

# Transducer

## Intrinsically Safe Transducer

## Series 443, 445, 446

### Features

- ▶ High accuracy
- ▶ Protection in hazardous environments, Class I, Div 1
- ▶ Superior EMI, ESD and RFI protection
- ▶ Rugged all-welded stainless steel construction
- ▶ NEMA 4
- ▶ Built-in high pressure snubber (2000 psi and above)
- ▶ cULus, CE approved
- ▶ ATEX / IECEx certified - 445 only

### Applications

- ▶ Oil & gas pipelines
- ▶ Oil patch
- ▶ Petrochemical plants
- ▶ Refineries
- ▶ Pulp and paper mills
- ▶ Coal and oil fired power plants
- ▶ Cement plants
- ▶ Gas transfers for fuel systems
- ▶ Gas panels
- ▶ Gas mixing systems

### General Specifications\*



<b>Accuracy (LH &amp; R):</b>	±0.25% FSO at 75°F (±0.5% for vacuum only [-23]) typical
<b>Long Term Stability:</b>	±0.5% FSO of calibration curve
<b>Typical Life Cycle:</b>	100 million cycles
<b>Proof Pressure:</b>	2 times rated pressure or 13,000 psi max. (884 bar), whichever is less
<b>Input:</b>	443: Excitation voltage: 11 to 28 VDC 446: Excitation voltage: 14 to 28 VDC 445: Excitation voltage: 12 to 28 VDC
<b>Supply Current:</b>	3.0 mA maximum (no load)
<b>Output:</b>	443: Output: 0.5 to 5.5 VDC Full scale output: 5.0 VDC ± 0.8% Zero output: 0.5 VDC ± 0.4%  446: Output: 1 to 11 VDC Full scale output: 10 VDC ± 0.4% Zero output: 1.0 VDC ± 0.2%  445: Output: 4 to 20 mA Full scale output: 16 mA ± 1% Zero output: 4 mA ± 2%
<b>Wetted Parts:</b>	17-4 PH (fitting) & 300 stainless steel (sensor)
<b>Enclosure:</b>	NEMA 4, 300 series stainless steel

<b>Response Time:</b>	2 kHz
<b>Pressure Connection:</b>	1/4"-18 NPT male
<b>Electrical Connection:</b>	3 conductor for voltage series and 2 conductor for current series, 24 awg, PVC jacketed, shielded cable, 3 ft. (1 m) long with integral strain relief and case ground (standard).
<b>Temperature Ranges:</b>	Operating: -40° to 158°F (-40° to 70°C) Compensated: -40° to 158°F (-40° to 70°C) Storage: -40° to 185°F (-40° to 85°C)
<b>Temperature Shift:</b>	Zero & Span: 0.01% per °F over compensated range reference
<b>Vibration:</b>	15 g's, 10-2000 Hz, MIL-STD 202
<b>Shock:</b>	50 g's, 11 ms, MIL-STD 202 Method 213, Cond. G.
<b>Approvals:</b>	Intrinsically safe pressure transducers are UL and cULus approved as telemetering equipment for use in hazardous locations (UL File E146589, WYMV, WYMV7) as follows:  Class I, Div. 1, Groups A, B, C & D Class II, Groups E, F & G, when installed in accordance with control drawing 272148 (443); TD-B77 (445); 272147 (446).  445 only: ATEX/IECEx Certification: CE 0081 (S) II 1 G D, Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da, -40°C to 70°C, DEMKO 09 ATEX 143402, IECEx UL 13.0069
<b>Weight:</b>	443 & 446: 7.4 oz. (221 grams) to 1000 psi 9.9 oz. (281 grams) 2,000 psi and higher  445: 7.4 oz. (210 grams) to 1000 psi 9.4 oz. (266 grams) 2,000 psi and higher
<b>Warranty:</b>	1 year warranty

\* See product configurator for additional options.

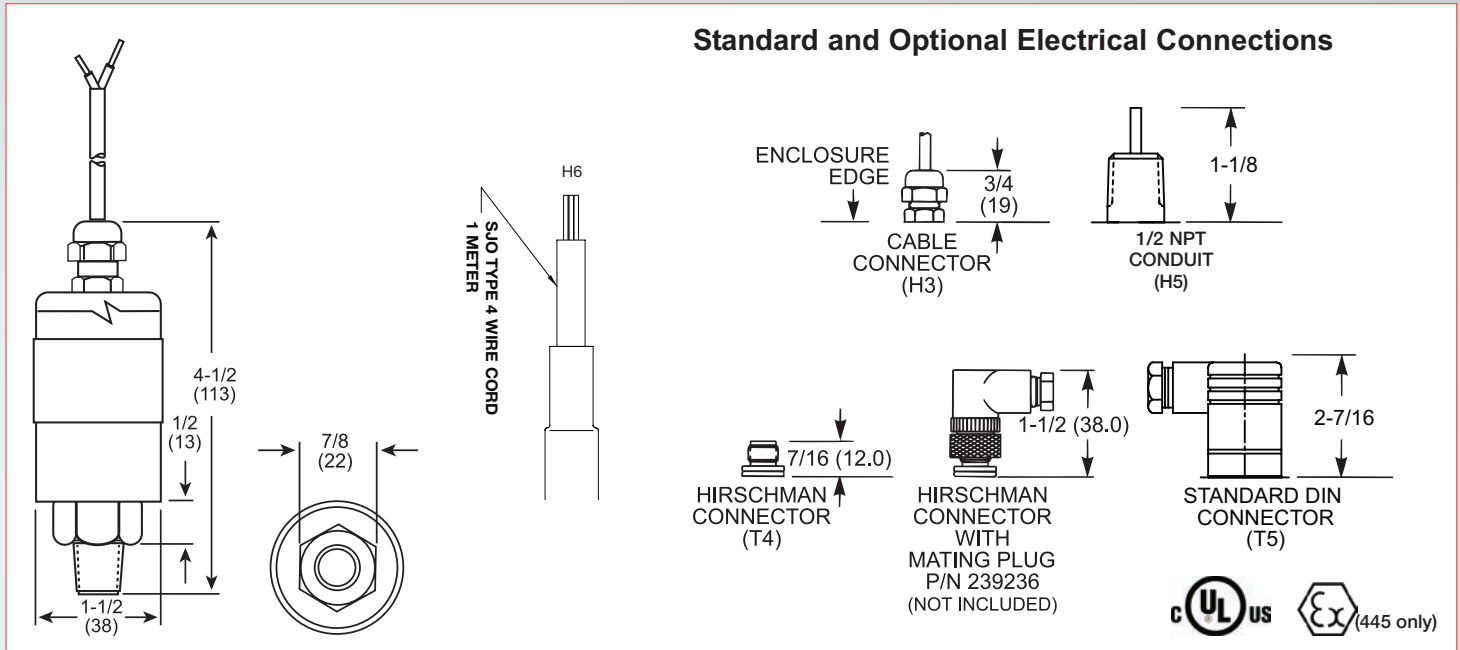
MILLIVOLT SERIES - 443 & 446		
(T4/T5)	(H3/H5)	Signal
1	Red	+ Excitation
3	White	+ Output
2	Black	Common
4	Bare	Case Drain
MILLIAMPER SERIES - 445		
1	Red	+ Excitation
2	Black	- Excitation
4	Bare	Case Drain

### Wiring Code

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## Technical Drawings



## Product Configurator

Example: **445 H3 -05 A**

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

### Base Model

443 <sup>1</sup>	0.5 - 5.5 VDC analog output
445	4 - 20 mA analog output
446 <sup>1</sup>	1 - 11VDC analog output

### Electrical Connection

H3	Shielded & jacketed #22 AWB cable (1 meter) (standard)
H5	1/2" male conduit with shielded & jacketed cable
H6 <sup>1</sup>	SJO cable type (1 meter)
T4 <sup>2</sup>	M12 Hirschman connector (ELST 412 PG9)
T5 <sup>1</sup>	Standard DIN connector (43650) - mating connector included
T8 <sup>1</sup>	DIN 43650 1/2" connector

### Pressure Range

-23	0 - 29.9" of Hg (Vacuum)
-25	0 - 5 psi (0 - 0.35 bar)
-01 <sup>3</sup>	0 - 15 psi (0 - 1 bar)
-21 <sup>3</sup>	0 - 30 psi (0 - 2 bar)
-03 <sup>3</sup>	0 - 50 psi (0 - 3.5 bar)
-22 <sup>3</sup>	0 - 60 psi (0 - 4 bar)
-04 <sup>3</sup>	0 - 100 psi (0 - 6.9 bar)
-05 <sup>3</sup>	0 - 150 psi (0 - 10.3 bar)
-06 <sup>3</sup>	0 - 200 psi (0 - 13.8 bar)
-07 <sup>3</sup>	0 - 300 psi (0 - 20.7 bar)
-08	0 - 500 psi (0 - 34.5 bar)
-19	0 - 600 psi (0 - 41 bar)
-10	0 - 1,000 psi (0 - 69 bar)
-11	0 - 1,500 psi (0 - 103.4 bar)
-12 <sup>4</sup>	0 - 2,000 psi (0 - 138 bar)
-13 <sup>4</sup>	0 - 3,000 psi (0 - 207 bar)
-14 <sup>4</sup>	0 - 4,000 psi (0 - 276 bar)
-15 <sup>4</sup>	0 - 5,000 psi (0 - 345 bar)
-16 <sup>4</sup>	0 - 6,000 psi (0 - 414 bar)
-17 <sup>4</sup>	0 - 7,500 psi (0 - 517 bar)
-18 <sup>4</sup>	0 - 10,000 psi (0 - 689 bar)

### Options

-E <sup>5</sup>	External adjustment - Zero/Span
-Z10	1 to 5V output (available only on 443 models)
-Z11	1 to 6V output (available only on 443 models)
-Z12	0.5 to 4.5V output (available only on 443 models)
-Z15	Calibrated in 'bar' unit
-Z16	0.2 to 10V output (available only on 446 models)
-Z17 <sup>6</sup>	For high pressure models with larger orifice
-Z18 <sup>1</sup>	Z17 and Z10 options combined
-ZXXY <sup>7</sup>	Special pressure ranges
-WXXX	Additional length of free leads (in inches) (with H3, H5 & H6 connection)

### Process Connections\*

Blank	1/4-18 NPT male (standard)
-P1	7/16-20 UNF-2B female (SAE #4)
-P3	7/16-20 UNF-2A male (JIC 37°)
-P4	1/2" NPT male
-P5	1/2" NPT female
-P6	1/4" NPT female

\* Consult factory for more options

## Accessories

Order #	Description
239236	Hirschman mating connector (T4 electrical option)
208360	Pressure snubber (1/4-18 NPT female/male)

<sup>1</sup>Not ATEX/IECEx certified

<sup>2</sup>Mating connector: Hirschman # ELWIK4 4021 PG7 or equivalent (not included). Order number: 239236

<sup>3</sup>Available in absolute ranges

<sup>4</sup>Built-in surge protector

<sup>5</sup>Available with connector options H3 and T4 only

<sup>6</sup>For pressure >1,000 psi a 3/16 diameter pressure port orifice with no surge protector is offered.

<sup>7</sup>Add suffix ZXXY for special pressure ranges. XX = significant digits. Y = number of trailing zeros. Example: for 230 psi calibration, add Z231