Product Data Sheet
August 2017
00813-0100-4570, Rev CA

Rosemount™ 5708 3D Solids Scanner

- Make informed decisions about inventory control with unique, dust-penetrating technology for measuring bulk solids and powders accurately.
- Take the guesswork out of measuring the level, volume, and with multiple point measurement.
- Operate with minimum maintenance on any material stored in a variety of silos, bins, and warehouses.
- Use 3D visualization to determine exactly what is going on inside your vessel.

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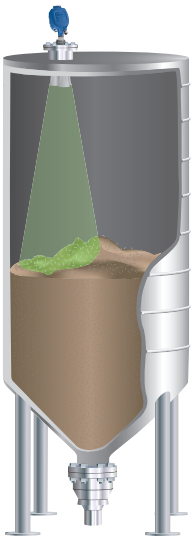
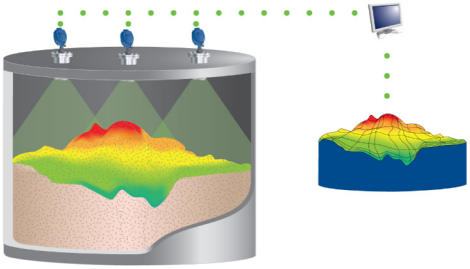
Overview



Rosemount 5708



Rosemount 5708 in a system

Measurement principle

The Rosemount 5708 uses an acoustic phased-array technology.

The Rosemount 5708 delivers accurate volume and level measurement of bulk solids and powders – regardless of material type, product characteristics, storage silo type, size, or harshness of the storage environment.

The device includes an integral array of three antennas that generate unique dust-penetrating low frequency acoustic waves and receive echoes from the contents. Using these antennas, the unit measures not only the time/distance of each echo, but also its direction.

Collecting multiple echoes from different directions and distances enables the Rosemount 5708 to accurately calculate the volume of stored material. It also enables the Rosemount 3DVision/3DMultiVision™ software to generate the 3D visualization of the material.

The acoustic waves combined with self-cleaning capabilities prevent material from adhering to the internal workings of the antenna array, ensuring long-term reliable performance with very low maintenance requirements, regardless of harsh dusty conditions.

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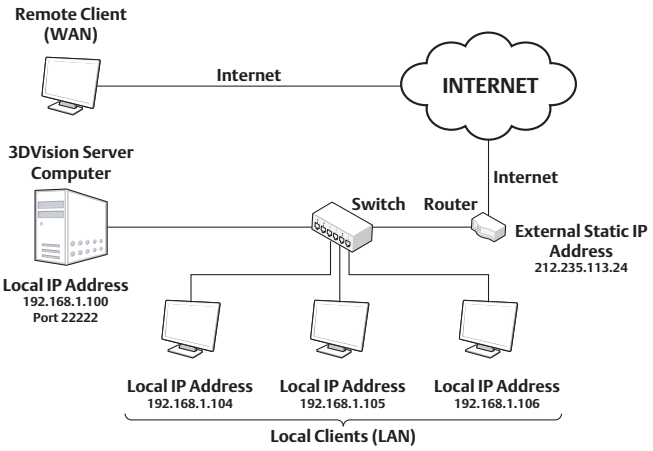
Monitor multiple vessels easily

Monitoring vessels across multiple sites and remote geographic areas is a challenge. You need accurate information that is based on real-time conditions. Rosemount 3DVision/3DMultiVision software provides sophisticated analysis of current conditions as well as historical data that allows you to improve your workflows while reducing operating costs.

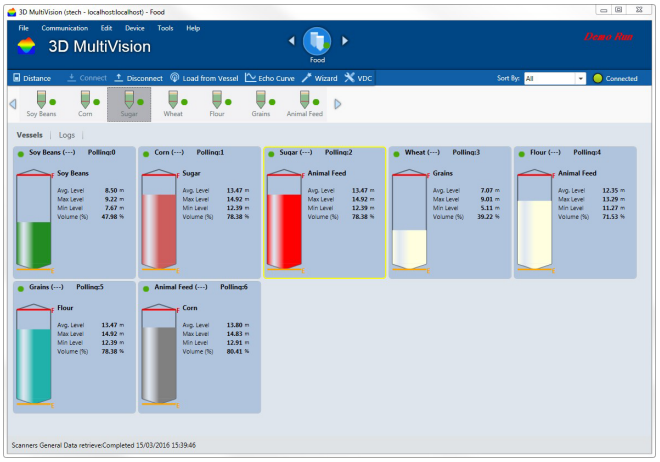
The software enables multiple accesses and is comprised of two components: a server and a client. The data is stored on the server computer which generates the reports and transfers the information to all connected Rosemount 3DVision clients.

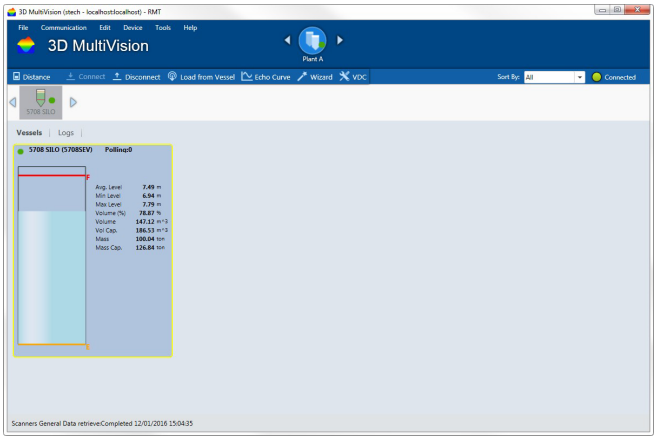
Authorized users, connected to the same LAN or via external connections (WAN), have access to both real-time and historical data for all Rosemount 5708 connected to the server.

The Rosemount 3DVision Client is a graphical and interactive program, allowing the user to receive online data from devices, view a 3D visualization of the material stored in the vessels, add or remove sites, vessels, and devices and manage alerts and reports.



Rosemount 3DVision computer topology





Application examples

The Rosemount 5708 enables efficient process measurement and true inventory management of bulk solid materials used in a broad range of industrial applications.

The devices can measure practically any kind of solid material, stored in a variety of containers, including large bins, bulk solid storage rooms, and warehouses, loads that randomly form over time inside silos, and many other challenging applications that were not possible previously. The Rosemount 5708 can measure ranges of up to 230 feet (70 m).

Rosemount 5708L

- Highly accurate readings of level
- Provides the average level of the stored contents and average distance from the device to the surface of the material

Rosemount 5708V

- Highly accurate readings of level and volume
- Provides minimum and maximum level/distance measurements
- Appropriate for vessels up to 40 feet (12 m) in diameter

Rosemount 5708S

- Highly accurate readings of level and volume
- Monitors inventory in large vessels
- Provides minimum and maximum level/distance measurements
- Unlimited vessel diameter when using Rosemount 5708S in a system
- Generates 3D visualization of the stored contents

Ordering Information

The Rosemount 5708 incorporate best-in-class solutions for previously inaccessible process measurement applications in many manufacturing sectors. Characteristics include:

- Multiple point measurement
- Dust-penetrating, acoustic-based low-frequency technology
- Unaffected by material type
- Long measurement range

Additional information

Specifications: see "Functional specifications" on page 11
Certifications: see "Product certifications" on page 17
Dimensional drawings: see "Dimensional drawings" on page 22

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 13 for more information on Material Selection.

Table 1. Rosemount 5708 Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery.
The non-starred offerings are subject to additional delivery lead time.

Model	Product description	
5708	3D Solids Scanner	★
Model type		
LNN	Average level measurement	★
VEN	Volume measurement up to 39.4 feet (12 m) in diameter	★
SEV	Volume measurement with visualization.	★
Housing material		
A	Polyurethane covered aluminum	★
Signal output		
B(1)	4–20 mA and RS-485 with Modbus®	★
Conduit/cable threads		
1	1/2-in. NPT adapter (qty = 2) supplied separately in the box	★
2	M20 x 1.5 thread	★
Hazardous locations certifications		
NA(2)	No hazardous locations certifications	★
I1	ATEX intrinsic safety	★
I3	NEPSI intrinsic safety	★

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I5	cFMus intrinsic safety	★
I2	INMETRO Intrinsic Safety	
I7	IECEx Intrinsic Safety	
IP	KOSHA Intrinsic Safety	
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	
IW	PESO Intrinsic Safety	
Process operating temperature		
S	Standard temperature –40... +185 °F (–40... +85 °C)	★
H	High temperature –40... +356 °F (–40... +180 °C) (no hazardous locations certifications available)	
Material of antenna construction		
P	Polyurethane painted aluminum antenna	★
8	PTFE coated aluminum antenna	
H	High temperature painted aluminum antenna	
I[3]	High temperature painted aluminum antenna supplied with 12-in (30 cm) extended cable	
J[4]	High temperature painted aluminum antenna for angle adapter supplied with 16-in. (40 cm) extended cable	
K[3]	High temperature painted aluminum antenna supplied with 20-in. (50 cm) extended cable	
L[3]	High temperature painted aluminum antenna supplied with 39-in. (100 cm) extended cable	
M[5]	High temperature painted aluminum antenna for ESP supplied with 59-in. (150 cm) extended cable	
O[3]	High temperature painted aluminum antenna supplied with 78-in. (200 cm) extended cable	
R[3]	High temperature painted aluminum antenna supplied with 118-in. (300 cm) extended cable	
O-ring material		
B	Nitrile butadiene for standard temperature	★
S	Silicone for high temperature	

Options (include with selected model number)

Mounting plate/assembly		
Mounting plate		
4AA	4-in. (100 mm) - Matches ANSI 4-in., Class 150 connection; painted carbon steel	
4AX	High temperature, 4-in. (100 mm) - Matches ANSI 4-in., Class 150 connection; painted carbon steel	
6AA	6-in. (150 mm) - Matches ANSI 6-in., Class 150 connection; painted carbon steel	
6AX	High temperature, 6-in. (150 mm) - Matches ANSI 6-in., Class 150 connection; painted carbon steel	
8AA	8-in. (200 mm) - Matches ANSI 8-in., Class 150 connection; painted carbon steel	
8AX	High temperature, 8-in. (200 mm) - Matches ANSI 8-in., Class 150 connection; painted carbon steel	
TAA	10-in. (250 mm) - Matches ANSI 10-in., Class 150 connection; painted carbon steel	

Table 1. Rosemount 5708 Ordering Information

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TAX	High temperature, 10-in. (250 mm) - Matches ANSI 10-in., Class 150 connection; painted carbon steel	
4DA	100 - Matches DN 100, PN 16 connection; painted carbon steel	
4DX	High temperature, 100 - Matches DN 100, PN 16 connection; painted carbon steel	
6DA	150 - Matches DN 150, PN 16 connection; painted carbon steel	
6DX	High temperature, 150 - Matches DN 150, PN 16 connection; painted carbon steel	
8DA	200 - Matches DN 200, PN 16 connection; painted carbon steel	
8DX	High temperature, 200 - Matches DN 200, PN 16 connection; painted carbon steel	
TDA	250 - Matches DN 250, PN 16 connection; painted carbon steel	
TDX	High temperature, 250 - Matches DN 250, PN 16 connection; painted carbon steel	
Mounting assembly (see page 28)		
A00	0° Steel powder coated mounting assembly (supplied with mounting plate)	
A05	5° Steel powder coated mounting assembly (supplied with mounting plate)	
A10	10° Steel powder coated mounting assembly (supplied with mounting plate)	
A15	15° Steel powder coated mounting assembly (supplied with mounting plate)	
A20	20° Steel powder coated mounting assembly (supplied with mounting plate)	
A30	30° Steel powder coated mounting assembly (supplied with mounting plate)	
B00	High temperature 0° steel powder coated mounting assembly (supplied with mounting plate)	
B05	High temperature 5° steel powder coated mounting assembly (supplied with mounting plate)	
B10	High temperature 10° steel powder coated mounting assembly (supplied with mounting plate)	
B15	High temperature 15° steel powder coated mounting assembly (supplied with mounting plate)	
B20	High temperature 20° steel powder coated mounting assembly (supplied with mounting plate)	
B30	High temperature 30° steel powder coated mounting assembly (supplied with mounting plate)	
Extended product warranty		
WR5[6]	5-year limited warranty	
Example model string: 5708-SEV-A-B-2-I1-S-P-B means volume measurement with visualization, ATEX intrinsic safety, with standard operation temperature antenna and O-ring.		

1. The Rosemount 5708 supports communication with the Modbus RTU and provides the holding registers only. It is not used for configuration.
2. Use when ordering high temperature antenna or for non-hazardous locations.
3. Order mechanical parts separately (see Table 2).
4. Angle adapter must be selected separately (see Table 2).
5. ESP hopper mounting bracket must be selected separately (see Table 2).
6. Check with your local Emerson™ office for a 2-year extended warranty when prepaid startup is ordered with the Rosemount 5708.

Accessories

Table 2. Accessories Ordering Information

The starred options (★) represent the most common options and should be selected for best delivery.
The non-starred offerings are subject to additional delivery lead time.

System controller and LinkPro (see page 14)		
05708-4000-0001	Rosemount System controller	★
05708-5000-0001	Rosemount LinkPro	★
3DMultiVision software upgrade and disk-on-key		
05708-8001-0027	Rosemount 3DMultiVision software upgrade per server installation	
05708-8001-0030	3DVision/3DMultiVision COG license activation	
05708-8001-0031	3DVision/3DMultiVision virtual sections license activation	
05708-3023-0001	Rosemount 5708 software and document disk-on-key	
Model type upgrade licenses		
05708-8001-0004	Upgrade Rosemount 5708LNN to VEN	
05708-8001-0006	Upgrade Rosemount 5708LNN to SEV	
05708-8001-0011	Upgrade Rosemount 5708VEN to SEV	
Communication modems		
05708-8003-0007	Converter RS485 to TCP/IP	
05708-3022-0001	USB to RS485 converter	
Antenna neck extensions (see page 23)		
05708-8005-0001	12-in. (30 cm) neck extension with extender cable for standard temperature	
05708-8005-0002	20-in. (50 cm) neck extension with extender cable for standard temperature	
05708-8005-0010	39-in. (100 cm) neck extension with extender cable for standard temperature	
05708-8005-0020	79-in. (200 cm) neck extension with extender cable for standard temperature	
05708-8005-0030	118-in. (300 cm) neck extension with extender cable for standard temperature	
05708-3012-0003(1)	12-in. (30 cm) neck extension for high temperature	
05708-3012-0005(1)	20-in. (50 cm) neck extension for high temperature	
05708-3012-0010(1)	39-in. (100 cm) neck extension for high temperature	
05708-3012-0020(1)	79-in. (200 cm) neck extension for high temperature	
05708-3012-0030(1)	118-in. (300 cm) neck extension for high temperature	
Antenna cable extensions (see page 25)		
05708-3006-0003	12-in. (30 cm) antenna cable extender for standard temperature only	
05708-3006-0005	20-in. (50 cm) antenna cable extender for standard temperature only	
05708-3006-0010	39-in. (100 cm) antenna cable extender for standard temperature only	

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05708-3006-0020	79-in. (200 cm) antenna cable extender for standard temperature only	
05708-3006-0030	118-in. (300 cm) antenna cable extender for standard temperature only	
Angle adapters (see page 24)		
05708-8006-0001	10° angle adapter with extender cable for standard temperature	
05708-8006-0002	20° angle adapter with extender cable for standard temperature	
05708-3010-0010(1)	10° angle adapter for high temperature	
05708-3010-0020(1)	20° angle adapter for high temperature	
Mounting plates (see page 27)		
05708-1810-0411	Matches DN 100, PN 16 connection; painted carbon steel	
05708-1810-0611	Matches DN 150, PN 16 connection; painted carbon steel	
05708-1810-0811	Matches DN 200, PN 16 connection; painted carbon steel	
05708-1810-1011	Matches DN 250, PN 16 connection; painted carbon steel	
05708-1811-0411	4-in. (100 mm) - Matches ANSI 4-in., Class 150 connection; painted carbon steel	
05708-1811-0611	6-in. (150 mm) - Matches ANSI 6-in., Class 150 connection; painted carbon steel	
05708-1811-0811	8-in. (200 mm) - Matches ANSI 8-in., Class 150 connection; painted carbon steel	
05708-1811-1011	10-in. (250 mm) - Matches ANSI 10-in., Class 150 connection; painted carbon steel	
05708-1822-0411	High temperature, Matches DN 100, PN 16 connection; painted carbon steel	
05708-1822-0611	High temperature, Matches DN 150, PN 16 connection; painted carbon steel	
05708-1822-0811	High temperature, Matches DN 200, PN 16 connection; painted carbon steel	
05708-1822-1011	High temperature, Matches DN 250, PN 16 connection; painted carbon steel	
05708-1823-0411	High temperature, 4-in. (100 mm) - Matches ANSI 4-in., Class 150 connection; painted carbon steel	
05708-1823-0611	High temperature, 6-in. (150 mm) - Matches ANSI 6-in., Class 150 connection; painted carbon steel	
05708-1823-0811	High temperature, 8-in. (200 mm) - Matches ANSI 8-in., Class 150 connection; painted carbon steel	
05708-1823-1011	High temperature, 10-in. (250 mm) - Matches ANSI 10-in., Class 150 connection; painted carbon steel	
Mounting assembly (see page 28)		
05708-3008-0001	Mounting adapter, 0°	
05708-3008-0005	Mounting adapter, 5°	
05708-3008-0010	Mounting adapter, 10°	
05708-3008-0015	Mounting adapter, 15°	
05708-3008-0020	Mounting adapter, 20°	
05708-3008-0030	Mounting adapter, 30°	
05708-3013-0001	High temperature mounting adapter 0°	
05708-3013-0005	High temperature mounting adapter 5°	
05708-3013-0010	High temperature mounting adapter 10°	
05708-3013-0015	High temperature mounting adapter 15°	

Table 2. Accessories Ordering Information

The starred options (★) represent the most common options and should be selected for best delivery.
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05708-3013-0020	High temperature mounting adapter 20°	
05708-3013-0030	High temperature mounting adapter 30°	
Mounting accessories (see page 26)		
05708-3014-0001[1]	ESP hopper mounting bracket	
05708-3023-0001	Manhole mounting tool kit	

1. Specify high temperature antenna cable length as part of the model code.

Specifications

Performance specifications

Reference conditions

- Temperature 77 °F ±9 °F (25 °C ±5 °C)
- Relative humidity 25–75%

Reference accuracy[1]

Distance ± 0.6-in. (15 mm) at reference conditions

Directional ±2 degrees

Temperature gradient

0.5% per 10.8 °F (6 °C) gradient

Radio approvals[2][3]

FCC 47 CFR part 15:2007, sub-part B, class A

Functional specifications

General

Field of application

Bulk solids

Measurement principle

Low frequency acoustic waves

Dead band

19.6-in. (0.5 m) from top of antenna assembly

Measurement range

Up to 230 ft. (70 m)

Minimum bulk density

12.5 lb/ft^3 (200 kg/m^3)

Process fitting

Thread, angle adapter

Emitting frequency

2.3–7 kHz

Power supply –4-wire instrument (active) 4–20 mA

Supply voltage

18–32 Vdc

Power consumption

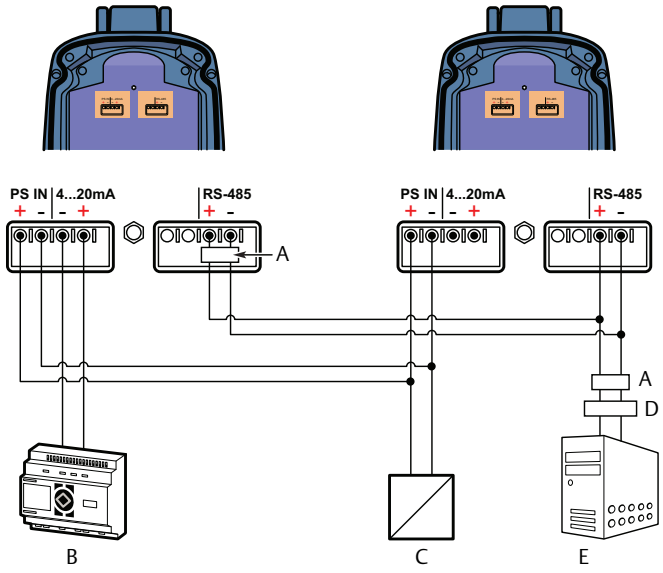
Max. 1.5 W @ 24 Vdc

Output

Output signal

4–20 mA[4] and Modbus[5]

Figure 1. Connection Example



A. 120 Ω resistor
B. PLC/DCS/Display
C. 24 Vdc power supply
D. RS-485 to USB converter
E. Rosemount 3DVision server

Current resolution

10 µA

Current limitation

22 mA

1. *Volume accuracy is dependent upon the position of devices in relation to the product surface. It can be estimated for every installation based upon mounting position, and vessel size.*
2. *The device may not cause harmful interference.*
3. *The device must accept any interference received, including interference that may cause undesired operation.*
4. *4–20 mA is a 2-wire connection, non-loop powered, and connected to an active device.*
5. *The Rosemount 5708 supports communication with the Modbus RTU and provides the holding registers only.*

Maximum load (active output)

400 Ω

Communication

Physical

RS-485

Protocol

Modbus[1]

Process pressure, temperature, and humidity

Vessel pressure

–0.29... 43.5 PSI (–20 mBar... 3 Bar)

Process temperature measured on the process fitting

- Standard temperature: –40... +185 F° (–40... +85 °C)
- High temperature: –40... +356 °F (–40... +180 °C)

Process humidity

up to 75% RH

Ambient, storage, and transport temperature

–40... +185 °F (–40... +85 °C)

Ingress protection

IP66, IP67 according to IEC 60529

Display and configuration

Output units

- Level and distance: feet (ft.), meters (m)
- Volume: cubic meters (m^3), cubic feet (ft^3), liters, gallons, bushels
- Mass: tons (US short), tons (metric), pounds (lb)
- Bulk density: ton/m^3, lbs/ft^3, gr/cm^3, kg/m^3
- Temperature: Fahrenheit (°F), Celsius (°C)

Output variables

	Rosemount 5708L	Rosemount 5708V	Rosemount 5708S
Level/distance	✓	✓	✓
Minimum and maximum level/distance	N/A	✓	✓
Volume	N/A	✓	✓
Mass[1]	N/A	✓	✓
SNR	✓	✓	✓
Temperature at antenna	✓	✓	✓

1. The mass is calculated in a conversion using one of the available methods within Rosemount 3DVision or independently on the customer's DCS/PLC/SCADA.

Configuration tools

- LCD display with four-button keypad[2]
- Rosemount 3DVision software (for single site/vessel)
- Rosemount 3DMultiVision software (for multiple sites/vessels)

Emerson Wireless THUM™ Adapter[3]

The THUM Adapter can be connected to the Rosemount 5708 by mounting it remotely using a remote mount kit.

See the Emerson Wireless THUM™ Adapter Product Data Sheet and Technical Note.

1. *The Rosemount 5708 supports communication with the Modbus RTU and provides the holding registers only.*

2. *The Rosemount 5708L can be completely configured via the LCD display. For the Rosemount 5708V and 5708S, the Rosemount 3DVision/3DMultiVision software is required.*

3. *The Rosemount 5708 with the THUM Adapter enables wireless access to the following parameters: 4–20mA current, distance, percentage, temperature and SNR. Diagnostics and configuration are available through wired connection.*

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process material or other process parameters with the product, options, configuration or materials of construction selected.

Housing and enclosure

Housing

Painted aluminum die casting

Antenna

Painted aluminum die casting (optional PTFE coating available)

Display window in housing

Polycarbonate/PC-ABS

Electrical connection

M20 for cable glands or conduit entries

Recommended output cabling is low resistance, twisted shielded pairs, 20–24 AWG

Cable entry/plug

1 x M20 x1.5 (cable Ø 8 to 13 mm)

1 x plug M20x 1.5

2 optional thread adapters M20, 1/2-in. NPT

Process fitting

Requires mounting plate

Weight

12.35 lb (5.6 kg)

Vessel connection

Mounting plate[1]

Minimum distance from filling points

24-in. (600 mm)

Minimum distance from side wall

24-in. (600 mm)

Mounting plate dimensions

According to DIN PN16 or ANSI Class 150 size and holes pattern

Display panel

LCD display

4 lines x 20 characters

Adjustment elements

4 keys (ESC, +, –, E)

1. *Mounting plates are available to accommodate 4–10-in. (100–250 mm) openings. For openings smaller than 8-in. (200 mm), there are antenna extensions available to allow the antenna to be installed from the inside of the vessel below the nozzle.*

Accessories

Rosemount System Controller

General

Construction

Aluminum chassis with fanless design

Power requirements

ATX power mode

DC to DC power design on-board, support from 9–36 Vdc
Optional 19 V, 65 W power adapter

Data storage

(1x) 2.5-in. SATA HDD drive bay

(1x) External CF socket

Physical specifications

Dimensions (H x W x D)
19.7 x 11.8 x 5.9-in. (500 x 300 x 150 mm)

Front view **Back view**

Weight

26.9 lb (12.2 kg)

Operating temperature

Ambient with air flow

23 to 122 °F (–5 to 50 °C) indoor installation

Storage temperature

–4 to 176 °F (–20 to 80 °C)

Relative humidity

10–93% (non-condensing)

Power supply

Voltage

20–28 Vdc

Power consumption

65 W

I/O Interface

Front

(2x) USB2.0 ports

Rear

9–36 Vdc input

(1x) DB15 VGA port

(1x) speaker out

(2x) USB2.0 ports

(2x) RS-485 with auto-flow control: isolation protection on COM1 and COM2

Note
When the Rosemount 5708 is connected to the Rosemount System Controller, the connection is active, not passive. Therefore, the device is the active module and the Rosemount System Controller should be the passive module.

Rosemount LinkPro

Physical specifications

Housing enclosure

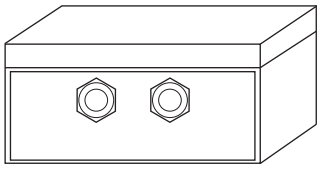
Polystyrene

Weight

3.13 lb (1.42 kg)

Dimensions (L x W x H)

10 x 7 x 3.5-in. (255 x 180 x 90 mm) - not including cable glands



Protection

IP66

Voltage supply

Operating voltage

10–30 Vdc (nominal 24 Vdc)

Average power consumption (idle mode)

1.5 W

Peak power consumption (transmit mode)

18 W

Power source limitation

2 A

Ambient temperature

–22 to +158 °F (–30 to +70 °C)

CE Conformity

EMC

Emission EN 301 489-7 V1.3.1:2005 standard harmonized under R&TTE Directive 1995/5/EC and EMC Directive 2004/108/EC Article 6(2)

Safety

EN 60950-1:06; EN 60950-22:06

Radio emissions

EN 301 511 V9.0.2

FCC Approval

FCC 47 CFR part:15:2007, subpart B, class A

Cable entry/plug

(2x) cable gland M20 x 1.5 (cable Ø 8–13 mm)

Software Installation Requirements

Rosemount 3DVision server

Processor	Intel™ Dual Core and above
RAM	At least 1 GB
Hard disk	At least 1 GB free space per year (2.8 MB per day for log files)
Graphic card resolution	Minimum 1024 x 768
Interfaces	Ethernet NIC card, serial port, USB port
Operating systems	Microsoft® Windows™ XP (SP2), Windows 7, and Windows 10

Rosemount 3DVision client

Processor	Intel Dual Core and above
RAM	At least 1 GB
Hard disk	At least 1 GB free space on HD
Graphic card resolution	Minimum 1280 x 1024
Graphic card memory	1 GB
Interfaces	Ethernet NIC card, CD-ROM drive or USB port
Operating systems	Windows XP (SP2), Windows 7, and Windows 10
Framework	Microsoft .NET framework 4.0

Product certifications

European Directive Information

A copy of the EC Declaration of Conformity can be found at the end of the Rosemount 5708 Series Quick Start Guide.
The most recent revision of the EC Declaration of Conformity can be found at EmersonProcess.com/Rosemount.

Ordinary Location Certification

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

North America

I5 US and Canada Intrinsic Safety (IS)
Certificate:3052166
Standards: FM Class 3600–2011, FM Class 3610–2010, FM Class 3810–2005, ANSI/IEC 60529–2004, CSA Std. C22.2. No. 25- 09, CSA Std. C22.2. No.157-92, CSA Std. C22.2 No. 1010–04, CAN/CSA E61241-1-1-2010
Markings: IS CL I, II DIV 1, GP C, D, E, F, G when connected per Rosemount drawing 05708-1900; T4(–40 °C ≤ T_a ≤ +85 °C); IP 6X

For electronic modules with serial number 836xxxxxxx:

Supplies-Terminals J5.1 (+), J5.2 (GND)
V_{max} (U_i) = 30 V, I_{max} (I_i) = 212 mA, P_{max} (P_i) = 1.2 W, C_i = 8 nF, L_i = 0

Interfaces-Terminals J5.4 (4 - 20 mA signal), J5.3 (GND common with J5.2):
V_{max} (U_i) = 10.5 V, I_{max} (I_i) = 106 mA, P_{max} (P_i) = 1.1 W, C_i = 8 nF, L_i = 0

RS-485-Terminals J6.3 (P), J6.4 (N):
V_{max} (U_i) = 6.51 V, I_{max} (I_i) = 651 mA, P_{max} (P_i) = 1.06 W, C_i = 0, L_i = 0

Approval valid for HART® and Modbus options.

Special Conditions for Safe Use (X):

1. The 3D Solids Scanner is only for use with electronics unit marked with serial number 836xxxxxx, as these units are for use with the 3D Solids ambient temperature range.
2. Part of the enclosure is constructed of plastic. To prevent the risk of electrostatic sparking, the plastic surface should be cleaned with a damp cloth.

Europe

I1 ATEX Intrinsic Safety
Certificate: BVS14ATEXE060X
Standards: EN60079-0:2012, EN60079-11:2012
Markings: ⟨Ex⟩ II 2 G Ex ib [ia] IIB T4 Gb (–40 °C ≤ T_a ≤ +85 °C)
Ex II 1/2 D Ex ib [ia] IIIC T110°C Da/Db
(–40 °C ≤ T_a ≤ +85 °C)

Table 3. Interface Para≤meters

Parameter	4–20 mA	RS-485
Voltage U_i/U_o	10.5 V	6.51 V
Current I_i/I_o	106 mA	2 x 651 mA
Power P_i/P_o	1.1 W	2 x 1.06 W
Capacitance C_i	8 nF	0 nF
Inductance L_i	0 mH	0 mH
Capacitance C_o	16 µF	2 x 285 µF
Inductance L_o	80 µH	83.9 µH
L_o/R_o	17.77 µH/Ω	67.12 µH/Ω
Characteristics	Trapezoid	Linear
Terminals	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Table 4. Supply Circuit Parameters

Parameter	Input	Output
Voltage U_i/U_o	24 V	N/A
Current I_i	Same values as the interconnected IS power supply	N/A
Power P_i/P_o	3 W	N/A
Capacitance C_i/C_o	8 nF	Same values of the interconnected IS power supply reduced by C_i
Inductance L_i/L_o	0 mH	Same values of the interconnected IS power supply reduced by L_i
L_o/R_o ratio	N/A	Same values of the interconnected IS power supply reduced by L_i
Characteristics	N/A	Same values as the interconnected IS power supply
Terminals	J5.1 (+), J5.2 (GND)	N/A

Special Condition for Safe Use (X):

1. Dust application:
   The installation of the 3D Solids Scanner or of the Antenna Unit of models providing head separation in the wall to areas requiring EPL Da (apparatus category 1D) equipment shall provide a degree of protection IP6X according to EN60529 and shall be carried out in such a way, that all metallic parts are integrated in the local equipotential bonding.
   Manufacturer's technical information related to use of the 3D Solids Scanner in contact with aggressive/corrosive media and to avoid any risk of mechanical impact shall be observed.

International

I7 IECEx Intrinsic Safety
Certificate:IECEx BVS 15.0042X
Standards: IEC 60079-0: 2011, IEC 60079-11: 2011
Markings: Ex ib [ia] IIB T4 Gb (-40 °C ≤ T_a ≤ +85 °C)
Ex ib [ia] IIIC T110°C Da/Db
(-40 °C ≤ T_a ≤ +85 °C)

Table 5. Interface Parameters

Parameter	4–20 mA	RS-485
Voltage U_i/U_o	10.5 V	6.51 V
Current I_i/I_o	106 mA	2 x 651 mA
Power P_i/P_o	1.1 W	2 x 1.06 W
Capacitance C_i	8 nF	0 nF
Inductance L_i	0 mH	0 mH
Capacitance C_o	16 µF	2 x 285 µF
Inductance L_o	80 µH	83.9 µH
L_o/R_o	17.77 µH/Ω	67.12 µH/Ω
Characteristics	Trapezoid	Linear
Terminals	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Table 6. Supply Circuit Parameters

Parameter	Input	Output
Voltage U_i/U_o	26.6 V	N/A
Current I_i	Same values as the interconnected IS power supply	N/A
Power P_i/P_o	3 W	N/A
Capacitance C_i/C_o	8 nF	Same values of the interconnected IS power supply reduced by C_i
Inductance L_i/L_0	0 mH	Same values of the interconnected IS power supply reduced by L_i
L_o/R_o ratio	N/A	Same values of the interconnected IS power supply reduced by L_i
Characteristics	N/A	Same values as the interconnected IS power supply
Terminals	J5.1 (+), J5.2 (GND)	N/A

Special Condition for Safe Use (X):

1. Dust application:
   The installation of the 3D-Solids Scanner or of the Antenna Unit of models providing head separation in the wall to areas requiring EPL Da equipment shall provide a degree of protection IP6X according to IEC 60529 and shall be carried out in such a way, that all metallic parts are integrated in the local equipotential bonding.
   Manufacturer's technical information related to use of the 3D Solids Scanner in contact with aggressive/corrosive media and to avoid any risk of mechanical impact shall be observed.

Brazil

I2 INMETRO Intrinsic Safety
Certificate:UL-BR 15.0072X
Standards:ABNT NBR IEC 60079-0:2008 + Errata 1:2011,
ABNT NBR IEC 60079-11:2009
Markings: Ex ib [ia] IIB T4 Gb (- 40 °C ≤ Ta ≤ + 85 °C) Ex ib [ia] IIIC T110 °C Da/Db (- 40 °C ≤ Ta ≤ + 85 °C)

Table 7. Interface Parameters

Parameter	4–20 mA	RS-485
Voltage U_i/U_o	10.5 V	6.51 V
Current I_i/I_o	106 mA	2 x 651 mA
Power P_i/P_o	1.1 W	2 x 1.06 W
Capacitance C_i	8 nF	0 nF
Inductance L_i	0 mH	0 mH
Capacitance C_o	16 µF	2 x 285 µF
Inductance L_o	80 µH	83.9 µH
L_o/R_o	17.77 µH/Ω	67.12 µH/Ω
Characteristics	Trapezoid	Linear
Terminals	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Table 8. Supply Circuit Parameters

Parameter	Input	Output
Voltage U_i/ U_o	24 V	N/A
Current I_i	Same values as the interconnected IS power supply	N/A
Power P_i/P_o	3 W	N/A
Capacitance C_i/C_o	8 nF	Same values of the interconnected IS power supply reduced by C_i
Inductance L_i/L_o	0 mH	Same values of the interconnected IS power supply reduced by L_i
L_o / R_o ratio	N/A	Same values of the interconnected IS power supply reduced by L_i
Characteristics	N/A	Same values as the interconnected IS power supply
Terminals	J5.1 (+), J5.2 (GND)	N/A

Special Conditions for Safe Use (X):

1. The installation of the 3D Solids Scanner or of the Antenna Unit of models providing head separation in the wall to areas requiring EPL Da (Zone 20) equipment shall provide a degree of protection IP6X according to ABNT NBR IEC 60529 and shall be carried out in such a way, that all metallic parts are integrated in the local equipotential bonding.
2. Manufacturer's technical information related to use of the 3D Solids Scanner in contact with aggressive / corrosive media and to avoid any risk of mechanical impact shall be observed.

China

I3 China Intrinsic Safety
Certificate: GYJ14.1362X
Standards: GB3836.1-2010, GB3836.4-2010, IEC61241-0 - 2004, GB12476.4-2010
Markings: Ex ib/ia IIB Gb T4 Ex ibD/iaD 21/20 T110 °C

Table 9. Interface Parameters

Parameter	4–20 mA	RS-485
Voltage U_i/U_o	10.5 V	6.51 V
Current I_i/I_o	106 mA	2 x 651 mA
Power P_i/P_o	1.1 W	2 x 1.06 W
Capacitance C_i	8 nF	0 nF
Inductance L_i	0 mH	0 mH
Capacitance C_o	16 µF	2 x 285 µF
Inductance L_o	80 µH	83.9 µH
L_o/R_o	17.77 µH/Ω	67.12 µH/Ω
Characteristics	Trapezoid	Linear
Terminals	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Table 10. Supply Circuit Parameters

Parameter	Input	Output
Voltage U_i/ U_o	24 V	N/A
Current I_i	Same values as the interconnected IS power supply	N/A
Power P_i/P_o	3 W	N/A
Capacitance C_i/C_o	8 nF	Same values of the interconnected IS power supply reduced by C_i
Inductance L_i/L_o	0 mH	Same values of the interconnected IS power supply reduced by L_i
L_o / R_o ratio	N/A	Same values of the interconnected IS power supply reduced by L_i
Characteristics	N/A	Same values as the interconnected IS power supply
Terminals	J5.1 (+), J5.2 (GND)	N/A

Special Condition for Safe Use (X):

1. The installation of the product shall provide a degree of protection IP6X according to GB4208-2008, and in such a way that all metallic parts are integrated in the local equipotential bonding.

India

IW PESO Intrinsic Safety
Certificate: P351811/1
Standards: EN60079-0:2012, EN60079-11:2012
Markings: Ex ib [ia] IIB t4 Gb

Korea

IP KTL Intrinsic Safety
Certificate: 15-KA4BO-0298X - ex
Standards: IEC 60079-0: 2011, IEC 60079-11: 2011
Markings: Ex ib [ia] IIB T4 Gb, Ex ib [ia] IIIC T110C Da/Db

Russia

IM Technical Regulation Customs Union (EAC) Intrinsic Safety
Certificate: RU C-DE.МЮ62.B.01949
Markings: 1Ex ib [ia] IIB T4 Gb X (–40 ≤ T_{amb} ≤ 85 °C)
Ex ib [ia] IIIC T110 °C Da/Db X
(–40 ≤ T_{amb} ≤ 85 °C)

Table 11. Supply Circuit Parameters

Parameter	Input	Output[1]
Voltage U_i/ U_o	24 V	24 V
Current I_i	[2]	[2]
Power P_i/P_o	3 W	3 W[2]
Capacitance C_i/C_o	8 nF	[3]
Inductance L_i/L_o	negligible	[3]
L_o / R_o ratio	N/A	[3]
Characteristics	N/A	[2]
Terminals	J5.1 (+), J5.2 (GND)	J6.1 (+), J5.2 (GND)

1. J5.1, J5.2 directly connected to J6.1, J6.2.
2. Same values as of the interconnected IS power supply.
3. Same values as of the interconnected IS power supply reduced by C_i, L_i.

Table 12. Interface Parameters

Parameter	4–20 mA	RS-485
Voltage U_i/U_o	10.5 V	6.51 V
Current I_i/I_o	106 mA	2 x 651 mA
Power P_i/P_o	1.1 W	2 x 1.06 W
Capacitance C_i	8 nF	мала
Inductance L_i	0 mH	0 mH
Capacitance C_o	16 µF	2 x 285 µF
Inductance L_o	80 µH	83.9 µH
L_o/R_o	17.77 µH/Ω	67.12 µH/Ω
Characteristics	Trapezoid	Linear
Terminals	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

Special Conditions for Safe Use (X):

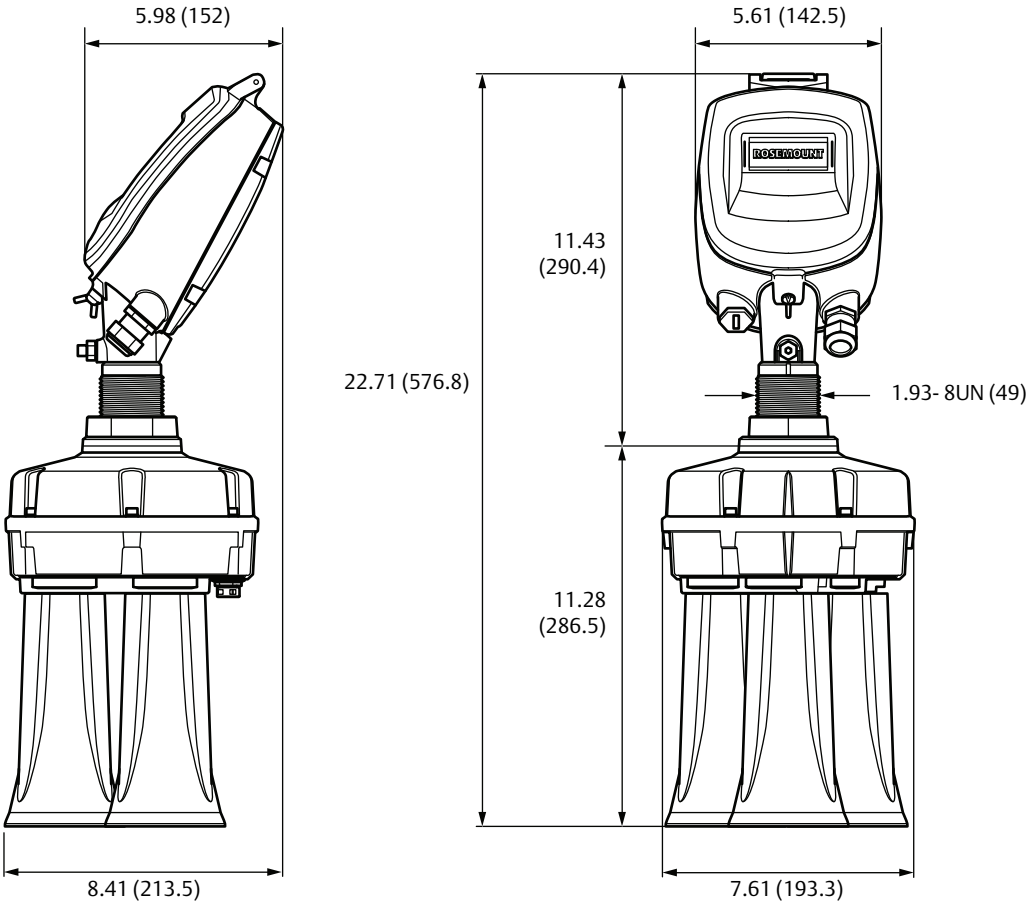
1. Levelmeter should be installed and operated in such a way that no danger of ignition due to electrostatic discharge.
2. The instructions specified in the manual, eliminates the risk of corrosion and / or mechanical action.
3. When the levelmeter, which provides separation of the head in areas requiring protection level equipment Da, the degree necessary to provide protection for at least IP6X in accordance with GOST 14254-96 and assembly should be performed so that all metal parts have the same potential.

Gas flow measurement by a Leading gas producer using Rosemount 1595 Conditioning Orifice Plate reduces operating and capital costs.

For detailed information on product certificates, refer to the Rosemount 5708 Reference Manual.

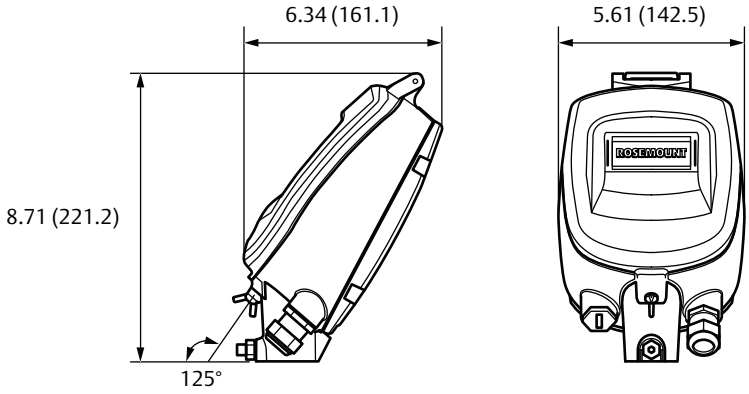
Dimensional drawings

Figure 2. Rosemount 5708 with Antenna Assembly



Dimensions are in inches (millimeters).

Figure 3. Rosemount 5708 Housing



Dimensions are in inches (millimeters).

Figure 4. Accessories - Neck Extension for Standard Temperature (Process Operating Temperature Code S)

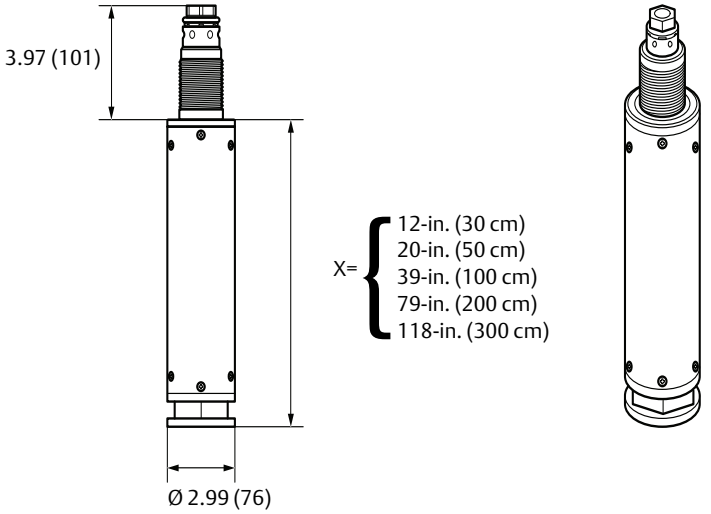
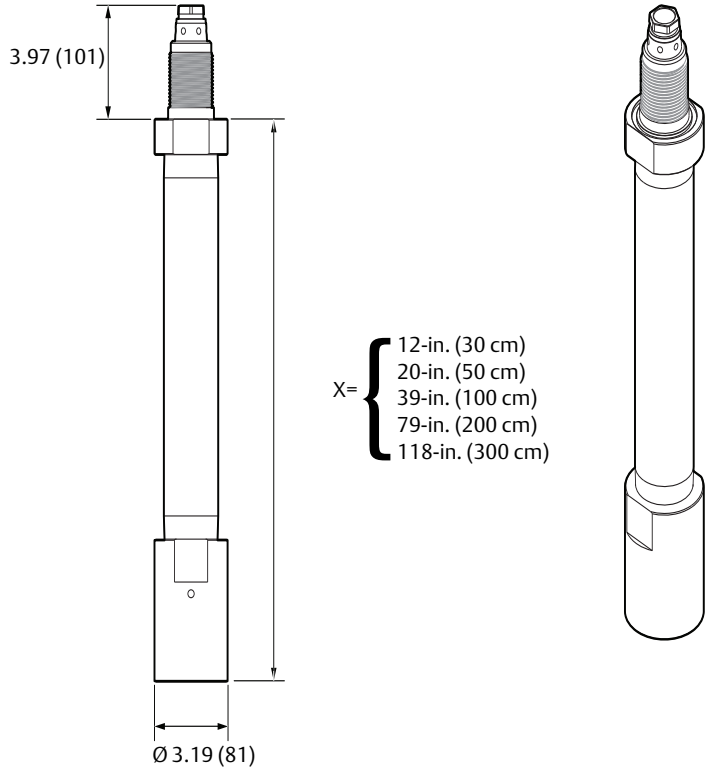
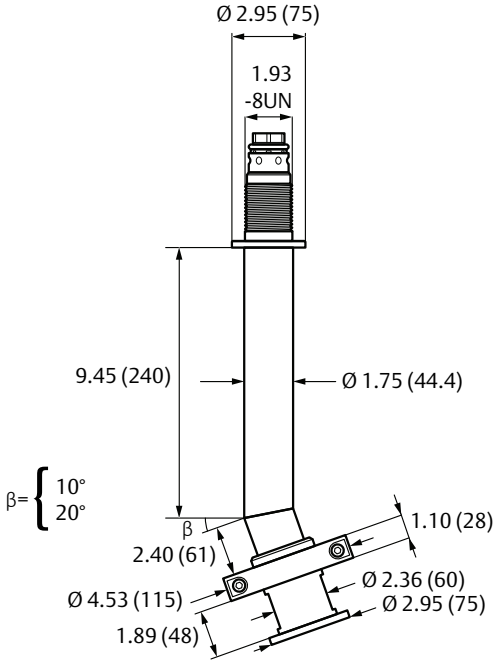


Figure 5. Accessories - Neck Extension for High Temperature (Process Operating Temperature Code H)



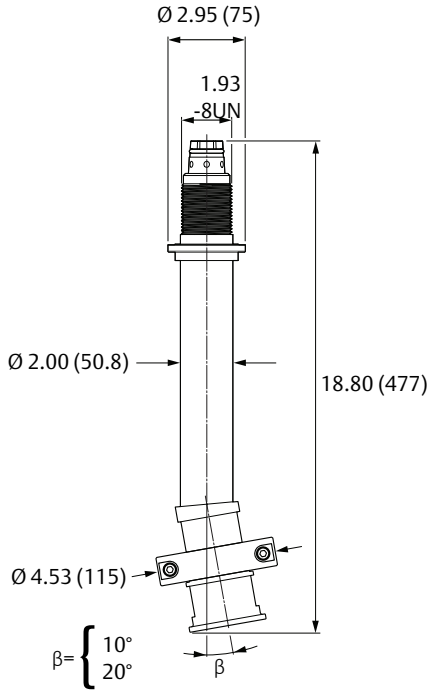
X represents the available options.

Figure 6. Accessories - Angle Adapter for Standard Temperature (Process Operating Temperature Code S)



Dimensions are in inches (millimeters).

Figure 7. Accessories - Angle Adapter for High Temperature (Process Operating Temperature Code H)



Dimensions are in inches (millimeters).

Note

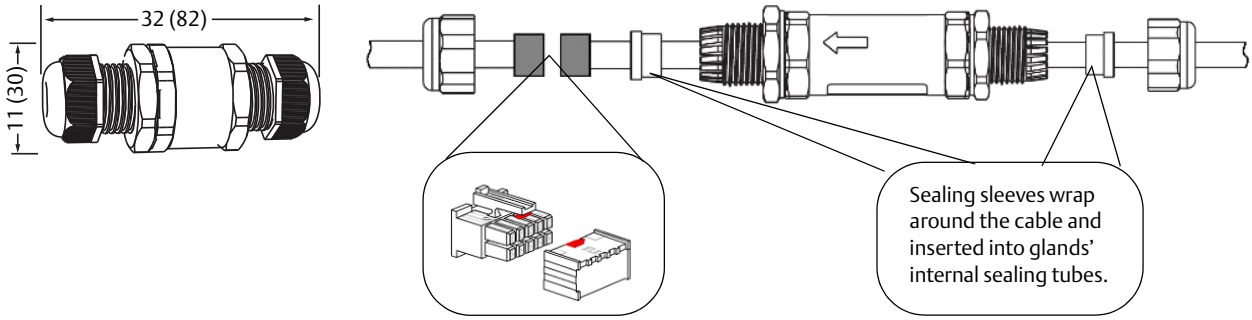
The minimum required opening for the angle adapter is 7.61-in. (193.3 mm).

Figure 8. Accessories - Cable Extension

Cable extension

X=
- 12-in. (30 cm)
- 20-in. (50 cm)
- 39-in. (100 cm)
- 79-in. (200 cm)
- 118-in. (300 cm)

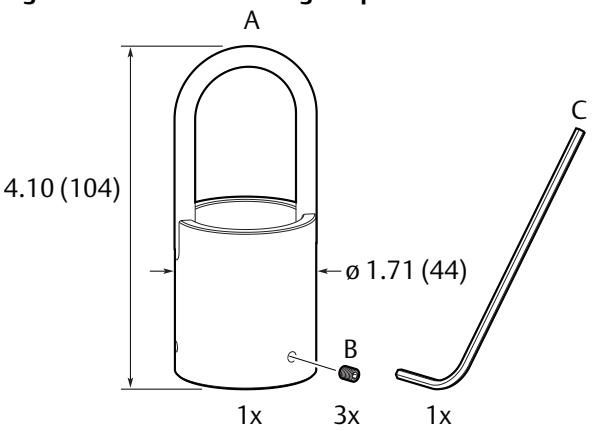
Cable extension connector



Dimensions are in inches (millimeters) if nothing else stated.

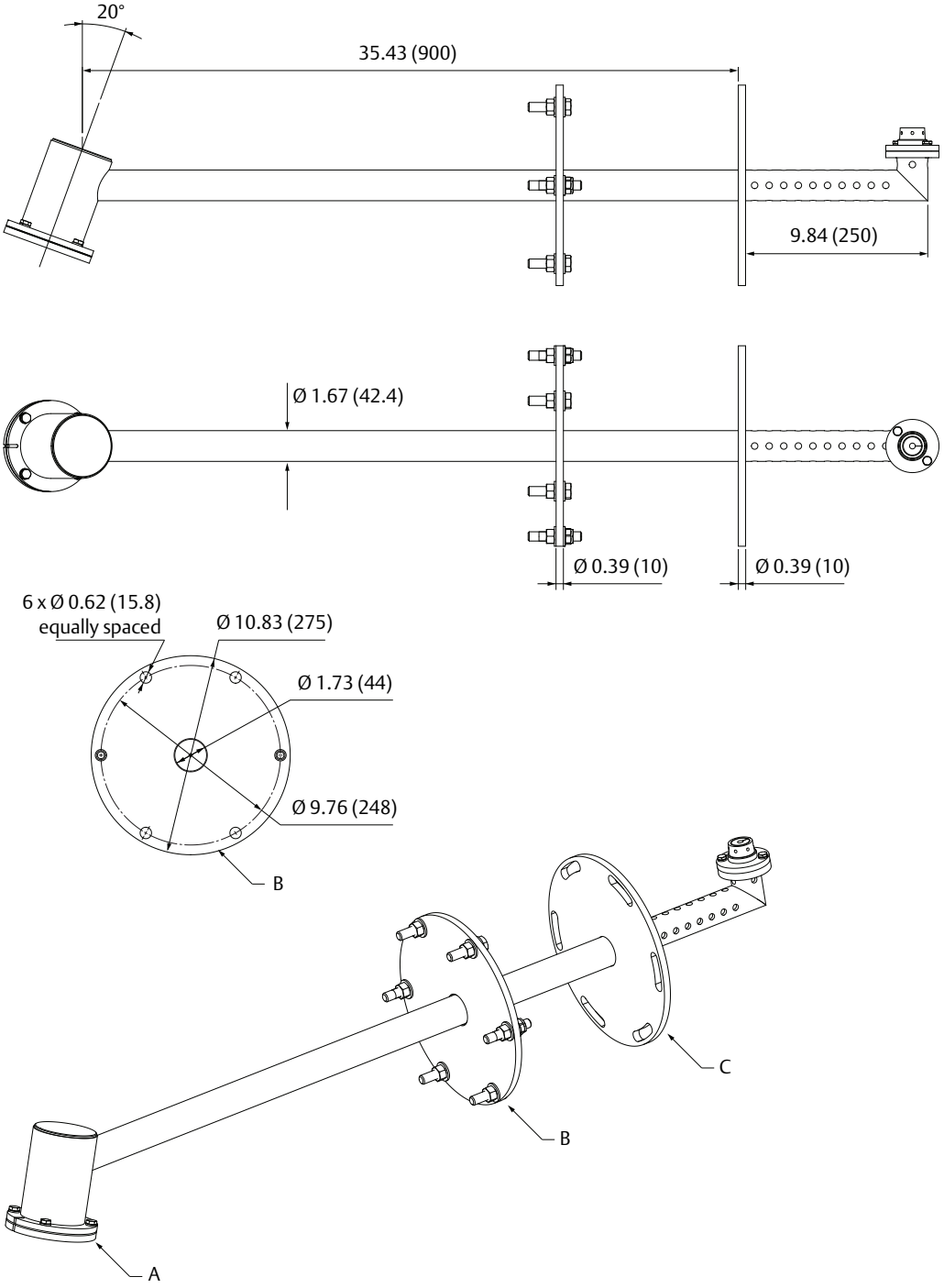
Note
X represents the available options. The cable extension and connector are available for standard temperature only.

Figure 9. Manhole Mounting Adapter



A. Installation adapter
B. Set screw
C. 2 mm hex key
Dimensions are in inches (millimeters).

Figure 10. Accessories - ESP Hopper Mounting Adapter

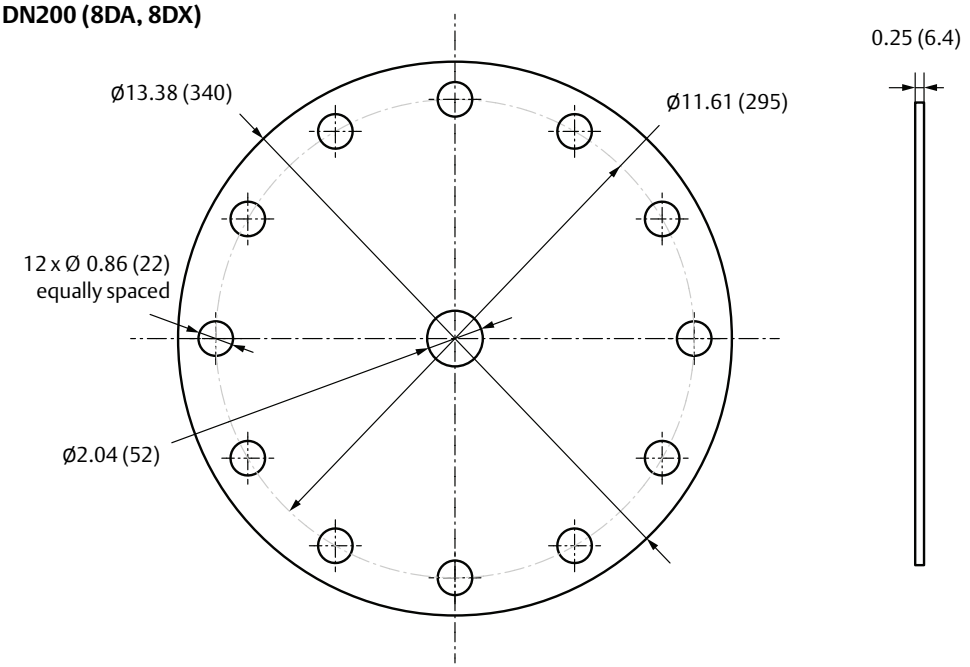


A. Antenna adapter
B. Support flange
C. Bracket flange
Dimensions are in inches (millimeters).

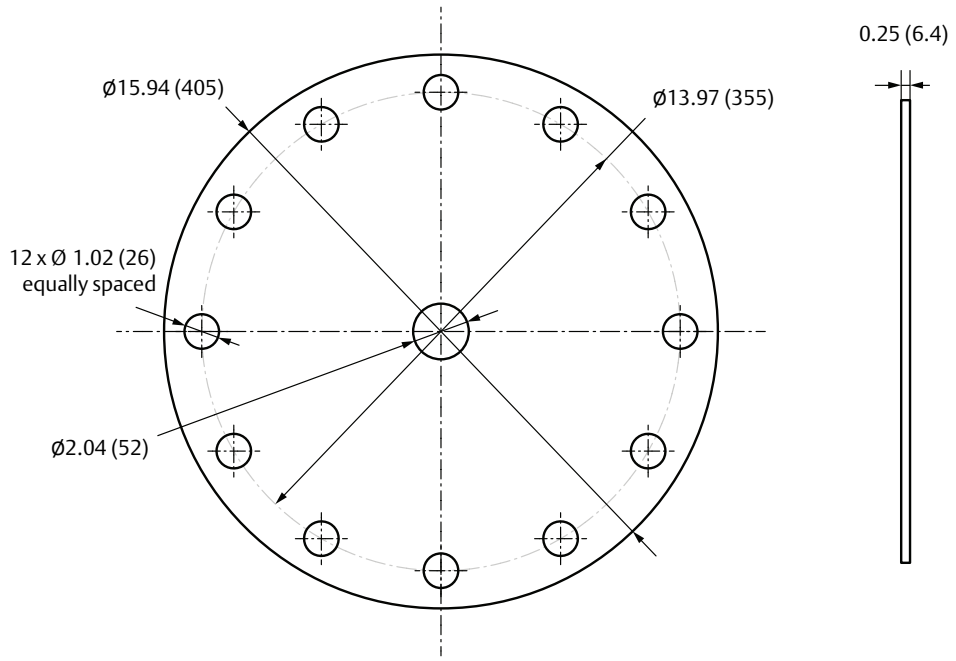
Note
Vertical nozzle for connecting to the bracket flange should be supplied by the customer.

Figure 11. Accessories - Mounting Plates

DN200 (8DA, 8DX)



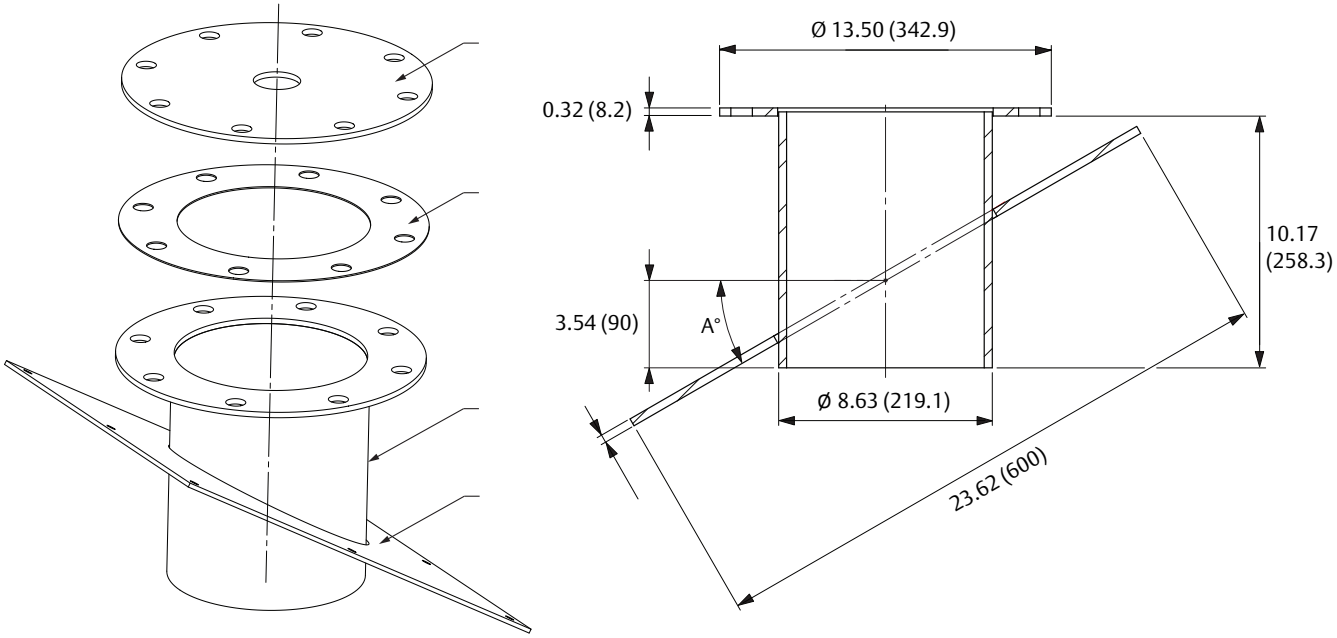
DN250 (TDA, TDX)



Dimensions are in inches (millimeters).

Note
Several different types of mounting plates are available. For detailed information, see the Rosemount 5708 Reference Manual.
Mounting plates are not pressure rated.

Figure 12. Mounting Assembly



A. Mounting plate
B. Gasket
C. Adapter tube
D. Adapter plate
Dimensions are in inches (millimeters).

Table 13. Mounting Assembly Option Codes for Different Angles

Angle A°	Option code standard temperature	Option code high temperature
0	A00	B00
5	A05	B05
10	A10	B10
15	A15	B15
20	A20	B20
30	A30	B30

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