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ДАТЧИКИ ДАВЛЕНИЯ

Технические характеристики

на STAW84L



SmartLine Wireless Absolute Pressure Transmitter Specification

34-SW-03-02, August 2019

Model:

STAW84L 0 to 500 psia 0 to 35 barA

Introduction

SmartLine Wireless Pressure continues the evolution of Honeywell's wireless transmitter product offering and provides the latest critical advancements to support industrial automation users' desire to expand wireless use for monitoring and control.

With over 14 years of industrial wireless experience, the SmartLine Wireless Pressure builds upon and is compatible with the current XYR 6000 product portfolio.

Similar to the XYR 6000 wireless transmitter, the SmartLine Wireless product line is part of the Honeywell OneWireless™ system and is ISA100 - ready.

SmartLine Wireless Pressure transmitters also leverage SmartLine technology in the incorporation of the enhanced SmartLine Pressure meter body. By utilizing the same meter body as in the non-wireless pressure product offering, you get best-in-class performance, reduction in spares inventory, and a lessening of the maintenance learning curve.

The SmartLine Wireless Pressure transmitter enables customers to obtain data and create information from remote and hazardous measurement locations without the need to run wires, where running wire is cost prohibitive and/or the measurement is in a hazardous location. Without wires, transmitters can be installed and operational in minutes, quickly providing information back to your system.



Figure 1 — SmartLine Wireless In-Line Absolute Pressure Transmitter

The previous generation transmitters primarily were applied to monitoring applications but experienced users know that Honeywell's wireless products are as reliable, secure, and safe as their wired counterparts. With this knowledge, users are now looking for wireless transmitters for use in specific control applications.

SmartLine Wireless introduces a step change in performance and most notably, performance suitable for control. SmartLine Wireless performance is improved in these ways:

- Fast ½ second publication rate
- Built-in additional noise reduction
- More powerful 4 dBi integral antenna
- Good battery life performance even at ½ second publication rate.

SmartLine Wireless Pressure retains the following desirable features from the XYR 6000 product offering:

- Mesh or non-mesh configuration within each transmitter
- Generic, off-the-shelf lithium ion battery.
- Two “D” size batteries for longer life.
- Choice of over-the-air or local provisioning (network security join key)
- Over-the-air firmware upgrade capability
- Unique, encrypted provisioning key delivered from the factory
- Remote and integral antenna options
- 24 VDC power option
- Publication rates of 1, 5, 10, or 30 seconds, plus new selections for ½ sec, and 1, 15, 30, 60 minutes
- Transmitter range (integral antenna) of 1150’ (350 m) under ideal conditions.

The STAW84L is a high performance absolute pressure transmitter featuring piezoresistive sensor technology which combines pressure sensing with on-chip temperature compensation capabilities. The result is high accuracy, stability and performance over a wide range of application pressures and temperatures.

The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications.

Span & Range Limits:

Model	URL psia (barA)	LRL psia (barA)	Max Span psia (barA)	Min Span psia (barA)
STAW84L	500 (35)	0 (0)	500 (35)	5 (0.35)

SmartLine Wireless Features

Local and over-the-air provisioning capability. All Honeywell wireless devices feature a secure method to join the local wireless network, also known as provisioning. SmartLine Wireless transmitters feature two methods to provision a transmitter onto the network which are either by using a handheld device to locally communicate through the IR interface or remotely using the over-the-air function. The over-the-air function is managed by the OneWireless gateway, Wireless Device Manager (WDM). In either method, the communication of secure, unique provisioning keys is one of the main factors to prevent against unintended access. Honeywell’s security keys are unique for each device from the factory, never made visible, always encrypted, and uniquely generated from the gateway that manages the deployed network.

Over-the-air firmware updates. Once joined as a member of your OneWireless network, the WDM can download new transmitter firmware releases to each SmartLine Wireless transmitter over the wireless network. Locating and accessing the transmitter locally is not required thus saving time and keeping your personnel in safe environments.

Mesh and non-mesh capability. All SmartLine Wireless transmitters can be configured to operate in either a mesh network or a star (non-mesh) network. The configuration is specific to each wireless transmitter and thus the network can consist of a mixture of meshing and non-meshing devices. Non-meshing is desirable for deterministic communications which is preferred for control.

Transmission power setting. To comply with local and regional requirements, SmartLine Wireless transmitters are set at the factory to the maximum transmission power setting allowed for the country of use.

Non-proprietary battery. Sourcing lithium thionyl chloride batteries is much simpler since SmartLine Wireless utilizes commercial off-the-shelf batteries. Please see the list of approved battery manufacturers later in this specification. Batteries are housed in an IS-approved battery compartment making battery changes safe and easy.

Backward compatibility. SmartLine Wireless transmitters can join existing OneWireless networks and interoperate with existing XYR 6000 wireless transmitters or other ISA100 Wireless compliant transmitters or networks.

OneWireless Network Features

The core of the Honeywell wireless solution is the OneWireless Network which consists a gateway, access point(s), and field routers.

The Wireless Device Manager (WDM) serves as the gateway function and in this role, manages the communication from the wireless field devices to the process control application. Typically, the WDM connects logically to the process control network (Level 2 or wireless DMZ). As the wireless network manager, the WDM provides easy access to the entire wireless network through a browser-based user interface. The Honeywell WDM can manage devices communicating over the ISA100 Wireless protocol and the Wireless HART™ protocol.

The ability to deploy redundant WDMs improves the reliability ensuring no loss of process data which is a requirement for control applications.

The Field Device Access Point (FDAP) serves in two roles in the OneWireless network infrastructure, which are: 1) access point, and 2) field router. As an access point, the FDAP directly connects to the WDM via Ethernet LAN cable. More than one access point is permitted and, when more than one is present, it ensures dual path for communications into the WDM from the field devices. As a field router, the FDAP located in the field would communicate to the FDAP acting as an access point. Using the FDAP as a router is more efficient than using field devices as routers since FDAPs are line powered devices whereas field devices are typically battery powered, and the FDAP offers greater range. The meshing capability of FDAPs allows flexibility in the setup of the wireless network to fit the requirements for wireless network performance, in terms of reliable communications, performance, and future growth.

The choice of non-meshing network may be desirable for decreased communication latency which a FDAP serving as a field router helps ensures.

Wireless Specifications

Parameter	Description
Wireless Communication	2,400 to 2,483.5 MHz (2.4 GHz) Industrial, Scientific and Medical (ISM) band DSSS - Direct Sequential Spread Spectrum per FCC 15.247 / IEEE 802.15.4 2006 Every data packet transmitted in either direction is verified (CRC check) and acknowledged by the receiving device. USA – FCC Certified Canada – IC Certified European Union – Radio Equipment Directive compliant
DSSS RF Transmitter Power	NA Selection –100 mW (20.0 dBm) maximum EIRP including antenna for USA and Canadian locations. EU Selection – 63 mW (18.0 dBm) maximum EIRP including antenna per RTTE/ETSI for EU locations. Compliant to ETSI EN 300 328 wireless standard
Data	PV Publish Cycle Time: Configurable as 0.5, 1, 5, 10, 30 seconds, plus 1, 15, 30, 60 minutes Rate: 250 Kbps
Antennas	Integral – 4 dBi omnidirectional monopole (default selection) Remote – 8 dBi omnidirectional monopole with up to 10 m cables and lightning surge arrester Remote – 14 dBi directional parabolic with up to 10 m cables and lightning surge arrester.
Signal Range	Nominal 350 m (1150 feet) between Field Transmitter and Infrastructure Unit (FDAP) when using 4 dBi Integral antenna with a clear line of sight*

*Actual range will vary depending on antennas, cables and site topography.

Specifications

Operating Conditions – All Models

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature ⁴	25 ±1	77 ±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Ambient Temperature LCD Display visible range	25 ±1	77 ±2	-40 to 85	-40 to 185				
Meter Body Temperature	25 ±1	77 ±2	-40 to 110 ¹	-40 to 230	-40 to 125	-40 to 257	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vacuum Region - Minimum Pressure	See Figure 2. Operate within specifications above 25 mmHgA (33 mbarA). Short term ¹ exposure to full vacuum will not result in damage							
Maximum Allowable Working Pressure (MAWP) ^{2,3}	Standard: STAW84L = 500 psia, 35 barA							
Vibration	Maximum of 4g over 15 to 200Hz.							
Shock	Maximum of 40g.							
Power	Commercially available, non-proprietary 3.6V Lithium thionyl chloride (LiSOC12) batteries, non-rechargeable, size D. Battery pack-only option is available. Approved list of the manufacturer models: <ol style="list-style-type: none"> 1. Xeno Energy XL-205F 2. Eagle Picher PT-2300H 3. Tadiran TL-5930/s 							
	24 VDC power option. For Non I.S. application: 16 to 28 VDC input range, max input current 100mA. For I.S. application: Barrier in accordance with the control drawing required, entity parameters 30V, 120mA, 0.9W							

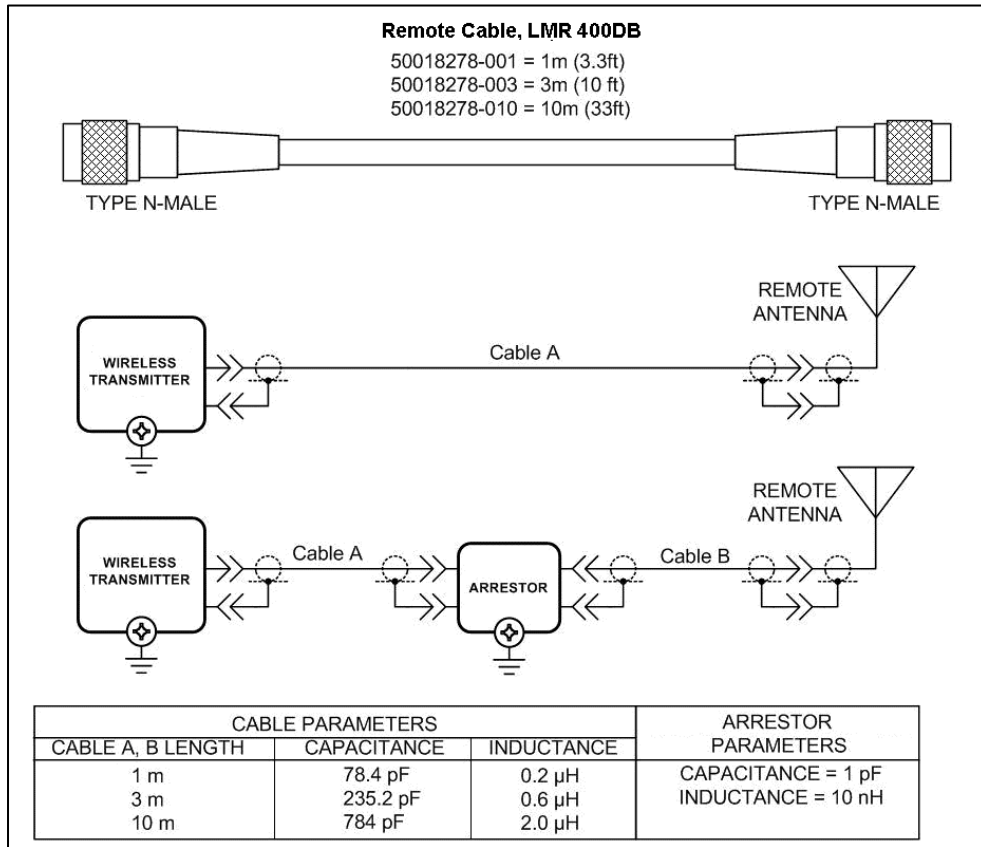
¹Short term equals 2 hours at 70°C (158°F)

²Units can withstand overpressure of 1.5 x MAWP without damage

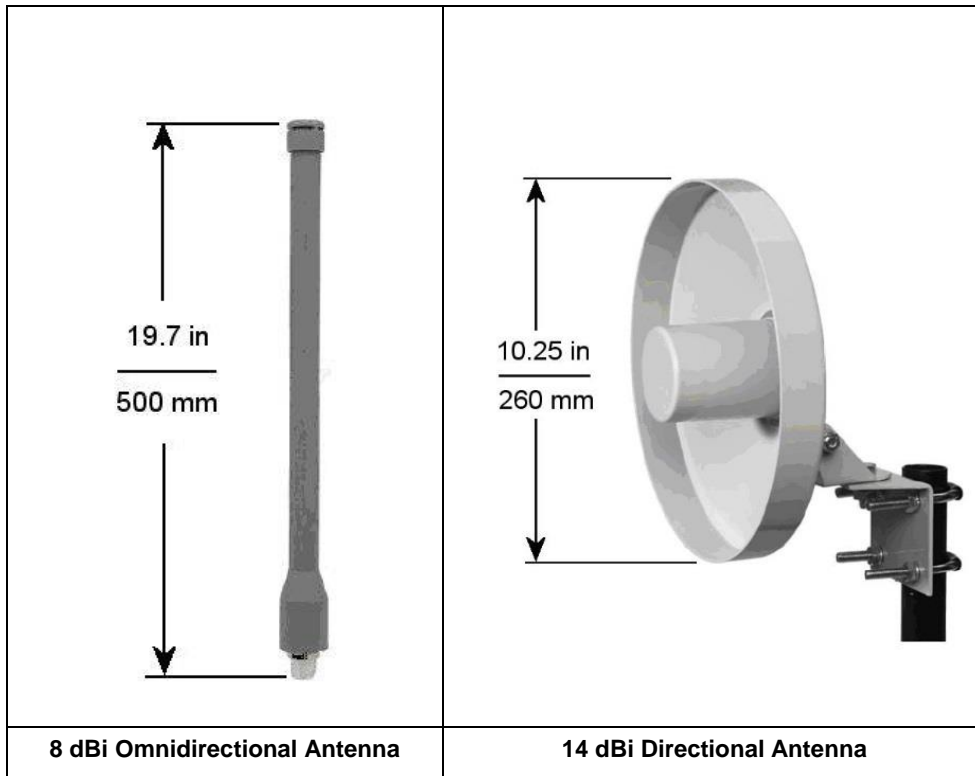
³Consult factory for MAWP of SmartLine Wireless transmitters with CRN approval

⁴ The Ambient Limits shown are for Ordinary Non-Hazardous locations only. Refer to the Hazardous Locations Approvals section for the Ambient Limits when installed in Hazardous Locations.

Remote Antenna Cables



Remote Antennas



Performance Specifications

Performance under Rated Conditions* - Model STAW84L (0 to 500 psia/35 barA)

Parameter	Description
Upper Range Limit psia barA	500 35
Minimum Span psia barA	5 0.35
Zero Suppression	No limit except minimum span within 0 (zero) to +100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • Accuracy includes residual error after averaging successive readings.	±0.065% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psia), accuracy equals: $\pm \left[0.0125 + 0.05 \left(\frac{20 \text{ psia}}{\text{span/ psia}} \right) \right] \text{ or } \pm \left[0.0125 + 0.05 \left(\frac{1.4 \text{ barA}}{\text{span/ barA}} \right) \right] \text{ in \% of span}$
Zero Temperature Effect per 28°C (50°F)	±0.05% of span. For URV below reference point (75 psia), effect equals: $\pm 0.05 \left(\frac{75 \text{ psia}}{\text{span/ psia}} \right) \text{ or } \pm 0.05 \left(\frac{5.25 \text{ barA}}{\text{span/ barA}} \right) \text{ in \% of span}$
Combined Zero and Span Temperature Effect per 28°C (50°F)	±0.075% of span. For URV below reference point (75 psia), effect equals: $\pm 0.025 + 0.05 \left(\frac{75 \text{ psia}}{\text{span/ psia}} \right) \text{ or } \pm 0.025 + 0.05 \left(\frac{5.25 \text{ barA}}{\text{span/ barA}} \right) \text{ in \% of span}$

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions – All Models

Parameter	Description
Electromagnetic Compatibility	IEC 61326-1
Lightning Surge Arrester (Remote antenna only)	Frequency range: 0 – 3 GHz, 50 Ohms, VSWR = 1:1.3 Max, Insertion Loss = 0.4 dB Connectors Type N Female, Max, Gas Tube Element: 90 V ± 20%, Impulse Breakdown Voltage = 1,000 V ± 20%, Maximum Withstand Current = 5 KA.
CE Conformity	These transmitters are in conformity with the Radio Equipment Directive, ETSI EN 300 328 V2.1.1 including EMC standard EN61326-1 2013

Physical Specifications

Parameter	Description
Mounting Bracket	Carbon Steel (zinc-plated) or Stainless Steel angle bracket or flat bracket available.
Fill Fluid	Silicone DC 200 oil, or CTFE (Chlorotrifluoroethylene)
Electronic Housing	Epoxy-Polyester hybrid paint. Low Copper-Aluminum with 1/2" NPT or M20 conduit connections. Meets NEMA 4X (hosedown and corrosion resistant), IP 66/67 (hosedown and submersible to 1m).
Stainless Steel Housing (option)	316 SS or Grade CF8M, the casting equivalent of 316 SS with M20 or 1/2" NPT conduit connections. If ordered with the Remote Antenna options, the antenna parts are not SS or Marine type cables; the integral antenna uses SS parts.
Process Connections	1/4-inch NPT; 1/2-inch NPT with adapter. Process heads meet DIN 19213 requirements.
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Mounting should result in the antenna being vertically oriented. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 2 .
Dimensions	See Figure 3 , Figure 4 and Figure 5 .
Net Weight	Approximately 11 pounds (5 Kg) ¹

¹ Add 8.0 pounds (3.6 kg) to any model equipped with stainless steel housing option (Model Selection Guide Table IV selection M or N)

Materials Specifications

(see model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	316L SS and Hastelloy® C-276 ²
Process Head Material	316 SS ³
Vent/Drain Valves & Plugs ¹	316 SS ³
Head Gaskets	N/A
Meter Body Bolting	N/A

¹ Vent/Drains are sealed with Teflon®

² Hastelloy C-276 or UNS N10276

³ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.

Mounting and Dimensions

Reference Dimensions:

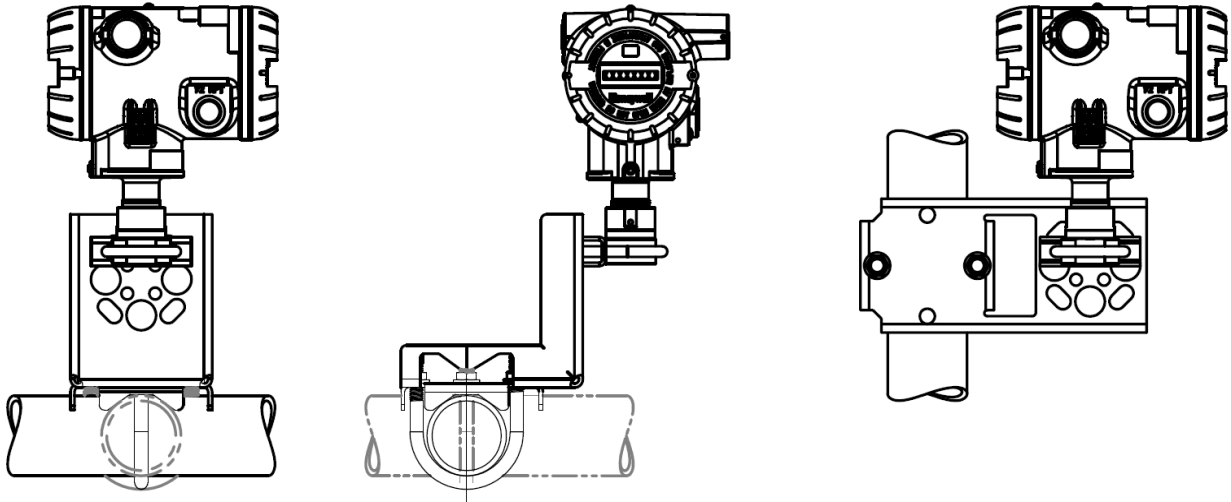


Figure 2 — Examples of typical mounting positions (antenna omitted)

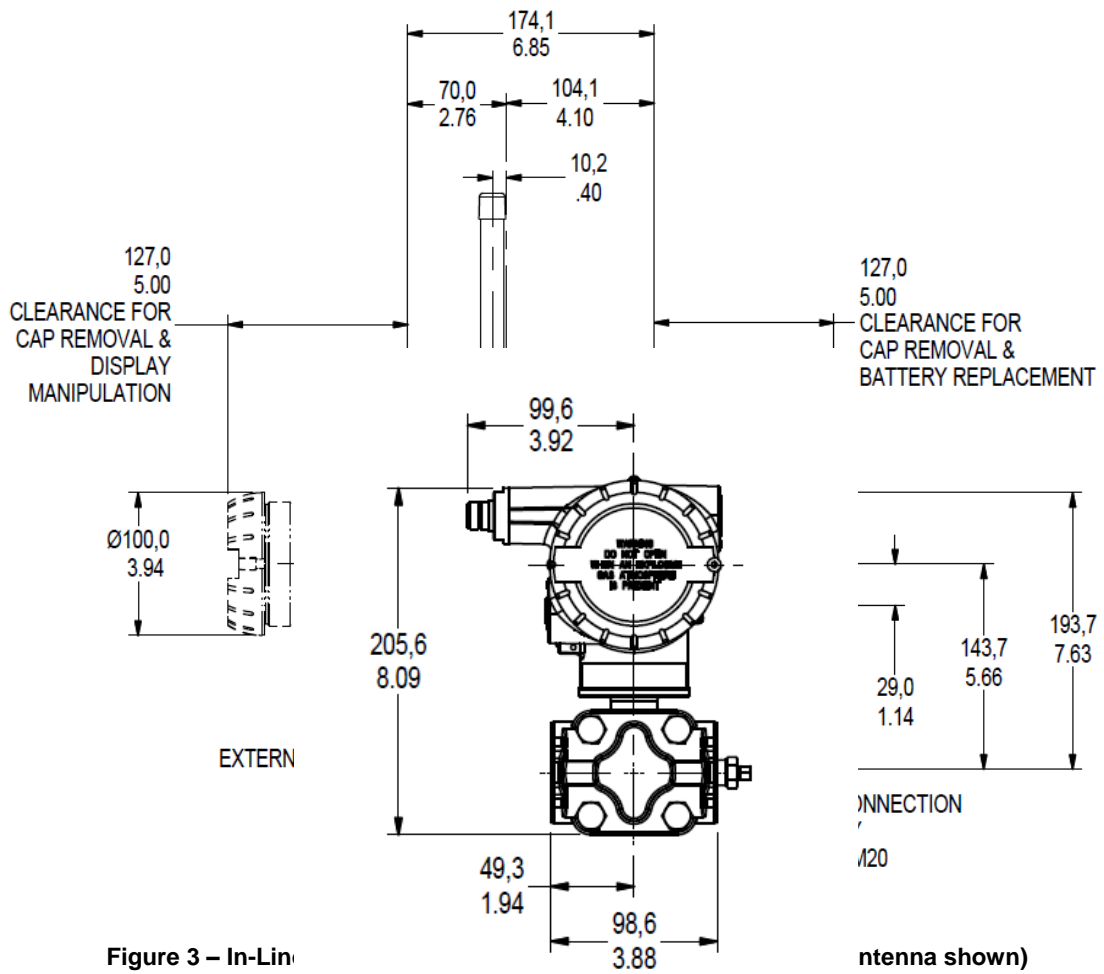


Figure 3 – In-Line

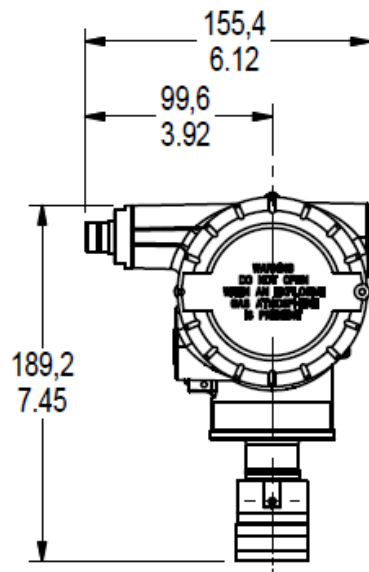


Figure 4 — T:

(te antenna adaptor shown)

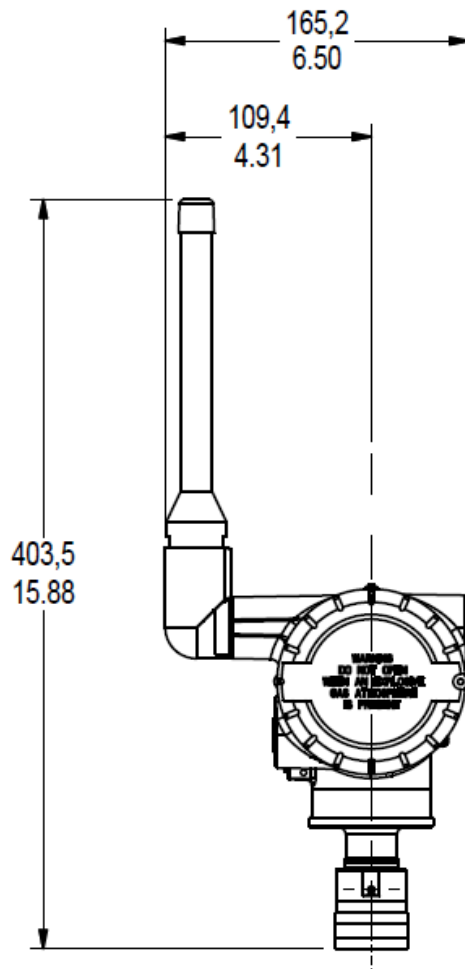


Figure 5 — Typical mounting dimensions for STAW84L (4 dBi antenna shown)

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