

**NEW**

New BiT with HART® Communication Protocol

# BiT - Barksdale Intelligent Transmitters

## Series 450 & Series 450X



**HART**  
COMMUNICATION PROTOCOL

### New Generation of Barksdale Digital Transmitters with introduction of Series 450 & Series 450X

- ▶ New transmitters offering Lightweight, compact footprint, higher accuracy & higher pressure ranges
- ▶ Oil & Gas, Explosion Proof Models: Series 450X
- ▶ Test & Measurement Models: Series 450
- ▶ HART® Communication Protocol & Digital Amplifier Models Available

**Control every move**

**Barksdale®**  
CONTROL PRODUCTS

**CRANE** Barksdale, Inc./Barksdale GmbH  
A Subsidiary of Crane Co.

# Barksdale Transmitters

*A performance legacy*



## New BiT Series

### BiT - Barksdale Intelligent Transmitter

With 24 standard pressure ranges from vacuum to **30,000 PSI** and multiple electrical and process connections, our intelligent transmitter is designed to meet your application needs. From high pressure models, to explosion proof models, to models with HART® communication protocol--our BiT is compact in size and big in performance.

**Series 450**

**Series 450X**

# Barksdale

## Engineering the future

### Barksdale - Innovating since 1949

With 70 years in business, Barksdale has been at the forefront of innovation with patented designs like our Shear-Seal® technology used in our valves with great success in demanding applications such as workholding, oil exploration and processing. Invented in 1949, Barksdale engineers have successfully built upon this technology expanding its product portfolio and have continued to offer best-in-class solutions to our customers in safety critical applications. This same technology was again reinvented and incorporated in our air suspension valves that have been used in the transportation industry with much success since 1992. Our switch technology has also made its mark in the industry. Barksdale's ground breaking temperature switch design, known for accuracy and reliability, enjoy a heritage that dates back to the mid-1960's when Barksdale perfected the first effective method for ambient compensation of bulb and capillary type switches. In the 1980's, Barksdale entered the transducer business and has developed a complete line of pressure transducers and transmitters for general industrial, intrinsically safe and hazardous applications. Our latest product innovation is our BiT -- Barksdale Intelligent Transmitter with HART®, which offers big performance in a small package.

### Crane Co. our Parent Company

Barksdale is proud to be a part of the Crane Co. family, a diversified manufacturer of highly engineered industrial products. With approximately 12,000 employees worldwide and four business segments: Fluid Handling, Payment & Merchandising Technologies, Aerospace & Electronics and Engineered Materials, Crane Co. associates work together to develop synergies to grow our business and benefit our customers. Founded in 1855, Crane Co. remains committed to the business principles of its founder, R.T. Crane, to conduct business with honesty and integrity.

Introducing our  
**new BiT**

Designed to meet your  
application needs



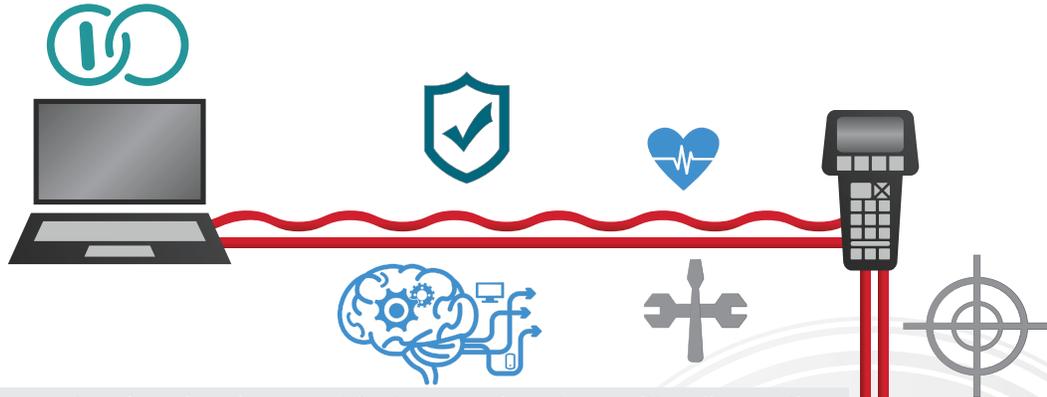
# Barksdale®

# Digital Transmitter

## Compatible with conventional installations

### SMART TRANSMITTER

Unlocking the true potential of your transmitter



Equipped with **HART® communication** protocol, embracing smart features such as transmitter diagnostics, calibration and field re-ranging up to 10 times less than calibrated full scale output. HART® enabled pressure transmitters can communicate over the legacy two-wire 4–20 mA analog current loops.

#### Reliable

HART® technology provides a reliable, proven solution for leveraging the benefits of intelligent devices with digital communication. Reliability of the new BiT series is supported by a rugged platform that has been tested extensively to meet burst pressure, vibration & shock, and electrical EMC requirements.

#### Accurate

Accuracy and stability are enhanced both through sensor technology and digital linearization of sensor output. HART® capability will allow you to adjust calibration to maintain accuracy.

#### Intelligent

HART® enabled transmitters provide higher data availability without the up-front investment in digital field networks, by using existing 2-wire current loop infrastructure. Digital data available includes transmitter configuration, calibration, and device status.

#### Remote Calibration & Re-ranging

HART® enables connectivity to transmitters which allows calibration from the safety and comfort of the control room. Remote calibration capabilities include zero trim and span adjustment, 10:1 turn down ratio which allows multiple ranges from a single transmitter.

#### Diagnostics

HART® diagnostics capability alerts when the transmitter has failed by latching at 4 or 20 mA output. HART® transmitters communicate diagnostic information to the control room, which minimizes the time required to identify the source of any problem and allows for quick corrective action. As a result, trips into the field or hazardous areas are reduced or eliminated.

#### Low Maintenance

HART® enabled devices reduce unplanned shutdowns and maintenance with diagnostic capabilities including device status, which allows quick identification of a failing device. Maintenance is also reduced with its remote calibration and ability to view, verify, test and clone existing configurations, which can be downloaded to other transmitters from a control room.



# New BiT

## Engineered to perform

### Engineered Innovative Design

BiT's lightweight and compact design reduces the product footprint in your application. All-welded rugged stainless steel construction allows for use in test & measurement and hazardous area applications. The explosion proof enclosure (flame proof and dust proof) provides IP66 & IP67, NEMA 4X, 7 & 9 ratings and an operating temperature range of -40° F to 176° F. Designed with safety in mind, Barksdale Intelligent Transmitters are equipped with halogen-free output wires and cable providing low toxicity in the event of a fire. NACE compliance is achieved by optional 316L Stainless Steel or 718 Inconel wetted material for up to 10,000 psi ranges. Third party certifications includes cULus, ATEX, IECEx, CE, and HART® Foundation approvals to validate design.



### Thin-Film vs. Strain-Gage Technology

The best modern designs of pressure and load sensor are based on thin film technology, proven in the tough environmental conditions where temperature, shock, vibration and EMC resilience are required. With the Titanium Nitride (TiN)-thin-film technique, no adhesive of any kind is used, as the film is bonded directly onto the sensor material. The sensor is precisely placed, providing long life, stability and high accuracy. The sensor element used in Titanium Nitride (TiN) thin film coating technology is particularly small and compact compared to strain gages, and has impressive specifications in terms of precision and long-term stability. Thin film gauges have been proven to more than a billion cycles on large diesel/gas engines, whereas foil strain gage sensors are typically only rated to one million cycles. In addition, manual placement of the foil strain gage frequently results in foil gage axis misalignment which causes in inaccuracy and off-axis sensitivity.

### Available Configurations

Test & Measurement (Series 450) and Explosion Proof (Series 450X) offer three base models:

1) 4-20mA with HART® communication. 2) Amplified 4-20mA 3) Amplified 1-5 VDC or optional custom voltage ranges up to 10 VDC (consult factory). In addition, we provide 24 standard ranges from vacuum to 30,000 psi with optional custom pressure ranges. Accuracy level options include 0.25% standard and 0.1% optional.

Multiple electrical connections with optional wire or cable outputs are available for hazardous and non-hazardous applications. Non-hazardous Test and Measurement (Series 450) models are available with industrial and military style connectors. BiT offers 13 process connections including 17-4 PH stainless steel or optional NACE compliant 316L stainless steel or Inconel material for corrosive production and wellbore environments.

# BiT - Series 450X



## Oil & Gas Applications

Barksdale BiT Series Transmitters are designed to be environmentally rugged with a corrosion resistant, all-welded stainless steel design with select standard and optional features to meet varying oil and gas application needs. Mobile equipment applications will be supported with BiT Series global hazardous area certifications which will allow movement of equipment worldwide, while meeting varying country hazardous certification requirements. Hard to reach remote or offshore locations will benefit from digital remote calibration and range turndown capabilities to reduce maintenance time and greatly reduce the need for spares. Oil and gas process applications requiring the monitoring of a high number of pressure points from a central control room will be aided by HART® technology providing remote diagnostics and calibration capability with a unique device ID for quick identification of failed transmitters.

Installation of the HART® transmitter with industry leading compact size will allow higher density mounting in manifolds. In addition, we provide many stainless steel process connections that include NACE compliant corrosive environment materials. Extended down time waiting for the delivery of the right pressure range transmitter to enter country and clear customs is eliminated with pressure range flexibility enabled with HART® communication protocol.

Typical applications for H455X series include offshore control panels and other O&G process and production equipment requiring cULus, ATEX and IECEx hazardous approvals. O&G Equipment applications include hydraulic and pneumatic control systems, pumps and compressors.

The new generation 450X series includes global hazardous area certifications, rugged welded construction, high accuracy and compact footprint to meet your Oil & Gas application requirements.



# BiT - Series 450

## Test & Measurement Applications

BiT Series Transmitter capabilities provide a rugged design platform for product testing and validation where high accuracy and reliable pressure measurement with long term stability are primary considerations. OEM's will benefit from the accuracy and long term stability to reduce calibration cycles required to maintain transmitters used for validating and monitoring product quality and to perform factory acceptance tests. High pressure, high cycle applications including pumps and compressors will benefit from the high cycle capabilities of thin-film sensing technology. Diffused silicon and thin-film technologies come together to provide vacuum to 30,000 psi range and proprietary digital linearization enables accuracies to 0.1% FSO. Test facilities and OEM's requiring a high number of pressure ranges will benefit from optional HART® communication protocol which enables 10:1 turndown of full scale output to reduce inventory cost by meeting multiple pressure range requirements from each transmitter. In addition, turndown range capability can provide over 10X proof pressure for worry-free service life in challenging environments with pressure spikes routinely exceeding the calibrated range. Digital field calibration capability keeps the transmitters in service reducing calibration cycle time and cost. In addition, digital calibration capability eliminates the need for external potentiometers to adjust zero and span, eliminating risk of potentiometer drift with temperature and vibration, and potential of moisture ingress.

450 series applications include non-hazardous industrial engine and pump lube pressure monitoring, test stands and test pressure logging, high cycle testing of pumps and compressors.

The new 450 series transmitter provides rugged welded construction, high accuracy, long term stability and high cycle capability to meet your Test & Measurement application requirements.



# Transmitter

## BiT – Barksdale Intelligent Transmitter

Series H455, 455, 452

### 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 ( $\pm 0.1\%$  and  $0.25\%$  FSO, (including 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\*

<b>Accuracy</b> including Linearity, Hysteresis and Repeatability: at 75°F, Typical	$\pm 0.1\%$ of Calibrated FSO (Option [-A1]) $\pm 0.25\%$ of Calibrated FSO (Standard) $\pm 0.5\%$ of Calibrated FSO (Vacuum only [-23])	<b>Dynamic Response Time:</b> H455: 455 & 452:	<70 milliseconds <50 milliseconds
<b>Temperature Shift:</b>	Zero & Span: 0.0125% Per °F over the compensated temperature range	<b>Sensors:</b>	Thin-Film (15k to 30k psi ranges, and -UL option for 10k psi range) Diffused Silicon (Vacuum to 10k psi ranges)
<b>Long Term Stability:</b>	$\pm 0.2\%$ FSO /year of calibration curve	<b>Enclosure:</b>	All welded 300 series stainless steel. IP66 & IP67 and NEMA 4X rated. 316L Stainless Steel (optional)
<b>Typical Life Cycle:</b>	100 million cycles	<b>Wetted Parts:</b>	
<b>Proof Pressure:</b>	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) Inconel (optional: up to 10k psi) 17-4 PH Stainless Steel for -UL option
<b>Input:</b> H455: 455*: 452*:	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 and 718 Inconel (optional: up to 10k psi)
<b>Supply Current:</b>		<b>Media</b>	
H455 & 455:	20mA max.	General:	Gas, vapor, liquid and viscous fluids [-Z17]
452:	20mA max.	Corrosive and Acidic: (up to 10,000 psi)	718 Inconel wetted material, NACE [-NC]; and 316L Stainless Steel, NACE [-SS]
<b>Output:</b> H455:	Output: 4-20 mA with HART® Protocol Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$	<b>Pressure Connection:</b>	13 available options. Refer to product configurator for available connections and ranges.
455:	Output: 4-20 mA Full Scale Output: 20 mA $\pm 1\%$ Zero output: 4 mA $\pm 1\%$	<b>Electrical Connection:</b>	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.
452:	Output: 1-5 VDC Full scale output: 5.0 VDC $\pm 1\%$ Zero output: 1.0 VDC $\pm 1\%$	<b>Temperature Ranges:</b>	
		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)
		<b>Vibration:</b>	10 g's, 10-500 Hz, MIL-STD 202, Method 204, Cond. A
		<b>Shock:</b>	50 g's, 11 mS, MIL-STD 202 Method 213, Cond. G.

\* See product configurator for additional options.

## General Specifications\* cont.

<b>Approvals:</b> cULus:	cULus approved for ordinary locations (UL 61010-1)	<b>Electromagnetic Compatibility (EMC)</b> IEC/EN 55011:	Emission & radiated emission for class A limits
<b>HART® Protocol:</b>	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  See HART Installation and Operation Manual 272438 for detailed information	IEC/EN 61000-4-5: H455:	Surge Test, +/-1kV between line and earth ground
		455 & 452:	Surge test not applicable; Class 2 power supply used at input of the device
<b>Compliances:</b>	CE, CRN, NACE (316L SS or 718 Inconel wetted material)	IEC/EN 61000-4-6:	RF Immunity, 150 kHz – 80 MHz, 3V
		<b>Weight:</b>	16 Ounces (453 grams)
		<b>Warranty:</b>	1 year warranty

\* See product configurator for additional options.

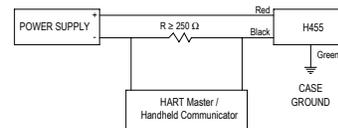
## Wiring Code

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

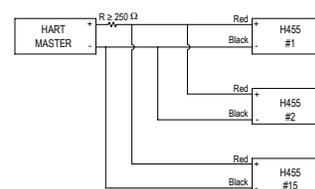
TABLE 2. JACKETED CABLE WIRE CONNECTIONS (-J Option)				
MODEL NO.	WHITE	BROWN	GREEN	YELLOW
H455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT

### CONFIGURATION WITH HART

#### Point to Point



#### Multi Drop

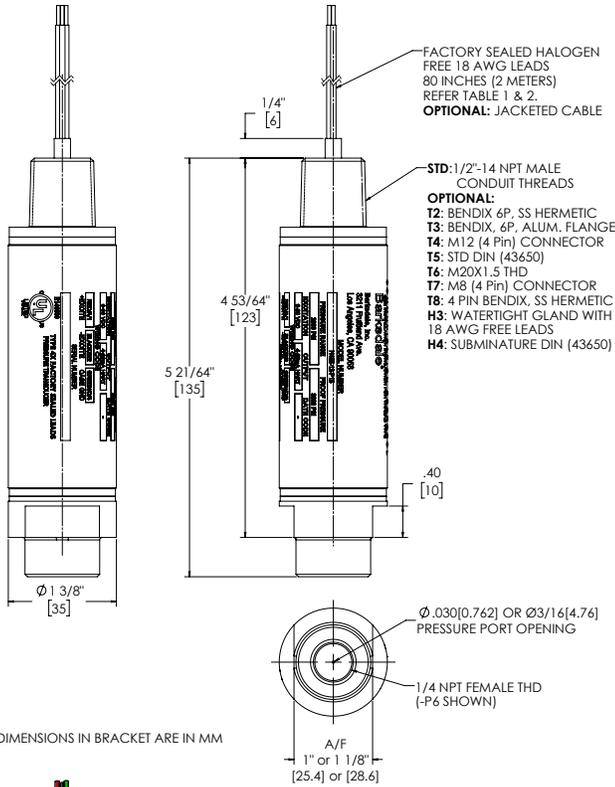


# Transmitter

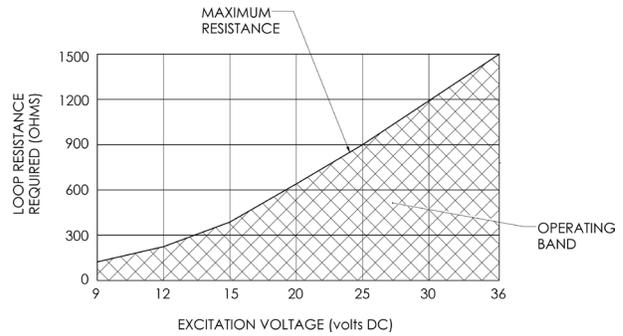
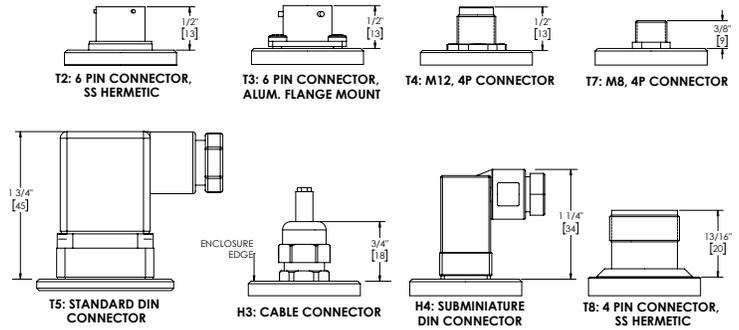
## BiT - Barksdale Intelligent Transmitter

## Series H455, 455, 452

### Technical Drawings



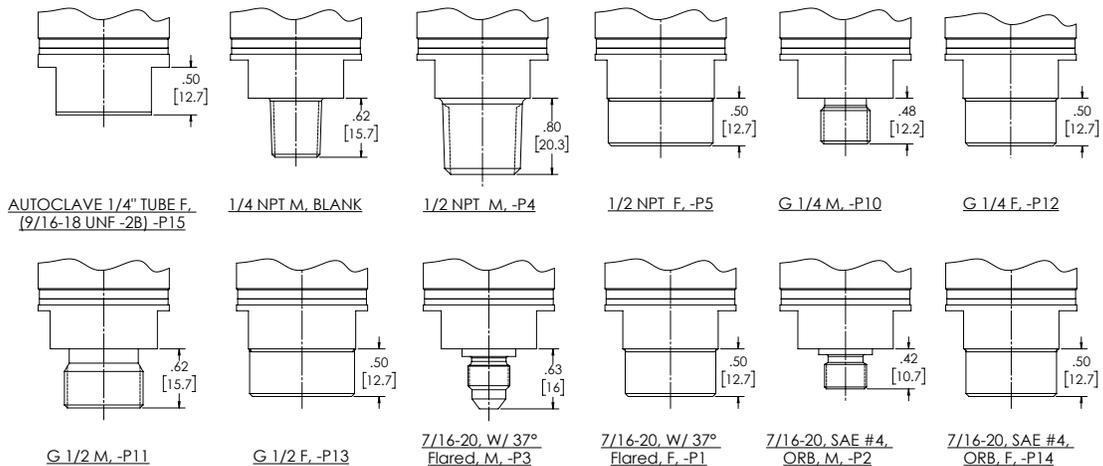
### Standard and Optional Electrical Connections



DIMENSIONS IN BRACKET ARE IN MM



### Process Connections



\* For ordinary location

# BiT – Barksdale Intelligent Transmitter

Series H455, 455, 452

## 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

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

### Process Connection

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

### Options

-ZVxx	Custom voltage output (Available on 452X only). Up to 10VDC. Consult Factory.
-Z17 <sup>2</sup>	For high pressure models with larger orifice; without pressure surge protector
-SC <sup>4,6</sup>	All 316 Stainless Steel construction with 316L SS wetted material (NACE)
-SS <sup>4,6</sup>	316L stainless steel wetted material (NACE)
-NC <sup>1,4,5</sup>	718 Inconel wetted material (NACE)
-UL <sup>7</sup>	cULus approval for -18 range (10k psi) only
-A1	Accuracy BFSL 0.1% FSO (LHR) at 75°F (Consult factory on vacuum [-23] models)
-ZXXX	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)

#### Notes

- No agency approvals
- 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.
- 15k to 30k psi ranges 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. Not available with -UL option
- 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

## 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	

# 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\*

<b>Accuracy</b> 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])	<b>Dynamic Response Time:</b> H455X: 455X & 452X:	<70 milliseconds <50 milliseconds
<b>Temperature Shift:</b>	Zero & Span: 0.0125% Per °F over the compensated temperature range	<b>Sensors:</b>	Thin-Film (15k to 30k psi ranges, and with -UL option for 10k psi range) Diffused Silicon (Vacuum to 10k psi ranges)
<b>Long Term Stability:</b>	±0.2% FSO/year of calibration curve	<b>Enclosure:</b>	All welded 300 series stainless steel. IP66 & IP67 and NEMA 4X rated. 316L Stainless Steel (optional)
<b>Typical Life Cycle:</b>	100 million cycles	<b>Wetted Parts:</b>	
<b>Proof Pressure:</b>	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
<b>Input:</b> 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)
<b>Supply Current:</b>		<b>Media</b> 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.	<b>Pressure Connection:</b>	13 available options. Refer to product configurator for available connections and ranges.
<b>Output:</b> H455X:	Output: 4-20 mA with HART® Protocol Full Scale Output: 20 mA ±1% Zero output: 4 mA ±1%	<b>Electrical Connection:</b>	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 Output: 20 mA ±1% Zero output: 4 mA ± 1%	<b>Temperature Ranges:</b>	
452X:	Output: 1-5 VDC Full scale output: 5.0 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)
		<b>Vibration:</b>	10 g's, 10-500 Hz, MIL-STD 202, Method 204, Cond A.
		<b>Shock:</b>	50 g's, 11 mS, MIL-STD 202 Method 213, Cond. G.

\* See product configurator for additional options.

Subject to technical changes.

**Barksdale**

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

## General Specifications\* cont.

<b>Approvals:</b> UL:  Single Seal:  ATEX/IECEX:	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  CSA C22.2 No. 61010-1 Certified ANSI/ISA 12.27.01 Certified (for ranges up to 10,000 PSI)  CE 0081 Ex 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	<b>Compliances:</b>  <b>Electromagnetic Compatibility (EMC)</b>	CE, CRN, NACE (316L SS wetted material)  Emission & radiated emission for class A limits  Electrostatic discharge (ESD) test - contact discharge +/-4 kV, Air discharge +/-8 kV  Radiated RF, EM field immunity 80mhz-1ghz, 3v/M  EFT (Burst) Test, +/-2 kV 455X & 452X: EFT (Burst) Test, +/-1 kV  Surge Test, +/-1kV between line and earth ground  Surge test not applicable; Class 2 power supply used at input of the device  RF Immunity, 150 kHz – 80 MHz, 3V
<b>HART® Protocol:</b>  Turndown Ratio:  Analog Output Calibration:  Sensor Trim:  Diagnostics:	HART® 7.6  10:1 (Full scale output rangeability)  Adjustable zero and span of 4-20mA. Full scale range must be ≥ (calibrated span / 10)  Sensor zero and full scale trim  Transmitter failure indicated by off-scale analog signals to alarm the user  See HART Installation and Operation Manual 272438 for detailed information	IEC/EN 55011:  IEC/EN 61000-4-2:  IEC/EN 61000-4-3:  IEC/EN 61000-4-4: H455X: 455X & 452X:  IEC/EN 61000-4-5: H455X: 455X & 452X:  IEC/EN 61000-4-6:	16 Ounces (453 grams)  1 year warranty
		<b>Weight:</b>	16 Ounces (453 grams)
		<b>Warranty:</b>	1 year warranty

\* See product configurator for additional options.

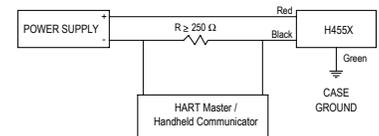
## Wiring Code

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

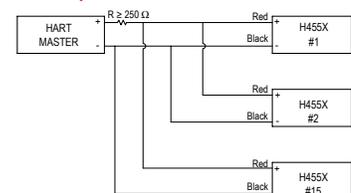
MODEL NO.	WHITE	BROWN	GREEN	YELLOW
H455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
455X	+ EXCITATION	- EXCITATION	EARTH GROUND	NOT INCLUDED
452X	+ EXCITATION	- EXCITATION	EARTH GROUND	VOLTAGE OUTPUT

### CONFIGURATION WITH HART

#### Point to Point



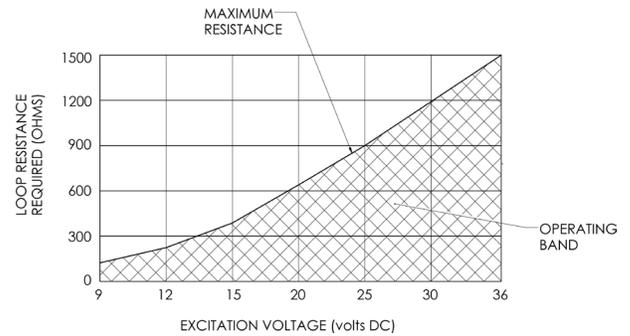
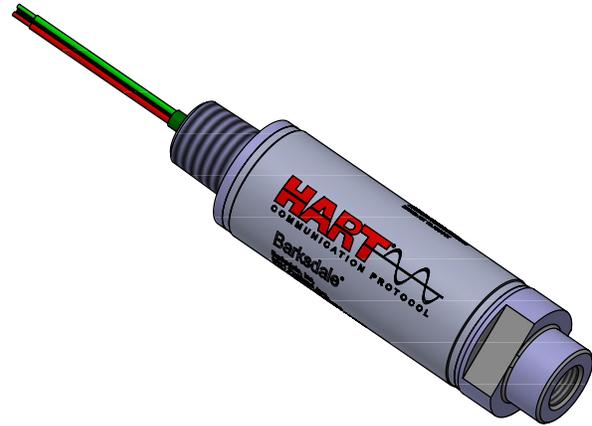
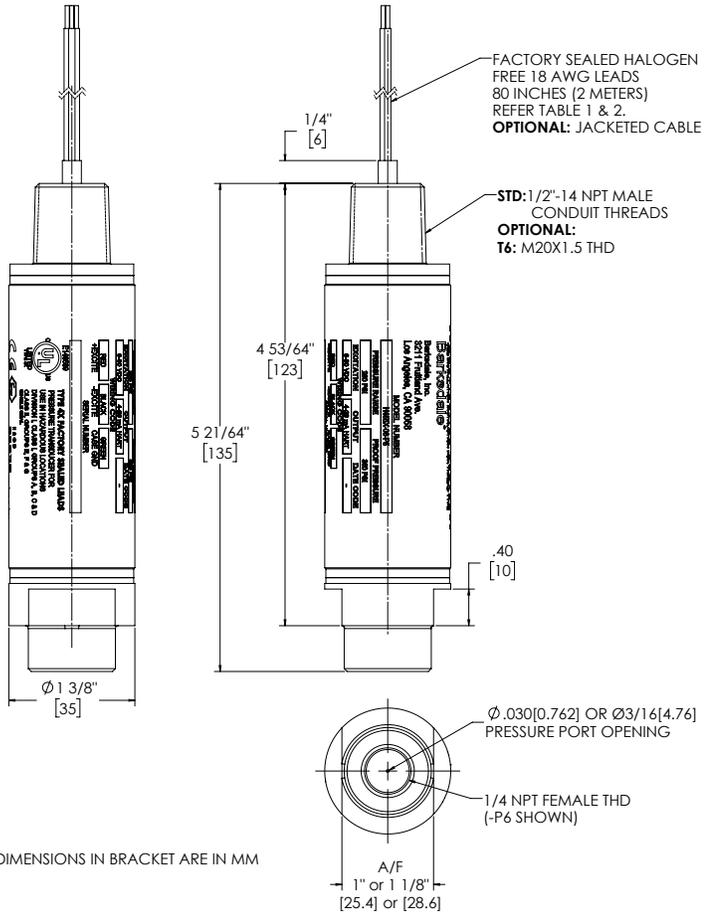
#### Multi Drop



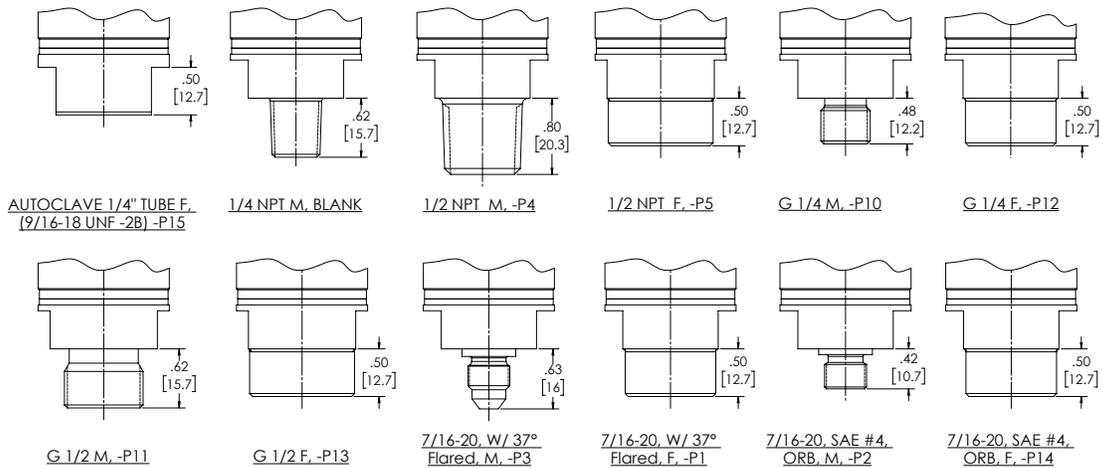
# Transmitter

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

### Technical Drawings



### Process Connections



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

## 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 <sup>1</sup>	0-500 psi	0-40 Bar
-10 <sup>1</sup>	0-1,000 psi	0-70 Bar
-11 <sup>1</sup>	0-1,500 psi	0-100 Bar
-12 <sup>1</sup>	0-2,000 psi	0-150 Bar
-13 <sup>1</sup>	0-3,000 psi	0-200 Bar
-14 <sup>1</sup>	0-4,000 psi	0-300 Bar
-15 <sup>1</sup>	0-5,000 psi	0-350 Bar
-16 <sup>1</sup>	0-6,000 psi	0-400 Bar
-17 <sup>1</sup>	0-7,500 psi	0-500 Bar
-18 <sup>1,5</sup>	0-10,000 psi	0-700 Bar
-29 <sup>1,2</sup>	0-15,000 psi	0-1,000 Bar
-30 <sup>1,2</sup>	0-20,000 psi	0-1,400 Bar
-31 <sup>1,2</sup>	0-22,000 psi	0-1,500 Bar
-32 <sup>1,2</sup>	0-25,000 psi	0-1,700 Bar
-33 <sup>1,2</sup>	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 <sup>1</sup>	For high pressure models with larger orifice; without pressure surge protector
-SC <sup>3,4</sup>	All 316 Stainless Steel construction with 316L SS wetted material (NACE)
-SS <sup>3,4</sup>	316L stainless steel wetted material (NACE)
-UL <sup>5</sup>	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	Custom length of free leads (in inches)

### Process Connection

Blank <sup>3</sup>	1/4-18 NPT male (standard)
-P6 <sup>3</sup>	1/4" NPT female
-P4 <sup>3</sup>	1/2" NPT male
-P5 <sup>3</sup>	1/2" NPT female
-P10 <sup>3</sup>	G 1/4, washer seal, male
-P12 <sup>3</sup>	G 1/4, washer seal, female
-P11 <sup>3</sup>	G 1/2, washer seal, male
-P13 <sup>3</sup>	G 1/2, washer seal, female
-P3 <sup>3</sup>	7/16-20, with 37° flared, male
-P1 <sup>3</sup>	7/16-20, with 37° flared, female
-P2 <sup>3</sup>	7/16-20, SAE #4, ORB, male
-P14 <sup>3</sup>	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	

# Barksdale Pressure Transmitters

*Innovative solutions with the highest quality.*

## Series 623,624,625,626,627



OEM Transducer

## Series 420,422



General Industrial Transducer (Unamplified)

## Series 423,425,426



General Industrial Transducer (Amplified)

## Series 433,435,436



Non-Incendive Transducer

## Series 443,445,446



Intrinsically Safe Transducer

## Series 423X,425X,426X



Explosion Proof Transducer (Amplified)



**Try our new BiT** - our new generation of transmitters with performance you can trust.

Need a customized solution? Barksdale seasoned engineering team will work with you to provide the best solution for your control instrumentation need. Contact us today at 800-835-1060.

**Barksdale Inc.**  
3211 Fruitland Ave.  
Los Angeles, CA 90058-0843  
U.S.A.  
Phone: (800) 835-1060  
Fax: (323) 589-3463  
Email: [sales@barksdale.com](mailto:sales@barksdale.com)  
[www.barksdale.com](http://www.barksdale.com)

**Barksdale GmbH**  
Dorn-Assenheimer Strasse 27  
61203 Reichelsheim, Germany  
Phone: (49) 6035-949-0 (main office)  
(49) 6035-949-204 (sales)  
Fax: (49) 6035-949-111/-113  
Email: [info@barksdale.de](mailto:info@barksdale.de)  
[www.barksdale.de](http://www.barksdale.de)

**Barksdale China**  
33F Huaihai Plaza  
1045 Central Huaihai Road  
Shanghai 200031 P.R. China  
Phone: +86 21 6127-3000  
Fax: +86 21 6473-3298  
[ChinaSales@barksdale.com](mailto:ChinaSales@barksdale.com)  
[www.BarksdaleChina.com](http://www.BarksdaleChina.com)

**Barksdale India**  
Crane Process  
Flow Technologies (India) Ltd  
Solitaire, 6th Floor  
S. No. 131/1 + 2  
ITI Road Aundh  
Pune - 41107, India  
Phone: + 91-20-71207162  
Fax: + 91-20-71207177  
[ssarkar@barksdale.de](mailto:ssarkar@barksdale.de)