

Transmitter

BiT – Barksdale Intelligent Transmitter *Series H455X, 455X, 452X*

Features

- ▶ Lightweight, compact and all-welded rugged stainless steel construction
- ▶ Thin-film & diffused silicon 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 down to 0.1% FSO, (including L,H,R)
- ▶ cULus, ATEX, IECEx and Single Seal certifications
- ▶ Explosion proof enclosure with IP66 & IP67 and NEMA 4X, 7 & 9 ratings
- ▶ CE, CRN, and NACE compliant and superior EMI/EMC protection
- ▶ Factory sealed, environment friendly, halogen free wires and cable
- ▶ RoHS & REACH Compliant

Applications

- ▶ Production Control Systems
- ▶ Chemical Injection Systems
- ▶ Oil & gas pipelines
- ▶ Petrochemical plants
- ▶ Refineries
- ▶ Coal and oil fired power plants
- ▶ Hydraulic Power Units
- ▶ Gas transfers for fuel systems



General Specifications*

Accuracy including Linearity, Hysteresis and Repeatability: at 75°F, Typical	±0.1% of Calibrated FSO (Option [-A1]) ±0.25% of Calibrated FSO (Standard) ±0.5% of Calibrated FSO (Vacuum only [-23])	Dynamic Response Time: H455X: 455X & 452X:	<70 milliseconds <50 milliseconds
Temperature Shift:	Zero & Span: 0.0125% Per °F over the compensated temperature range	Sensors:	Thin-Film (15k to 30k psi ranges, and with -UL option for 10k psi range) Diffused Silicon (Vacuum to 10k psi ranges)
Long Term Stability:	±0.2% FSO/year of calibration curve	Enclosure:	All welded 300 series stainless steel. IP66 & IP67 and NEMA 4X rated. 316L Stainless Steel (optional)
Typical Life Cycle:	100 million cycles	Wetted Parts:	
Proof Pressure:	2X range for up to 7500 psi models 1.5X range for 7500 - 30000 psi models	Sensor:	17-4 PH Stainless steel (15k-30k psi) 316L Stainless steel (up to 10k psi) 17-4 PH Stainless Steel for -UL option
Input: H455X: 455X*: 452X*:	Excitation voltage: 9 to 30 VDC Excitation voltage: 9 to 30 VDC Excitation voltage: 12 to 30 VDC * (SELV, PELV), Class 2 Power Supply	Fitting:	17-4 PH Stainless steel (all ranges) 316L Stainless steel (optional: up to 10k psi)
Supply Current:		Media General:	Gas, vapor, liquid and viscous fluids [-Z17]
H455X & 455X:	20 mA max.	Corrosive and Acidic: (up to 10,000 psi)	316L Stainless Steel, NACE [-SS]
452X:	20 mA max.	Pressure Connection:	13 available options. Refer to product configurator for available connections and ranges.
Output: H455X:	Output: 4-20 mA with HART® Protocol Full Scale Span: 16 mA ±1% Zero output: 4 mA ±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.
455X:	Output: 4-20 mA Full Scale Span: 16 mA ±1% Zero output: 4 mA ± 1%	Temperature Ranges:	
452X:	Output: 1-5 VDC Full Scale Span: 4.0 VDC ± 1% Zero output: 1.0 VDC ± 1%	Operating (Ambient):	-40 to +176 °F (-40 to +80 °C)
		Compensated:	0 to +165 °F (-18 to +74 °C)
		Media:	-40 to +176 °F (-40 to +80 °C)
		Storage:	-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.

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General Specifications* cont.

Approvals: UL: cULus approved as telemetering equipment for use in hazardous locations (UL File E146589, WYMV, WYMV7) factory sealed, Type 4X, as follows: Class I, Div. 1, Groups A, B, C & D Class II, Div. 1, Groups E, F & G Single Seal: CSA C22.2 No. 61010-1 Certified ANSI/ISA 12.27.01 Certified (for ranges up to 10,000 PSI) ATEX/IECEX: CE 0081 II 2 G D Ex db IIC T5 Gb Ex tb IIIC T81°C Db, IP66 & IP67 -40 °C ≤ Tamb ≤ +80 °C DEMKO 18 ATEX 2084 IECEX UL 18.0090	Compliances: CE, CRN, NACE (316L SS wetted material)
HART® Protocol: HART® 7.6 Turndown Ratio: 10:1 (Full scale output rangeability) Analog Output Calibration: Adjustable zero and span of 4-20mA. Full scale range must be ≥ (calibrated span / 10) Sensor Trim: Sensor zero and full scale trim Diagnostics: Transmitter failure indicated by off-scale analog signals to alarm the user See HART Installation and Operation Manual 272438 for detailed information	Electromagnetic Compatibility (EMC) IEC/EN 55011: Emission & radiated emission for class A limits IEC/EN 61000-4-2: Electrostatic discharge (ESD) test - contact discharge +/-4 kV, Air discharge +/-8 kV IEC/EN 61000-4-3: Radiated RF, EM field immunity 80mhz-1ghz, 3v/M IEC/EN 61000-4-4: H455X: EFT (Burst) Test, +/-2 kV 455X & 452X: EFT (Burst) Test, +/-1 kV IEC/EN 61000-4-5: H455X: Surge Test, +/-1kV between line and earth ground 455X & 452X: Surge test not applicable; Class 2 power supply used at input of the device 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 WIRE CONNECTIONS

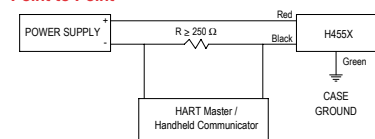
MODEL NO.	RED	BLACK	GREEN	WHITE
H455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452X	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT

TABLE 2. JACKETED CABLE WIRE CONNECTIONS (-J Option)

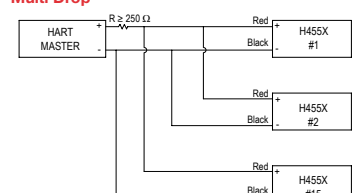
MODEL NO.	WHITE	BROWN	GREEN	YELLOW
H455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452X	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT

CONFIGURATION WITH HART

Point to Point



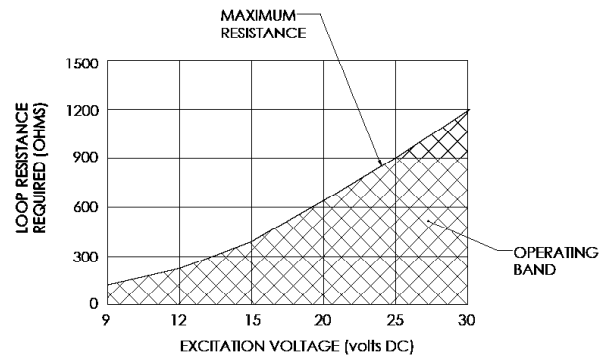
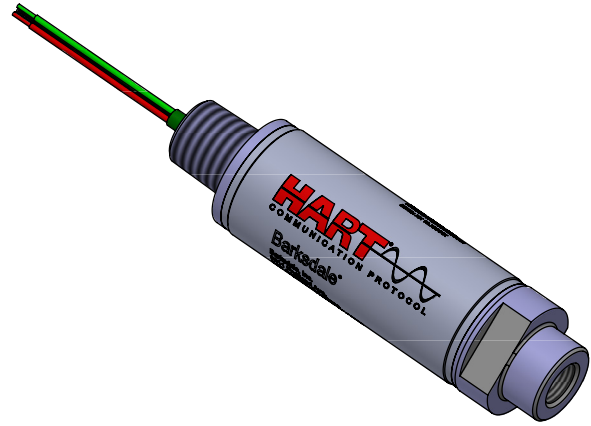
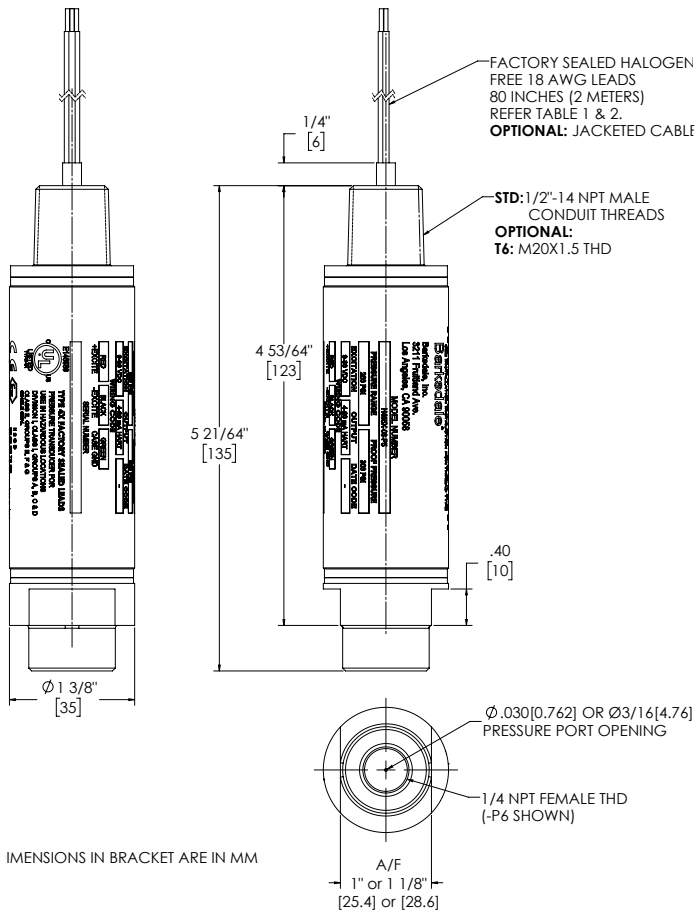
Multi Drop



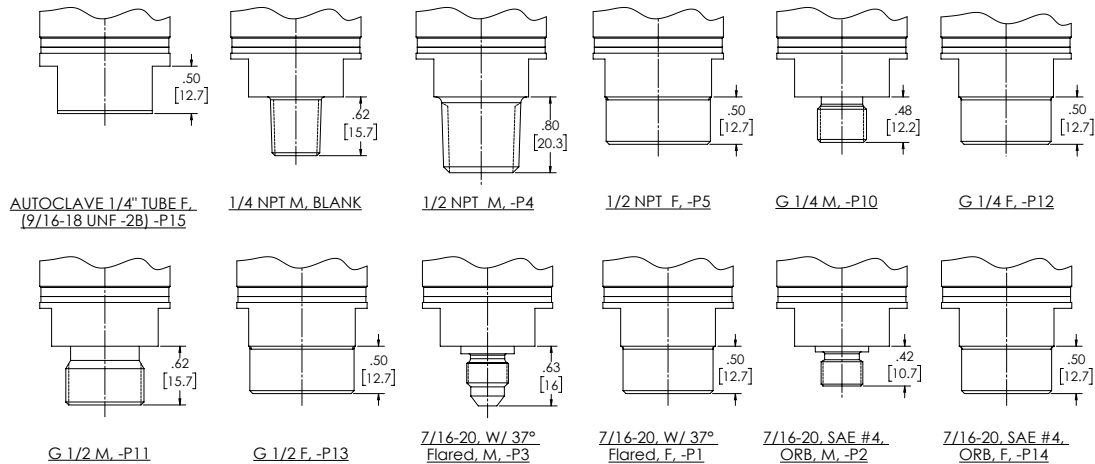
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Technical Drawings



Process Connections



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Product Configurator

Example: **H455X T6 -29 BA -P15 -Z17-A1-Z123**

Base Model

H455X	4 - 20 mA Output with HART® Comm. Protocol
455X	4 - 20 mA Output
452X	1-5 VDC Output

Electrical Connection

Blank	1/2"-14 NPT Male conduit
T6	M20 x 1.5 Male conduit

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 ¹	0-500 psi	0-40 Bar
-10 ¹	0-1,000 psi	0-70 Bar
-11 ¹	0-1,500 psi	0-100 Bar
-12 ¹	0-2,000 psi	0-150 Bar
-13 ¹	0-3,000 psi	0-200 Bar
-14 ¹	0-4,000 psi	0-300 Bar
-15 ¹	0-5,000 psi	0-350 Bar
-16 ¹	0-6,000 psi	0-400 Bar
-17 ¹	0-7,500 psi	0-500 Bar
-18 ^{1,5}	0-10,000 psi	0-700 Bar
-29 ^{1,2}	0-15,000 psi	0-1,000 Bar
-30 ^{1,2}	0-20,000 psi	0-1,400 Bar
-31 ^{1,2}	0-22,000 psi	0-1,500 Bar
-32 ^{1,2}	0-25,000 psi	0-1,700 Bar
-33 ^{1,2}	0-30,000 psi	0-2,000 Bar

* Vacuum

Pressure Unit & Type

Blank	PSI - Gauge pressure (standard)
A	PSI - Absolute pressure (Not applicable with "-23" range; only available up to 300 psi)
B	Bar - Gauge Pressure
BA	Bar - Absolute Pressure (ranges start from -1 Bar) (Not applicable with "-23" range; only available up to 20 Bar)

Options

-ZVxx	Custom voltage output (Available on 452X only). Up to 10VDC. Consult Factory.
-Z17 ¹	For high pressure models with larger orifice; without pressure surge protector
-SC ^{3,4}	All 316 Stainless Steel construction with 316L SS wetted material (NACE)
-SS ^{3,4}	316L stainless steel wetted material (NACE)
-UL ⁵	cULus in addition to ATEX & IECEx approvals for -18 range (10k psi) only
-A1	Accuracy BFSL 0.1% FSO, typical (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 (in inches)
-WXXX	Additional length of free leads/cable (in inches)

Process Connection

Blank ³	1/4-18 NPT male (standard)
-P6 ³	1/4" NPT female
-P4 ³	1/2" NPT male
-P5 ³	1/2" NPT female
-P10 ³	G 1/4, washer seal, male
-P12 ³	G 1/4, washer seal, female
-P11 ³	G 1/2, washer seal, male
-P13 ³	G 1/2, washer seal, female
-P3 ³	7/16-20, with 37° flared, male
-P1 ³	7/16-20, with 37° flared, female
-P2 ³	7/16-20, SAE #4, ORB, male
-P14 ³	7/16-20, SAE #4, ORB, female
-P15	HF4 Autoclave, 1/4" tube, female (9/16-18 UNF-28 THD)

Notes

1. Pressure ranges indicated have built-in pressure surge protector. Add "-Z17" suffix for high pressure models with no snubber; for use with high viscosity media. Refer to sales drawing for orifice sizes.
2. 15,000 to 30,000 psi ranges available only with "-P15" Process Connection
3. Available up to 10,000 psi
4. -SS option is included in -SC option. -SC does not include material of electrical connection. Not available with -UL option
5. -UL option only available for 10,000 PSI range. No cULus approval for 10,000 psi range without -UL option. cULus approval standard for all other ranges. ATEX & IECEx approvals standard for all ranges.

Additional Documents and Accessories

Title	Reference Number
Installation and Maintenance Instructions	272439
HART Installation and Operation Manual	272438
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	