Smart Wireless THUM™ Adapter

- *An installation-ready solution that provides rich WirelessHART™ data*
- *2- or 4-wire HART™ devices*
- *Flexibility to meet your most demanding applications*
- *Wireless output with >99% data reliability delivers rich HART data, protected by industry leading security*
- *Gain access to additional HART information, such as diagnostics or multivariable data*
- *Add wireless to almost any measurement point*
- *WirelessHART capabilities extend the full benefits of PlantWeb® to previously inaccessible locations*

WirelessHART

Contents

EMERSON™
Process Management

Wireless Overview

SELF-ORGANIZING NETWORKS

The self-forming, intelligent devices provide exceptional data reliability and network stability. The Smart Wireless THUM Adapter works with existing wired devices, allowing you to use existing practices, training and maintenance procedures, without the added wiring costs.

LAYERED SECURITY KEEPS YOUR NETWORK SAFE

Emerson Process Management's layered approach to wireless network security ensures that your network stays protected. The network devices implement Encryption, Authentication, Verification, Anti-Jamming and Key Management methods to ensure that data transmissions are received only by the Smart Wireless Gateway.

SMARTPOWER™

Emerson devices incorporate SmartPower™. SmartPower refers to the benefits that users enjoy due to the engineering efforts made to reduce power consumption. Emerson has power-optimized our instrumentation, both hardware and software, to extend life while still delivering highly reliable measurements with rich HART data and diagnostic information. The THUM Adapter is a power scavenging device that requires no external battery.

RELIABLE TRANSMITTER PERFORMANCE

The THUM Adapter ensures top transmitter performance in harsh and/or noisy EMI/RFI environments.

DIGITAL FIELD DEVICES THAT POWER PLANTWEB

The THUM Adapter powers PlantWeb by communicating important HART data and diagnostic information that ensures process health and enables economical HART architecture.

MOUNTING FLEXIBILITY

Any measurement point can be reached by connecting the THUM Adapter directly to any 2- or 4-wire HART device conduit entry, or through the use of a conduit adapter.

WIRELESS HART

The Smart Wireless THUM Adapter utilizes self-organizing network technology to deliver information rich data with >99 percent data reliability This innovation extends the full benefits of PlantWeb to previously inaccessible locations.

SMART WIRELESS SOLUTIONS

Smart Wireless Gateway

The Emerson Smart Wireless Gateway integrates the self-organizing network into the host system, providing industry leading security and data reliability.

Smart Wireless Field Devices

Emerson Process Management has a family of Smart Wireless products to integrate different measurement types into a self-organizing network that optimizes plant performance and reduces risk to personnel. The different measurement types offered include pressure, level, flow, temperature, discrete position monitoring, pH, conductivity, and vibration.

AMS® Wireless SNAP-ON™

The AMS Wireless SNAP-ON application helps to plan and validate your wireless network using best practices. It allows for viewing of communication details graphically in real time, and maintains the health of your entire self-organizing network.

WirelessHART... The Industry Standard

Self-Organizing, Adaptive Mesh Routing

- No wireless expertise required, devices automatically find the best communication paths
- Network continuously monitors paths for degradation and repairs itself
- Adaptive behavior provides reliable, hands-off operation and simplifies network deployments, expansion and reconfiguration
- Supports both star and mesh topologies

Industry Standard Radio with Channel Hopping

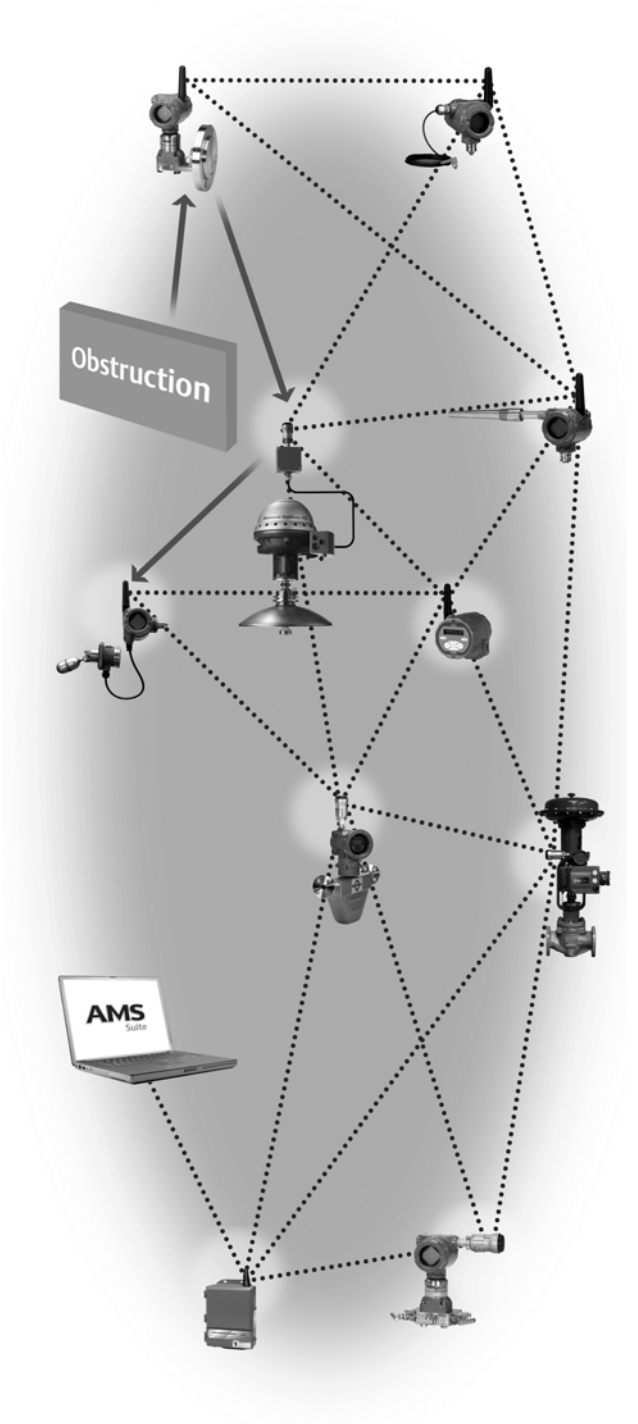
- Standard IEEE 802.15.4 radios
- 2.4 GHz ISM band sliced into 16 radio-channels
- Continually “hop” across channels to avoid interference and increase reliability
- Direct Sequence Spread Spectrum (DSSS) technology delivers high reliability in challenging radio environment

Self-Healing Network

- If an obstruction is introduced into the mesh network, devices will automatically find the best alternate communication path. This alternate path will be created and the information will continue to flow

Seamless Integration to Existing Hosts

- Transparent and seamless integration
- Same control system applications
- Gateways connect using industry protocols



Smart Wireless THUM Adapter

Device Specifications

- Approvals: FM, CSA, ATEX, IECEx
- Input: Either 2- or 4-wire HART 5.0 device
- SmartPower™: Power scavenging technology (no battery required)

Enable Enhanced Valve Capabilities

- Online, in-service valve testing through AMS ValveLink SNAP-ON Application
- Monitor alerts such as travel deviation with AMS Device Manager, supply pressure, and electronics health
- Trend actual valve position

Gain Access to Advanced Instrument Diagnostics

- Rosemount 3051S with Advanced Process Diagnostics
- Micro Motion™ Coriolis Meter Verification with optional AMS Meter Verification SNAP-ON
- Rosemount Radar Echo Curve
- Rosemount Magnetic Flow Meter Verification™ with AMS Device Manager

Efficiently Gather Data from Multivariable Devices

- Rosemount 3051S MultiVariable™ Transmitter and 3095 Mass Flow Transmitters
- Rosemount 3300 and 5300 Radar Level Transmitters
- Micro Motion Coriolis Meters
- Rosemount TankRadar Rex and TankRadar Pro
- Rosemount Magnetic Flowmeter
- Rosemount MultiVariable Vortex Flowmeter

Make any HART Device Wireless to Enable New Measurement Points

- Level
- Flow
- Valves
- Liquid and Gas Analytical
- Pressure
- Temperature

Remotely Manage Devices and Monitor Health with AMS Device Manager

- Reduce troubleshooting time
- As found, as left data
- Calibration tracking

Ordering Information

TABLE 1. Smart Wireless THUM Adapter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model	Product Description	
775	Smart Wireless THUM Adapter	
Output		
X	Wireless	
Housing		
Standard		**Standard**
D	Aluminum	★
Mounting Connection		
Standard		**Standard**
1	1/2 - 14 NPT	★
2	M20-Conduit Adapter	★
PlantWeb Functionality		
Standard		**Standard**
1	HART® Data	★
Certification		
Standard		**Standard**
I5	FM Intrinsically Safe, Non-incendive	★
I6	CSA Intrinsically Safe	★
I1	ATEX Intrinsic Safety	★
I7	IECEx Intrinsic Safety	★
N1	ATEX Type n	★
N7	IECEx Type n	★
NA	No Approval	★
Wireless Update Rate		
Standard		**Standard**
WA	User Configurable Update Rate	★
Operating Frequency and Protocol		
Standard		**Standard**
3	2.4 GHz DSSS, WirelessHART	★
Omnidirectional Wireless Antenna		
Standard		**Standard**
WK	Long range, Integral Antenna	★
SmartPower™ Options		
Standard		**Standard**
9	Power Scavenging	★
Typical Model Number: 775XD11I5WA3WK9		

ACCESSORIES AND SPARE PARTS

TABLE 2. Accessories

Item Description	Part Number
Remote Mount Kit - AI	00775-9000-0001
Remote Mount Kit - SST	00775-9000-0011
M20-Conduit Adapter	00775-9001-0001

Specifications

Functional Specifications

Input

Any 2- or 4-wire HART powered device

Output

WirelessHART

Humidity Limits

0–100% relative humidity

Update Rate

User selectable, 8 sec. to 60 min.

Physical Specifications

Electrical Connections

The THUM Adapter is connected into a powered 4–20 mA loop, powering itself by scavenging power. The THUM Adapter causes a voltage drop across the loop. The drop is linear from 2.25 volts at 3.5 mA to 1.2 volts at 25 mA, but does not effect the 4–20 mA signal on the loop. Under fault conditions, the maximum voltage drop is 2.5 volts.

Power Supply

Minimum load on loop 250 Ohms

To maintain normal operating functions of the sub-device, the power in the loop must have at least a 2.5 V margin at a 250 Ohm load.

Limit power supply to 0.5 Amps maximum.

Limit power supply to 55 Volts DC maximum.

HART Communicator Connections

Utilize wired device HART connections.

Materials of Construction

Enclosure

Housing - Low-copper aluminum

Paint - Polyurethane

M20-Conduit Adapter - SST
M20-Conduit Adapter O-ring - Buna-n

Antenna

Poly butadine terephthalate (PBT) / Polycarbonate (PC) integrated omnidirectional antenna

Weight

THUM Adapter only - 0.65 lbs. (0.29 kg)

With aluminum remote kit - 3.2 lbs. (1.45 kg)

With stainless steel remote kit - 5.4 lbs. (2.45 kg)

With M20-Conduit Adapter - 0.85 lbs. (0.38 kg)

Enclosure Ratings

Housing option code D and remote mount kits are NEMA 4X and IP66.

Mounting

The THUM Adapter may be attached directly to the conduit of any 2- or 4-wire HART 5.0 device or mounted remotely by using remote mount kit.

Performance Specifications

ElectroMagnetic Compatibility (EMC)

All Models:

Meets all relevant requirements of EN 61326-1 (2006) when installed with shielded wiring. The sub-device must also use shielded wiring for installation.

Vibration Effect

Output unaffected when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-60 Hz 0.15 mm displacement peak amplitude / 60-500 Hz 2g).

When the THUM Adapter is used on wired devices that are subject to vibration levels greater than 2g, it is recommended that the THUM Adapter be remotely mounted using the remote mount kit.

Temperature Limits

Operating Limit	Storage Limit
–40 to 185 °F –40 to 85 °C	–40 to 185 °F –40 to 85 °C

Output Specifications

The THUM Adapter allows WirelessHART™ communication between the HART device it is connected to and the Smart Wireless Gateway.

Product Certifications

Approved Manufacturing Locations

Rosemount Inc. – Chanhassen, Minnesota, USA

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found at www.rosemount.com. A hard copy may be obtained by contacting an Emerson Process Management representative.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

Electro Magnetic Compatibility (EMC) (2004/108/EC)

Emerson Process Management complies with the EMC Directive.

Radio and Telecommunications Terminal Equipment Directive (R&TTE) (1999/5/EC)

Emerson Process Management complies with the R&TTE Directive.

Telecommunication Compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation.This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

Ordinary Location Certification for FM

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certificates

North American Certifications

Factory Mutual (FM) Approvals

I5 FM Intrinsically Safe and Non-incendive
Intrinsically Safe for Class I/II/III, Division 1, Groups A, B, C, D, E, F, and G.
Zone Marking: Class I, Zone 0, AEx ia llC
Temperature Codes T4 (-50 °C ≤ T_{amb} ≤ 70 °C)
Non-incendive for Class I, Division 2, Groups A, B, C, and D.
Intrinsically safe and non-incendive when installed according to Rosemount Drawing 00775-0010.
Enclosure Type 4X/IP66

CSA - Canadian Standards Association

I6 CSA Intrinsically Safe
Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D.
T3C (-50 °C ≤ T_{amb} ≤ 70 °C)
Intrinsically safe when installed according to Rosemount Drawing 00775-0012.
Suitable for Class I, Division 2, Groups A, B, C, and D.
Enclosure Type 4X/IP66

European Certifications

I1 ATEX Intrinsic Safety
Certificate No.: Baseefa09ATEX0125X ⟨Ex⟩ II 1G
Ex ia IIC T4 (-50 °C ≤ T_{amb} ≤ 70 °C)
IP66
CE 1180

TABLE 3. Input Parameters

Loop Power
Ui = 30V
Ii = 200 mA
Pi = 1.0 W
Ci = 0
Li = 0

Special conditions for safe use (X)
The surface resistivity of the antenna is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

The enclosure is made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0.

N1 ATEX Type n
Certificate No.: Baseefa09ATEX0131 ⟨Ex⟩ II 3 G
Ex nA IIC T4 (-50 °C ≤ T_{amb} ≤ 70 °C)
Ui = 45 Vdc MAX
IP66
CE 1180

IECEx Certifications

I7 IECEx Intrinsic Safety
Certificate No.: IECEx BAS 09.0050X
Ex ia IIC T4 (-50 °C ≤ T_{amb} ≤ 70°C)
IP66

TABLE 4. Input Parameters

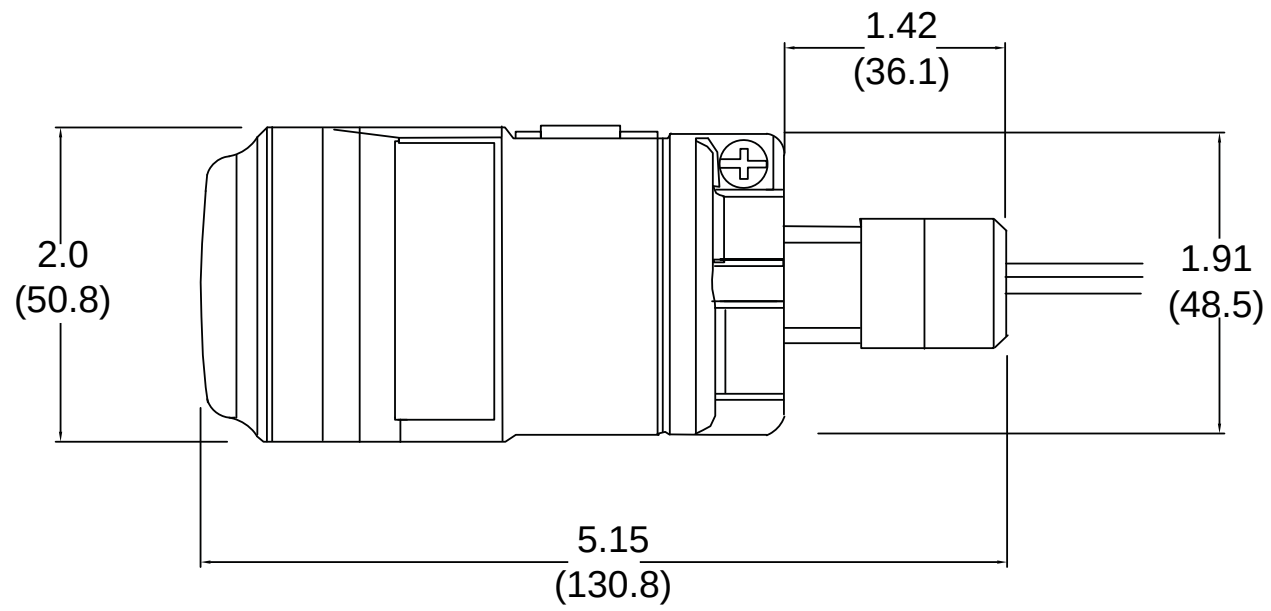
Loop Power
Ui = 30V
Ii = 200 mA
Pi = 1.0 W
Ci = 0
Li = 0

Special conditions for safe use (X)
The surface resistivity of the antenna is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

The enclosure is made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0.

N7 IECEx Type n
Certificate No.: IECEx BAS 09.0058
Ex nA IIC T4 (-50 °C ≤ T_{amb} ≤ 70°C)
Ui = 45 Vdc MAX
IP66

Dimensional Drawings



Dimensions are in inches (millimeters)

Smart Wireless THUM Adapter

Product Data Sheet
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