

LETTER OF TRANSMITTAL

Sargent Irrigation Co.

PO Box 650
Grant, NE 69140
(308) 352-4379

DATE September 07, 2013
ATTENTION Chris Miller
RE: NCORPE
Well Conversions & Controls
PROJECT #: 159-P5-003-12

TO: Miller & Associates
1111 Central Avenue
Kearney, Nebraska 68847

WE ARE SENDING YOU Attached Via Fax: _____ Under separate cover the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____ **Submittal No. 7-A**

COPIES	DATE	NO.	DESCRIPTION
1	9-7-13		Roemount Magnetic Flow Meters - See Attached Information
			Install with clearance per Shop Drawings
			<p style="text-align: center;">MILLER & ASSOCIATES CONSULTING ENGINEERS, P.C.</p> <p> <input type="checkbox"/> Approved <input checked="" type="checkbox"/> Approved as Corrected <input type="checkbox"/> Rejected <input type="checkbox"/> Revise & Resubmit <input type="checkbox"/> Submit Specific Item </p> <p>This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the work of all trades; and for performing all work in a safe and satisfactory manner.</p> <p>Date: 9-11-13 By: CAM</p> <p>Project No: 159-P5-003</p>

THESE ARE TRANSMITTED as checked below

- For approval
- For your use
- As Requested
- For signature

- Approved as submitted
 - Approved as noted
 - Return for corrections
 - For review and comment
 - Resubmit
 - Submit
 - Return
 - For bid due
- _____ copies for approval
_____ copies for distribution
_____ corrected prints

REMARKS:

COPY TO _____

SIGNED: Glenn Taubenheim

**HOA SOLUTIONS, INC.
DATA SHEET**

**Nebraska Cooperative Republican Platte
Enhancement Project
Construction Package No. 2
Well Conversions & Controls
2013
Project No. 159-P5-003-12**

DEVICE NAME: Magnetic Flow Meters-Resubmittal

MANUFACTURER: Rosemount

QUANTITY: 30

MODEL/PART NUMBER: 8750WA12ESR1A1FPSA100CA1NHM4GI

BRIEF DESCRIPTION: 10" Flow Meters

**8750WA – Magnetic Flowtube and Transmitter
12ES – Wall Mount Transmitter with Premier LOI Capabilities
(0.5% Standard, 0.25% High Accuracy)
R – Remote Mount Transmitter
1 – AC Transmitter Power Supply
A – 4-20 mA Digital Electronics (HART Protocol)
1 – ½-14 NPT Standard Conduit Entry
F – Flanged Tube Style
P – Polyurethane Tube Lining
S – 316L SST – Tube Electrode Material
A – Standard 2-Electrodes
100 – 10" Line Size
C – Tube Flange Material: Carbon Steel, Raised Face, Slip-On
A1 – Tube Flange Rating: ASME B16.5 (ANSI) RF Class 150
NH – Safety Approvals: FM/CSA Ordinary Locations/General Purpose Shock and
Fire Hazard Approved, FM/CSA Non-Hazardous Area
M4 – Transmitter Display Option: LOI
G1 – Tube Ground Ring Option: 316L SST Pair
Calibration – 0-2500 GPM 100
08732-0753-1003 – High Performance Electrical Combo Cable Assembly
Scaled Pulse Output for Remote Totalization is included with all 8750WA Meters
(see attached Equipment Data Sheet)**

EQUIPMENT DATA SHEET (Revision)

PROJECT NAME

N-Corpe - Construction Package No. 2
Well Conversions & Controls

DATE

8/19/2013, Revised 9/5/2013

ENGINEER

Miller & Associates Consulting Engineers, P.C.
1111 Central Ave
Kearney, NE 68847-6833

CONTRACTOR

Hydro Optimization & Automation Solutions
5701 N 58th Street
Lincoln, NE 68507

MANUFACTURER

Rosemount | Emerson Process Mgmt.
8200 Market Boulevard
Chanhassen, MN 55317-9685

SUPPLIER

Mellen & Associates, Inc.
3404 South 11th Street
Council Bluffs, IA 51501
Ph: 712-322-9333 / Fax: 712-322-6557
E-Mail: mellen@melleninc.com

PRODUCT DESCRIPTION:

Rosemount Model 8750WA Magnetic Flow Meter

SPECIFICATION SECTION:

13442-2

TAGGING INFORMATION

QUANTITY	SIZE	TAG NUMBER	DESCRIPTION
30	10"	FE/FIT 121	Rosemount Magnetic Flow Meter, Model: 8750WA12ESR1A1FPSA100CA1NHM4G1

CODE	DESCRIPTION
8750WA	Model, Magnetic Flowtube + Transmitter, Water & Wastewater
12ES	Transmitter Class Wall Mount Transmitter with Premier LOI Capabilities (0.5% standard, 0.25% high accuracy)
R	Transmitter Mounting Transmitter, Remote Mt.
1	Transmitter Power Supply Transmitter Power Supply, AC
A	Transmitter Outputs 4 - 20 mA Digital Electronics (HART Protocol)
1	CONDUIT ENTRY 1/2-14 NPT, Standard Conduits
F	Tube Style Tube Style, Flanged
P	Tube Lining Tube Lining, Polyurethane
S	Tube Electrode Material Tube Electr. Material, 316L SST
A	Tube Electrode Type Tube Elect Type, 2 Electrodes - Std.
100	Tube, Line Size 10.0"(250mm)
C	Tube Flange Material Flange Mtl: Carbon Steel, Raised-Face, Slip-On
A1	Tube Flange Rating Flng Rtg, ASME B16.5 (ANSI) RF Class 150
NH	Safety Approvals FM/CSA Ordinary Locations/Gen'l Purpose Shock & Fire Hazard Appr.; FM/CSA Non-Hazardous Area Appr.
M4	Transmitter Display Option Transmitter Display Option, LOI
G1	Tube Ground Ring Option Tube Ground Ring, Pair (316L SST)
Notes	1) Package includes 300 Total Feet High-Performance Electrical Combo Cable Assembly, Part# 08732-0753-1003 2) Meters calibrated for 0 to 2500 GPM 3) Scaled Pulse Output for Remote Flow Totalization included with all 8750WA meters.

ATTACHMENTS:

00813-0100-4750, Rev EA	Product Data Sheet, Dimensions & Features
00825-0100-4750	Quick Install Guide
00809-0100-4750	Reference Manual

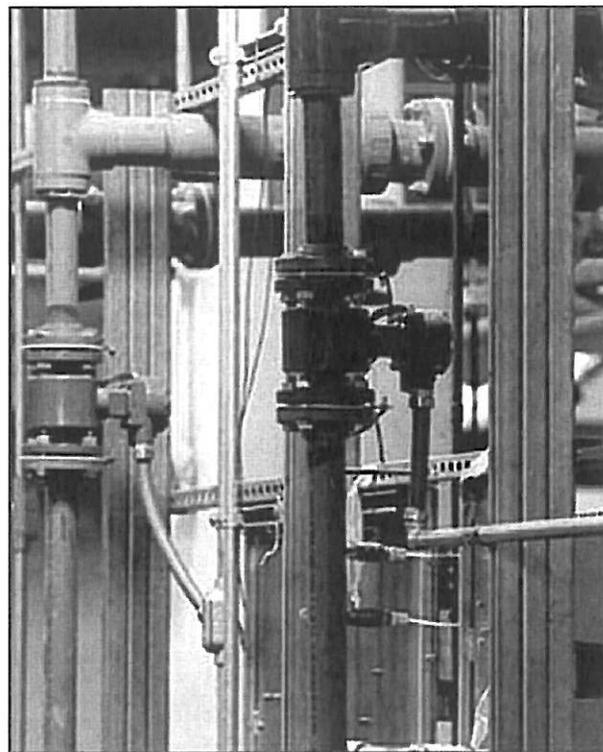
COMMENTS:

Submittal returned on 9/4/13, noted as "revise and resubmit" (to include "Scaled Pulse Output for Remote Flow Totalization"). This feature is standard for all 8750WA mag meters, and has been added to the notes above. Page 2-10 of the attached reference manual provides instructions for powering the output.

Rosemount 8750WA Magnetic Flowmeter System For Water and Wastewater Industries

THE 8750WA MAGNETIC FLOWMETER

- *Rosemount reliability in a customized offering specific to the Water and Wastewater industries*
- *Available in flanged and wafer styles*
- *Polyurethane, PTFE and Neoprene Liners*
- *Line sizes available from 0.5 to 48in. standard*
- *Line sizes > 48" available (Consult Factory)*
- *Options for:*
 - *Diagnostic Suite for improved maintenance practices*
 - *Diagnostic Suite for simplified meter verification*
 - *Submersible to IP68*
 - *NSF Drinking Water Certification*



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ROSEMOUNT

www.rosemount.com


EMERSON
Process Management

Rosemount 8750WA

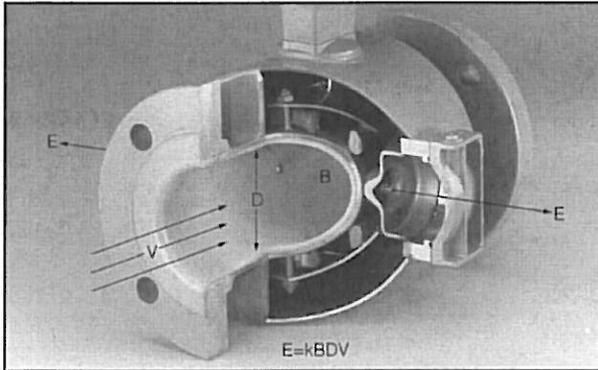
The Rosemount 8750WA Magmeter Sensor Delivers Reliability for Water and Wastewater Industries

OPERATION

The operating principle of the magnetic flowmeter system is based upon Faraday's Law of electromagnetic induction, which states that a *voltage will be induced in a conductor moving through a magnetic field.*

Faraday's Law: $E=kBDV$

The magnitude of the induced voltage **E** is directly proportional to the velocity of the conductor **V**, conductor width **D**, and the strength of the magnetic field **B**. The figure below of a Model 8750WA sensor illustrates the relationship between the physical components of the magnetic flowmeter and Faraday's Law.

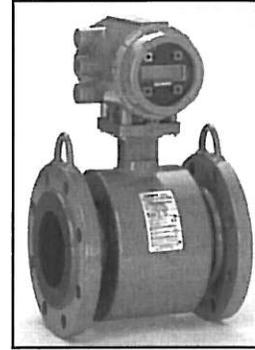


Magnetic field coils placed on opposite sides of the pipe generate a magnetic field. As the conductive process liquid moves through the field with average velocity **V**, electrodes sense the induced voltage. The width of the conductor is represented by the distance between electrodes. An insulating liner prevents the signal from shorting to the pipe wall.

The only variable in this application of Faraday's Law is the velocity of the conductive liquid **V** because field strength is controlled constant and electrode spacing is fixed. Therefore, the output voltage **E** is directly proportional to liquid velocity, resulting in the inherently linear output of a Rosemount Magnetic Flowmeter.

Rosemount 8750WA32

The integral mount Rosemount 8750WA32 transmitter has a die cast aluminum housing for excellent reliability. With an optional backlit 2 line by 16 character local operator interface, the transmitter can be configured by optical switches to simplify adjustments without removing the cover.



Rosemount 8750WA12

The remote mount Rosemount 8750WA12 transmitter features an easy to use operator interface and the Rosemount magmeter diagnostics. The intuitive 15 actuator keypad provides instant access to the most commonly used functions, and the 2 line by 20 character display provide clear indication. Together they provide fast, intuitive, and easy configuration.



Product Data Sheet

00813-0100-4750, Rev EA
October 2012

Rosemount 8750WA

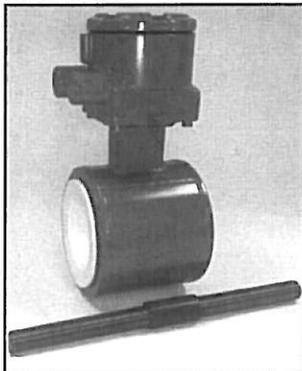
8750WA Flanged Sensors

The 8750WA flanged sensors are fabricated from stainless and carbon steel and welded to provide a hermetic seal that protects against moisture and other contaminants. Sizes range from 1/2 in. (15 mm) to 48 in. (1200 mm) standard (larger sizes available - consult factory). The sealed housing ensures maximum sensor reliability by protecting all internal components and wiring from the most hostile environments.



Rosemount 8750WA Wafer Sensors

The flangeless design of the 8750WA wafer sensor makes it an economical, compact, and lightweight alternative to flanged magnetic flowmeters. Alignment spacers provided with every sensor assist with centering the sensor in the process line and makes installation easier.



Rosemount Mag Diagnostics Reduce Costs & Improves Output

Rosemount Magmeters provide device diagnostics that informs the user of abnormal situations throughout the life of the meter - from Installation to Maintenance and Meter Verification.

With Rosemount Magmeter diagnostics enabled, users can change their practices to improve plant availability and output, and reduce costs through simplified installation, maintenance and troubleshooting.

Mag User Practice	8750WA32	8750WA12
Installation		
Grounding/Wiring	•	•
Maintenance		
Coil Fault	•	•
Transmitter	•	•
Meter Verification		
Full Meter Verification (includes sensor)	•	•
Process Management		
High Process Noise	•	•
Empty Pipe	•	•

OPTIONS FOR ACCESSING DIAGNOSTICS

Rosemount Magmeter Diagnostics can be accessed through the Local Operator Interface (LOI), the 375/475 Handheld Communicator, and AMS Device Manager.

Access Diagnostics through the LOI for quicker installation, maintenance, and meter verification

Rosemount Magmeter Diagnostics are available through the LOI to make maintenance of every magmeter easier.

Access Diagnostics through AMS™ Suite: Intelligent Device Manager for the Ultimate Value

The value of the Diagnostics increases significantly when AMS is used. Now the user gets a simplified screen flow and procedures for how to respond to the Diagnostic messages.

Optional Rosemount Mag Diagnostics

SMART Meter Verification

Verifying magmeter calibration has traditionally required the flowmeter to be removed from the line and re-calibrated in a flow lab or with a prover. More recently, verification using a field calibrator has become a popular solution, but it still requires extra equipment and is a time consuming process.

Now the Rosemount SMART Meter Verification diagnostic allows users to verify the flowmeter without additional equipment. Initiated directly through the meter Local Operator Interface (LOI), 475 Field Communicator or AMS™ Suite: Intelligent Device Manager, SMART Meter Verification verifies both the transmitter and sensor calibration. The displayed results can be used to fill out the verification form, or simply print the results when using AMS Device Manager.

SMART Meter Verification delivers a fast and cost-effective approach to meter verification with no additional equipment. This diagnostic is one of the PlantWeb® diagnostic options (DA2) in the Rosemount 8750WA Magnetic Flowmeter model number.

High Process Noise Detection

Loop control in many chemical and slurry applications can be difficult due to “noisy” output from the flowmeter. The historic practice was to add damping to the flowmeter’s output to stabilize the flow signal. This adds deadtime to the control loop resulting in additional process variability that drives up operating costs.

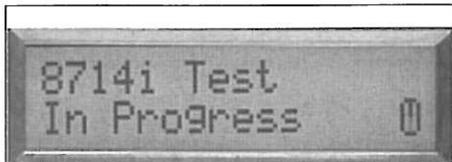
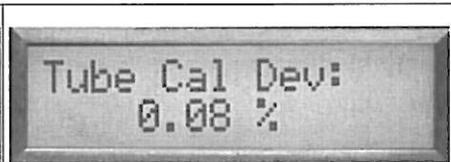
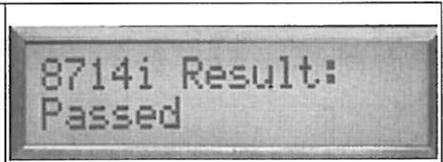
Only Rosemount 8750WA Magmeters have a comprehensive solution to optimize installed performance and signal stability in even the noisiest applications, without additional damping. The high process noise diagnostic alerts you when variability is caused by process noise and not actual flow variation. This allows you to adjust to a higher coil drive frequency to stabilize the output without adding damping. By taking advantage of the high process noise diagnostic and scalable coil drive capability you improve process control, increase product quality and reduce scrap. This diagnostic is one of the PlantWeb® diagnostic options (DA1) in the Rosemount 8750WA Magnetic Flowmeter model number.

Grounding/Wiring Fault Detection

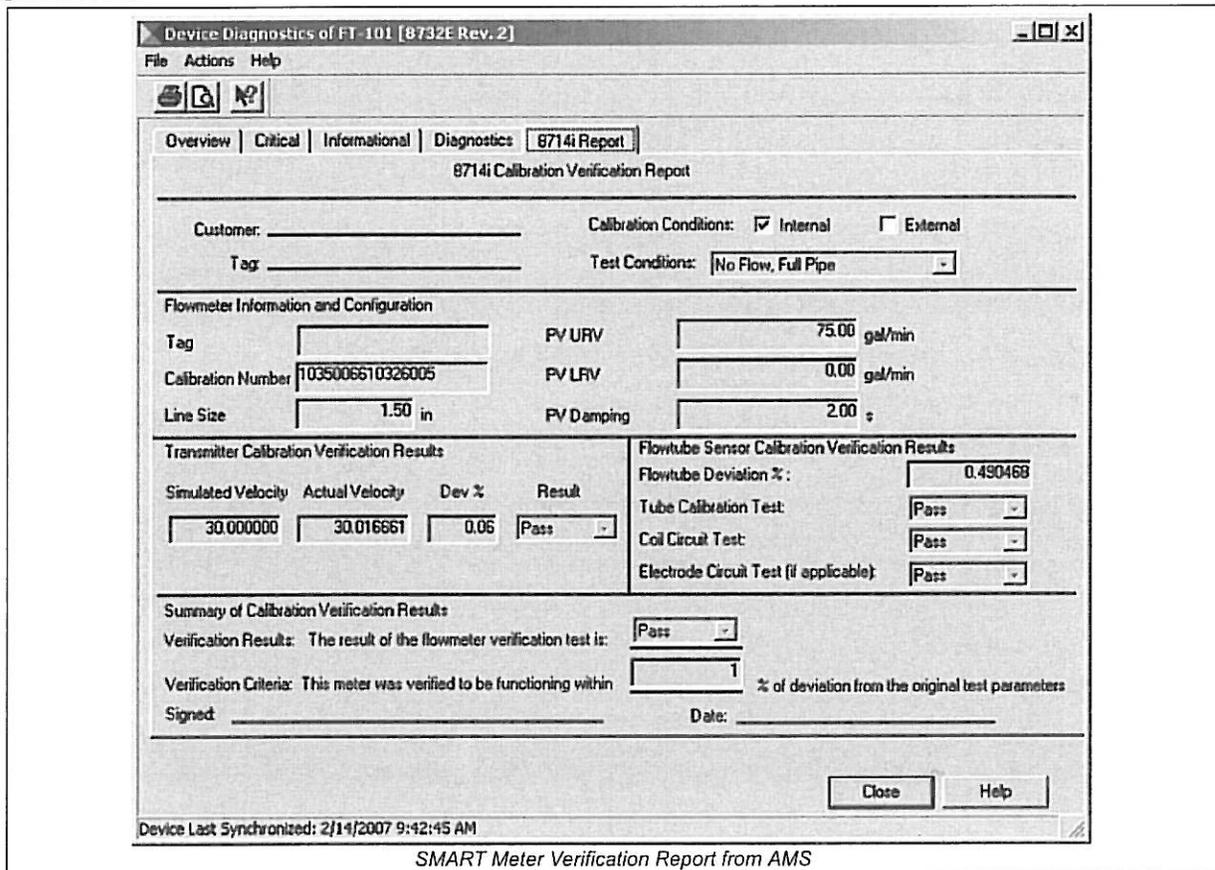
Rosemount technology provides a grounding and wiring fault detection diagnostic to dramatically reduce the time and cost of installing magmeters. One of the most common installation issues with magmeters is the lack of a proper ground. Without a proper ground, the meter will not read flow correctly. By continually monitoring the line noise voltage across the frequency spectrum, Rosemount technology can detect and alert you immediately if the meter wiring or grounding needs to be fixed. This saves commissioning time, reduces installation costs, and can help prevent inaccurate measurements. This diagnostic is one of the PlantWeb® diagnostic options (DA1) in the Rosemount 8750WA Magnetic Flowmeter model number.

SMART Meter Verification Improves Magnetic Flowmeter Verification Practice

Diagnostic in LOI

		
<p>SMART Meter Verification checks transmitter and sensor characteristics.</p>	<p>Deviation from baseline values are reported.</p>	<p>Meter Calibration is verified.</p>

Diagnostic in AMS



The screenshot shows a software window titled "Device Diagnostics of FT-101 [8732E Rev. 2]". The "Diagnostics" tab is active, displaying an "8714i Calibration Verification Report".

Customer: _____ **Calibration Conditions:** Internal External
Tag: _____ **Test Conditions:** No Flow, Full Pipe

Flowmeter Information and Configuration

Tag		PV URV	75.00 gal/min
Calibration Number	1035006610326005	PV LRV	0.00 gal/min
Line Size	1.50 in	PV Damping	2.00 s

Transmitter Calibration Verification Results

Simulated Velocity	Actual Velocity	Dev %	Result
30.000000	30.016661	0.06	Pass

Flowtube Sensor Calibration Verification Results

Flowtube Deviation %:	0.490468
Tube Calibration Test:	Pass
Coil Circuit Test:	Pass
Electrode Circuit Test (if applicable):	Pass

Summary of Calibration Verification Results

Verification Results: The result of the flowmeter verification test is: Pass

Verification Criteria: This meter was verified to be functioning within 1 % of deviation from the original test parameters

Signed: _____ Date: _____

Device Last Synchronized: 2/14/2007 9:42:45 AM

Buttons: Close, Help

SMART Meter Verification Report from AMS

Verification Report

A verification report that can be filled out manually is available on Rosemount.com.

[http://www2.emersonprocess.com/siteadmincenter/PM Rosemount Documents/00816-0200-4727](http://www2.emersonprocess.com/siteadmincenter/PM%20Rosemount%20Documents/00816-0200-4727)

Grounding/ Wiring Diagnostic Improves Installation Practices

Diagnostic in LOI

<p>3.45 Ft/Sec Grnd/Wire Fault</p>	<p>Error Messages: Grnd/Wire Fault</p>	<p>Line Noise: 5.43 mV</p>
<p>Grounding and wiring fault displays on LOI.</p>	<p>Error messages under Diagnostic menu.</p>	<p>Line noise value can be viewed. If line noise is > 5 mV, Diagnostic is tripped.</p>

Diagnostic in AMS

The screenshot shows the AMS status screen with the 'Diagnostics' tab selected. Under 'Grounding/Wiring Fault', the 'Grounding/Wiring Fault' indicator is active, and the 'Line Noise' is displayed as 5.4 mV. A note below states: 'Note: A line noise of less than 5 mV is recommended'. Other diagnostic sections include 'Empty Pipe' (EP Value: 0.63, EP Trig Level: 100.00), 'Electronics Temperature' (Elec Temp: 86.9 F), and 'High Process Noise' (5Hz SNR: 95.5, 37Hz SNR: 3720.1, Coil drv freq: 5 Hz).

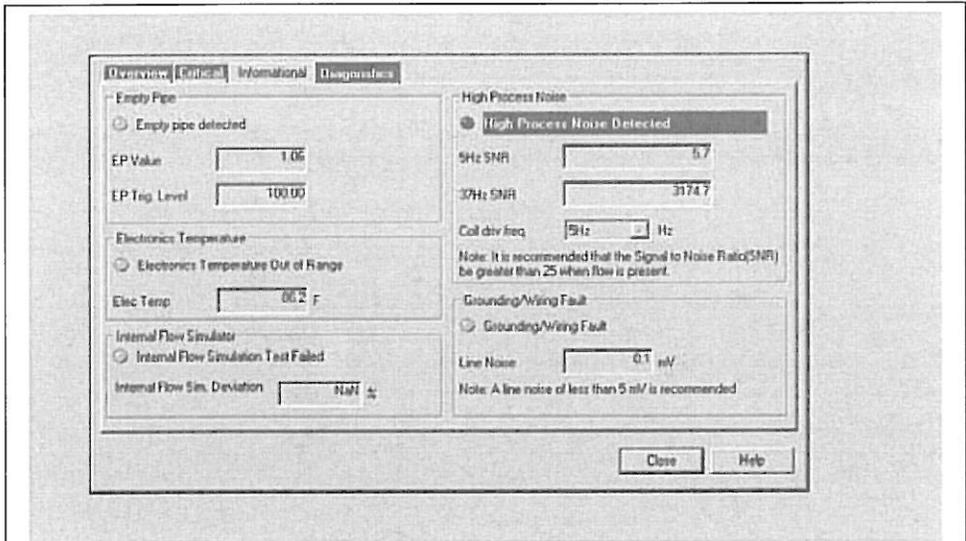
Grounding and wiring is tripped and shown in AMS status screen.

High Process Noise Diagnostic Improves Process Management

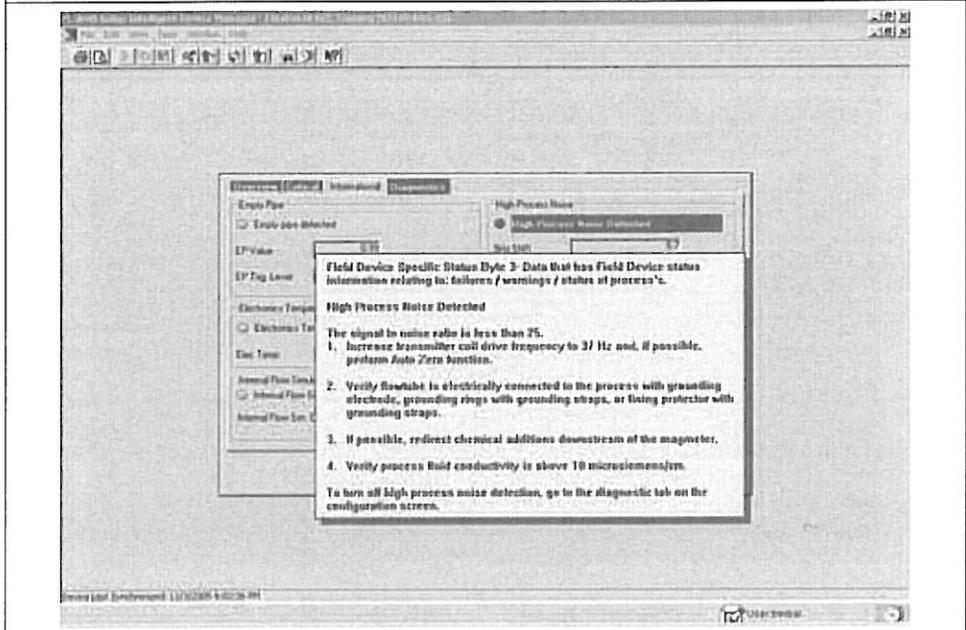
Diagnostic in LOI

<p>3.02 Ft/Sec Hi Process Noise</p>	<p>Sig/Noise Ratio 5Hz: 5.7</p>	<p>Sig/Noise Ratio 37.5Hz: 3560.0</p>
<p>LOI indicates high process noise is detected.</p>	<p>Signal-to-noise ratio (SNR) is viewed in Diagnostic menu. If < 25:1, diagnostic tripped.</p>	<p>Improved SNR and signal stability by moving coil drive frequency from 5 Hz to 37 Hz.</p>

Diagnostic in AMS



AMS status screen indicates high process noises detected and shows SNR at both coil drive frequencies.



AMS help provides procedure for adjusting mag coil drive frequency to improve signal stability.

Rosemount 8750WA Specifications

FUNCTIONAL SPECIFICATIONS

Service

Water and water-based fluids

Line Sizes

1/2 -48 in. (15 - 1200 mm)

Sensor Compensation

Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in accuracy.

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Pressure Limits

Per ASME B16.5 and ASME B16.47 for the flange selected.

Sensor Coil Resistance

350 Ω maximum

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.04 and 30 ft/s (0.01 to 10 m/s) for both forward and reverse flow in all sensor sizes. Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/s).

Sensor Ambient Temperature Limits

-20 to 140 °F (-29 to 60 °C)

Process Temperature Limits

Polyurethane Lining

0 to 140 °F (-18 to 60 °C)

Neoprene Lining

0 to 185 °F (-18 to 85 °C)

PTFE Lining

-20 to 248 °F (-29 to 120 °C)

Table 1. Temperature vs. Pressure Limits⁽¹⁾

Sensor Temperature vs. Pressure Limits for ASME B16.5 Class Flanges (1/2- to 48-in. line sizes) ⁽²⁾					
Flange Material	Flange Rating	Pressure			
		@ -20 to 100 °F (-29 to 38 °C)	@ 200 °F (93 °C)	@ 300 °F (149 °C)	@ 350 °F (177 °C)
Carbon Steel	Class 150	285 psi	260 psi	230 psi	215 psi
	Class 300	740 psi	675 psi	655 psi	645 psi
304 Stainless Steel	Class 150	275 psi	235 psi	205 psi	190 psi
	Class 300	720 psi	600 psi	530 psi	500 psi

(1) Liner temperature limits must also be considered. Polyurethane, Linatex, and Neoprene have temperature limits of 140°F, 158°F, and 185°F, respectively.

(2) 30- to 48-in. AWWA C207 Class D and Class E are rated to 150 psi at atmospheric temperature.

Rosemount 8750WA

Optional Digital Output Function

Externally powered at 5 to 24 V DC, transistor switch closure up to 3 W to indicate either:

Reverse Flow:

Activates switch closure output when reverse flow is detected. The reverse flow rate is displayed.

Zero Flow:

Activates switch closure output when flow goes to 0 ft/s.

Empty Pipe:

Activates switch closure output when an empty pipe condition is detected.

Transmitter Faults:

Activates switch closure output when a transmitter fault is detected.

Flow Limits (2) (8750WA12ES only):

Activates switch closure output when the transmitter measures a flow rate that meets the conditions established for this alert. There are two independent flow limit alerts that can be configured as discrete outputs.

Totalizer Limit (8750WA12ES only):

Activates switch closure output when the transmitter measures a total flow that meets the conditions established for this alert.

Diagnostic Status (8750WA12ES only):

Activates switch closure output when the transmitter detects a condition that meets the configured criteria of this output.

Optional Digital Input Function

Externally powered at 5 to 24 V dc, transistor switch closure up to 3 W to indicate either:

Net Total Reset:

Resets the net totalizer value to zero.

Positive Zero Return (PZR):

Simulates zero-flow condition.

Submergence Protection (Sensor) - SA/SB/SC/SD/SE/SF Options

IP68. Continuous submergence to 30 ft. (10 m).

Requires conduit entries of the sensor remote junction box be properly sealed to prevent water ingress. This requires the user to install sealed IP68 approved cable glands, conduit connections, or conduit plugs.

Option Codes SA, SB, SC, SD, SE, and SF provide a pre-wired potted and sealed junction box to prevent the ingress of water. These options still require the use of sealed conduits to meet IP68 protection requirements.

Example of a protection category:

Identity letters - IP

First identity number - 6⁽¹⁾

Second identity number - 8⁽²⁾

(1) Protection against the entry of dust (dust-proof). Complete contact prevention.

(2) The enclosure is suitable for constant submersion in water under given conditions which are determined by the manufacturer (submersion).

Product Data Sheet

00813-0100-4750, Rev EA

October 2012

Rosemount 8750WA

PERFORMANCE SPECIFICATIONS

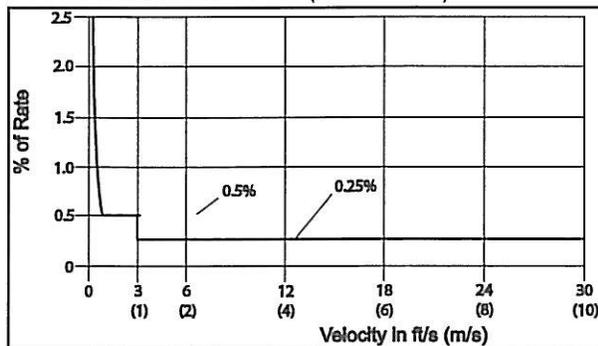
(System specifications are given using the frequency output and with the unit at referenced conditions).

8750WA32 and 8750WA12

Flanged Sensor Accuracy

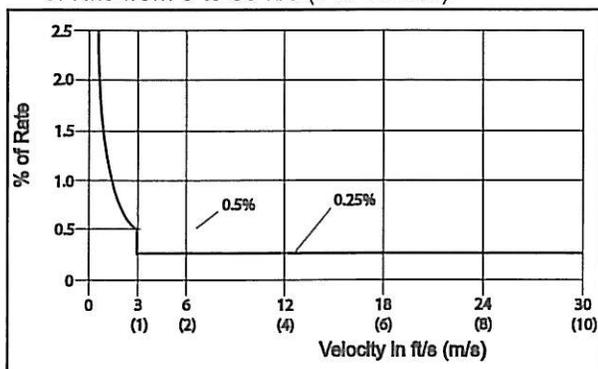
The standard System Accuracy is 0.5% of rate from 1 to 30 ft/s (0.3 to 10 m/s). Includes combined effects of linearity, hysteresis, repeatability and calibration uncertainty. Accuracy is .005 ft/s (.0015 m/s) from low flow cutoff to 1.0 ft/s (0.3 m/s).

The (D1) optional high system accuracy is 0.25% of rate from 3 to 30 ft/s (1 to 10 m/s).



Wafer Sensor Accuracy

System accuracy is $\pm 0.5\%$ of rate from 3 to 30 ft/s (1 to 10 m/s); between 0.04 and 3.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ± 0.015 ft/s (0.005 m/s). Optional high accuracy is $\pm 0.25\%$ of rate from 3 to 30 ft/s (1 to 10 m/s).



Repeatability

$\pm 0.1\%$ of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

$\pm 0.25\%$ of rate over six months

Ambient Temperature Effect

$\pm 1\%$ per 100 °F (37.8 °C)

Mounting Position Effect

None when installed to ensure sensor remains full.

PHYSICAL SPECIFICATIONS

Flanged Sensors

Non-Wetted Materials

Sensor Body

AISI Type 304 SST

Flanges

Carbon steel, AISI Type 304/304L SST

Housing

Welded steel

Paint

Polyurethane

Process Wetted Materials

Lining

Polyurethane, Neoprene, and PTFE

Electrodes

316L SST and Nickel Alloy 276 (UNS N10276)

Process Connections

ASME B16.5 (ANSI) Class 150, Class 300

0.5- to 24-in. (Class 150)

0.5- to 24-in. (Class 300)

AWWA C207 Class D and Class E

30- to 48-in.

MSS - SP44 Class 150

30- and 36-in.

Wafer Sensors

Non-Wetted Materials

Sensor Body

303 SST (ASTM A-743)

Coil Housing

Investment cast steel (ASTM A-27)

Paint

Polyurethane

Rosemount 8750WA

Process-Wetted Materials

Lining
PTFE

Electrodes
316L SST, Nickel Alloy 276 (UNS N10276)

Process Connections

Mounts between these Flange Configurations
ASME B16.5 (ANSI): Class 150, 300

Studs, Nuts, and Washers
ASME B16.5 (ANSI)

0.5- and 1-in. (15 and 25 mm):
316 SST, ASTM A193, Grade B8M, Class 1 threaded mounting studs; ASTM A194, Grade 8M heavy hex nuts;
SAE per ANSI B18.2.1, Type A, Series N flat washers.

1.5- through 8-in. (40 through 200 mm):
CS, ASTM A193, Grade B7, Class 1 threaded mounting studs; ASTM A194, Grade 2H heavy hex nuts;
SAE per ANSI B18.2.1, Type A, Series N flat washers; all items clear, chromate zinc-plated.

Electrical Connections

Two 1/2–14 NPT connections with number 8 screw terminals are provided in the terminal enclosure for electrical wiring.

Grounding Electrode

A grounding electrode is installed similarly to the measurement electrodes through the sensor lining on 8750WA sensors. It is available in all electrode materials.

Grounding Rings

Grounding rings are installed between the flange and the tube face on both ends of the sensor. Single ground rings can be installed on either end of the sensor. They have an I.D. slightly larger than the sensor I.D. and an external tab to attach ground wiring. Grounding rings are available in 316L SST, and Nickel Alloy 276 (UNS N10276).

Lining Protectors

Lining protectors are installed between the flange and the tube face on both ends of the sensor. The leading edge of lining material is protected by the lining protector; lining protectors cannot be removed once they are installed. Lining protectors are available in 316L SST, and Nickel Alloy 276 (UNS N10276).

Dimensions

See Figure 3, Figure 4, and Table 3.

Weight

See Table 2 and Table 3

Transmitters

8750WA32

Materials of Construction

Housing
Low-copper aluminum
Nema 4X and IEC 60529 IP66

Paint
Polyurethane

Cover Gasket
Rubber

Electrical Connections

Two or three 1/2–14 NPT with number 8 screw terminal connections are provided for electrical wiring. PG13.5 and CM20 adapters are available. Screw terminals provided for all connections. Power wiring connected to transmitter only. Integrally mounted transmitters are factory wired to the sensor.

Mounting

Integrally mounted transmitters do not require interconnecting cables. The local display and transmitter can be rotated in 90° increments. Remote mounted transmitters require only a single conduit connection to the sensor.

Transmitter Weight

Approximately 7 pounds (3.2 kg). Add 0.5 pounds (0.5 kg) for local display.

Product Data Sheet

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Rosemount 8750WA

8750WA12

Materials of Construction

Housing

Low-copper aluminum, NEMA 4X and
IEC 60529 IP65

Pollution Degree 2

Paint

Polyurethane

Cover Gasket

Rubber

Electrical Connections

Four 1/2–14 NPT connections provided on the base of the transmitter. Screw terminals provided for all of the connections. Power wiring connected to the transmitter only. Remote mounted transmitters require only a single conduit connection to the sensor.

NOTE

If 3/4 - 14 NPT connections are required, 1/2 to 3/4 in. adapter kits are available for order.

Line Power Fuses

90–250 V AC systems (8750WA12)

2 amp, Quick-acting Bussman AGC2 or
equivalent

12–42 V DC systems

3 amp, Quick-acting Bussman AGC3
or equivalent

Transmitter Weight

Transmitter approximately 9 lb (4 kg). Add 1 lb
(0.5 kg) for local operator interface.

Rosemount 8750WA

Table 2. Flanged Sensor (ASME)

Nominal Line Size Inches (mm)	Sensor Flange Rating	
	ASME B16.5 (ANSI)	Sensor Weight lb (kg)
½ (15)	150	20 (9)
½ (15)	300	22 (10)
1 (25)	150	20 (9)
1 (25)	300	22 (10)
1½ (40)	150	22 (10)
1½ (40)	300	24 (11)
2 (50)	150	26 (12)
2 (50)	300	28 (13)
3 (80)	150	40 (18)
3 (80)	300	47 (21)
4 (100)	150	48 (22)
4 (100)	300	65 (30)
6 (150)	150	81 (37)
6 (150)	300	93 (42)
8 (200)	150	110 (50)
8 (200)	300	162 (74)
10 (250)	150	220 (98)
10 (250)	300	300 (136)
12 (300)	150	330 (150)
12 (300)	300	435 (197)
14 (350)	150	370 (168)
14 (350)	300	573 (261)
16 (400)	150	500 (227)
16 (400)	300	755 (343)
18 (450)	150	600 (272)
18 (450)	300	1010 (459)
20 (500)	150	680 (308)
20 (500)	300	1180 (536)
24 (600)	150	1000 (454)
24 (600)	300	1865 (848)
30 (750)	125 (AWWA Class D)	897 (407)
30 (750)	150 (MSS SP44)	1562 (708)
30 (750)	300 (MSS SP44)	2951 (1338)
36 (900)	125 (AWWA Class D)	1267 (575)
36 (900)	150 (MSS SP44)	2550 (1157)
36 (900)	300 (MSS SP44)	4582 (2079)
42 (1050)	AWWA Class B	1289 (585)
42 (1050)	AWWA Class D	1550 (708)
42 (1050)	AWWA Class E	2400 (1089)
48 (1200)	AWWA Class B	1585 (719)
48 (1200)	AWWA Class D	1892 (858)
48 (1200)	AWWA Class E	3152 (1430)

Dimensional Drawings

Figure 1. Rosemount 8750WA12 Transmitter

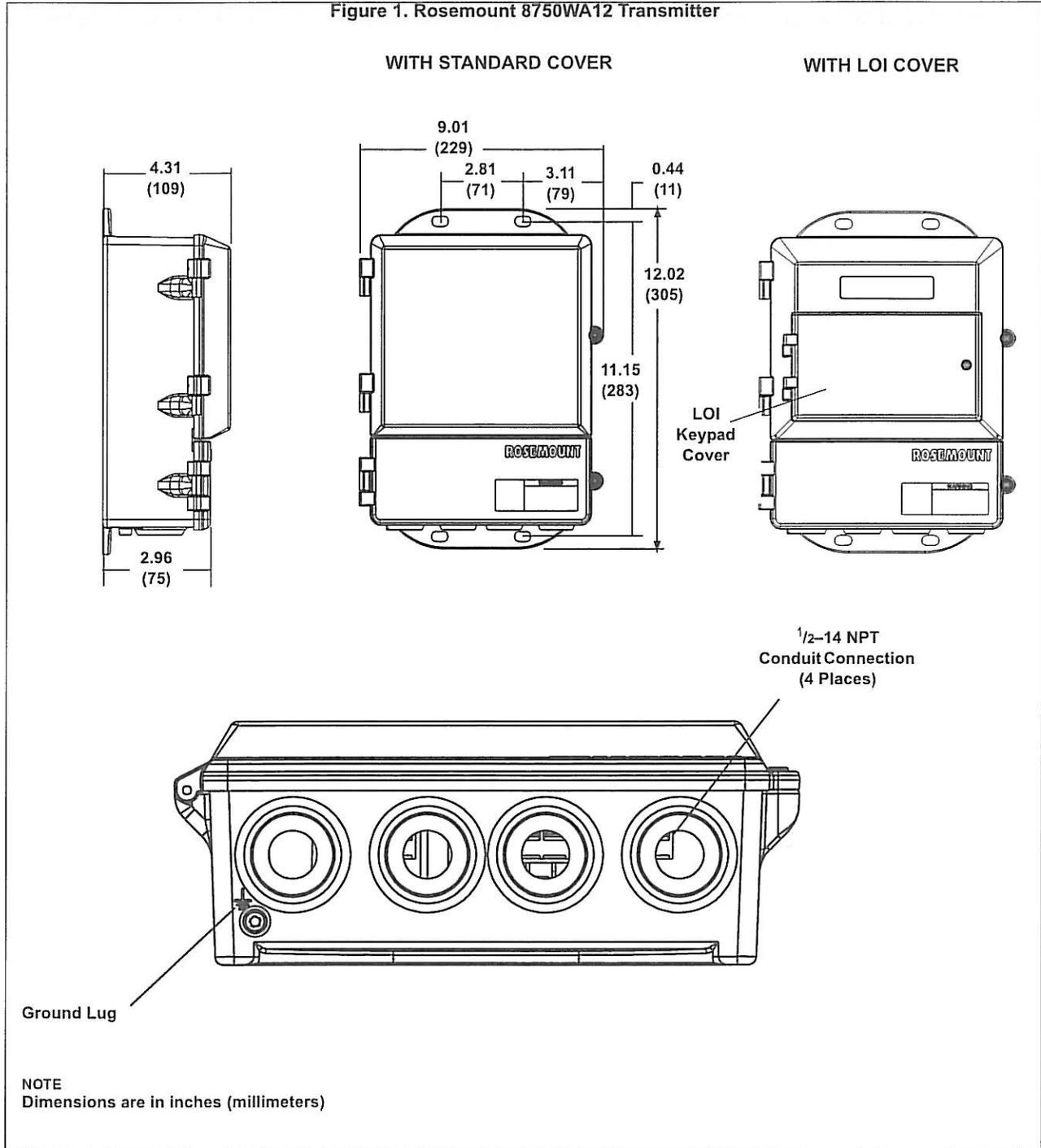
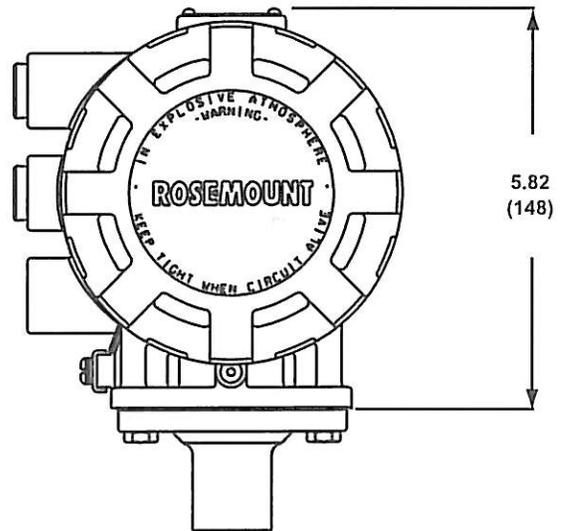
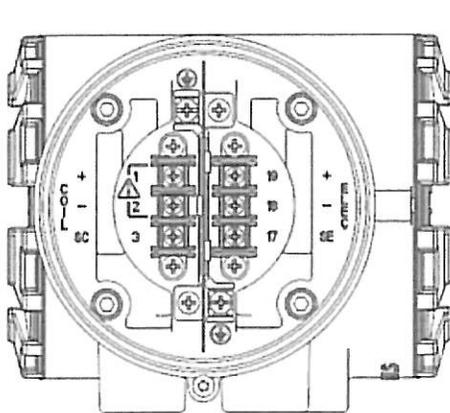
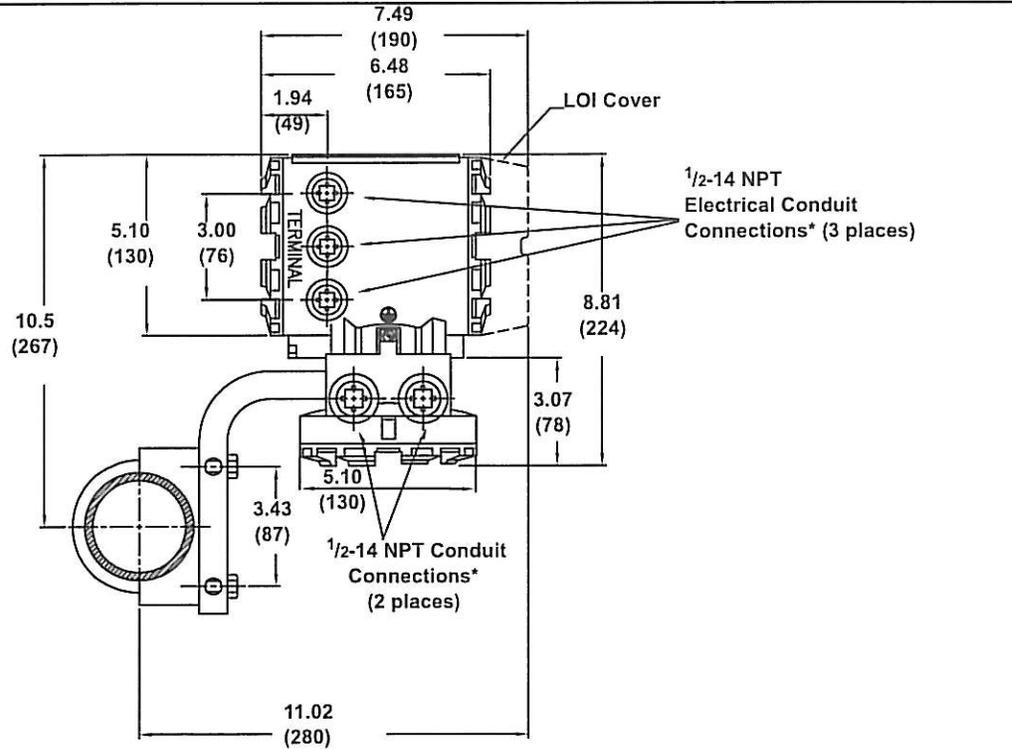


Figure 2. Rosemount 8750WA32 Transmitter



* Conduit connections are also available with M20 and PG 13.5 connections with the use of conduit threaded adapters.

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Figure 3. Rosemount 8750WA Flanged Sensors, Typical of 0.5- through 4-in. (15 through 100 mm) Line Sizes

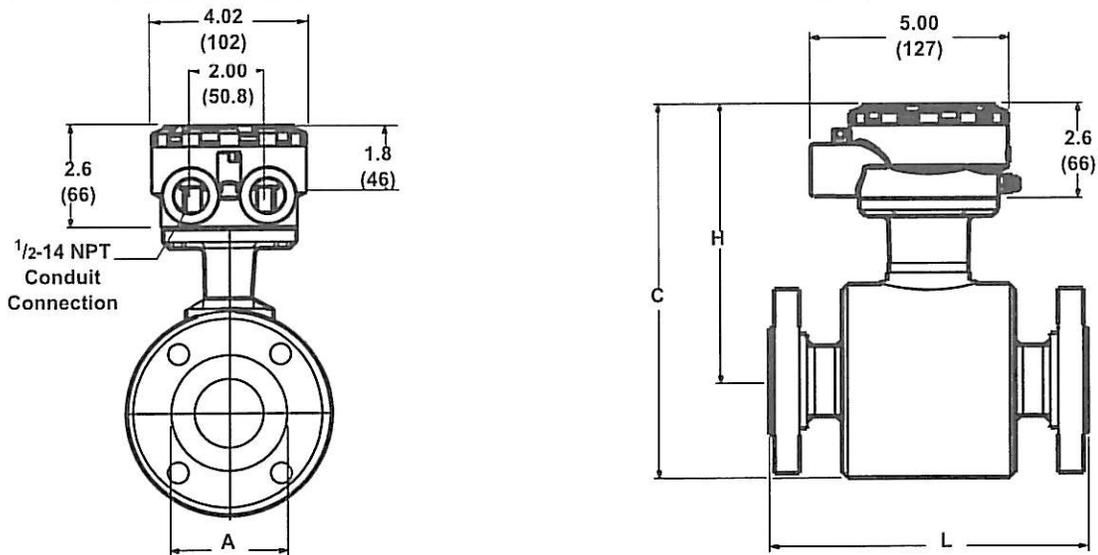
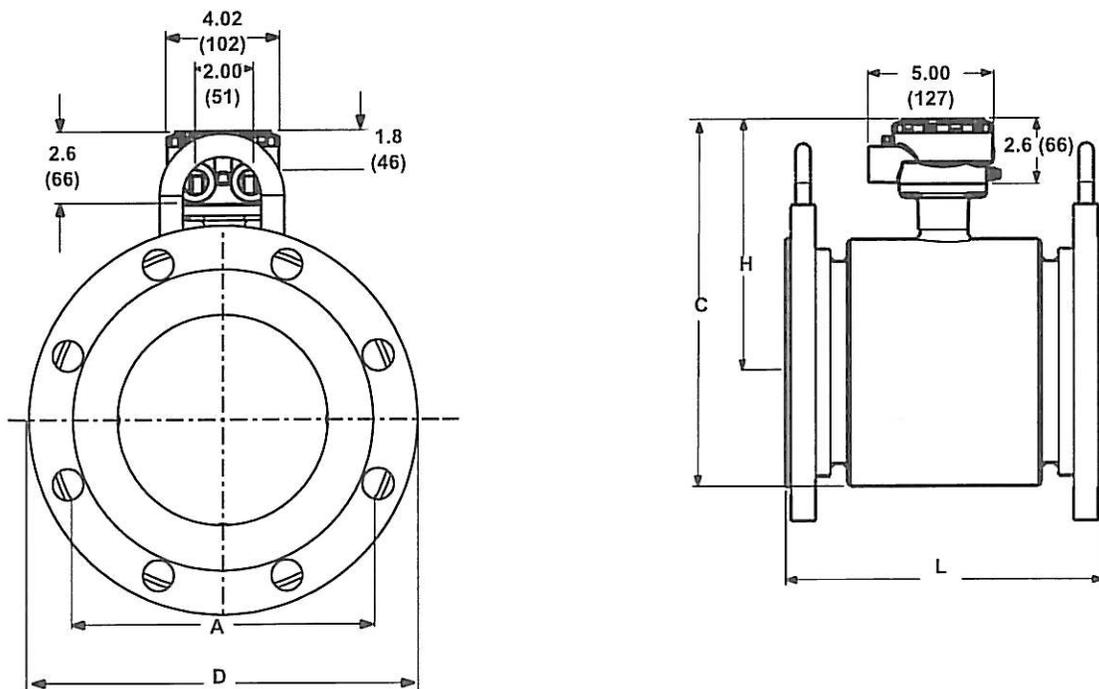


Figure 4. Rosemount 8750WA Flanged Sensors, Typical of 6- through 48-in. (150 through 1200 mm) Line Sizes



Rosemount 8750WA

Table 3. Rosemount 8750WA Dimensions in Inches (Millimeters) (Dimensions with ASME B16.5 (ANSI) Flanges) Refer to Dimensional Drawings, Figure 3, and Figure 4.

Line Size and Flange Rating	Body Height "H"	Liner Face Diameter "A"	Overall Sensor Length "L" ⁽¹⁾			Flange Diameter "D"	Liner Thickness	Inside Diameter
			PTFE	Neoprene	Poly			
0.5-150	6.75 (171)	1.38 (35)	7.88 (200)	7.88 (200)	7.88 (200)	3.50 (89)	0.09 (2.3)	0.49 (12.5)
0.5-300	6.75 (171)	1.38 (35)	7.88 (200)	7.88 (200)	7.88 (200)	3.75 (95)	0.09 (2.3)	0.49 (12.5)
1-150	6.75 (171)	2.00 (51)	7.88 (200)	7.88 (200)	7.88 (200)	4.25 (108)	0.09 (2.3)	0.91 (23)
1-300	6.75 (171)	2.00 (51)	7.88 (200)	7.88 (200)	7.88 (200)	4.88 (124)	0.09 (2.3)	0.91 (23)
1.5-150	7.10 (180)	2.88 (73)	7.88 (200)	7.88 (200)	7.88 (200)	5.00 (127)	0.12 (3.1)	1.44 (37)
1.5-300	7.10 (180)	2.88 (73)	7.88 (200)	7.88 (200)	7.88 (200)	6.12 (155)	0.12 (3.1)	1.44 (37)
2-150	7.10 (180)	3.62 (92)	7.88 (200)	7.88 (200)	7.88 (200)	6.00 (152)	0.12 (3.1)	1.91 (49)
2-300	7.10 (180)	3.62 (92)	7.88 (200)	7.88 (200)	7.88 (200)	6.50 (165)	0.12 (3.1)	1.91 (49)
3-150	8.10 (206)	5.00 (127)	7.88 (200)	7.88 (200)	7.88 (200)	7.50 (191)	0.15 (3.8)	2.96 (75)
3-300	8.10 (206)	5.00 (127)	8.63 (219)	8.63 (219)	8.63 (219)	8.25 (210)	0.15 (3.8)	2.96 (75)
4-150	8.45 (215)	6.19 (157)	9.84 (250)	9.84 (250)	9.84 (250)	9.00 (229)	0.15 (3.8)	3.96 (101)
4-300	8.45 (215)	6.19 (157)	10.88 (276)	10.88 (276)	10.88 (276)	10.00 (254)	0.15 (3.8)	3.96 (101)
6-150	9.45 (240)	8.50 (216)	11.81 (300)	11.81 (300)	11.81 (300)	11.00 (279)	0.19 (4.8)	5.98 (152)
6-300	9.45 (240)	8.50 (216)	13.06 (332)	13.06 (332)	13.06 (332)	12.50 (318)	0.19 (4.8)	5.69 (144)
8-150	10.42 (265)	10.62 (270)	13.78 (350)	13.78 (350)	13.78 (350)	13.50 (343)	0.19 (4.8)	7.94 (202)
8-300	10.42 (265)	10.62 (270)	15.60 (396)	15.60 (396)	15.60 (396)	15.00 (381)	0.17 (4.3)	7.64 (194)
10-150	11.78 (299)	12.75 (324)	15.00 (381)	15.00 (381)	15.00 (381)	16.00 (406)	0.26 (6.5)	9.87 (251)
10-300	11.78 (299)	12.75 (324)	17.13 (435)	17.13 (435)	17.13 (435)	17.50 (444)	0.26 (6.5)	9.48 (241)
12-150	12.86 (327)	15.00 (381)	18.00 (457)	18.00 (457)	18.00 (457)	19.00 (483)	0.26 (6.7)	11.87 (301)
12-300	12.86 (327)	15.00 (381)	20.14 (512)	20.14 (512)	20.14 (512)	20.50 (52)	0.26 (6.7)	11.48 (292)
14-150	13.92 (354)	16.25 (413)	21.00 (533)	21.00 (533)	21.00 (533)	21.00 (533)	0.19 (4.8)	13.16 (334)
14-300	13.92 (354)	16.25 (413)	23.25 (591)	23.25 (591)	23.25 (591)	23.00 (584)	0.19 (4.8)	12.79 (325)
16-150	14.93 (379)	18.50 (470)	24.00 (610)	24.00 (610)	24.00 (610)	23.50 (597)	0.19 (4.8)	15.12 (384)
16-300	14.93 (379)	18.50 (470)	26.25 (667)	26.25 (667)	26.25 (667)	25.50 (648)	0.19 (4.8)	14.75 (375)
18-150	16.19 (411)	21.00 (533)	27.00 (686)	27.00 (686)	27.00 (686)	25.00 (635)	0.19 (4.8)	17.09 (434)
18-300	16.19 (411)	21.00 (533)	30.12 (765)	30.12 (765)	30.12 (765)	28.00 (711)	0.19 (4.8)	16.35 (415)
20-150	17.20 (437)	23.00 (584)	30.00 (762)	30.00 (762)	30.00 (762)	27.50 (698)	0.19 (4.8)	18.96 (482)
20-300	17.20 (437)	23.00 (584)	33.25 (845)	33.25 (845)	33.25 (845)	30.50 (774)	0.19 (4.8)	18.21 (463)
24-150	19.48 (495)	27.25 (692)	36.00 (914)	36.00 (914)	36.00 (914)	32.00 (813)	0.19 (4.8)	22.94 (583)
24-300	19.48 (495)	27.25 (692)	39.64 (1007)	39.64 (1007)	39.64 (1007)	36.00 (914)	0.19 (4.8)	22.06 (560)
30-AWWA Class D	22.71 (577)	33.75 (859)	37.00 (940)	37.11 (943)	36.93 (938)	38.75 (984)	0.19 (4.8)	28.99 (736)
30-MSS SP44 150	22.71 (577)	33.75 (859)	41.56 (1056)	41.66 (1058)	41.48 (1054)	38.75 (984)	0.19 (4.8)	28.86 (733)
30-MSS SP44 300	22.71 (577)	33.75 (859)	47.25 (1200)	47.35 (1202)	47.17 (1198)	42.99 (1092)	0.19 (4.8)	28.12 (714)
36-AWWA Class D	26.61 (676)	40.25 (1023)	40.63 (1032)	40.43 (1027)	40.55 (1030)	46.00 (1168)	0.19 (4.8)	34.65 (880)
36-MSS SP44 150	26.61 (676)	40.25 (1023)	47.24 (1200)	47.05 (1195)	47.17 (1198)	46.00 (1168)	0.19 (4.8)	34.27 (870)
36-MSS SP44 300	26.61 (676)	40.25 (1023)	53.19 (1351)	52.95 (1345)	53.07 (1348)	50.00 (1270)	0.19 (4.8)	33.27 (845)
42	29.45 (748)	47.29 (1201)	NA	42.00 (1200)	NA	53.0 (1346)	0.24 (6.1)	41.02 (1042)
48	32.44 (824)	53.79 (1366)	NA	47.20 (1200)	NA	59.5 (1511)	0.24 (6.1)	47.02 (1194)

(1) When 2 grounding rings are specified, add 0.25 in. (6.35 mm) for 0.50- through 14-in. (15 through 350 mm) sensors, add 0.50 in. (12.7 mm) for 16-in. (400 mm) and larger. When lining protectors are specified, add 0.25 in. (6.35 mm) for ½- through 12-in. (15 through 300 mm) sensors, add 0.50 in. (12.7 mm) for 14- through 36-in. (350 through 900 mm) sensors.

Figure 5. Rosemount 8750WA Wafer Sensors, Typical of 0.5- and 1-in. (15 and 25 mm) Line Sizes

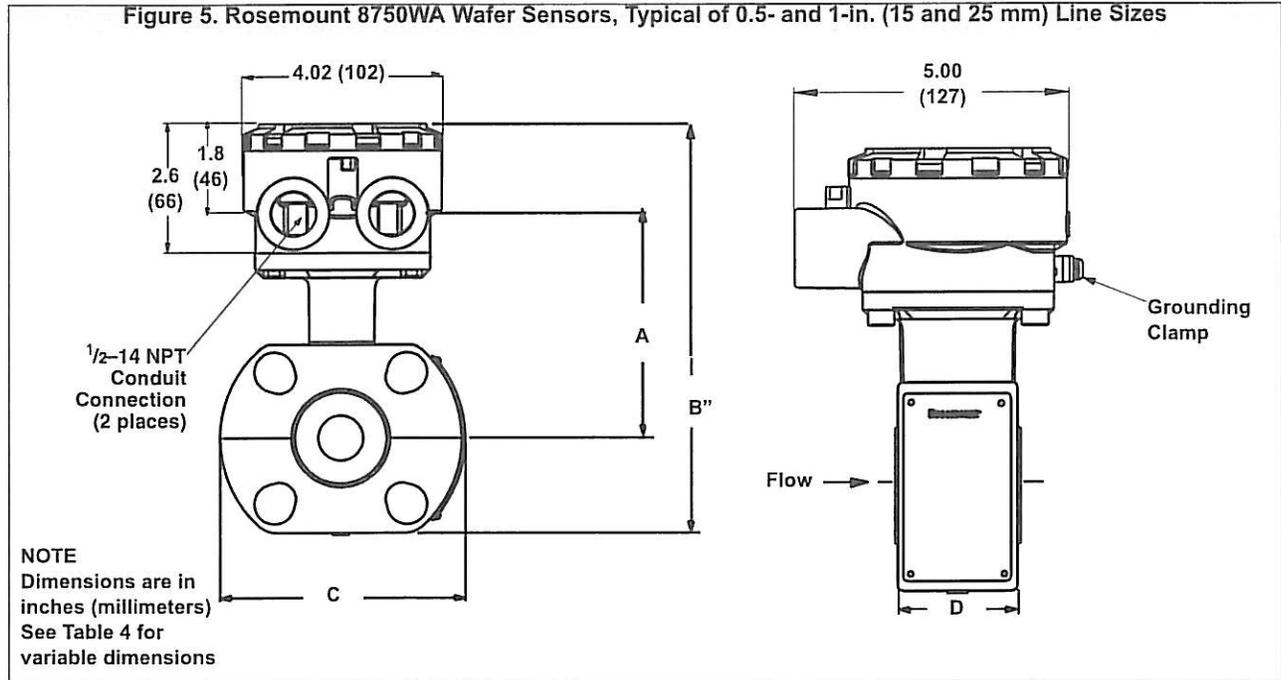
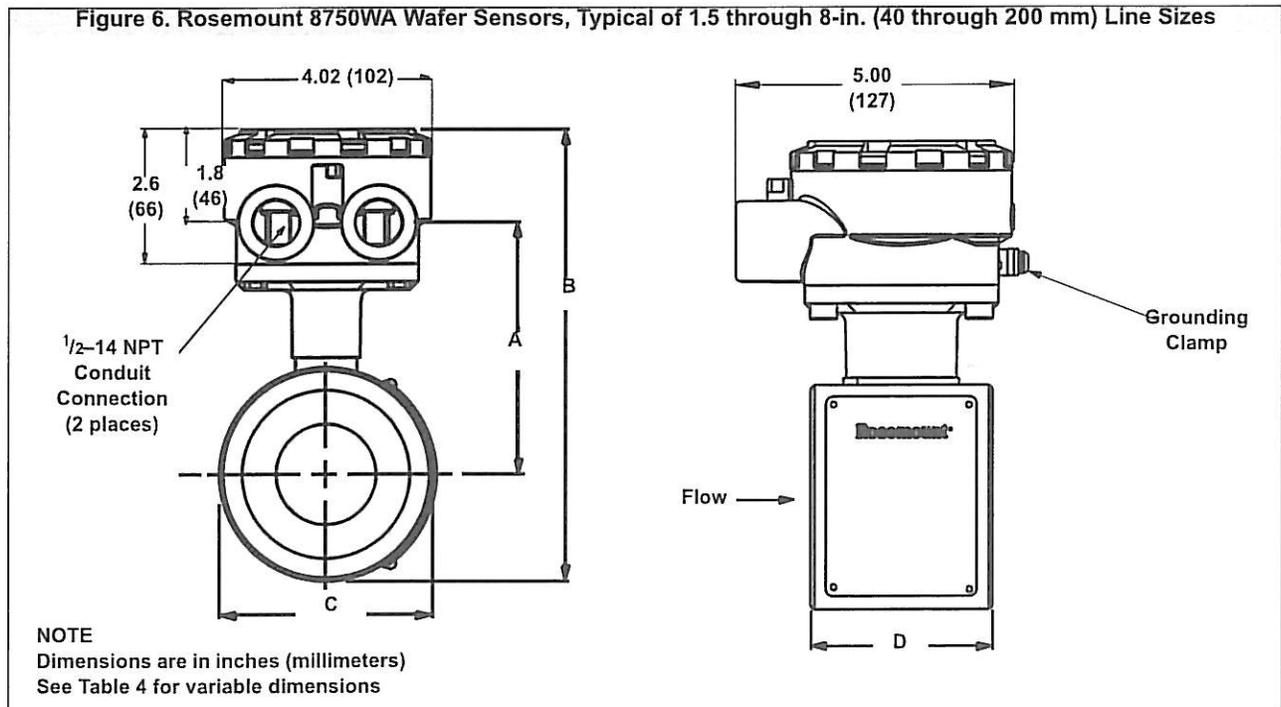


Figure 6. Rosemount 8750WA Wafer Sensors, Typical of 1.5 through 8-in. (40 through 200 mm) Line Sizes



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Table 4. Rosemount 8711 Sensor Dimensions and Weight

Nominal Line Size Inches (mm)		Sensor Housing Dimensions						Sensor Length "D"		Inside Diameter		Weight lb (kg)	
		"A" Max.		"B"		"C"							
0.5	(15)	4.00	(102)	5.44	(138)	3.56	(90)	2.17	(55)	.593	(15)	4	(2)
1	(25)	4.31	(109)	6.06	(154)	4.50	(114)	2.17	(55)	.970	(24)	5	(2)
1.5	(40)	4.42	(112)	7.41	(188)	3.28	(83)	2.73	(69)	1.50	(38)	5	(2)
2	(50)	4.64	(118)	7.94	(202)	3.91	(99)	3.26	(83)	1.92	(50)	7	(3)
3	(80)	5.26	(134)	9.19	(233)	5.16	(131)	4.68	(119)	2.79	(76)	13	(6)
4	(100)	5.87	(149)	10.41	(264)	6.38	(162)	5.88	(149)	3.70	(99)	22	(10)
6	(150)	6.97	(177)	12.60	(320)	8.56	(217)	6.87	(174)	5.825	(148)	35	(16)
8	(200)	8.00	(2003)	14.66	(372)	10.63	(270)	8.86	(225)	7.875	(200)	60	(27)

Magnetic Flowmeter Sizing

Flowmeter Sizing

Because of its effect on flow velocity, sensor size is an important consideration. It may be necessary to select a magnetic flowmeter that is larger or smaller than the adjacent piping to ensure the fluid velocity is in the specified measuring range of the sensor.

Suggested guidelines and examples for sizing normal velocities in different applications are listed in Table 5, Table 6, and Table 7. Operation outside these guidelines may also give acceptable performance.

Table 5. Sizing Guidelines

Application	Velocity Range (ft/s)	Velocity Range (m/s)
Normal Service	2–20	0.6–6.1
Abrasive Slurries	3–10	0.9–3.1
Non-Abrasive Slurries	5–15	1.5–4.6

To convert flow rate to velocity, use the appropriate factor listed in Table 6 and the following equation:

$$\text{Velocity} = \frac{\text{Flow Rate}}{\text{Factor}}$$

Example: SI Units

Magmeter Size: 100 mm (factor from Table 6 = 492.0)

Normal Flow Rate: 800 L/min

$$\text{Velocity} = \frac{800 \text{ (L/min)}}{492.0}$$

Velocity = 1.7 m/s

Example: English Units

Magmeter Size: 4 in. (factor from Table 6 = 39.679)

Normal Flow Rate: 300 GPM

$$\text{Velocity} = \frac{300 \text{ (gpm)}}{39.679}$$

Velocity = 7.56 ft/s

Table 6. Line Size vs. Conversion Factor

Nominal Line Size Inches (mm)	Gallons Per Minute Factor	Liters Per Minute Factor
½ (15)	0.947	11.745
1 (25)	2.693	33.407
1½ (40)	6.345	78.69
2 (50)	10.459	129.7
3 (80)	23.042	285.7
4 (100)	39.679	492.0
6 (150)	90.048	1,116
8 (200)	155.94	1,933
10 (250)	245.78	3,048
12 (300)	352.51	4,371
14 (350)	421.70	5,229
16 (400)	550.80	6,830
18 (450)	697.19	8,645
20 (500)	866.51	10,745
24 (600)	1,253.2	15,541
30 (750)	2,006.0	24,877
36 (900)	2,935.0	36,398
40 (1000)	3,652	45,357
42 (1050)	4,110	51,107
48 (1200)	5,402	67,159

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Table 7. Line Size vs. Velocity/Rate

Nominal Line Size in Inches (mm)	Minimum/Maximum Flow Rate							
	Gallons per Minute				Liters per Minute			
	at 0.04 ft/s (Low-flow Cutoff)	at 1 ft/s (Min Range Setting)	at 3 ft/s	at 30 ft/s (Max Range Setting)	at 0.012 m/s (Low-flow Cutoff)	at 0.3 m/s (Min Range Setting)	at 1 m/s	at 10 m/s (Max Range Setting)
1/2 (15)	0.038	0.947	2.84	28.412	0.14	3.58	11.74	117.45
1 (25)	0.108	2.694	8.08	80.813	0.41	10.18	33.40	334.07
1 1/2 (40)	0.254	6.345	19.03	190.36	0.96	23.98	78.69	786.9
2 (50)	0.418	10.459	31.37	313.77	1.58	39.54	129.7	1,297
3 (80)	0.922	23.042	69.12	691.26	3.49	87.10	285.7	2,857
4 (100)	1.588	39.679	119.0	1,190.4	6.00	138.6	492.0	4,920
6 (150)	3.600	90.048	270.1	2,701.4	13.61	340.3	1,116	11,167
8 (200)	6.240	155.94	467.7	4,677.8	23.59	589.4	1,933	19,337
10 (250)	9.840	245.78	737.3	7,373.4	37.20	929.0	3,048	30,480
12 (300)	14.200	352.51	1,059	10,575	53.68	1,332	4,371	43,715
14 (350)	16.800	421.70	1,265	12,651	63.50	1,594	5,230	52,296
16 (400)	22.000	550.80	1,652	16,524	83.16	2,082	6,830	68,304
18 (450)	27.800	697.19	2,091	20,916	105.0	2,635	8,646	86,459
20 (500)	34.600	866.51	2,599	25,995	130.7	3,275	10,740	107,457
24 (600)	50.200	1,253.2	3,759	37,596	189.7	4,737	15,540	155,414
30 (750)	80.200	2,006.0	6,018	60,180	303.1	7,582	24,880	248,773
36 (900)	117.40	2,935.0	8,805	88,050	443.7	11,094	36,390	363,983
40 (1000)	146	3,652	10,956	109,564	544.3	13,607	45,357	453,571
42 (1050)	164	4,110	12,330	123,330	561	14,022	46,740	467,400
48 (1200)	216	5,402	16,206	162,060	737	18,426	61,420	614,200

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North American Certifications Factory Mutual (FM)

NOTE

For the 8750WA32 transmitters with a local operator interface (LOI), the lower ambient temperature limit is -20 °C.

NH Ordinary Location Approval

Enclosure Type 4X/IP 66
FM and CSA Marked for Ordinary Locations

N0 Division 2 Approval Non-Flammable Fluids (All transmitters)

Reference Rosemount Control Drawing 08732-1052
(8750WA).

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8750WA12 at 40 °C),
T4 (8750WA32 at 60°C: -50 °C ≤ Ta ≤ 60 °C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T5 (8750WA12 at 40°C), T5 (8750WA32 at
60°C)

Enclosure Type 4X

N5 Division 2 Approval Flammable Fluids (All Transmitters) For sensors with IS electrodes only

Reference Rosemount Control Drawing 08732-1052
(8750WA).

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8750WA12 at 40 °C)
T4 (8750WA32 at 60°C: -50 °C ≤ Ta ≤ 60 °C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T5 (8750WA12 at 40°C), T5 (8750WA32 at
60°C)

Enclosure Type 4X

Canadian Standards Association (CSA)

NH Ordinary Location Approval

Enclosure Type 4X/IP 66
FM and CSA Marked for Ordinary Locations

N0 Division 2 Approval Non-Flammable Fluids (All transmitters)

Reference Rosemount Control Drawing 08732-1052
(8750WA).

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8750WA12 at 40 °C),
T4 (8750WA32 at 60 °C: -50 °C ≤ Ta ≤ 60 °C)

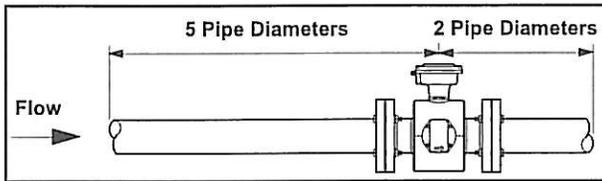
Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T5 (8750WA12 at 40 °C), T5 (8750WA32 at
60 °C)

Enclosure Type 4X

Rosemount 8750WA

Upstream/Downstream Piping Length

To ensure specification accuracy over widely varying process conditions, install the sensor with a minimum of five straight pipe diameters upstream and two straight pipe diameters downstream from the electrode plane. See Figure 7. This procedure should adequately allow for disturbances created by elbows, valves, and reducers.



Consult the factory for performance in applications with less than ideal straight runs. Sensors can be installed with as few as zero diameters of straight run.

Sensor Grounding

A reliable ground path is required between the sensor and the process fluid. Optional grounding rings, grounding electrodes, and lining protectors are available with 8750WA sensors to ensure proper grounding. See Table 8 and Table 9.

Table 9. Grounding Installation

Type of Pipe	Grounding Options			
	No Grounding Options	Grounding Rings	Grounding Electrodes	Lining Protectors
	Acceptable	Not Required	Not Required	Acceptable
	Not Acceptable	Acceptable	Acceptable	Acceptable
	Not Acceptable	Acceptable	Acceptable	Acceptable

Table 8. Grounding Options

Grounding Options	General Characteristics
No Grounding Options (grounding straps)	<ul style="list-style-type: none"> Acceptable for conductive unlined pipe Grounding straps provided by Rosemount Inc. Pipe must be grounded
Grounding Electrode	<ul style="list-style-type: none"> Same material as measurement electrodes Sufficient grounding option when process fluid conductivity is greater than 100 microsiemens/cm Not recommended in electrolysis or galvanic corrosion applications
Grounding Rings	<ul style="list-style-type: none"> Low conductivity process fluids Cathodic or electrolysis applications that may have stray currents in or around the process Variety of materials for process fluid compatibility
Lining Protectors	<ul style="list-style-type: none"> Protects upstream edge of sensor from abrasive fluids Permanently installed on sensor Protects liner material from over torquing of flange bolts Provides ground path and eliminates need for grounding ring or grounding electrode

Material Selection

See Table 10 for information on Liner types, Table 11 for information on Electrode Materials, and Table 12 for information on Electrode Types.

Table 10. Lining Material

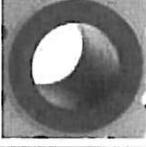
Lining Material	General Characteristics
Polyurethane 	<ul style="list-style-type: none"> • Excellent abrasion resistance for small and medium particles • Limited chemical resistance • 0 to 140 °F (-18 to 60 °C) • Typically applied in clean water
Neoprene 	<ul style="list-style-type: none"> • Very good abrasion resistance for small and medium particles • Better chemical resistance than polyurethane • 0 to 185 °F (-18 to 85 °C) • Typically applied in water with chemicals, and sea water
PTFE 	<ul style="list-style-type: none"> • Highly chemical resistant • Excellent temperature capabilities • -20 to 248 °F (-29 to 120 °C)

Table 11. Electrode Material

Electrode Material	General Characteristics
316L Stainless Steel	<ul style="list-style-type: none"> • Good corrosion resistance • Good abrasion resistance • Not recommended for sulfuric or hydrochloric acids
Nickel Alloy 276 (UNS N10276)	<ul style="list-style-type: none"> • Better corrosion resistance • High strength • Good in slurry applications • Effective in oxidizing fluids

Table 12. Electrode Type

Electrode Type	General Characteristics
Standard Measurement	<ul style="list-style-type: none"> • Lowest cost • Good for most applications
Standard Measurement + Grounding (Also see Table 8 for grounding options and installation)	<ul style="list-style-type: none"> • Low cost grounding option especially for large line sizes • Minimum conductivity of 100 microsiemens/cm • Not recommended for electrolysis or galvanic corrosion applications
Bulletnose	<ul style="list-style-type: none"> • Slightly more expensive • Best option for coating processes

Ordering Information

Model	Product Description
8750WA	Magnetic Flowmeter System for Water Industries
Code	Transmitter Class
32ES	Traditional Transmitter with Aluminum Housing - 0.5% Ref Acc with Option for 0.25%
12ES	Wall Mount Transmitter with Premier LOI Capabilities - 0.5% Ref Acc with Option for 0.25%
0000	Spare sensor only - Unit shipped without a transmitter.
Code	Transmitter Mount
T	Integral Mount ⁽¹⁾
R	Remote Mount
Code	Power Supply
1	AC Power Supply (90-250 V AC, 50-60 Hz)
2	DC Power Supply (12-42 V DC)
0	Spare sensor only - Unit shipped without a transmitter.
Code	Outputs
A	4-20 mA Digital Electronics (HART Protocol)
0	Spare sensor only - Unit shipped without a transmitter.
Code	Conduit Entry
1	1/2-14 NPT, Standard Conduits (12ES,Qty=4; 32ES, Qty=2)
2	CM20, Standard Conduits (12ES,Qty=4; 32ES, Qty=2)
3	PG 13.5, Standard Conduits (12ES,Qty=4; 32ES, Qty=2)
4	1/2-14 NPT, Additional Conduits (12ES,N/A; 32ES, Qty=3)
5	CM20, Additional Conduits (12ES,N/A; 32ES, Qty=3)
6	PG 13.5, Additional Conduits (12ES,N/A; 32ES, Qty=3)
0	Spare sensor only - Unit shipped without a transmitter.
Code	Sensor Style
F	Flanged Style
W	Wafer Style ^{(2) (3)}
0	Spare transmitter only - Unit shipped without a sensor.
Code	Lining Material
P	Polyurethane
N	Neoprene
T	PTFE
0	Spare transmitter only - Unit shipped without a sensor.
Code	Electrode Material
S	316L Stainless Steel
H	Nickel Alloy 276 (UNS N10276)
0	Spare transmitter only - Unit shipped without a sensor.
Code	Electrode Type
A	2 Electrodes - Standard
B	2 Electrodes - Bullet Nose
E	3rd Grounding Electrode - Standard
0	Spare transmitter only - Unit shipped without a sensor.

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Code	Line Size
005	1/2 in. (15 mm) - Only available in PTFE
010	1 in. (25 mm)
015	1 1/2 in. (40 mm)
020	2 in. (50 mm)
030	3 in. (80 mm)
040	4 in. (100 mm)
060	6 in. (150 mm)
080	8 in. (200 mm)
100	10 in. (250 mm)
120	12 in. (300 mm)
140	14 in. (350 mm)
160	16 in. (400 mm)
180	18 in. (450 mm)
200	20 in. (500 mm)
240	24 in. (600 mm)
300	30 in. (750 mm)
360	36 in. (900 mm)
420	42-in (1050 mm) - Only available with Neoprene Liner, AWWA Flanges, and NH approval code
480	48-in (1200 mm) - Only available with Neoprene Liner, AWWA Flanges, and NH approval code
000	Spare transmitter only - Unit shipped without a sensor.
Code	Flange Material
C	Carbon Steel ⁽⁴⁾
S	Stainless Steel ⁽⁴⁾
W	Wafer Style, no flanges required ⁽⁵⁾
0	Spare transmitter only - Unit shipped without a sensor.
Code	Flange Rating
A1	ASME B16.5 (ANSI) RF Class 150 ⁽⁶⁾
A3	ASME B16.5 (ANSI) RF Class 300 ⁽⁷⁾
AA	AWWA Class D Flanges (30 - 48in only)
AB	AWWA Class B (30 and 48 in only)
AE	AWWA Class E (42 and 48 in only)
Code	Hazardous Area Approvals
N0	FM Class 1 Division 2 for non-flammable fluids; CSA Class 1 Division 2
N5	FM Class 1 Division 2 for flammable fluids
NH	FM/CSA Marked Non-Hazardous Area Approvals (Ordinary Locations) Complies with EN 61010
00	Spare transmitter only - Unit shipped without a sensor.
Code	Options
	Diagnostic Suite
DA1	Diagnostic Suite including, Grounding/Wiring Detection, and High Process Noise
DA2	SMART Meter Verification Diagnostic Suite
	Auxiliary Output
AX	Two additional DI/DO Channels, see page 10 for more details ⁽⁸⁾
	Displays
M4	Local Operator Interface
	Remote Mounting Options
B6	Stainless Steel 4-Bolt Kit for 2" Pipe Mount (for Transmitter Class 12ES only)
	Wafer Mounting Kit Options
MK2	Mounting Studs, and Nuts ⁽⁵⁾
	Ground Rings
G1	(2) 316L SST Ground Rings
G5	(1) 316L SST Ground Ring

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	Lining Protectors⁽⁴⁾
L1	(2) 316L SST Lining Protectors
	Calibration
D1	High Accuracy (0.25%)
	Custom Software Configuration
C1	Custom Software Configuration
	American Recovery and Reinvestment Act
US	ARRA Compliance Certificate
	Other Agency Approvals
DW ⁽⁹⁾	NSF Drinking Water Approval
	Submersible Options for IP68⁽¹⁰⁾⁽¹¹⁾
SA	Submersible with 50' of Cable
SB	Submersible with 100' of Cable
SC	Submersible with 150' of Cable
SD	Submersible with 200' of Cable
SE	Submersible with 250' of Cable
SF	Submersible with 300' of Cable
	Q Certs
Q4	Calibration Certificate
Typical Model Number: 8750WA 32ES T A 1 F P S A 030 C A1 NH DA2 M4 DW	

(1) Available with transmitter class 32ES only

(2) Available with PTFE lining only

(3) Available up to 8 in. (200 mm)

(4) Available with sensor style F only

(5) Available with sensor style W only

(6) Available in line sizes up to 24-inch. For 30 and 36-inch meters, flanges will be per MSS-SP44 Class 150 specifications.

(7) Available in line sizes up to 24-inch. Not available for 30 or 36-inch meters.

(8) Requires conduit entry option 4, 5, or 6 for the 8750WA32

(9) Available with PTFE (all line sizes) or Polyurethane (4 in. or larger) Lining Materials and 316L SST Electrode Material

(10) Available in remote mount configuration for flange units only

(11) Provides pre-wired potted remote junction box, sealed conduit gland, and conduit plug. Requires the use of sealed conduit to meet IP68 requirements

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Tagging

The sensor and transmitter will be tagged, at no charge, in accordance with customer requirements.

Transmitter tag character height is
0.125 in. (3.18 mm).

Sensor tag: 40 character maximum.

Transmitter tag: see Configuration Data Sheet for character maximum.

Ordering Procedure

To order, select the desired sensor and/or transmitter by specifying model codes from the ordering table.

For remote transmitter applications, note the cable specification requirements.

Sensors and transmitters must be selected from Product Data Sheet 00813-0100-4750.

Standard Configuration

The Rosemount 8750WA32 and 8750WA12 Transmitters are factory configured with the attached sensor size, appropriate calibration number, desired 4-20 mA set points, and engineering units.

Additional configurations require the C1 option and a completed Configuration Data Sheet for custom configurations.

Cable Requirements for Remote Transmitters

NOTE

To order cable specify length as quantity desired.
25 feet = Qty (25) 08732-0753-1003

Description	Unit of Measure	P/N
Signal Cable (20 AWG) Belden 8762, Alpha 2411 equivalent	ft m	08712-0061-0001 08712-0061-0003
Coil Drive Cable (14 AWG) Belden 8720, Alpha 2442 equivalent	ft m	08712-0060-0001 08712-0060-0003
Combination Cable Signal Cable (20 AWG) and Coil Drive Cable (18 AWG) ⁽¹⁾	ft m	08732-0753-1003 08732-0753-2004

(1) For remote mount installations, combination signal and coil drive cable should be limited to less than 100 ft (30 m).

Remote transmitter installations using individual cables require equal lengths of signal and coil drive cables. Integrally mounted transmitters are factory wired and do not require interconnecting cables.

Lengths from 5 to 1000 feet (1.5 to 300 meters) may be specified and will be shipped with the sensor.

Custom Configuration (Option Code C1)

If Option Code C1 is ordered, the Configuration Data Sheet (CDS) must be submitted at the time of order.