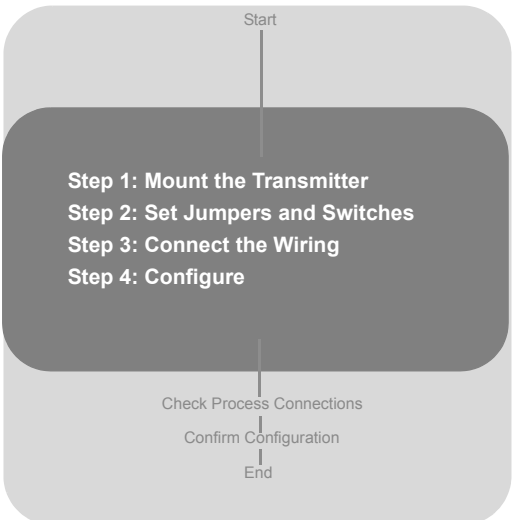
Quick Installation Guide
00825-0100-4811, Rev BA
September 2005

Rosemount 3300 Series

Guided Wave Radar Level and Interface Transmitter



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Rosemount 3300 Series

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⚠ IMPORTANT NOTICE

This installation guide provides basic guidelines for the Rosemount® 3300 Series. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, explosion-proof, flameproof, or intrinsically safe (I.S.) installations. Refer to the Rosemount 3300 Series Reference Manual (document number 00809-0100-4811) for more instructions. The manual and this Quick Installation Guide (QIG) are also available electronically on www.rosemount.com.

⚠ WARNING

Failure to follow safe installation and service 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 QIG and the Reference Manual. Failure to do so may impair the protection provided by the equipment.
- Any substitution of non-recognized spare parts may jeopardize safety. Repair, e.g. substitution of components etc. may also jeopardize safety and is under no circumstances allowed.

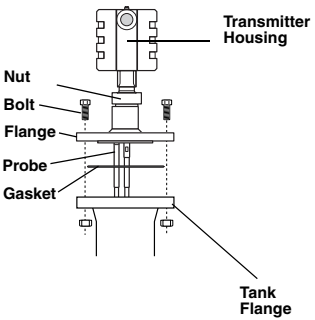
Explosions could result in death or serious injury

- Verify that the operating environment of the transmitter is consistent with the appropriate hazardous locations specifications. See Hazardous Locations Certifications on page 12 in this Quick Installation Guide.
- In an Explosion-proof/Flame-proof installation, do not remove the transmitter covers when power is applied to the unit.
- Before connecting a HART®-based Communicator in an explosive atmosphere, make sure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.
- To avoid process leaks, only use o-ring designed to seal with the corresponding flange adapter.

Electrical shock can result in death or serious injury

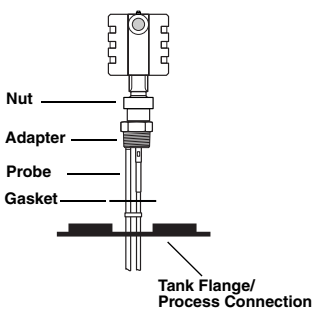
- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.
- Make sure the main power to the Rosemount 3300 Series transmitter is off and the lines to any other external power source are disconnected or not powered while wiring the transmitter.

STEP 1: MOUNT THE TRANSMITTER



Tank Connection with Flange

1. Place a gasket on top of the tank flange.
2. Lower the transmitter and probe with flange into the tank.
3. Tighten the bolts.
4. Loosen the nut that connects the housing to the probe and rotate the housing to the desired direction.
5. Tighten the nut.

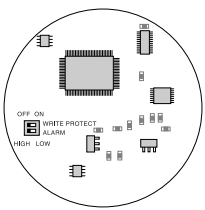


Threaded Tank Connection

1. For adapters with BSP/G threads, place a gasket on top of the tank flange.
2. Lower the transmitter and probe into the tank.
3. Screw the adapter into the process connection.
4. Loosen the nut that connects the housing to the probe and rotate the housing to the desired direction.
5. Tighten the nut.

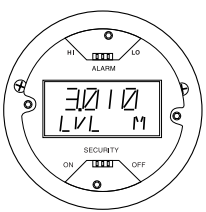
STEP 2: SET JUMPERS AND SWITCHES

If alarm and security jumpers are not set, the transmitter will operate with the default alarm condition HIGH and Security OFF.
Write Protection must be set after configuration (Step 4).



To set Alarm and Write Protection on the circuit board

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 position LOW.
3. To enable the security write protection feature, move the write protect switch to position ON.
4. Replace the cover and tighten securely.



To set Alarm and Write Protection on the LCD

Switches on the circuit board need to be in default position, write protection OFF and Alarm HIGH, in order to make the LCD override circuit board settings.

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

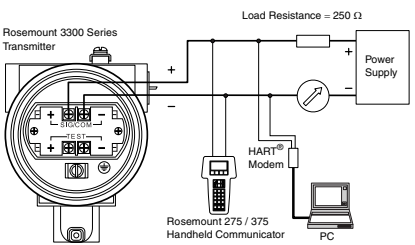
STEP 3: CONNECT THE WIRING

The Rosemount 3300 Series transmitter operates with power supply ranging from 11-42 V dc (11-30 V dc in IS applications, 16-42 V dc in Explosion Proof (EEx d)/ Flame Proof applications).
The transmitter requires shielded twisted pair wiring (18-12 AWG), suitable for the supply voltage and approved for use in hazardous areas if applicable.

To Connect the Transmitter

1. Make sure the housing is grounded in accordance with Hazardous Locations Certifications, national and local electrical codes.
2. Make sure the power supply is disconnected.
3. Remove the cover on the terminal side (see label marked field terminals).
4. Pull the cable through the cable gland / conduit.
   For Explosion Proof / Flame Proof installations, only use cable glands or conduit entry devices of certified Explosion Proof or Flame Proof type.
5. Connect wires as illustrated below.
6. If applicable, use the enclosed metal plug to seal an unused port.
7. Replace the cover and tighten. Also tighten the cable gland and finally, connect the power supply.

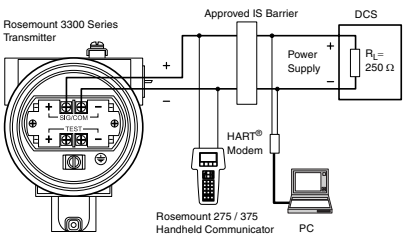
Non-Intrinsically Safe Output



STEP 3 CONTINUED...

Intrinsically Safe Output

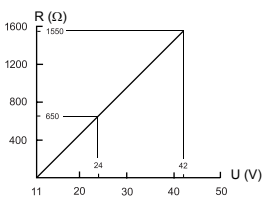
IS Parameters:
U_i=30 V, I_i= 130 mA,
P_i=1 W, L_i=C_i=0



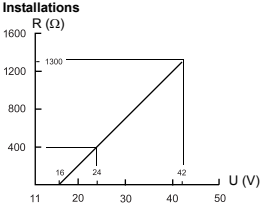
The Rosemount 275 / 375 Handheld Communicator requires a minimum load resistance of 250 Ohm within the loop in order to function properly, see below.

Load Limitations

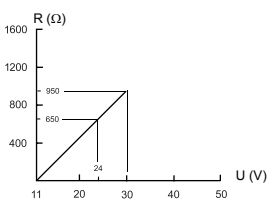
Non-Hazardous Installations



Explosionproof/Flameproof (EEx d) Installations



Intrinsically Safe Installations



NOTE
For the EEx d case the diagram is only valid if the HART® load resistance is at the + side, otherwise the load resistance value is limited to 300 Ohm.

STEP 4: CONFIGURE THE TRANSMITTER

Configuration of the Rosemount 3300 Series transmitter can be done either with a Rosemount 275 / 375 Handheld Communicator, Asset Management Solutions (AMS) or Radar Configuration Tools (RCT). Configuration with Radar Configuration Tools requires a HART® modem, and the procedure is described below, together with the corresponding Rosemount 275 / 375 fast key codes. If the transmitter is pre-configured in factory it is not necessary to proceed with step 4, unless you like to verify / change settings.

Installing the Radar Configuration Tools (RCT) Software

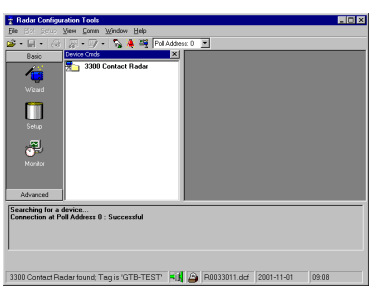
To install the RCT software:

1. Insert the installation CD into your CD-ROM drive.
2. Follow the instructions. If the installation program is not automatically started, run **Setup.exe** from the CD.

Starting the RCT

Click Programs>RCT Tools>RCT. The following window appears(1). The RCT contains a Help function which can be reached from the menu or by using the F1 key.

Basic
Wizard
Setup



(1) For optimum performance set COM Port Buffers to 1. You might receive a pop-up reminder of this before the RCT window appears. See Chapter 4 "Start-up" in the Reference Manual (00809-0100-4811).

STEP 4 CONTINUED...

Configuration of a Rosemount 3300 Series transmitter can be done by using the installation Wizard for detailed guidance or by using the Setup function if you are already familiar with the configuration procedure (or if you want to change settings).

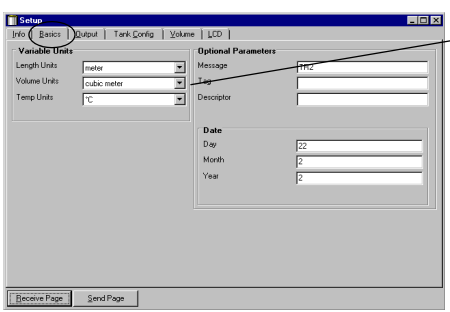
Configuration Using the Wizard

1. Click the Wizard icon (make sure that the Basic section is open) or choose the View>Wizard menu option.
2. Click the start button and follow the instructions.

Configuration Using the Setup Function & Fast Key Code

1. Click the Setup icon (make sure that the Basic section is open) or choose the View>Setup menu option.
2. Choose the appropriate tab: Info (information about the device), Basics (see below), Analog (see below), Tank Config (see below), Volume (specification of tank geometry for volume calculations) or LCD (display panel settings).
3. Press the Receive Page button to load the parameters configured in the transmitter into the dialog window. If any parameter is changed, press the Send Page button to load data back to the transmitter.

Setup - Basics

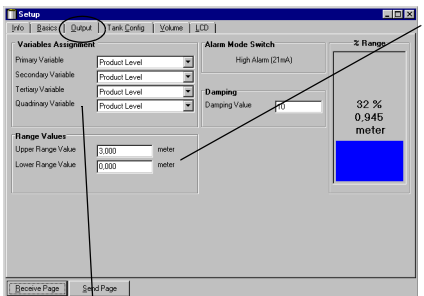


Set Units, 275 /375 Fast Key Code [1,3,1]

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

STEP 4 CONTINUED...

Setup - Output



Set Range Values, 275 /375 Fast Key Code [1,3,4,3]

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 Dead Zone.(1)

Set Variable Assignment, 275 /375 Fast Key Code [1,1,1]

Available measuring parameters for:

- Model 3301 are Level, Distance to Level, Total Volume and for the case with fully immersed probe Interface Level and Interface Distance.
- Model 3302 are Level, Distance to Level, Total Volume, Interface Level, Interface Distance, Upper Product Layer Thickness.

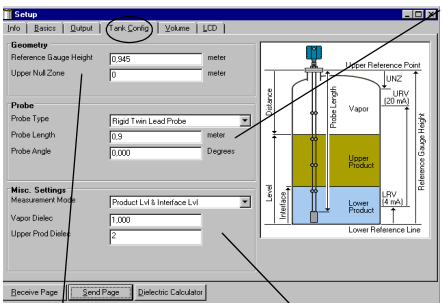
In the Primary Variable field, the measuring parameter is entered for the analog signal.

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

(1) See the Reference Manual (00809-0100-4811) for details.

STEP 4 CONTINUED...

Setup - Tank Config



Geometry

See tank picture in window.

- Set Reference Gauge Height, 275 / 375 Fast Key Code [1,3,2,1]
- Set Upper Null Zone, if needed, 275 / 375 Fast Key Code [1,3,3,1]

Probe

- Set Probe Type, 275 / 375 Fast Key Code [1,3,2,3]: Configured in factory
- Set Probe Length, 275 / 375 Fast Key Code [1,3,2,2]: Configured in factory but needs to be changed if the probe is cut in field
- Set Probe Angle, 275 / 375 Fast Key Code [1,3,2,4]

Misc. Settings

- Set Vapor Dielectric value, if needed, 275 / 375 Fast Key Code [1,3,3,2]
- Set Upper Product Dielectric value, Interface measurements only, 275 / 375 Fast Key Code [1,3,3,3]

HAZARDOUS LOCATIONS CERTIFICATIONS

NOTE
A safety isolator such as a zener barrier is always needed for intrinsic safety.
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.

Factory Mutual (FM) Approvals

Project ID: 3013394

E5 Explosion Proof for use in Class I, Div. 1, Groups B, C and D;
Dust Ignition Proof for use in Class II/III,
Div. 1, Groups E, F and G;
With Intrinsically Safe connections to
Class I, II, III, Div. 1, Groups A, B, C, D, E, F and G.
Temperature Class T5 @ +85°C.
Ambient temperature limits -40°C to +85°C.
Factory Sealed.

I5 Intrinsically Safe for Class I, II, III, Div. 1, Groups A, B, C, D, E, F and G,
Class I, Zone 0, AEx ia IIC T4 T_a=70°C.
Temp code T4 at 70°C max ambient.
Control Drawing: 9150077-944.
Non-Incendive Class I, Div. 2, Groups A, B, C and D;
Suitable for Class II, III, Div. 2,
Groups F and G.
Non-incendive maximum operating parameters: 42 V, 25 mA.
Temp code T4A at 70°C max ambient.

ATEX Approval CE 0575

E1 Flame Proof:

⟨Ex⟩ II 1/2 GD T80°C.
EEx d [ia] IIC T6 (-40°C<T_a<+75°C).
KEMA 01ATEX2220X.

NOTE
Special conditions for safe use (X):
When used in a potentially explosive atmosphere where the use of equipment-category 1 apparatus is required, appropriate measures must be taken to prevent electrostatic discharge.

I1 Intrinsic Safety:

⟨Ex⟩ II 1 G EEx ia IICT4 (-50°C<T_a<+70°C).
BAS02ATEX1163X
U_i=30 V dc, I_i=130 mA, P_i=1.0 W, L_i=C_i=0.

NOTE
Special conditions for safe use (X):
The apparatus is not capable of withstanding the 500 V test as defined in clause 6.4.12 of EN 50020. This must be considered during installation.
When used in a potentially explosive atmosphere where the use of equipment-category 1 apparatus is required, appropriate measures must be taken to prevent electrostatic discharge.

Canadian Standards Association (CSA) Approval
Cert. no 2002.1250250.

E6 Explosion Proof: Class I, Div. 1, Groups C and D.
Dust Ignition Proof:
Class II, Div. 1 and 2, Groups G and coal dust.
Class III, Div. 1, Haz. Loc.
[Ex ia IIC T6].

Ambient temperature limits -40°C to +85°C.
Factory Sealed.

I6 Intrinsically Safe: Ex ia IIC T4,
Class I, Div. 1, Groups A, B, C and D.
Temp code T4.
Control Drawing: 9150077-945.
Non-Incendive: Class III, Div. 1, Haz. Loc.
Class I, Div 2, Groups A, B, C and D.

Ambient temperature limits -40°C to +70°C.

IECEx Approval

E7 Flameproof:

Ex d [ia] IIC T6 (T_{amb} = -20°C + 60°C) IP66
IECEx TSA 04.0013X

SPECIAL CONDITIONS FOR SAFE USE (X)

The apparatus metallic enclosure must be electrically bonded to earth.
The conductor used for the connection shall be equivalent to a copper conductor of 4 mm^2 minimum cross-sectional area.
Where it is required that an unused conduit entry is to be closed by means of the blanking plug, the plug supplied by the equipment manufacturer with this equipment is certified for this purpose under this certification.
Maximum Voltage U_m = 250 V.

I7 Intrinsic Safety:

Ex ia IIC T4 (T_a = 60°C) IP66
IECEx TSA 04.0006X

U_{imax} = 30 V, I_{imax} = 130 mA, P_{imax} = 1 W, C_{imax} = 0 nF, L_{imax} = 0 mH

SPECIAL CONDITIONS FOR SAFE USE (X)

The programming port must not be used in the hazardous area.
The apparatus metallic enclosure must be electrically bonded to the earth.
The conductor used for the connection shall be equivalent to a copper conductor of 4 mm^2 minimum cross-sectional area.
The input parameters stated above must be taken into consideration during the installation of the apparatus.

Combination Approvals

KA ATEX and CSA Flameproof / Explosion Proof
KB FM and CSA Explosion Proof
KC ATEX and FM Flameproof / Explosion Proof
KD ATEX and CSA Intrinsic Safety
KE FM and CSA Intrinsic Safety
KF ATEX and FM Intrinsic Safety

For information on hazardous locations installations, refer to the Reference Manual (document number 00809-0100-4811).