drähte.
Reaktionszeit: 50 msec.
Max. Messkreiswiderstand: 900 Ω.
Elektrische Anschlüsse: Draht-Pigtail.
Montageausrichtung: Aufgehängt im Tank unterhalb des gemessenen Pegels. Kann auf der Unterseite des Tanks auf seiner Seite platziert werden.
Gewicht: 3.8 lb (1.7 kg) bis 4.3 lb (2.0 kg).
Einhaltung: CE, UKCA, siehe Klassifizierung der Zulassung für Eigensicherheit.

⚠ WARNHINWEIS Verwendung mit zugelassenen Sicherheitsbarrieren durch Entitätsbewertung.

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⚠ VORSICHT Die angegebenen Versorgungsspannungswerte dürfen nicht überschritten werden. Dauerhafte Schäden, die nicht durch die Garantie abgedeckt sind, werden die Folge sein. Dieses Gerät ist nicht für den 120- oder 240-Volt-AC-Betrieb ausgelegt. Es darf nur mit 10−28 VDC verwendet werden.

INSTALLATION

1. **Lage:** Wählen Sie einen Ort, an dem die Temperatur des Wandlers zwischen -4 und 176 °F (-20 bis 80 °C) für ETFE-Kabel oder -4 und 149 °F (-20 bis 65 °C) für Polyurethankabel liegt. Der Abstand vom Empfänger wird nur durch den Gesamt-Messkreiswiderstand begrenzt.

2. **Position:** Der Wandler ist nicht ortsempfindlich. Alle Standardmodelle werden jedoch ursprünglich mit dem Gerät in einer Position mit der Membran nach unten kalibriert. Obwohl er in anderen Winkeln verwendet werden kann, wird für beste Genauigkeit empfohlen, dass Geräte in der Position installiert werden, die im Werk kalibriert wurde.

3. **Montage:** Der Messumformer kann mithilfe mehrere Methoden montiert werden. Er kann vom elektrischen Kabel aufgehängt werden, er kann auf der Unterseite des Tanks in horizontaler oder vertikaler Ausrichtung ruhend platziert werden, oder er kann an einem Rohr oder Hängedraht mit einem 1/2" NPT Steckeranschluss an der Oberseite des Gehäuses befestigt werden.

4. **Drahtlänge:** Die maximale Länge des Kabels, das den Wandler und den Empfänger verbindet, ist eine Funktion aus Kabelgröße und Empfängerwiderstand. Das Kabel sollte nicht mehr als 10 % des Empfängerwiderstands zum Gesamt-Messkreiswiderstand beitragen. Wählen Sie für extrem lange Strecken (über 1000 Fuß) Empfänger mit niedrigem Widerstand, um die Größe und Kosten der Verbindungskabel zu minimieren. Wo die Verdrahtungslänge unter 100 Fuß (30 m) liegt, kann Draht von nur 22 AWG verwendet werden.

5. **Verdrahtung:** Für die Stromversorgung des Regelkreises ist ein externes Netzteil mit 10−28 VDC mit einer Mindeststromkapazität von 40 mADC (pro Wandler) erforderlich. Siehe Abbildung A für eine Darstellung der Verbindung von Stromversorgung, Wandler und Empfänger. Der Bereich des geeigneten Empfängerlastwiderstands (RL) für die verfügbare Spannung der Gleichstromversorgung wird durch die folgende Formel ausgedrückt:

$$RL\ Max = \frac{Vps - 10\ V}{20\ mA\ DC}$$

Für die Steuerringleitung sollten abgeschirmte Kabel verwendet werden.

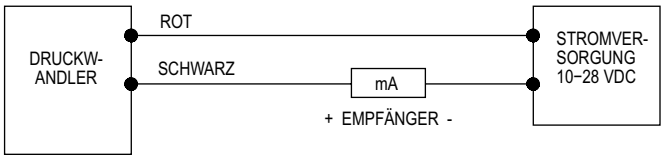

Abbildung A

Schwarzer Draht ist negativ [-] und roter Draht ist positiv [+] in Abbildung B.

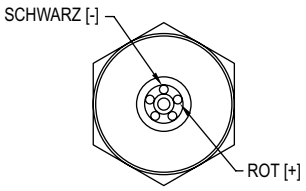

Abbildung B

WARTUNG

Nach der endgültigen Installation des Druckwandlers und seines Begleitempfängers ist keine routinemäßige Wartung erforderlich. Eine regelmäßige Überprüfung der Systemkalibrierung wird empfohlen. Die Wandler der Serie PBLTX sind nicht vor Ort reparierbar und sollten zurückgesandt werden, wenn eine Reparatur erforderlich ist (eine Reparatur vor Ort sollte nicht durchgeführt werden und kann die Garantie ungültig machen). Fügen Sie der Rücksendung eine kurze Erläuterung des Problems sowie relevante Anwendungshinweise bei. Bevor Sie das Produkt einschicken, holen Sie sich bitte beim Kundendienst eine Warenrücksendenummer.

001833-44

NOTES:
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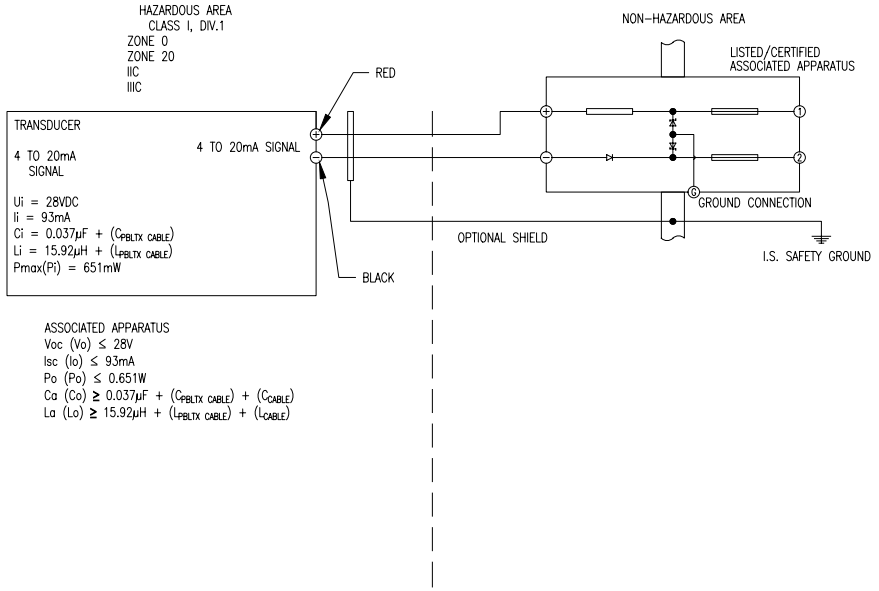
7. NO REVISIONS TO THIS DRAWING WITHOUT PRIOR APPROVAL BY UL.



ASSOCIATED APPARATUS
Voc (Vo) ≤ 28V
Isc (Io) ≤ 93mA
Po (Po) ≤ 0.651W
Ca (Co) ≥ 0.037µF + ($C_{PBLTX\ CABLE}$) + (C_{CABLE})
La (Lo) ≥ 15.92µH + ($L_{PBLTX\ CABLE}$) + (L_{CABLE})

ZONE AND DIVISION ENTITY PARAMETERS ARE SHOWN AS: DIVISION (ZONE)

Ⓒ = CRITICAL DIMENSION
STANDARD TOLERANCES UNLESS NOTED:
ALL DECIMAL DIMENSIONS ± .005
ALL ANGLES ± 1°

NO.	CHANGES	BY/DATE
2	UPDATING STANDARDS FOR AGENCY PER ECR–048314	KAS 12–10–21
1	GENERAL REVISION AS REQUESTED BY UL PER ECR #43410	RBS 6–20–18
0	INITIAL RELEASE ND–005145	AMS 02–28–18

DATE 02–12–18
DWN BY AMS
CHKD DGH
APPD LR
ACAD2002

NAME: PBLTX I.S. CONTROL DRAWING

MATERIAL
FINISH

DWYER INSTRUMENTS, INC.
MICHIGAN CITY, INDIANA 46360 U.S.A.

FR. NO. 001833–44

DWYER INSTRUMENTS, LLC
Postfach 373 • MICHIGAN CITY, INDIANA 46360, USA
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Fax: +1-219-872-9057
www.dwyer-inst.com
e-mail: info@dwyermail.com

001833-47

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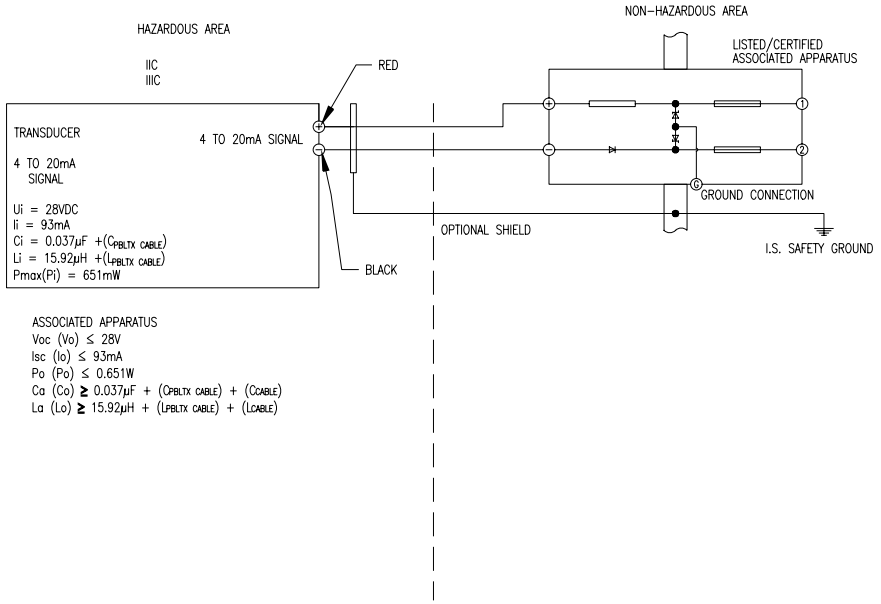
3. THE ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION INSTRUCTIONS MUST BE FOLLOWED WHEN INSTALLING THE EQUIPMENT.
4. WARNING – ALL FIELD WIRING SHALL BE SUITABLE FOR AN AMBIENT TEMPERATURE RANGE OF –20° TO 80°C.
5. THE CABLE USED IN THIS DEVICE HAS A VENT TUBE. THEREFORE THE CABLE ATTACHED TO THE PBLTX SHALL BE TERMINATED IN THE HAZARDOUS AREA.
6. NO REVISIONS TO THIS DRAWING WITHOUT PRIOR APPROVAL BY UL/DEMKO.
7. TRANSDUCER MUST BE INSTALLED IN ACCORDANCE TO IEC/EN 60079-14 OR ANY LOCAL INSTALLATION CODES/REQUIREMENTS.



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Po (Po) ≤ 0.651W
Ca (Co) ≥ 0.037µF + (CPBLTX CABLE) + (CCABLE)
La (Lo) ≥ 15.92µH + (LPBLTX CABLE) + (LCABLE)

CD = CRITICAL DIMENSION
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ALL ANGLES ± 1°

NO.	CHANGES	BY/DATE
3	UPDATING STANDARDS FOR AGENCY PER ECR-048314	KAS 12-10-21
2	ADDED ATEX CONFIGURATION PER ECR #045704	JEO 12-10-19
1	GENERAL REVISION AS REQUESTED BY UL PER ECR #43410	RBS 6-20-18
0	INITIAL RELEASE ND-005145	AMS 02-28-18

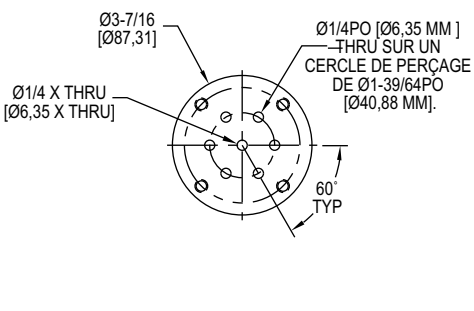
DATE 02-14-18
DWN BY AMS
CHKD DGH
APPD LR
NAME: PBLTX I.S. CONTROL DRAWING ATEX/IECEx
MATERIAL
FINISH

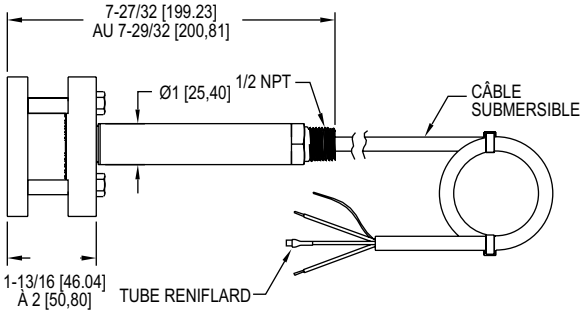
4

DWYER INSTRUMENTS, LLC.
MICHIGAN CITY, INDIANA 46360 U.S.A.
FR. NO. 001833-47

Transducteur de niveau submersible série PBLTX

Spécifications - Installation et mode d'emploi





Le **transducteur de niveau submersible série PBLTX** est conçu pour des années de service sans souci dans les applications les plus difficiles. Le modèle PBLTX mesure la hauteur du liquide au-dessus de sa position dans le réservoir référencé à la pression atmosphérique. Le transducteur est constitué d'un élément de détection piézorésistif, enveloppé dans un corps en acier inoxydable 316. Idéal pour les applications d'eaux usées et de boue, il possède des caractéristiques pour protéger l'unité contre ces applications exigeantes. Le joint à membrane de grand diamètre en acier inoxydable 316 protège des obstructions et résiste aux dommages liés aux matières flottantes.

Il est équipé d'un câble à résistance à la traction de 270 lb (123 kg), blindé et ventilé. Le tube de mise à l'air libre du câble compense automatiquement les variations de pression atmosphérique au-dessus du réservoir. L'évent est protégé par un filtre sans entretien éliminant les particules ou les gouttelettes d'eau qui pénètrent dans le transducteur.

Classification d'homologation de sécurité intrinsèque
Le modèle PBLTX est enregistré UL pour une utilisation dans les zones dangereuses (classées). La méthode de protection est la sécurité intrinsèque, « ia ». Elle a été étudiée par UL en vertu de la norme UL 913 8e édition, CAN/CSA C22.2 n° 60079-0:15 et CAN/CSA C22.2 n° 60079-11:14.

Zone dangereuse (classée) à sécurité intrinsèque pour :
Classe I Div. 1 groupes A, B, C, D
Classe II Div. 1 groupes E, F, G
Classe III Div. 1
Classe I Zone 0 AEx ia IIC T4 Ga
Zone 20 AEx ia IIIC T135 °C Da
Ex ia IIC T4 Ga
Ex ia IIIC T135 °C Da
Ta = -20 °C à 80 °C (câble ETFE)
Ta = -20 °C à 65 °C (câble en polyuréthane)
Installer conformément au schéma de contrôle 001833-44.
Voir le schéma de contrôle 001833-44 pour les paramètres d'entité.

ATEX : Certificat de type UE n° DEMKO 18 ATEX 2080
NORMES ATEX : EN 60079-0, EN 60079-11
CLASSIFICATION ATEX : CE 2813 Ex II 1 G Ex ia IIC T4 Ga (-20 °C ≤ Tamb ≤ 80 °C (câble ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (câble en polyuréthane))
CE 2813 Ex II 1 D Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C (câble ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (câble en polyuréthane))
Certificat de conformité IECEx : IECEx UL 18.0086
NORMES IECEx : IEC 60079-0, IEC 60079-11
CLASSIFICATION IECEx : Ex ia IIC T4 Ga (-20 °C ≤ Tamb ≤ 80 °C (câble ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (câble en polyuréthane))
Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C (câble ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (câble polyuréthane))
Certificat de conformité UKCA Ex: UL21UKEX2364
NORMES UKCA Ex: EN 60079-0, EN 60079-11
CLASSIFICATION UKCA Ex: II 1 G Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤80°C
Installer conformément au schéma de contrôle 001833-47
VOIR LE SCHÉMA DE CONTRÔLE 001833-47 POUR LES PARAMÈTRES D'ENTITÉ.

SPÉCIFICATIONS

Service: Liquides compatibles.
Matériaux mouillés: Corps : acier inoxydable 316, acier inoxydable 316L ; Câble : polyéther polyuréthane ou ETFE ; Joints : fluoroélastomère.
Précision: ± 0,25 % FS.
Limite de température: Câble ETFE équipé : -4 à 176 °F (-20 à 80 °C) ; Câble en polyuréthane équipé : -4 à 149 °F (-20 à 65 °C).
Plage de températures compensées: -4 à 176 °F (-20 à 80 °C)
Effet thermique: Moins de ± 0,02 %/FS/°F.
Limite de pression: 2X FS.
Puissance électrique nécessaire: 10 à 28 VCC.
Signal en sortie: 4 à 20 mA CC, deux fils.
Temps de réponse: 50 msec.
Résistance max. de la boucle: 900 Ω.
Raccordement électrique: Raccord flexible.
Orientation de montage: Suspendu dans le réservoir au-dessous du niveau étant mesuré. Peut être placé sur le fond du réservoir sur le côté.
Poids: 3,8 lb (1,7 kg) à 4,3 lb (2,0 kg).
Conformité: CE, UKCA, Voir Classification d'homologation de sécurité intrinsèque.

⚠ AVERTISSEMENT Utiliser avec des barrières de sécurité approuvées en utilisant l'évaluation de l'entité.

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P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360, ÉTATS-UNIS.
Téléphone: 219-879-8000 **www.dwyer-inst.com**
Fax: 219-872-9057 **e-mail: info@dwyermail.com**

⚠ MISE EN GARDE : Ne pas dépasser les tensions d'alimentation nominales spécifiées. Le non-respect de cette consigne entraînera des dommages permanents non couverts par la garantie. Ce dispositif n'est pas conçu pour un fonctionnement à 120 ou 240 VCA. Utiliser uniquement à 10 à 28 VCC.

INSTALLATION

1. **Emplacement :** Sélectionner un emplacement où la température du transducteur se situera entre -4 et 176 °F (-20 et 80 °C) pour le câble ETFE ou -4 et 149 °F (-20 et 65 °C) pour le câble en polyuréthane. La distance à partir du récepteur est uniquement limitée par la résistance totale de la boucle.

2. **Position :** Le transducteur peut se positionner librement. Toutefois, tous les modèles standard sont à l'origine étalonnés avec l'unité dans une position orientant la membrane vers le bas. Bien qu'ils puissent être utilisés sous d'autres angles, pour une meilleure précision, il est recommandé que les unités soient installées dans la position étalonnée à l'usine.

3. **Montage :** Le transducteur peut être monté par plusieurs méthodes. Il peut être suspendu au câble électrique, il peut être placé reposant sur le fond du réservoir en orientation horizontale ou verticale, ou il peut être fixé à un tuyau ou en accrochant le fil près du raccord mâle de 1/2 po NPT sur la partie supérieure du corps.

4. **Longueur de câble :** La longueur maximale du câble de raccordement du transducteur au récepteur dépend de la taille du câble et de la résistance du récepteur. Le câblage ne doit pas contribuer à plus de 10 % de la résistance du récepteur par rapport à la résistance totale de la boucle. Pour les longues distances (supérieures à 1 000 pieds [304,8 mm]), choisir des récepteurs avec une résistance plus élevée afin de réduire la taille et le coût des câbles de raccordement. Lorsque la longueur de câble est inférieure à 100 pieds (30,5 m), un fil aussi petit que 22 AWG peut être utilisé.

5. **Câblage :** Une alimentation externe fournissant entre 10 et 28 VCC avec une capacité de courant minimum de 40 mA CC (par transducteur) est nécessaire pour alimenter la boucle de contrôle. Voir figure A pour le raccordement à l'alimentation électrique, transducteur et récepteur. La plage de charge de résistance appropriée du récepteur (RL) pour la tension d'alimentation CC disponible s'exprime par la formule suivante :

$$\text{RL Max} = \frac{\text{Vps} - 10\ \text{V}}{20\ \text{mA CC}}$$

L'utilisation d'un câble blindé est recommandé pour le câblage à boucle de contrôle.

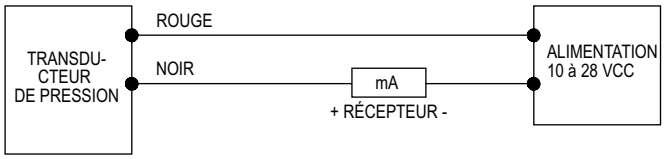

Figure A

Le fil noir est négatif [-] et le fil rouge est positif [+] à la figure B.

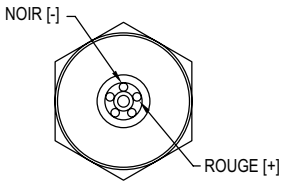

Figure B

ENTRETIEN

Après l'installation finale du transducteur de pression et de son récepteur aucun entretien de routine n'est nécessaire. Une vérification périodique de l'étalonnage du système est suggérée. Les transducteurs série PBLTX ne sont pas réparables sur site et doivent être retournés si des réparations sont nécessaires (les tentatives de réparation peuvent annuler la garantie). Prendre soin d'inclure une brève description du problème ainsi que toute remarque utile sur les conditions d'utilisation. Contacter le service client pour recevoir un numéro d'autorisation de retour de marchandise avant de procéder au renvoi.

001833-44

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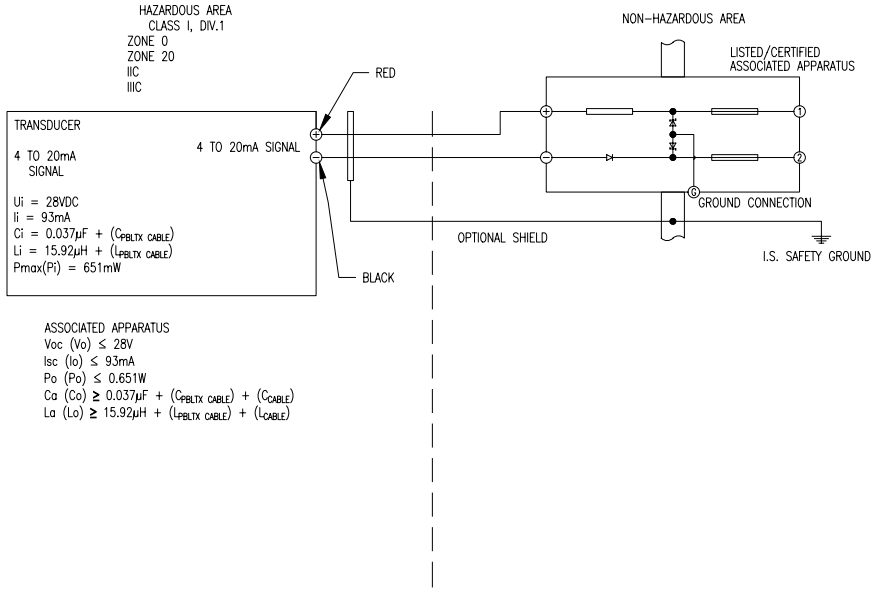

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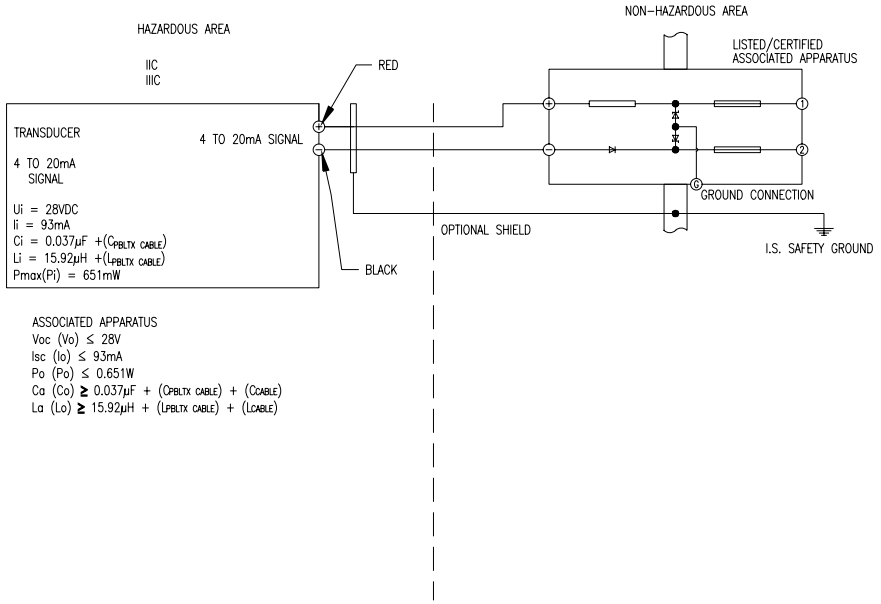

CD = CRITICAL DIMENSION
STANDARD TOLERANCES UNLESS NOTED:
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DATE 02-14-18
DWN BY AMS
CHKD DGH
APPD LR

NAME
PBLTX
I.S. CONTROL DRAWING
ATEX/IECEx

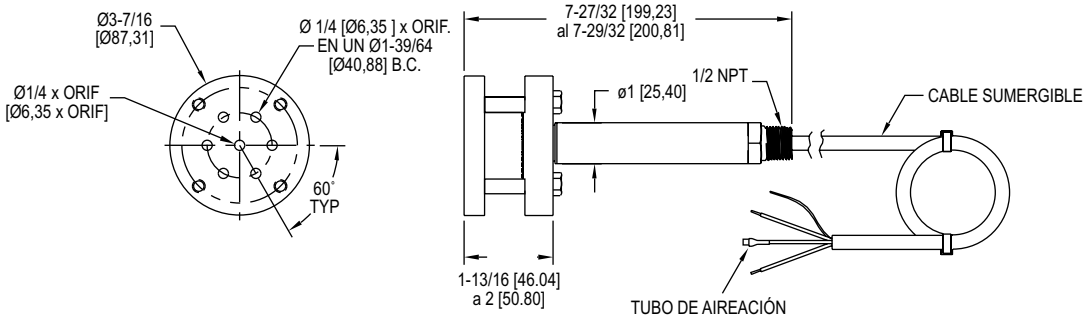
MATERIAL
FINISH

DWYER INSTRUMENTS, LLC.
MICHIGAN CITY, INDIANA 46360 U.S.A.

FR. NO. 001833-47

Transductor de nivel sumergible de la serie PBLTX

Especificaciones: instrucciones de instalación y uso



El **transductor de nivel sumergible de la serie PBLTX** se fabrica para que preste servicio durante años sin dar problemas en las aplicaciones más duras. El PBLTX mide la altura del líquido por encima de su posición en el depósito tomando la presión atmosférica como referencia. El transductor consta de un elemento de detección piezorresistivo que está alojado en una carcasa de 316 SS. Perfecto para aplicaciones en aguas residuales y lodos con prestaciones que protegen la unidad de estas exigentes aplicaciones. La junta de diafragma de gran diámetro de 316 SS no se obstruye y es resistente a los sólidos flotantes.

Viene equipado con un cable apantallado y ventilado que tiene una resistencia de 270 libras a la tracción. El tubo de ventilación del interior del cable compensa automáticamente los cambios de presión atmosférica existentes por encima del depósito. El respiradero está protegido por un filtro que no necesita mantenimiento y elimina las partículas o gotas de agua que entran en el transductor.

Clasificación de la certificación de seguridad intrínseca
El PBLTX está homologado por UL para su uso en ubicaciones peligrosas (clasificadas). El método de protección es por seguridad intrínseca, "ia". Fue investigado por UL según la norma UL 913 8.ª edición, CAN/CSA C22.2 n.° 60079-0:15 y CAN/CSA C22.2 n.º 60079-11:14.

Ubicación (clasificada como) peligrosa intrínsecamente segura para:
Clase I Div. 1 Grupos A, B, C, D
Clase II Div. 1 Grupos E, F, G
Clase III Div. 1
Clase I Zona 0 AEx ia IIC T4 Ga
Zona 20 AEx ia IIIC T135 °C Da
Ex ia IIC T4 Ga
Ex ia IIIC T135 °C Da
Ta = entre -20 °C y 80 °C (cable de ETFE)
Ta = entre -20 °C y 65 °C (cable de poliuretano)
Instálese conforme al esquema de control 001833-44.
Consulte en el esquema de control 001833-44 los parámetros de entidad.

ATEX: Certificado de tipo EU Nº DEMKO 18 ATEX 2080
NORMAS ATEX: EN 60079-0, EN 60079-11
CLASIFICACIÓN ATEX: CE 2813 Ex II 1 G Ex ia IIC T4 Ga (-20 °C ≤ Tamb ≤ 80 °C (cable de ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (cable de poliuretano))
CE 2813 Ex II 1 D Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C (cable de ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (cable de poliuretano))
Certificado de cumplimiento IECEx: IECEx UL 18.0086
NORMAS IECEx: IEC 60079-0, IEC 60079-11
CLASIFICACIÓN IECEx: Ex ia IIC T4 Ga (-20 °C ≤ Tamb ≤ 80 °C (cable de ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (cable de poliuretano))
Ex ia IIIC T135 °C Da (-20 °C ≤ Tamb ≤ 80 °C (cable de ETFE)) (-20 °C ≤ Tamb ≤ 65 °C (cable de poliuretano))
Certificado de cumplimiento UKCA Ex: UL21UKEX2364
NORMAS UKCA Ex: EN 60079-0, EN 60079-11
CLASIFICATIÓN UKCA Ex: II 1 G Ex ia IIC T4 Ga (-20°C ≤ Tamb ≤80°C
Instálese conforme al esquema de control 001833-47
PARA VER LOS PARÁMETROS DE ENTIDAD, CONSULTE EL ESQUEMA 001833-47.

ESPECIFICACIONES

Mantenimiento: líquidos compatibles.
Materiales humedecidos: cuerpo: 316 SS, 316L SS; cable: poliuretano con base de poliéter o ETFE; juntas: fluoroelastómero.
Precisión: ±0,25 % FS.
Límite de temperatura: cable de ETFE suministrado entre -4 y 176 °F (-20 y 80 °C); cable de poliuretano suministrado entre -4 y 149 °F (-20 y 65 °C).
Rango de temperatura compensado: entre -4 y 176 °F (-20 y 80 °C).
Efecto térmico: menos de ±0,02 %/ FS/ °F.
Límite de presión: 2X FS.
Potencia requerida: 10-28 V CC.
Señal de salida: 4-20 mA CC, dos cables.
Tiempo de respuesta: 50 ms.
Máx. Resistencia de bucle: 900 Ω.
Conexión eléctrica: espiral de cable.
Orientación para el montaje: suspendido dentro del depósito por debajo del nivel que se está midiendo. Se puede colocar en la parte inferior del depósito a su lado.
Peso: 3.8 lb (1.7 kg) a 4.3 lb (2.0 kg).
Cumplimiento: CE, UKCA, consulte la Clasificación de la certificación de seguridad intrínseca.

⚠ ADVERTENCIA Empléese con barreras de seguridad autorizadas utilizando la evaluación de entidades.

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Teléfono: +1-219-879-8000 www.dwyer-inst.com
Fax: +1-219-872-9057 e-mail: info@dwyermail.com

⚠ PRECAUCIÓN No sobrepase los valores de tensión de alimentación especificados. Se producirán daños permanentes que no están cubiertos por la garantía. Este dispositivo no está diseñado para funcionar a una CA de 120 o 240 voltios. Utilícese solamente a 10-28 V CC.

INSTALACIÓN

1. **Ubicación:** seleccione un lugar donde la temperatura del transductor esté entre -4 y 176 °F (-20 y 80 °C) para el cable de ETFE o entre -4 y 149 °F (-20 y 65 °C) para el cable de poliuretano. La distancia desde el receptor solo está limitada por la resistencia de bucle total.

2. **Posición:** el transductor no es sensible a la posición. Sin embargo, todos los modelos estándar están calibrados originalmente con la unidad en una posición con el diafragma hacia abajo. Aunque se pueden utilizar en otros ángulos, para que la precisión sea mayor se recomienda que las unidades se instalen en la posición calibrada en la fábrica.

3. **Montaje:** el transductor se puede montar utilizando varios métodos. Se puede suspender del cable eléctrico, se puede colocar descansando en la parte inferior del depósito con una orientación horizontal o vertical, o se puede conectar a una tubería o colgar el cable por la conexión macho 1/2″ NPT en la parte superior de la carcasa.

4. **Longitud del cable:** la longitud máxima del cable que conecta el transductor y el receptor depende del tamaño del cable y de la resistencia del receptor. El cableado no debe contribuir a la resistencia de bucle total en más del 10 % de la resistencia del receptor. Para distancias extremadamente largas (más de 1000 pies [304 m]), elija receptores que tengan una resistencia superior, para minimizar el tamaño y el coste de los cables de conexión. Cuando la longitud del cableado es inferior a 100 pies (30 m), se puede utilizar un cable de pequeño calibre de 22 AWG.

5. **Cableado:** para alimentar el bucle de control, hay que tener un suministro de alimentación externo que proporcione 10-28 V CC con una capacidad de corriente mínima de 40 mA CC (por transductor). Vea en la Figura A la conexión del suministro de alimentación, el transductor y el receptor. El rango de la resistencia adecuada de la carga del receptor (RL) para el suministro de alimentación de CC disponible se expresa mediante la siguiente fórmula:

$$\text{RL Máx} = \frac{\text{Vps} - 10\ \text{V}}{20\ \text{mA CC}}$$

Para controlar el cableado de bucle se recomienda utilizar un cable apantallado.

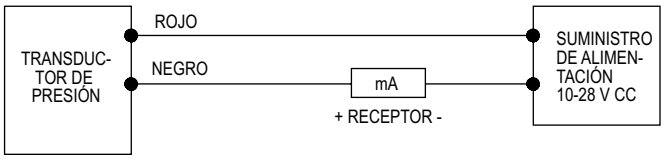

Figura A

En la Figura B, el cable negro es negativo [-] y el cable rojo es positivo [+].

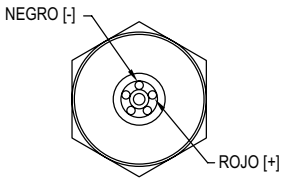

Figura B

MANTENIMIENTO

Después de la instalación definitiva del transductor de presión y su receptor complementario, no es necesario realizar el mantenimiento de rutina. Se sugiere realizar periódicamente la revisión de la calibración del sistema. Los transductores de la serie PBLTX no son reparables in situ y deben devolverse si es necesario repararlos (no debe intentarse realizar la reparación in situ, lo que podría anular la garantía). Asegúrese de incluir una breve descripción del problema, además de notas pertinentes sobre la aplicación. Para obtener un número de autorización de devolución de productos antes del envío, póngase en contacto con el servicio de atención al cliente.

001833-44

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2. ASSOCIATED APPARATUS OUTPUT CURRENT MUST BE LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE–CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN–CIRCUIT VOLTAGE AND SHORT–CIRCUIT CURRENT.
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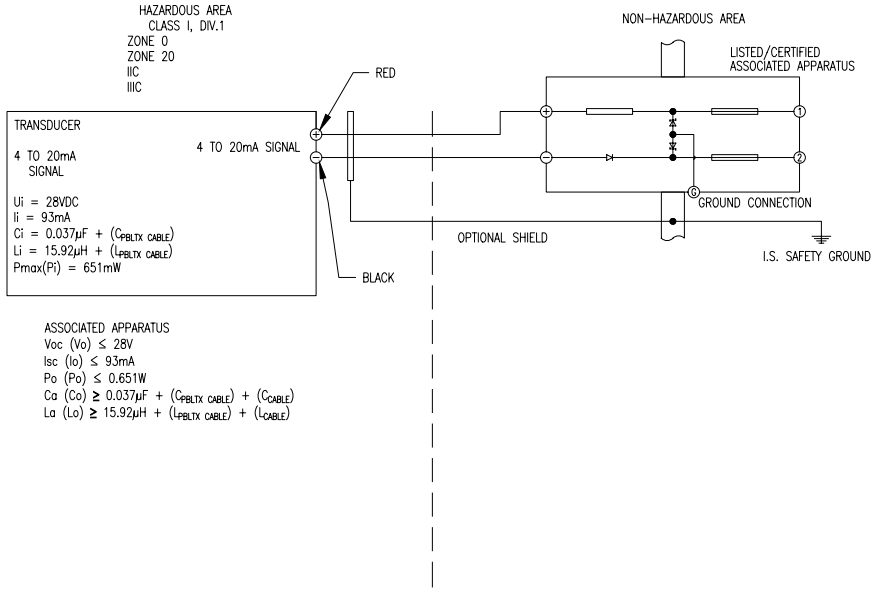

ASSOCIATED APPARATUS
Voc (Vo) ≤ 28V
Isc (Io) ≤ 93mA
Po (Po) ≤ 0.651W
Ca (Co) ≥ 0.037µF + ($C_{PBLTX\ CABLE}$) + (C_{CABLE})
La (Lo) ≥ 15.92µH + ($L_{PBLTX\ CABLE}$) + (L_{CABLE})

ZONE AND DIVISION ENTITY PARAMETERS ARE SHOWN AS: DIVISION (ZONE)

Ⓒ = CRITICAL DIMENSION
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DWN BY AMS
CHKD DGH
APPD LR
ACAD2002

NAME: PBLTX I.S. CONTROL DRAWING

MATERIAL
FINISH

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FR. NO. 001833–44

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001833-47

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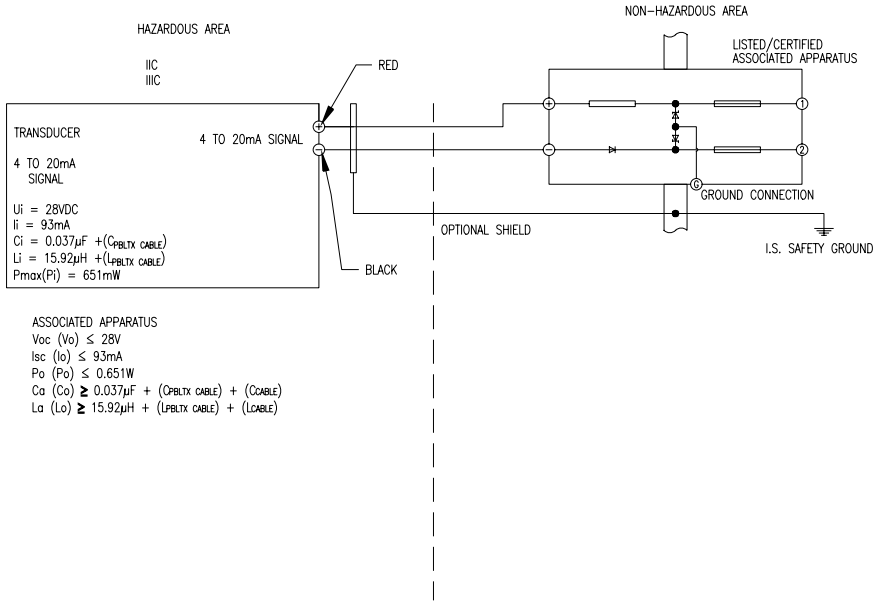

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