Barksdale®
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

Installation and Maintenance Instructions

Intrinsic Safety H455E & 455E
Barksdale Intelligent Transmitter

See Control Drawing #272471 for Intrinsically Safe Installation

COMMON SPECIFICATIONS FOR ALL UNIITS:

Calibration Reference Conditions:

Ambient Temperature: -40 TO 176°F (-40 TO 80°C)
Relative Humidity: 40 to 60%
Barometric Pressure: 29.92 in. Hg.

Performance Characteristics:

Accuracy (L,H&R): ± 0.25% FSO (BFSL of L/H/R effects at 75°F)
±0.1% FS At 75°F (24°C) (Optional)
Long Term Stability: Will repeat within ± 0.2% FSO of original calibration curve for 3 year
Proof Pressure: 2X range for up to 7500 psi models;
1.5X range for 7500 – 30000 psi models.
Vibration: 2000 Hz at 15 g's peak, MIL-STD 202, METHOD 204, COND. B
Shock: 50 g's, 11 ms, MIL-STD 202, METHOD 213, Cond. G.
Wetted Material: 316L Stainless Steel (up to 10k psi)
17-4 PH Stainless Steel (>15k psi)
Optional: 718 Inconel (up to 10k psi)
Pressure Cavity Volume: 0.08 inches³ maximum approx.

CALIBRATION:

All models are tested to meet or exceed the published specifications. The calibration and testing were done using instrumentation and standards traceable to the National Institute of Standards and Technology (NIST). Also tested in accordance with MIL-STD-45662A.

Approvals:

CE 0081 Ex

II 1 G D
Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da, IP66 & IP67
-40°C ≤ Tamb ≤ +80°C
CML 19 ATEX 2240X
IECEx CML 19.0066X

C SP® US

INTRINSIC SAFETY
CLASS I, DIV 1, GROUPS A, B, C & D
CLASS II, DIV 1, GROUPS E, F & G
Ex ia IIC T4 Ga
Ex ia IIIC T135ºC Da
Class I, Zone 0, AEx ia IIC T4 Ga
Zone 20, AEx ia IIIC T135ºC Da
FACTORY SEALED NEMA 4X ENCLOSURE

Model Series: **H455E & 455E(4 – 20 mA):**
Excitation Voltage: 9 to 30 VDC
Analog Output: 4 to 20 mA
Zero Balance: ±1% FSO At 75°F (24°C)
Protection: Reverse polarity protected
Loop Resistance: See loop resistance chart on back page
Temperature Range: Compensated: 0 to +165°F (-18 to +74°C)
Operating: -40 to +176°F (-40 to +80°C)
Media: -40 to +176°F (-40 to +80°C)
Temperature Error: ±1% per 100°F
Weight: 16 Oz (453 grams)
Wiring (STD):

TABLE 1. FREE LEAD WIRES, CONNECTOR PIN AND JACKETED CABLE (-J OPTION) WIRE CONNECTIONS				
MODEL No.	**RED/A/1/WHT**	**BLACK/B/2/BRN**	**GREEN/D/4/GRN**	**WHITE/C/3/YEL**
H455E / 455E	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED

Wiring (Bendix connector): Per Bendix connector Pins
Wiring (Deutsch connector): Refer sales drawing
Span Adjustment (Turn Down): 10:1 (With HART option only)
Span Accuracy: ±1% FSO AT 75°F (24°C).

TYPE OF THREADS FOR PROCESS CONNECTIONS			
Code	**Thread type**	**Code**	**Thread type**
BLANK	1/4" NPT, Male	**- P11**	G 1/2, Washer seal, Male
- P6	1/4" NPT, Female	**- P13**	G 1/2, Washer seal, Female
- P4	1/2" NPT, Male	**- P3**	7/16-20, with 37° Flared, Male
- P5	1/2" NPT, Female	**- P1**	7/16-20, with 37° Flared, Female
- P10	G 1/4, washer seal, Male	**- P2**	7/16-20, SAE #4, ORB, Male
- P12	G 1/4, Washer seal, Female	**- P14**	7/16-20, SAE #4, ORB, Female
- P15	HF4 Autoclave, 1/4" Tube, Female (9/16-18 UNF-28 THD)		

Consult Sales Drawing & EN/IEC 61000-4 for appropriate Electromagnetic Compatibility (EMC) requirements.

WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
Clean only with damp cloth.

AVERTISSEMENT : Pour éviter l'inflammation d'atmosphères inflammables ou combustibles, débrancher l'alimentation avant une maintenance. Nettoyer uniquement avec un chiffon humide.

Safe Use: The Apparatus is not capable of withstanding the 500V insulation test required by Clause 6.3.13 of IEC/EN 60079-11:2011. This must be taken into account when installing the equipment.

Utilisation sûre: L'appareil n'est pas capable de résister au test d'isolation de 500 V requis par la clause 6.3.13 de la norme IEC / EN 60079-11: 2011. Ceci doit être pris en compte lors de l'installation de l'équipement.

www.mod-tronic.com | sales@mod-tronic.com | 1-800-794-5883

W A R N I N G ! READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transmitter and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects. Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.

Barksdale pressure transmitters having a pressure range 500 psi and higher have a built in pressure surge protection in the input port. The design is such that an orifice is made an integral part of the pressure port. Designed with the upstream side of the orifice as a sharp corner, it acts as a very effective protection. Other orifice devices can be installed upstream of the pressure transmitter in the piping system for extra protection where the system engineer requires it.

Liquid surges are particularly damaging to pressure transmitters if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed, and a pressure snubber should be installed on every transmitter.

Symptoms of fluid hammer and surge's damaging effects:

1. Pressure transmitter exhibits an output at zero pressure (large zero offset). If zero offset is less than 10% FS, user can usually re-zero meter, install proper snubber and continue monitoring pressures.
2. Pressure transmitter output remains constant regardless of pressure.
3. In severe cases, there will be no output.

TORQUE REQUIREMENTS:

Apply pipe compound sparingly to male pipe threads only. Avoid pipe strain on Transmitter housing by properly supporting and aligning piping. Apply wrench to the hex flats of fittings only, then tighten the connection. Adequate support of piping and proper mounting of the pressure transmitter should be made to avoid excessive shock and vibration.

TORQUE TO 125 - 150 pound inches.

CAUTION: For steam service, install a condensate loop (pigtail or steam siphon tube) between the steam line and the pressure transmitter.

AVERTISSEMENT ! LIRE AVANT L'INSTALLATION

Les coups de bélier et remontées de fluide peuvent détruire tout transmetteur de pression et doivent toujours être évités. Un amortisseur de pression devra être installé pour éliminer les effets nuisibles des coups de bélier. Un coup de bélier se produit lorsqu'un écoulement de liquide est subitement arrêté, comme lors de la fermeture rapide de vannes électromagnétiques. Les remontées de fluide se produisent lorsque l'écoulement est subitement amorcé, comme lors du démarrage d'une pompe à pleine puissance ou de l'ouverture subite d'une vanne.

Les transmetteurs de pression Barksdale ayant une plage de pression de 2 000 psi (137,9 bars) et supérieure ont une protection contre les coups de béliers à la prise d'entrée. Leur conception est telle qu'un orifice est intégré à la prise de pression. Le côté en amont de l'orifice se présentant sous la forme d'un angle aigu, il s'agit d'une protection très efficace. D'autres dispositifs à orifice peuvent être installés en amont du transmetteur de pression dans la tuyauterie pour plus de protection lorsque l'ingénieur systèmes en a besoin.

Les remontées de liquide sont particulièrement nuisibles aux transmetteurs de pression si le tuyau est vide au départ. Pour éviter les remontées nuisibles, les conduites de fluide doivent rester pleines (si possible), les pompes doivent être mises en route progressivement et les vannes ouvertes lentement. Pour éviter les dégâts des coups de béliers et remontées de fluide, une chambre anti-remontée devra être installée et un amortisseur de pression devra être installé sur chaque transmetteur.

Symptômes des effets nuisibles des coups de bélier et des remontées de fluide : 1. Le transmetteur de pression présente une sortie à la pression zéro (grand décalage de zéro). Si le décalage de zéro est inférieur à 10 % de la pleine échelle (FS), l'utilisateur peut généralement remettre à zéro le manomètre, installer l'amortisseur adéquat et continuer à surveiller les pressions.

2. La sortie du transmetteur de pression reste constante, quelle que soit la pression.

3. Dans des cas sévères, il n'y aura pas de sortie.

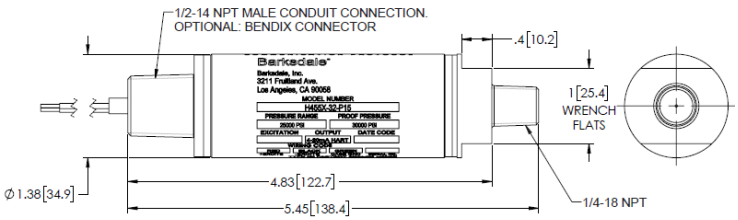
EXIGENCES DE COUPLE :

Appliquer avec parcimonie de la pâte à joints sur les filets de tuyauterie mâles uniquement. Éviter les contraintes du tuyau sur le boîtier du transmetteur en soutenant et alignant correctement le tuyau. Serrer avec une clé au niveau des méplats des raccords uniquement, puis serrer le raccord. Soutenir le tuyau et installer correctement le transmetteur de pression pour éviter les chocs et vibrations excessifs. SERRER JUSQU'À 125 à 150 lb-in (14,3 à 16,95 bars).

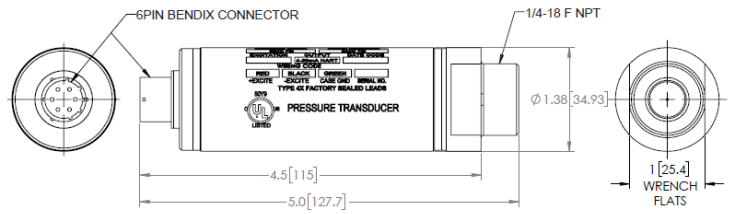
MISE EN GARDE: Pour le service à la vapeur, installez une boucle de condensat (tube en queue de cochon ou siphon à vapeur) entre la conduite de vapeur et le transmetteur de pression.

DIMENSIONS

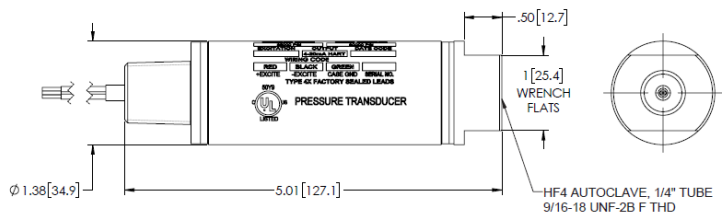
- LOW/HIGH PRESSURE CONFIGURATION W/ DIFFERENT PROCESS FITTINGS



- BENDIX CONNECTOR CONFIGURATION FOR ALL RANGES



- SUPER PRESSURE CONFIGURATION



Refer to product data sheet / sales drawing for other electrical terminations.

WARNING

INSTALLATION REQUIREMENTS PER
BARKSDALE CONTROL DRAWING #272471

ATTENTION

EXIGENCES D'INSTALLATION PAR
DESSIN DE CONTROLE BARKSDALE #272471

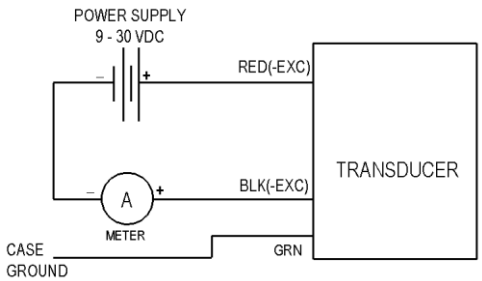
CONDITION OF USE IN THE FINAL INSTALLATION:

ENTITY PARAMETERS					
MODEL	I.S. VALUES				
	Vmax / Ui	Imax / Ii	Ci	Li	Pi max
H455E / 455E	30 VDC	100mA	2.2 nF	30 uH	750 mW

WARNING: DO NOT REMOVE CONNECTOR WHILE POWERED!
AVERTISSEMENT : NE PAS RETIRER LE CONNECTEUR AVEC L'APPAREIL SOUS TENSION !

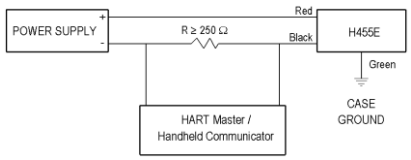
WIRING

Current Output (4-20mA):

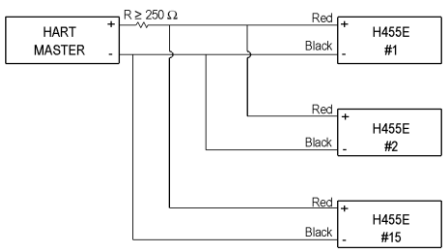


Configuration with HART Device:

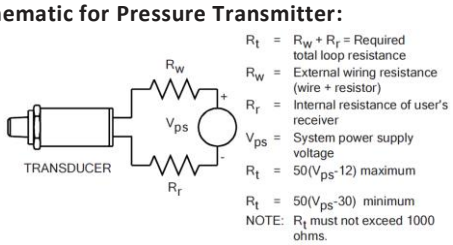
1. Point to Point:



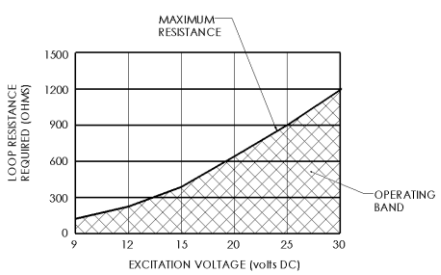
2. Multi Drop:



Typical Schematic for Pressure Transmitter:



Load Resistance Chart:



RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to Barksdale, Inc. Customer Service Department.
Call 323-589-6181, FAX: 323-589-3463

BEFORE RETURNING ANY PRODUCT(S) TO BARKSDALE, YOU MUST OBTAIN A RETURNED MERCHANDISE AUTHORIZATION FROM OUR CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS).

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting Barksdale:
1. P.O. number under which the product was PURCHASED.
2. Model number of the product under warranty.
3. Repair instructions and/or specific problems you are having with the product.
4. Application information.

Bulletin No. 272470 REV B 10-15-2019