

800 Series Pressure Transmitters

SOR® Pressure Transmitters are versatile, rugged products designed for industrial process monitoring and control. This catalog contains application and ordering data for compact styles of pressure transmitter. Pressure ranges for applications requiring measurement of gauge, or differential pressure are all available.

SOR pressure transmitters can be ordered with a multitude of options and accessories offering the best solution for your unique application.







815PT with "IN" LCD Display



815DT

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Model	805PT Compact Pressure Transmitter			805QS Compact Pressure Switch-Transmitter			815PT Compact Smart Pressure Switch-Transmitter		
	Gauge (psi)	Over Pressure (psi)	Absolute (psia)	Gauge (psi)	Over Pressure (psi)	Absolute (psia)	Gauge (psi)	Over Pressure (psi)	Absolute (psia)
	0 to 5	15		0 to 5	15		0 to 5	15	
	0 to 15	45	0 to 15	0 to 15	45	0 to 15	0 to 15	45	0 to 15
	0 to 50	150	0 to 50	0 to 50	150	0 to 50	0 to 50	150	0 to 50
	0 to 100	300	0 to 100	0 to 100	300	0 to 100	0 to 100	300	0 to 100
Pressure	0 to 250	500		0 to 250	500		0 to 250	500	
Ranges	0 to 500	1,000		0 to 500	1,000		0 to 500	1,000	
	0 to 1,000	2,000		0 to 1,000	2,000		0 to 1,000	2,000	
	0 to 2,500	5,000		0 to 2,500	5,000		0 to 2,500	5,000	
	0 to 5,000	10,000		0 to 5,000	10,000		0 to 5,000	10,000	
	0 to 10,000	20,000		0 to 10,000	20,000		0 to 10,000	20,000	
	0 to 15,000	21,000		0 to 15,000	21,000		0 to 15,000	21,000	
	0 to 30,000	42,000		0 to 30,000	42,000		0 to 30,000	42,000	
Analog Output	4-20mA or 1-5VDC (Low Power) Output must be specified at time of order.				4-20mA / 1-5VDC (Low Power) Output is field configurable.				
Communication Protocol	-					HART® 7 / Modbus RTU Output is field configurable.			
Accuracy	± 0.25% URL			± 0.10% URL					
Built in Switch	-			Yes 3 Switch Output Modes		Yes 9 Switch Output Modes			
Switch Ac- curacy	-			± 2% URL		± 0.25% URL			
Response Time	< 5ms				< 70ms				
Supply Voltage	8-30VDC			10-36VDC					
Field Calibration	SOR Calibration Kit and PC required				External Magnetic Targets HART 7 / Modbus RTU				
	71. (10.0.15.11)			Explosion Proof Class I, II, I		II; Division 1 Groups A-G; T5; Type 4X			
Agency	FM (l	J.S. and Cana	aa)	Non-incendive	on-incendive Class I, II, III; Division 2 Groups A-G; T		5; Type 4X		
Approvals	ATEX/IECEx or INMETRO			Flameproof Ex db IIC T5 Gb; IP66					
Warranty	3 years								
Catalog	See page 4					5	See page 8		

Please consult Product Specifications Table and Model Tree for the complete details of each model.

Model	815DT Compact Smart Differential Pressure Switch-Transmitter			
	Range	Max Static Pressure	Turndown	
	0 to 5 psid	1,000 psi	5:1	
Pressure	0 to 15 psid	1,000 psi	5:1	
Ranges	0 to 50 psid	1,000 psi	5:1	
	0 to 100 psid	1,000 psi	5:1	
	0 to 300 psid	1,000 psi	5:1	
	0 to 500 psid	1,000 psi	5:1	
	Range	HI Side	LO Side	
	0 to 5 psid	15 psid	15 psid	
	0 to 15 psid	45 psid	45 psid	
HI & LO Side Over Pressure Ratings	0 to 50 psid	150 psid	150 psid	
Over Fressure Raungs	0 to 100 psid	300 psid	300 psid	
	0 to 300 psid	900 psid	900 psid	
	0 to 500 psid	1,500 psid	1,500 psid	
Analog Output	4-20mA / 1-5VDC (Low Power) Output is field configurable.			
Communication	HART® 7 / Modbus RTU			
Protocol	Output is field configurable.			
Output Signal Characteristic	Linear (Default) Square Root Strapping Table			
Accuracy	± 0.10% URL			
Built in Switch	Yes			
Switch Accuracy	± 0.25% URL			
Response Time		< 70ms		
Supply Voltage		10-36VDC		
Field Calibration	External Magnetic Targets HART® 7 / Modbus RTU			
	FM (U.S. and Canada)	Explosion Proof	Class I, II, III; Division 1 Groups A-G; T5; Type 4X	
Agency Approvals		Non- incendive	Class I, II, III; Division 2 Groups A-G; T5; Type 4X	
	ATEX/IECEx or INMETRO	Flameproof	Ex db IIC T5 Gb; IP66	
144	3 years			
Warranty		3 years		

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805 Pressure Switch-Transmitters

The 805 Pressure Switch-Transmitter is a compact

loop-powered pressure switch-transmitter. A supplemental continuous output is

also available (either 4-20mA or 1-5VDC). Its rugged construction makes cost of ownership low and it carries a three-year warranty. The SOR 805 pressure switch-transmitter is suitable for hazardous locations and hostile environments where space is limited. It meets applications where low-cost, discrete and continuous monitoring is preferred. Switch set points and supplemental continuous output zero and span points are field adjusted via SOR Calibration Kit with USB communication cable.

Features

- Compact, 316 stainless steel, explosion proof housing
- Stainless steel sensor, no o-ring
- Solid state switch output (805QS only)
- 0.25% continuous output accuracy
- Hermetically sealed leads
- LCD display option available
- EMI/RFI protection







- Dual Seal approval
- INMETRO approval





1/2" NPT(M) with 1/4" NPT(F)

and Autoclave F250C(F) for 1/4" OD tubing



 FM and ATEX/IECEx certified for hazardous locations in U.S., Canada and Europe

Process Connection

Product Specifications

Dilino --- Codd --- (0050C --- L)

Loop Resistance

Circuit Protection

Construction

Primary Switch Output (805QS only)				
Accuracy	±2% URL			
Туре	Normally Open			
	Solid State Relay			
Electrical Rating	30V, 120mA			
Temperature Effect	±2% URL/100°F			
	@ -40 to 176°F			
Continuous Output				
Accuracy	±0.25% URL (BFSL)			
(Linearity, Hy	ysteresis, and Repeatability)			
Output	4-20 mA			
1-5 VDC option	on (27mW ± 5mW @ 9 VDC)			
Zero Offset	+10% URL			
Temperature	±1% URL/100°F			
	@ -40 to -176°F			
Temperature Range				
Compensated	-40 to 176°F (-40 to 80°C)			
Ambient	-40 to 176°F (-40 to 80°C)			
Process	-40 to 194°F (-40 to 90°C)			
Storage	-40 to 194°F (-40 to 90°C)			
Long Term Stability	≤ ±0.5% URL per year			
Response Time	<u><</u> 5 ms			
Supply Voltage	8-30VDC			

Electrical Connection				
Size	1/2" NPT(M)			
Termination	18 AWG shielded cable, 72-inch length			
(Consult factory for alternation	ate electrical connections)			
Wetted Materials 316/316L-SS (for pressure range 0-5 psi thru 0-15 psi				
	17-4SST (for pressure ranges above 0-15 psi)			
Over Pressure				
0-5 thru 0-100 psi	3 times FSPR			
0-250 thru 0-10,000 ps	si 2 times FSPR			
Up to 30,000 psi	1.4 times FSPR			
Burst Pressure				
0-5 thru 0-100 psi	4 times FSPR			
0-250 psi	40 times FSPR			
0-500 thru 0-1000 psi	20 times FSPR			
0-2500 psi	10 times FSPR			
0-5000 psi	8 times FSPR			
0-10,000 thru 0-15,00	0 psi 4 times FSPR			
0-30,000 psi	1.8 times FSPR			
Weight	1.8 lb (0.8 kg)			
Warranty	3 years			

Design and specifications are subject to change without notice. For latest revision, see sorinc.com.

800 ohms @ 24VDC

316SS housing (CF8M)

Reverse polarity and EMI/RFI protected

805 Pressure Switch-Transmitters

The primary switch output of the 805QS is a "Normally Open Solid State Relay" rated 30V, 120mA. It can be configured three ways; as shown below. Switch set point(s) and supplemental continuous output zero and span points are set at the factory as specified by the customer.

In all three configurations, the fail-safe state for the 805QS switch output will be open (i.e., if power is removed from the 805QS, the switch contacts will open automatically).

0 Window Mode

Switch is closed when the process pressure is within the user selected range (LO and HI set points), and open when the pressure is above or below that range.

Switch Closed

Switch Open

LO SET POINT (+/- 2%)

HI SET POINT (+/- 2%)

Switch Open

2 Close on Rise/Open on Fall

Switch is open when the process pressure is below the user selected set point and closed when the pressure is above that set point.

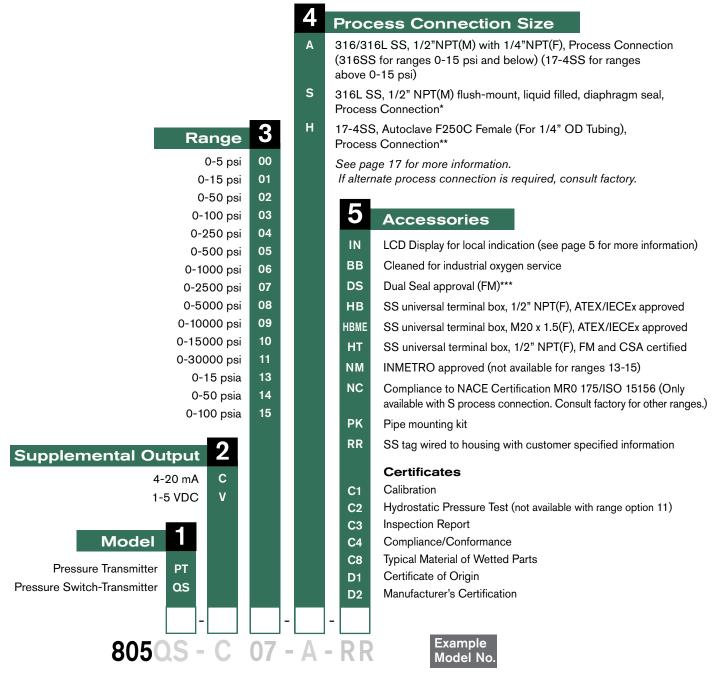
Open on Rise/Close on Fall

Switch is closed when the process pressure is below the user selected set point and open when the pressure is above that set point.

How to Order

Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

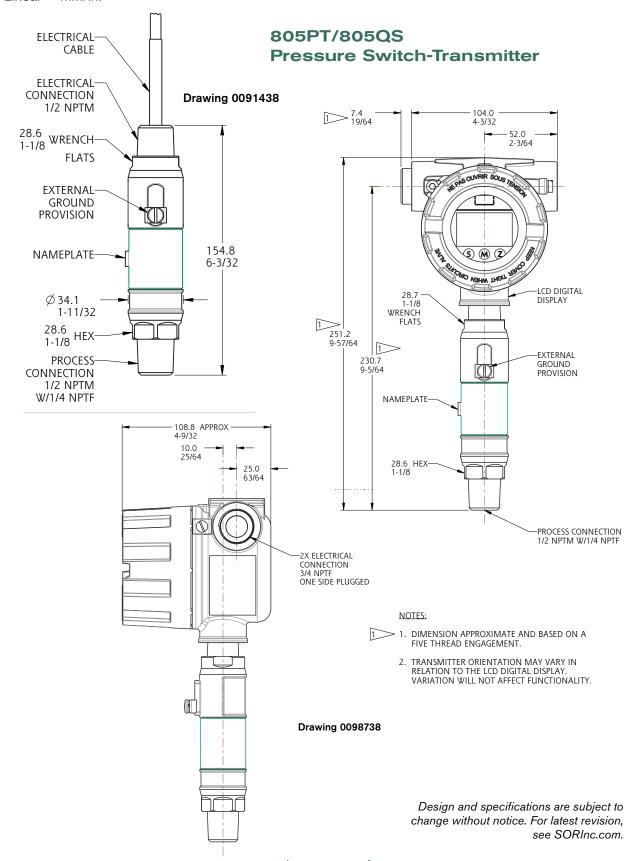
- You must select a designator for each component
- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



- * Only available for range option 04 thru 08
- ** For pressure ranges above 0-10000psi (range options 10 and 11)
- *** Dual Seal version is not hermetically sealed, only available for range options 00 thru 09.

See page 15 for agency and options.

Dimensions shown are for reference only. Contact the factory for certified dimension drawings. Linear = mm/in.



815 Smart Pressure Switch-Transmitters

The 815 Smart Pressure Switch-Transmitters are rugged, compact, loop-powered instruments that are ideally suited for hazardous locations and hostile environments where space is limited. The 815 offers many industry standard outputs to meet applications where low-cost, discrete and continuous monitoring is required or preferred. This versatile instrument may be used to safely monitor and control many process applications, but is specifically designed for upstream, midstream, and downstream oil & gas applications. Its stainless-steel construction and three-year warranty dramatically reduces the total cost of ownership.

The 815 is easily configured using HART®7 Communication Protocol and Modbus RTU Serial Communications; it is also very easy to set the zero and span set points with a magnet, as the zero and span magnetic targets are clearly identified on the casting. The SOR 815 is a feature rich, low cost, compact transmitter that sits at the top of its class.

Features

- HART®7 communication protocol with 4-20 mA output
- 1-5 VDC (low-power) mode of operation
- Modbus RTU (RS-485) serial communications
- Configurable normally-open solid-state switch output (SPST)
- ±0.10% (URL) continuous output accuracy
- Zero balance & URL: ±0.25% URL (each)
- Compact, 316 stainless steel, explosion proof housing
- NACE MRO 175/ISO 15156 certification option available
- Hermetically sealed leads
- Pressure ranges: 0-5 psi to 0-30,000 psi for 815PT, 0-5 psid to 0-500 psid for 815DT
- Zero and span magnetic targets located on casting
- LCD display option available





- 202 diopidy option available
- EMC (EMI/RFI) protectionNEMA 4X, IP66 housing



- FM and ATEX/IECEx certified for hazardous locations in U.S., Canada and Europe
- Dual Seal approval
- 3 year warranty











Product Specifications			
Continuous Output	Construction 316SS housing (CF8M)		
Accuracy ±0.10% URL (BFSL)	Process Connection		
(Linearity, Hysterisis and Repeatability)	815PT 1/2" NPT(M) with 1/4" NPT(F)		
Zero Balance & URL ±0.25% URL (Each)	or Autoclave F250C (F)		
Output 4-20mA	for 1/4" OD Tubing		
HART® 7 Communications Protocol	815DT (H & L side) 1/4" NPT(F)		
Modbus RTU (RS-485) Serial Communications	Electrical Connection		
1-5VDC (Low Power) Mode of Operation	Size 1/2" NPT(M)		
(36mW ± 5mW @ 10VDC)	Termination 18 AWG shielded cable,		
Temperature Effect ±1% URL/100°F	72-inch length		
@ -40 to 176°F	Wetted Materials		
Switch Output	815PT 316/316L-SST (for 0-5 psi thru		
1: Off	0-15 psi & psia pressure ranges)		
2: Windowed, Normally-Open	17-4SST (for pressure		
3: Windowed, Normally-Closed	ranges above 0-15 psi)		
4: Single Point, Normally-Open	815DT 316/316L-SST		
5: Single Point, Normally-Closed 6: PWM (Pulse Width Modulation), Pulsed Low	Max Static Line Pressure		
7: PWM (Pulse Width Modulation), Pulsed High	815DT 1,000 psi		
8: Dead Band, Normally-Open	Over Pressure		
9: Dead Band, Normally-Closed	815PT		
Accuracy ±0.25% URL	0-5 thru 0-100 psi 3 times FSPR		
Type Normally Open	0-250 thru 0-10,000 psi 2 times FSPR		
Solid State Relay (SPST)	Up to 30,000 psi 1.4 times FSPR		
Electrical Rating 30V, 120mA	815DT 3 times FSPR		
Temperature Effect ±1% URL/100°F	Burst Pressure		
@ -40 to 130°F	815PT		
Temperature Range	0-5 thru 0-100 psi 4 times FSPR		
Compensated -40 to 176°F (-40 to 80°C)	0-250 psi 40 times FSPR		
Ambient -40 to 176°F (-40 to 80°C)	0-500 thru 0-1000 psi 20 times FSPR		
Process -40 to 194°F (-40 to 90°C)	0-2500 psi 10 times FSPR		
Storage -40 to 194°F (-40 to 90°C)	0-5000 psi 8 times FSPR		
Long Term Stability ≤ ±0.5% URL per year	0-10,000 thru 0-15,000 psi 4 times FSPR		
Response Time ≤ 70 ms	0-30,000 psi 1.8 times FSPR		
Supply Voltage 10-36VDC	815DT 4 times FSPR		
Loop Resistance 667 ohms @ 24VDC	Weight 1.8 lb (0.8 kg)		
Circuit Protection Reverse polarity	Warranty 3 years		
and EMC (EMI/RFI) protected			

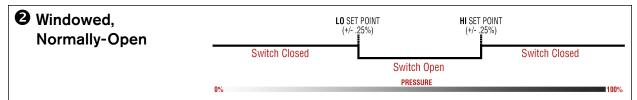
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815 Smart Pressure Switch-Transmitters

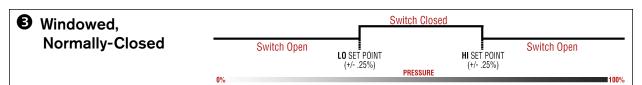
The switch output of the 815 is a Normally Open Solid State Relay rated for 30V, 120mA. It can be configured 9 ways; as shown in the following diagrams. Switch set point(s) and continuous output zero and span points are set at the factory as specified by the customer.

In all nine configurations, the fail-safe state for the 815 switch output will be open (i.e., if power is removed from the 815, the switch contacts will open automatically).

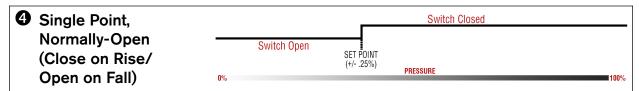
- Off
- Windowed, Normally-Open
- Windowed, Normally-Closed
- Single Point, Normally-Open
- Single Point, Normally-Closed
- 6 PWM (Pulse Width Modulation), Pulsed Low
- PWM (Pulse Width Modulation), Pulsed High
- 3 Dead Band, Normally-Open
- Dead Band, Normally-Closed



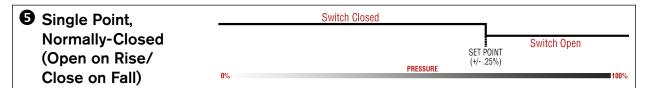
In this configuration, the switch output will be open when the process pressure is within a user selectable range and closed when the pressure is outside of these boundaries. This is designed for applications where there is a known acceptable operating pressure range.



In this configuration, the switch output will be closed when the process pressure is within a user selectable range and open when the pressure is outside of these boundaries. This is designed for applications where there is a known acceptable operating pressure range.

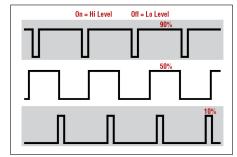


In this configuration, the switch output will be open for pressures less than the selected setpoint. The switch output would then be closed for pressures greater than the setpoint.

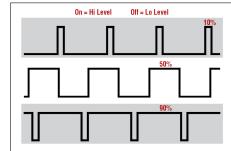


In this configuration, the switch output will be closed for pressures less than the selected setpoint. The switch output would then be open for pressures greater than the setpoint.

6 Pulse Width Modulation - Pulsed Lo



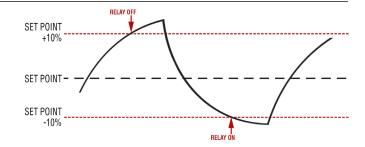
Pulse Width Modulation - Pulsed Hi



889 Dead Band

This diagram depicts an adjustable dead band. Dead band is the range through which an input can be varied without initiating an observable response. Dead band is usually expressed in percent of span.

EXAMPLE: A 20% total dead band is applied to the setpoint of a monitored parameter. The relay will turn on and off as indicated in the graph above.



Note: The continuous zero and span points and the Switch Configuration Mode and set point(s) must be specified. Refer to switch configuration diagrams on page 10.

Example: **815PT-Z07-A-RR**, which has a range of **0-2500 psi** could be ordered with zero and span of 200 psi and 2300 psi. The window mode switch configuration could have a LO set point of 210 psi and a HI set point of 2290 psi.

External Magnetic Zero & Span



The 815PT and 815DT can be easily configured externally with a magnet. Simply place a magnet to the targets located on the housing for 3 seconds and set the zero and span.

To set the Zero, simply follow the steps below:

- Step 1: Bring the pressure to the desired Zero value.
- Step 2: Place the magnet on the circle target located on the housing and hold for 3 seconds.
- Step 3: After zero value is set, remove the magnet.



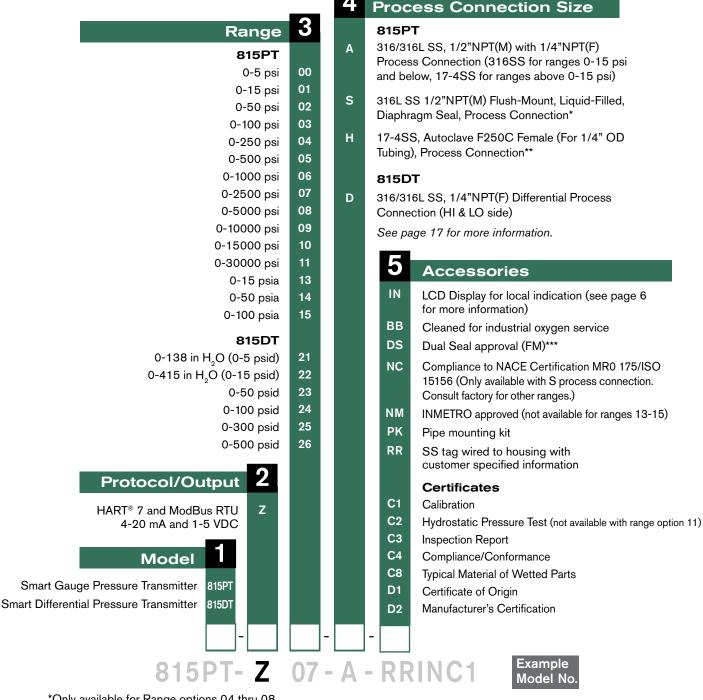
To set the Span, follow the same steps except place the magnet con the triangle on the housing for 3 seconds. Using this method requires a power and a pressure source. Almost any magnet can be used, and SOR can provide the magnetic tool if needed.

815 Smart Pressure **Switch-Transmitters**

How to Order

Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

- You must select a designator for each component
- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



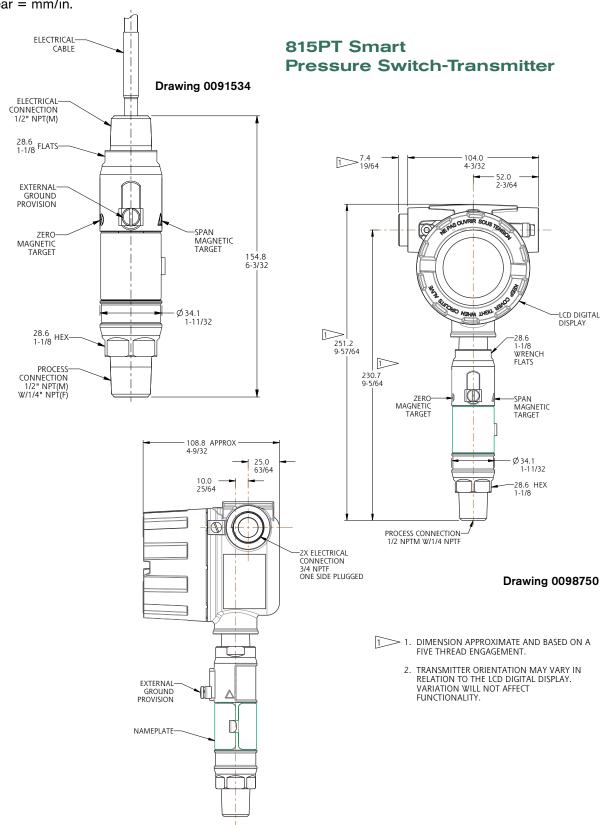
^{*}Only available for Range options 04 thru 08

See page 15 for agency and options.

^{**}For pressure Ranges above 0-10,000 psi (Range options 10 and 11)

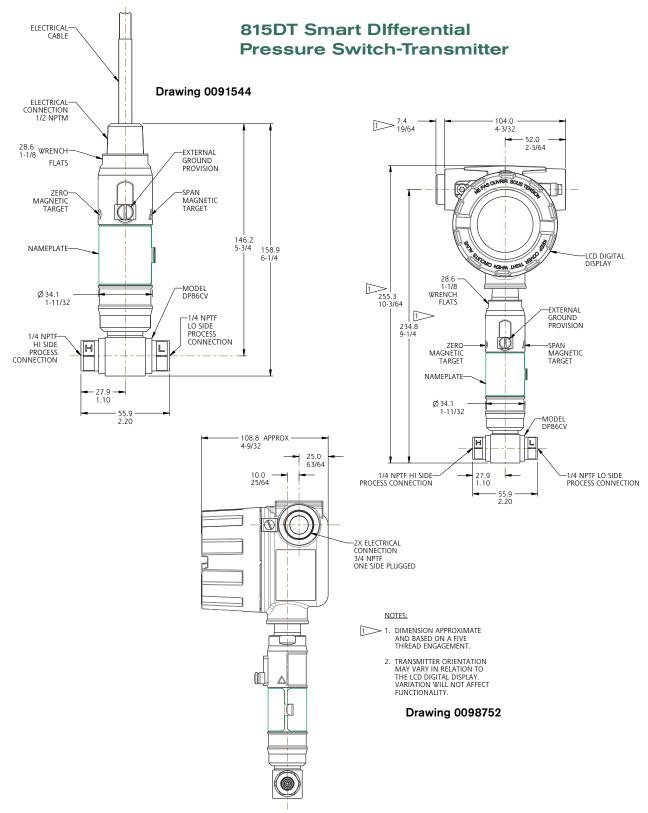
^{***}Dual Seal version is not hermetically sealed. Only available for Range options 00 thru 09 and 21 thru 26.

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805/815 Process Connections

Designator	Α	S	Н	Alternate
Description	Stainless Steel, 1/2"NPT(M) with 1/4"NPT(F), (316/316L SS for ranges 0-15 psi and below) (17-4SS for ranges above 0-15 psi)	316L SS, 1/2" NPT(M) flush-mount, liquid filled, diaphragm seal.	17-4SS, Autoclave F250C Female (For 1/4" OD Tubing)	If alternate process connection is required, please consult the factory.
Application	General applications with process materials not containing heavy particulates that could induce clogging of pressure port.	Use when applications contain dirty, sticky or high particulate process material such as paraffin.	Use for applications where pressures are greater than 10,000 psi, Standard NPT threads are not suitable at these high pressures.	SOR can provide many other process connections including: • Thread & port size adapters • Direct & remote mount diaphragm seals • Tri-clamp/sanitary fittings • Flanged • Other
Photo				

Agency Approvals

Approved*	Safety Method	Approval
FM	Explosion Proof Hazardous Locations	Class I, II, III; Division 1 Groups A-G; T5; Type 4X
(U.S. and Canada)	Non-incendive	Class I, II, III; Division 2 Groups A-G; T5; Type 4X
ATEX/IECEx or INMETRO	Flameproof	Ex db IIC T5 Gb; IP66

^{*} Product holds a Canadian Registration Number (CRN) in all provinces, only available for Range options 04 thru 09.

LCD Display "IN" Option

The "IN" LCD display is a low cost option for when simple local indication is needed. The "IN" option provides a 5-digit backlit loop powered LCD display enclosed in an explosion proof housing with terminal block connections inside. For configuring the display, push buttons are provided on the front of the housing. Configuration of the display and transmitter are done separately.



Display Specifications

2 wire: 4-20mA **Analog Signal** Power Supply 16-30 VDC (with 805 series transmitter) Permissible Temperature -20 to +70°C Accuracy ≤0.1% F.S. **Digits** 41/2 neq: 5 pos Units Blank, kPa, MPa, Pa, bar, mbar, psi, mH20, mmH20, cmH20, mmHg, Torr, atm, kg, g, mg, N, kN, °C, °F, K, %RH, %VOL, PPM, %LEL, pH, m, cm, mm, inch, m/s, Ω (ohm), k Ω (kohm), mV, V, L/min, M3/hr

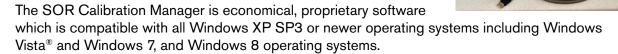
Instrument Connection ½" NPTF
Electrical Conduit Connection 3/4" NPTF
Housing Material Die-casting Aluminum
with chromating and chemically resistant paint
Window Material Glass
Housing Agency Approvals FM (US and Canada)

CSA
ATEX IEC Ex d IP68
Weight (Display only) ≈2.0 lbs

Display option can be sold separately without transmitter installed and will work with any 4-20mA two-wire device. Part number 9231526.

805PT/805QS Calibration Kit

This kit includes an SOR Calibration Interface and SOR Calibration Manager software that allows the user to verify, adjust and re-calibrate a device from scratch to implement turndown and zero offset, or adjust the zero output of a device to account for environmental effects. For the 805QS, the software also allows the user to verify, adjust, and recalibrate the switch output settings.



To order 805PT/805QS Calibration Kit use part number 9231026.



Lenexa, KS USA | 913-888-2630 | Fax 913-888-0767 | **SORInc.com**