Barksdale

Installation And Maintenance Instructions

420 SERIES

PRESSURE TRANSDUCERS

COMMON SPECIFICATIONS FOR ALL UNITS

Calibration Reference Conditions

Ambient Temperature: 75°F
Relative Humidity: 40 to 60%
Barometric Pressure: 29.92 in. Hg.

Performance Characteristics

Accuracy (LH&R): ± 0.25%, Best Straight Line (BSL) @ 75°F
Long Term Stability: Will repeat within ± 0.25% FSO of original calibration curve for 1 year
Proof Pressure: 2 times rated pressure range, or 13,000 psi, whichever is less
Life, Cycling: Full scale pressure cycles: 10^8 to 300 psi, 10^7 to 1,000 psi, 10^6 to 7,500 psi
Vibration: 15 g's, 10 to 2000 Hz (MIL-STD-202, M204, Cond . B)
Shock: 50 g's, 11 ms (MIL-STD-202, M213, Cond. G)
Wetted Material: 300 series and 17- 4 PH stainless steel.
Electrical Connection: 1 meter jacketed cable, standard
Pressure Cavity Volume: 0.075 inches maximum
Enclosure Rating: NEMA 4 (Except 420 & 422 - NEMA 3)

MILLIVOLT OUTPUT MODELS 420 & 422

Excitation: 10 VDC (Nominal)
Output: 0 to 30 mV (420)
0 to 100 mV (422)
Zero Output: 0 mV ± 2 mV
Full Scale Output: 30 mV ± 1 mV (420)
(3 mV/V Ratiometric with Excitation Voltage)
100 mV ±1 mV (422)
(10 mV/V Ratiometric with Excitation Voltage)
Resistance: 5000 ohms (nominal)
Temperature Range: Compensated: +30° to +160°F (-1° to 71°C)
Operating: -40° to 185°F (-40° to 85°C) standard
Temperature Error: ±3.0% of FSO max over compensated range (420)
±1.0% of FSO max over compensated range (422)
Weight: 4.6 oz (131 grams)
Wiring: Red (+Excite) Bendix Pin A/Pin 1
Green (+Output) Bendix Pin B/Pin 3
White (-Output) Bendix Pin C/Pin 2
Black (-Excite) Bendix Pin D/Pin 4

VOLTAGE OUTPUT MODELS 423 (5 VDC OUTPUT) 426 (10 VDC OUTPUT)

Excitation: 9 to 30 VDC operating (423)
14 to 30 VDC operating (426)
Output: 0.5 to 5.5 VDC (423)
1 to 11 VDC (426)
Zero Output: 0.5 VDC, ± 2.0% of FSO (423)
1.0 VDC, ± 2.0% of FSO (426)
Full Scale Output: 5.5 VDC, ± 1.0% (423)
11 VDC, ± 1.0% (426)
Protection: Reverse polarity protected
Minimum Load Resistance: 2000 ohms
Temperature Range: Compensated: +30° to +130°F (-1° to 54°C)
Operating: -40° to 185°F (-40° to 85°C)
Temperature Error: ±1.0% of FSO max over compensated range
Weight: 5.8 oz (166 grams)
Wiring: Red (+Excite) Bendix Pin A/Pin 1
White (+Output) Bendix Pin B/Pin 3
Black (Common) Bendix Pin C/Pin 2
Drain (Case Gnd) Bendix Pin D/Pin 4

CURRENT OUTPUT MODEL 425

Excitation: 12 to 30 VDC
Output: 4 to 20 mA
Zero Output: 4 mA, ± 2.0% of FSO @ 75°F
Full Scale Output: 20 mA, ± 1.0% @ 75°F
Protection: Reverse polarity protected
Loop Resistance: See loop resistance chart on back page
Temperature Range: Compensated: 0° to +160°F (-18° to 71°C)
Operating: -40° to 185°F (-40° to 85°C)
Temperature Error: ±1.0% of FSO max over compensated range
Weight: 5.9 oz (167.5 grams)
Wiring: Red (+Excite) Bendix Pin A/Pin 1
Black (-Excite) Bendix Pin B/Pin 2
Drain (Case Gnd) Bendix Pin D/Pin 4

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.

WARNING! READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transducer 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 transducers having a pressure range 2,000 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 transducer in the piping system for extra protection where the system engineer requires it.

Liquid surges are particularly damaging to pressure transducers 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 transducer.

Symptoms of fluid hammer and surge's damaging effects:

1. Pressure transducer 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 transducer output remains constant regardless of pressure.
3. In severe cases, there will be no output.

TORQUE REQUIREMENTS:

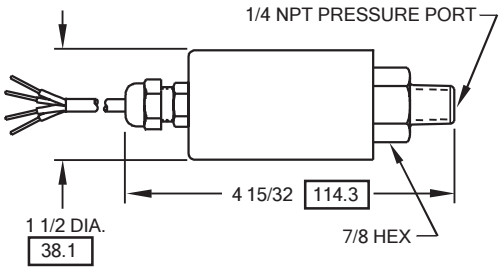
Apply pipe compound sparingly to male pipe threads only. Avoid pipe strain on Transducer housing by properly supporting and aligning piping. Apply wrench to the hex flats of fittings only, then tighten the connection. Adequate support of piping and proper mounting of the pressure transducer should be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

TORQUE TO 125 - 150 pound inches.

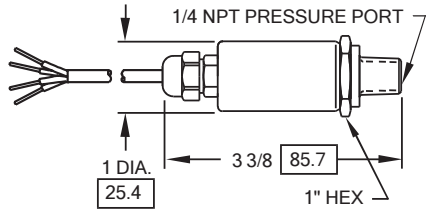
CAUTION: For steam service, install a condensate loop (pigtail or steam siphon tube) between the steam line and the pressure transducer.

DIMENSIONS

MILLIVOLT OUTPUT

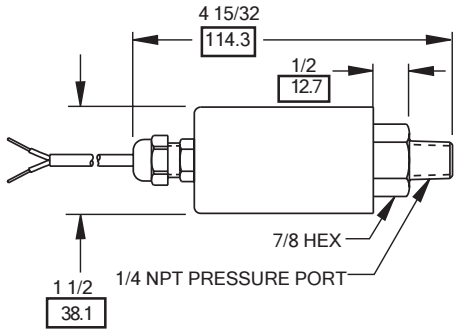


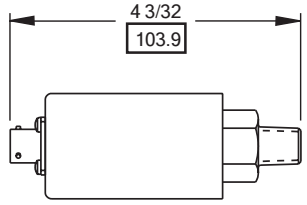
PRESSURE RANGES 2000 TO 7500 PSI



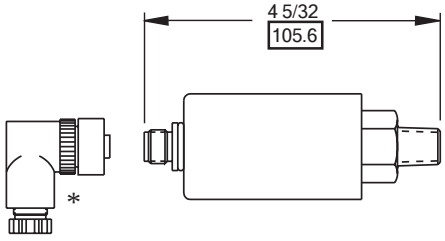
PRESSURE RANGES 15 TO 1000 PSI

AMPLIFIED OUTPUT





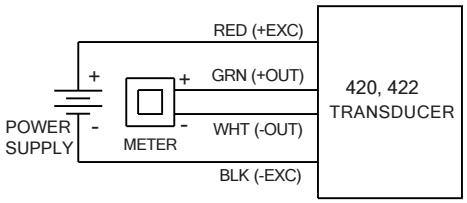
T2 ELECTRICAL CONNECTOR



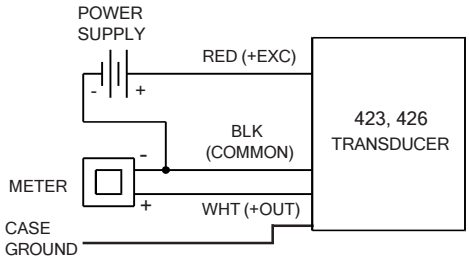
T4 ELECTRICAL CONNECTOR

WIRING

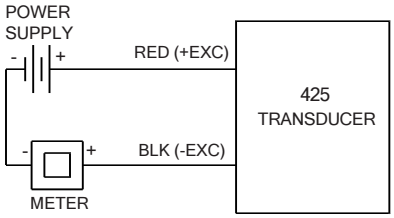
MILLIVOLT OUTPUT



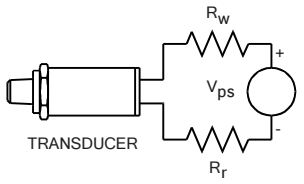
VOLTAGE OUTPUT



CURRENT OUTPUT



TYPICAL APPLICATION SCHEMATIC FOR 425 TRANSDUCER



R_t = $R_w + R_r$ = Required total loop resistance

R_w = External wiring resistance (wire + resistor)

R_r = Internal resistance of user's receiver

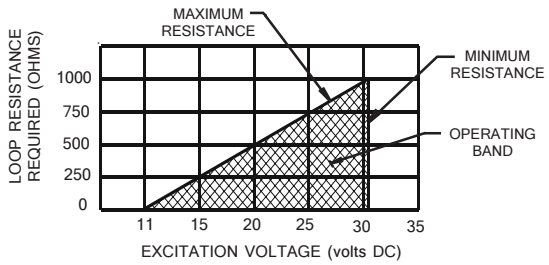
V_{ps} = System power supply voltage

R_t = $50(V_{ps}-12)$ maximum

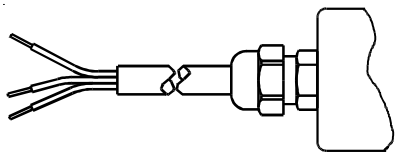
R_t = $50(V_{ps}-30)$ minimum

NOTE: R_t must not exceed 1000 ohms.

LOOP RESISTANCE CHART

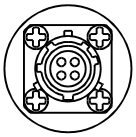


ELECTRICAL CONNECTIONS

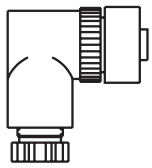


Shielded Jacketed Cable Standard

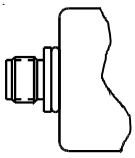
ADDITIONAL OPTIONS (420, 422, 423, 425, 426 MODELS)



Bendix Connector
NEMA 3
4 Pin (PT02A-8-4P)
To order: replace H3 in catalog number with T2
Mating Connector (not provided)
T2: Bendix PT06E-8-4S(SR)

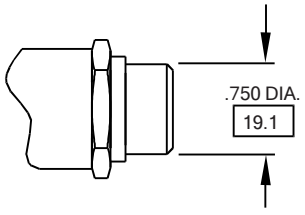


NEMA 3
Mating Connector
Hirschman model
ELWIKA 4012 PG7
* (not provided)



NEMA 3
Hirschman Connector
model ELST 412 PG9
To order: replace H3
in catalog number with T4

PRESSURE PORT OPTION



7/16-20 UNF INTERNAL PORT
To order: add -P1 suffix to catalog number

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.

FOR NON-WARRANTY REPAIRS OR CALIBRATION, consult Barksdale for current repair/calibration charges. Have the following information available BEFORE contacting Barksdale:
1. Your P.O. number to cover the COST of the repair/calibration.
2. Model number of product.
3. Repair instructions and/or specific problems you are having with the product.