

Rosemount 8700 Series Magnetic Flowmeter Systems

THE 8700 SERIES...

- *Rosemount 8712 HART Transmitter - available with Device Diagnostics to improve reliability and performance. Provides quick setup with easy-to-use local operator interface.*
- *Rosemount 8712H/8707 High-Signal System - Pulsed dc solutions for the most demanding flow measurement applications*
- *Rosemount 8705 Flanged flowtube - Fully welded flowtube for maximum protection (standard ISO lay length)*
- *Rosemount 8711 Wafer flowtube - Economical, compact, and light weight flowtube, provided with alignment rings for easy installation*
- *Rosemount 8721 Hygienic flowtube - Specifically designed for food, beverage, and life sciences applications.*
- *Rosemount 8732 HART/8742 Foundation Fieldbus Transmitter - Integral-mount design eliminates wiring error, backlit display for easy viewing, and explosion-proof housing for hazardous environments. 8742 available with Device Diagnostics to improve mag reliability and performance*



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Rosemount 8700 Series System Overview

Rosemount 8712D/H

The remote mount Rosemount 8712 transmitter brings diagnostics to any HART/ 4-20mA system that can change how magmeters are installed, maintained, and verified. The 8712 also features an easy-to-use operator interface, with quick access to all diagnostic information, and instant access to basic configuration setup through dedicated keys.

Rosemount 8732C

The integral mount Rosemount 8732C transmitter has an explosion proof housing and full RFI/EMI protection that is ideal for harsh environment installations where moisture and contaminant in filtration are possible. With an optional backlit 2 line by 16 character local operator interface, the transmitter can be configured by optical switches to simplify adjustments in hazardous environments without removing the cover.



Rosemount 8714D

The Rosemount 8714D Calibration Standard attaches to a 8712D, 8732, or 8742C transmitter's flowtube connections to ensure traceability to NIST standards and long-term accuracy of the flowmeter system. The 8714D is not compatible with 8712H high-signal transmitter.

Flanged Flowtubes

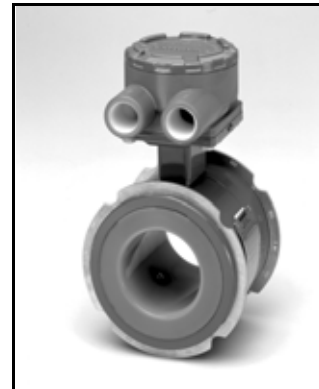
All flanged Rosemount flowtubes are fabricated from stainless and carbon steel and welded to provide a hermetic seal that protects against moisture and other contaminants. Sizes range from 1/2 inch (15 mm) to 36 inch (900 mm). The sealed housing ensures maximum flowtube reliability by protecting all internal components and wiring from the most hostile environments.

Hygienic Flowtubes

The 8721 hygienic flowtube is specifically designed for the demanding applications in food, beverage, and life sciences. The robust, all-welded, full diameter flowtube is constructed of FDA approved materials that are fit for purpose, and is authorized to display the 3-A Symbol (Authorization #1222), is certified by EHEDG (#C03-5229) and is approved for use in FDA Grade A milk meter based timing loops (M-b 350). Sizes range from 1/2" (15mm) to 4" (100mm) and are available in a variety of industry standard process connections.

Wafer Flowtubes

The flangeless design of the 8711 wafer flowtube makes it an economical, compact, and lightweight alternative to flanged magnetic flowmeters. Alignment rings, provided with every Rosemount 8711 flowtube, center the flowtube in the process line and makes the installation easier.



High-Signal Magmeter System ⁽¹⁾

The Rosemount 8707 High-Signal Flowtube, used in conjunction with the 8712H High-Signal Transmitter, forms the Rosemount High-Signal Magnetic Flowmeter System. This system provides stable flow measurement in the most difficult high-noise applications while maintaining the benefits of dc technology. The increased signal strength of the Rosemount[®] high-signal system is made possible through a combination of flowtube coil design that incorporates the most advanced materials and an extremely efficient and innovative coil drive circuit. The increased signal strength of the Rosemount high-signal system, coupled with advanced signal processing and superior filtering techniques, provides the solution to demanding flow measurement applications.

(1) The high-signal magmeter system is not available in Europe.

Rosemount Magmeter Diagnostics Power PlantWeb



Rosemount Mag Diagnostics Power PlantWeb to Reduce Cost & Improve Output by Enabling New Practices

PlantWeb is a digital plant architecture that uses the power of field intelligence to improve plant performance by increasing output and reducing cost. Whether in FOUNDATION Fieldbus or a HART/4-20 mA system, Rosemount Magmeters provide device diagnostics that powers PlantWeb and 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	HART - 8712	FOUNDATION fieldbus - 8742
Installation		
Grounding/Wiring	•	•
Maintenance		
Coil Fault	•	•
Electrode Fault		•
Transmitter	•	•
Calibration Verification		
Transmitter	•	
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 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.

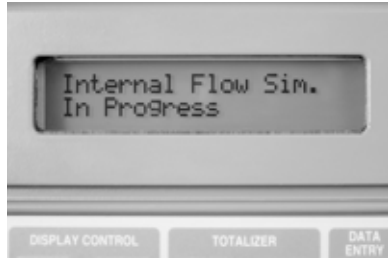
Access Diagnostics through AMS Device Manager for the Ultimate Value with PlantWeb Alerts

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. The user maximizes the value of the Diagnostics to power PlantWeb when they use an online AMS package with PlantWeb alerts that inform the user through a red light when a Diagnostic has tripped.

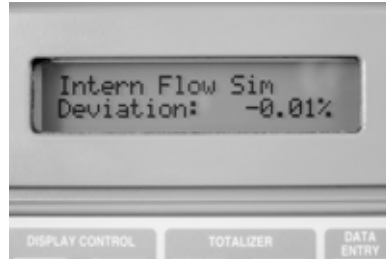
Rosemount 8700 Series

Internal Flow Simulator Improves Transmitter Verification Practice

Diagnostic in LOI



Transmitter Verification through flow simulation.



Deviation from expected calibration value.



Transmitter Calibration is verified.

Grounding/ Wiring Diagnostic Improves Installation Practices

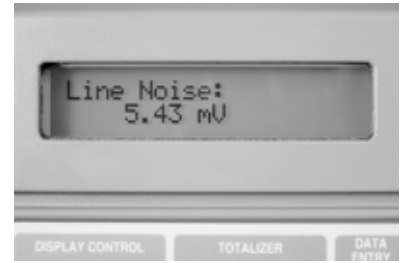
Diagnostic in LOI



Grounding and wiring fault displays on LOI.

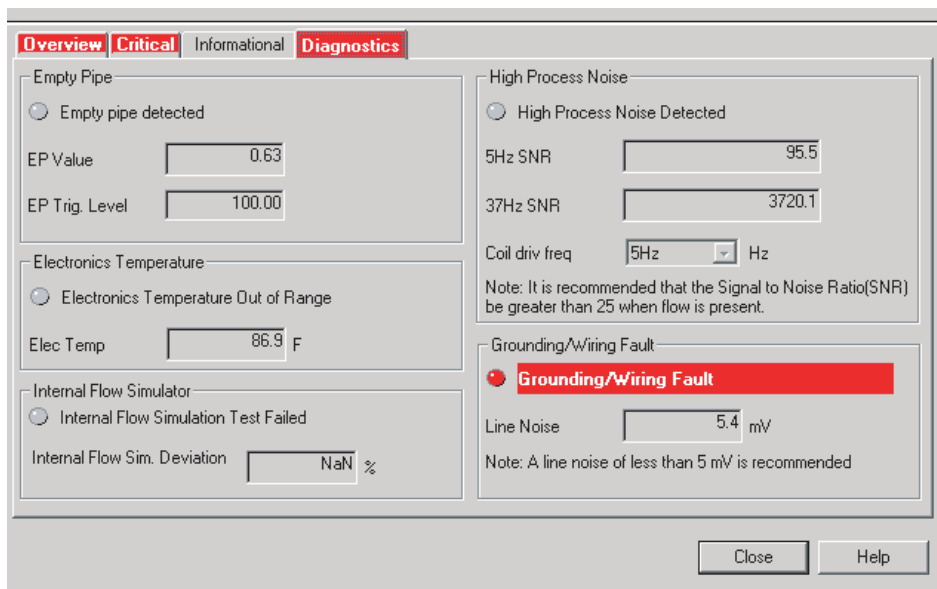


Error messages under Diagnostic menu.



Line noise value can be viewed. If line noise is > 5 mV, Diagnostic is tripped.

Diagnostic in AMS



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

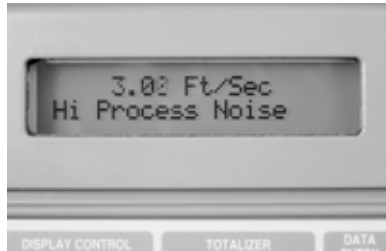
Product Data Sheet

00813-0100-4727, Rev NB
Catalog 2006 - 2007

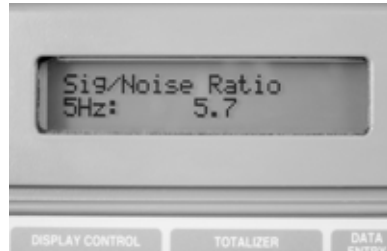
Rosemount 8700 Series

High Process Noise Diagnostic Improves Process Management

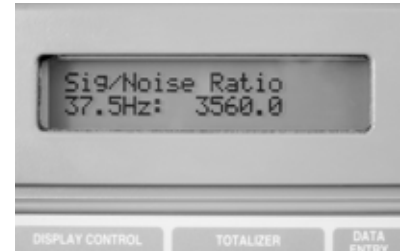
Diagnostic in LOI



LOI indicates high process noise is detected.

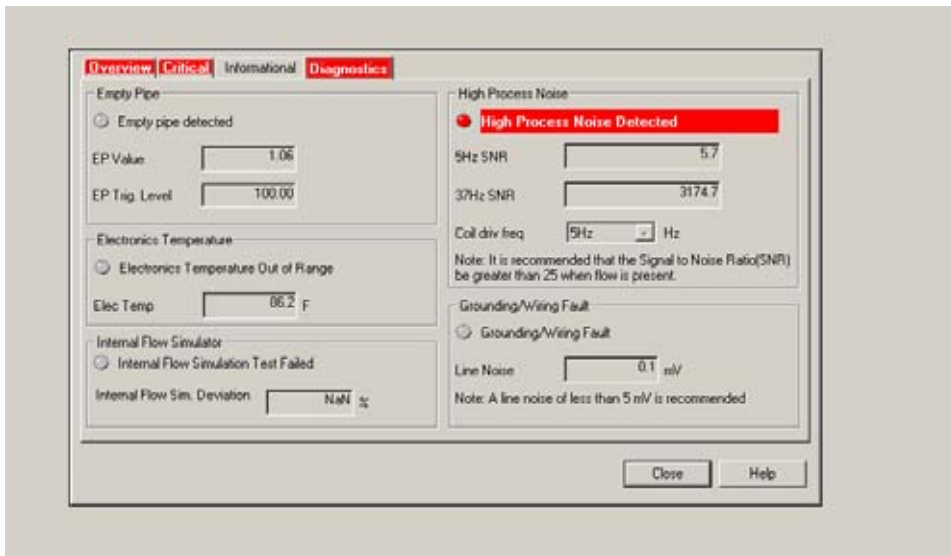


Signal-to-noise ratio (SNR) is viewed in Diagnostic menu. If < 25:1, diagnostic tripped.



Improved SNR and signal stability by moving coil drive frequency from 5 Hz to 37.5 Hz.

Diagnostic in AMS



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

Field Device Specific Status Byte 2 - Data that has Field Device status information relating to: failures / warnings / status of process's.

Empty Pipe Detected

The flowtube is not full of fluid. The process variable is zero. The following actions can be taken if empty pipe detection is unexpected.

1. Verify flowtube is full.
2. Set the 'EP Trig. Level' to a value above the 'EP Value' seen with a full pipe.
3. Increase the 'EP Counts' on the diagnostic tab of the configuration screen to compensate for process noise. The Empty Pipe Counts is the number of consecutive Empty Pipe Value readings above the Empty Pipe Trigger Level required to set the Empty Pipe diagnostic. The count range is 5-50, with factory default set at 5.
4. Increase process fluid conductivity above 50 microsiemens/cm.
5. Properly connect the wiring between the flowtube and the transmitter on the flowtube.
Corresponding terminal block numbers in the flowtube and transmitter must be connected.
6. Perform flowtube electrical resistance tests. Confirm the resistance reading between coil ground (ground symbol) and coil (1 and 2) is infinity. Confirm the resistance reading between electrode ground (17) and an electrode (18 or 19) is greater than 2 kohms and rises. For more detailed information, consult the flowtube product manual.

For difficult applications, record the 'EP Value' with both a full pipe and an empty pipe. Set the 'EP Trig. Level' between the two values.

To turn off empty pipe diagnostic, go to the diagnostic tab on the configuration screen.

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

Rosemount 8712D/H Transmitter Specifications

Functional Specifications

Flowtube Compatibility

Rosemount 8712 is compatible with all Rosemount flowtubes: 8705, 8707, 8711, 8721, and 570TM. The 8712D/U is also compatible with AC and DC powered flowtubes of other manufacturers. The 8712H is only compatible with 8707 High-Signal flowtube.

Flowtube Coil Resistance

Rosemount 8712D/U: 350 Ω maximum

Rosemount 8712H: 12 Ω maximum

Flow Rate Range

8712D: Capable of processing signals from fluids that are traveling between 0.01 and 40 ft/s (0 to 12 m/s) for both forward and reverse flow in all flowtube sizes. Full scale continuously adjustable between -40 and 40 ft/s (-12 to 12 m/s).

8712H: 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 flowtube sizes. Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/s).

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for Rosemount 8712D. Process liquid must have a conductivity of 50 microsiemens/cm (50 micromhos/cm) for the 8712H. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

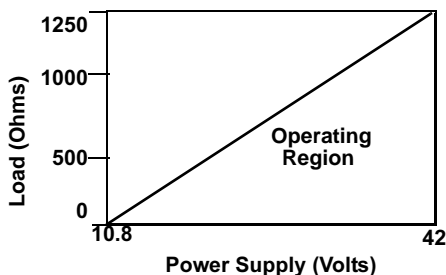
Power Supply

8712D: 90-250 V ac ±10%, 50-60 Hz or 12-42 V dc

8712H: 115 V ac ±10%, 50-60 Hz

DC Load Limitations (Analog Output)

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:



$$R_{\max} = 41.7(V_{ps} - 10.8)$$

V_{ps} = Power Supply Voltage (Volts)

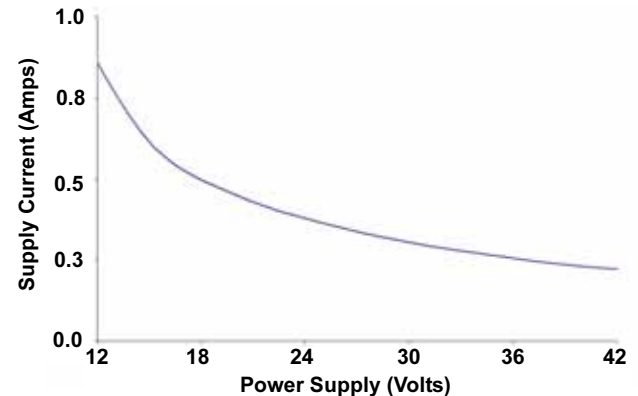
R_{\max} = Maximum Loop Resistance (Ohms)

NOTE

HART Communication requires a minimum loop resistance of 250 ohms.

Supply Current Requirements (8712D)

Units powered by 12-42 V dc power supply may draw up to 2 amp of current.



$$I = 10/V$$

I = Supply current requirement (Amps)

V = Power supply voltage (Volts)

Installation Coordination

Installation (overvoltage) Category II

Power Consumption

8712D: 10 watts maximum

8712H: 300 watts maximum

Ambient Temperature Limits

Operating

8712D: -20 to 140°F (-29 to 60 °C) with local operator interface

-40 to 165°F (-40 to 74°C) without local operator interface

8712H: -20 to 130 °F (-29 to 54 °C) with or without local operator interface

Storage

-22 to 176 °F (-40 to 80 °C)

Humidity Limits

0-100% RH at 120 °F (49 °C), decreases linearly to 10% RH at 130 °F (54 °C)

Enclosure Ratings

Enclosure Type 4X, IP65

Product Data Sheet

00813-0100-4727, Rev NB

Catalog 2006 - 2007

Rosemount 8700 Series

Output Signals

Analog Output Adjustment

4–20 mA, jumper-selectable as internally or externally powered 5 to 24 V dc; 0 to 1000 Ω load.

Engineering units—lower and upper range values are user-selectable.

Output automatically scaled to provide 4 mA at lower range value and 20 mA at upper range value.

8712D: Full scale continuously adjustable between -40 and 40 ft/s (-12 to 12 m/sec), 1 ft/s (0.3 m/s) minimum span.

8712H: Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/sec), 1 ft/s (0.3 m/s) minimum span.

HART Communications, digital flow signal, superimposed on 4–20 mA signal, available for control system interface. 250 Ω required for HART communications.

Scalable Frequency Adjustment

8712H: 0-1000 Hz, externally powered at 5 to 24 V dc, transistor switch closure up to 5.75 W. Pulse value can be set to equal desired volume in selected engineering units. Pulse width adjustable from 0.5 to 100 m/s. Local operator interface automatically calculates and displays maximum allowable output frequency.

8712D: 0-10,000Hz, externally powered at 5 to 24 V dc, transistor switch closure supports power loads up to 2W for frequencies up to 4000Hz, and 5 V dc at 0.1 W at maximum frequency of 10,000 Hz. Pulse can be set to equal desired velocity or volume in user selectable engineering units. Pulse width is adjustable from 1.5 to 500 msec, below 1.5 msec pulse width automatically switches to 50% duty cycle.

Auxiliary 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.

Positive Zero Return

Forces outputs of the transmitter to the zero flow rate signal level. Activated by applying a contact closure.

Software Lockout

Security lockout jumper on the electronics board can be set to deactivate all LOI and HART-based communicator functions to protect configuration variables from unwanted or accidental change.

Output Testing

Analog Output Test

Transmitter may be commanded to supply a specified current between 3.75 and 23.25 mA

Pulse Output Test

8712H: Transmitter may be commanded to supply a specified frequency between 1 and 1000 Hz

8712D: Transmitter may be commanded to supply a specified frequency between 1 pulse/ day and 10,000 Hz

Turn-on Time

8712H: 30 minutes to rated accuracy from power up, 5 seconds from power interruption

8712D: 5 minutes to rated accuracy from power up, 5 seconds from power interruption

Start-up Time

0.2 seconds from zero flow

Low Flow Cutoff

Adjustable between 0.04 and 1 ft/s (0.01 and 0.3 m/s). Below selected value, output is driven to the zero flow rate signal level. (8712D is adjustable between 0.01 and 1 ft/s).

Overrange Capability

Signal output will remain linear until 110% of upper range value. The signal output will remain constant above these values. Out of range message displayed on LOI and the HART Communicator.

Damping

8712H: Adjustable between 0.2 and 256 seconds

8712D: Adjustable between 0.0 and 256 seconds

Flowtube Compensation

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

8712D transmitters and other manufacturer's flowtubes can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match known flow rate.

Rosemount 8700 Series

Performance Specifications

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

Accuracy

Rosemount 8712H with 8707 Flowtube

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 ± 0.005 ft/s (0.0015 m/s). Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Rosemount 8712D with Other Manufacturers' Flowtubes

When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained. Analog output has the same accuracy as frequency output, plus an additional 0.1% of span.

There is no accuracy specification for other manufacturers' flowtubes calibrated in the process line.

Rosemount 8712D with 8705 and 8721 Flowtube

System accuracy is $\pm 0.5\%$ of rate from 1 to 40 ft/s (0.3 to 12 m/s); between 0.04 and 1.0 ft/s (0.01 and 0.3 m/s), the system has an accuracy of ± 0.005 ft/s (0.0015 m/s). Analog output has the same accuracy as frequency output plus an additional 0.05% of span.

Rosemount 8712D with 8711 Flowtube

System accuracy is $\pm 0.5\%$ of rate from 3 to 40 ft/s (1 to 12 m/s); below 3 ft/s (1 m/s), the system has an accuracy of ± 0.015 ft/s (0.005 m/s). Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Vibration Effect

$\pm 0.1\%$ of span per SAMA PMC 31.1, Level 2

Repeatability

$\pm 0.1\%$ of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

$\pm 0.1\%$ of rate over six months

Ambient Temperature Effect

8712H: $\pm 1\%$ per 100 °F (37.8 °C)

8712D: 0.25% over operating temperature range

RFI Effect

Class 1, A, B, C: $\pm 0.5\%$ of span at 3 V/m per SAMA PMC 33.1, wires and conduit

EN61326-1 1997 + A1/A2 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Supply Voltage Effect

Transmitter meets supply voltage effect requirements of SAMA PMC 31.1, Section 5.10.1 through 5.10.5. Transmitter withstands surges in supply voltage as specified in IEEE 472, 1974

Physical Specifications

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 flowtube. Integrally mounted transmitters are factory wired to the flowtube.

NOTE

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

Line Power Fuses

115 V ac systems (8712H)

5 amp, Quick-acting Bussman AGCI or equivalent (Rosemount 8712H only).

90-250 V ac systems (8712D)

2 amp, Quick-acting Bussman AGCI or equivalent

12-42 V dc systems (8712D)

3 amp, Quick-acting Bussman AGCI or equivalent

Transmitter Weight

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

Rosemount 8732C Transmitter Specifications

Functional Specifications

Flowtube Compatibility

Compatible with Rosemount 8705, 8711, and 8721 flowtubes.

Flowtube Coil Resistance

25 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 flowtube sizes. Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/s).

Conductivity Limits

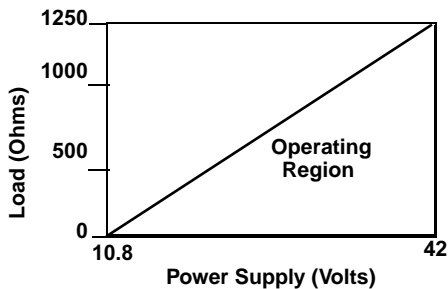
Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8732C. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Power Supply

85 -250 V ac ±10%, 50-60 Hz or 15-50 V dc

DC Load Limitations (Analog Output)

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:



$$R_{\max} = 41.7(V_{ps} - 10.8)$$

$$V_{ps} = \text{Power Supply Voltage (Volts)}$$

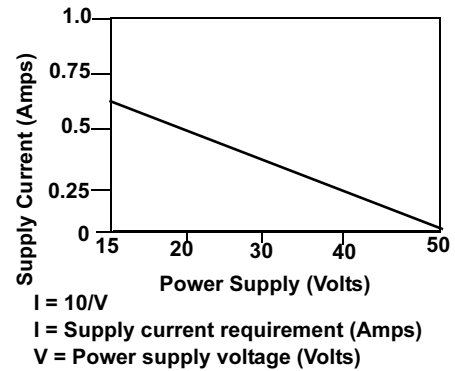
$$R_{\max} = \text{Maximum Loop Resistance (Ohms)}$$

NOTE

HART Communication requires a minimum loop resistance of 250 ohms.

Supply Current Requirements

Units powered by 15-50 V dc power supply may draw up to 1 amp of current.



Installation Coordination

Installation (overvoltage) Category II

Power Consumption

10 watts maximum

Ambient Temperature Limits

Operating

-40 to 165 °F (-40 to 74 °C) without local operator interface
 13 to 149 °F (-25 to 65 °C) with local operator interface

Storage

-40 to 185 °F (-40 to 85 °C)

Humidity Limits

0-100% RH to 150 °F (65 °C)

Enclosure Rating

NEMA 4X CSA Type 4X, IEC 60529, IP67 (transmitter),
 Pollution Degree 2

Rosemount 8700 Series

Output Signals

Analog Output Adjustment

4–20 mA, jumper-selectable as internally or externally powered 5 to 24 V dc; 0 to 1000 Ω load.

Engineering units—lower and upper range values are user-selectable.

Output automatically scaled to provide 4 mA at lower range value and 20 mA at upper range value. Full scale continuously adjustable between -30 and 30 ft/s (-10 to 10 m/sec), 1 ft/s (0.3 m/s) minimum span.

HART Communications, digital flow signal, superimposed on 4–20 mA signal, available for control system interface. 250 Ω required for HART communications.

Scalable Frequency Adjustment

0-1000 Hz, externally powered at 5 to 24 V dc, translator switch closure up to 5.75 w. Pulse value can be set to equal desired volume in selected engineering units. Pulse width adjustable from 0.5 to 100 m/s. Local operator interface automatically calculates and displays maximum allowable output frequency.

Auxiliary 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.

Software Lockout

Security lockout switch on the electronics board can be set to deactivate all LOI and HART-based communicator functions to protect configuration variables from unwanted or accidental change.

Display Lockout

All optical switches on the display can be locked locally from the display layout configuration screen by holding the upper right optical switch for 20 seconds. The display can be reactivated holding the same switch for 20 seconds.

Output Testing

Analog Output Test

Transmitter may be commanded to supply a specified current between 3.75 and 23.25 mA.

Pulse Output Test

Transmitter may be commanded to supply a specified frequency between 1 and 1000 Hz.

Turn-on Time

30 minutes to rated accuracy from power up;
5 seconds from power interruption

Start-up Time

0.2 seconds from zero flow

Low Flow Cutoff

Adjustable between 0.001 and 1 ft/s (0.0003 and 0.3 m/s). Below selected value, output is driven to the zero flow rate signal level.

Overrange Capability

Signal output will remain linear until 110% of upper range value or 33 ft/s. The signal output will remain constant above these values. Out of range message displayed on LOI and the HART Communicator.

Damping

Adjustable between 0.2 and 256 seconds

Flowtube Compensation

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

Performance Specifications

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

Accuracy

Rosemount 8732C with 8705 or 8721 Flowtubes:

System accuracy is $\pm 0.5\%$ of rate from 1 to 30 ft/s (0.3 to 10 m/s); below 1.0 ft/s (0.3 m/s), the system has an accuracy of ± 0.005 ft/s (0.0015 m/s). Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Rosemount 8732C with 8711 Flowtube:

System accuracy is $\pm 0.5\%$ of rate from 3 to 30 ft/s (0.9 to 10 m/s); below 3 ft/s (0.9 m/s), the system has an accuracy of ± 0.015 ft/s (0.005 m/s). Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Vibration Effect

IEC 60770-1

Repeatability

$\pm 0.1\%$ of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

$\pm 0.1\%$ of rate over six months

Ambient Temperature Effect

$\pm 0.25\%$ change over operating temperature range

EMC Compliance

EN61326-1 1997 + A1/A2 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Physical Specifications

Materials of Construction

Housing

Low copper aluminum, NEMA 4X and IEC 60529 IP66
Pollution Degree 2

Paint

Polyurethane

Cover Gasket

Rubber

Electrical Connections

Two $\frac{1}{2}$ -14 NPT connections provided on the transmitter housing. 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 flowtube.

Mounting

Transmitter is mounted integrally with the flowtube and does not require interconnecting cables.

Transmitter Weight

Approximately 7 pounds (3.2 kg). Add 1 pound (0.5 kg) for Option Code M4.

Rosemount 8742C Transmitter Specifications

Functional Specifications

Flowtube Compatibility

Compatible with Rosemount 8705, 8711, and 8721 flowtubes.

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8742C. Excludes the effects of interconnecting cable length in remote mount transmitter installations.

Flowtube Coil Resistance

25 maximum

Flow Rate Range

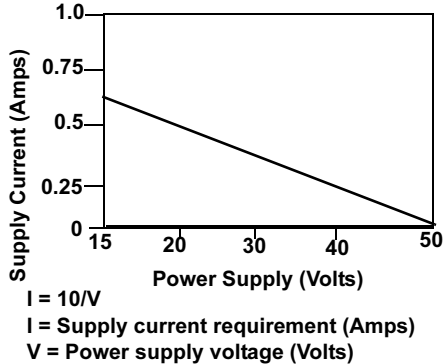
Capable of processing signals from fluids that are traveling between 0 and 40 ft/s (0 to 12 m/s) for both forward and reverse flow in all flowtube sizes.

Power Supply

90–250 V ac, 50–60 Hz, 15–50 V dc

Supply Current Requirements

Units powered by 15–50 V dc power supply may draw up to 1 amp of current.



Installation Coordination

Installation (overvoltage) Category II

Power Consumption

10 watts maximum

Ambient Temperature Limits

Operating

- 40 to 165 °F (–40 to 74 °C) without local operator interface
- 13 to 147 °F (–25 to 65 °C) with local operator interface

Storage

- 40 to 185 °F (–40 to 85 °C)

Humidity Limits

0–100% RH to 150 °F (65 °C)

NEMA 4X CSA Type 4X, IEC 60529, IP67 (transmitter), Pollution Degree 2

Output Signal

Manchester-encoded digital signal that conforms to IEC 1158-2 and ISA 50.02

FOUNDATION Fieldbus Specifications

Schedule Entries

Seven (7)

Links

Twenty (20)

Virtual Communications Relationships (VCRs)

One (1) predefined (F6, F7)
Nineteen (19) configurable (see Table 1)

TABLE 1. Block Information

Block	Base Index	Execution Time (Milliseconds)
Resource (RB)	300	—
Transducer (TB)	400	—
Analog Input (AI)	1,000	15
Proportional/Integral/Derivative (PID)	10,000	25
Integrator	12,000	20

Reverse Flow

Detects and reports reverse flow

Software Lockout

A write-lock switch and software lockout are provided in the resource function block.

Turn-on Time

30 minutes to rated accuracy from power up;
10 seconds communication from power interruption

Start-up Time

0.2 seconds from zero flow

Low Flow Cutoff

Adjustable between 0 and 1 ft/s. Below selected value, output is driven to the zero flow rate.

Overrange Capability

Signal output continues to 110% of upper range value setting, then remains constant. Messages are supplied to the fieldbus network.

Damping

Adjustable between 0 and 255 seconds

Performance Specifications

(System specifications are given using the unit at referenced conditions.)

Accuracy

Rosemount 8742C Transmitter with 8705 and 8721 Flowtubes

System accuracy is $\pm 0.5\%$ of rate from 1 to 40 ft/s (0.3 to 12 m/s); includes combined effects of linearity, hysteresis, repeatability, and calibration uncertainty; below 1.0 ft/s (0.3 m/s), the system has an accuracy of ± 0.005 ft/s (0.0015 m/s).

Rosemount 8742C Transmitter with 8711 Flowtube

System accuracy is $\pm 0.5\%$ of rate from 3 to 40 ft/s (0.9 to 12 m/s); includes combined effects of linearity, hysteresis, repeatability, and calibration uncertainty; below 3 ft/s (0.9 m/s), the system has an accuracy of ± 0.015 ft/s (0.005 m/s).

Vibration Effect

IEC 60770-1

Repeatability

$\pm 0.1\%$ of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

$\pm 0.1\%$ of rate over six months

Ambient Temperature Effect

$\pm 0.25\%$ of rate over operating temperature range

EMC Compliance

EN61326-1 1997 + A1/A2 3(Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus.

Transient Protection

The 8742C transmitter prevents damage to the flowmeter from transients compliant to:

IEC 6100 – 4-4 (for burst currents)

IEC 6100 – 4-5 (for surge currents)

Mounting Position Effect

None when installed to ensure flowtube remains full

Physical Specifications

Materials of Construction (Transmitter)

Housing

Low-copper aluminum

Paint

Polyurethane

Cover Gasket

Rubber

Electrical Connections

Two $1/2$ –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 flowtube.

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 flowtube.

Weight

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

Rosemount 8700 Series

Rosemount 8705 Flanged and 8707 High-Signal Flanged Flowtubes Specifications

Functional Specifications

Conductive liquids and slurries

Line Sizes

$\frac{1}{2}$ –36 inch (15–900 mm) for Rosemount 8705

3–36 inch (80–600 mm) for Rosemount 8707

Interchangeability

Rosemount 8705 Flowtubes are interchangeable with 8712D, 8732, and 8742C Transmitters. Rosemount 8707 High-Signal Flowtubes are interchangeable with 8712H High-Signal Transmitters. System accuracy is maintained regardless of line size or optional features. Each flowtube nameplate has a sixteen-digit calibration number that can be entered into a transmitter through the Local Operator Interface (LOI) or the HART Communicator on the 8712H and the 8732C. In a FOUNDATION™ fieldbus environment, the 8742C can be configured using the DeltaV™ fieldbus configuration tool or another FOUNDATION fieldbus configuration device. No further calibration is necessary.

Upper Range Limit

30 ft/s (10 m/s)

Process Temperature Limits

Teflon (PTFE) Lining

–20 to 350 °F (–29 to 177 °C)

Tefzel (ETFE) Lining

–20 to 300 °F (–29 to 149 °C)

PFA Lining

–20 to 350 °F (–29 to 177 °C)

Polyurethane Lining

0 to 140 °F (–18 to 60 °C)

Neoprene Lining

0 to 185 °F (–18 to 85 °C)

Linatex Lining

0 to 158 °F (–18 to 70 °C)

Ambient Temperature Limits

–30 to 150 °F (–34 to 65 °C)

Pressure Limits

See Table 2 and Table 4

Vacuum Limits

Teflon (PTFE) Lining

Full vacuum to 350 °F (177 °C) through 4-inch (100 mm) line sizes. Consult factory for vacuum applications with line sizes of 6 inches (150 mm) or larger.

All Other Standard Flowtube Lining Materials

Full vacuum to maximum material temperature limits for all available line sizes.

Submergence Protection

IP 68. Continuous to 30 feet (10 meters)
Recommended with sealed cable glands

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8705. Process liquid must have a conductivity of 50 microsiemens/cm (50 micromhos/cm) for 8707 when used with 8712H, 5 microsiemens/cm when used with other transmitters. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

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Rosemount 8700 Series

TABLE 2. Temperature vs. Pressure Limits⁽¹⁾

Flowtube Temperature vs. Pressure Limits for ASME B16.5 Class Flanges (¹ / ₂ - to 36-inch 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
	Class 600 ⁽³⁾	1000 psi	800 psi	700 psi	650 psi
	Class 600 ⁽⁴⁾	1480 psi	NA	NA	NA
	Class 900	2220 psi			
304 Stainless Steel	Class 150	275 psi	235 psi	205 psi	190 psi
	Class 300	720 psi	600 psi	530 psi	500 psi
	Class 600 ⁽⁵⁾	1000 psi	800 psi	700 psi	650 psi
	Class 600 ⁽⁶⁾	1440 psi	NA	NA	NA
	Class 900	2160 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- and 36-inch AWWA C207 Table 3 Class D rated to 150 psi at atmospheric temperature.
- (3) Option Code C6
- (4) Option Code C7
- (5) Option Code S6
- (6) Option Code S7

TABLE 3. Temperature vs. Pressure Limits⁽¹⁾

Flowtube Temperature vs. Pressure Limits for AS2129 Table D and E Flanges (4- to 24-inch line sizes)					
Carbon Steel	D	101.6 psi	101.6 psi	101.6 psi	94.3 psi
	E	203.1 psi	203.1 psi	203.1 psi	188.6 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.

Performance Specifications

TABLE 4. Temperature vs. Pressure Limits⁽¹⁾

Flowtube Temperature vs. Pressure Limits for DIN Flanges (15 to 600 mm line sizes)					
Flange Material	Flange Rating	@ -196 to 50 °C (-320 to 122 °F)	@ 100 °C (212 °F)	@ 150 °C (302 °F)	@ 175 °C (347 °F)
		Carbon Steel	PN 10	10 bar	10 bar
PN 16	16 bar		16 bar	15.6 bar	15.3 bar
PN 25	25 bar		25 bar	24.4 bar	24.0 bar
PN 40	40 bar		40 bar	39.1 bar	38.5 bar
304 Stainless Steel	PN 10	9.1 bar	7.5 bar	6.8 bar	6.5 bar
	PN 16	14.7 bar	12.1 bar	11.0 bar	10.6 bar
	PN 25	23 bar	18.9 bar	17.2 bar	16.6 bar
	PN 40	36.8 bar	30.3 bar	27.5 bar	26.5 bar

- (1) Liner temperature limits must also be considered. Polyurethane, Linatex, and Neoprene have temperature limits of 140°F, 158°F, and 185°F, respectively.
- (System specifications are given using the frequency output and with the unit at referenced conditions.)

Accuracy

Rosemount 8705 with 8712D, 8732C, or 8742C

±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 ±0.005 ft/s (±0.0015 m/s) from low-flow cutoff to 1.0 ft/s (0.3 m/s).

Rosemount 8707 with 8712D/H, 8732C, or 8742C

±0.5% of rate from 3 to 30 ft/s (1 to 10 m/s). Include combined effects of linearity, hysteresis, repeatability and calibration uncertainty. Accuracy is ±0.015 ft/s (±0.0045 m/s) from low-flow cutoff to 3.0 ft/s (1 m/s).

Vibration Effect

IEC 60770-1

Mounting Position Effect

None when installed to ensure flowtube remains full

Physical Specifications

Non-Wetted Materials

Flowtube

AISI Type 304 SST

Flanges

Carbon steel, AISI Type 304/304L SST, or Type 316/316L SST

Housing

Welded steel

Paint

Polyurethane

Process Wetted Materials

Lining

PFA, Teflon (PTFE), Tefzel (ETFE), polyurethane, neoprene, Linatex

Electrodes

316L SST, Hastelloy C-276, tantalum, 90% platinum-10% iridium, titanium

Process Connections

ASME B16.5 (ANSI) Class 150, Class 300, Class 600, or Class 900

0.5- to 30-inch (Class 150)

0.5- to 24-inch (Class 300)

0.5- to 10-inch (Class 600 derated to 1000 psi max)

1- to 8-inch (Full rated Class 600 and 900)

AWWA C207 Table 3 Class D

30- and 36-inch

EN 1092 (DIN) PN 10, 16, 25, and 40

PN10: Not available for flange sizes from 15 to 150 mm

PN16: Not available for flange sizes from 15 to 80 mm

PN 25: Not available for flange sizes from 15 to 150 mm

PN40: Available for all flange sizes

AS 2129 Table D and E

0.5- to 36 inch

AISI Type 304 SST Sanitary Tri-Clover

3-A-compliant quick disconnect ferrule-mounted to ASME B16.5 (ANSI) Class 150 flange; 0.5- to 3-inch.

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 flowtube lining on 8705 flowtubes. 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 flowtube. Single ground rings can be installed on either end of the flowtube. They have an I.D. slightly larger than the flowtube I.D. and an external tab to attach ground wiring. Grounding rings are available in 316L SST, Hastelloy-C, titanium, and tantalum.

Lining Protectors

Lining protectors are installed between the flange and the tube face on both ends of the flowtube. 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, Hastelloy-C, and titanium.

Dimensions

See Figure 3, Figure 4, and Figure 8 and Table 12, Table 16, and Table 17.

Weight

See Table 5 and Table 6

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Rosemount 8700 Series

TABLE 5. Flowtube Weight (ASME)

Nominal Line Size ⁽¹⁾ Inches (mm)	Flowtube Flange Rating		Flowtube Weight lb (kg)
	ASME B16.5 (ANSI)	DIN	
½ (15)	150	PN 40	20 (9)
½ (15)	300		22 (10)
1 (25)	150	PN 40	20 (9)
1 (25)	300		22 (10)
1½ (40)	150	PN 40	22 (10)
1½ (40)	300		24 (11)
2 (50)	150	PN 40	26 (12)
2 (50)	300		28 (13)
3 (80)	150	PN 40	40 (18)
3 (80)	300		47 (21)
4 (100)	150	PN 16	48 (22)
4 (100)	300		65 (30)
6 (150)	150	PN 16	81 (37)
6 (150)	300		93 (42)
8 (200)	150	PN 10	110 (50)
8 (200)	300		162 (74)
10 (250)	150	PN 10	220 (98)
10 (250)	300		300 (136)
12 (300)	150	PN 10	330 (150)
12 (300)	300		435 (197)
14 (350)	150	PN 10	370 (168)
16 (400)	150	PN 10	500 (227)
18 (450)	150	PN 10	600 (272)
20 (500)	150	PN 10	680 (308)
24 (600)	150	PN 10	1,000 (454)
30 (750)	150	-	1,747 (792)
36 (900)	125	-	1,975 (898)

(1) 30- and 36-inch AWWA C207 Table 2 Class D rated to 150 psi at atmospheric temperature.

TABLE 6. Flowtube weights (AS2129)

Nominal Line Size Inches (mm)	AS2129	Flowtube Weight lb (kg)
4 (100)	D	33 (15)
4 (100)	E	37 (17)
6 (150)	D	66 (30)
6 (150)	E	71 (32)
8 (200)	D	86 (39)
8 (200)	E	88 (40)
10 (250)	D	187 (85)
10 (250)	E	201 (91)
12 (300)	D	273 (124)
12 (300)	E	284 (129)
14 (350)	D	293 (133)
14 (350)	E	317 (144)
16 (400)	D	386 (175)
16 (400)	E	430 (195)
18 (450)	D	516 (234)
18 (450)	E	569 (258)
20 (500)	D	569 (258)
20 (500)	E	626 (284)
24 (600)	D	855 (388)
24 (600)	E	974 (442)

Rosemount 8711 Wafer Flowtube Specifications

SPECIFICATIONS

Functional Specifications

Service

Conductive liquids and slurries

Line Sizes

0.15- through 8-inch (4 through 200 mm)

Interchangeability

Rosemount 8711 Flowtubes are interchangeable with 8732 and 8742C Transmitters. System accuracy is maintained regardless of line size or optional features. Each flowtube nameplate has a sixteen-digit calibration number that can be entered into a transmitter through the Local Operator Interface (LOI) or the HART Communicator on the Rosemount 8712H and the 8732C. In a FOUNDATION fieldbus environment, the 8742C can be configured using the DeltaV fieldbus configuration tool or another FOUNDATION fieldbus configuration device. No further calibration is necessary.

Upper Range Limit

30 ft/s (10 m/s)

Process Temperature Limits

Tefzel (ETFE) Lining

-20 to 300 °F (-29 to 149 °C) for 0.5- through 8-inch (15–200 mm) line sizes

-20 to 200 °F (-29 to 93 °C) for 0.15- and 0.3-inch (4 and 8 mm) line sizes

Teflon (PTFE) Lining

-20 to 350 °F (-29 to 177 °C)

Ambient Temperature Limits

-30 to 150 °F (-34 to 65 °C)

Maximum Safe Working Pressure at 100 °F (38 °C)

Tefzel (ETFE) Lining

Full vacuum to 740 psi (5.1 MPa) for 0.5- through 8-inch (15 through 200 mm) flowtubes

285 psi (1.96 MPa) for 0.15- and 0.30-inch (4 and 8 mm) flowtubes

Teflon (PTFE) Lining

Full vacuum through 4-inch (100 mm) line sizes. Consult factory for vacuum applications with line sizes of 6 inches (150 mm) or larger.

Conductivity Limits

Process liquid must have a conductivity of 5 microsiemens/cm (5 micromhos/cm) or greater for 8711. Excludes the effect of interconnecting cable length in remote mount transmitter installations.

Performance Specifications

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

Accuracy

Rosemount 8711 with 8712D, 8732C, or 8742C Transmitters

±0.5% of rate from 3 to 30 ft/s (1 to 10 m/s)

±0.015 ft/s (0.0045 m/s) from low-flow cutoff to 3 ft/s (1 m/s)

Vibration Effect

IEC 60770-1

Mounting Position Effect

No effect when installed to ensure flowtube remains full

Physical Specifications

Non-Wetted Materials

Flowtube

303 SST (ASTM A-743)

Coil Housing

Investment cast steel (ASTM A-27)

Paint

Polyurethane

Process-Wetted Materials

Lining

Tefzel (ETFE), Teflon (PTFE)

Electrodes

316L SST, Hastelloy C-276, tantalum, 90% platinum—10% iridium, titanium

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Rosemount 8700 Series

Process Connections

Mounts between these Flange Configurations

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

EN 1092 (DIN): PN 10 and 25

BS: 10 Table D, E, and F

Studs, Nuts, and Washers⁽¹⁾

ASME B16.5 (ANSI)

0.15- through 1-inch (4 through 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-inch (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.

EN 1092 (DIN)

4 through 25 mm (0.15- through 1-inch):

316 SST ASTM A193, Grade B8M Class 1 threaded mounting studs; ASTM A194, Grade 8M, DIN 934 H=D, metric heavy hex nuts; 316 SST, A4, DIN 125 flat washers.

40 through 200 mm (1.5- through 8-inch):

CS, ASTM A193, Grade B7 threaded mounting studs; ASTM A194, Grade 2H, DIN 934 H=D, metric heavy hex nuts; CS, DIN 125 flat washers; all items yellow 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 flowtube lining. 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 flowtube. They have an I.D. slightly larger than the flowtube I.D. and an external tab to attach ground wiring. Grounding rings are available in 316L SST, Hastelloy C-276, titanium, and tantalum.

Dimensions and Weight

See Figure 7, Figure 8, and Table 18

(1) 0.15 and 0.30 inch (4 and 80 mm) flowtubes mount between 1/2-inch flange.

Rosemount 8721 Sanitary Flowtube Specifications

NOTE

All transmitter specifications can be found in the Product Data Sheet 00813-0100-4727.

Functional Specifications

Service

Conductive liquids and slurries

Line Sizes

$\frac{1}{2}$ -4 inch (15–100 mm)

Flowtube Compatibility and Interchangeability

The Rosemount 8721 Flowtubes are interchangeable with Rosemount 8732, 8742, and 8712D transmitters. System accuracy is maintained regardless of line size or optional features.

Each flowtube nameplate has a sixteen-digit calibration number that can be entered into the transmitter through the Local Operator Interface (LOI) or the HART Communicator. No further calibration is necessary.

Flowtube Compensation

Rosemount flowtubes are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of flowtubes 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.

Flowtube Coil Resistance

5 Ω to 10 Ω (line size dependant)

Flow Rate Range

Capable of processing signals from fluids that are traveling between 0.04 and 33 ft/s (0.01 to 10 m/s) for both forward and reverse flow in all flowtube sizes. Full scale continuously adjustable between -33 and 33 ft/s (-10 to 10 m/s).

Flowtube Ambient Temperature Limits

14 to 140 °F (-15 to 60 °C)

Process Temperature Limits

PFA Lining

-20 to 350 °F (-29 to 177 °C)

Pressure Limits

Line Size	Max Working Pressure	CE Mark Max. Working Pressure
$\frac{1}{2}$ (15)	300 psi (20.7 bar)	300 psi (20.7 bar)
1 (25)	300 psi (20.7 bar)	300 psi (20.7 bar)
1 $\frac{1}{2}$ (40)	300 psi (20.7 bar)	300 psi (20.7 bar)
2 (50)	300 psi (20.7 bar)	300 psi (20.7 bar)
2 $\frac{1}{2}$ (65)	300 psi (20.7 bar)	240 psi (16.5 bar)
3 (80)	300 psi (20.7 bar)	198 psi (13.7 bar)
4 (100)	210 psi (14.5 bar)	148 psi (10.2 bar)

Vacuum Limits

Full vacuum at maximum lining material temperature; consult factory.

Submergence Protection (Flowtube)

IP68. Continuous to 30 ft (10 m).

Performance Specifications

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

Accuracy

Rosemount 8732, 8742, or 8712D with 8721 Flowtube

System accuracy is $\pm 0.5\%$ of rate from 1 to 30 ft/s (0.3 to 10 m/s); includes combined effects of linearity, hysteresis, repeatability, and calibration uncertainty; between 0.04 and 1.0 ft/s (0.01 and 0.5 m/s), the system has an accuracy of ± 0.005 ft/s. Analog output has the same accuracy as frequency output plus an additional 0.1% of span.

Repeatability

$\pm 0.1\%$ of reading

Response Time

0.2 seconds maximum response to step change in input

Stability

$\pm 0.1\%$ of rate over six months

Ambient Temperature Effect

$\pm 1\%$ per 100 °F (37.8 °C)

Mounting Position Effect

None when installed to ensure flowtube remains full.

Product Data Sheet

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Rosemount 8700 Series

Physical Specifications

Mounting

Integrally mounted transmitters are factory-wired and do not require interconnecting cables. The transmitter can rotate in 90° increments. Remote mounted transmitters require only a single conduit connection to the flowtube.

Cable Requirements for Remote Transmitters

TABLE 7. Transmitter Input Power

Description	P/N
Signal Cable (20 AWG) Belden 8762, Alpha 2411 equivalent	08712-0061-0001
Coil Drive Cable (14 AWG) Belden 8720, Alpha 2442 equivalent	08712-0060-0001
Combination Signal and Coil Drive Cable	08712-0752-0001

Remote transmitter installations require equal lengths of signal and coil drive cables. Lengths from 5 to 1,000 feet (1.5 to 300 meters) may be specified, and will be shipped with the flowtube. When ordering the combination cable, the lengths specified must be from 5 to 500 feet (1.5 to 150 meters). For optimum performance, separate signal and coil cables are recommended.

Non-Wetted Materials (Flowtube)

Flowtube

304 Stainless Steel (wrapper), 304 Stainless Steel (pipe)

Terminal Junction Box

Cast aluminum, polyurethane coated
Optional: 304 Stainless Steel

Paint

Polyurethane

Weight

TABLE 8. 8721 Flowtube weight (pounds)

Line Size	Flowtube Only	008721-0350 Tri-Clamp fitting (each)
0.5	4.84	0.58
1.0	4.52	0.68
1.5	5.52	0.88
2.0	6.78	1.30
2.5	8.79	1.66
3.0	13.26	2.22
4.0	21.04	3.28

8732C Transmitter

5.25 pounds

8732C Transmitter with LOI

6.90 pounds

Aluminum remote junction box

1.84 pounds

Process Wetted Materials (Flowtube)

Liner

PFA with Ra < 32µinch (0.81µm)

Electrodes

316L SST with Ra < 15µinch (0.38µm)

Hastelloy C-276 with Ra < 15µinch (0.38µm)

90% Platinum-10% Iridium with Ra < 15µinch (0.38µm)

Process Connections

The Rosemount 8721 Sanitary Flowtube is designed using a standard IDF fitting as the basis for providing a flexible, hygienic interface for a variety of process connections. The Rosemount 8721 Flowtube has the threaded or "male" end of the IDF fitting on the ends of the base flowtube. The flowtube can be directly connected with user supplied IDF fittings and gaskets. If other process connections are needed, the IDF fittings and gaskets can be provided and welded directly into the sanitary process tubing, or can be supplied with adapters to standard Tri-Clamp® process connections.

Tri-Clamp® Sanitary Coupling

IDF Sanitary Coupling (screw type)

IDF specification per BS4825 part 4

Weld Nipple

DIN 11851

DIN 11864

SMS 1145

Cherry-Burrell I-Line

Process Connection Material

316L Stainless Steel with Ra < 32µinch (0.81µm)

Optional Electropolished Surface Finish
with Ra < 15µinch (0.38µm)

Process Connection Gasket Material

Silicone

EPDM

Viton

Electrical Connections (Flowtube)

Two 3/4-14 NPT connections with number 8 screw terminals are provided in the terminal enclosure for electrical wiring.

Flowtube Dimensions

Refer to Figure 1

Rosemount 8700 Series

Rosemount 8714D Reference Calibration Standard Specifications

Functional Specifications

Ambient Temperature Limits

Operating

-30 to 140 °F (-34 to 60 °C)

Storage

-40 to 140 °F (-40 to 60 °C)

Humidity Limits

0 to 95% relative humidity

Performance Specifications

Accuracy

±0.05% of rate at 30 ft/s at 25°C

±0.10% of rate at 10 ft/s and 3 ft/s

Warm-up Time

30 minutes

Ambient Temperature Effect

< 0.015% of rate per 10 °F (< 0.027% per 10 °C)

Humidity Effect

No effect from 0 to 60% relative humidity

< 0.10% of rate from 60 to 90% relative humidity

Long-Term Stability

< 0.10% of rate shift in one year

Physical Specifications

Electrical Connections

Electrical connections are compatible with 8712D, 8732 or 8742 terminal blocks. Electrical connections are not compatible with 8712H terminal block.

Mounting

Any position is acceptable

Materials of Construction

Housing

Extruded aluminum

Covers

Stamped aluminum, silk-screened

Paint

Polyurethane

Weight

Approximately 3 lb (2 kg)

Product Certifications

Approved Manufacturing Locations

Rosemount Inc. — Eden Prairie, Minnesota, USA
Fisher-Rosemount Tecnologias de Flujo, S.A. de C.V. —
Chihuahua, Chihuahua, Mexico
Veenendaal, The Netherlands

EUROPEAN DIRECTIVE INFORMATION

The EC declaration of conformity for all applicable European directives for this product can be found on our website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive

Rosemount Inc. complies with the ATEX Directive.

Type n protection type in accordance with EN50 021



- Closing of entries in the device must be carried out using the appropriate EExe or EExn metal cable gland and metal blanking plug or any appropriate ATEX approved cable gland and blanking plug with IP66 rating certified by an EU approved certification body.

European Pressure Equipment Directive (PED) (97/23/EC)

Rosemount 8705 and 8707 Magnetic Flowmeter flowtubes in line size and flange combinations:

Line Size: 1 1/2 inch - 3 inch with all flanges available.
Line Size: 4 inch - 24 inch with all DIN flanges and ANSI 150 and ANSI 300 flanges.
Line Size: 30 inch - 36 inch with AWWA 125 flanges
QS Certificate of Assessment - EC No. PED-H-20
Module H Conformity Assessment

Rosemount 8711 Magnetic Flowmeter Flowtubes Line Sizes: 1.5, 2, 3, 4, 6, and 8 inch

QS Certificate of Assessment - EC No. PED-H-20
Module H Conformity Assessment

Rosemount 8721 Sanitary Magmeter Flowtubes in line sizes of 1 1/2 inch and larger:

Module A Conformity Assessment

All other Rosemount 8705/8707/8711/8721 Flowtubes — in line sizes of 1 inch and less: Sound Engineering Practice

Flowtubes that are SEP are outside the scope of PED and cannot be marked for compliance with PED.

Mandatory CE-marking for flowtubes in accordance with Article 15 of the PED can be found on the flowtube body (CE 0575).

Flowtube category I is assessed for conformity per module A procedures.

Flowtube categories II – IV, use module H for conformity assessment procedures.

Electro Magnetic Compatibility (EMC) (89/336/EEC)(obsolete)

All Models EN 50081-1: 1992, EN 50082-2: 1995 (obsolete),
EN 61326: 1997/ A1:1998 / A2:2000

Installed signal wiring should not be run together and should not be in the same cable tray as AC power wiring.

Device must be properly grounded or earthed according to local electric codes.

To improve protection against signal interference, shielded cable is recommended.

Low Voltage Directive (93/68/EEC)

All Models 8732, Model 8742C - AC
EN 61010-1: 1995

Other important guidelines

Only use new, original parts.

To prevent the process medium escaping, do not unscrew or remove process flange bolts, adapter bolts or bleed screws during operation.

Maintenance shall only be done by qualified personnel.

CE CE Marking

Compliance with all applicable European Union Directives.
(Note: CE Marking is not available on Rosemount 8712H).

Rosemount 8700 Series

HAZARDOUS LOCATION CERTIFICATIONS

Equivalent Hazardous Location Certifications for flowtube and transmitter must match in integrally-mounted magnetic flowmeter systems. Remote-mounted systems do not require matched hazardous location certification option codes.

Transmitter Approval Information

TABLE 9. Transmitter Option Codes

Approval Codes	Rosemount 8712D	Rosemount 8712H	Rosemount 8732	Rosemount 8742 Transmitter		Rosemount 8721
				Fieldbus Output	I.S. fieldbus Output	
NA						.
N0		
N5		
E1			.	.		
E5			.	.		
ED			.	.		
K0				.	.	
K1					.	
K5				.	.	
KD ⁽¹⁾				.	.	
N1 ⁽²⁾	.					

(1) Refer to Table 11 on page 29 for relation between ambient temperature, process temperature, and temperature class.

(2) Only available for the 8712D.

North American Certifications Factory Mutual (FM)

N0 Division 2 Approval (All transmitters)

Reference Rosemount Control Drawing 08742-1051 (8742C) or 08732-1052 (8732C/8742C).

Class I, Division 2, Groups A, B, C, D

Temp Codes – T4 (8712 at 40°C, 8742 at 60°C), T5 (8732 at 60°C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T4 (8712 at 40°C), T6 (8732/8742 at 60°C)

Enclosure Type 4X

K0 Division 2 Approval with Intrinsically Safe Output (8742 Only)

Reference Rosemount Control Drawing 08742-1051

Class I, Division 2, Groups A, B, C, D with IS output for Class I, Division 1, Groups A, B, C, D.

Temp Code – T4 at 60°C

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 at 60°C

Enclosure Type 4X

K5 Explosionproof Approval with Intrinsically Safe Output (8742 only)

Reference Rosemount Control Drawing 08742-1051

Explosion-Proof for Class I, Division 1, Groups C, D with IS output for Class I, Division 1, Groups A, B, C, D.

Temp Code – T4 at 60°C

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 at 60°C

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8742 at 60°C)

Enclosure Type 4X

N5 Division 2 Approval (All Transmitters) For flowtubes with IS electrodes only

Reference Rosemount Control Drawing 08742-1051 (8742C) or 08732-1052 (8732C).

Class I, Division 2, Groups A, B, C, D

Temp Codes – T4 (8712 at 40°C, 8742 at 60°C), T5 (8732 at 60°C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Codes – T4 (8712 at 40°C), T6 (8732/8742 at 60°C)

Enclosure Type 4X

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Rosemount 8700 Series

E5 Explosion-Proof Approval (8732 and 8742 only)

Reference Rosemount Control Drawing 08732-1052

Explosion-Proof for Class I, Division 1, Groups C, D
Temp Code – T6 at 60°C

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 at 60°C

Class I, Division 2, Groups A, B, C, D
Temp Codes – T4 (8742 at 60°C), T5 (8732 at 60°C)
Enclosure Type 4X

Canadian Standards Association (CSA)

N0 Division 2 Approval

Reference Rosemount Control Drawing 08732-1051
(8732C or 8742C only)

Class I, Division 2, Groups A, B, C, D
Temp Codes – T5 (8732 at 60°C), T4 (8742 at 60°C)

Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Enclosure Type 4X

K0 Division 2 Approval with Intrinsically Safe Output (8742 Only)

Reference Rosemount Control Drawing 08742-1052

Class I, Division 2, Groups A, B, C, D with IS output for
Class I, Division 1, Groups A, B, C, D. Temp Code – T4 at
60°C


Dust-ignition proof Class II/III, Division 1, Groups E, F, G
Temp Code – T6 at 60°C

Enclosure Type 4X


European Certifications

E1 ATEX Flameproof

Hydrogen gas group

8732 - Certificate No.: 03ATEX2052X  II 2G

EEx d IIB + H₂ T6 (-20°C ≤ Ta ≤ +65°C)

8742 - Certificate No.: 03ATEX2159X  II 2G

EEx de IIB + H₂ T6 (-20°C ≤ Ta ≤ +65°C)

V_{max} = 250 V AC or 50 V DC

 0575

ED ATEX Flameproof

8732 - Certificate No.: KEMA03ATEX2052X  II 2G

EEx d IIB T6 (Ta = -20°C to +65°C)

V_{max} = 250 V AC or 50 V DC

 0575

SPECIAL CONDITIONS FOR SAFE USE (X (03ATEX2052X):

If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or 8711 Flowtubes, it shall be assured that the mechanical contact areas of the Flowtube and Flow Transmitter comply with the requirements for flat joints according to standard EN 50018, clause 5.2.

The relation between ambient temperature, process temperature, and temperature class is to be taken from the table under (15 - description) above. (**See Table 11**)


The electrical data is to be taken from the summary under (15 - electrical data) above. (**See Table 12**)

If the Rosemount 8732 Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN 50018, clause 5.2.

INSTALLATION INSTRUCTIONS:

The cable and conduit entry devices and blanking elements shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. With the use of conduit, a certified stopping box shall be provided immediately to the entrance of the enclosure.


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ED 8742 - Certificate No: KEMA03ATEX2159X  II 2G
 EEx de IIB T6 (Ta = -20°C to +65°C)
 $V_{max} = 250 \text{ V AC or } 50 \text{ V DC}$
 cE 0575

K1 ATEX Flameproof

Hydrogen Gas Group with

Intrinsically safe output (8742 only)

Certificate No.: KEMA03ATEX2159x  II 2G

ATEX EEx de [ia] IIB + H₂ T6 (-20°C ≤ Ta ≤ +65°C)


$V_{max} = 250 \text{ V AC or } 50 \text{ V DC}$

cE 0575

See Table 12 for Electrical Parameters

KD ATEX Flameproof with

Intrinsically Safe Output (8742 only)

Certificate No: KEMA03ATEX2159X  II 2G


EEx de [ia] IIB T6 (Ta = -20°C to +65°C)

$V_{max} = 250 \text{ V AC or } 50 \text{ V DC}$

cE 0575

See Table 12 for Electrical Parameters

Remote Junction Box (8732C or 8742C)

Certificate No.: KEMA03ATEX2052x  II 2G

ATEX EEx e ⁽¹⁾ T6 (Ta = -20°C to +65°C)

When installed per drawing 08732-1050

After de-energizing, wait 10 minutes before opening cover

cE 0575

⁽¹⁾ IIB + H₂ for E1, K1
 IIB for ED, KD

SPECIAL CONDITIONS FOR SAFE USE (X) (03ATEX2159X):

The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15 - description) above. (See **Table 11**).

If the Rosemount 8742C Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN 50018, clause 5.2.

INSTALLATION INSTRUCTIONS:

The cable and conduit entry devices and the closing elements shall be of a certified increased safety type, suitable for the conditions of use and correctly installed.

At ambient temperatures above 50°C, the flow meter shall be used with heat resistant cables with a temperature rating of at least 90°C.

A Junction Box in type of explosion protection increased safety "e" may be attached to the base of the Rosemount 8742C Flow Transmitter, permitting remote mounting of the Rosemount 8705 and 8711 Flowtubes.

Ambient temperature range of the Junction Box: -20°C to +65°C.

The Junction Box is classified as II 2 G EEx e IIB T6 and certified under KEMA 03ATEX2052X.

N1 ATEX (Pending)

8712D - ATEX Certificate No:

EEx nA nL IIC T4

Flowtube Approval Information

TABLE 10. Flowtube Option Codes⁽¹⁾

Approval Codes	Rosemount 8705 Flowtube		Rosemount 8707 Flowtube		Rosemount 8711 Flowtube		Rosemount 8721 Flowtubes
	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids	For Flammable Fluids	For Non-flammable Fluids
NA							•
N0	•						
N1	•	•					
N5	•	•	•	•	•	•	
E1	•	•					
E5					•	•	
CD ⁽²⁾					•	•	
KD ⁽²⁾	•	•					

(1) CE Marking is standard on Rosemount 8705 and 8711. No hazardous location certifications are available on the Rosemount 570TM.

(2) Refer to Table 11 on page 29 for relation between ambient temperature, process temperature, and temperature class.

North American Certifications

Factory Mutual (FM)

- N0 Division 2 Approval for Non-Flammable Fluids (All Flowtubes)**
 Class I, Division 2, Groups A, B, C, D
 Temp Code – T5 (8705/8711 at 60°C)
 Temp Code – T3C (8707 at 60°C)
 Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
 Temp Code – T6 (8705/8711 at 60°C)
 Temp Code – T3C (8707 at 60°C)
 Enclosure Type 4X
- N0 for 8721 Hygienic Flowtube**
 Factory Mutual (FM) Ordinary Location;
 CE Marking; 3-A Symbol Authorization #1222;
 EHEDG Type EL
- N5 Division 2 Approval for Flammable Fluids (All Flowtubes)**
 Class I, Division 2, Groups A, B, C, D
 Temp Code – T5 (8705/8711 at 60°C)
 Temp Code – T3C (8707 at 60°C)
 Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
 Temp Code – T6 (8705/8711 at 60°C)
 Temp Code – T3C (8707 at 60°C)
 Enclosure Type 4X
- E5 Explosion-Proof (8711 Only)**
 Explosion-Proof for Class I, Division 1, Groups C, D
 Temp Code – T6 at 60°C
 Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
 Temp Code – T6 at 60°C
 Class I, Division 2, Groups A, B, C, D
 Temp Code – T5 at 60°C
 Enclosure Type 4X


Canadian Standards Association (CSA)

- N0** Suitable for Class I, Division 2, Groups A, B, C, D
 Temp Code – T5 (8705/8711 at 60°C)
 Temp Code – T3C (8707 at 60°C)
 Dust-Ignition proof Class II/III, Division 1, Groups E, F, G
 Enclosure Type 4X
- N0 for 8721 Hygienic Flowtube**
 Canadian Standards Association (CSA) Ordinary Location;
 CE Marking; 3-A Symbol Authorization #1222;
 EHEDG Type EL

Rosemount 8700 Series

European Certifications

N1 ATEX Non-Sparking/Non-incendive (8705/8711 Only)

Certificate No: KEMA02ATEX1302X  II 3G

EEx nA [L] IIC T3... T6


Ambient Temperature Limits -20 to 65°C

SPECIAL CONDITIONS FOR SAFE USE (X):

The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15-description) above. - (See Table 13) The electrical data is to be taken from the summary under (15-electrical data above). (See Table 12)

E1, ATEX Increased Safety (Zone 1)

CD with IS Electrodes (8711 only)

Certificate No: KEMA03ATEX2052X  II 1/2G

EEx e ia IIC T3... T6 (Ta = -20 to +60°) (See Table 11)

CE 0575

V_{max} = 40 V DC (pulsed)

SPECIAL CONDITIONS FOR SAFE USE (X):

If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or Rosemount 8711 Flowtubes, it shall be assured that the mechanical contact areas of the Flowtube and Flow Transmitter comply with the requirements for flat joints according to standard EN 50018, clause 5.2. The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15-description) above. - (See Table 11) The electrical data is to be taken from the summary under (15-electrical data above). (See Table 12)


INSTALLATION INSTRUCTIONS:

At ambient temperature above 50°C, the flowmeter shall be used with heat resistant cables with a temperature rating of at least 90°C.

A fuse with a rating of maximum 0,7 A according to IEC 60127-1 shall be included in the coil excitation circuit if the flowtubes are used with other flow transmitters (e.g. Rosemount 8712).

E1, ATEX Increased Safety (Zone 1)

KD with IS Electrodes (8705 only)

Certificate No. KEMA 03ATEX2052X  II 1/2G

EEx e ia IIC T3... T6 (Ta = -20 to 60°C) (See Table 11)

CE 0575

V_{max} = 40 V DC (pulsed)

SPECIAL CONDITIONS FOR SAFE USE (X):

If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or Rosemount 8711 Flowtubes, it shall be assured that the mechanical contact areas of the Flowtube and Flow Transmitter comply with the requirements for flat joints according to standard EN 50018, clause 5.2. The relation between ambient temperature, process temperature and temperature class is to be taken from the table under (15-description) above. - (See Table 11) The electrical data is to be taken from the summary under (15-electrical data above). (See Table 12)

INSTALLATION INSTRUCTIONS:

At ambient temperature above 50°C, the flowmeter shall be used with heat resistant cables with a temperature rating of at least 90°C.

A fuse with a rating of maximum 0,7 A according to IEC 60127-1 shall be included in the coil excitation circuit if the flowtubes are used with other flow transmitters (e.g. Rosemount 8712).

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TABLE 11. Relation between ambient temperature, process temperature, and temperature class⁽¹⁾

Meter Size (Inches)	Maximum Ambient Temperature	Maximum Process Temperature	Temperature Class
1/2	115°F (65°C)	239°F (115°C)	T3
1	149°F (65°C)	248°F (120°C)	T3
1	95°F (35°C)	95°F (35°C)	T4
1 1/2	149°F (65°C)	257°F (125°C)	T3
1 1/2	122°F (50°C)	148°F (60°C)	T4
2	149°F (65°C)	257°F (125°C)	T3
2	149°F (65°C)	167°F (75°C)	T4
2	104°F (40°C)	104°F (40°C)	T5
3 - 36	149°F (65°C)	266°F (130°C)	T3
3 - 36	149°F (65°C)	194°F (90°C)	T4
3 - 36	131°F (55°C)	131°F (55°C)	T5
3 - 36	104°F (40°C)	104°F (40°C)	T6
6	115°F (65°C)	275°F (135°C)	T3
6	115°F (65°C)	230°F (110°C)	T4
6	115°F (65°C)	167°F (75°C)	T5
6	140°F (60°C)	140°F (60°C)	T6
8-60	115°F (65°C)	284°F (140°C)	T3
8-60	115°F (65°C)	239°F (115°C)	T4
8-60	115°F (65°C)	176°F (80°C)	T5
8-60	115°F (65°C)	156°F (69°C)	T6

(1) This table is applicable for CD and KD option codes only.

TABLE 12. Electrical Data

Rosemount 8732 Flow Transmitter	
Power supply:	250 Vac, 1 A or 50 Vdc, 2,5 A, 20 W maximum
Pulsed output circuit:	30 V dc (pulsed), 0,25 A, 7,5 W maximum
4-20 mA output circuit:	30 V dc, 30 mA, 900 mW maximum
Rosemount 8705 and 8711 Flowtubes	
Coil excitation circuit:	40 V dc (pulsed), 0,5 A, 20 W maximum
Electrode circuit:	in type of explosion protection intrinsic safety EEx ia IIC, U _i = 5 V, I _i = 0.2 mA, P _i = 1 mW, U _m = 250 V
Rosemount 8742C Flow Transmitter (EEx de version):	
Power supply:	250 Vac, 1 A, 40 VA or 50 Vdc, 2,5 A, 15 W maximum
Foundation Fieldbus output:	30 Vdc, 30 mA, 1 W maximum
Rosemount 8742C Flow Transmitter (EEx de [ia] version):	
Power supply:	250 Vac, 1 A, 40 VA or 50 Vdc, 2,5 A, 15 W maximum
Foundation Fieldbus output: (terminals + and -)	in type of explosion protection intrinsic safety EEx, only for connection to a certified intrinsically safe circuit, with the following maximum values:
	U _i = 30 V
	I _i = 380 mA
	P _i = 5,32 W
	C _i = 4,4 nF
	L _i = 0 mH

Rosemount 8700 Series

TABLE 13. Relation between the maximum ambient temperature, the maximum process temperature, and the temperature class⁽¹⁾

Maximum Ambient Temperature	Maximum process temperature °F (°C) per temperature class			
	T3	T4	T5	T6
0.5 inch flowtube size				
149°F (65°C)	297°F (147°C)	138°F (59°C)	54°F (12°C)	18°F (-8°C)
140°F (60°C)	309°F (154°C)	151°F (66°C)	66°F (19°C)	28°F (-2°C)
131°F (55°C)	322°F (161°C)	163°F (73°C)	79°F (26°C)	41°F (5°C)
122°F (50°C)	334°F (168°C)	176°F (80°C)	90°F (32°C)	54°F (12°C)
113°F (45°C)	347°F (175°C)	189°F (87°C)	102°F (39°C)	66°F (19°C)
104°F (40°C)	351°F (177°C)	199°F (93°C)	115°F (46°C)	79°F (26°C)
95°F (35°C)	351°F (177°C)	212°F (100°C)	127°F (53°C)	90°F (32°C)
86°F (30°C)	351°F (177°C)	225°F (107°C)	138°F (59°C)	102°F (39°C)
77°F (25°C)	351°F (177°C)	237°F (114°C)	151°F (66°C)	115°F (46°C)
68°F (20°C)	351°F (177°C)	248°F (120°C)	163°F (73°C)	127°F (53°C)
1.0 inch flowtube size				
149°F (65°C)	318°F (159°C)	158°F (70°C)	72°F (22°C)	34°F (1°C)
140°F (60°C)	331°F (166°C)	171°F (77°C)	84°F (29°C)	46°F (8°C)
131°F (55°C)	343°F (173°C)	183°F (84°C)	97°F (36°C)	59°F (15°C)
122°F (50°C)	351°F (177°C)	196°F (91°C)	109°F (43°C)	72°F (22°C)
113°F (45°C)	351°F (177°C)	207°F (97°C)	122°F (50°C)	84°F (29°C)
104°F (40°C)	351°F (177°C)	219°F (104°C)	135°F (57°C)	97°F (36°C)
95°F (35°C)	351°F (177°C)	232°F (111°C)	145°F (63°C)	109°F (43°C)
86°F (30°C)	351°F (177°C)	244°F (118°C)	158°F (70°C)	122°F (50°C)
77°F (25°C)	351°F (177°C)	257°F (125°C)	171°F (77°C)	135°F (57°C)
68°F (20°C)	351°F (177°C)	270°F (132°C)	183°F (84°C)	145°F (63°C)
1.5 inch flowtube size				
149°F (65°C)	297°F (147°C)	160°F (71°C)	88°F (31°C)	55°F (13°C)
140°F (60°C)	307°F (153°C)	171°F (77°C)	97°F (36°C)	66°F (19°C)
131°F (55°C)	318°F (159°C)	181°F (83°C)	108°F (42°C)	77°F (25°C)
122°F (50°C)	329°F (165°C)	192°F (89°C)	118°F (48°C)	88°F (31°C)
113°F (45°C)	340°F (171°C)	203°F (95°C)	129°F (54°C)	97°F (36°C)
104°F (40°C)	351°F (177°C)	214°F (101°C)	140°F (60°C)	108°F (42°C)
95°F (35°C)	351°F (177°C)	223°F (106°C)	151°F (66°C)	118°F (48°C)
86°F (30°C)	351°F (177°C)	234°F (112°C)	160°F (71°C)	129°F (54°C)
77°F (25°C)	351°F (177°C)	244°F (118°C)	171°F (77°C)	140°F (60°C)
68°F (20°C)	351°F (177°C)	255°F (124°C)	181°F (83°C)	151°F (66°C)
Continued on Next Page				

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TABLE 13. Relation between the maximum ambient temperature, the maximum process temperature, and the temperature class⁽¹⁾

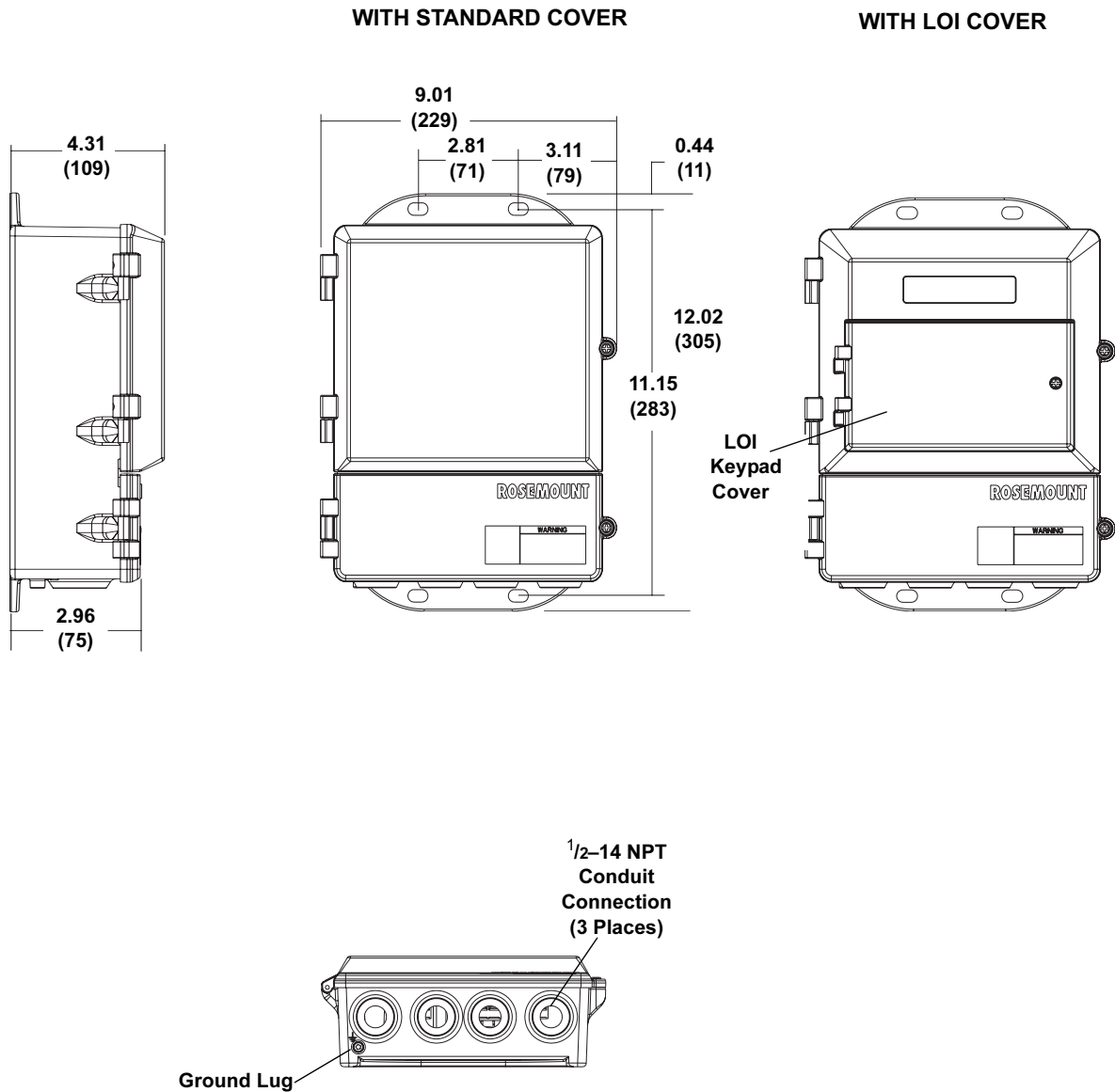
Maximum Ambient Temperature	Maximum process temperature °F (°C) per temperature class			
	T3	T4	T5	T6
2.0 inch flowtube size				
149°F (65°C)	289°F (143°C)	163°F (73°C)	95°F (35°C)	66°F (19°C)
140°F (60°C)	300°F (149°C)	172°F 78(°C)	104°F (40°C)	75°F (24°C)
131°F (55°C)	309°F (154°C)	183°F (84°C)	115°F (46°C)	84°F (29°C)
122°F (50°C)	318°F (159°C)	192°F (89°C)	124°F (51°C)	95°F (35°C)
113°F (45°C)	329°F (165°C)	201°F (94°C)	135°F (57°C)	104°F (40°C)
104°F (40°C)	338°F (170°C)	212°F (100°C)	144°F (62°C)	115°F (46°C)
95°F (35°C)	349°F (176°C)	221°F (105°C)	153°F (67°C)	124°F (51°C)
86°F (30°C)	351°F (177°C)	232°F (111°C)	163°F (73°C)	135°F (57°C)
77°F (25°C)	351°F (177°C)	241°F (116°C)	172°F (78°C)	144°F (62°C)
68°F (20°C)	351°F (177°C)	252°F (122°C)	183°F (84°C)	153°F (67°C)
3 to 60 inch flowtube size				
149°F (65°C)	351°F (177°C)	210°F (99°C)	117°F (47°C)	75°F (24°C)
140°F (60°C)	351°F (177°C)	223°F (106°C)	129°F (54°C)	90°F (32°C)
131°F (55°C)	351°F (177°C)	237°F (114°C)	144°F (62°C)	102°F (39°C)
122°F (50°C)	351°F (177°C)	250°F (121°C)	156°F (69°C)	117°F (47°C)
113°F (45°C)	351°F (177°C)	264°F (129°C)	171°F (77°C)	129°F (54°C)
104°F (40°C)	351°F (177°C)	266°F (130°C)	183°F (84°C)	144°F (62°C)
95°F (35°C)	351°F (177°C)	266°F (130°C)	198°F (92°C)	156°F (69°C)
86°F (30°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	171°F (77°C)
77°F (25°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	176°F (80°C)
68°F (20°C)	351°F (177°C)	266°F (130°C)	203°F (95°C)	176°F (80°C)

(1) This table is applicable for N1 option codes only.

Dimensional Drawings

FIGURE 1. Rosemount 8712D/H Transmitter

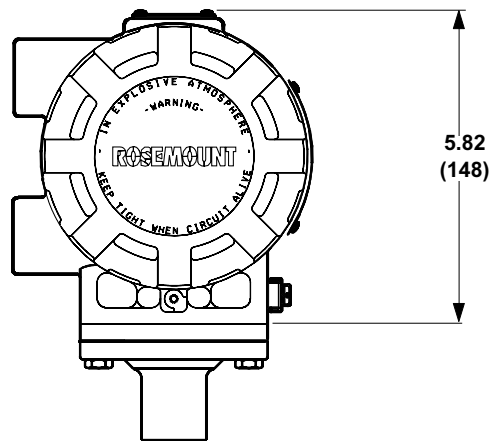
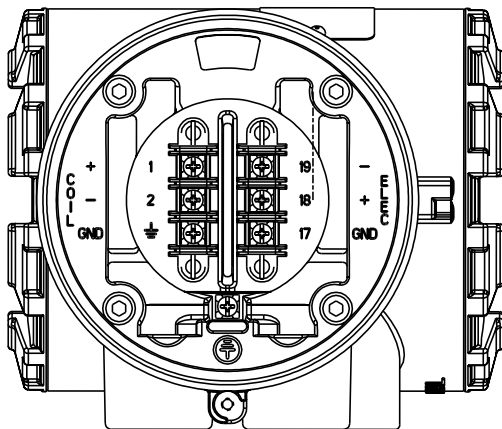
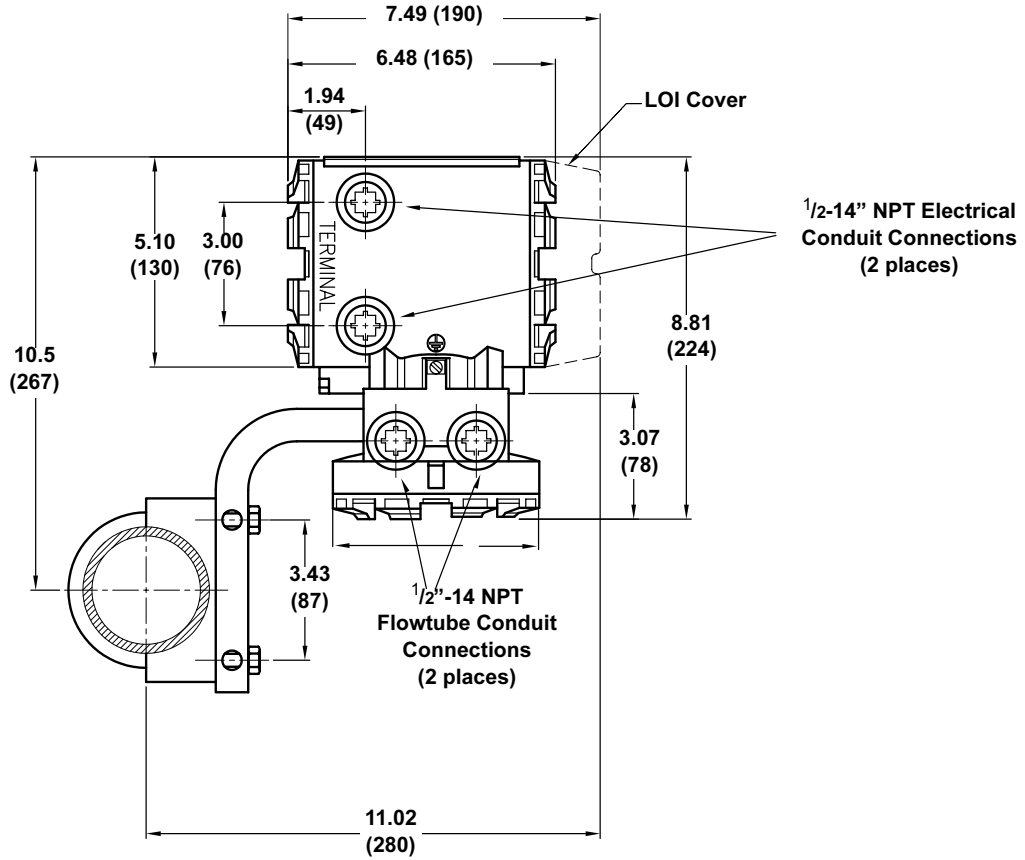
Need to Add "E" and "C" to table.



NOTE
 Dimensions are in inches (millimeters)

8712-12A01A, 8712B01A, 8712C01A, 8712D01A

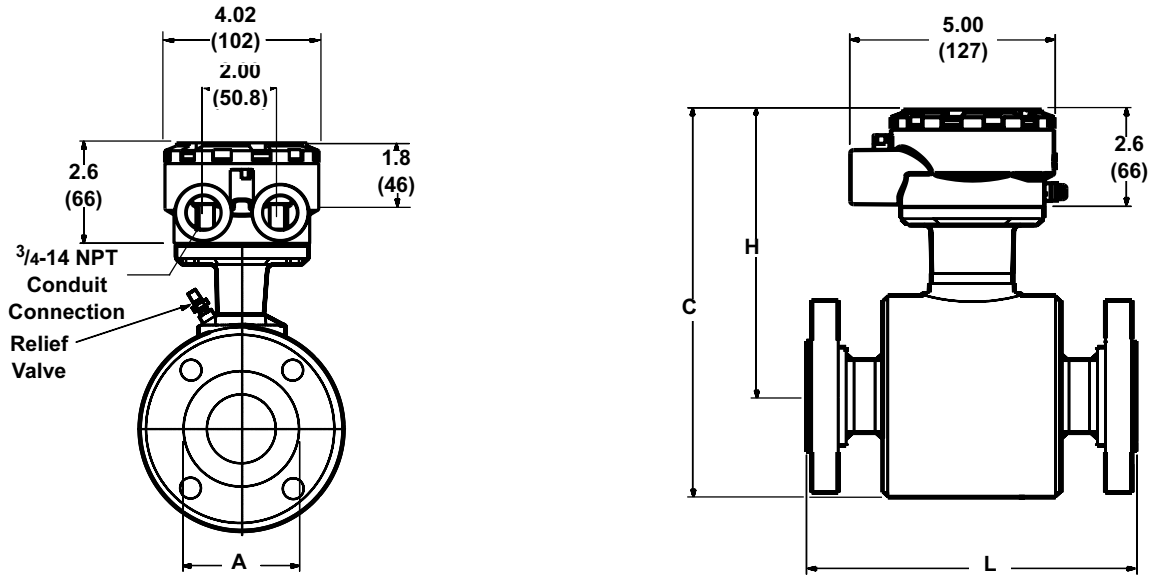
FIGURE 2. Rosemount 8732C and 8742C Transmitter



Note
 Dimensions in inches (millimeters)

8742-8742_06A, 8742_06B, 1002G01A

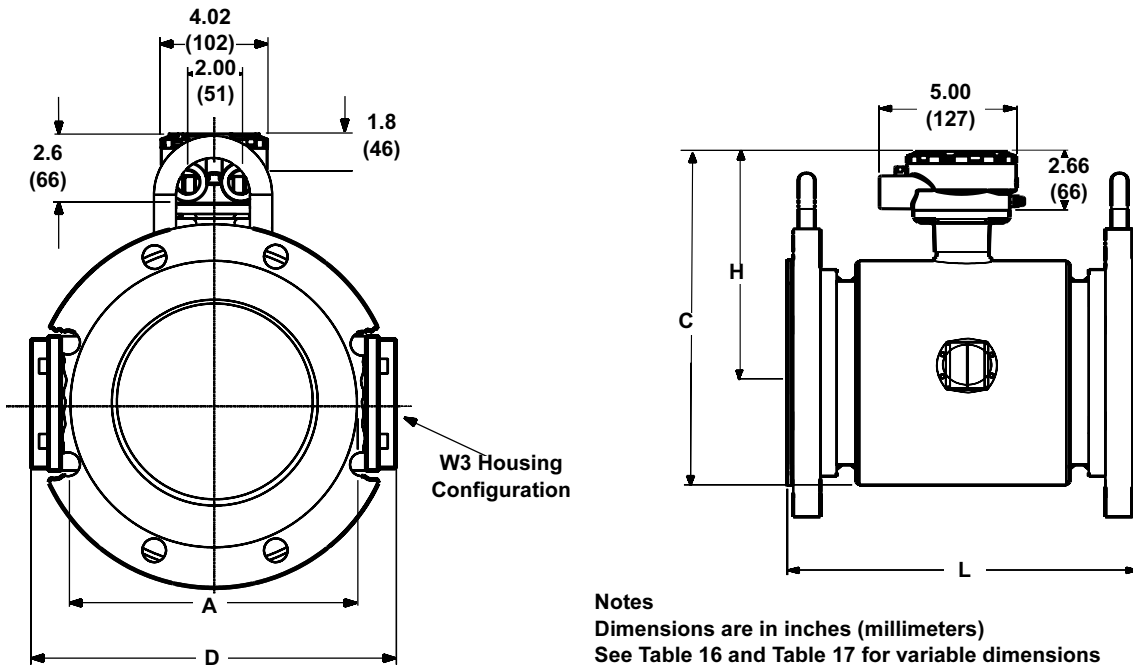
FIGURE 3. Rosemount 8705 and 8707 Flowtubes, Typical of 0.5- through 4-inch (15 through 100 mm) Line Sizes



8705-1002A05A, 1002B05A

Notes
 Dimensions are in inches (millimeters)
 See Table 16 and Table 17 for variable dimensions
 W1 Housing Configuration (Sealed, welded housing with pressure relief valve)

FIGURE 4. Rosemount 8705 and 8707 Flowtubes, Typical of 6- through 36-inch (150 through 900 mm) Line Sizes



8705-1002A06A, 1002B06A

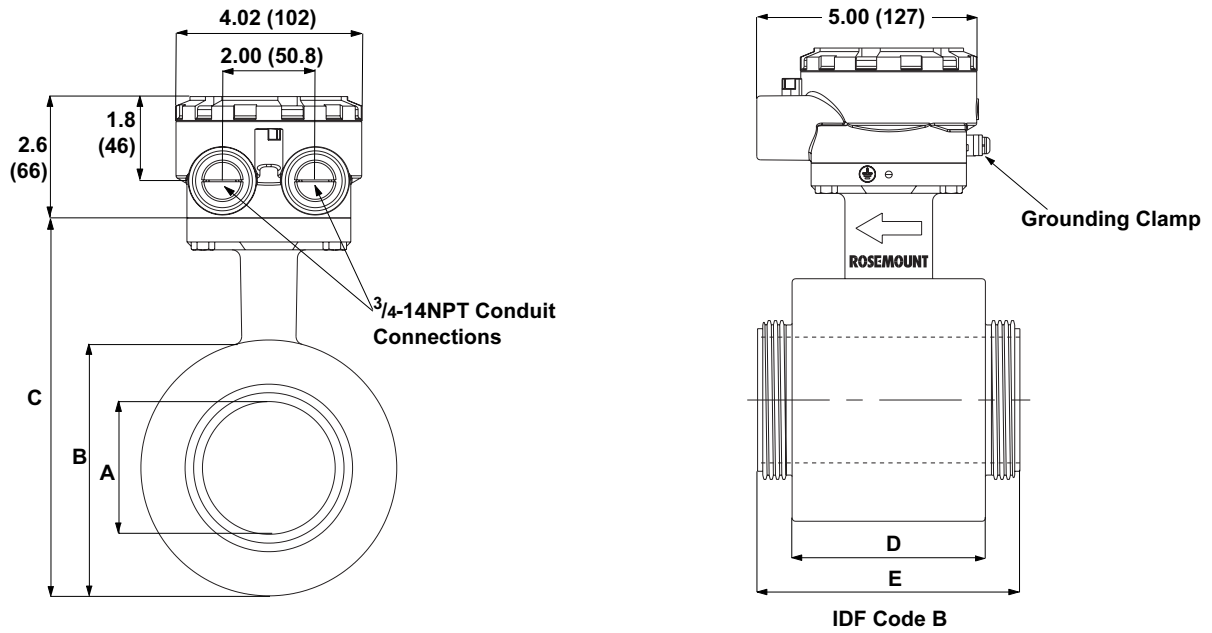
Notes
 Dimensions are in inches (millimeters)
 See Table 16 and Table 17 for variable dimensions
 W3 Housing Configuration (Sealed welded housing with separate electrode compartments)

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FIGURE 5. Dimensional Drawings of Rosemount 8721 Flowtubes Typical of 1 through 4inch (25 through 100mm) line sizes.



8721_A_01.EPS; 8721_A_02.EPS

TABLE 14. Rosemount 8721 Dimensions in Inches (Millimeters). Refer to Dimensional Drawing Figure 5.

Line Size	Flowtube Dimensions A	Body Diameter B	Flowtube Height C	Body Length D	IDF Length E
1/2 (15)	0.62 (15.8)	2.87 (73.0)	5.51 (140.0)	2.13 (54.0)	3.66 (93.0)
1 (25)	0.87 (22.2)	2.87 (73.0)	5.51 (140.0)	2.13 (54.0)	3.66 (93.0)
1 1/2 (40)	1.37 (34.9)	3.50 (88.9)	6.14 (155.9)	2.40 (61.0)	3.96 (100.5)
2 (50)	1.87 (47.6)	4.00 (101.5)	6.63 (168.5)	2.83 (72.0)	4.41 (112.0)
2 1/2 (65)	2.38 (60.3)	4.53 (115.0)	7.17 (182.0)	3.58 (91.0)	5.23 (133.0)
3 (80)	2.87 (73.0)	5.57 (141.5)	8.21 (208.5)	4.41 (112.0)	5.98 (152.0)
4 (100)	3.84 (97.6)	6.98 (177.0)	9.61 (244.0)	5.20 (132.0)	6.77 (172.0)

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FIGURE 6. Dimensional Drawings of Rosemount 8721 Flowtubes Typical of 1 through 4inch (25 through 100mm) line sizes

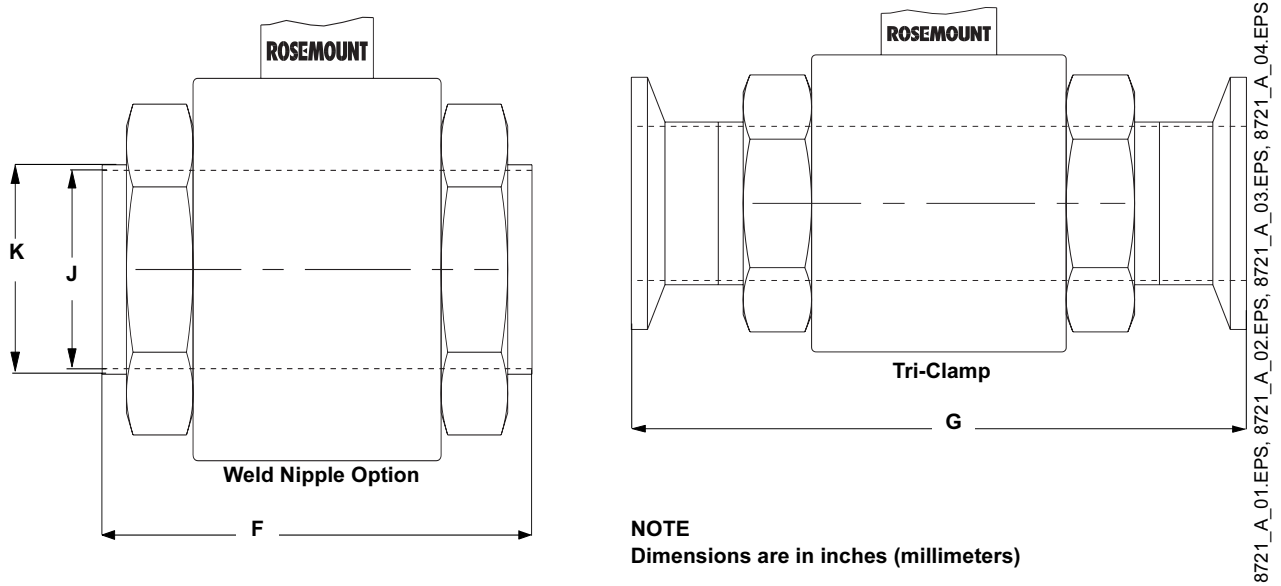


TABLE 15. Rosemount 8721 Process Connection Lay Length in Inches (Millimeters). Refer to Figure 6.

Line Size	Weld Nipple Length F	Weld Nipple Tube ID J	Weld Nipple Tube OD K	Tri Clamp Length G
1/2 (15)	5.61 (142)	0.62 (15.75)	0.75 (19.05)	8.31 (211)
1 (25)	5.61 (142)	0.87 (22.2)	1.00 (25.65)	7.85 (199)
1 1/2 (40)	5.92 (150)	1.37 (34.9)	1.68 (42.7)	8.17 (207)
2 (50)	6.35 (161)	1.87 (47.6)	2.01 (51.05)	8.60 (218)
2 1/2 (65)	7.18 (182)	2.37 (60.3)	2.51 (63.75)	9.43 (239)
3 (80)	7.93 (201)	2.87 (73.0)	3.01 (76.45)	10.18 (258)
4 (100)	9.46 (240)	3.84 (97.6)	4.01 (101.85)	11.70 (297)

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TABLE 16. Rosemount 8705 and 8707 Dimensions in Inches (Millimeters) (Dimensions with ASME B16.5 (ANSI) Flanges) ⁽¹⁾
Refer to Dimensional Drawings, Figure 3, Figure 4, and Figure 8

Line Size ⁽²⁾ and Flange Rating	Body Height "H"	Liner Face Diameter "A"	Overall Flowtube Length "L" ⁽³⁾	Flange Diameter "D"	Liner Thickness	Inside Diameter
0.5-150	6.75 (171)	1.38 (35)	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)	3.75 (95)	0.09 (2.3)	0.49 (12.5)
0.5-600	6.75 (171)	1.38 (35)	8.67 (220)	3.75 (95)	0.09 (2.3)	0.49 (12.5)
1-150	6.75 (171)	2.00 (51)	7.88 (200)	4.25 (108)	0.09 (2.3)	0.91 (23)
1-300	6.75 (171)	2.00 (51)	7.88 (200)	4.88 (124)	0.09 (2.3)	0.91 (23)
1-600	6.75 (171)	1.62 (41)	8.67 (220)	4.88 (124)	0.09 (2.3)	0.91 (23)
1-900	6.75 (171)	1.62 (41)	9.66 (245)	5.88 (149)	0.13 (3.3)	0.80 (20)
1.5-150	7.10 (180)	2.88 (73)	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)	6.12 (155)	0.12 (3.1)	1.44 (37)
1.5-600	7.10 (180)	2.88 (73)	8.63 (219)	6.12 (155)	0.13 (3.3)	1.36 (35)
1.5-900	7.10 (180)	2.50 (64)	9.52 (242)	7.00 (178)	0.13 (3.3)	1.25 (32)
2-150	7.10 (180)	3.62 (92)	7.88 (200)	6.00 (152)	0.12 (3.1)	1.91 (49)
2-300	7.10 (180)	3.62 (92)	7.88 (200)	6.50 (165)	0.12 (3.1)	1.91 (49)
2-600	7.10 (180)	3.62 (92)	8.78 (223)	6.50 (165)	0.13 (3.3)	1.82 (46)
2-900	7.10 (180)	3.25 (83)	10.26 (261)	8.50 (216)	0.13 (3.3)	1.69 (43)
3-150	8.10 (206)	5.00 (127)	7.88 (200)	7.50 (191)	0.15 (3.8)	2.96 (75)
3-300	8.10 (206)	5.00 (127)	8.63 (219)	8.25 (210)	0.15 (3.8)	2.96 (75)
3-600	8.10 (206)	5.00 (127)	12.4 (315)	8.25 (210)	0.13 (3.3)	2.76 (70)
3-900	8.10 (206)	4.63 (118)	12.8 (326)	9.50 (241)	0.13 (3.3)	2.37 (60)
4-150	8.45 (215)	6.19 (157)	9.84 (250)	9.00 (229)	0.15 (3.8)	3.96 (101)
4-300	8.45 (215)	6.19 (157)	10.88 (276)	10.00 (254)	0.15 (3.8)	3.96 (101)
4-600	8.45 (215)	6.19 (157)	12.83 (326)	10.75 (273)	0.13 (3.3)	3.72 (95)
4-900	8.45 (215)	5.81 (148)	13.89 (353)	11.50 (292)	0.13 (3.3)	3.37 (86)
6-150	9.45 (240)	8.50 (216)	11.81 (300)	11.00 (279)	0.19 (4.8)	5.98 (152)
6-300	9.45 (240)	8.50 (216)	13.06 (332)	12.50 (318)	0.19 (4.8)	5.69 (144)
6-600	9.45 (240)	8.50 (216)	14.23 (361)	14.00 (356)	0.19 (4.8)	5.69 (144)
6-900	9.45 (240)	8.00 (203)	15.51 (394)	15.00 (381)	0.16 (4.1)	4.86 (123)
8-150	10.42 (265)	10.62 (270)	13.78 (350)	13.50 (343)	0.19 (4.8)	7.94 (202)
8-300	10.42 (265)	10.62 (270)	15.60 (396)	15.00 (381)	0.17 (4.3)	7.64 (194)
8-600	10.42 (265)	10.62 (270)	16.72 (428)	16.50 (419)	0.17 (4.3)	7.64 (194)
8-900	10.42 (265)	10.00 (254)	18.47 (469)	18.50 (470)	0.17 (4.3)	6.65 (169)
10-150	11.78 (299)	12.75 (324)	15.00 (381)	16.00 (406)	0.26 (6.5)	9.87 (251)
10-300	11.78 (299)	12.75 (324)	17.13 (435)	17.50 (444)	0.26 (6.5)	9.48 (241)
10-600	11.78 (299)	12.75 (324)	19.54 (496)	20.00 (508)	0.26 (6.5)	9.21 (234)
12-150	12.86 (327)	15.00 (381)	18.00 (457)	19.00 (483)	0.26 (6.7)	11.87 (301)
12-300	12.86 (327)	15.00 (381)	20.14 (512)	20.50 (52)	0.26 (6.7)	11.48 (292)
14-150	13.92 (354)	16.25 (413)	21.00 (533)	21.00 (533)	0.19 (4.8)	13.16 (334)
14-300	13.92 (354)	16.25 (413)	23.25 (591)	23.00 (584)	0.19 (4.8)	12.79 (325)
16-150	14.93 (379)	18.50 (470)	24.00 (610)	23.50 (597)	0.19 (4.8)	15.12 (384)
16-300	14.93 (379)	18.50 (470)	26.25 (667)	25.50 (648)	0.19 (4.8)	14.75 (375)
18-150	16.19 (411)	21.00 (533)	27.00 (686)	25.00 (635)	0.19 (4.8)	17.09 (434)
18-300	16.19 (411)	21.00 (533)	30.12 (765)	28.00 (711)	0.19 (4.8)	16.35 (415)
18-450						
20-150	17.20 (437)	23.00 (584)	30.00 (762)	27.50 (698)	0.19 (4.8)	18.96 (482)
20-300	17.20 (437)	23.00 (584)	33.25 (845)	30.50 (774)	0.19 (4.8)	18.21 (463)
24-150	19.48 (495)	27.25 (692)	36.00 (914)	32.00 (813)	0.19 (4.8)	22.94 (583)
24-300	19.48 (495)	27.25 (692)	39.64 (1007)	36.00 (914)	0.19 (4.8)	22.06 (560)
30	22.23 (565)	33.80 (859)	37.25 (946)	38.75 (984)	0.19 (4.8)	28.75 (730)
36	26.10 (663)	40.27 (1023)	40.88 (1038)	46.00 (1168)	0.19 (4.8)	35.00 (889)

(1) AS2129 Table D and E flange dimensions match ANSI 150# dimensions.

(2) 30- and 36-inch AWWA C207 Table 2 Class D rated to 150 psi at 150 °F.

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

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TABLE 17. Rosemount 8705 Flowtube Dimensions with DIN Flanges in Millimeters (Inches)

Line Size ⁽¹⁾ and Flange Rating	Body Height "H"	Liner Face Diameter "A"	Overall Flowtube Length "L" ⁽²⁾	Flange Diameter "D"	Liner Thickness	Inside Diameter
15 mm PN 10-40	171 (6.75)	45 (1.77)	200 (7.88)	95 (3.74)	2.3 (0.09)	12.5 (.49)
25 mm PN 10-40	171 (6.75)	68 (2.68)	200 (7.88)	115 (4.53)	2.3 (0.09)	23.1 (.91)
40 mm PN 10-40	180 (7.10)	88 (3.46)	200 (7.87)	150 (5.91)	3.1 (0.12)	37 (1.44)
50 mm PN 10-40	180 (7.10)	102 (4.02)	200 (7.87)	165 (6.50)	3.1 (0.12)	49 (1.91)
80 mm PN 10-40	206 (8.10)	138 (5.43)	200 (7.87)	200 (7.87)	3.8 (0.15)	75.2 (2.96)
100 mm PN 10-16	215 (8.45)	162 (6.38)	250 (9.84)	220 (8.66)	3.8 (0.15)	100.6 (3.96)
100 mm PN 25-40	215 (8.45)	162 (6.38)	250 (9.84)	235 (9.25)	3.8 (0.15)	100.6 (3.96)
150 mm PN 10	240 (9.45)	212 (8.35)	300 (11.81)	285 (11.22)	4.7 (0.19)	152 (5.98)
150 mm PN 16	240 (9.45)	215 (8.46)	300 (11.81)	220 (8.66)	4.7 (0.19)	152 (5.98)
150 mm PN 25	240 (9.45)	218 (8.58)	300 (11.81)	300 (11.81)	4.7 (0.19)	152 (5.98)
150 mm PN 40	240 (9.45)	218 (8.58)	332 (13.07)	300 (11.81)	4.7 (0.19)	144 (5.67)
200 mm PN 10	265 (10.42)	268 (10.55)	350 (13.78)	240 (13.39)	4.9 (0.19)	202 (7.94)
200 mm PN 16	265 (10.42)	268 (10.55)	350 (13.78)	340 (13.39)	4.9 (0.19)	202 (7.94)
200 mm PN 25	265 (10.42)	278 (10.94)	350 (13.78)	360 (14.17)	4.9 (0.19)	202 (7.94)
200 mm PN 40	265 (10.42)	285 (11.22)	396 (15.60)	375 (14.76)	4.3 (0.17)	194 (7.64)
250 mm PN 10	299 (11.78)	320 (12.60)	381 (15.00)	395 (15.55)	6.6 (0.26)	251 (9.88)
250 mm PN 16	299 (11.78)	320 (12.60)	381 (15.00)	405 (15.94)	6.6 (0.26)	251 (9.88)
250 mm PN 25	299 (11.78)	335 (13.19)	381 (15.00)	425 (16.73)	6.6 (0.26)	251 (9.88)
250 mm PN 40	299 (11.78)	345 (13.58)	435 (17.13)	450 (17.72)	6.6 (0.26)	240 (9.45)
300 mm PN 10	327 (12.86)	370 (14.57)	457 (18.00)	445 (17.52)	6.6 (0.26)	302 (11.87)
300 mm PN 16	327 (12.86)	378 (14.88)	457 (18.00)	460 (18.11)	6.6 (0.26)	302 (11.87)
300 mm PN 25	327 (12.86)	395 (15.55)	457 (18.00)	485 (19.09)	6.6 (0.26)	302 (11.87)
300 mm PN 40	327 (12.86)	410 (16.14)	512 (20.14)	515 (20.28)	6.6 (0.26)	292 (11.48)
350 mm PN 10	354 (13.92)	430 (16.93)	534 (21.03)	505 (19.88)	7.4 (0.19)	334 (13.16)
350 mm PN 16	354 (13.92)	438 (17.24)	534 (21.03)	520 (20.47)	7.4 (0.19)	334 (13.16)
350 mm PN 25	354 (13.92)	450 (17.72)	534 (21.03)	555 (21.85)	7.4 (0.19)	334 (13.16)
350 mm PN 40	354 (13.92)	465 (18.31)	591 (23.25)	580 (22.83)	7.4 (0.19)	12.79 (325)
400 mm PN 10	379 (14.93)	482 (18.98)	610 (24.00)	565 (22.24)	7.4 (0.19)	384 (15.12)
400 mm PN 16	379 (14.93)	490 (19.29)	610 (24.00)	580 (22.83)	7.4 (0.19)	384 (15.12)
400 mm PN 25	379 (14.93)	505 (19.88)	610 (24.00)	620 (24.41)	7.4 (0.19)	384 (15.12)
400 mm PN 40	379 (14.93)	535 (21.06)	667 (26.25)	660 (25.98)	7.4 (0.19)	375 (14.75)
500 mm PN 10	437 (17.20)	585 (23.03)	762 (30.00)	670 (26.38)	7.4 (0.19)	482 (18.96)
500 mm PN 16	437 (17.20)	610 (24.02)	762 (30.00)	715 (28.15)	7.4 (0.19)	482 (18.96)
500 mm PN 25	437 (17.20)	615 (24.21)	762 (30.00)	730 (28.74)	7.4 (0.19)	482 (18.96)
500 mm PN 40	437 (17.20)	615 (24.21)	845 (33.25)	755 (29.72)	7.4 (0.19)	463 (18.21)
600 mm PN 10	495 (19.48)	685 (26.97)	914 (36.00)	780 (30.71)	7.4 (0.19)	583 (22.94)
600 mm PN 16	495 (19.48)	725 (28.54)	914 (36.00)	840 (33.07)	7.4 (0.19)	583 (22.94)
600 mm PN 25	495 (19.48)	720 (28.35)	914 (36.00)	845 (33.27)	7.4 (0.19)	581 (22.87)

Dimensions with DIN Flanges

(1) Consult factory for larger line sizes.

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

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FIGURE 7. Rosemount 8711 Dimensional Drawings (0.15-inch through 1-inch line sizes)

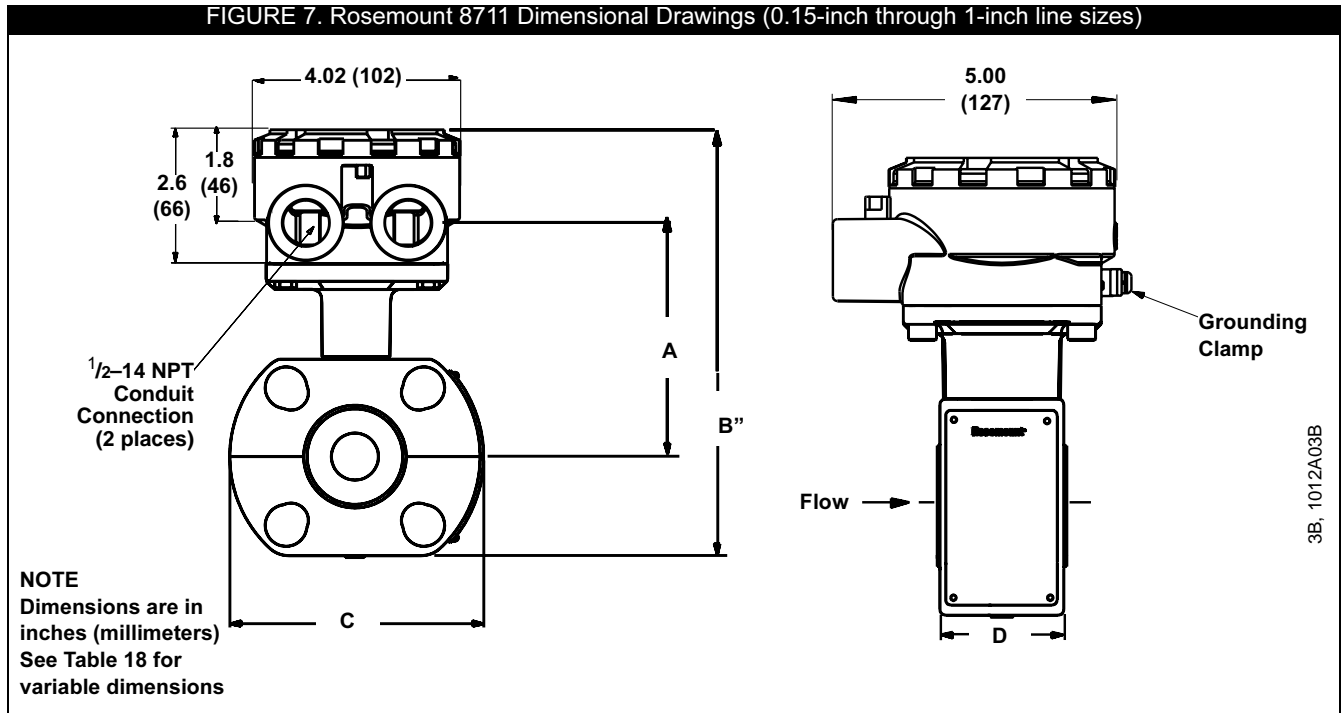
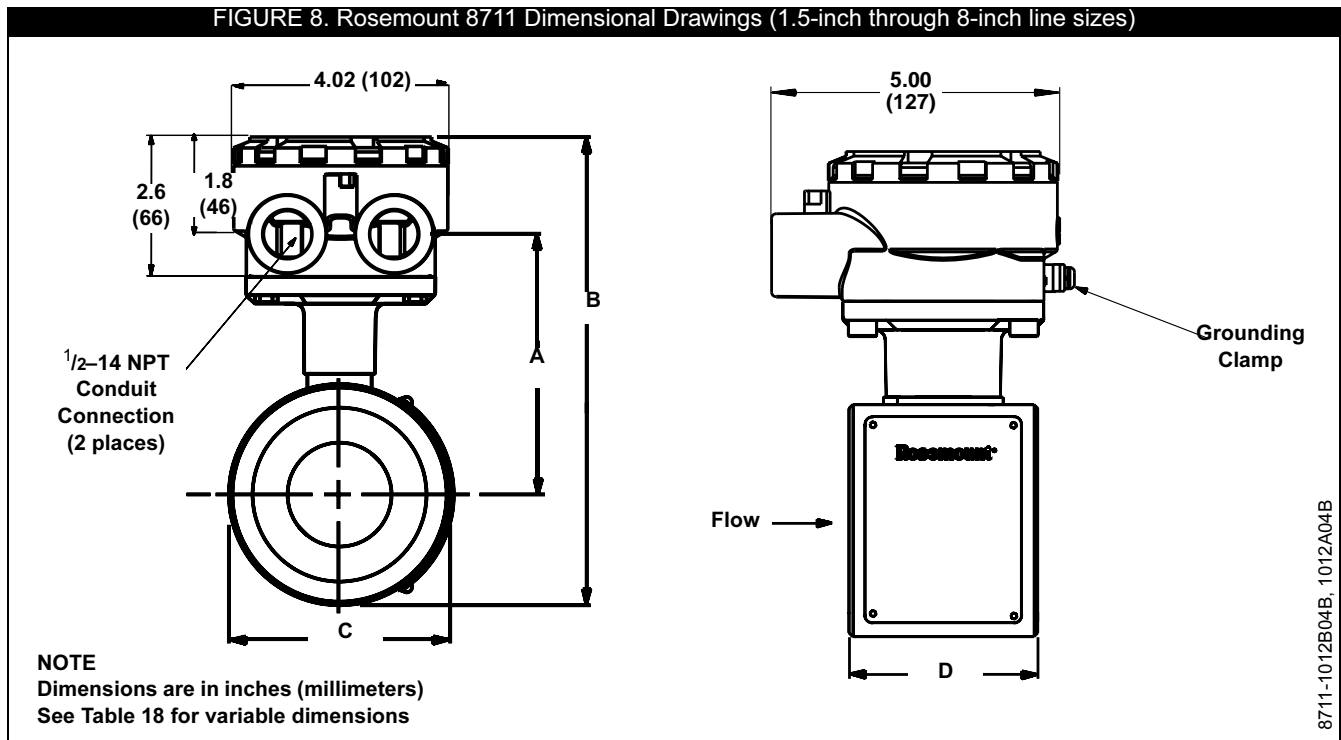


FIGURE 8. Rosemount 8711 Dimensional Drawings (1.5-inch through 8-inch line sizes)



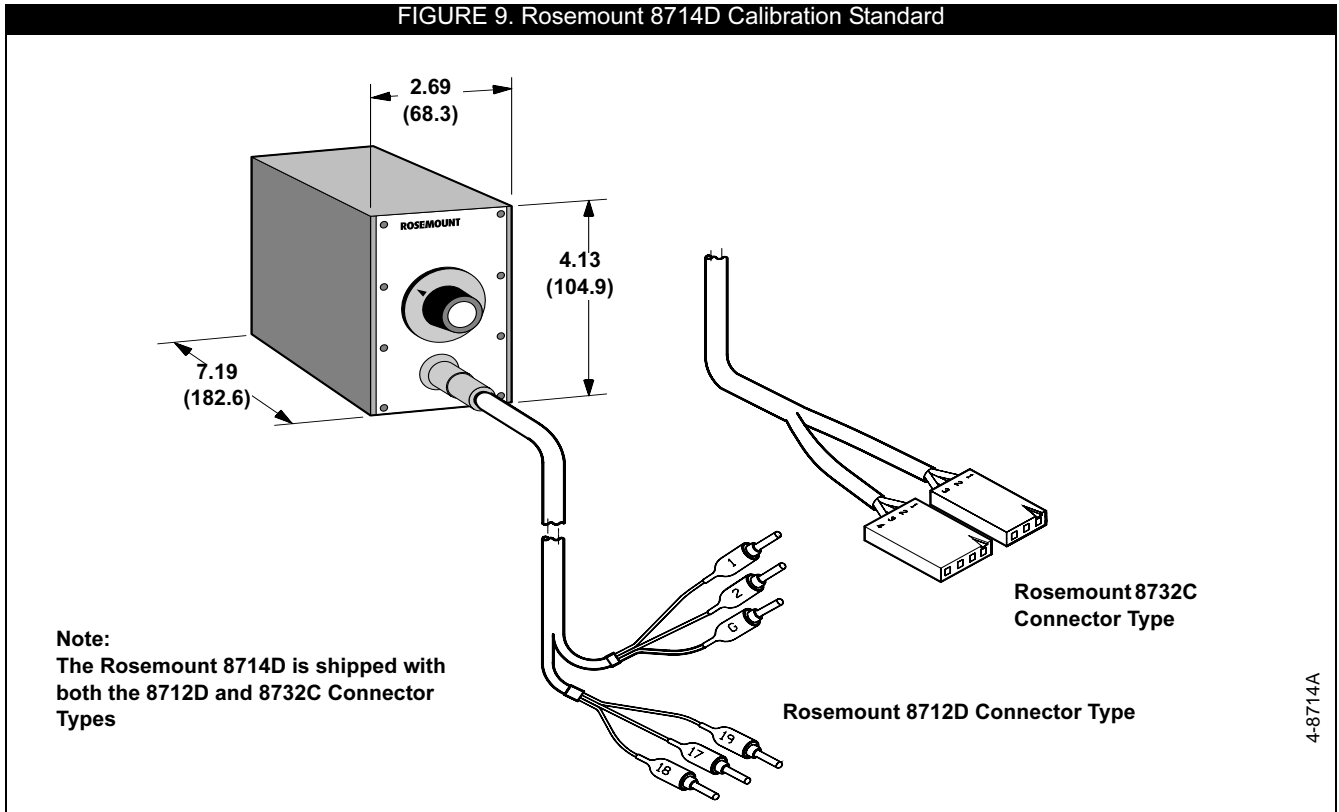
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TABLE 18. Rosemount 8711 Flowtube Dimensions and Weight

Nominal Line Size Inches (mm)	Flowtube Housing Dimensions						Flowtube Length		Inside Diameter		Weight lb (kg)
	"A" Max.	"B"	"C"	"D"	"D"	Inside Diameter	Inside Diameter				
0.15 ⁽¹⁾ (4)	4.00 (102)	5.44 (138)	3.56 (90)	2.17 (55)	.150 (4)			4 (2)			
0.30 ⁽¹⁾ (8)	4.00 (102)	5.44 (138)	3.56 (90)	2.17 (55)	.300 (7)			4 (2)			
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)			

(1) 0.15 and 0.30 inch (4 and 8 mm) flowtubes mount between ½-inch (13 mm) flange.

FIGURE 9. Rosemount 8714D Calibration Standard



NOTE

The Rosemount 8732C Connector Type is compatible with the Rosemount 8742.

Magnetic Flowmeter Sizing

Flowmeter Sizing

Because of its effect on flow velocity, flowtube 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 flowtube. Suggested guidelines and examples for sizing normal velocities in different applications are listed in Table 19, Table 20, and Table 21. Operation outside these guidelines may also give acceptable performance.

TABLE 19. Sizing Guidelines

Application	Velocity Range	
	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 19 and the following equation:

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

Example: SI Units

Magnetometer Size: 100 mm (**factor from Table 20 = 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

Magnetometer Size: 4 inch (**factor from Table 20 = 39.679**)
 Normal Flow Rate: 300 GPM

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

Velocity = 7.56 ft/s

TABLE 20. Line Size vs. Conversion Factor

Nominal Line Size Inches (mm)	Gallons Per Minute Factor	Liters Per Minute Factor
0.15 (4)	0.055	0.683
0.30 (8)	0.220	2.732
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

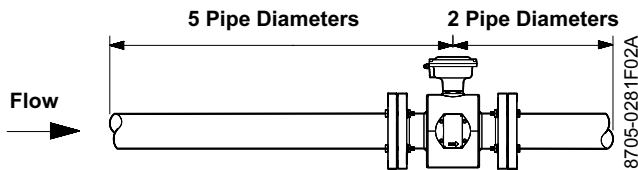
TABLE 21. Line Size vs. Velocity/Rate

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)
.15 (4)	0.002	0.055	0.16	1.65	0.01	0.21	0.68	6.83
.30 (8)	0.009	0.220	0.66	6.60	0.03	0.83	2.73	27.32
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	36.679	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

Upstream/Downstream Piping Length

To ensure specification accuracy over widely varying process conditions, install the flowtube with a minimum of five straight pipe diameters upstream and two straight pipe diameters downstream from the electrode plane. See Figure 10. This procedure should adequately allow for disturbances created by elbows, valves, and reducers.

FIGURE 10. Upstream and Downstream Straight Pipe Diameters



Flowtube Grounding

A reliable ground path is required between the flowtube and the process fluid. Optional grounding rings, grounding electrodes, and lining protectors are available with 8700 Series flowtubes to ensure proper grounding. See Table 22 and Table 23.

TABLE 22. 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.
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 flowtube from abrasive fluids Permanently installed on flowtube Protects liner material from over torquing of flange bolts Provides ground path and eliminates need for grounding ring or grounding electrode

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TABLE 23. Grounding Installation

Type of Pipe	Grounding Options			
	No Grounding Options	Grounding Rings	Grounding Electrodes	Lining Protectors
Conductive Unlined Pipe	Acceptable	Not Required	Not Required	Acceptable
Conductive Lined Pipe	Not Acceptable	Acceptable	Acceptable	Acceptable
Non-Conductive Pipe	Not Acceptable	Acceptable	Acceptable	Acceptable

Material Selection

Several liner types, electrode materials, and electrode types are available on Rosemount Magnetic Flowtubes to ensure compatibility with virtually any application. See Table 24 for information on liner types, Table 25 for information on electrode materials, and Table 26 for information on electrode types. Other material options not mentioned here are available. Contact your local sales representative for material selection. For further guidance on selecting materials, refer to the Magnetic Flowmeter Material Selection Guide located on Rosemount.com (document number 00816-0100-3033).

TABLE 24. Lining Material

Lining Material	General Characteristics
PFA	<ul style="list-style-type: none"> Highly chemical-resistant Excellent high temperature capabilities
Teflon (PTFE)	<ul style="list-style-type: none"> Highly chemical-resistant Excellent high temperature capabilities
Tefzel (ETFE)	<ul style="list-style-type: none"> Highly chemical-resistant Better abrasion resistance than Teflon
Polyurethane	<ul style="list-style-type: none"> Excellent abrasion resistance Limited chemical resistance
Neoprene	<ul style="list-style-type: none"> Very good abrasion resistance Better chemical resistance than polyurethane
Linatex Rubber	<ul style="list-style-type: none"> Very good abrasion resistance Limited chemical resistance especially in acids Softer material than polyurethane and neoprene

TABLE 25. 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
Hastelloy C-276	<ul style="list-style-type: none"> Better corrosion resistance High strength Good in slurry applications Effective in oxidizing fluids
Tantalum	<ul style="list-style-type: none"> Better chemical resistance Not recommended for hydrofluoric acid, fluosilic acid, or sodium hydroxide
90% Platinum - 10% Iridium	<ul style="list-style-type: none"> Best chemical resistance Expensive material Not recommended for aquaregia
Titanium	<ul style="list-style-type: none"> Better chemical resistance Better abrasion resistance Good for sea water applications Not recommended for hydrofluoric or sulfuric acid

TABLE 26. Electrode Type

Electrode Type	General Characteristics
Standard Measurement	<ul style="list-style-type: none"> Costs least Good for most applications
Bulletnose Electrodes	<ul style="list-style-type: none"> Slightly more expensive Best option for coating processes
Removable Electrode	<ul style="list-style-type: none"> Most expensive Better than standard electrode for coating processes

Ordering Information

ROSEMOUNT 8712D ORDERING INFORMATION

Model	Product Description	Availability
8712D	Magnetic Flowmeter Transmitter	•
Code	Transmitter Style	
R	Remote (2-inch pipe or surface mounting)	•
Code	Power Supply Voltage	
03	12–42 V dc	•
12	90-250 V ac, 50–60 Hz	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval; CE Marking	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class I, Division 2 Approval for flammable fluids	•
Code	Options	
DA1	Diagnostic Suite: Grounding Wiring, High Process Noise, Transmitter Verification	•
B6	Stainless Steel 4-bolt Kit for 2-inch Pipe Mount	•
C1	Custom Configuration (Completed CDS required with order)	•
C4	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994, and high alarm level ⁽¹⁾	•
CN	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994, and low alarm level ⁽¹⁾	•
D1	High Accuracy Calibration [0.25% of rate from 3 to 30 ft/s (0.9 to 10 m/s)] matched flowtube and transmitter system ⁽²⁾	•
M4	Local Operator Interface (LOI)	•
J1	CM 20 conduit adapter	•
J2	PG 13.5 conduit adapter	•
Code	Quick Installation Guide (QIG) Language Options (Default is English)	
YA	Danish QIG	•
YD	Dutch QIG	•
YF	French QIG	•
YG	German QIG	•
YH	Finnish QIG	•
YI	Italian QIG	•
YN	Norwegian QIG	•
YP	Portuguese QIG	•
YS	Spanish QIG	•
YW	Swedish QIG	•
Typical Model Number: 8712D R 12 N0 M4		

(1) NAMUR compliant operation and the Alarm latch options are preset at the factory and can not be changed to standard operation in the field.

(2) Option Code must be selected for both flowtube and transmitter.

ROSEMOUNT 8712H ORDERING INFORMATION

Model	Product Description	Availability
8712H	High-Signal Magnetic Flowmeter Transmitter (For use with 8707 High-Signal Flowtube only.)	H
Code	Transmitter Style	H
R	Remote (2-inch pipe or surface mounting)	•
Code	Power Supply Voltage	H
12	115 V ac, 50–60 Hz	•
Code	Product Certifications	H
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval	•
N5	Factory Mutual (FM) Class I, Division 2 Approval for flammable fluids	•
Code	Options	H
B6	Stainless Steel 4-bolt Kit for 2-inch Pipe Mount	•
C1	Custom Configuration (Completed CDS required with order)	•
D1	High Accuracy Calibration [0.25% of rate from 3 to 30 ft/s (0.9 to 10 m/s)] matched flowtube and transmitter system ⁽¹⁾	•
M4	Local Operator Interface (LOI)	•
Code	Quick Installation Guide (QIG) Language Options (Default is English)	
YA	Danish QIG	•
YD	Dutch QIG	•
YF	French QIG	•
YG	German QIG	•
YH	Finnish QIG	•
YI	Italian QIG	•
YN	Norwegian QIG	•
YP	Portuguese QIG	•
YS	Spanish QIG	•
YW	Swedish QIG	•
Typical Model Number: 8712H R 12 N0 M4		

(1) Option Code must be selected for both flowtube and transmitter.

ROSEMOUNT 8732C ORDERING INFORMATION

Model	Product Description	Availability
8732C	Magnetic Flowmeter Transmitter	•
Code	Transmitter Style	
T	Integral (mounted to flowtube)	•
R	Remote (2-inch pipe mount)	
Code	Power Supply Voltage	
03	15–50 V dc	•
12	85–250 V ac, 50–60 Hz	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval; CE Marking	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class I, Division 2 Approval for flammable fluids	•
E1	ATEX EEx d IIB + H2 T6, Flameproof Approval for Hydrogen gas	•
E5	Factory Mutual (FM) Class I, Division 1, Explosion Proof Approval ⁽¹⁾	•
ED	ATEX EEx d IIB T6 Flameproof Approval;	•
Code	Options	
C1	Custom Configuration – Completed CDS required with order	•
C4	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994, and high alarm level ⁽²⁾	•
CN	Analog Output Levels Compliant with NAMUR recommendations NE43, 18-January-1994, and low alarm level ⁽²⁾	•
D1	High Accuracy Calibration [0.25% of rate from 3 to 30 ft/s (0.9 to 10 m/s)] matched flowtube and transmitter system ⁽³⁾	•
DT	Heavy Duty Tagging	•
J1	CM 20 Conduit Adaptor	•
J2	PG 13.5 Conduit Adaptor	•
L1	Transient Protection Circuitry	•
M4	Local Operator Interface	•
T1	Non-volatile Totalizer	•
Code	Quick Installation Guide (QIG) Language Options (Default is English)	
YA	Danish QIG	•
YD	Dutch QIG	•
YF	French QIG	•
YG	German QIG	
YH	Finnish QIG	•
YI	Italian QIG	
YN	Norwegian QIG	•
YP	Portuguese QIG	•
YS	Spanish QIG	•
YW	Swedish QIG	•
Typical Model Number: 8732C T 12 N0 M4		

(1) Only available with Rosemount 8711 Integral Mount Flowtube

(2) NAMUR compliant operation and the Alarm latch options are preset at the factory and can not be changed in the field.

(3) Option Code must be ordered for both flowtube and transmitter.

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ROSEMOUNT 8742C ORDERING INFORMATION

Model	Product Description	Availability
8742C	Magnetic Flowmeter Transmitter with FOUNDATION fieldbus (flowtube ordered separately)	•
Code	Transmitter Output	
F	FOUNDATION fieldbus protocol, comes with standard Analog Input Integrator Function block and Backup LAS	•
Code	Power Supply Voltage	
AC	90–250 V ac, 50–60 Hz	•
DC	15-50 V dc	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2, Class II/III Division 1, approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval CE Marking;	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class I, Division 2, Class II/III Division 1, approval for flammable fluids	•
E1	ATEX EEx d IIB + H2 T6, Flameproof Approval for Hydrogen gas	•
E5 ⁽¹⁾	Factory Mutual (FM) Class I, Division 1, Class II/III Division 1, explosion proof approval	•
ED	ATEX EEx d IIB T6, Flame-proof approval	•
K0	Factory Mutual (FM) Class I, Division 2, Class II/III Division 1, approval and Canadian Standards Association (CSA) Class 1, Division 2, Class II/III Division 1 with intrinsically safe fieldbus output	•
K1	ATEX EEx de [ia] IIB + H2 T6 flameproof approval for hydrogen gas with intrinsically safe fieldbus output and FISCO compliant	•
K5 ⁽¹⁾	Factory Mutual (FM) Class I, Division 1, Explosion Proof with intrinsically safe Fieldbus and FISCO output	•
KD	ATEX EEx d [ia] IIB T6, Flame-proof approval with intrinsically safe Fieldbus output and FISCO compliant	•
Code	Options	
	PlantWeb Software Functions	•
A01	Proportional/Integral/Derivative (PID) function blocks	•
D01	Product and process diagnostics: grounding/wiring diagnostic, electrode fault diagnostic, and high process noise detection	•
D11	Product diagnostic: grounding/wiring diagnostic and electrode fault diagnostic	•
D21	Process diagnostic: high process noise detection	•
	Transmitter Options	•
B4	Remote Mount for 2" Pipe Mount Bracket (transmitter junction box and mounting bracket included)	•
C1	Custom Configuration (completed configuration data sheet (CDS) required with order)	•
D1	High Accuracy Calibration [0.25% of rate from 3 to 30 ft/s (0.9 to 10m/s)] matched flowtube	•
DT	Heavy Duty Tagging	•
J1	CM 20 Conduit Adapter	•
J2	PG 13.5 Conduit Adapter	•
M5	Local Display	•
	Conduit Electrical Connector	
GE ⁽²⁾	M12, 4-pin, Male Connector (<i>euromast</i> [®])	
GM ⁽²⁾	A size Mini, 4-pin, Male Connector (<i>minifast</i> [®])	
GN	GM with EEx d	
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Code	Quick Installation Guide (QIG) Language Options (Default is English)	
YA	Danish QIG	•
YD	Dutch QIG	•
YF	French QIG	•
YG	German QIG	•
YH	Finnish QIG	
YI	Italian QIG	•
YN	Norwegian QIG	•
YP	Portuguese QIG	•
YS	Spanish QIG	
YW	Swedish QIG	•

Typical Model Number: 8742C F AC N0 A01

(1) Only available with Rosemount 8711 Integral Mount flowtube

(2) Not available with certain hazardous location certifications. Contact a Rosemount representative for details.

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ROSEMOUNT 8705 ORDERING INFORMATION

Code	Product Description	Availability				
8705	Magnetic Flowmeter Flowtube	•				
Code	Lining Material					
A	PFA	•				
T	Teflon (PTFE)	•				
F	Tefzel (ETFE)	•				
P	Polyurethane	•				
N	Neoprene	•				
L	Linatex natural rubber	•				
Other lining materials available upon request. Consult factory. For availability by Line Size; see chart below						
Code	Electrode Material / Electrode Type					
Two Measurement Electrodes						
SA	316L Stainless Steel	•				
HA	Hastelloy C-276	•				
TA	Tantalum	•				
PA	90% Platinum—10% Iridium	•				
NA	Titanium	•				
Two Measurement Electrodes + Third Grounding Electrode (Not available with W3 on electrode housing configuration on 8" (200 mm) and under line sizes.)						
SE	316L Stainless Steel	•				
HE	Hastelloy C-276	•				
TE	Tantalum	•				
PE	90% Platinum—10% Iridium	•				
NE	Titanium	•				
Two Bulletnose Measurement Electrodes (Available in 2-inch (50 mm) and larger sizes only)						
SB	316L Stainless Steel	•				
HB	Hastelloy C-276	•				
Two Removable Measurement Electrodes (Available in 2-inch (50 mm) and larger sizes only); requires W3 option						
SR	316L Stainless Steel	•				
HR	Hastelloy C-276	•				
Other electrode materials and types available upon request. Consult factory.						
Lining Material (from above)						
Code	Line Size	Code A	Code T	Code F	Code P	Code N, and L
005	½ inch (15 mm)	NA	•	•	NA	NA
010	1 inch (25 mm)	•	•	•	•	•
015	1½ inch (40 mm)	•	•	•	•	•
020	2 inch (50 mm)	•	•	•	•	•
030	3 inch (80 mm)	•	•	•	•	•
040	4 inch (100 mm)	•	•	•	•	•
060	6 inch (150 mm)	•	•	•	•	•
080	8 inch (200 mm)	•	•	•	•	•
100	10 inch (250 mm)	•	•	•	•	•
120	12 inch (300 mm)	•	•	•	•	•
140	14 inch (350 mm)	NA	•	•	•	•
160	16 inch (400 mm)	NA	•	•	•	•
180	18 inch (450 mm)	NA	•	NA	•	•
200	20 inch (500 mm)	NA	•	NA	•	•
240	24 inch (600 mm)	NA	•	NA	•	•
300	30 inch (750 mm)	NA	•	NA	•	•
360	36 inch (900 mm)	NA	•	NA	•	•

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Code	Flange Material, Type, and Rating	Availability
C1	Carbon Steel, ASME B16.5 (ANSI) Class 150 (30- and 36-inch AWWA C207 Table 3 Class D Flat Face)	•
C2	Carbon Steel, MSS SP44 Class 150 (30-inch [750 mm] only)	•
C3	Carbon Steel, ASME B16.5 (ANSI) Class 300	•
C6	Carbon Steel, ASME B16.5 (ANSI) Class 600 ⁽¹⁾ (maximum pressure: 1000 psig; available in 0.5- through 10-inch [15 through 250 mm])	•
C7	Carbon Steel, ASME B16.5 (ANSI) Class 600 ⁽²⁾ (with lining material codes P, N, and L only; available in 1- through 8-inch [25 through 200 mm])	•
C9	Carbon Steel, ASME B16.5 (ANSI) Class 900 ^{(2) (3)} (with lining material codes, P, N, L only, available in 1- through 8- [25 through 200mm])	•
S1	304 Stainless Steel, ASME B16.5 (ANSI) Class 150 (30- and 36-inch AWWA C207 Table 3 Class D Flat Face)	•
S2	304 Stainless Steel, MSS SP44 Class 150 (30- through 36-inch [750 through 900 mm] only)	•
S3	304 Stainless Steel, ASME B16.5 (ANSI) Class 300	•
S6	304 Stainless Steel, ASME B16.5 (ANSI) Class 600 ⁽¹⁾ (maximum pressure: 1000 psig; available in 0.5- through 10-inch [15 through 250 mm])	•
S7	304 Stainless Steel, ASME B16.5 (ANSI) Class 600 ⁽²⁾ (lining material codes P, N, and L only; available in 1- through 8-inch [25 through 200 mm])	•
S9	304 Stainless Steel, ASME B16.5 (ANSI) Class 900 ^{(2) (3)} (with lining material codes, P, N, L only, available in 1- through 8- [25 through 200mm])	•
P1	316 Stainless Steel, ASME B16.5 (ANSI) Class 150 (¹ / ₂ - and 24-inch AWWA C207 Table 2 Class D Flat Face), pipe and flange	•
P3	316 Stainless Steel, ASME B16.5 (ANSI) Class 300, pipe and flange	•
CD	Carbon Steel, DIN PN 10 (not available for flange sizes 15 to 150 mm)	•
CE	Carbon Steel, DIN PN 16 (not available for flange sizes 15 to 80 mm)	•
CF	Carbon Steel, DIN PN 25 (not available for flange sizes 15 to 150 mm)	•
CH	Carbon Steel, DIN PN 40 (not available for flange sizes 750 to 900 mm)	•
CK	Carbon Steel, AS2129 Table D (available flange sizes 15 to 900 mm) ⁽⁴⁾	•
CL	Carbon Steel, AS2129 Table E (available flange sizes 15 to 900 mm) ⁽⁴⁾	•
SD	Stainless Steel, DIN PN 10 (not available for flange sizes 15 to 150 mm)	•
SE	Stainless Steel, DIN PN 16 (not available for flange sizes 15 to 80 mm)	•
SF	Stainless Steel, DIN PN 25 (not available for flange sizes 15 to 150 mm)	•
SH	Stainless Steel, DIN PN 40 (not available for flange sizes 750 to 900 mm)	•

Other flange materials, types, and ratings available upon request. Consult factory.

Code	Electrode Housing Configuration	
W0	Sealed, welded housing	•
W1	Sealed, welded housing with pressure relief	•
W3	Sealed, welded housing with separate electrode compartments	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval, CE Marking	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class I, Division 2 Approval (with intrinsically safe electrode)	•
E1 ⁽⁵⁾	ATEX EEx e ia IIC T3...T6, Increased Safety Approval (with intrinsically safe electrode)	•
KD	ATEX EEx e ia IIC T3...T6, Increased Safety Approval (with intrinsically safe electrode)	•
N1	ATEX EEx nA [L] IIC non-incendive Type n Approval	•

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Code	Options Continued
	Optional Grounding Rings⁽⁶⁾
G1	316L SST Grounding Rings •
G2	<i>Hastelloy</i> C-276 Grounding Rings (0.5- through 12-inch (15 through 300 mm) flowtube line sizes) •
G3	Titanium Grounding Rings (0.5- through 12-inch (15 through 300 mm) flowtube line sizes) •
G4	Tantalum Grounding Rings (0.5- through 8-inch (15 through 200 mm) flowtube line sizes) •
G5	Single 316L SST Grounding Ring •
G6	Single <i>Hastelloy</i> C-276 Grounding Ring (0.5- through 12-inch (15 through 300 mm) flowtube line sizes) •
G7	Single Titanium Grounding Ring (0.5- through 12-inch (15 through 300 mm) flowtube line sizes) •
G8	Single Tantalum Grounding Ring (0.5- through 8-inch (15 through 200 mm) flowtube line sizes) •
	Optional Lining Protectors⁽⁶⁾
L1	316L SST Lining Protectors •
L2	<i>Hastelloy</i> C-276 Lining Protectors (0.5- to 12-inch (15 to 300 mm) flowtube line sizes) •
L3	Titanium Lining Protectors (0.5- to 12-inch (15 to 300 mm) flowtube line sizes) •
	Optional Sanitary Connections⁽⁷⁾
A3	Sanitary 3-A (0.5- to 3-inch (15 to 80 mm) sizes only); ASME B16.5 (ANSI) Class 150 to Tri-Clamp Adapter •
A4	Sanitary 3-A (2.5-inch (64 mm) sizes only); ASME B16.5 (ANSI) Class 150 to Tri-Clamp Adapter •
A5	Cherry Burrell Sanitary I-line (0.5- to 3-inch (15 to 80 mm) sizes only); ASME B16.5 (ANSI) Class 150 to I-line Adapter •
A6	Cherry Burrell Sanitary I-line (2.5-inch (64 mm) sizes only); ASME B16.5 (ANSI) Class 150 to I-Line Adapter •

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Code	Options Continued	
Other Options		
B3	Integral Mount with Rosemount 8732C/8742C Transmitter	•
D1	High Accuracy Calibration [0.25% of rate from 3-30 ft/s (0.9-10 m/s)] matched flowtube and transmitter system ⁽⁸⁾	•
DT	Heavy Duty Tagging	•
DW	NSF Drinking Water Certification PTFE (Teflon) or Poly liner material with SST electrode material	•
H1	Rosemount 8701 flowtube lay length (available for 0.5- to 12-inch (15 to 300 mm) line sizes); spool piece or spacer: ASME B16.5 (ANSI) Class 150 or Class 300 flange and 304 stainless steel pipe	•
H2	Rosemount 8701 Flowtube lay length (available for 0.5- to 16-inch (15-400 mm) line sizes.)	•
H5	Foxboro [®] Model 2800 lay length (available for 3.0 to 18 inch (80 to 450mm line sizes)) spool piece: ASME B16.5 (ANSI) Class 150 flange and 304 stainless steel pipe.	•
H7	ABB Fischer & Porter [®] Model CopaX and MagX lay length (available for 0.5 to 12in (15 to 3000 mm line sizes)) spool piece: ASME B16.5 (ANSI) Class 150 flange and 304 stainless steel pipe.	•
J1	CM20 Conduit Adapter	•
J2	PG13.5 Conduit Adapter	•
Q4	Inspection Certificate-Calibration Data, ISO 10474 3.1B, (Flow Cal., 1-10ft/s [0.3-3 m/s])	•
Q5 ⁽¹⁰⁾	Hydrostatic Testing Certification (place on sales order, not on model string)	•
Q8	Material Traceability Certificate per DIN 3.1 B	•
Q9	Material Traceability Certificate (electrodes only) per DIN 3.1B 337	•
Q15 ^{(9) (10)}	NACE Certificate	•
Q66	Welding Procedure Qualification Record Documentation	•
Q67	Welder Performance Qualification Record Documentation	•
Q68 ⁽¹¹⁾	Welding Procedure Specification Documentation	•
Q70	Inspection Certificate Weld Examination, ISO 10474 3.1B – 0.5- to 12-inch [15-300 mm] flowtube line sizes – 14- to 18-inch [350-450 mm] flowtube line sizes – 20- to 36-inch [500-900 mm] flow tube line sizes	•
Typical Model Number: 8705 T SA 040 C1 W0 N0		

- (1) Electrode options limited to two measurement electrodes or two measurement electrodes + third grounding electrode.
- (2) Electrode options limited to two measurement electrodes or two measurement electrodes only.
- (3) Lining Protectors not available.
- (4) Option code limited to Liner material T, P, or F; cannot be ordered with ground rings, lining protectors AX or HX options.
- (5) For use with E1 / K1 transmitter.
- (6) Grounding Rings and Lining Protectors provide the same fluid grounding function. Lining Protectors available in Teflon (PTFE) and Tefzel (ETFE) only.
- (7) Sealed, welded housing (Option Code W0 or W1) required. Only available with Teflon (PTFE) lining material (Option Code T) and 316L Stainless Steel, Hastelloy C-276, and 90% Platinum-10% Iridium electrode material (Option Codes S, H, and P). Not available with integral mount Rosemount 8712 transmitter. Sanitary connection codes A4 and A6 only available in line size code 020.
- (8) Option Code must be ordered for both flowtube and transmitter.
- (9) Order as a separate line item.
- (10) Order by placing model code in manufacturing notes on sales order. This code does not belong in the model string.
- (11) Order as a separate line item, this code does not belong in the model string.

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ROSEMOUNT 8707 ORDERING INFORMATION

Code	Product Description	Availability			
8707	High-Signal Magnetic Flowmeter Flowtube	•			
Code	Lining Material				
A	PFA ⁽¹⁾				
T	Teflon (PTFE)	•			
F	Tefzel (ETFE)	•			
P	Polyurethane	•			
N	Neoprene	•			
L	Linatex natural rubber	•			
Other lining materials available upon request. Consult factory. For availability by Line Size, see chart below.					
Code	Electrode Material / Electrode Type				
Two Measurement Electrodes					
SA	316L Stainless Steel	•			
HA	Hastelloy C-276	•			
TA	Tantalum	•			
PA	90% Platinum —10% Iridium	•			
NA	Titanium	•			
Two Measurement Electrodes + Third Grounding Electrodes ⁽²⁾					
SE	316L Stainless Steel	•			
HE	Hastelloy C-276	•			
TE	Tantalum	•			
PE	90% Platinum —10% Iridium	•			
NE	Titanium	•			
Two Bulletnose Measurement Electrodes (Available in 2-inch (50 mm) and larger line sizes only)					
SB	316L Stainless Steel	•			
HB	Hastelloy C-276	•			
Lining Material (from above)					
Code	Line Size	Code A	Code T	Code F	Code P, N, and L
030	3 inch (80 mm)	•	•	•	•
040	4 inch (100 mm)	•	•	•	•
060	6 inch (150 mm)	•	•	•	•
080	8 inch (200 mm)	•	•	•	•
100	10 inch (250 mm)	•	•	•	•
120	12 inch (300 mm)	•	•	•	•
140	14 inch (350 mm)	NA	•	•	•
160	16 inch (400 mm)	NA	•	•	•
180	18 inch (450 mm)	NA	•	NA	•
200	20 inch (500 mm)	NA	•	NA	•
240	24 inch (600 mm)	NA	•	NA	•
300	30 inch (750 mm)	NA	•	NA	•
360	36 inch (900 mm)	NA	•	NA	•
Code	Flange Material, Type, and Rating				
C1	Carbon Steel, ASME B16.5 (ANSI) Class 150 (30- and 36-inch AWWA C207 Table 2 Class D Flat Face)	•			
C2	Carbon Steel, MSS SP44 Class 150 (30-inch [750 mm] only)	•			
C3	Carbon Steel, ASME B16.5 (ANSI) Class 300	•			
S1	304 Stainless Steel, ASME B16.5 (ANSI) Class 150 (30- and 36-inch AWWA C207 Table 2 Class D Flat Face)	•			
S2	304 Stainless Steel, MSS SP44 Class 150 (30- through 36-inch [750 through 900 mm] only)	•			
S3	304 Stainless Steel, ASME B16.5 (ANSI) Class 300	•			

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Rosemount 8700 Series

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Code	Housing Configuration	Availability
W0	Sealed, welded housing	•
W1	Sealed, welded housing with pressure relief	•
W3	Sealed, welded housing with separate electrode compartments	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class 1, Division 2 Approval for flammable fluids	•
Code	Options	
Optional Grounding Rings⁽³⁾		
G1	316L SST Grounding Rings	•
G2	Hastelloy C-276 Grounding Rings (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
G3	Titanium Grounding Rings (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
G4	Tantalum Grounding Rings (3- through 8-inch (80 through 200 mm) flowtube line sizes)	•
G5	Single 316L SST Grounding Ring	•
G6	Single Hastelloy C-276 Grounding Ring (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
G7	Single Titanium Grounding Ring (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
G8	Single Tantalum Grounding Ring (3- through 8-inch (80 through 200 mm) flowtube line sizes)	•
Optional Lining Protectors⁽³⁾		
L1	316L SST Lining Protectors	•
L2	Hastelloy C-276 Lining Protectors (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
L3	Titanium Lining Protectors (3- through 12-inch (80 through 300 mm) flowtube line sizes)	•
Other Options		
B3	Integral Mount with Rosemount 8732C (8742C) transmitter	•
D1	High Accuracy Calibration [0.25% of rate from 3-30 ft/s (0.9-10 m/s)] matched flowtube and transmitter system ⁽⁴⁾	•
D2	Dual Flowtube Calibration Numbers on Rosemount 8712H and 8712C Transmitters	•
DT	Heavy Duty Tagging	•
H1	Rosemount 8703 flowtube lay length (available for 3- through 4-inch (80 through 100 mm) line sizes); spool piece: ASME B16.5 (ANSI) Class 150 or Class 300 flange and 304 stainless steel pipe	•
H2	Rosemount 8703 flowtube lay length (available for 3- through 16-inch (80 through 400 mm) line sizes)	•
H5	Foxboro [®] Model 2800 lay length (available for 3.0 through 18 inch (80 through 450mm line sizes)) spool piece: ASME B16.5 (ANSI) Class 150 flange and 304 stainless steel pipe.	•
H7	ABB Fischer & Porter [®] Model CopaX and MagX lay length (available for 0.5 through 12in (15 through 3000 mm line sizes)) spool piece: ASME B16.5 (ANSI) Class 150 flange and 304 stainless steel pipe or teflon spacer.	•
J1	CM20 Conduit Adapter	•
J2	CM13.5 Conduit Adapter	•
Q4	Inspection Certificate-Calibration Data, ISO 10474 3.1B, (Flow Cal., 1-10ft/s [0.3-3 m/s])	•
Q5	Hydrostatic Testing Certification	•
Q8	Material Traceability Certificate per DIN 3.1 B	•
Q9	Material Traceability Certificate (electrodes only) per DIN 3.1B 337	•
Q15	NACE Certification ⁽⁵⁾	•
Q66	Welding Procedure Qualification Record Documentation	•
Q67	Welder Performance Qualification Record Documentation	•
Q68	Welding Procedure Specification Documentation	•
Q70	Inspection Certificate Weld Examination, ISO 10474 3.1B	
	– 3- to 12-inch [80-300 mm] flowtube line sizes	•
	– 14- to 18-inch [350-450 mm] flowtube line sizes	•
	– 20- to 36-inch [500-900 mm] flow tube line sizes	•
Typical Model Number: 8707 T SA 040 C1 W0 N0		

(1) Electrode options limited to two Hastelloy C-276 or two 90% Platinum-10% Iridium electrode material. Cannot be ordered with 300# lining protectors or Quality Certificates Q8, Q9, Q66, Q67, Q68, or Q70.

(2) Available for 10 inch and larger line sizes only.

(3) Grounding Rings and Lining Protectors provide the same fluid grounding function. Lining Protectors available with Teflon (PTFE) and Tefzel (ETFE) lining material only.

(4) Option Code must be ordered for both flowtube and transmitter.

(5) Order as a separate line item.

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Rosemount 8700 Series

ROSEMOUNT 8711 ORDERING INFORMATION

Model	Product Description	Availability
8711	Magnetic Flowmeter Flowtube (flangeless construction)	•
Code	Lining Material	
T	Tefzel (ETFE)	•
S	Teflon (PTFE) (not available with 0.15 and 0.30 inch [4 and 8 mm] line sizes)	•
Code	Electrode Material / Electrode Type	
Two Measurement Electrodes		
SA	316L Stainless Steel	•
HA	<i>Hastelloy C-276</i>	•
TA	Tantalum	•
PA	90% Platinum—10% Iridium	•
NA	Titanium	•
Two Measurement Electrodes + Third Grounding Electrode		
SE	316L Stainless Steel	•
HE	<i>Hastelloy C-276</i>	•
TE	Tantalum	•
PE	90% Platinum—10% Iridium	•
NE	Titanium	•
Two Bulletnose Measurement Electrodes (Available in 2-inch (50 mm) and larger line sizes only)		
SB	316L Stainless Steel	•
HB	<i>Hastelloy C-276</i>	•
Code	Line Size	
15F	0.15 inch (4 mm) (not available with <i>Teflon</i> (PTFE) lining material)	•
30F	0.30 inch (8 mm) (not available with <i>Teflon</i> (PTFE) lining material)	•
005	½ inch (15 mm)	•
010	1 inch (25 mm)	•
015	1½ inch (40mm)	•
020	2 inch (50mm)	•
030	3 inch (80 mm)	•
040	4 inch (100 mm)	•
060	6 inch (150 mm)	•
080	8 inch (200 mm)	•
Code	Transmitter Mounting Configuration	
R	Remote	•
U	Integral, mounted to Rosemount 8732C/8742C transmitter	•

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Rosemount 8700 Series

Code	Mounting Kit	Availability
Expanded Kit: includes two alignment rings (where applicable), threaded SST studs, and nuts		
1	ASME B16.5 (ANSI) Class 150	•
2	DIN PN 10/16 (8 inch [200 mm] has a PN 10 mounting kit only)	•
3	ASME B16.5 (ANSI) Class 300	•
4	DIN PN 25/40 (8 inch [200 mm] has a PN 25 mounting kit only)	•
Standard Kit: includes two alignment rings (where applicable)		
5	ASME B16.5 (ANSI) Class 150	•
6	DIN PN 10/16 (8 inch [200 mm] has a PN 10 alignment rings only)	•
7	ASME B16.5 (ANSI) Class 300	•
8	DIN PN 25/40 (8 inch [200 mm] has a PN 25 alignment rings only)	•
Code	Product Certifications	
N0	Factory Mutual (FM) Class I, Division 2 Approval for nonflammable fluids; Canadian Standards Association (CSA) Class I, Division 2 Approval; CE Marking	•
NA	No Hazardous Area Approval; CE Marking	•
N5	Factory Mutual (FM) Class 1, Division 2 Approval (with intrinsically safe electrodes)	•
N1	ATEX EEx nA [L] IIC non-incendive Type n Approval	•
E1 ⁽¹⁾	ATEX EEx e ia IIC T3...T6, increased safety approval with intrinsically safe electrodes	•
E5	Factory Mutual (FM) Class 1, Division 1, Explosion-Proof Approval (available with integral mount Rosemount 8732C/8742C or remote mount transmitters)	•
CD	ATEX EEx e ia IIC Increased Safety Approval with intrinsically safe electrodes	•
Code	Options	
D1	High Accuracy Calibration [0.25% of rate from 3-30 ft/s (0.9-10m/s)] matched flowtube and transmitter	•
DT	Heavy Duty Tagging	•
DW ⁽²⁾	NSF Drinking Water Certification (Stainless steel electrode material only)	•
G1	316L SST Grounding Rings	•
G2	Hastelloy C-276 Grounding Rings	•
G3	Titanium Grounding Rings	•
G4	Tantalum Grounding Rings	•
J1	CM20 Conduit Adapter	•
J2	CM13.5 Conduit Adapter	•
Q4	Inspection Certificate-Calibration Data, ISO 10474 3.1B, (Flow Cal., 1-10ft/s [0.3-3 m/s])	•
Q5	Hydrostatic Testing Certification (place on sales order, not on model string)	•
Q8	Material Traceability Certificate per DIN 3.1B	•
Q9	Material Traceability Certificate (Electrodes only) per DIN 3.1B	•
Q15 ⁽³⁾	NACE Certification	•
Q66	Welding Procedure Qualification Record Documentation (6- and 8-inch (150- and 200mm) line sizes only)	•
Q67	Welder Performance Qualification Record Documentation	•
Q68	Welding Procedure Specification Documentation	•
Q70	Inspection Certificate Weld Examination, ISO 10474 3.1B -.15 through 8-inch [4- through 300 mm] flowtube line sizes	•
Typical Model Number: 8711 T SA 030 U 5 N0		

(1) For use with E1 / K1 transmitter.

(2) PTFE for 3 - 8 inch only.

(3) Order as a separate line item.

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Rosemount 8700 Series

ROSEMOUNT 8721 ORDERING INFORMATION

Model	Product Description	Availability
8721	Sanitary Magnetic Flowmeter	•
Code	Lining Material	
A	PFA	•
Code	Electrode Material	
S	316L SST (standard)	•
H	Hastelloy C-276	•
P	90% Platinum-10% Iridium	•
Code	Electrode Construction	
A	Standard measurement electrodes	•
Code	Line Sizes	
005	15 mm (1/2 inch)	•
010	25 mm (1 inch)	•
015	40 mm (1 1/2 inch)	•
020	50 mm (2.0 inch)	•
025	65 mm (2 1/2 inch)	•
030	80 mm (3.0 inch)	•
040	100 mm (4.0 inch)	•
Code	Transmitter Mounting Configuration	
R	Remote, for use with 8712, or remote version of 8732/8742 transmitter	•
U	Integral, mounted to 8732/8742 transmitter	•
X	Flowtube only (does not include terminal junction box)	•
Code	Process Connection Type	
A	Tri-Clamp ⁽¹⁾	•
B	IDF Sanitary screw type ⁽²⁾	•
C	Weld nipple ⁽²⁾	•
D	DIN 11851 (Imperial)	•
E	DIN 11851 (Metric)	•
F	DIN 11864-1 form A	•
G	DIN 11864-2 form A	•
H	SMS Connection	•
J	Cherry-Burrell I-Line	•
Code	Process Gasket Material	
1	Silicone gasket seal	•
2	EPDM	•
4	Viton	•
8	EPDM Compression - limiting ⁽³⁾	•
9	Viton Compression - limiting ⁽³⁾	•
X	No gasket (User supplied; only applicable with Process Connection B)	•
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Rosemount 8700 Series

Code	Product Certifications	
N0	Factory Mutual (FM) Ordinary Location; CSA; CE Marking; 3-A; EHEDG Type EL ⁽³⁾	•
Code	Options	
AH	Electropolished process connection surface finish < 15µinch Ra (0.38µm Ra)	•
D1	High Accuracy Calibration [0.25% of rate from 3-30 ft/s (0.9-10 m/s)] matched flowtube and transmitter system	•
D3	High Velocity Calibration Verification (calibration verified at 1.3, 10, and 20 ft/sec)	•
HD	DanFoss Lay Length	•
HP	Process Data PD340 (Alfa-Laval PD340) 250mm lay length and Tri-Clamp process connections	•
J1	CM20 Conduit Adapter (Applies to Transmitter Mount Option "R" only)	•
J2	PG13.5 Conduit Adapter (Applies to Transmitter Mount Option "R" only)	•
Q4	Inspection Certification for Calibration Data	•
Q8	Material Traceability Certificate per ISO 10474 3.1B (product contact surfaces)	•
SJ	304 Stainless Steel terminal junction box (Remote configuration only)	•

Typical Model Number: 8721 A S A 020 U A 1 N0

(1) *Tri-Clamp specification per BPE-2002*

(2) *IDF Specification per BS4825 Part 4*

(3) *EHEDG Document 8 requires mechanical compression limiting, provided by Compression - limiting gaskets for line sizes 1- 4 inch only.*

ROSEMOUNT 8714 DQ4 ORDERING INFORMATION

Model	Description	Availability
8714DQ4	Reference Calibration Standard	•

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Tagging

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

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

Flowtube tag: 40 character maximum.

Transmitter tag: see Configuration Data Sheet for character maximum.

Ordering Procedure

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

For remote transmitter applications, note the cable specification requirements.

Flowtubes and transmitters must be selected from Product Data Sheet 00813-0100-4727.

Standard Configuration

Unless the Configuration Data Sheet is completed, the transmitter will be shipped as follows:

Engineering Units:	ft/sec
4 mA (1 V dc):	0
20 mA (5 V dc):	30
Tube Size:	3-inch
Empty Pipe:	Off
Flowtube Calibration Number:	1000005010000000

The Rosemount 8732C and the 8742C Transmitter are factory-calibrated with the attached flowtube size and appropriate calibration number.

Cable Requirements for Remote Transmitters

Description	Length	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 Signal and Coil Drive Cable (18 AWG) ⁽¹⁾	ft m	08712-0752-0001 08712-0752-0003

(1) *Combination signal and coil drive cable is not recommended for high-signal magmeter system. For remote mount installations, combination signal and coil drive cable should be limited to less than 100 ft (30 m).*

Remote transmitter installations 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 1,000 feet (1.5 to 300 meters) may be specified, and will be shipped with the flowtube. Cable longer than 100 feet (30 meters) is not recommended for high-signal systems.

Custom Configuration (Option Code C1)

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



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