

Rosemount™ 3300 Level Transmitter

Guided Wave Radar



Contents

About this guide.....	3
Mount the transmitter head/probe.....	7
Set jumpers and switches.....	17
Connect wiring and power up.....	19
Configure.....	25
Environmental conditions.....	31
Product certifications.....	32

1 About this guide

This start guide provides basic guidelines for the Rosemount 3300 Level Transmitter. Refer to Rosemount 3300 Level Transmitter [Reference Manual](#) for more instructions. The manual and this Quick Start Guide (QSG) are also available electronically on Emerson.com/Rosemount.

⚠ WARNING

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

- Make sure only qualified personnel perform installation or service.
- Use the equipment only as specified in this Quick Start Guide and the Reference Manual. Failure to do so may impair the protection provided by the equipment.
- Do not perform any service other than those contained in this manual unless you are qualified.
- Flamepath joints are not for repair. Contact the manufacturer.

Explosions could result in death or serious injury.

- Verify that the operating environment of the transmitter is consistent with the appropriate hazardous locations specifications. See [Product certifications](#) in this Quick Start Guide.
- In an explosion-proof/flameproof installation, do not remove the transmitter covers when power is applied to the unit.
- Before connecting a handheld communicator in an explosive atmosphere, ensure the instruments are installed in accordance with intrinsically safe or non-incendive field wiring practices.
- To avoid process leaks, only use the O-ring designed to seal with the corresponding flange adapter.

Electrical shock could cause death or serious injury.

- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.
- Make sure the mains power to the transmitter is off and the lines to any other external power source are disconnected or not powered while wiring the transmitter.

Temperature restrictions apply for Explosion-proof versions. For limits, see certificate-specific information in the [Product certifications](#) chapter in this document.

⚠ WARNING

The electronics enclosures are category 2G or 2D equipment. The probes not covered with plastic and not made of titanium, are category 1G or 1D. The plastic covered probes or probes made of titanium, are only category 1G equipment.

Probes with non-conducting surfaces and light metals:

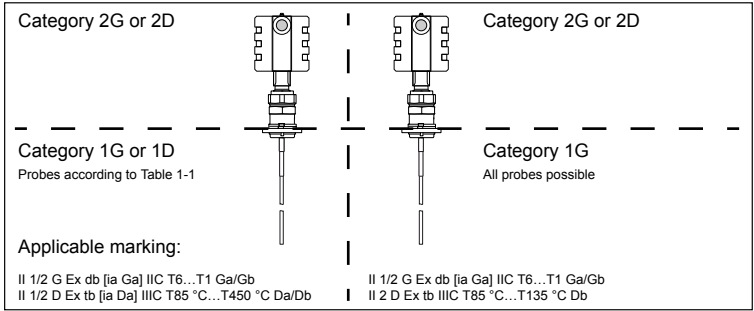
- Probes covered with plastic and/or with plastic discs may generate an ignition- capable level of electrostatic charge under certain extreme conditions. Therefore, when the probe is used in a potentially explosive atmosphere, appropriate measures must be taken to prevent electrostatic discharge. These probes are not allowed in dust classified areas.

The following probes do not contain plastic or PTFE material, and are allowed to be placed in a Dust classified area:

Table 1-1: Probes Containing no Plastic or PTFE Material

Code	Material of construction: Process connection/Probe
1	316L SST (EN 1.4404)
2	Alloy C-276 (UNS N10276) plate design if flanged version
3	Alloy 400 (UNS N04400) plate design if flanged version
5	Titanium Gr-1 and Gr-2
9	Duplex 2205 (EN 1.4462/UNS S31803) (plate design if flanged version)
L	Alloy 625 (UNS N06625)
M	Alloy 400 (UNS N04400)
H	Alloy C-276 (UNS N10276)
D	Duplex 2205 (EN 1.4462/UNS S31803)

The Material of Construction Code can be found in the ninth character position of the transmitter model code (for example 330xxxxx1xxxxxxxx).



- Probes and flanges containing >7.5 percent magnesium or zirconium are not allowed in explosive dust atmosphere. Contact your Emerson sales representative for more information.

Probes and flanges containing light metals:

- When used in category 1/2G installations, probes and flanges containing titanium or zirconium must be mounted in such a way that sparks from impact or friction between these parts and steel cannot occur.

⚠ WARNING

Any substitution of non-authorized parts or repair, other than exchanging the complete transmitter head or probe assembly, may jeopardize safety and is prohibited.

- Unauthorized changes to the product are strictly prohibited as they may unintentionally and unpredictably alter performance and jeopardize safety. Unauthorized changes that interfere with the integrity of the welds or flanges, such as making additional perforations, compromise product integrity and safety. Equipment ratings and certifications are no longer valid on any products that have been damaged or modified without the prior written permission of Emerson. Any continued use of product that has been damaged or modified without the written authorization is at the customer’s sole risk and expense.

⚠ WARNING**Physical access**

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

2 Mount the transmitter head/probe

2.1 Tank connection with flange

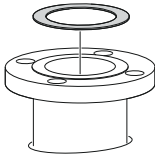
Prerequisites

Note

PTFE covered probes must be handled carefully to prevent damage to the coating.

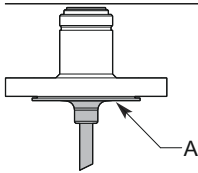
Procedure

1. Place a suitable gasket on top of the tank flange.



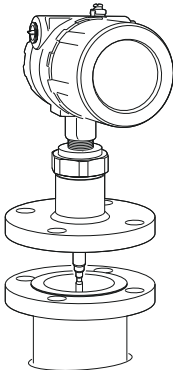
Note

Gasket should not be used for PTFE covered probe with protective plate.

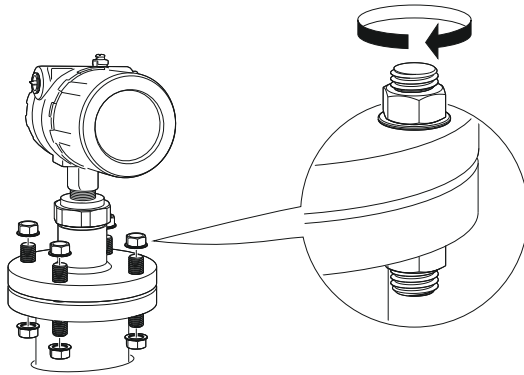


A. PTFE covered probe with protective plate

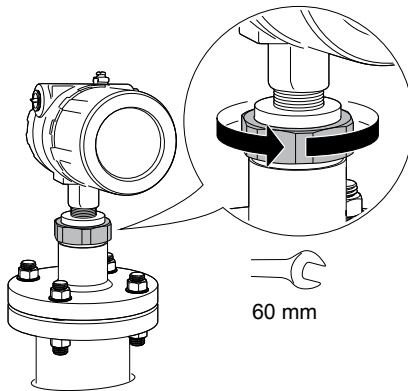
2. Lower the transmitter and probe with flange into the tank.



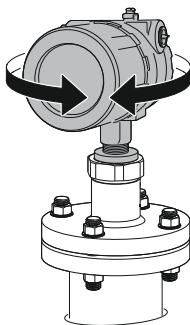
- 3. Tighten bolts and nuts with sufficient torque for the flange and gasket choice.



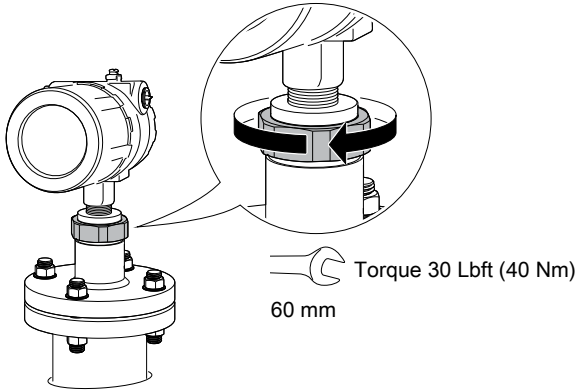
- 4. Loosen the nut that connects the transmitter head to the probe slightly.



- 5. Rotate the transmitter housing so the cable entries/display face the desired direction.



6. Tighten the nut.



2.2 Threaded tank connection

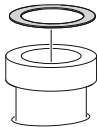
Prerequisites

Note

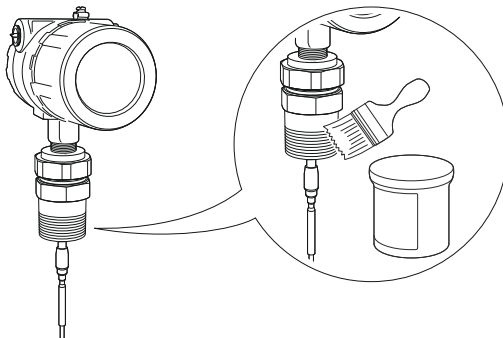
PTFE covered probes must be handled carefully to prevent damage to the coating.

Procedure

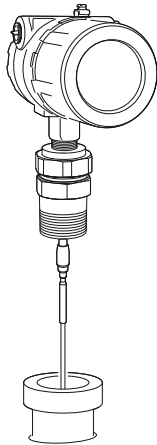
1. For adapters with BSPP (G) threads, place a suitable gasket on top of the tank flange.



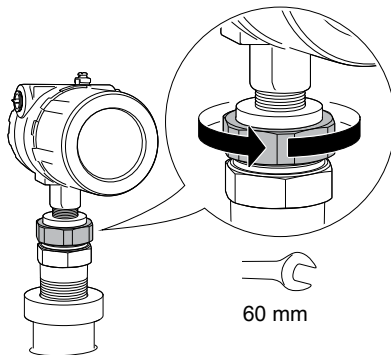
2. For adapters with NPT threads, use anti-seize paste or PTFE tape according to your site procedures.



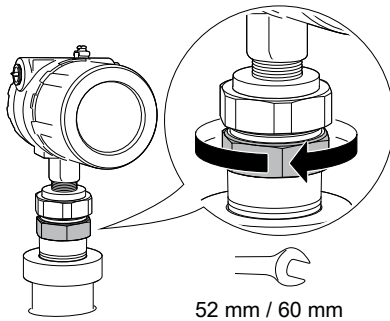
3. Lower the transmitter and probe into the tank.



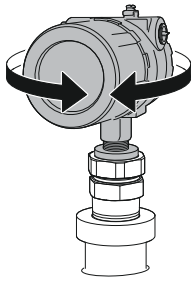
4. Loosen the nut that connects the transmitter head to the probe slightly.



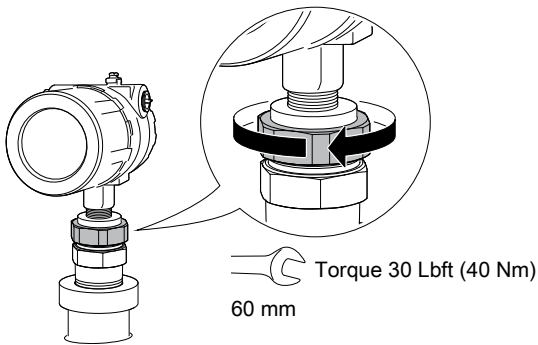
5. Screw the adapter into the process connection.



- 6. Rotate the transmitter housing so the cable entries/display face the desired direction.



- 7. Tighten the nut.



2.3 Tank connection with Tri-Clamp®

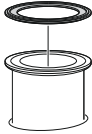
Prerequisites

Note

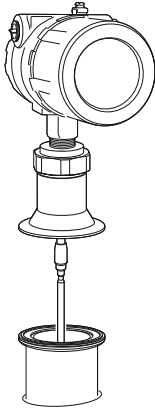
PTFE covered probes must be handled carefully to prevent damage to the coating.

Procedure

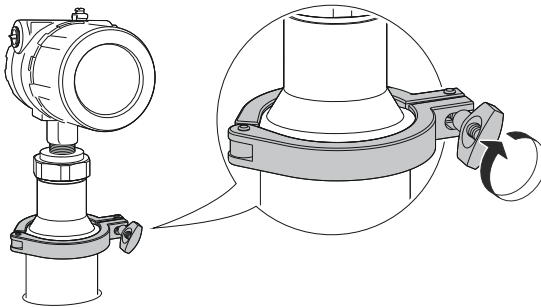
1. Place a suitable gasket on top of the tank flange.



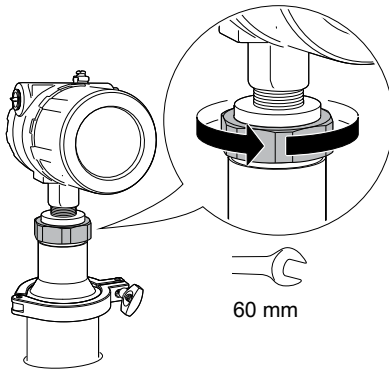
2. Lower the transmitter and probe into the tank.



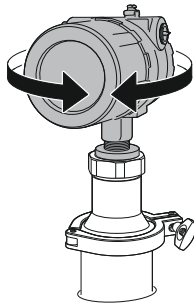
3. Tighten the clamp to the recommended torque (see the manufacturer's instruction manual).



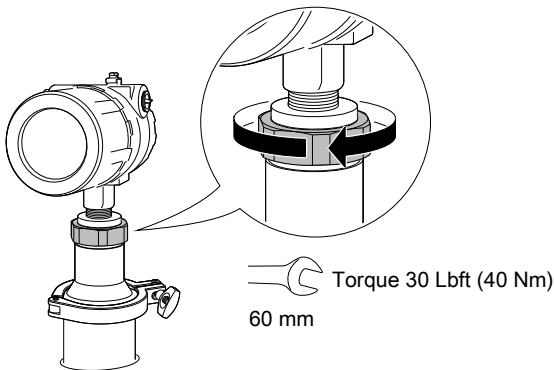
- 4. Loosen the nut that connects the transmitter head to the probe slightly.



- 5. Rotate the transmitter housing so the cable entries/display face the desired direction.



- 6. Tighten the nut.

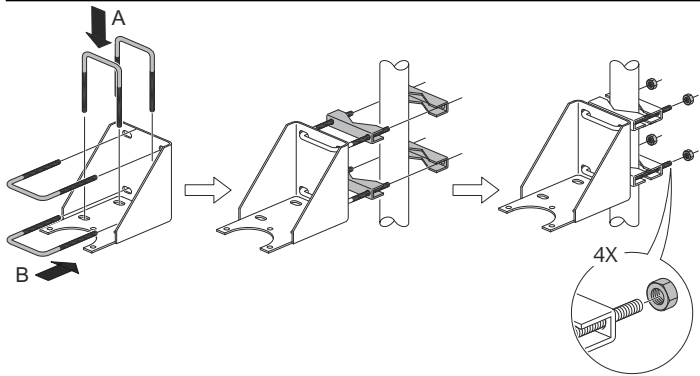


2.4 Bracket mounting

Procedure

1. Mount the bracket to the pipe/wall.

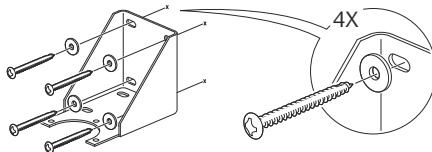
On pipe:



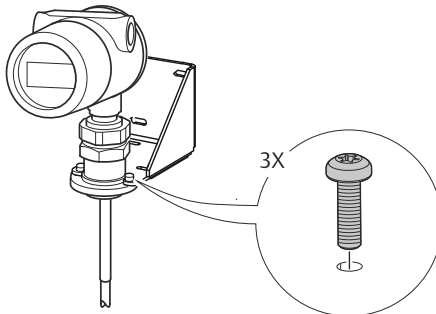
A. Horizontal pipe

B. Vertical pipe

On wall:



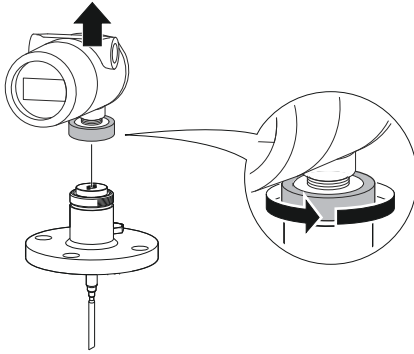
2. Mount the transmitter with probe to the bracket.



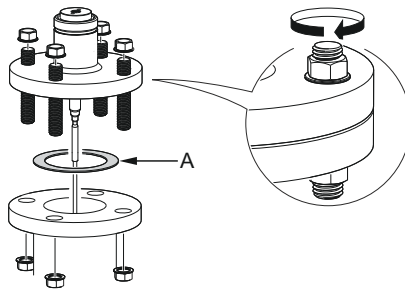
2.5 Install remote housing

Procedure

1. Carefully remove the transmitter.

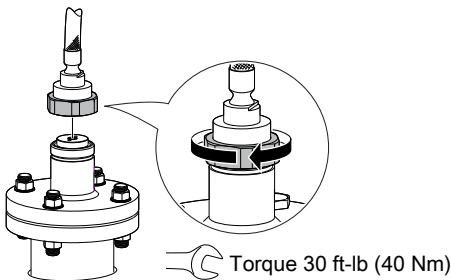


2. Mount the probe on tank.

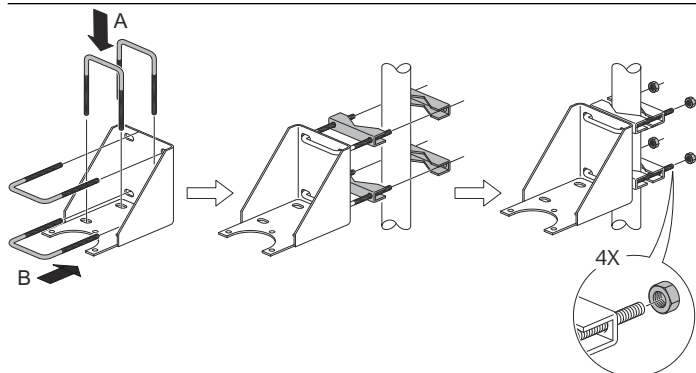


A. Gasket

3. Mount the remote connection on the probe.



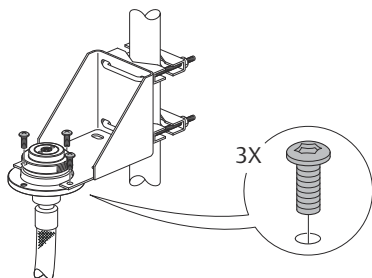
4. Mount the bracket to the pipe.



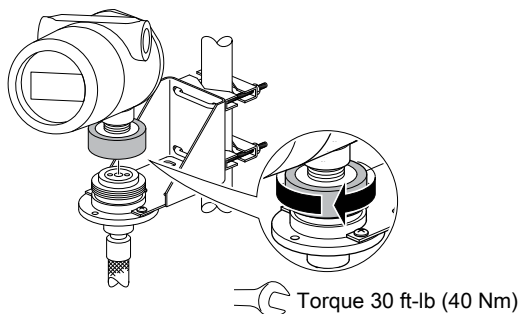
A. Horizontal pipe

B. Vertical pipe

5. Fasten the housing support.



6. Mount the transmitter head.



3 Set jumpers and switches

Write Protection must be set after configuration (see [Configure](#)).

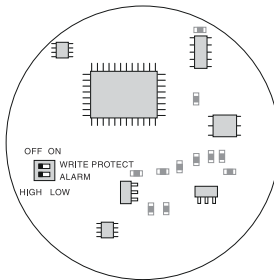
3.1 Set alarm and write protection on the circuit board

If alarm and security jumpers are not set, the transmitter operates with the default alarm condition HIGH and Security OFF.

Procedure

1. Remove the cover on the circuit side (see label marked circuit side).
2. To set the 4-20 mA alarm output to LOW, move the alarm switch to the LOW position.
3. To enable the security write protection feature, move the write protect switch to the ON position.
4. Replace the cover and tighten securely.

Figure 3-1: Circuit Board



3.2 Set alarm and write protection on the LCD display

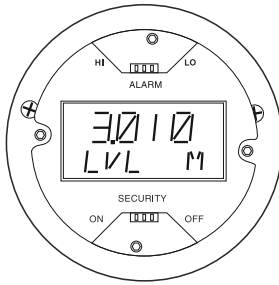
Prerequisites

To have the LCD display override the circuit board settings, the write protection switch on the circuit board needs to be in the OFF position and the alarm switch on the circuit board needs to be in the HIGH position.

Procedure

1. To set the 4-20 mA alarm output to LOW, place jumper between the right and center hole position.
2. To enable the security write protection feature, place jumper between the left and center hole position - ON.

Figure 3-2: LCD Display



4 Connect wiring and power up

4.1 Power supply

For HART®, the input voltage is 11-42 V (11-30 V in IS applications, 16-42 V in Explosion-proof / Flameproof applications). For Modbus®, the input voltage is 8-30 V.

4.2 Cable selection

The transmitter requires shielded twisted pair wiring (18-12 AWG) suitable for the supply voltage and, if applicable, approved for use in hazardous areas.

4.3 Cable/conduit entries

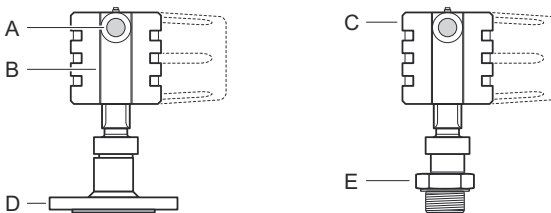
The electronics housing has two entries for ½-14 NPT. Optional M20×1.5 and PG 13.5 adapters are also available. The connections are made in accordance with local or plant electrical codes.

Make sure that unused ports are properly sealed to prevent moisture or other contamination from entering the terminal block compartment of the electronics housing.

Note

Remove any orange caps that may be attached. Use the enclosed metal plug to seal the unused port.

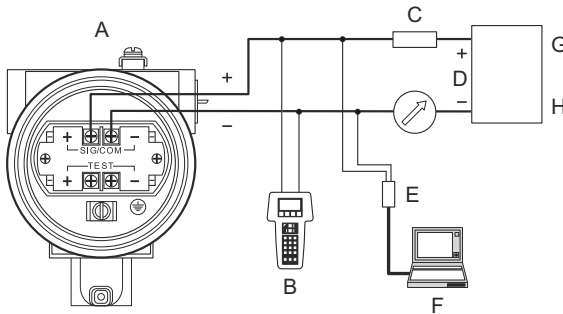
Figure 4-1: Electronics Housing



- A. Cable Entry: ½-14 NPT
Optional adapters: M20, PG13.5
 - B. Radar electronics
 - C. Dual compartment housing
 - D. Flanged process connections
 - E. Threaded process connections
-

4.4 Wiring diagram

Figure 4-2: Non-Intrinsically Safe HART® Output and Type n Approvals: Non-Sparking/ Energy Limited Power Supply

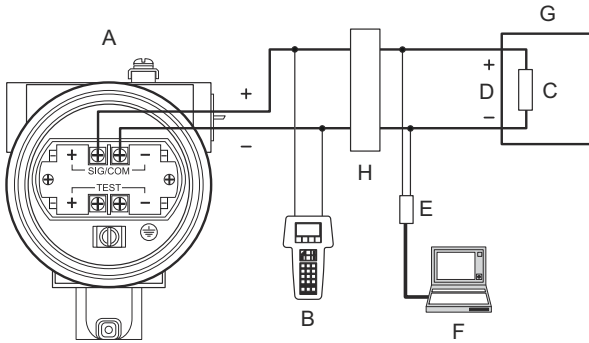


- A. Rosemount 3300 Level Transmitter
- B. Handheld communicator
- C. Load resistance = 250Ω
- D. Power supply
- E. HART modem
- F. PC
- G. Maximum voltage: $U_m = 250 \text{ V}$
- H. HART: $U_n = 42.4 \text{ V}$

Note

Rosemount 3300 Level Transmitters with Flameproof/Explosion-proof HART Output have a built-in barrier; no external barrier needed.

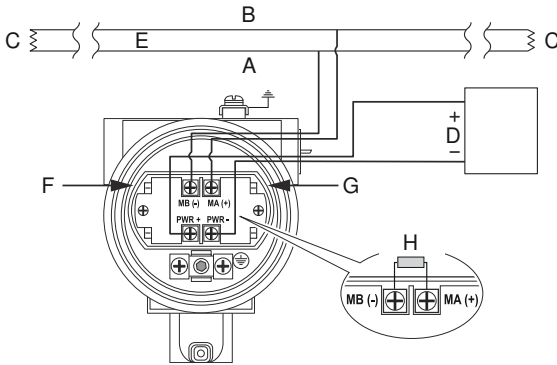
Figure 4-3: Intrinsically Safe HART Output



- A. Rosemount 3300 Level Transmitter
- B. Handheld communicator
- C. $R_I = 250 \Omega$
- D. Power supply
- E. HART modem
- F. PC
- G. DCS
- H. Approved IS barrier

IS Parameters: $U_i = 30 \text{ V}$, $I_i = 130 \text{ mA}$, $P_i = 1 \text{ W}$, $L_i = C_i = 0$

Figure 4-4: Non-intrinsically Safe Modbus® Output



- A. "A" line
- B. "B" line
- C. 120 Ω
- D. Power supply
- E. RS485 Bus
- F. HART +
- G. HART -
- H. If the unit is the last transmitter on the bus, a 120 Ω termination resistor is required.

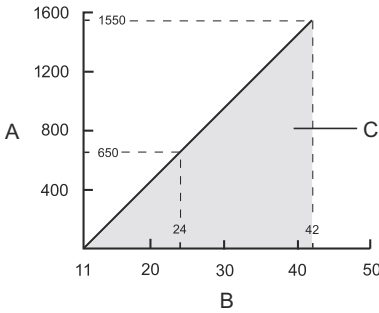
Note

Rosemount 3300 Level Transmitters with Flameproof/Explosion-proof Modbus Output have a built-in barrier; no external barrier needed.

4.5 Load limitations

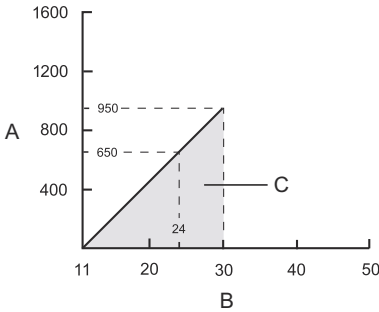
For HART® communication, a minimum loop resistance of 250 Ω is required. Maximum loop resistance is determined by the voltage level of the external power supply, as given by the following diagrams:

Figure 4-5: Non-Hazardous Installations, and Type n Approvals: Non-Sparking / Energy Limited Power Supply

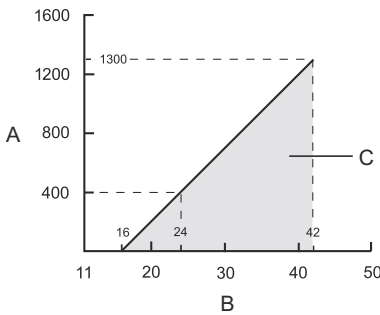


- A. Loop Resistance (Ohms)
- B. External Power Supply Voltage (Vdc)
- C. Operating region

Figure 4-6: Intrinsically Safe Installations



- A. Loop Resistance (Ohms)
- B. External Power Supply Voltage (Vdc)
- C. Operating region

Figure 4-7: Explosion-proof/Flameproof (Ex d and tb) Installations

- A. Loop Resistance (Ohms)
 B. External Power Supply Voltage (Vdc)
 C. Operating region

Note

For the Ex d and tb installations the diagram is only valid if the HART load resistance is at the + side, otherwise the load resistance value is limited to 300 Ω .

4.6 Connect the transmitter

Procedure

1. Make sure the housing is grounded according to Hazardous Locations Certifications, national and local electrical codes.
2. Verify that the power supply is disconnected.
3. Remove the cover on the terminal side (see label marked field terminals).
4. Pull the cable(s) through the cable gland/conduit.
 For Explosion-proof / Flameproof installations, only use cable glands or conduit entry devices certified Explosion-proof or Flameproof (Ex d IIC (gas) or Ex t IIIC (dust)).
5. Connect the cable wires (see [Wiring diagram](#)).
6. If applicable, use the enclosed metal plug to seal any unused port.
7. Replace the cover and tighten.
8. Tighten the cable gland.
9. Connect the power supply.

5 Configure

If the transmitter is pre-configured at the factory, this section is only necessary to change or verify the settings.

Configuration of the Rosemount 3300 Level Transmitter can be done either with a handheld communicator, the AMS Device Manager, or Radar Configuration Tools (RCT). If using the Radar Configuration Tools, a HART® modem is required.

5.1 Installing the Radar Configuration Tools (RCT) software

To install the RCT software:

Procedure

1. Insert the installation CD into your CD-ROM drive.
2. Follow the instructions.

Need help?

If the installation program does not automatically start, run Setup.exe from the CD.

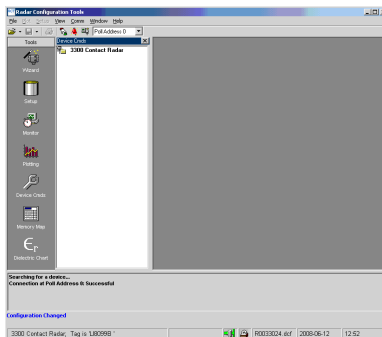
5.2 Starting RCT

Prerequisites

For optimum performance set COM Port Buffers to 1. Refer to the Rosemount 3300 Level Transmitter [Reference Manual](#) for more instructions.

Procedure

Select **Programs** → **Rosemount** → **RCT**.



Need help?

The Help function of the RCT can be reached from the menu or by pressing the **F1** key.

5.3 Configuration using the Wizard

Configuration of a Rosemount 3300 Level Transmitter can be done using the installation Wizard for detailed guidance.

Procedure

1. Make sure that the **Tools Bar** is open (Project Bar is ticked within View). Then select the **Wizard** icon or select the **View** → **Wizard** menu option.
2. Select the **Start** button and follow the instructions.

5.4 Configuration using the Setup Function

If you are already familiar with the configuration procedure, or if you want to change settings, you may use the setup function.

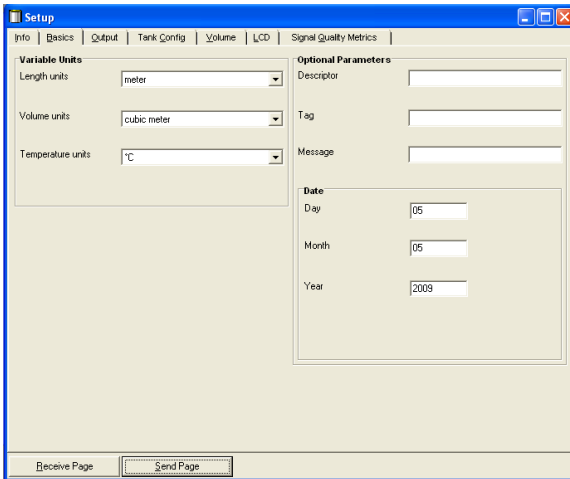
Procedure

1. Make sure that the **Tools Bar** is open (Project Bar is ticked within View). Then select the **Setup** icon or select the **View** → **Setup** menu option.
2. Select the appropriate tab:
 - Info (information about the device)
 - Basics
 - Output
 - Tank Config
 - Volume (specification of tank geometry for volume calculations)
 - LCD (display panel settings)
 - Signal Quality Metrics (for activating/de-activating and display of signal quality metrics, available with the DA1 option)
3. To load the parameters configured in the transmitter into the dialog window, click the **Receive Page** button.
4. To load any parameter changes back to the transmitter, click the **Send Page** button.

5.4.1 Setup - Basics

Units

Length, volume, and temperature units can be set. Units are used wherever measurement and configuration data occur.



5.4.2 Setup - Output

Range values

The Lower Range value = 4 mA value

The Upper Range value = 20 mA value

The 4-20 mA range must not include the upper or lower Transition Zone.⁽¹⁾

Variable assignment

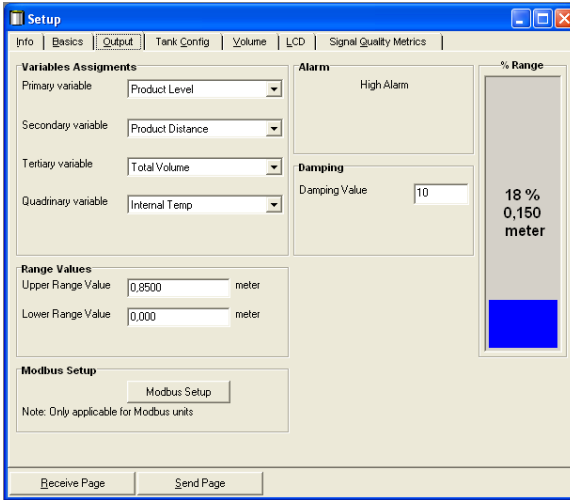
Rosemount 3301 available measuring parameters: Level, Distance to Level, Total Volume. For fully immersed probe: Interface Level and Interface Distance.

Rosemount 3302 available measuring parameters: Level, Distance to level, Total Volume, Interface Level, Interface Distance, and Upper Product Layer Thickness.

In the **Primary Variable** field, the measuring parameter is entered for the analog signal.

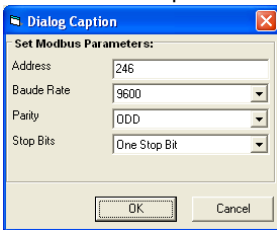
More variables can be assigned if the superimposed digital HART® signal or a HART Tri-loop™ is used.

⁽¹⁾ See the Rosemount 3300 Level Transmitter [Reference Manual](#).

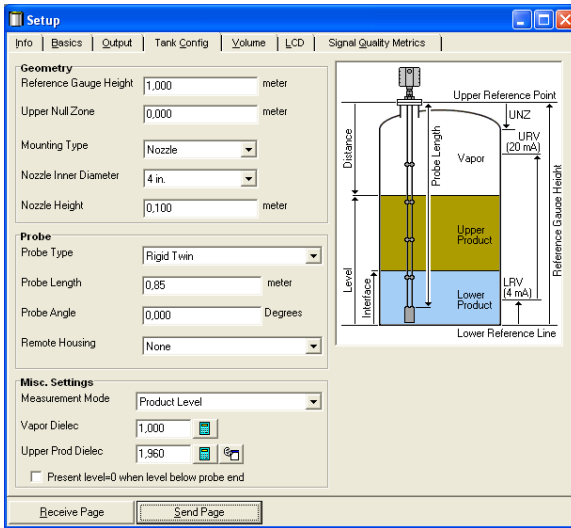


Modbus® setup

If the transmitter has the Modbus option, configuration of the communication parameters can be set.



5.4.3 Setup - Tank Config



Geometry

See tank picture in window.

- Set Reference Gauge Height
- Set Upper Null Zone (if needed)
- Set Mounting Type
- Set Diameter (if Mounting Type is Nozzle or Pipe/Chamber)
- Set Nozzle Height (if Mounting Type is Nozzle)

Probe

- Set Probe Type (This parameter is pre-configured at factory.)
- Set Probe Length (This parameter is pre-configured at factory. The probe length needs to be changed if the probe is cut in field.)
- Set Probe Angle
- If Remote Housing is mounted, set the Remote Housing length (setting not available in DD/DTM™)

Miscellaneous settings

- Set Vapor Dielectric value (if needed)
- Set Upper Product Dielectric value (interface measurements only)

5.5 Additional configuration to fine-tune performance

To fine-tune the transmitter's performance, it is recommended the Trim Near Zone function be executed after configuration is finished.

For detailed information on how to trim the near zone, see the Rosemount 3300 Level Transmitter [Reference Manual](#).

6 Environmental conditions

6.1 Ambient temperature limits (for use in explosive atmospheres)

Explosion-proof/Flame-proof version: $-58\text{ }^{\circ}\text{F} (-50\text{ }^{\circ}\text{C}) \leq T_a \leq +167\text{ }^{\circ}\text{F} (+75\text{ }^{\circ}\text{C})$

Intrinsically safe version: $-58\text{ }^{\circ}\text{F} (-50\text{ }^{\circ}\text{C}) \leq T_a \leq +158\text{ }^{\circ}\text{F} (+70\text{ }^{\circ}\text{C})$

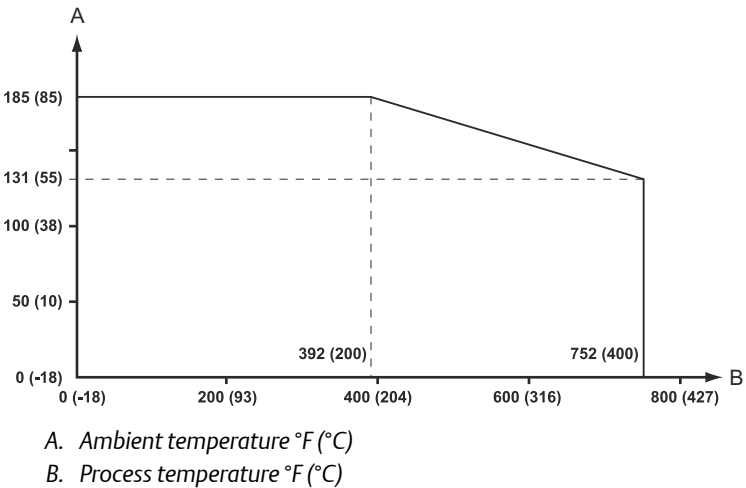
National deviations may apply, see [Product certifications](#).

6.2 Process temperature restrictions

When the Rosemount 3300 is installed in high temperature applications, consider the maximum ambient temperature. Tank insulation should not exceed 4 in. (10 cm).

[Figure 6-1](#) shows the maximum ambient temperature vs. process temperature.

Figure 6-1: Ambient Temperature vs. Process Temperature



6.3 Pressure limits

For pressure limits, see the Rosemount 3300 Level Transmitter [Reference Manual](#).

7 Product certifications

Rev 3.7

7.1 European directive information

The EU Declaration of Conformity for all applicable European directives for this product can be found on [EU Declaration of Conformity](#). The most current revision is available at [Emerson.com/Rosemount](#).

7.2 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).

7.3 Installing equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

7.4 USA

7.4.1 E5 Explosionproof (XP), Dust-Ignitionproof (DIP)

Certificate FM 3013394

Standards FM Class 3600 – 2011; FM Class 3610 – 2010; FM Class 3611 – 2004; FM Class 3615 – 2006; FM Class 3810 – 2005; ANSI/ISA 60079-0 – 2009; ANSI/ISA 60079-11 – 2009; ANSI/NEMA 250 – 1991; ANSI/IEC 60529 – 2004

Markings XP CL I, DIV 1, GP B, C, D; DIP CLII/III, DIV 1, GP E, F, G; T5
Ta=85°C; Type 4X/IP66

Specific Conditions for Safe Use (X):

1. Potential Electrostatic Charging Hazard – The enclosure contains non-metallic material. To prevent the risk for electrostatic sparking the plastic surface should only be cleaned with a damp cloth.
2. WARNING – The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

7.4.2 I5 Intrinsic Safety (IS), Nonincendive (NI)

Certificate FM 3013394

Standards FM Class 3600 – 2011; FM Class 3610 – 2010; FM Class 3611 – 2004; FM Class 3615 – 2006; FM Class 3810 – 2005; ANSI/ISA 60079-0 – 2009; ANSI/ISA 60079-11 – 2009; ANSI/NEMA 250 – 1991; ANSI/IEC 60529 – 2004

Markings IS CL I, DIV 1, GP A, B, C, D, E, F, G in accordance with control drawing 9150077-944; IS (Entity) CL I, Zone 0, AEx IA IIC T4 in accordance with control drawing 9150077-944, NI CL I, DIV 2, GP A, B, C, D, T4a Ta=70 °C; Suitable for use in CL II/III DIV 2, GP A, B, C, D, T4a Ta=70 °C; Type 4X/IP66

Specific Conditions for Safe Use (X):

1. Potential Electrostatic Charging Hazard – The enclosure contains non-metallic material. To prevent the risk for electrostatic sparking the plastic surface should only be cleaned with a damp cloth.
2. WARNING – The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

	U _i	I _i	P _i	C _i	L _i
Entity parameters HART	30 V	130 mA	1 W	0 nF	0 mH

7.5 Canada

7.5.1 E6 Explosionproof, Dust-Ignitionproof

Certificate 1250250

Standards CSA C22.2 No.0-M91, CSA C22.2 No.25-1966, CSA C22.2 No.30-M1986, CSA C22.2 No.94-M91, CSA C22.2 No.142-M1987, CSA C22.2 157-M1992, CSA C22.2 No. 213-M1987, CAN/CSA E60079-11:02, CAN/CSA C22.2 No. 60529:05, ANSI/ISA 12.27.01-2003

Markings Explosionproof CL I, DIV 1, GP C, D; Dust-Ignitionproof CL II, DIV 1 and 2, GP G and coal dust, CL III, DIV 1, Type 4X/IP66

7.5.2 I6 Intrinsically Safe and Non-Incendive Systems

Certificate 1250250

Standards CSA C22.2 No.0-M91, CSA C22.2 No.25-1966, CSA C22.2 No.30-M1986, CSA C22.2 No.94-M91, CSA C22.2 No.142-

M1987, CSA C22.2 157-M1992, CSA C22.2 No. 213-M1987, CAN/CSA E60079-11:02, CAN/CSA C22.2 No. 60529:05, ANSI/ISA 12.27.01-2003


Markings CL I, DIV 1, GP A, B, C, D, T4 see installation drawing 9150077-945; Non-Incendive Class III, DIV 1, Haz-loc CL I DIV 2, GP A, B, C, D, Maximum Ambient Temperature +70 °C, T4, Type 4X/IP66, Maximum Working Pressure 5000 psi, Dual Seal.

7.6 Europe

7.6.1 E1 ATEX Flameproof

Certificate KEMA 01ATEX2220X

Standards EN 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-11:2012, EN 60079-26:2015, EN 60079-31:2014

Markings  II 1/2 G Ex db [ia Ga] IIC T6...T1
II 1/2 D Ex tb [ia Da] IIIC T85 °C...T450 °C Da/Db
II 2 D Ex tb IIIC T85 °C...T135 °C Db

Ambient temperature range -50 °C to +75 °C
-40 °C to +75 °C with process temperature range -196 °C to -50 °C.

Specific Conditions for Safe Use (X):

1. On application of the transmitter with plastic covered probes, in an explosive gas atmosphere, precaution shall be taken to avoid danger of ignition due to electrostatic charges on the probe.
2. On application of the transmitter in an explosive dust atmosphere, the transmitter shall be installed in such a way that the risk from the electrostatic discharges and propagating brush discharges caused by rapid flow of dust at the label is avoided.
3. For probes and flanges containing light metals, an ignition hazard due to impact or friction needs to be avoided according to EN 60079-0 clause 8.3 when used as Category 1/2 G equipment.

Temperature class / Maximum surface temperature	Maximum process temperature	Maximum ambient temperature
T6 / T 85 °C	+75 °C	+75 °C
T5 / T 100 °C	+90 °C	+75 °C
T4 / T 135 °C	+125 °C	+75 °C
T3 / T 200 °C	+190 °C	+75 °C
T2 / T 300 °C	+285 °C	+65 °C
T1 / T 450 °C	+400 °C	+55 °C

7.6.2 I1 ATEX Intrinsic Safety

Certificate BAS02ATEX1163X

Standards EN 60079-0:2012+A11:2013, EN 60079-11:2012

Markings  II 1G Ex ia IIC T4 Ga (-50°C ≤ Ta ≤ +70°C)

Specific Conditions for Safe Use (X):

1. The equipment is not capable of withstanding the 500V test as defined in EN60079-11. This must be considered in any installation.
2. The enclosure is made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in zone 0.
3. The probes may contain plastic materials greater than 4cm² or be coated with plastic and these can present an electrostatic risk if rubbed or placed in a fast moving air flow.
4. The probes may contain light alloys which can present a risk from frictional ignitions. Care should be taken to protect them from mechanical impact during use or installation.

	U _i	I _i	P _i	C _i	L _i
Entity parameters HART	30 V	130 mA	1 W	0 nF	0 mH

7.6.3 N1 ATEX Type N: Non-Sparking/Intrinsic Safety

Certificate BAS12ATEX0089X

Standards EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010

Markings Ex ic nA IIC T4 Gc (-50°C ≤ Ta ≤ +70°C) Un = 42.4 V

Specific Conditions for Safe Use (X):

1. The equipment is not capable of withstanding the 500V test as defined in EN 60079-11 and EN 60079-15. This must be considered in any installation.
2. The Probes may contain plastic materials greater than 20cm² or be coated with plastic and these can present an electrostatic risk if rubbed or placed in a fast moving air flow.
3. The cable entry must use a suitable, equipment certified cable gland which provides strain relief and any unused openings to the equipment must be blanked off to maintain a degree of protection of at least IP66.

7.7 International

7.7.1 E7 IECEx Flameproof

Certificate	IECEx DEK 12.0015X
Standards	IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-11:2011; IEC 60079-26:2014, IEC 60079-31:2013
Markings	Ex db [ia Ga] IIC T6...T1 Ga/Gb Ex tb [ia Da] IIIC T85 °C...T450 °C Da/Db Ex tb IIIC T85 °C...T135 °C Db
Ambient temperature range	-50 °C to +75 °C -40 °C to +75 °C with process temperature range -196 °C to -50 °C.

Specific Conditions for Safe Use (X):

1. On application of the transmitter with plastic covered probes, in an explosive gas atmosphere, precaution shall be taken to avoid danger of ignition due to electrostatic charges on the probe.
2. On application of the transmitter in an explosive dust atmosphere, the transmitter shall be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust at the label is avoided.
3. For probes and flanges containing light metals, an ignition hazard due to impact or friction needs to be avoided according to IEC 60079-0 clause 8.3, when used as EPL Ga/Gb equipment.

Temperature class / Maximum surface temperature	Maximum process temperature	Maximum ambient temperature
T6 / T 85 °C	+75 °C	+75 °C
T5 / T 100 °C	+90 °C	+75 °C
T4 / T 135 °C	+125 °C	+75 °C
T3 / T 200 °C	+190 °C	+75 °C
T2 / T 300 °C	+285 °C	+65 °C
T1 / T 450 °C	+400 °C	+55 °C

7.7.2 I7 IECEx Intrinsic Safety

- Certificate** IECEx BAS 12.0062X
- Standards** IEC 60079-0:2011, IEC 60079-11:2011
- Markings** Ex ia IIC T4 Ga (-50°C ≤ Ta ≤ +70°C)

Specific Conditions for Safe Use (X):

1. The equipment is not capable of withstanding the 500V test as defined in EN60079-11. This must be considered in any installation.
2. The enclosure is made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in zone 0.
3. The probes may contain plastic materials greater than 4cm² or be coated with plastic and these can present an electrostatic risk if rubbed or placed in a fast moving air flow.
4. The probes may contain light alloys which can present a risk from frictional ignitions. Care should be taken to protect them from mechanical impact during use or installation.

	U _i	I _i	P _i	C _i	L _i
Entity parameters	30 V	130 mA	1 W	0 nF	0 mH

7.7.3 N7 IECEx Type N: Non-sparking/Intrinsic Safety

- Certificate** IECEx BAS 12.0061X
- Standards** IEC 60079-0:2011, IEC 60079-11:2011, IEC 60079-15:2010
- Markings** Ex ic nA IIC T4 Gc (-50°C ≤ Ta ≤ +70°C), Um = 254 V

Specific Conditions for Safe Use (X):

1. The equipment is not capable of withstanding the 500V test as defined in EN 60079-11 and EN 60079-15. This must be considered in any installation.
2. The Probes may contain plastic materials greater than 20cm² or be coated with plastic and these can present an electrostatic risk if rubbed or placed in a fast moving air flow.
3. The cable entry must use a suitable, equipment certified cable gland which provides strain relief and any unused openings to the equipment must be blanked off to maintain a degree of protection of at least IP66.

7.8 Brazil**7.8.1 E2 INMETRO Flameproof****Certificate** UL-BR-17.0192X**Standards** ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-1:2009 + Errata 1:2011, ABNT NBR IEC 60079-11:2009, ABNT NBR IEC 60079-26:2008, ABNT NBR IEC 60079-31:2011

Markings Ex d [ia Ga] IIC T6...T1 Ga/Gb
 Ex tb [ia Da] IIIC T85 °C...T450 °C Da/Db
 Ex tb IIIC T85 °C...T135 °C -/Db

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.8.2 I2 INMETRO Intrinsic Safety**Certificate** UL-BR-17.0192X**Standards** ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009**Markings** Ex ia IIC T4 Ga (- 50°C ≤ Tamb ≤ + 70°C)**Specific Conditions for Safe Use (X):**

1. See certificate for Specific Conditions.

	U_i	I_i	P_i	C_i	L_i
Entity parameters	30 V	130 mA	1 W	0 nF	0 mH

7.9 China

7.9.1 E3 China Flameproof

Certificate GYJ17.1035X

Standards GB 3836.1-2010, GB 3836.2-2010, GB 3836.4-2010, GB 3836-20-2010, GB 12476.1-2013, GB 12476.4-2010, GB 12476.5-2013

Markings Ex d [ia Ga] IIC T6-T1 Gb,
Ex iaD tD 20/A21 IP6X T85°C~T450°C,
Ex tD A21 IP6X T85°C~T135°C

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.9.2 I3 China Intrinsic Safety

Certificate GYJ16.1336X

Standards GB 3836.1-2010, GB 3836.4-2010, GB 3836.20-2010

Markings Ex ia IIC T4 (-50°C ≤ Ta ≤ +70°C),

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

	U _i	I _i	P _i	C _i	L _i
Entity parameters	30 V	130 mA	1 W	0 nF	0 mH

7.9.3 N3 China Type N

Certificate GYJ15.1078X

Standards GB 3836.1-2010, GB 3836.4-2010, GB 3836.8-2003

Markings Ex ic nA IIC T4 Gc, Un = 42.4 V

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.10 Technical Regulations Customs Union (EAC)

7.10.1 EM Technical Regulations Customs Union (EAC) Flameproof

Certificate RU C-US.GB05.V.01030

Markings Ga/Gb Ex d [ia Ga] IIC T6...T1 X

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.10.2 IM Technical Regulations Customs Union (EAC) Intrinsic Safety

Certificate RU C-US.GB05.V.01030

Markings 0Ex Ia IIC T4 Ga X

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

	U _i	I _i	P _i	C _i	L _i
Entity parameters	30 V	130 mA	1 W	0 nF	0 mH

7.11 Japan

7.11.1 E4 Flameproof with display

Certificate TC18544

Markings Ex d [ia] IIB T6
Ex ia IIB T6

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.11.2 E4 Flameproof without display

Certificate TC 18545

Markings Ex d [ia] IIB T6
Ex ia IIB T6

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.12 Republic of Korea

7.12.1 EP Korea Flameproof

Certificate 10-KB4BO-0019X

Markings Ex d[ia] IIC T6

Specific Conditions for Safe Use (X):

1. See certificate for Specific Conditions.

7.13 India**7.13.1 Flameproof****Certificate** P119297/1**Markings** Ex d [ia Ga] IIC T6...T1 Ga/Gb**Specific Conditions for Safe Use (X):**

1. See certificate for Specific Conditions.

7.13.2 Intrinsically safe**Certificate** P428257/1**Markings** Ex ia IIC T4 Ga**Specific Conditions for Safe Use (X):**

1. See certificate for Specific Conditions.

7.13.3 Intrinsically safe**Certificate** P428258/1**Markings** II 1G Ex ia IIC T4 Ga**Specific Conditions for Safe Use (X):**

1. See certificate for Specific Conditions.

7.14 Combinations**KA** Combination of E1 and E6**KB** Combination of E5 and E6**KC** Combination of E1 and E5**KD** Combination of I1 and I6**KE** Combination of I5 and I6**KF** Combination of I1 and I5

7.15 Additional certifications

7.15.1 U1 Overfill prevention

Certificate Z-65.16-416

Application TÜV tested and approved by DIBt for overfill prevention according to the German WHG regulations.

7.16 Pattern approval

GOST Belarus

Certificate RB-03 07 2765 10

GOST Kazakhstan

Certificate KZ.02.02.03473-2013

GOST Russia

Certificate SE.C.29.010.A

GOST Uzbekistan

Certificate 02.2977-14

China Pattern Approval

Certificate 2009-L256

7.17 Conduit plugs and adapters

IECEx Flameproof and Increased Safety

Certificate IECEX UL 18.0016X


Standards IEC60079-0:2011, IEC60079-1:2014, IEC60079-7:2015, IEC60079-31:2013


Markings Ex de eb IIC Gb;
Ex ta IIIC Da

ATEX Flameproof and Increased Safety

Certificate DEMKO 18 ATEX 1986X

Standards EN60079-0:2012+A11:2013, EN60079-1:2014, EN60079-7:2015, EN60079-31:2014

Markings  II 2 G Ex de IIC Gb,

 II 1 D Ex ta IIIC Da
Table 7-1: Conduit Plug Thread Sizes

Thread	Identification mark
M20 x 1.5	M20
½ - 14 NPT	½ NPT

Table 7-2: Thread Adapter Thread Sizes

Male thread	Identification mark
M20 x 1.5 – 6g	M20
½ - 14 NPT	½ - 14 NPT
¾ - 14 NPT	¾ - 14 NPT
Female thread	Identification mark
M20 x 1.5 – 6H	M20
½ - 14 NPT	½ - 14 NPT
G1/2	G1/2

Specific Conditions for Safe Use (X):

1. The Blanking Elements shall not be used with an adapter.
2. Only one adapter shall be used with any single cable entry on the associated equipment.
3. It is the end user's responsibility to ensure that the ingress protection rating is maintained at the interface of the equipment and the blanking element/adapter.
4. Suitability of the temperature of the devices is to be determined during end-use with suitably rated equipment.

7.18 Installation drawings

Figure 7-1: 9150077-944 - System Control Drawing

ORIGINAL SIZE A3

REVISE	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON
1	01/2018	SMC/2961	1/2018	1/2018	SMC/2961	1/2018	SMC/2961	1/2018	SMC/2961

NON-HAZARDOUS LOCATION

HAZARDOUS LOCATION

ROSEMOUNT 3300 SERIES

Intrinsically Safe Apparatus for use in Class I, II, III, Division 1 Groups A, B, C, D, E, F, G
Class 1, Zone 0, AEx ia IIC 14

Temperature class: T4 (-50 ≤ Ta ≤ +70 deg C)

Entropy Parameters:
Vmax(U) ≤ 30V, Imax(I) ≤ 130 mA
Ci = 0 nF, Li = 0 μH, Pi ≤ 1 W

WEEK	ISSUE	CH	DESCRIPTION	DATE	BY	REASON	DATE	BY	REASON
0139	0139	6	01/2018	01/2018	SMC/2961	01/2018	SMC/2961	01/2018	SMC/2961

ENTY CONCEPT APPROVAL

The Entity concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in combination as a system. The approved values of max. open circuit voltage (Voc or Vi) and max. short circuit current (Isc or It) and max. power (Voc x Isc / 4) or (Vi x It / 4), for the associated apparatus must be less than or equal to the maximum safe input voltage (Vmax), maximum safe input current (Imax), and maximum safe input power (Pmax) of the intrinsically safe apparatus. In addition, the approved max. allowable connected capacitance (Ca or Co) of the associated apparatus, the approved max. allowable connected inductance (La or Lb) of the associated apparatus, and the approved max. allowable internal capacitance (Ci) of the intrinsically safe apparatus, must be greater than the sum of the interconnecting cable inductance and the unprotected internal inductance (Li) of the intrinsically safe apparatus.

Notes:

- No revision to this drawing without prior Factory Mutual approval.
- Associated apparatus manufacturer's installation drawing must be followed when installing this product.
- Dust-Tight seal must be used when installed in Class II and Class III environments.
- Control equipment connected to the barrier must not use or generate more than 250 Vrms or Vdc.
- Resistance between Intrinsically Safe Ground and Earth Ground must be less than 1.0 ohm.
- Installations should be in accordance with ANSI/ISA 812.6 "Installation of Intrinsically Safe Systems for Hazardous Locations" and the National Electric Code (ANSI/NFPA 70).
- The associated apparatus must be Factory Mutual Approved.

WARNING : To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

WARNING: Substitution of components may impair Intrinsic Safety.

WARNING: Potential Electrostatic Charging Hazard— The enclosure contains non-metallic material. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned with a damp cloth.

WARNING: The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

FM Approved Product
No revisions to this drawing without prior Factory Mutual Approval.

ISSUED BY	WEEK	PRODUCT CODE	FILE	SCALE	SHEET
GU-LN	0139	3300	PDF	2:1	5 / 11
APPROVED BY	WEEK	IND. TYPE	OTHER UNITS	SCALE <td>SHEET</td>	SHEET
GU-PO	0139	6	OTHER UNITS	2:1	5 / 11

ALL DIMENSIONS ARE IN MILLIMETRES

ROSEMOUNT

9150 077-944

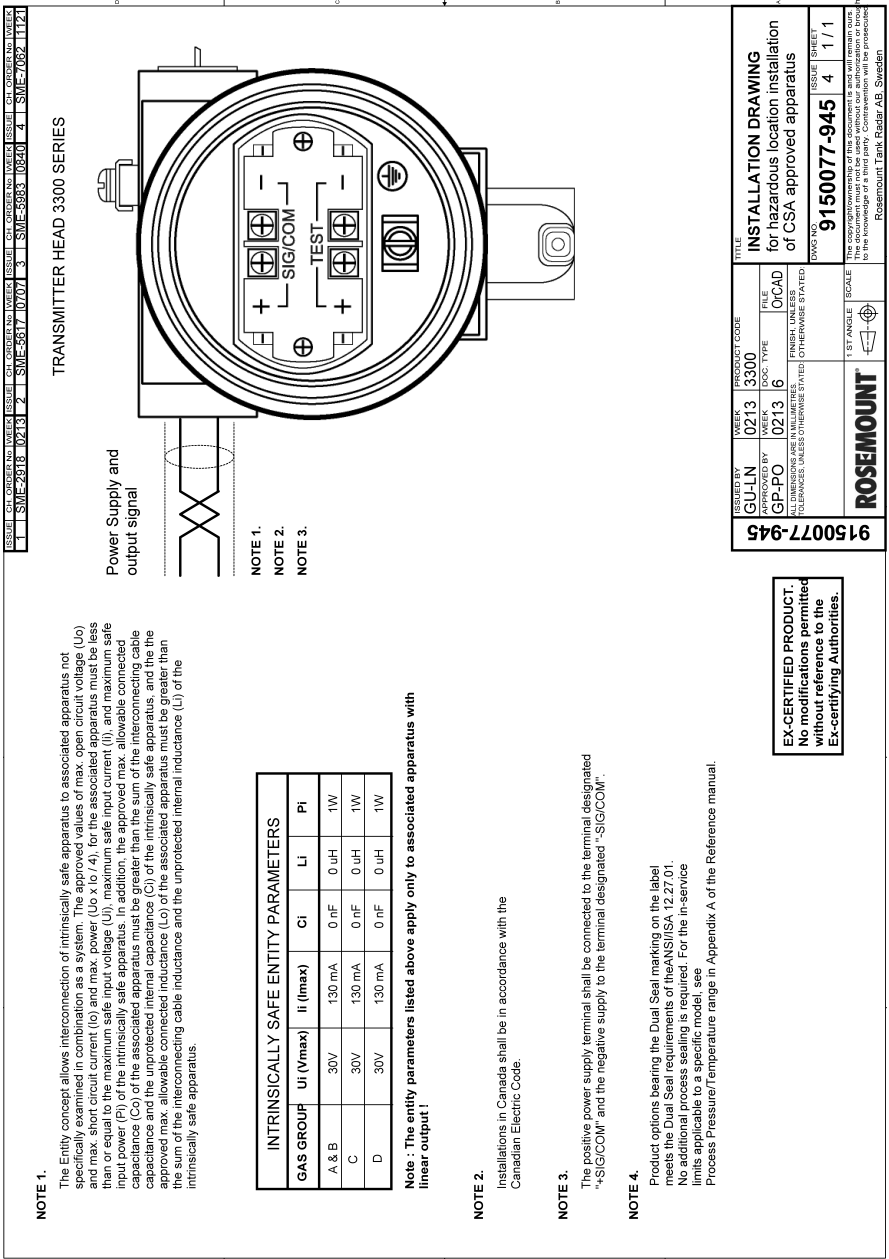
TITLE
SYSTEM CONTROL DRAWING
for hazardous location installation of intrinsically safe FM approved apparatus

DRAWING NO.
9150 077-944

The copyright of this document is the property of Rosemount Process Automation. This document may not be used without our authorisation through the Rosemount Process Automation website.



1. The Rosemount Process Automation logo is a registered trademark of Rosemount Process Automation.

Figure 7-2: 9150077-945 Installation Drawing



7.19 EU Declaration of Conformity

Figure 7-3: EU Declaration of Conformity



EU Declaration of Conformity

No: 3300

We,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

declare under our sole responsibility that the product,


Rosemount 3300 Series Guided Wave Radar Level and Interface Transmitter

manufactured by,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

is in conformity with the provisions of the European Community Directives, including the latest amendments, as shown in the attached schedule.

Presumption of conformity is based on the application of the harmonized standards, normative documents or other documents and, when applicable or required, a European Community notified body certification, as shown in attached schedule.



(signature)

Manager Product Approvals
(function name - printed)

Dajana Prastalo
(name - printed)

2019-03-22
(date of issue)



**Schedule
No: 3300**



EMC Directive (2014/30/EU)

EN 61326-1:2013

ATEX Directive (2014/34/EU)

BAS02ATEX1163X

Intrinsic Safety

Equipment Group II, Category 1 G, Ex ia IIC T4 Ga

EN 60079-0:2012 + A11:2013; EN 60079-11:2012

KEMA 01ATEX2220X

Flameproof

Equipment Group II, Category 1/2 G Ex db [iaGa] IIC T6...T1 Ga/Gb and
Equipment Group II, Category 1/2 D Ex tb [ia Da] IIIC T85°C...T450°C Da/Db or
Equipment Group II, Category 2 D Ex tb IIIC T85°C...T135°C Db

EN 60079-0:2012 + A11:2013; EN 60079-1:2014; EN 60079-11:2012; EN 60079-26:2015;
EN 60079-31:2014

Baseefa12ATEX0089X

Type of protection N, Non-sparking and Intrinsic Safety

Equipment Group II, Category 3 G, Ex ic nA IIC T4 Gc

EN 60079-0:2012 + A11:2013; EN 60079-11:2012; EN 60079-15:2010



**Schedule
No: 3300**



ATEX Notified Body for EU Type Examination Certificates and Type Examination Certificates

Notified Body responsible before March 2019
SGS Baseefa Ltd [Notified Body Number: 1180]
Rockhead Business Park, Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom

Notified Body responsible after March 2019
SGS Fimko Oy [Notified Body Number: 0598]
Särkiniementie 3
P.O. Box 30
FI-00211, Helsinki
Finland

DEKRA (formerly **KEMA**) **Quality B.V.** [Notified Body Number: 0344]
Utrechtsweg 310
6812 AR Arnhem
Netherlands

ATEX Notified Body for Quality Assurance

DNV Nemko Presafe AS [Notified Body Number: 2460]
Veritasveien 1
1322 HØVIK
Norway

7.20 China RoHS

List of Model Parts with China RoHS Concentration above MCVs
含有China RoHS管控物质超过最大浓度限值的部件型号列表

Part Name 部件名称	Hazardous Substances / 有害物质					
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr +6)	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴联苯醚(PBDE)
Electronics Assembly 电子组件	X	O	O	O	O	O
Housing Assembly 壳体组件	O	O	O	O	O	O

This table is proposed in accordance with the provision of SJ/T11364

本表格系依据SJ/T11364的规定而制作。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

X: 意为在该部件所使用的的所有均质材料里，至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求。



Global Headquarters

Emerson Automation Solutions
6021 Innovation Blvd.
Shakopee, MN 55379, USA

- +1 800 999 9307 or +1 952 906 8888
- +1 952 949 7001
- RFQ.RMD-RCC@Emerson.com

Latin America Regional Office


Emerson Automation Solutions
1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA


- +1 954 846 5030
- +1 954 846 5121
- RFQ.RMD-RCC@Emerson.com

Asia Pacific Regional Office

Emerson Automation Solutions
1 Pandan Crescent
Singapore 128461

- +65 6777 8211
- +65 6777 0947
- Enquiries@AP.Emerson.com

 [Linkedin.com/company/Emerson-Automation-Solutions](https://www.linkedin.com/company/Emerson-Automation-Solutions)

 [Twitter.com/Rosemount_News](https://twitter.com/Rosemount_News)

 [Facebook.com/Rosemount](https://www.facebook.com/Rosemount)

 [Youtube.com/user/RosemountMeasurement](https://www.youtube.com/user/RosemountMeasurement)

North America Regional Office

Emerson Automation Solutions
8200 Market Blvd.
Chanhassen, MN 55317, USA

- +1 800 999 9307 or +1 952 906 8888
- +1 952 949 7001
- RMT-NA.RCCRF@Emerson.com

Europe Regional Office

Emerson Automation Solutions Europe
GmbH
Neuhofstrasse 19a P.O. Box 1046
CH 6340 Baar
Switzerland

- +41 (0) 41 768 6111
- +41 (0) 41 768 6300
- RFQ.RMD-RCC@Emerson.com

Middle East and Africa Regional Office

Emerson Automation Solutions
Emerson FZE P.O. Box 17033
Jebel Ali Free Zone - South 2
Dubai, United Arab Emirates

- +971 4 8118100
- +971 4 8865465
- RFQ.RMTMEA@Emerson.com

©2019 Emerson. All rights reserved.

Emerson Terms and Conditions of Sale are available upon request. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount is mark of one of the Emerson family of companies. All other marks are the property of their respective owners.