

815LT Submersible Smart Level-Pressure Transmitter

815LT Transmitters are rugged, compact, loop-powered instruments that accurately and reliably measure levels for many types of liquids. The transmitters indicate level by continuously monitoring the static pressures of the liquids, using high-performance pressure sensors. The 815LT has a corrosion-resistant 316 stainless steel, seal welded housing, and a high-density Polyethylene (HDPE) cable jacket for compatibility with most liquids. A PVC self-flushing nose cone can also be provided to prevent clogging, or standard configuration offers dual 1/4" NPT female/1/2" NPT male connections for rigid mounting. The transmitters are vented at the surface through a tube in the cable to reference atmospheric pressure.

Applications

- Water/Wastewater
- Lift Stations
- Lime Slurries
- Sumps
- Reservoirs
- Leachate Tanks
- Chemical Storage Tanks
- Clarifiers
- Digesters



815LT Features Overview

4-20mA Output	◆
1-5V (low power) Output	◆
Solid-State Switch Output	◆
HART Protocol	◆
Modbus RTU Protocol	◆
External Zero/Span Points	◆
Pressure Ranges	0-7 ft. wc. to 0-250 psi (.3 bar to 17 bar)
Response Time	≤70ms
Accuracy	0.10%
Construction	316SS Housing (CF8M)
Electrical Connection	22 AWG shielded cable
Warranty	3 years

Features

- Compact, 316 Stainless Steel construction
- IP68 housing Submersible up to 1200 feet
- Cage option to protect sensor from solids and prevent build up
- LCD remote mounted display option
- HART®7 & Modbus RTU (RS-485) Communications available
- Vent tube for reference to atmospheric pressure
- 1-5 VDC (Low-Power) Mode of Operation
- Configurable Normally-Open Solid-State Switch Output (SPST)
- ±0.10% (URL) Continuous Output Accuracy
- Turndown: 5 to 1
- Zero and Span Magnetic Targets Located on Casting
- EMC (EMI/RFI) Protection



815LT Submersible Smart Transmitter with PVC Nose Cone



815LT Submersible Smart Transmitter with Optional Cage

815LT Submersible Smart Level-Pressure Transmitter

Product Specifications

Continuous Output

Accuracy	±0.10% URL (BFSL) (Linearity, Hysteresis and Repeatability)
Zero Balance & URL	±0.25% URL (Each)
Turndown	5:1
Output	4-20mA
	HART 7 Communications Protocol
	Modbus RTU (RS-485) Serial Communications
	1-5VDC (Low Power) Mode of Operation (36mW ± 5mW @ 10VDC)
Temperature Effect	±1% URL/100°F @ -40 to 176°F

Switch Output

1: Off	
2: Windowed, Normally-Open	
3: Windowed, Normally-Closed	
4: Single Point, Normally-Open	
5: Single Point, Normally-Closed	
6: PWM (Pulse Width Modulation), Pulsed Low	
7: PWM (Pulse Width Modulation), Pulsed High	
8: Dead Band, Normally-Open	
9: Dead Band, Normally-Closed	
Accuracy	±0.25% URL
Type	Normally Open
	Solid State Relay (SPST)
Electrical Rating	30V, 120mA
Temperature Effect	±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
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Response Time	≤ 70 ms
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Supply Voltage	10-36VDC
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Loop Resistance	667 ohms @ 24VDC
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Circuit Protection	Reverse polarity and EMC (EMI/RFI) protected
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Construction	316SS housing (CF8M)
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Process Connection	1/2" NPT(M) with 1/4" NPT(F) PVC nose cone 2.5" diaphragm with cage assembly
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Electrical Connection	22 AWG shielded cable flying leads
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Over Pressure	3 times FSPR
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Burst Pressure	4 times FSPR
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Weight	1.8 lb (0.8 kg)
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Warranty	3 years
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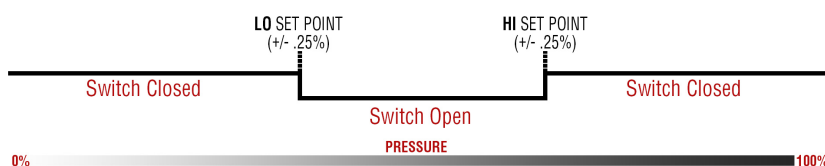
815LT Submersible Smart Level-Pressure Transmitter

The switch output of the 815LT 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 815LT switch output will be open (i.e., if power is removed from the 815LT, the switch contacts will open automatically).

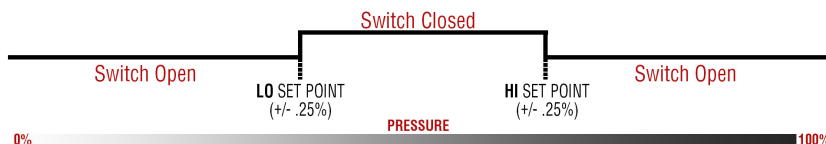
- ❶ Off
- ❷ Windowed, Normally-Open
- ❸ Windowed, Normally-Closed
- ❹ Single Point, Normally-Open
- ❺ Single Point, Normally-Closed
- ❻ PWM (Pulse Width Modulation), Pulsed Low
- ❼ PWM (Pulse Width Modulation), Pulsed High
- ❽ Dead Band, Normally-Open
- ❾ Dead Band, Normally-Closed

❷ Windowed, Normally-Open



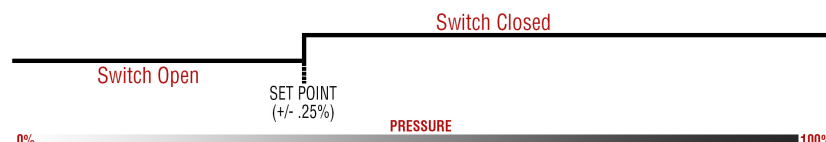
In this configuration, the switch output will be open when the process pressure is within a user selectable range and closed when the pressure is outside of these boundaries. This is designed for applications where there is a known acceptable operating pressure range.

❸ Windowed, Normally-Closed



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.

❹ Single Point, Normally-Open (Close on Rise/ Open on Fall)



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.

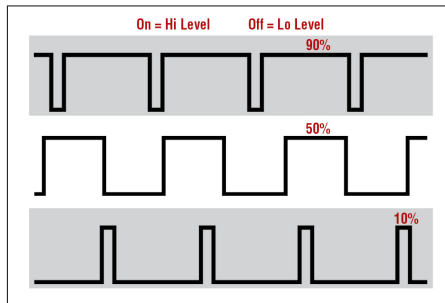
❺ Single Point, Normally-Closed (Open on Rise/ Close on Fall)



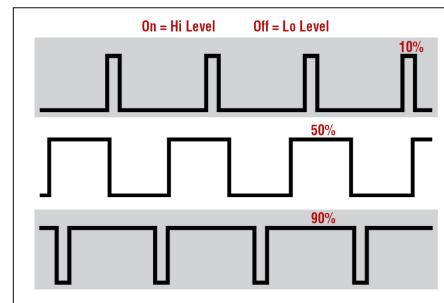
In this configuration, the switch output will be closed for pressures less than the selected setpoint. The switch output would then be open for pressures greater than the setpoint.

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⑥ Pulse Width Modulation - Pulsed Lo



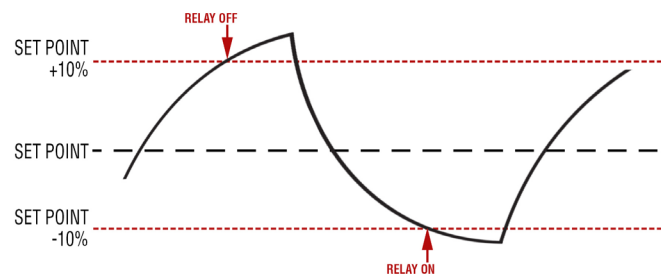
⑦ Pulse Width Modulation - Pulsed Hi



⑧ & ⑨ 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.

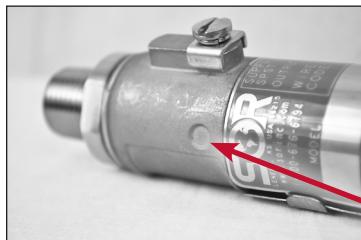
EXAMPLE: A 20% total dead band is applied to the setpoint of a monitored parameter. The relay will turn on and off as indicated in the graph above.



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 3.

Example: **815LT-Z01-150-A**, which has a range of **35 ft. w.c.** could be ordered with zero and span of **3 ft. w.c.** and **32 ft. w.c.**. The window mode switch configuration could have a LO set point of **4 ft. w.c.** and a HI set point of **31 ft. w.c.**

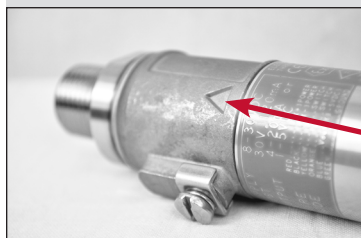
External Magnetic Zero & Span



The 815LT 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 on 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.

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. ***If you do not see what you need, please consult the factory and a special configuration will be engineered.***

815LT - Z 01 -150 - P - RD **Example Model No.**

Cable Clamp

Junction Box

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LCD Display
& Sensor Types

LCD Remote Mount Display “RD” Option

The “RD” LCD display is a low cost option for when a simple local indication is needed. The “RD” option is provided with 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.



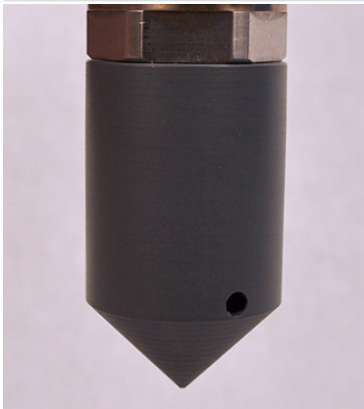
Display Specifications

Analog Signal	2 wire: 4-20mA	Instrument Connection	Remote
Power Supply (with 800 series transmitter)	18-36 VDC	Electrical Conduit Connection	3/4" NPTF
Permissible Temperature	-20 to +70°C	Housing Material	Die-casting Aluminum with chromating and chemically resistant paint
Accuracy	≤0.1% F.S.	Window Material	Glass
Digits	4½ neg; 5 pos	Housing Agency Approvals	FM (US and Canada) CSA ATEX IEC Ex d IP68
Units	Blank, kPa, MPa, Pa, bar, mbar, psi, mmH2O, 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	Display Rotation	350°
		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.

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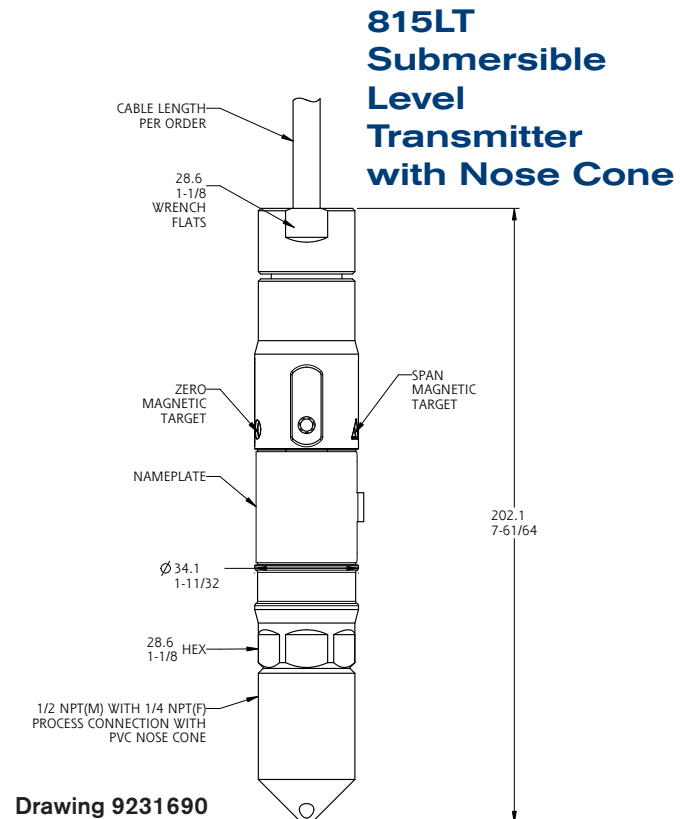
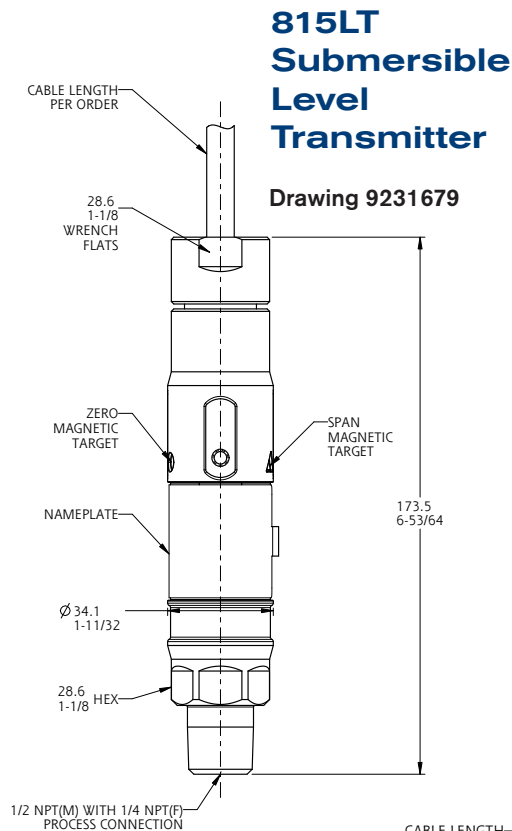
Sensor Types

Designator	A	P	T
Description	Stainless Steel, 1/2" NPT(M) with 1/4"NPT(F)	Stainless Steel, 1/2" NPT(M) with 1/4"NPT(F) with removable self-flushing PVC nose cone.	Stainless Steel, 2.5" diaphragm seal with protective cage assembly.
Application	For applications where pressure transmitter is measuring process pressure and is either continuously or frequently immersed in fluids.	For general applications with relatively clean process fluids. Includes a PVC self-flushing nose cone to prevent clogging and is easily removed for calibration or rigid mounting.	For sludge and slurry applications. Large flush face diaphragm prevents clogging and is also provided with a protective cage from solids and debris.
Photo			

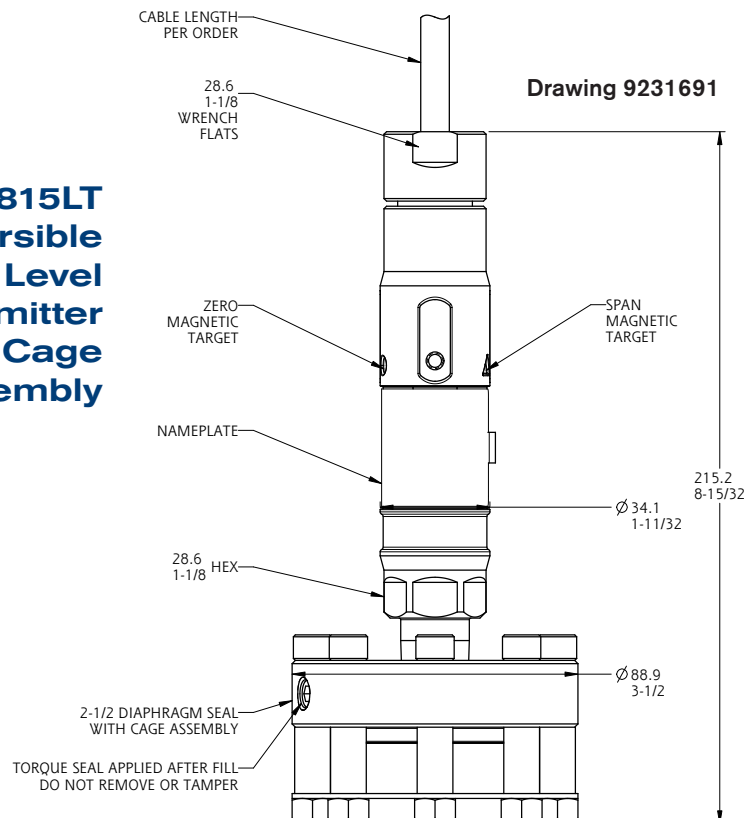
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Dimensions

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



815LT Submersible Level Transmitter with Cage Assembly



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MEASUREMENT AND CONTROL

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