

## SPT Series

# Low Cost, Stainless Steel Pressure Transducers



### 0-3 psi to 0-5000 psi

The SPT stainless steel devices are designed for pressure applications that involve measurement of hostile media in harsh environments and will accommodate any media that will not adversely attack 304 or 316 stainless steel wetted parts.

This SPT Series is calibrated and compensated for three styles of output: 4-20 mA (mA version), 1-5 Vdc (4V version), and 0-100 mV (mV version). All versions feature a variety of pressure connections to allow use in a wide range of OEM equipment.

The SPT stainless steel devices are rugged and reliable transducers for use in a wide variety of pressure sensing applications where corrosive liquids or gases are monitored. Contact your local SenSym ICT representative, the factory, or go to Sensym ICT's Web site at [www.sensym-ict.com](http://www.sensym-ict.com) for additional details.

### APPLICATIONS

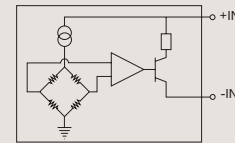
- Industrial Automation and Flow Control
- Pressure Instrumentation
- Hydraulic Systems
- Process Control

### FEATURES

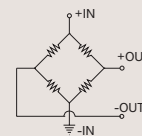
- Reliable Semiconductor Technology
- Calibrated and Temperature Compensated
- Rugged Stainless Steel Package
- NEMA 4 Design
- Small Size
- Absolute, Gauge, Sealed Gauge, Vacuum Gauge Pressures

### EQUIVALENT BASIC CIRCUIT

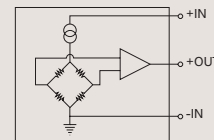
SPT mA



SPT mV



SPT 4V



## SPT Series

### PRESSURE TRANSDUCER CHARACTERISTICS

#### Environmental Specifications

Compensated: -10°C to +85°C Vibration: 10G at 20-2000 Hz  
 Operating: -40°C to +125°C Shock: 100G for 11 msec  
 Storage: -40°C to +125°C Life: 1 Million cycles minimum  
 Insulation Resistance: 100 MΩ at 50 Vdc

#### Recommended Supply Range

SPT mA: Supply Voltage  $V_S = +12.5$  Vdc to +30 Vdc  
 SPT 4V: Supply Voltage  $V_S = +12$  Vdc to +30 Vdc  
 Quiescent Current  $I_{QSC} = 5$  mA  
 Short Circuit Current  $I_{SC} = 18$  mA  
 SPT mV: Supply Voltage  $V_S = +10$  Vdc

#### Maximum Supply Ratings

SPT mV: Supply Voltage  $V_S = +15$  Vdc  
 SPT mA and SPT 4V: Supply Voltage  $V_S = +30$  Vdc

### PRESSURE RANGE SPECIFICATIONS (all devices)

SenSym ICT Part No. *	Pressure Range	Proof Pressure <sup>(7)</sup>	Burst Pressure <sup>(8)</sup>
SPT(mA,mV,4V) 0003P G (4,5,6,7,9) (B/WXX)	0-3 psig	9 psig	15 psig
SPT(mA,mV,4V) 0005P G (4,5,6,7,9) (B/WXX)	0-5 psig	15 psig	25 psig
SPT(mA,mV,4V) 0010P G (4,5,6,7,9) (B/WXX)	0-10 psig	30 psig	50 psig
SPT(mA,mV,4V) 0015P (A,G,V) (4,5,6,7,9) (B/WXX)	0-15 psi	45 psi	75 psi
SPT(mA,mV,4V) 0030P (A,G,V) (4,5,6,7,9) (B/WXX)	0-30 psi	90 psi	150 psi
SPT(mA,mV,4V) 0050P (A,G,V) (4,5,6,7,9) (B/WXX)	0-50 psi	150 psi	250 psi
SPT(mA,mV,4V) 0100P (A,G,V) (4,5,6,7,9) (B/WXX)	0-100 psi	300 psi	500 psi
SPT(mA,mV,4V) 0200P (A,G,V) (4,5,6,7,9) (B/WXX)	0-200 psi	600 psi	1000 psi
SPT(mA,mV,4V) 0300P (A,G,V) (4,5,6,7,9) (B/WXX)	0-300 psi	900 psi	1500 psi
SPT(mA,mV,4V) 0500P (A,G,V) (4,5,6,7,9) (B/WXX)	0-500 psi	1200 psi	2400 psi
SPT(mA,mV,4V) 1000P (A,S) (4,5,6,7) (B/WXX)	0-1000 psi	3000 psia	5000 psia
SPT(mA,mV,4V) 2000P (A,S) (4,5,6,7) (B/WXX)	0-2000 psi	6000 psia	10000 psia
SPT(mA,mV,4V) 3000P (A,S) (4,5,6,7) (B/WXX)	0-3000 psi	9000 psia	10000 psia
SPT(mA,mV,4V) 5000P (A,S) (4,5,6,7) (B/WXX)	0-5000 psi	10000 psia	10000 psia

\* Note: Vacuum gauge units (V option) allow you to pull a hard vacuum on the gauge units. Vacuum gauge parts are only available on the mV version in 15 through 500 psig. As sold, this package design is not submersible. In order to make the package design submersible, package needs to be sealed.

### SPT mV Series PERFORMANCE CHARACTERISTICS<sup>(1)</sup>

Characteristic	Min	Typical	Max	Units
Zero Pressure Offset	-2	0	+2	mV
Full-Scale Span (0-3 to 0-5 psig only) <sup>(2)</sup>	48	50	52	mV
Full-Scale Span (0-10 to 0-3000 psi only) <sup>(2)</sup>	98	100	102	mV
Full-Scale Span (0-5000 psi only) <sup>(2)</sup>	148	150	152	mV
Pressure Non-Linearity <sup>(3)</sup>	-	±0.1	±0.25	%FSS
Pressure Hysteresis <sup>(3)</sup>	-	±0.015	±0.030	%FSS
Repeatability	-	±0.010	±0.030	%FSS
Temp. Effect on Span <sup>(4)</sup>	-	±0.5	±1.0	%FSS
Temp. Effect on Offset <sup>(4)</sup>	-	±0.5	±1.0	%FSS
Temp. Effect on Span (0-3 and 0-5 psi only) <sup>(4)</sup>	-	±1	±2.0	%FSS
Temp. Effect on Offset (0-3 and 0-5 psi only) <sup>(4)</sup>	-	±1	±2.0	%FSS
Thermal Hysteresis (-10 to +85°C)	-	±0.1	±0.3	%FSS
Long Term Stability of Offset & Span <sup>(5)</sup>	-	±0.1	±0.3	%FSS
Response Time <sup>(6)</sup>	-	0.1	-	mS
Common Mode Voltage (Voltage Version "K") <sup>(9)</sup>	.5	1.25	2.0	Vdc
Input Resistance	8.0	25	50	kΩ
Output Resistance	3.0	4.5	6.0	kΩ

### SPT mV SERIES SPECIFICATION NOTES

Note 1: Reference Conditions (unless otherwise noted):  
 $T_A = 25^\circ\text{C}$   
 Supply  
 $V_S = 10$  Vdc ±0.01 Vdc

Note 2: Full-Scale Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. Full-Scale Span (FSS) is ratiometric to the supply voltage.

Note 3: Pressure Non-Linearity is based on best-fit straight line from the zero to the full-scale pressure. Pressure Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.

Note 4: Maximum error band of the offset voltage or span over the compensated temperature range, relative to the 25°C reading.

Note 5: Long term stability over a six month period.

Note 6: Response time for 0 psi to FSS pressure step change, 10% to 90% rise time.

Note 7: The maximum pressure that can be applied without changing the transducer's performance or accuracy.

Note 8: The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer case.

Note 9: Common Mode Voltage as measured from output to ground.

**SPT mA Series PERFORMANCE CHARACTERISTICS<sup>(1)</sup>**

Characteristic	Min	Typical	Max	Units
Zero Pressure Offset	3.84	4.0	4.16	mA
Full-Scale Span <sup>(2)</sup>	15.84	16.0	16.16	mA
Pressure Non-Linearity <sup>(3)</sup>	-	±0.1	±0.25	%FSS
Pressure Hysteresis <sup>(3)</sup>	-	±0.015	±0.03	%FSS
Repeatability	-	±0.010	±0.030	%FSS
Temp. Effect on Span <sup>(4)</sup>	-	±0.5	±1.5	%FSS
Temp. Effect on Offset <sup>(4)</sup>	-	±0.5	±1.5	%FSS
Temp. Effect on Span (0-3psi and 0-5psi only) <sup>(4)</sup>	-	±1.5	±2.5	%FSS
Temp. Effect on Offset (0-3psi and 0-5psi only) <sup>(4)</sup>	-	±1.5	±2.5	%FSS
Thermal Hysteresis (-10 to +85°C)	-	±0.1	±0.3	%FSS
Long Term Stability of Offset & Span <sup>(5)</sup>	-	±0.1	±0.3	%FSS
Response Time <sup>(6)</sup>	-	5	-	mS

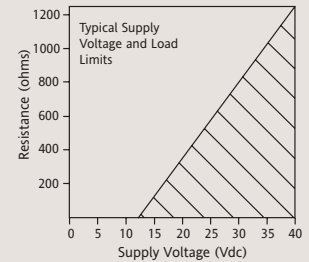
**SPT 4V Series PERFORMANCE CHARACTERISTICS<sup>(1)</sup>**

Characteristic	Min	Typical	Max	Units
Zero Pressure Offset	0.96	1.0	1.04	Volts
Full-Scale Span <sup>(2)</sup>	3.96	4.0	4.04	Volts
Pressure Non-Linearity <sup>(3)</sup>	-	±0.1	±0.25	%FSS
Pressure Hysteresis <sup>(3)</sup>	-	±0.015	±0.03	%FSS
Repeatability	-	±0.010	±0.030	%FSS
Temp. Effect on Span <sup>(4)</sup>	-	±0.5	±1.5	%FSS
Temp. Effect on Offset <sup>(4)</sup>	-	±0.5	±1.5	%FSS
Temp. Effect on Span (0-3psi and 0-5psi only) <sup>(4)</sup>	-	±1.5	±2.5	%FSS
Temp. Effect on Offset (0-3psi and 0-5psi only) <sup>(4)</sup>	-	±1.5	±2.5	%FSS
Thermal Hysteresis (-10 to +85°C)	-	±0.1	±0.3	%FSS
Long Term Stability of Offset & Span <sup>(5)</sup>	-	±0.1	±0.3	%FSS
Response Time <sup>(6)</sup>	-	5	-	mS

**SPT mA AND SPT 4V SERIES SPECIFICATION NOTES**

- Note 1: Reference Conditions (unless otherwise noted):  
 $T_A = 25^\circ\text{C}$   
 Supply  
 $V_S = 24 \text{ Vdc} \pm 0.01 \text{ Vdc}$
- Note 2: Full-Scale Span is the algebraic difference between the output voltage at full-scale positive pressure and the output at zero pressure.
- Note 3: Pressure Non-Linearity is based on best-fit straight line from the zero to the full-scale pressure. Pressure Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Note 4: Maximum error band of the offset voltage or span over the compensated temperature range, relative to the 25°C reading.
- Note 5: Long term stability over a six month period.
- Note 6: Response time for a 0 psi to FSS pressure step change, 10% to 90% rise time.
- Note 7: The maximum pressure that can be applied without changing the transducer's performance or accuracy.
- Note 8: The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer case.

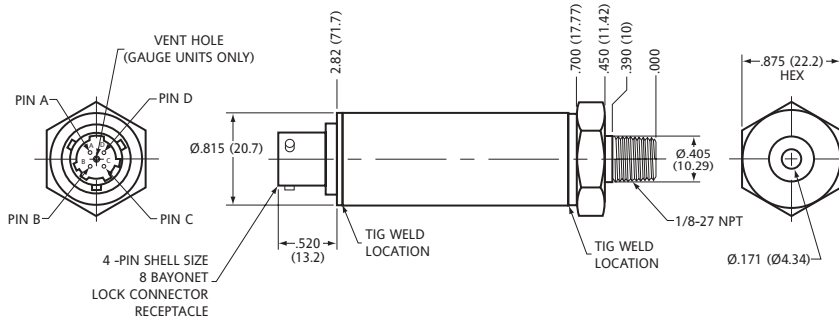
**SPT mA SERIES EXTERNAL LOAD LINE**



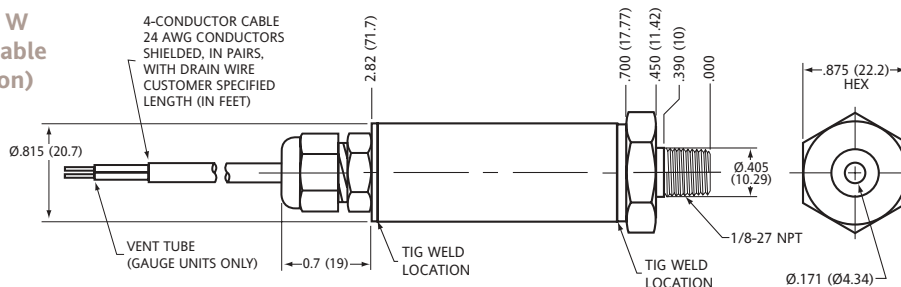
**PHYSICAL DIMENSIONS**

**PACKAGE 4  
1/8 NPT PORT**

**VERSION B  
(Bayonet Connector)**



**VERSION W  
(Pigtail Cable Connection)**



**THE FOLLOWING TABLES APPLY TO ALL DRAWINGS**

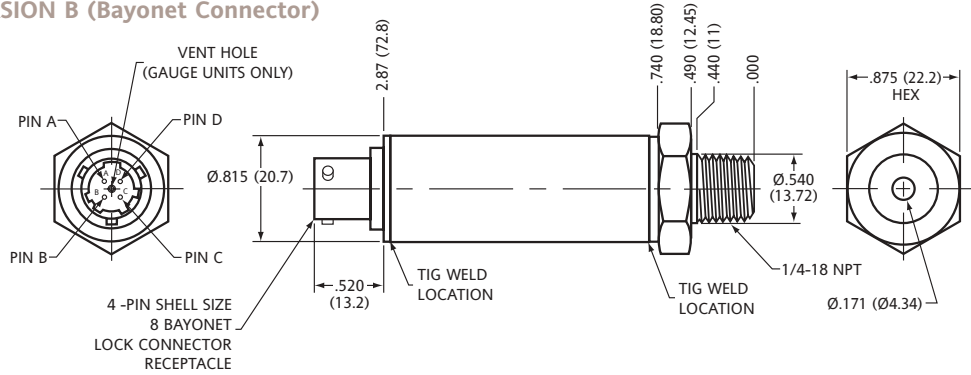
PIN DESIGNATIONS			
PIN LTR	mA	4V	mV
A	+IN	+IN	+IN
B	N/C	+OUT	+OUT
C	N/C	N/C	-OUT
D	-IN	-IN	-IN

WIRE CODE			
Color	mA	4V	mV
RED	+IN	+IN	+IN
BLACK	-IN	-IN	-IN
GREEN	N/C	+OUT	+OUT
WHITE	N/C	N/C	-OUT
BARE	SHIELD	SHIELD	SHIELD

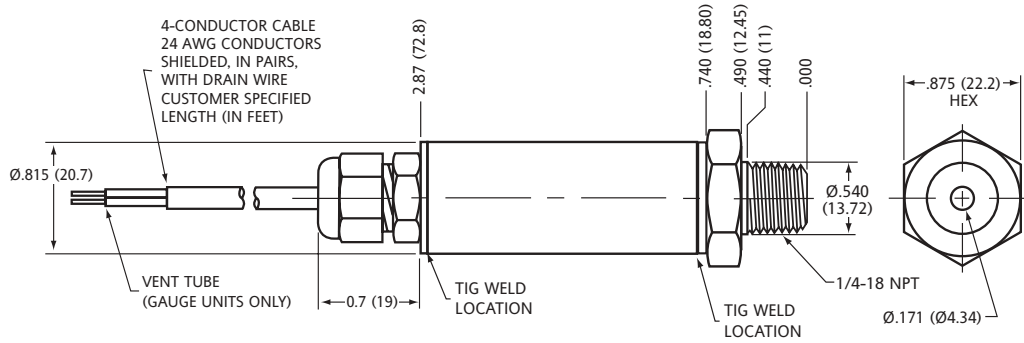
**PHYSICAL DIMENSIONS (con't)**

**PACKAGE 5  
1/4 NPT PORT**

**VERSION B (Bayonet Connector)**

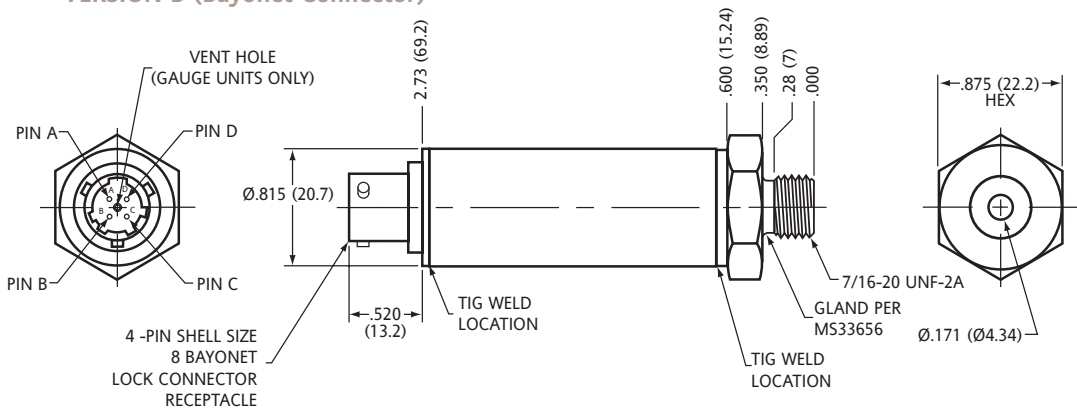


**VERSION W (Pigtail Cable Connection)**

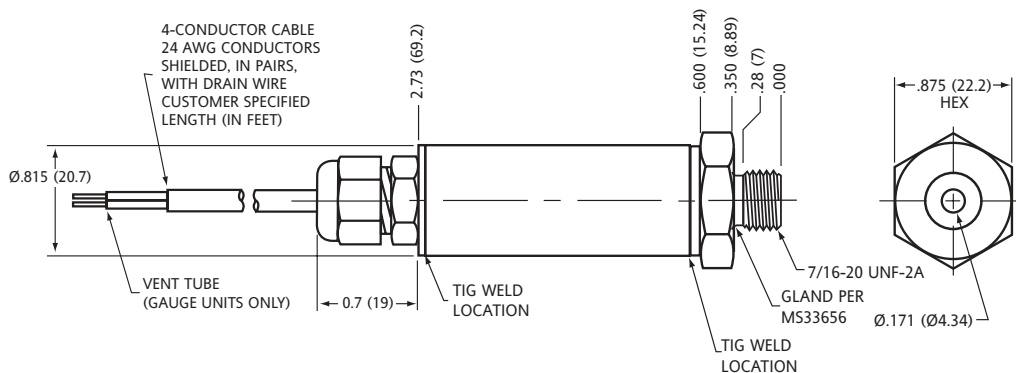


**PACKAGE 6  
7/16-20 UNF PORT**

**VERSION B (Bayonet Connector)**



**VERSION W (Pigtail Cable Connection)**

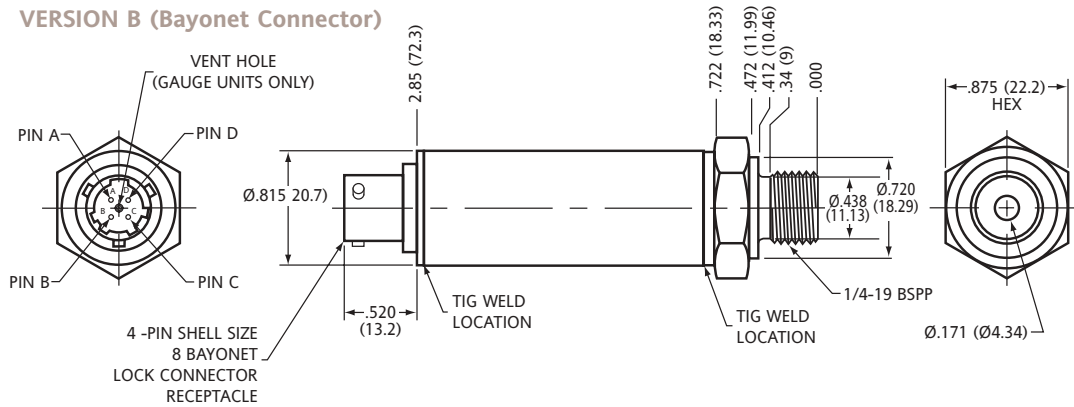


# SPT Series

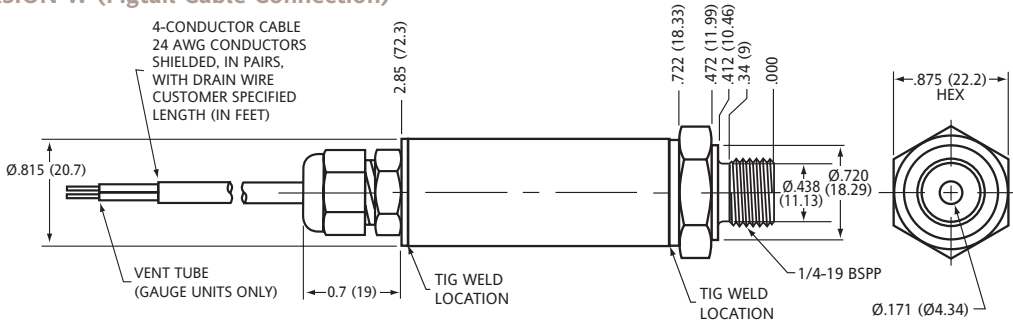
## PHYSICAL DIMENSIONS (con't)

### PACKAGE 7 1/4-19 BSPP PORT

#### VERSION B (Bayonet Connector)

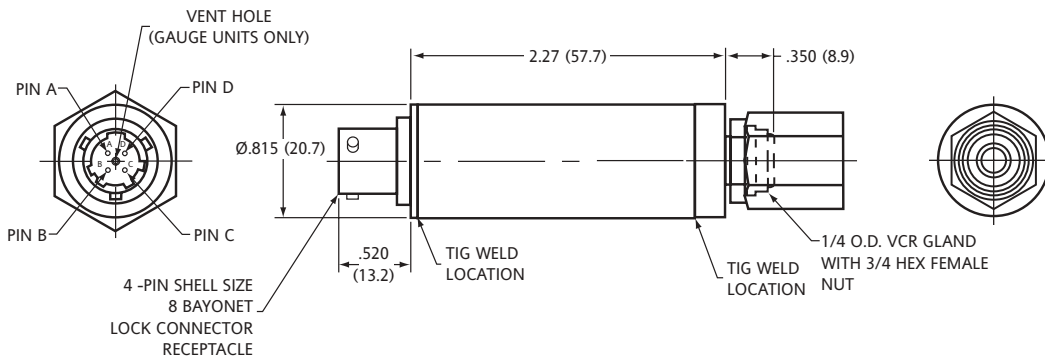


#### VERSION W (Pigtail Cable Connection)

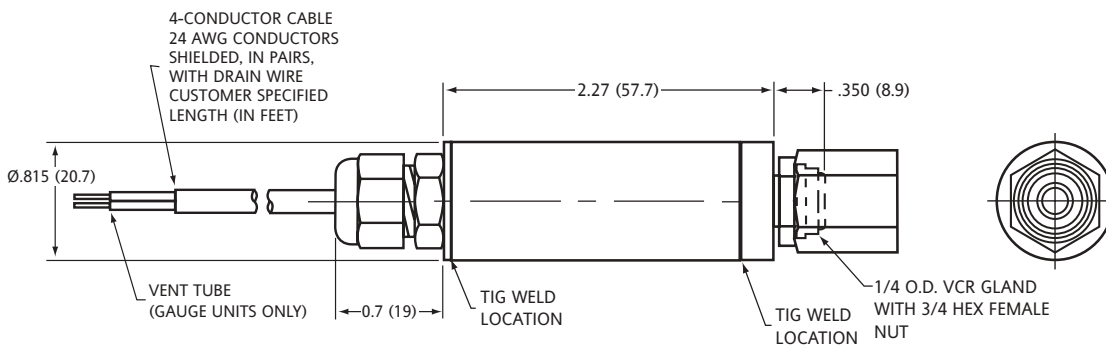


### PACKAGE 9 VCR PORT

#### VERSION B (Bayonet Connector)



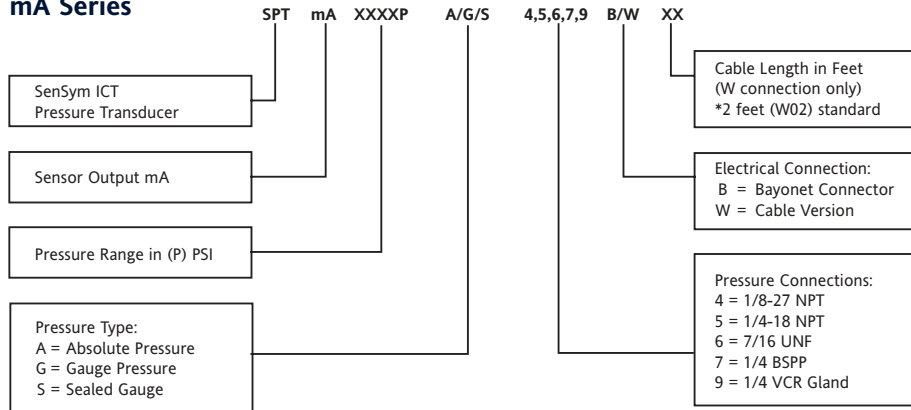
#### VERSION W (Pigtail Cable Connection)



# SPT Series Low Cost, Stainless Steel Pressure Transducers

## ORDERING INFORMATION - PART # DESCRIPTION

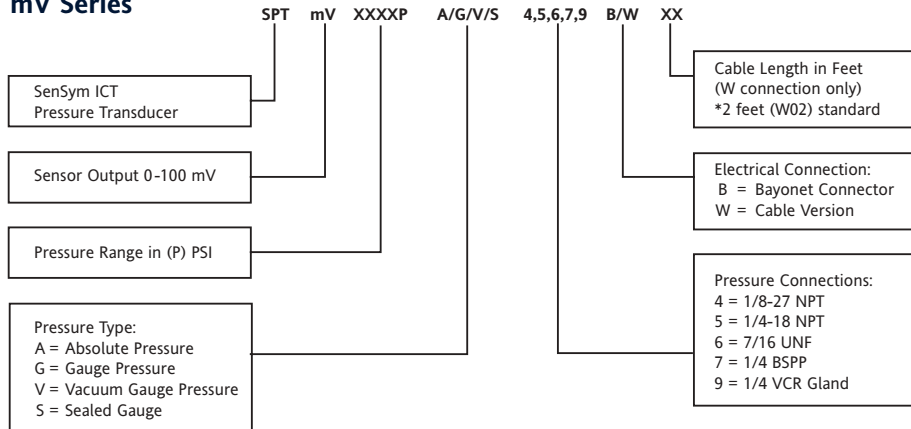
### SPT mA Series



For example: Part #**SPTmA0100PA4W02** = SPT mA Sensor, 100 psi, Absolute, 1/8NPT Port with a 2 feet cable (pigtail) electrical connection.

**\*NOTE: Cable Length is 2 feet standard (W02) unless otherwise specified.**

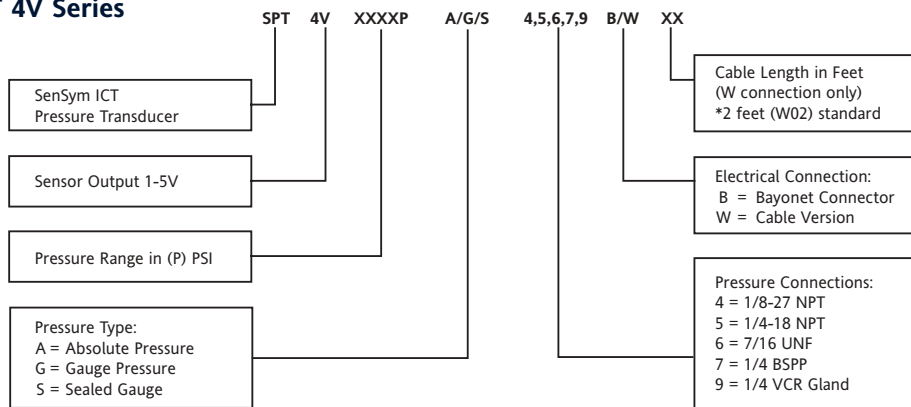
### SPT mV Series



For example: Part #**SPTmV0100PA4W02** = SPT mV Sensor, 100 psi, Absolute, 1/8NPT Port with a 2 feet cable (pigtail) electrical connection.

**\*NOTE: Cable Length is 2 feet standard (W02) unless otherwise specified.**

### SPT 4V Series



For example: Part #**SPT4V0100PA4W02** = SPT 4V Sensor, 100 psi, Absolute, 1/8NPT Port with a 2 feet cable (pigtail) electrical connection.

**\*NOTE: Cable Length is 2 feet standard (W02) unless otherwise specified.**



Sensor Systems

1 408 954 6700  
FAX: 408 954 9458  
SenSym ICT  
1804 McCarthy Boulevard  
Milpitas, CA 95035

www.sensym-ict.com

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