Quick Start Guide
00825-0100-4570, Rev CB
July 2017

Rosemount™ 5708 3D Solids Scanner

EMERSON™

⚠ WARNING

Authorized personnel

- All operation described in this document must be carried out by authorized, trained personnel only.
- For safety and warranty reasons, any internal work on the devices must be carried out by manufacturer-authorized personnel only.

Warnings about misuse

- Inappropriate or incorrect use of the device may result in hazards and application-specific malfunctioning, such as vessels overfill or damage to system components through incorrect mounting or adjustments.
- If the device is used in a manner not specified in this document, the protection provided by the device will be impaired.

General safety instructions

- Consider local and national electrical codes and all common safety regulations and accident prevention rules during installation.
- Substitution of components may impair intrinsic safety.
- For preventing ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

Learn more

Visit Emerson.com/Level to download the Rosemount 5708 3D Solids Scanner Reference Manual.

Package components

- Rosemount 5708 head
- Rosemount 5708 antenna
- Rosemount 5708 Quick Start Guide
- USB to RS-485 converter (pre-wired in factory)
- USB Flash drive containing:
  a. Installation package of the Rosemount 3DVision software
  b. Reference manual
  c. Quick Start Guide
  d. Configuration movie
  e. Installation movie
  f. Link to Emerson.com/Level

Contents

1.0 Site preparations

Prior to installation, complete and verify the site preparations described in this section. For optimal installation, ensure the Rosemount 5708 can be positioned and fitted according to the guidelines in section 2.0.

Recommended tools for installation:

- A set of small precision screwdrivers (for the terminal blocks)
- 13 mm open wrench
- 4 mm Hex key (preferably with a handle)
- Large adjustable wrench
- Utility knife, cutter, pointed pliers, insulating tape
- Laser measurement device or equivalent
- RS-485 to USB converter, including drivers
- 120 Ω (RS-485) resistor
- 250 Ω (HART®) resistor
- PC or laptop
- DC Voltmeter

Complete the following steps before installing the Rosemount 5708.

1.1 Power

- Make sure grounding is done properly. Connect one end of the cable shield to the power ground. It is highly recommended to have the same potential grounding to all devices.
- Prepare a 24 Vdc power supply near the device mounting location.
- Make sure that you use proper cables for wiring. The Rosemount 5708 is a 4-wire device. The voltage supply and data output (4-20 mA) are carried along two separate two-wire connection cables.

1.2 Communications

- For RS-485 communication, use shielded, twisted-pair cables with 120 Ω impedance. Make sure the cables are approved for RS-485 communications.
- Route communication cables in proper conduits. Use a proper cable type.
- For 4-20 mA communication, use shielded, twisted-pair, low resistance cables. Make sure the cables are rated for analog signals.
- For daisy chaining, a single 4-wire cable can be used, both for RS-485 and the 24 Vdc power supply.

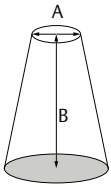
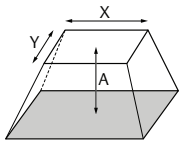
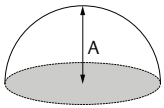
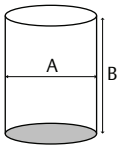
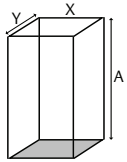
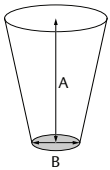
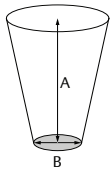
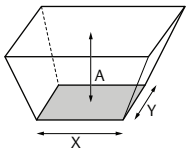
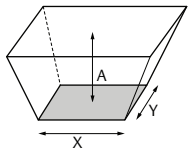
2.0 Site and installation information

The information listed on these pages is necessary for configuration of the device.

2.1 Material characteristics

Material name:						
Material density:	☐	lbs/ft^3	☐	tons/m^3	Angle of repose:	
Max. temperature:	☐	°F	☐	°C	Maximum pressure: ☐ Bar ☐ PSI	

2.2 Vessel type and dimensions

Vessel details[1]	❍ ft ❍ m	
Vessel type	**Cylindrical**	**Rectangular**
Top shape	❍ **Flat**	❍ **Flat**
	❍ **Cone** Top diameter (A): _____ Height (B): _____ 	❍ **Pyramid** Height (A): _____ X: _____ Y: _____ 
	❍ **Dome** Height (A): _____ 	
Center shape	❍ **Cylinder** Diameter (A): _____ Height (B): _____ 	❍ **Cube** Height (A): _____ X: _____ Y: _____ 
Bottom shape	❍ **Flat**	❍ **Flat**
	❍ **Cone** Height (A): _____ Bottom diameter (B): _____ 	❍ **Cone** Height (A): _____ Bottom diameter (B): _____ 
	❍ **Pyramid** Height (A): _____ X: _____ Y: _____ 	❍ **Pyramid** Height (A): _____ X: _____ Y: _____ 

1. Required Field - Accurate Vessel dimensions are required to allow optimal location determination.

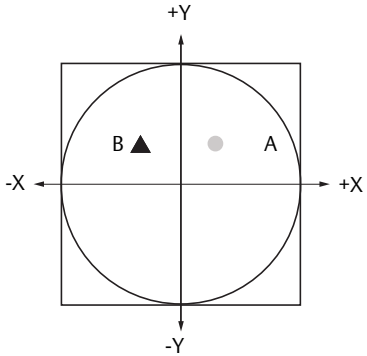
2.3 Vessel details

Internal structure like: Ladder, pipe, window, screw, door, rail, support beam or any other obstacle which is visible to the 5708 scanner. Drawings should be available.			
Internal movement:	☐ YES	☐ NO	If yes, please describe:

2.4 Rosemount 5708 and filling location

	X	Y	Offset from roof
1st Rosemount 5708 location:			
2nd Rosemount 5708 location:			
3rd Rosemount 5708 location:			
Filling location:			

Figure 1. Rosemount 5708 and Filling Port Locations



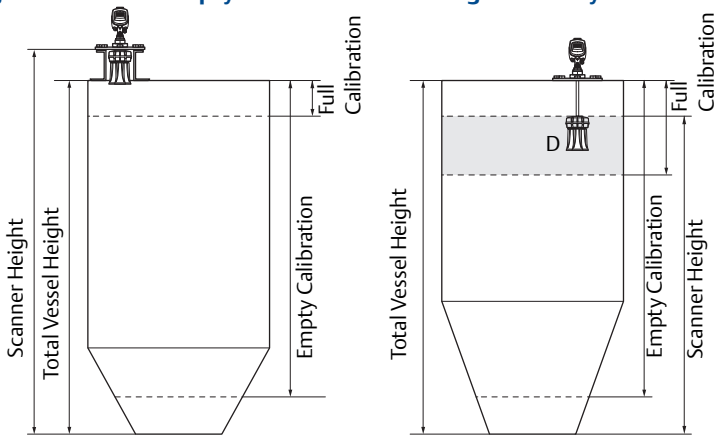
A. Rosemount 5708 (X1, Y1)
B. Fill (X2, Y2)

- When mounting more than a single Rosemount 5708 (e.g. in a system of multiple devices), the location of all devices must be specified.
- When the application has more than a single filling point, all other filling points must be specified as well.

Full and empty calibration

- Full and empty calibration levels are measured from the top of the vessel.
- The full and empty calibration levels represent the 20 mA (100%) and 4 mA (0%) of the volume respectably.
- The Rosemount 5708 has a 20 in. (0.5 m) dead zone starting from the top part of the antenna assembly.

Figure 2. Full and Empty Calibration in Rectangular and Cylindrical Vessels



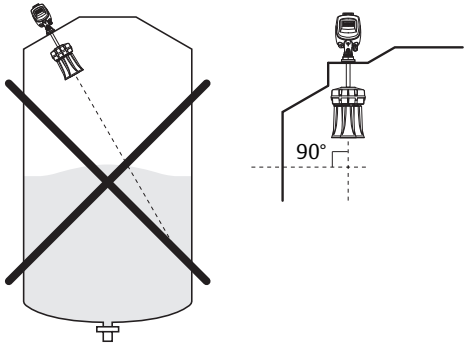
Full calibration:	☐	ft	☐	m
Empty calibration:	☐	ft	☐	m

2.5 Application process

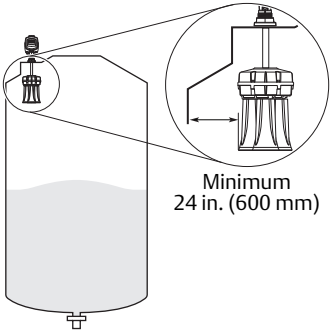
Maximum filling rate:	☐	lbs/hour	☐	tons/hour
Maximum emptying rate:	☐	lbs/hour	☐	tons/hour
Total capacity when vessel is full:	☐	lbs	☐	tons

2.6 Mounting location

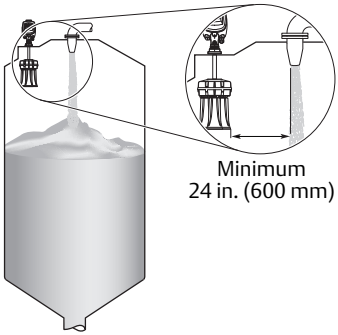
- Mount Rosemount 5708 perpendicular to the ground.



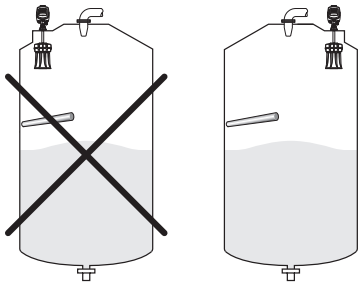
- Keep necessary distance from side wall.



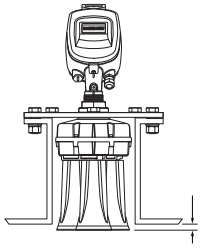
- Keep necessary distance from filling points.



- Make sure there is no obstacle below the device.



- In the case of standpipe mounting, assemble and position the Rosemount 5708 at a height that leaves at least 0.4 in. (10 mm) below the standpipe for the antenna end to protrude.



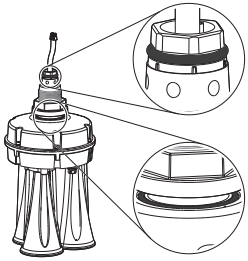
3.0 Physical mounting

Step 1: Check power and cables

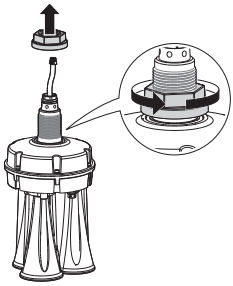
1. Check the 24 Vdc with a voltmeter.
2. Check the resistance of the data communication lines.
3. Verify 60 Ω of resistance when connecting the 120 Ω resistors at both ends.

Step 2: Install the mounting plate

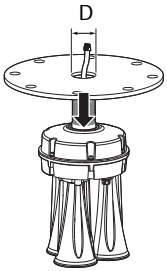
1. Verify the O-rings on the neck tube are in place.



2. Remove the nut from the neck tube.

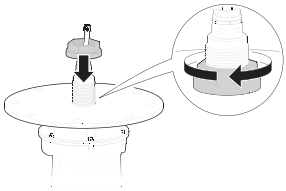


3. Place the mounting plate over the neck tube.



Note
Make sure the hole diameter (D) in the center is 2.05 in. (52 mm).

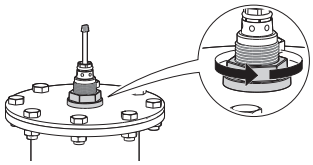
4. Replace the nut and tighten it over the neck tube to the mounting plate.



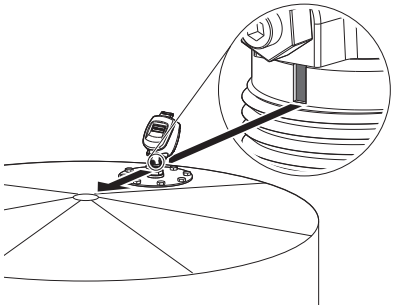
5. Lower the antenna and mounting plate into the fitting location on the silo.
6. Bolt the mounting plate onto the flange of the silo.

Step 3: Rotate antenna toward silo center

1. Slightly loosen the nut that connects the antenna with the mounting plate.



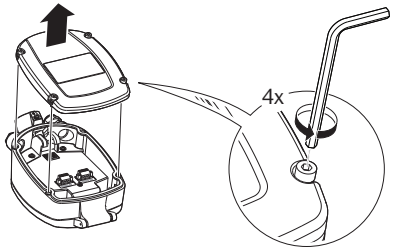
2. Rotate the antenna. **The notch on the top of the thread must be directed toward the center of the silo.**



3. Tighten nut.

Step 4: Install head

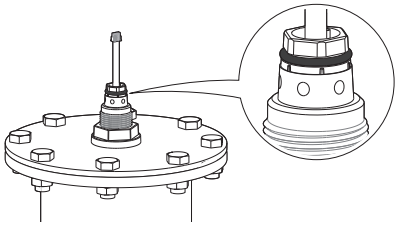
1. Remove the rear panel.



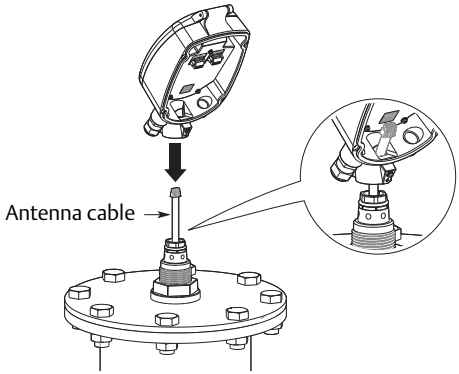
Hex key (4 mm)

2. Remove the cable clamp.

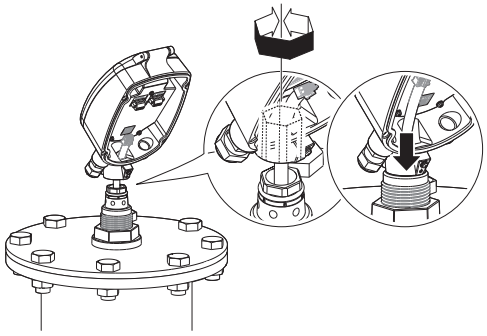
3. Verify the presence of the O-ring on the tube neck.



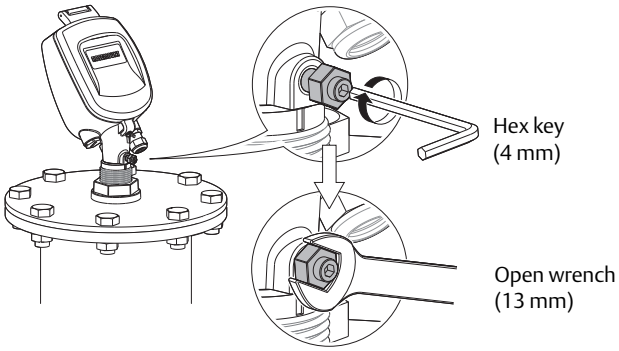
4. Gently insert the antenna cable through the head.



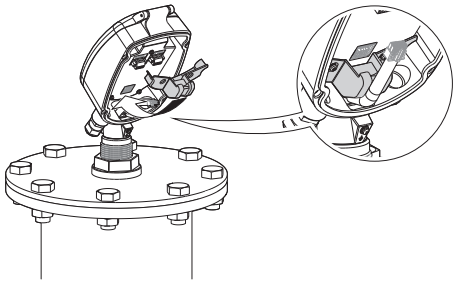
5. Insert the head onto the neck tube.
   a. Rotate the head to the desired direction. The head may be installed in six different positions. It is highly recommended to direct the head towards the center of the silo.
   b. Make sure to push the head all the way down until it fully contacts the top of the neck tube.



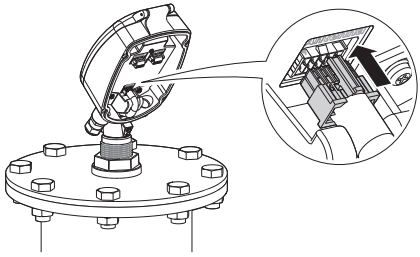
6. Tighten the front screw.



7. Remount the cable clamp.

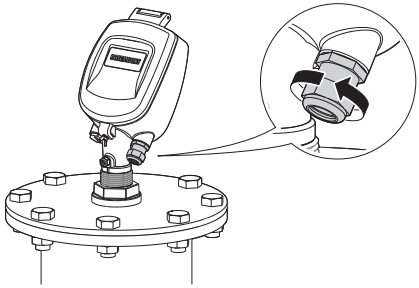


8. Gently connect the antenna cable connector. Make sure the latch is clicked and locking the connector.

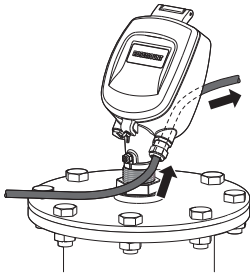


Step 5: Wire the Rosemount 5708

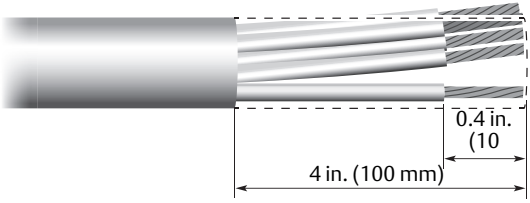
1. Verify the power supply is disconnected.
2. Loosen the compression nut of the cable gland entry.



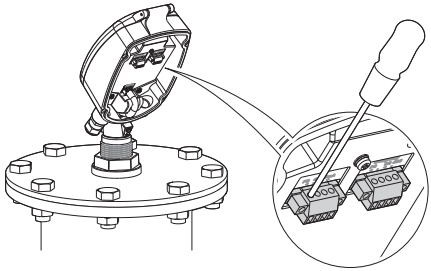
3. Insert the cable into the head.



4. Remove approximately 4 in. (100 mm) of the cable mantle and strip approximately 0.4 in. (10 mm) off the edge of each conductor.

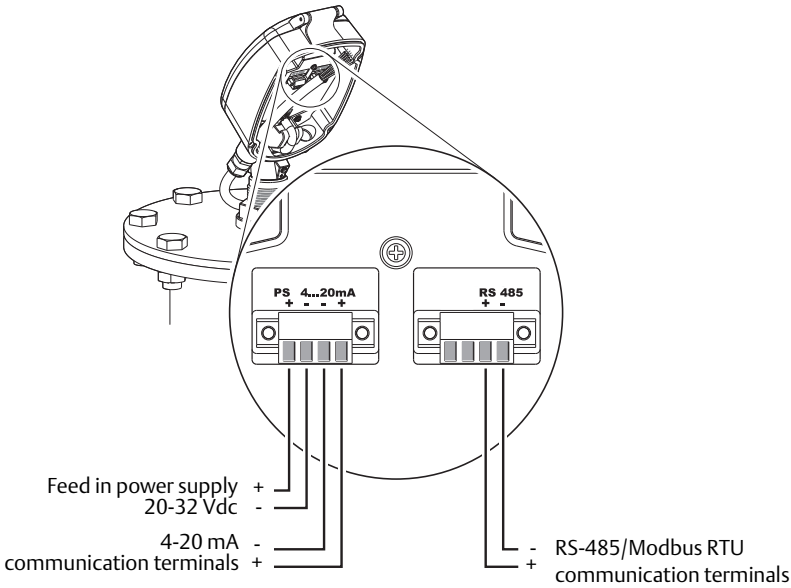


5. Loosen the terminal block screws located inside the head.



6. Connect the cable wires according to the wiring diagram. See page 14 for different connection methods.

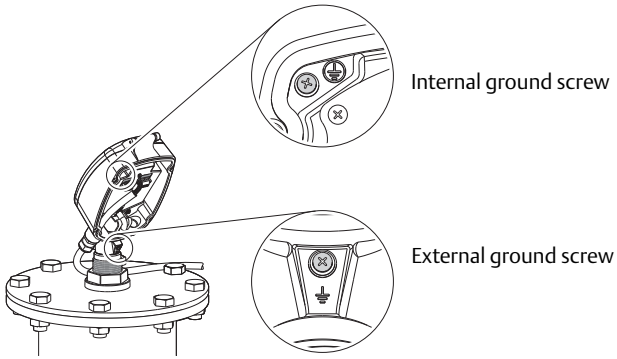
Note
When connecting the last Rosemount 5708 in the chain, a 120 Ω resistor must be connected as well. Check polarity of the power entity before connecting the device.



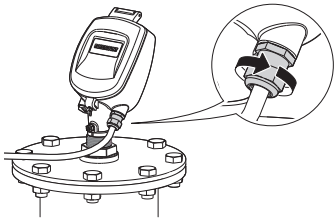
7. Connect the external ground terminal.
   The Rosemount 5708 must be grounded electrostatically.

- For internal grounding, use the power cable ground.
- For external grounding, use the earth potential equalization of the plant.

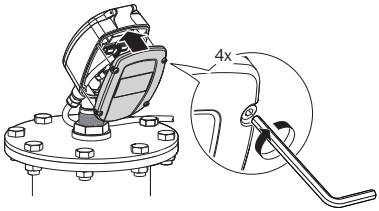
Note
An internal cable grounding connection is also possible using the inner connection as shown below.



8. Tighten the compression nut over the cable gland entry opening.



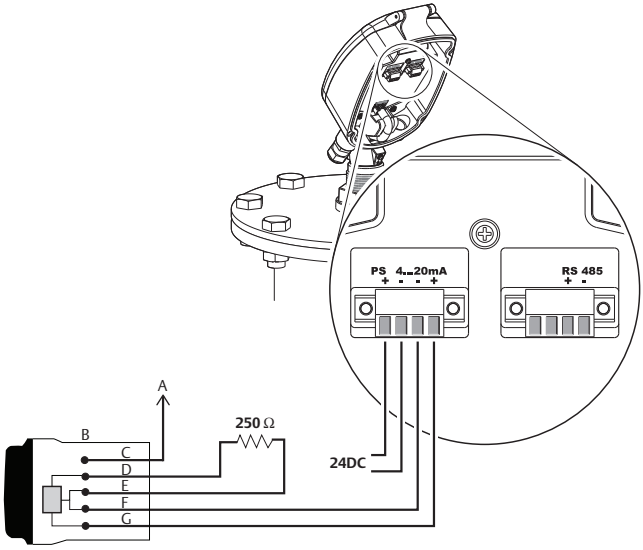
9. Attach the rear panel back to position and tighten the screws.



Step 6: Different connection methods

Use RS-485 or 4-20 mA connection for communication.

Figure 3. Wiring the 4-20mA to Smart Wireless THUM™ Adapter



A. Rosemount 5708 housing ground shield
B. THUM Adapter
C. Green
D. Yellow
E. White
F. Black
G. Red

Figure 4. Rosemount 5708 Connection

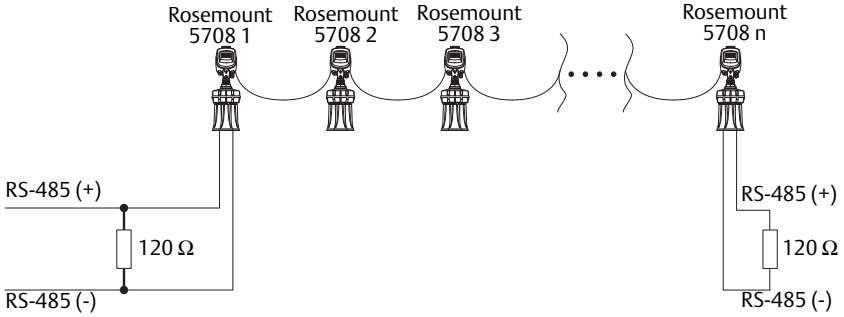
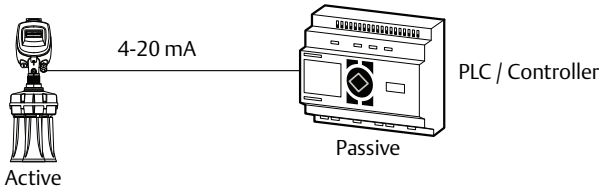


Figure 5. 4-20 mA Connection



⚠WARNING

This type of connection is active and not passive, hence the device is the active module and the PLC should be the passive module.

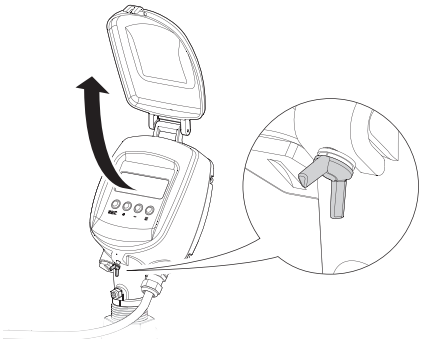
4.0 Configuration using the LCD display

4.1 On-board configuration

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

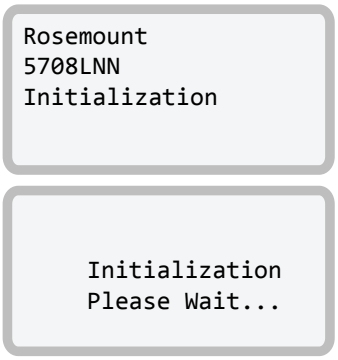
Figure 6. User Interface

ESC	Navigates back within a function menu. Continuous 3 second press exits to the default screen.
+	Navigates upwards in the navigation list. Navigates right within a function.
–	Navigates downwards in the navigation list. Navigates left within a function.
E	Navigates to the right when within a function group. Stores a value once configured.



1. Connect power and open the front cover.

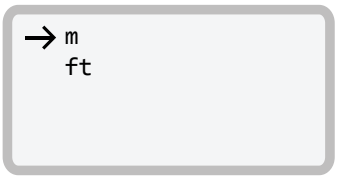
   A self-test will start and run for about 30 seconds the display remains blank during this time.



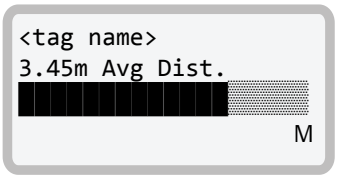
2. After initialization, the version screen appears.

   According to the factory default settings, after power initiation or scanner restart, a screen prompts for configuration.

   In the main menu, select **Basic Settings**.



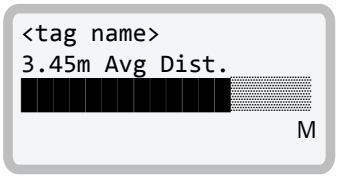
3. Use the [+] / [–] keys to switch between the options.
   Press [E] to select and continue with the settings or [ESC] to exit to the main screen.



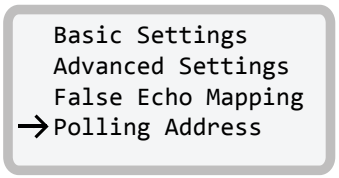
4. When the startup process is complete, the following screen appears showing the current average distance measurement.
   The top line displays the tag name. By default, this line is empty.
   Press [E] to enter the main menu.

4.2 Setting the polling address

Setting the device address is mandatory when multiple devices are connected over an RS-485 Multidrop (daisy chain). Set the addresses prior to use of the Rosemount 3DVision software.

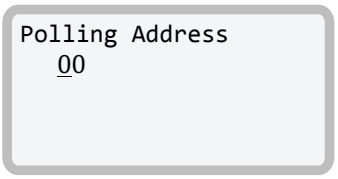


1. From the main screen, press the [E] key to enter the main menu.



2. In the main menu, use the [+] / [−] keys to scroll down to **Polling Address**.

   Press [E] to switch to the Polling Address configuration screen.



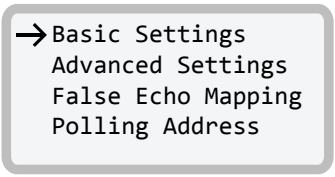
3. Use the [−] key to switch between the two digits. Use the [+] key to modify the value.
   The default polling address is 00. The polling address ranges from 00 to 63.
   Press [E] to store the modified address and [ESC] to exit to the main screen.

For the Rosemount 5708V and 5708S, only polling address configuration is done using the LCD display.
The rest of the configuration is completed with the Rosemount 3DVision software.

4.3 Configuring the Rosemount 5708L

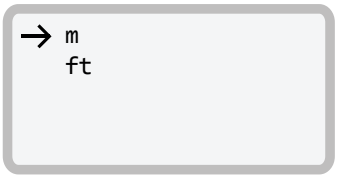
Basic Settings configuration

1. From the main screen, press the [E] key to enter the main menu.

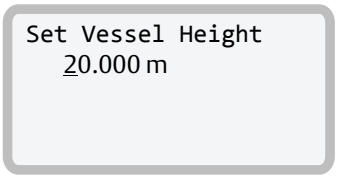


2. In the main menu, use the [+] / [−] keys to scroll down to **Basic Settings**.

   Press [E] to switch to the Basic Settings screen.

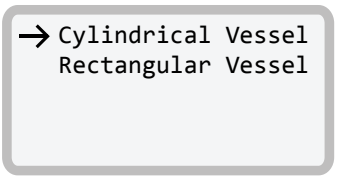


3. Set the distance units, either meters (**m**) or feet (**ft**).



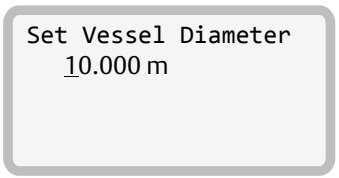
4. Set **Vessel Height** from the vessel bottom edge to the vessel top edge.

   Use the [-] key to switch between the two digits. Use the [+] key to modify the value.

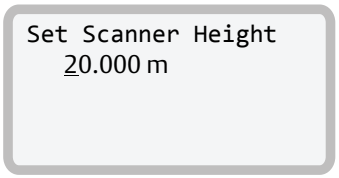


5. Select the vessel shape, either **Cylindrical** or **Rectangular**.

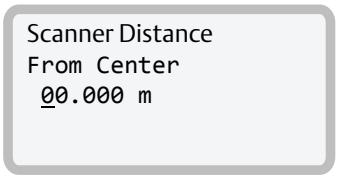
   Use the [+] / [-] keys to switch between the options. Press [E] to continue.



   a. If **Cylindrical** is selected, set vessel diameter.
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.

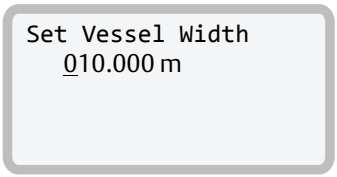


   b. Set **Scanner Height** from the bottom edge of the vessel to the scanner's mounting plate (point above the antenna).
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.

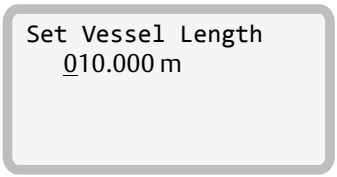


   c. Set **Scanner Distance from Center**.
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to exit to the main screen.

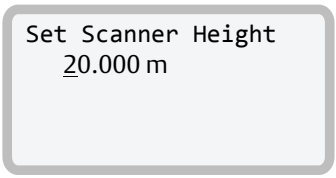
6. If **Rectangular** is selected, set vessel width first (dimension on the x-axis).



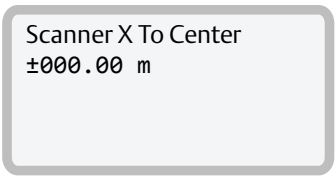
a. Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



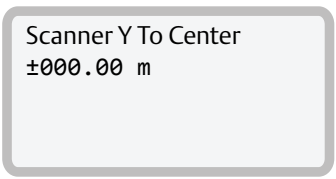
b. Set **Vessel Length** (dimension on the y-axis).
Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



c. Set **Scanner Height** from the bottom edge of the vessel to the scanner's mounting plate (point above the antenna).
Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



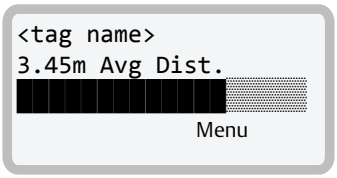
d. Set the scanner's distance from the x-axis, see Figure 1 on page 5.
Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



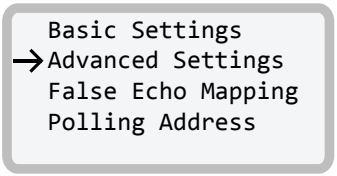
e. Set the scanner's distance from the y-axis, see Figure 1 on page 5.
Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to exit to the main screen.

Advanced Settings configuration

After configuring the Basic Settings, perform Advanced Settings configuration.

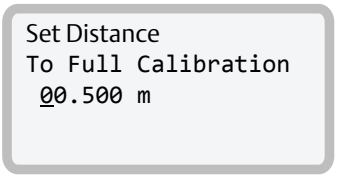


1. From the main screen, press the [E] key to enter the main menu.

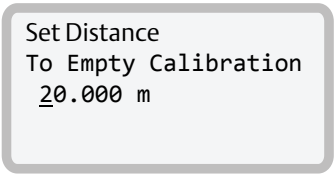


2. In the main menu, scroll down to **Advanced Settings**, using the [-] key.

   Press [E] to switch to the **Advanced Settings** configuration screen.

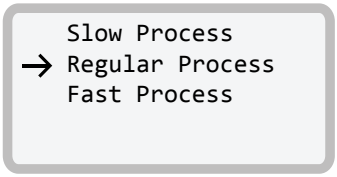


3. Set the distance from the mounting plate (top of the scanner's antenna) to the **Full calibration point**/100% level point.
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



4. Set the distance from the mounting plate (top of the scanner's antenna) to the **Empty calibration point**/0% level point.
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.

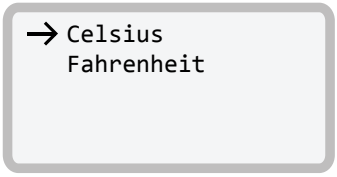
5. Press [E] to keep the default setting.
   Note: if using an angle adaptor, set the angle value.
   Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.



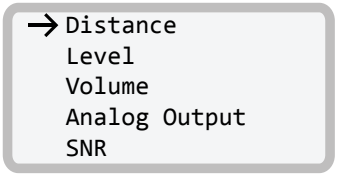
6. Set the process rate using the − key. Press E to continue.

   Make sure to always use **Regular Process**.

   For the Slow and Fast Process options, contact your local customer service.



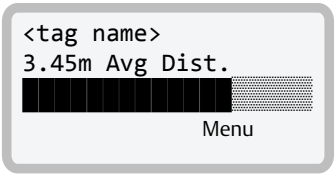
7. Set the temperature units using the − key. Press E to continue.



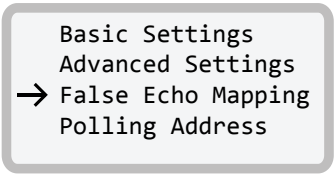
8. Set the displayed parameter desired for the main screen using the − key. Press E to exit to the main screen.

False Echo Mapping

When the configuration is finished, set False Echo Mapping.

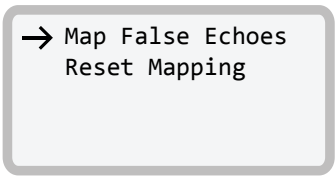


1. From the main screen, press the E key to enter the main menu.



2. In the main menu, scroll down to **False Echo Mapping**, using the − key.

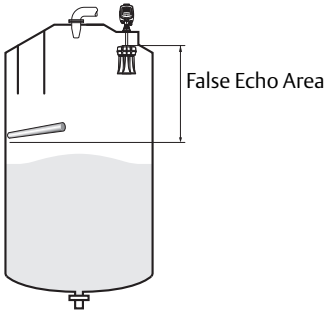
   Press E to switch to the **False Echo Mapping** configuration screen.



3. Select **Map False Echoes** for automatically mapping all the false echoes up to a certain distance.

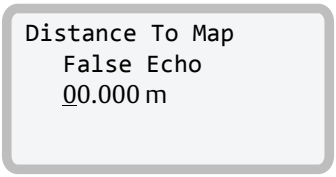
   Or select **Reset Mapping** for deleting the stored mapped false echoes from the memory of the scanner.

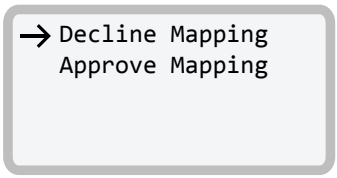
   Use the [-] key to go down the list. Press [E] to continue.



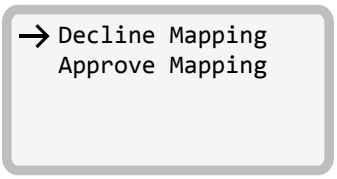
   a. If **Map False Echoes** is selected, set the distance from the top of the antenna assembly to the end of the scanning point. Always make sure to map false echoes above material level. The recommended level is 3 ft. (1 m) above actual material level.

      Use the [-] key to switch between the two digits. Use the [+] key to modify the value. Press [E] to continue.





   b. Approve or decline the false echo mapping operation.
      Use the [-] key to go down the list. Press [E] to continue.



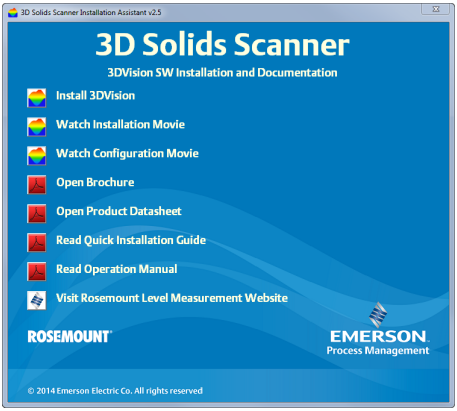
   c. If **Reset Mapping** is selected, approve or decline the operation. Use the [-] key to go down the list. Press [E] to continue.

5.0 Configuration using Rosemount 3DVision

5.1 Installing the Rosemount 3DVision software

The software is comprised of two components: a server and a client. For initial configuration, it is recommended to install both the server and the client on the same computer. However, it is possible to install the Rosemount 3DVision Server and Client on separate computers and connect to them accordingly.

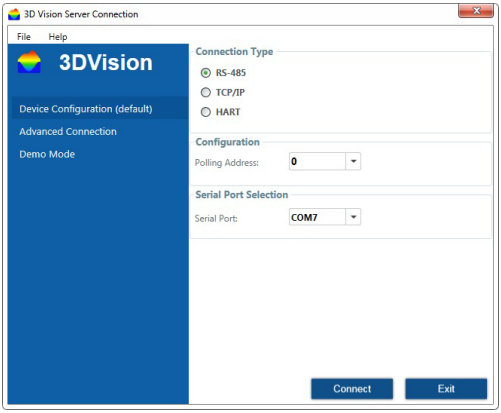
1. Insert the flash drive into the USB port.
2. Select **Install Rosemount 3DVision** and follow the on-screen instructions.



If the installation program does not start automatically, run Installer.exe from the flash.

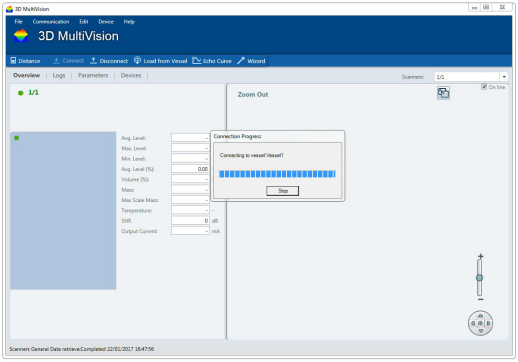
5.2 Starting Rosemount 3DVision

1. Double-click the Rosemount **3DVision** desktop icon  . After a few seconds, the *Rosemount 3DVision Server Connection* window appears.
2. Select **Device Configuration (default)** to start configuration.

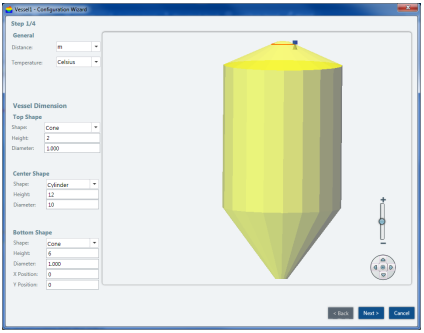


3. Set the correct connection type, polling address, and serial port. Select **Connect**.

   After selecting the **Connect** button, the software automatically connects and downloads the parameters from the Rosemount 5708.



4. After the connection has been made, *Configuration Wizard* appears:
   a. Step 1/4: Set up general information and vessel dimensions.
   b. Step 2/4: Set up device position.
   c. Step 3/4: Set up filling points.
   d. Step 4/4: Set up full and empty calibration. Select **Finish** to complete vessel configuration.

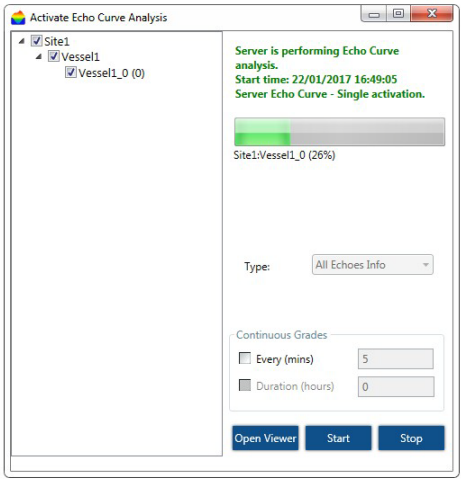


5.3 Performing Echo Curve Analysis

This step should only be performed if the distance given by the Rosemount is incorrect.

When first configuring the Rosemount 5708, it is recommended to perform Echo Curve Analysis. Using the Echo Curve Analysis it is possible to determine if any of the advanced parameters need additional changes.

- On the **Device** menu, select **Echo Curve Analysis**. Then make sure the check-box is checked, then select the **Start** button.

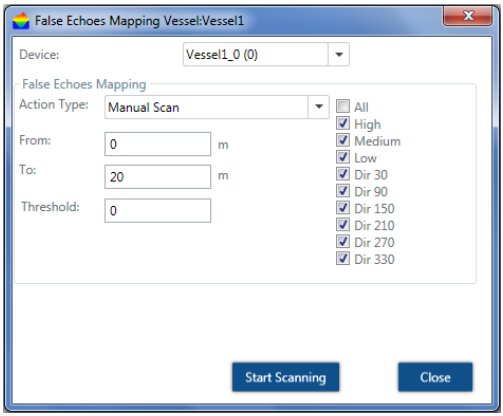


Once the Echo Curve Analysis is complete, the echo curve window will pop up. This function is also available via **Device** > **Echo Curve Analyze Viewer**.

5.4 Performing False Echo Mapping

With this option it is possible to perform a false echo mapping on any of the beams to ignore false echoes inside the vessel caused by internal objects or other interferences.

1. On the **Device** menu, select **Device False Echo Mapping**.
2. Set the *From* and *To* distances to perform false echo mapping.
3. Select the **Start Scanning** button.



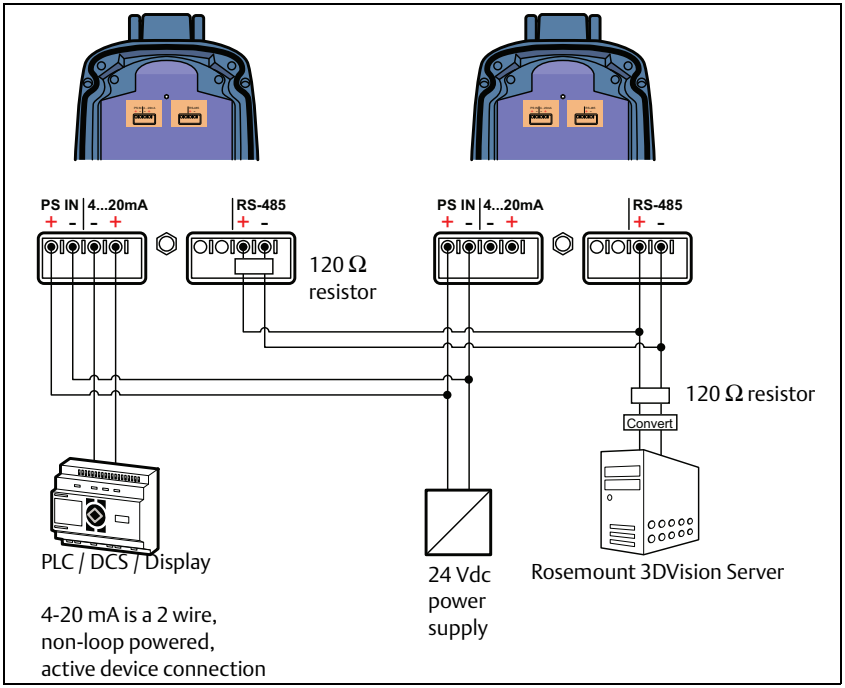
6.0 Post installation procedures

1. Perform hand measurement to the material.
2. Compare data with the result of distance measurement performed by the Rosemount 5708:
   a. Reference point for measurements and comparisons is the top part of the antenna assembly.
   b. Test the device while silo is idle.
   c. Measure as close to the Rosemount 5708 as possible.
   d. In some models, the device has minimum and maximum values for distance. Check if the hand dip is between these measurement.
3. Coordinate filling and emptying processes.
   a. Follow the Rosemount 5708 measurements during the process.
   b. Check and compare distance.
   c. Follow the log trends in Rosemount 3DVision.
4. Perform echo curve analysis and false echo mapping. For detailed information, see the Rosemount 5708 Reference Manual.
5. Adjust advanced parameters. For more information, see the Rosemount 5708 Reference Manual.

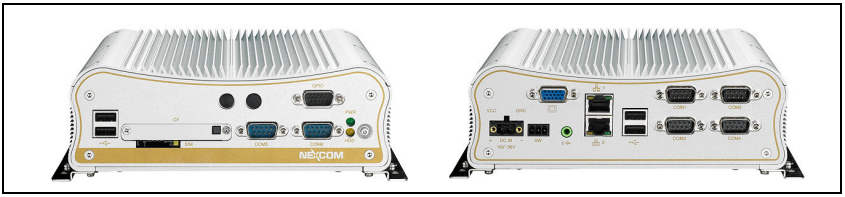
7.0 Rosemount 5708S in a system

7.1 System components

- Multiple units of Rosemount 5708S



- Rosemount System Controller



7.2 Physical mounting

1. Install the devices as written in "Physical mounting" on page 8.
2. Repeat installation steps until all are installed.

7.3 Wiring

Power

A single 24 Vdc power supply is for all devices within the system.

RS-485 communication

Every Rosemount 5708 should be connected in daisy chain. For more information, see “Rosemount 5708 Connection” on page 15.

4-20 mA connection

Since every Rosemount 5708 in the daisy chain outputs the same data, it does not matter which device the 4-20 mA output is derived from. The 4-20 mA output represents the volume calculated by devices in the vessel.

Grounding

For grounding information, see page 13.

7.4 On-board configuration (Rosemount 5708S)

1. Configure polling addresses only.
2. Make sure each device has a different polling address and at least one has polling address 00.
   For detailed information on polling address configuration, see “Setting the polling address” on page 17.

7.5 Configuring using Rosemount 3DVision

For detailed information on configuring the Rosemount 5708 and Rosemount System Controller, refer to the Rosemount 5708 Reference Manual.

7.6 Maintenance

Preventive maintenance procedure

The following periodic maintenance procedure is recommended for keeping the Rosemount 5708 in proper operating conditions and preventing unnecessary malfunctioning which may be caused by environmental factors during time:

- Clean the interior part of the antennas (see details below).
- Visually check and ensure the communication and power cables are in good condition and are not damaged.
- Check and ensure proper sealing of cable entry openings.
- Open the rear side of the Rosemount 5708 head and ensure absence of wetness.

Antenna cleaning guidelines:

- Disconnect power to the Rosemount 5708.
- Disassemble the mounting plate and carefully pull out the entire Rosemount 5708.
- Use a brush or wet cloth for the purpose of cleaning.
- As necessary, water can be used for cleaning.
- Avoid usage of sharp tools such as screwdrivers for cleaning. Such tools may damage the membranes.

Preventive maintenance frequency

The frequency of the maintenance procedure is subject to the conditions and the type of material stored in the vessel. In the case of materials such as salt, sugar, calcium carbonate etc., treatments should be more frequent.

8.0 Product certifications

Rev 1.2

8.1 European Directive Information

A copy of the EC Declaration of Conformity can be found on page 35. The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

8.2 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).

8.3 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 ≤ Ta ≤ +85 °C); IP 6XFor electronic modules with serial number 836xxxxxxx:
Supplies - Terminals J5.1 (+), J5.2 (GND) U_i = 24 V, I_i = 125 mA, P_i = 3 W, C_i = 8 nF, L_i = 0
Interfaces - Terminals J5.4 (4 - 20 mA signal), J5.3 (GND common with J5.2): U_i = 10.5 V, I_i = 106 mA, P_i = 1.1 W, Ci = 8 nF, Li = 0 µH
RS-485 - Terminals J6.3 (P), J6.4 (N): U_i = 6.51 V, I_i = 651 mA, P_i = 1.06 W, C_i = 0 nF, L_i = 0 µH

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.

8.4 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 1. 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 2. Supply Circuit Parameters

Parameter	4-20 mA	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.

8.5 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 ≤ Ta ≤ +85 °C)
Ex ib [ia] IIIC T110°C Da/Db (-40 °C ≤ Ta ≤ +85 °C)

Table 3. 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 4. 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_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 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.

8.6 China

I3 China Intrinsic Safety

Certificate: 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

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.

8.7 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 $\leq T_a \leq$ + 85 °C)
Ex ib [ia] IIIC T110 °C Da/Db (- 40 °C $\leq T_a \leq$ + 85 °C)

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 (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.
   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.

8.8 EAC

IM Intrinsic Safety by TR CU 012/2011
Markings: 1Ex ib [ia] IIB T4 Gb X (-40 ≤ Tamb ≤ 85 °C)
Ex ib [ia] IIIC T110 °C Da/Db X (-40 ≤ Tamb ≤ 85 °C)

Table 5. Input parameters

Parameters	Supply circuit		Interface	
	Input	Output (1)	4-20 mA	RS 485
Level of protection	Ex ib IIB / Ex ib IIIC	Ex ib IIB / Ex ib IIIC	Ex ia IIB / Ex ia IIIC	Ex ia IIB / Ex ia IIIC
Voltage	U_i = 24 V	U_o = 24 V	$U_i = U_o$ = 10,5 V	$U_i = U_o$ = 6,51 V
Current	I_i (2)	I_o (2)	$I_i = I_o$ = 106 mA	$I_i = I_o$ = 2 × 651 mA
Power	P_i = 3 W	P_o = 3 W (2)	$P_i = P_o$ = 1,1 W	$P_i = P_o$ = 2 ×1,06 W
Capacitance C_i	8 nF		8 nF	мала
Capacitance C_o	N/A	(3)	16 µF	2 × 285 µF
Inductance L_i	Negligible		Negligible	Negligible
Inductance L_o	N/A	(3)	80 µH	83.9 µH
L_o/R_o	N/A	(3)	17.77 µH /Ohm	67.12 µH /Ohm
Characteristics	N/A	(2)	Trapezoid	Linear
Terminals	J5.1 (+), J5.2 (GND)	J6.1 (+), J6.2 (GND)	J5.3 (4–20 mA), J5.4 (GND)	J6.3 (+), J6.4 (RTN)

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.

Special Conditions for Safe Use (X):

1. Level meter 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 level meter, 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.

8.9 India

IW PESO Intrinsic Safety
Certificate: P351811/1
Standards: EN 60079-0: 2012, EN 60079-11: 2012
Markings: Ex ib [ia] IIB t4 Gb

8.10 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

For detailed information on configuring the Rosemount 5708 and Rosemount System Controller, refer to the Rosemount 5708 Reference Manual.

Figure 7. Rosemount 5708 Declaration of Conformity

EMERSON.
Process Management

CE

EU Declaration of Conformity

No: RMD 1102 Rev. B

We,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

declare under our sole responsibility that the product,

Rosemount 5708 3D Solids Scanner

manufactured by,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.

(signature)	Vice President of Global Quality (function)
Kelly Klein (name)	19 Apr 2016 (date of issue)

Page 1 of 2

EMERSON.
Process Management

EU Declaration of Conformity

No: RMD 1102 Rev. B

EMC Directive (2004/108/EC) ***This directive is valid until 19 April 2016***
EMC Directive (2014/30/EU) ***This directive is valid from 20 April 2016***

Harmonized Standards: EN61326: 2013

ATEX Directive (94/9/EC) ***This directive is valid until 19 April 2016***
ATEX Directive (2014/34/EU) ***This directive is valid from 20 April 2016***

BVS14ATEXE060X – Intrinsic Safety Certificate
Equipment Group II Category 2 G
Ex ib [ia] IIB T4 Gb
Equipment Group II Category 1/2 D
Ex ib [ia] IIIC T110°C Da/Db
Harmonized Standards Used:
EN60079-0:2012, EN60079-11:2012

ATEX Notified Body

DEKRA EXAM Gmbh [Notified Body Number: 0158]
Dinnendahlstrasse 9
44809 Bochum, Germany

ATEX Notified Body for Quality Assurance

SGS Baseefa Limited [Notified Body Number: 1180]
Rockhead Business Park
Staden Lane
Buxton, Derbyshire
United Kingdom SK17 9RZ

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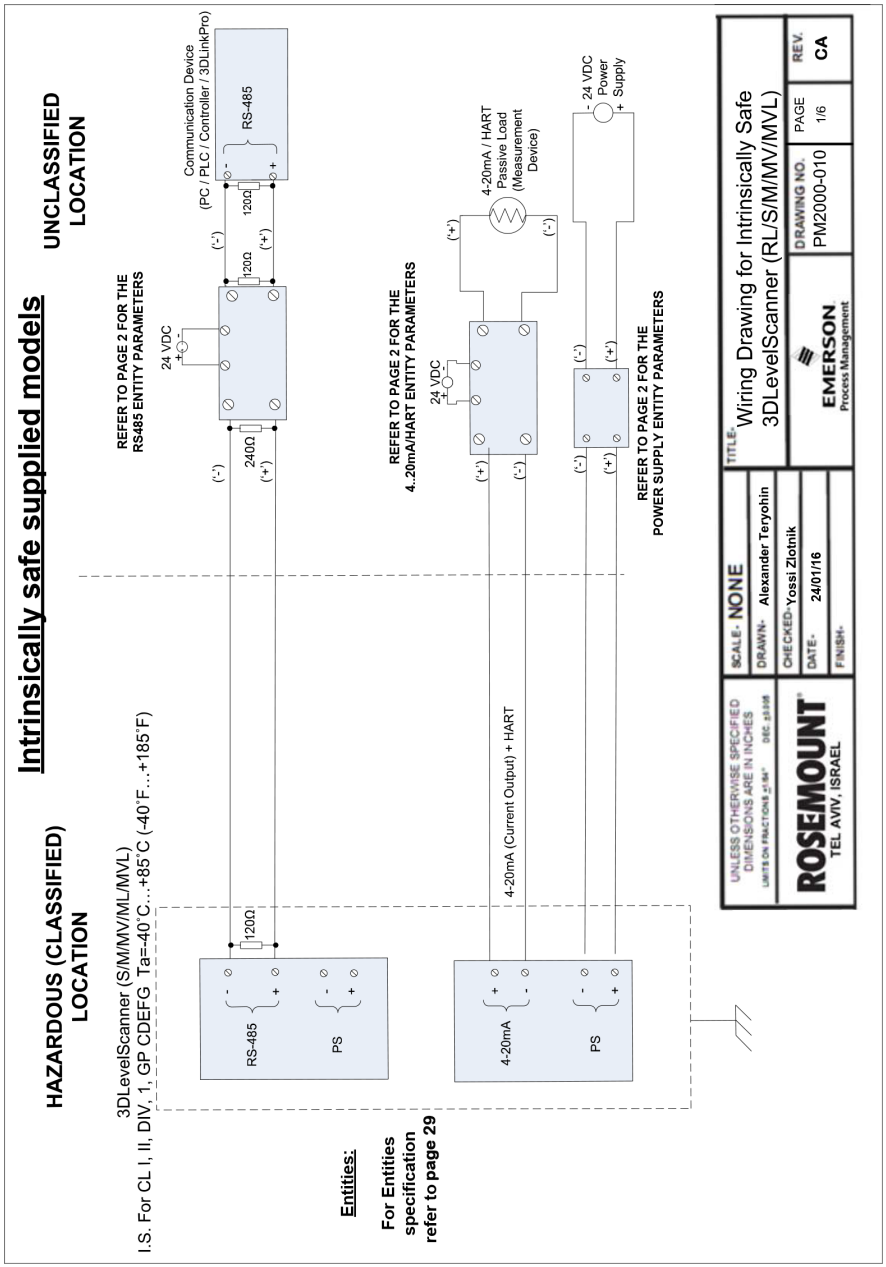
9.0 Installation drawing

Figure 8. Wiring Drawing for Intrinsically Safe 3D Solids Scanner



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Quick Start Guide
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