

Transmitter

BiT – Barksdale Intelligent Transmitter

Series H455, 455, 452

Features

- ▶ Lightweight, compact and all-welded rugged stainless steel construction
- ▶ High performance sensors for high accuracy
- ▶ Optional HART® communication protocol with diagnostics & field calibration, reducing maintenance time and cost; and 10:1 turndown ratio for re-ranging, maintaining high accuracy and allowing one part number for multiple pressure ranges
- ▶ High accuracy: $\pm 0.1\%$ and $\pm 0.25\%$ FSO, (L,H,R)
- ▶ cULus Certification for Ordinary Locations
- ▶ IP66 & IP67 and NEMA 4X Protection
- ▶ CE, CRN, NACE compliant and Superior EMC/EMI protection
- ▶ RoHS / REACH Compliant

Applications

- ▶ Hydraulic and Pneumatic Product Testing
- ▶ Engine Testing
- ▶ Hydraulic Equipment
- ▶ O&G BOP Pressure Testing
- ▶ Acid Pumps
- ▶ Data Acquisition System
- ▶ Heavy Mobile Equipment Testing
- ▶ OEM Factory Acceptance Testing
- ▶ Pressure Data Loggers
- ▶ Mobile Pressure Test Labs



General Specifications*

| | | | |
|---|---|--|--|
| Accuracy including Linearity, Hysteresis and Repeatability: | $\pm 0.1\%$ of Calibrated FSO (Option [-A1]) $\pm 0.25\%$ of Calibrated FSO (Standard) $\pm 0.5\%$ of Calibrated FSO (Vacuum only [-23]) | Dynamic Response Time: H455: 455 & 452: | <70 milliseconds <50 milliseconds |
| Temperature Shift: | Zero & Span: 0.0125% Per °F over the compensated temperature range | Enclosure: | All welded 300 series stainless steel. IP66 & IP67 and NEMA 4X rated. 316 Stainless steel (optional) |
| Long Term Stability: | $\pm 0.2\%$ FSO /year of calibration curve | Wetted Parts: Sensor: | 17-4 PH Stainless steel (more than 10k psi) 316L Stainless steel (up to 10k psi) Inconel (optional: up to 10k psi) 17-4 PH Stainless Steel for -UL option (10k psi) |
| Typical Life Cycle: | 100 million cycles | Fitting: | 17-4 PH Stainless steel (all ranges) 316L Stainless steel and 718 Inconel (optional: up to 10k psi) |
| Proof Pressure: | 2X range for up to 7500 psi models 1.5X range for 7500 - 30000 psi models | Media General: | Gas, vapor, liquid and viscous fluids [-Z17] |
| Input: H455: 455*: 452*: | Excitation voltage: 9 to 30 VDC Excitation voltage: 9 to 30 VDC Excitation voltage: 12 to 30 VDC * (SELV, PELV), Class II Power Supply | Corrosive and Acidic: (up to 10,000 psi) | 718 Inconel wetted material, NACE [-NC]; and 316L Stainless Steel, NACE [-SS] |
| Supply Current: H455 & 455: 452: | 20mA max. 20mA max. | Pressure Connection: | 13 available options. Refer to product configurator for available connections and ranges. |
| Output: H455: 455: 452: | Output: 4–20 mA with HART® Protocol Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$ Output: 4–20 mA Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$ Output: 1–5 VDC Full scale output: 5.0 VDC $\pm 1\%$ Zero output: 1.0 VDC $\pm 1\%$ | Electrical Connection: | 3 conductors for voltage output series and 2 conductors for current output series, 18 AWG, 80" (2 m) long with integral strain relief and case ground (standard). Jacketed cable (optional). Halogen free wires and cable. |
| | | Temperature Ranges: Operating (Ambient): Compensated: Media: Storage: | -40 to +176 °F (-40 to +80 °C) 0 to +165 °F (-18 to +74 °C) -40 to +176 °F (-40 to +80 °C) -40 to +185 °F (-40 to +85 °C) |
| | | Vibration: | 10 g's, 10-500 Hz, MIL-STD 202, Method 204, Cond. A |
| | | Shock: | 50 g's, 11 mS, MIL-STD 202 Method 213, Cond. G. |

* See product configurator for additional options.

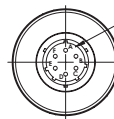
General Specifications* cont.

| | | | |
|-----------------------------|--|---|---|
| Approvals: cULus: | cULus approved for ordinary locations (UL 61010-1) | Electromagnetic Compatibility (EMC) IEC/EN 55011: | Emission & radiated emission for class A limits |
| HART® Protocol: | HART® 7.6 | IEC/EN 61000-4-2: | Electrostatic discharge (ESD) test - contact discharge +/-4 kV, Air discharge +/-8 kV |
| Turndown Ratio: | 10:1 (Full scale output rangeability) | IEC/EN 61000-4-3: | Radiated RF, EM field immunity 80mhz-1ghz, 3v/M |
| Analog Output Calibration: | Adjustable zero and span of 4-20mA. Full scale range must be ≥ (calibrated span / 10) | IEC/EN 61000-4-4: H455: | EFT (Burst) Test, +/-2 kV |
| Sensor Trim: | Sensor zero and full scale trim | 455 & 452: | EFT (Burst) Test, +/-1 kV |
| Diagnostics: | Transmitter failure indicated by off-scale analog signals to alarm the user | IEC/EN 61000-4-5: H455: | Surge Test, +/-1kV between line and earth ground |
| | See HART Installation and Operation Manual 272438 for detailed information | 455 & 452: | Surge test not applicable; Class II power supply used at input of the device |
| Compliances: | CE, CRN (refer to drawing # 272479 for applicable models) NACE (316L SS or 718 Inconel wetted material) | IEC/EN 61000-4-6: | RF Immunity, 150 kHz – 80 MHz, 3V |
| | | Weight: | 16 Ounces (453 grams) |
| | | Warranty: | 1 Year warranty |

* See product configurator for additional options.

Wiring Code

| TABLE 1. FREE LEAD WIRES AND CONNECTOR PIN CONNECTIONS | | | | |
|--|--------------|--------------|--------------|----------------|
| MODEL NO. | RED/A/1 | BLACK/B/2 | GREEN/D/4 | WHITE/C/3 |
| H455 | + EXCITATION | - EXCITATION | EARTH GROUND | NOT INCLUDED |
| 455 | + EXCITATION | - EXCITATION | EARTH GROUND | NOT INCLUDED |
| 452 | + EXCITATION | - EXCITATION | EARTH GROUND | VOLTAGE OUTPUT |



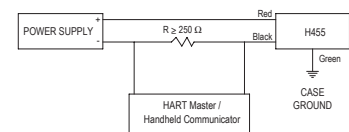
* 'A' TO 'F' ARE PINS FOR CONNECTION REFER TABLE 1.

| TABLE 2. JACKETED CABLE WIRE CONNECTIONS (-J Option) | | | | |
|--|--------------|--------------|--------------|----------------|
| MODEL NO. | WHITE | BROWN | GREEN | YELLOW |
| H455 | + EXCITATION | - EXCITATION | EARTH GROUND | NOT INCLUDED |
| 455 | + EXCITATION | - EXCITATION | EARTH GROUND | NOT INCLUDED |
| 452 | + EXCITATION | - EXCITATION | EARTH GROUND | VOLTAGE OUTPUT |

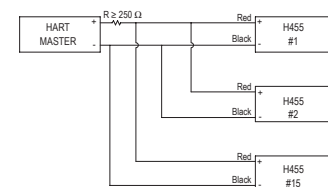
| TABLE 3. DEUTSCH CONNECTOR PIN CONNECTIONS (-D3 & -D4 Option) | | | | | |
|---|-----------|--------------|--------------|----------------|--------------|
| MODEL NO. | CONNECTOR | PIN A/1 | PIN B/2 | PIN C/3 | PIN D/4 |
| CURRENT | D3 | + EXCITATION | - EXCITATION | EARTH GROUND | N/A |
| VOLTAGE | D3 | + EXCITATION | - EXCITATION | VOLTAGE OUTPUT | N/A |
| CURRENT | D4 | - EXCITATION | + EXCITATION | EARTH GROUND | N/A |
| VOLTAGE | D4 | - EXCITATION | + EXCITATION | VOLTAGE OUTPUT | EARTH GROUND |

CONFIGURATION WITH HART

Point to Point



Multi Drop

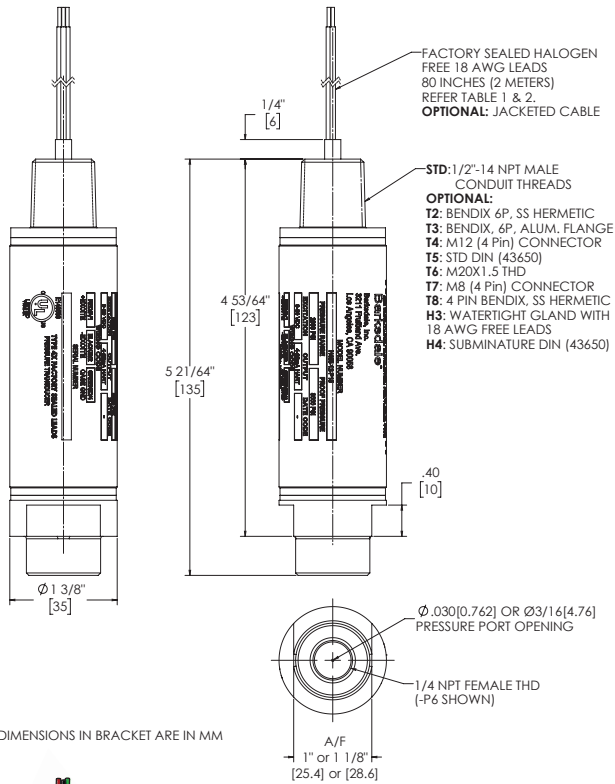


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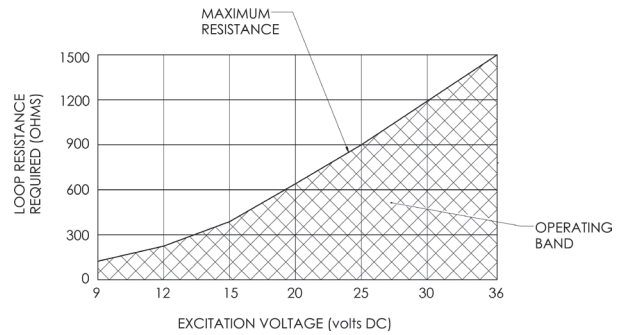
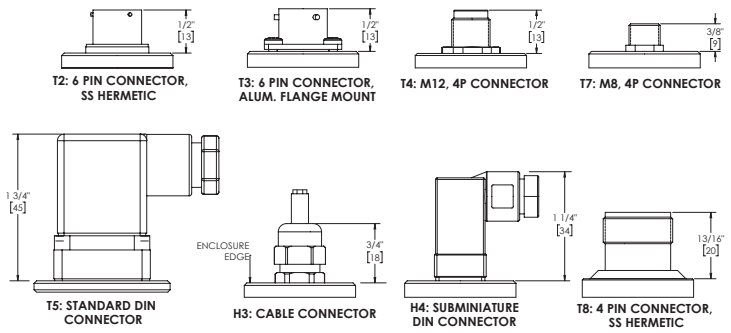
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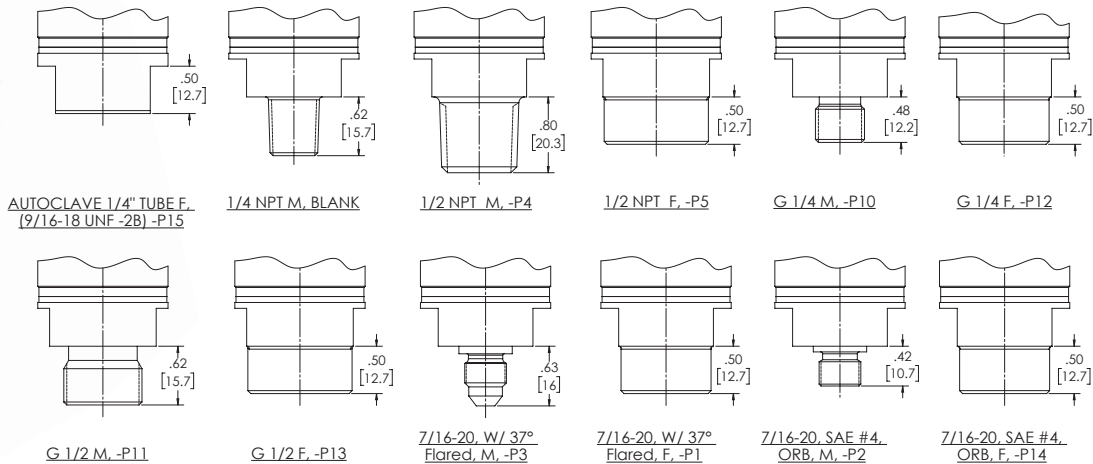
Technical Drawings



Standard and Optional Electrical Connections



Process Connections



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Product Configurator

Example: **H455 T6 -29 BA -P15 -Z17-A1-Z123**

Base Model

| | |
|-------------|--|
| H455 | 4 - 20 mA Output with HART® Comm. Protocol |
| 455 | 4 - 20 mA Output |
| 452 | 1-5 VDC Output |

* Highlighted options represent those most frequently used. Select these common options for improved availability. (5/21)

Electrical Connection

| | |
|--------------|--|
| Blank | 1/2"-14 NPT Male conduit |
| T2 | 6 pin connector, SS Hermetic, PTIH-10-6P |
| T3 | 6 pin connector, Alum. Flange Mount, PT02E-10-6P |
| T4 | M12 (4 Pin) connector |
| T5 | Standard DIN (EN 175301-803, Type A) |
| T6 | M20 x 1.5 Male conduit |
| T7 | M8 (4 Pin) connector |
| T8 | 4 pin connector, SS Hermetic, PTIH-14S-2P |
| H3 | Watertight Gland with 18AWG Free Leads |
| H4 | Mini DIN (EN 175301-803, Type C) |

Pressure Unit & Type

| | |
|--------------|--|
| Blank | PSI - Sealed gage pressure (standard) |
| A | PSI - Absolute pressure (Not applicable with "-23" range) |
| B | Bar - Sealed gage pressure |
| BA | Bar - Absolute Pressure (ranges start from -1 Bar) (Not applicable with "-23" range) |

Process Connection

| | |
|--------------------------|---|
| Blank⁴ | 1/4-18 NPT male (standard) |
| -P6⁴ | 1/4" NPT female |
| -P4⁴ | 1/2" NPT male |
| -P5⁴ | 1/2" NPT female |
| -P10⁴ | G 1/4, washer seal, male |
| -P12⁴ | G 1/4, washer seal, female |
| -P11⁴ | G 1/2, washer seal, male |
| -P13⁴ | G 1/2, washer seal, female |
| -P3⁴ | 7/16-20, with 37° flared, male |
| -P1⁴ | 7/16-20, with 37° flared, female |
| -P2⁴ | 7/16-20, SAE #4, ORB, male |
| -P14⁴ | 7/16-20, SAE #4, ORB, female |
| -P15 | HF4 Autoclave, 1/4" tube, female (9/16-18 UNF-2B THD) |

Pressure Range

| | | |
|------------------------|---------------|-------------|
| -23* | 0-29.9" of Hg | 0 to -1 Bar |
| -01 | 0-15 psi | 0-1 Bar |
| -21 | 0-30 psi | 0-2 Bar |
| -03 | 0-50 psi | 0-3 Bar |
| -22 | 0-60 psi | 0-4 Bar |
| -04 | 0-100 psi | 0-7 Bar |
| -05 | 0-150 psi | 0-10 Bar |
| -06 | 0-200 psi | 0-15 Bar |
| -07 | 0-300 psi | 0-20 Bar |
| -08 | 0-500 psi | 0-40 Bar |
| -10 | 0-1,000 psi | 0-70 Bar |
| -11 | 0-1,500 psi | 0-100 Bar |
| -12 | 0-2,000 psi | 0-150 Bar |
| -13 | 0-3,000 psi | 0-200 Bar |
| -14 | 0-4,000 psi | 0-300 Bar |
| -15 | 0-5,000 psi | 0-350 Bar |
| -16 | 0-6,000 psi | 0-400 Bar |
| -17 | 0-7,500 psi | 0-500 Bar |
| -18⁷ | 0-10,000 psi | 0-700 Bar |
| -29⁸ | 0-15,000 psi | 0-1,000 Bar |
| -30⁸ | 0-20,000 psi | 0-1,400 Bar |
| -31⁸ | 0-22,000 psi | 0-1,500 Bar |
| -32⁸ | 0-25,000 psi | 0-1,700 Bar |
| -33⁸ | 0-30,000 psi | 0-2,000 Bar |

Options

| | |
|----------------------------|---|
| -ZVxx | Custom voltage output (Available on 452X only). Up to 10VDC. Consult Factory. |
| -Z17² | Larger orifice; without pressure surge protector |
| -SC⁵ | 316 Stainless steel enclosure |
| -SS^{4,6} | 316L stainless steel wetted material (NACE) |
| -NC^{1,4,5} | 718 Inconel wetted material (NACE) |
| -UL⁷ | cULus approval for -18 range (10k psi) only |
| -A1 | Accuracy BFUL 0.1% FSO (LHR) at 75°F (Consult factory on vacuum [-23] models) |
| -ZXXY | Special pressure ranges XX - significant digits Y - number of trailing zeros Example: 130 psi calibration: add -Z131 |
| -JXXX | Jacketed cable (available on conduit and gland electrical connections) (in inches) |
| -WXXX | Custom Length of free leads (Available on Conduit and gland electrical connections) (In Inches) |
| -D3⁸ | 3 Pin deutsch connector DT04-3P |
| -D4⁸ | 4 Pin deutsch connector DT04-4P |

Notes

- No agency approvals
- All pressure ranges have built-in pressure surge protector. Add "-Z17" suffix for no snubber; for use with high viscosity media. Refer to Sales drawing for orifice sizes.
- Ranges with more than 10k psi are available only with -P15 Process Connection
- Available up to 10,000 psi
- "-NC" option only available with following pressure ranges: -11, -13, -16 and -18. Consult factory for availability on other pressure ranges. Not available for Vacuum [-23] range and Absolute models [A] & [BA].
- SS option is included in -SC option. -SC does not include material of electrical connection. "-UL" option and more than 10k psi ranges only with 17-4PH SS wetted material.
- UL option only available for 10,000 psi range. No cULus approval for 10,000 psi range without -UL suffix option. cULus approval standard for all other ranges. -UL only with 17-4 PH SS wetted material
- Connected to factory sealed halogen free, 18 AWG free leads 12" (3m). Also available with -WXXX and -JXXX options.

Additional Documents and Accessories

| Title | Reference Number |
|---|--|
| Installation and Maintenance Instructions | 272441 |
| HART Installation and Operation Manual | 272438 |
| Cable & Connectors | Cable & Connectors. Bulletin #S0115-C |
| Certificate of Compliance (Found on back of packing slip) | Use Document Title in purchase order. Only available at the time of order. |
| Certificate of Compliance (Signed document) | |
| Test Report | |
| Calibration Test Sheet (Included in product package) | |
| Material Certification | |
| Paper Tag | |
| Metal Tag | |

* Vacuum

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