Product Data Sheet
00813-0100-4840, Rev. AC
February 2008

Rosemount 3100 Series Ultrasonic Level Transmitters

The Rosemount 3100 Series is a loop-powered ultrasonic transmitter designed for reliable continuous level measurement.

THE 3100 SERIES FEATURES:

- *Non-contacting measurement with no moving parts*
- *Integral LCD and push-buttons as standard for on-site programming*
- *Continuous measurement of level or distance-to-surface. Volume or open channel flow calculations for The Rosemount 3102 and Rosemount 3105*
- *Two integral signal relays for The Rosemount 3102*
- *Easy to install and configure*
- *Rugged aluminum housing and PVDF wetted material*
- *Two-wire direct current loop-powered*

HART® FIELD COMMUNICATIONS PROTOCOL

CE

Contents

Reliability in a Universal Package

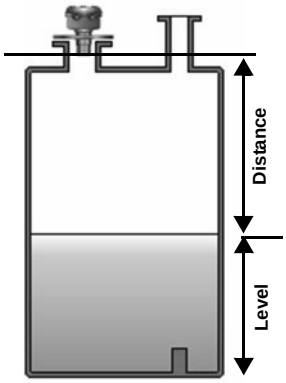
The Rosemount 3100 Series is a liquid level transmitter based on ultrasonic technology that is suitable for many liquid applications.

MEASUREMENT PRINCIPLE

Ultrasonic pulse signals are transmitted and reflected from the liquid surface. The transmitter 'listens' for reflected signals (echoes) and measures the time-delay between transmitting and receiving.

The distance to the liquid surface is automatically calculated using the computed time-delay.

*Distance = Speed of sound in air * (Time-delay / 2)*



An integral temperature sensor continuously measures the air temperature around the transmitter. It then computes the *speed of sound in air*, automatically compensating the *Distance* for temperature effects.

The 3102 and 3105 have a Remote Temperature Sensor option.

The Distance measurement can be sent through the 4–20 mA or HART® output.

Level Measurement

When programmed with the bottom reference of the application, usually the tank bottom, the transmitter will calculate the liquid depth (Level).

The calculated Level can be sent through the 4–20 mA or HART output.

Volume Measurement

The Rosemount 3102 and Rosemount 3105 can calculate the volume of liquid in a tank. The transmitter has a library of profile shapes for selection.

The calculated Volume can be sent through the 4-20 mA or HART output.

Open Channel Flow Measurement

The Rosemount 3102 and Rosemount 3105 can also calculate the rate of liquid flow in an open channel. The transmitter has a library of standard open channel flow structure profiles, but also supports a user-defined flow profile that is plotted or calculated.

A ten-point strapping table for non-standard tank shapes and flow structures can be input into the transmitter.

The calculated Flow Rate can be sent through the 4–20 mA or HART output.

SPECIAL FEATURES

Advanced software features

- Learn routine (false echo registration)

  The transmitter can learn to ignore up to four false echoes, caused by the pulse signal reflecting off obstructions, until the actual level is seen.
- Empty tank mapping

  When a tank is empty, the transmitter can learn to ignore up to four false echoes, without the need for user interaction.
- Present depth

  When the tank is not empty, the bottom reference can be automatically reset to the sum of a known user-entered depth and the distance to the surface.
- Set as empty

  When the tank is empty, the bottom reference can be automatically reset to the measured distance.
- Distance offset

  The distance to the surface can be adjusted by a user-entered positive or negative offset value.
- Level offset

  The level can be adjusted by a user-entered positive or negative offset value.
- Bottom blanking

  The transmitter can be set to ignore an area of the tank bottom, if there is an obstruction, to avoid false echoes.

Relays on The Rosemount 3102

- Two integral relays for control functionality.

Integral display and push buttons

The central area of the display allows up to five alphanumeric measurement or data characters to assist when programming.

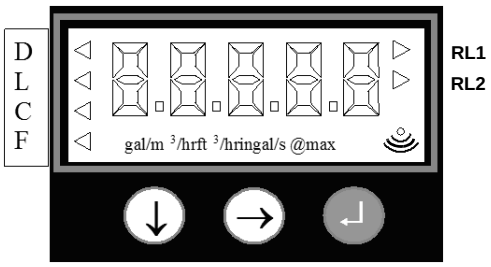
On The Rosemount 3102 and 3105, to the left of the central area are **four arrow icons**, only one of which will be lit at any one time to indicate the measurement chosen by the user:

- D (Distance-to-surface)
- L (Level)
- C (Content / Volume)
- F (Flow)

On The Rosemount 3102, to the right of the central area are **two arrow icons** that indicate the status of the transmitter relay outputs RL1 and RL2. When lit, they indicate that the relay contact is closed.

Under the central area is a list of measurement units, where the transmitter will light the measurement units chosen.

To the right of the measurement units is an **echo received icon** made up of three arc segments that indicate the strength of the echo received.



Integral push-buttons and display

Remote temperature sensor option

All models have an integrated sensor to automatically compensate for temperature effects.

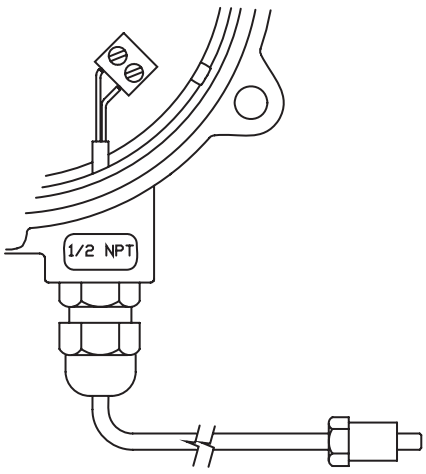
For transmitter installations where the integral temperature sensor is not representative of the air / medium temperature in the process, the use of an **external temperature sensor** improves reliability.

The sensor is installed in between the transmitter and the liquid surface, or in a shaded area of an open channel.

Sensor Specification:

- Stainless steel type 316 body with locknut (shown above)
- M10 thread, 0.24-in. (6-mm) maximum panel thickness
- Sensor working temperature: –40 to 185 °F (–40 to 85 °C)
- Cable working temperature: –4 to 176 °F (–20 to 80 °C)
- Cable 16.4 ft (5 m) long, single twisted pair

Rosemount 3102/3105 Transmitter



External temperature sensor

Selecting a Rosemount 3100 Series Transmitter

Overview of models

The Rosemount 3101 is for simple level or distance measurements over a range of 1 to 26 ft (0,3 to 8 m), and a 4–20 mA signal output.

The 3102 has two integral relays for level or distance measurements over a range of 1 to 36 ft (0,3 to 11 m). It also features volume and open channel flow calculations, and a 4–20 mA / HART output.

The 3105, certified Intrinsically Safe, is for level or distance measurements over a range of 1 to 36 ft (0,3 to 11 m) in hazardous areas. It also features volume and open channel flow calculations, and a 4–20 mA / HART output.

Housing

The housing is available in aluminum, and has two $^1/_2$–14 NPT cable/conduit entries.

Option of M20 x 1.5 conduit/cable adaptors.

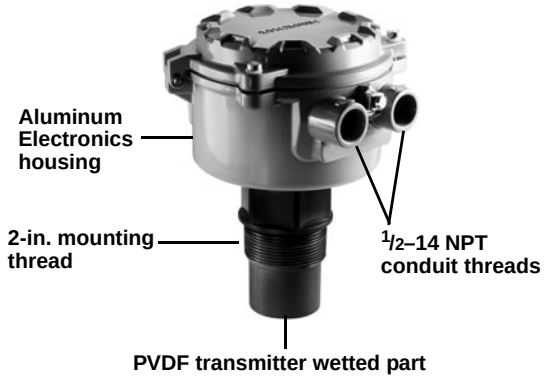
Wetted parts are made of corrosion resistant PVDF.

Process Connection

Threaded Connection

Threads: 2-in. BSPT or 2-in. NPT.

Optional flange accessories: See page 18.



Electrical connections

(For full specification, see page 8)

Power supply

The 3100 Series requires an external power supply:
3101: 12 to 30 Vdc
3102: 12 to 40 Vdc
3105: 12 to 40 Vdc, (12 to 30 Vdc in hazardous area)

Signal output

The 3101 has an analog 4–20 mA output, which is powered by the voltage supplied to the transmitter.

The 3102 and 3105 have a 4–20 mA output with HART communication, powered by the voltage supply to the transmitter.

Relay outputs

The 3102 has two relay outputs, powered by the voltage supply to the transmitter.

Remote temperature sensor

All models have an integrated sensor for automatically compensating for temperature effects.

The 3102 and 3105 have support for connecting a Rosemount Remote Temperature Sensor, an optional accessory (see page 18) that automatically overrides the integral sensor and provides dynamic temperature compensation.

Measurements and Calculations

3101: Level, or distance to the surface.
3102: Level (or distance), volume, open channel flow.
3105: Level (or distance), volume, open channel flow.

Measurement range

3101: 1 to 26 ft (0,3 to 8 m)
3102: 1 to 36 ft (0,3 to 11 m)
3105: 1 to 36 ft (0,3 to 11 m)

Product certifications

(For a summary of certifications, see page 11.)

Non-hazardous area installation

The 3101 and 3102 are available for:

- FM and CSA Ordinary Location installation.

Hazardous area installation

The 3105 is available for:

- FM Intrinsically Safe/Non-incendive installation.
- CSA Intrinsically Safe/Non-incendive installation.
- ATEX and IECEx Intrinsically Safe installation.

NOTE:
Product certifications are selected using the Ordering Information (starting on page 15).

System Integration

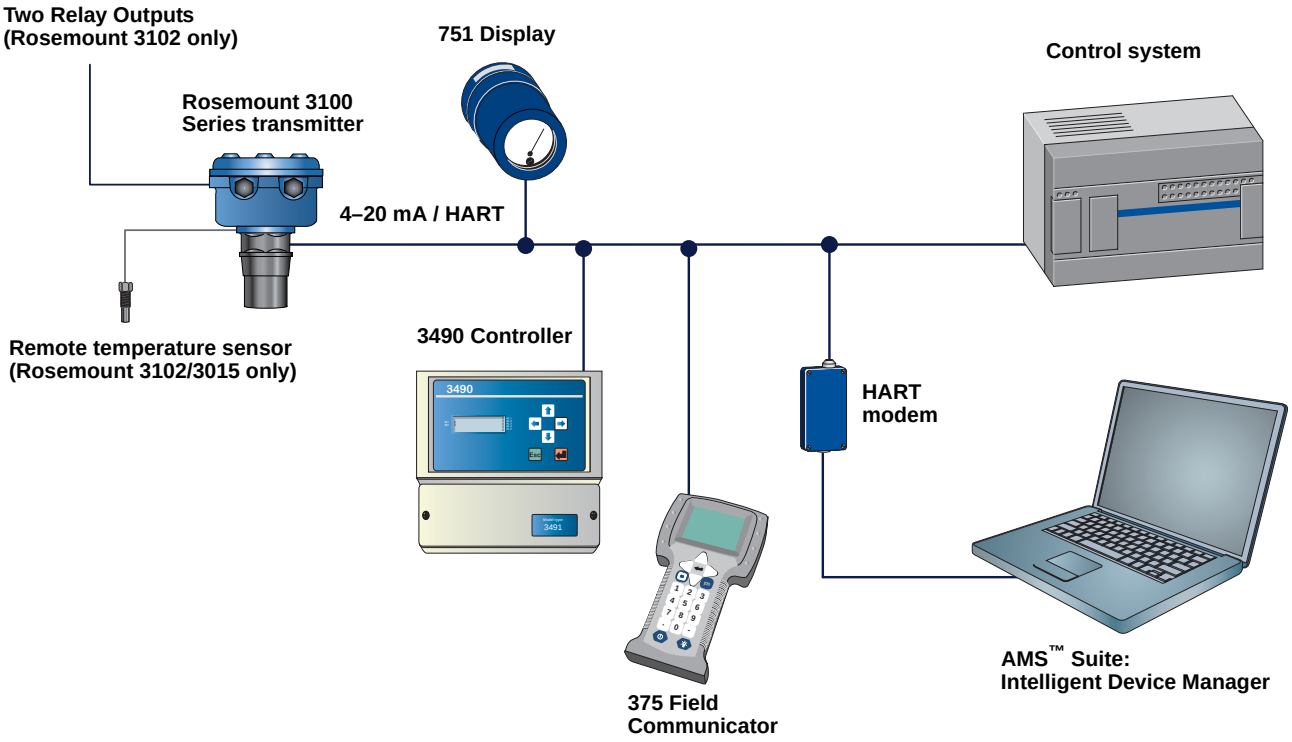
The Rosemount 3100 Series transmitter uses the same two wires for power supply and communication.

The 3100 Series requires an external power supply:

- 3101: 12 to 30 Vdc
- 3102: 12 to 40 Vdc
- 3105: 12 to 40 Vdc (30 Vdc in hazardous area).

Measurement data is transmitted as an analog 4–20 mA signal as standard.

On The Rosemount 3102 and Rosemount 3105, a digital HART signal is superimposed on the 4–20 mA signal.



The Rosemount 3100 Series transmitter powers PlantWeb® with easier configuration, lower installation costs, higher reliability and device diagnostics that enable predictive intelligence, reduce operating costs and improve plant availability.

Installation Best Practices

Correct location of the transmitter is essential for the reliable operation of any ultrasonic level measurement system.

NOTE:
The Rosemount 3100 Series is designed to be mounted in a *non-metallic fitting* or *flange*. Please check optional PVC flange accessories on page 18.

Mounting considerations

a) The transmitter should be mounted above the liquid surface using the 2-in. thread provided. To help mounting, optional flanges and bracket kits are available - see page 18.

b) Mount the transmitter vertically to ensure a *maximum echo size* received.

c) Obstructions within the beam angle generate strong false echoes; so position the transmitter to avoid this situation.

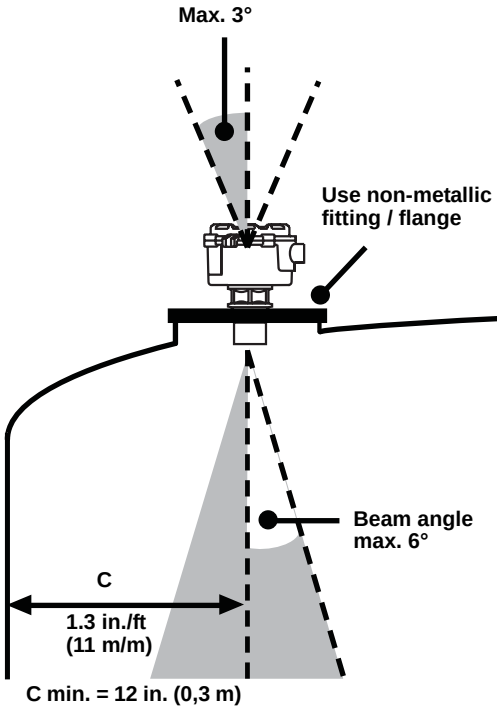
d) To avoid detecting unwanted objects in the tank or well, maintain a distance of at least 1.3 in. from the center line of the transmitter for every foot (11 cm for every meter) range to the obstruction.

e) It is recommended the transmitter be mounted no closer than 12 in. (0,3 m) to the wall to avoid losing echo size.

f) Avoid applications where heavy condensation could form on the transmitter.

g) If the transmitter is mounted in a stand-off or nozzle, the transmitter face should protrude at least 0.2 in. (5 mm) into the tank.
If this is not possible, see “Mounting in a nozzle or stand-off” on page 7.

h) In environments where direct sunlight can cause high surface temperatures on exposed instruments, a sun-shade, or remote temperature sensor option, is recommended.



Liquid surface conditions

a) Foaming liquids (which are poor ultrasonic reflectors) can reduce the size of the returned echo. An ultrasonic transmitter should be mounted over an area of clear liquid.

b) Do not mount the transmitter directly over any inlet stream.

c) Liquid surface turbulence is not a problem, unless it is excessive. Normally, the effects of turbulence are minor and excessive turbulence can be fine-tuned on site, if necessary.

d) A still-pipe can be used to avoid foam and turbulence.

In-tank effects

a) Stirrers or agitators can cause a vortex, so try to mount the transmitter off-center of any vortex to maximize the return echo.

b) As stirrer blades become uncovered, they create echoes as they pass through the ultrasonic beam. The transmitter can be tuned on-site to ignore these false echoes.

Mounting in a nozzle or stand-off

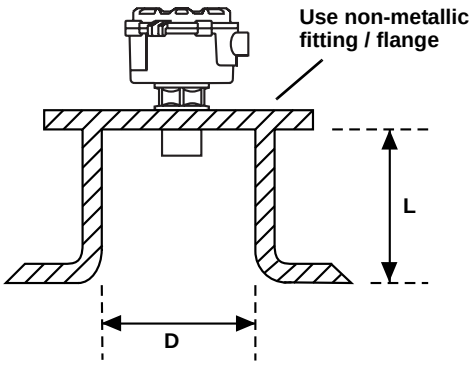
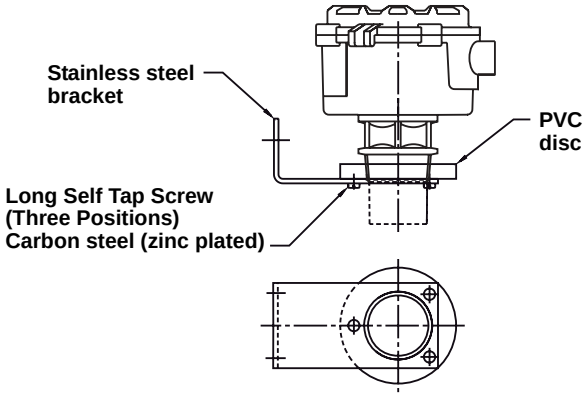


TABLE 1.

Nozzle Diameter Size (D)	Maximum Nozzle Length (L)
DN50 (2 in.)	3/4 in. (18 mm)
DN80 (3 in.)	4 in. (100 mm)
DN100 (4 in.)	4 in. (100 mm)
DN125 (5 in.)	8 in. (200 mm)
≥DN150 (6 in.)	14 in. (350 mm)

Mounting with optional bracket kit



Note:
Combined weight of bracket and disc is approximately 1 lb (0,5 kg).

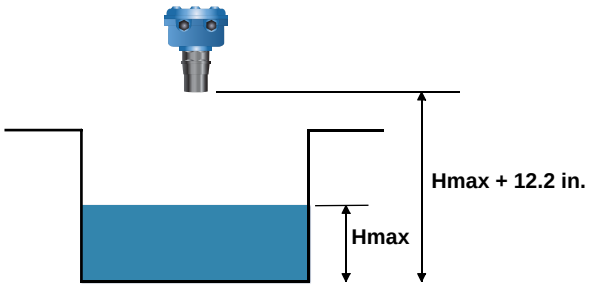
NOTE
Dimension drawings for optional bracket kits are on page 14. See also ordering information on page 18.

Open Channel Flow installations (Rosemount 3102 and Rosemount 3105)

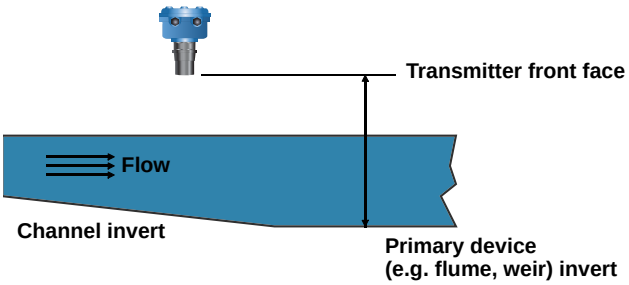
There are normally two distinct parts to an open channel flow measurement system; the primary element (flow structure) and the secondary element (head measurement instrumentation). For accurate open channel flow measurement, both parts of the system must be accurately installed.

The transmitter should be positioned at the correct distance upstream from the flow structure at a height that is, at least, equal to the maximum flow depth plus the blanking distance (dead zone) of the transmitter (see below).

A minimum distance of 12.2 in. (0,31 m) is recommended.



It is important that the *bottom reference* of the transmitter measures the distance of the center of the invert of the primary device (see below), and NOT the distance to the channel bottom directly below the transmitter.



NOTES:

- The liquid surface at the point of measurement must be stable, smooth, and have a uniform approach velocity. It must not be affected by baffles, foam, hydraulic jumps or any other object that may cause flow disruption.
- The primary element should be free from any situation where it is likely to 'drown' (refer to the relevant Standard for further information)

Specifications

General	
Product	Rosemount 3100 Series level transmitters: The 3101: Level and Distance measurement. The 3102: Level, Distance, Volume, and Open channel flow measurement with two integral signal relays. The 3105: Level, Distance, Volume, and Open channel flow measurement for hazardous locations.
Measurement principle	Ultrasonic, time-of-flight.
Measuring performance	
Measurement range	Rosemount 3101: 1 to 26 ft (0,3 to 8 m) Rosemount 3102: 1 to 36 ft (0,3 to 11 m) Rosemount 3105: 1 to 36 ft (0,3 to 11 m)
Level resolution	Better than $^{1}/_{16}$" (1 mm)
Level accuracy	Rosemount 3101: ± 0.2 in. (5 mm) for <3.3 ft (1 m), ± 0.5% of measured distance for >3.3 ft (1 m) The 3102 and The 3105: ± 0.1 in. (2.5 mm) <3.3 ft (1 m), ±0.25% of measured distance for >3.3 ft (1 m) under reference conditions (1)
Blanking distance (Dead Zone)	12 in. (0,3 m)
Update interval	1 second
Display / Configuration	
Integral Display	4/5 digit display for live measurement, and for configuration purposes.
Output Units	For Level or distance-to-surface: m, ft, in, or none For Contents: l, m^3, gal, or ft^3 For Flow: l/s, l/m, m^3/hr, gal/s, gal/m, ft^3/m (cfm), ft^3/hr, or none
Output Variables	Rosemount 3101: Level, or distance-to-surface Rosemount 3102: Level (or distance-to-surface), Content (Volume), and Flow. Rosemount 3105: Level (or distance-to-surface), Content (Volume), and Flow.
Configuration tools	Standard integral push-buttons with LCD. 375 Field Communicator. Rosemount 3490 Series Universal Control Unit. Rosemount AMS(TM) Suite
Electrical	
Power supply	Loop-powered (two-wire) Rosemount 3101: 12 to 30 Vdc Rosemount 3102: 12 to 40 Vdc Rosemount 3105: 12 to 40 Vdc (non-hazardous area), 12 to 30 Vdc (hazardous area).
Earthing	None required.
Current Output	Rosemount 3101: Analog 4–20 mA Rosemount 3102: Analog 4–20 mA, HART. Rosemount 3105: Analog 4–20 mA, HART.
Signal on alarm	Standard: Low = 3.75 mA. High = 21.75 mA. Namur NE43: Low = 3.6 mA. High = 22.5 mA
Saturation levels	Standard: Low = 3.9 mA. High=20.8 mA. Namur NE43: Low = 3.8 mA. High = 20.5 mA
Relay output (on Rosemount 3102)	Two integral signal relays, SPST rated 1A @ 30VDC (inductive) and 2A @ 30VDC (resistive)
Electrical parameters	U_i = 30 V, I_i = 120 mA, P_i = 0.82 W, L_i = 108μH, C_i = 0 nF.
Cable entry	½" - 14 NPT conduit entries for cable glands. Option: M20 x 1.5 conduit/cable adaptor.
Output Cabling	Single twisted-pair and shielded, min. 0.22 mm^2 (24 AWG), max. 1.5 mm^2 (15 AWG).
Materials of construction	
Wet-side material	PVDF.
Body and cover material	Polyurethane-covered Aluminum.
Cover seal	Silicone rubber.
Cover screws	316 Stainless Steel.
Transducer body seal	EPDM.

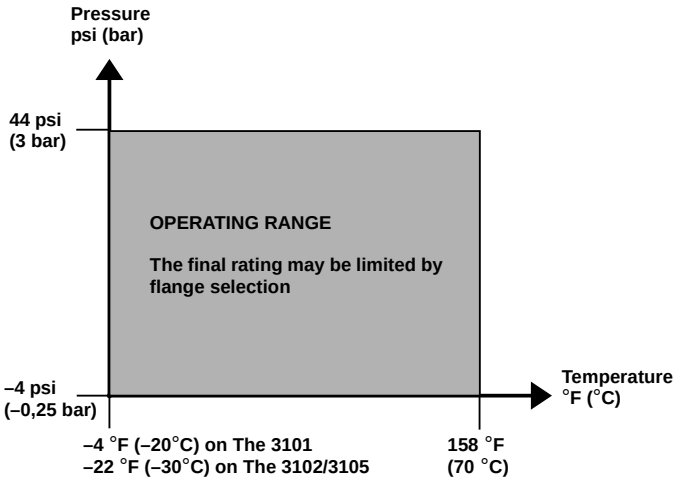
Continued on next page

Mechanical	
Mounting thread size	2-in. NPT, or 2-in. BSP. Optional flange accessories available.
Measuring	
Temperature compensation	Rosemount 3101: Automatic Integral temperature compensation. Rosemount 3102: Automatic Integral temperature compensation. Optional remote temperature sensor for dynamic temperature compensation. (2) Rosemount 3105: Automatic Integral temperature compensation. Optional remote temperature sensor for dynamic temperature compensation. (2)
Environment	
Ambient temperature	Rosemount 3101: –4 to 158 °F (–20 to 70 °C) Rosemount 3102 and Rosemount 3105: –40 to 158 °F (–40 to 70 °C) (3)
Process temperature	Rosemount 3101: –4 to 158 °F (–20 to 70 °C) Rosemount 3102 and Rosemount 3105: –22 to 158 °F (–30 to 70 °C)
Process pressure	–4 to 44 psi (–0,25 to 3,0 bar)
Ingress protection	NEMA 4X, IP 66.
Electromagnetic compatibility	EN61326 (Class B)
Certifications	CE-mark, FM, CSA, ATEX, or IECEx - dependent on order code.

(1) Temperature: 68 °F (20 °C), Pressure: 101.3 kPa (atmospheric pressure), and Relative Humidity: 65%.
(2) See page 18 for optional accessories.
(3) See page 11 onwards for approval temperature ranges.

Temperature and Pressure Ratings

The process temperature/pressure rating depends on the design of the transmitter in combination with the flange materials.

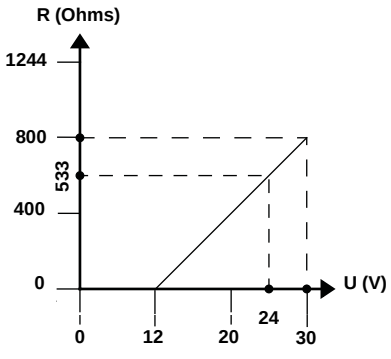


Process temperature and pressure diagram for Rosemount 3100 Series

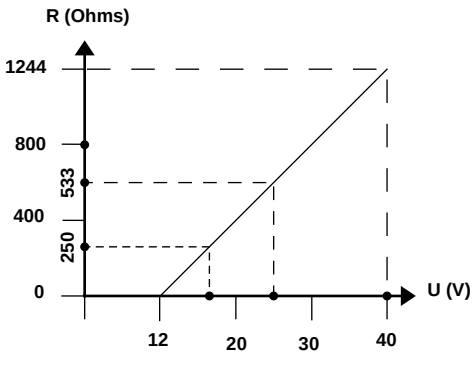
Load Limitations

A HART® Communicator requires a minimum load resistance of 250 Ohm within the loop in order to function properly. Communication with Rosemount 3490 Universal Controller does not require additional resistance. The maximum load resistance can be determined from these diagrams:

Non-Intrinsically Safe Installations

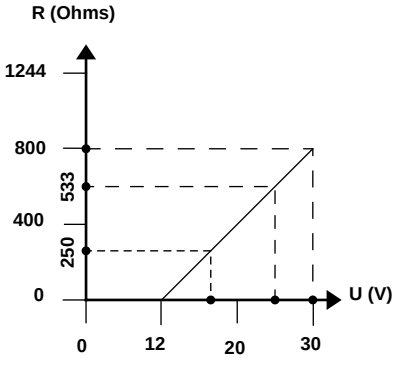


Rosemount 3101



Rosemount 3102 and Rosemount 3105

Intrinsically Safe Installations



Rosemount 3105

NOTE
R = Maximum Load Resistance
U = External Power Supply Voltage

Product Certifications

ORDINARY LOCATION CERTIFICATION FOR FM *(ROSEMOUNT 3101 AND 3102)*

G5 Project ID: 3024095
The transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

ORDINARY LOCATION CERTIFICATION FOR CSA *(ROSEMOUNT 3101 AND 3102)*

G6 Project ID: 1878089
The transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by CSA, a nationally recognized testing laboratory as accredited by the Standards Council of Canada (SCC).

Special conditions for safe use:

1. For this CSA approval, the power for the Rosemount 3100 Series must be supplied from a Rosemount 3490 Series Control Unit, or from a class 2 or SELV source.

EUROPEAN DIRECTIVE INFORMATION

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

ATEX Directive (94/9/EC)

Complies with the ATEX Directive.

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

3100 Series is outside the scope of PED Directive.

Electro Magnetic Compatibility (EMC) Directive

EN61326 (Class B)

CE-mark

Complies with applicable directives

The 3101 (EMC)

The 3102 (EMC)

The 3105 (EMC, ATEX)

HAZARDOUS LOCATIONS CERTIFICATIONS *(ROSEMOUNT 3105)*

Factory Mutual (FM) Approvals

Factory Mutual (FM) Intrinsically Safe Approval

I5 Project ID: 3024095
Intrinsically Safe for Class I, Div. 1, Groups A, B, C and D
Intrinsically Safe for Class I, Zone 0, AEx ia IIC
Temperature Code: T4 at 60 °C, max ambient
Temperature Code: T6 at 55 °C, max ambient

Control Drawing: 71097/1216
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Factory Mutual (FM) Non-Incendive Approval

I5 Project ID: 3024095
Non-Incendive for Class I, Div. 2, Groups A, B, C and D
Non-Incendive for Class I, Zone 2, AEx nA IIC
Temperature Code: T4 at 60 °C, max ambient
Temperature Code: T6 at 55 °C, max ambient

Control Drawing: 71097/1216
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Canadian Standards Association (CSA) Approvals

Canadian Standards Association (CSA) Intrinsically Safe Approval

I6 Project ID: 07 CSA 1878089
Intrinsically Safe for Class I, Div. 1, Groups A, B, C, and D
Intrinsically Safe for Class 1, Zone 0, Ex ia IIC
Temperature Code:
T4 (T_{amb} –40 to 60 °C)
T6 (T_{amb} –40 to 55 °C)

Control Drawing: 71097/1218
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Canadian Standards Association (CSA) Non-Incendive Approval

I6 Project ID: 07 CSA 1878089
Non-Incendive for Class I, Div. 2, Groups A, B, C, and D
Non-Incendive for Class I, Zone 2, Ex nL IIC
Temperature Code:
T4 (T_{amb} –40 to 60 °C)
T6 (T_{amb} –40 to 55 °C)

Control Drawing: 71097/1218
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

ATEX Intrinsically Safe Approval

I1 Certificate: Sira 06ATEX2260X
Intrinsically Safe for II 1 G, EEx ia IIC
Temperature Class:

T4 (T_{amb} –40 to 60 °C)
T6 (T_{amb} –40 to 55 °C)

Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 μH, Ci = 0 μF

Special conditions for safe use:

1. All transmitter models have external plastic parts, which could present a risk of ignition due to electrostatic charge build-up. They shall not be directly installed in any process where its enclosure might be charged by the rapid flow of non-conductive media.
2. All transmitter models shall only be cleaned with a damp cloth.
3. When the transmitter housing uses aluminum alloy in its construction, this presents a risk of ignition due to impact and shall be taken into consideration on installation and use.

IECEx Approval

I7 Certificate: IECEx SIR 06.0068X
Intrinsically Safe for Zone 0, Ex ia IIC
Temperature Class:

T4 (T_{amb} –40 to 60 °C)
T6 (T_{amb} –40 to 55 °C)

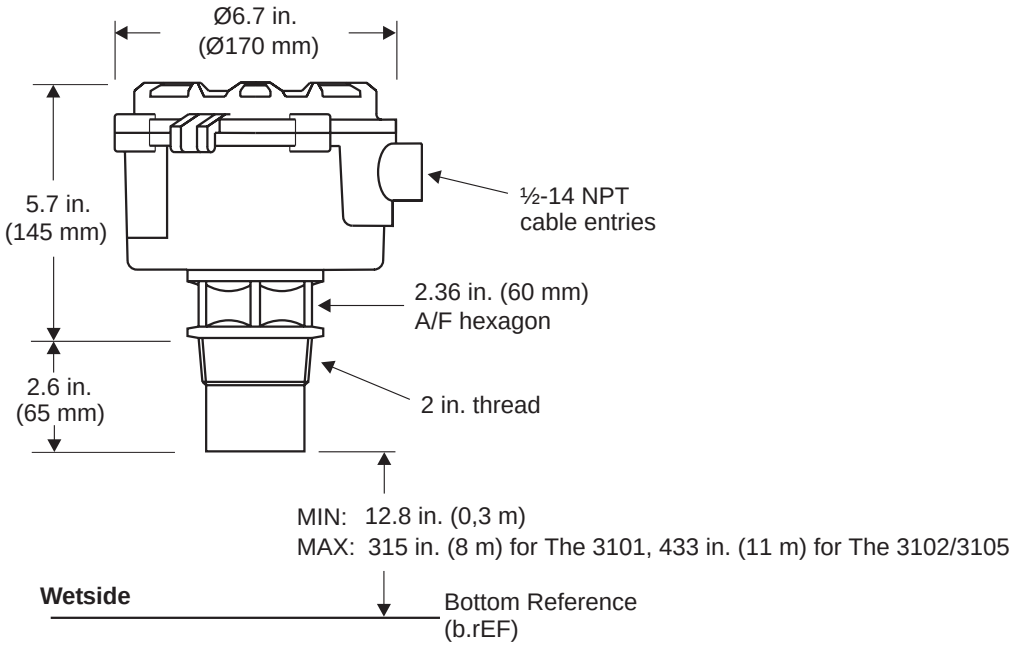
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 μH, Ci = 0 μF

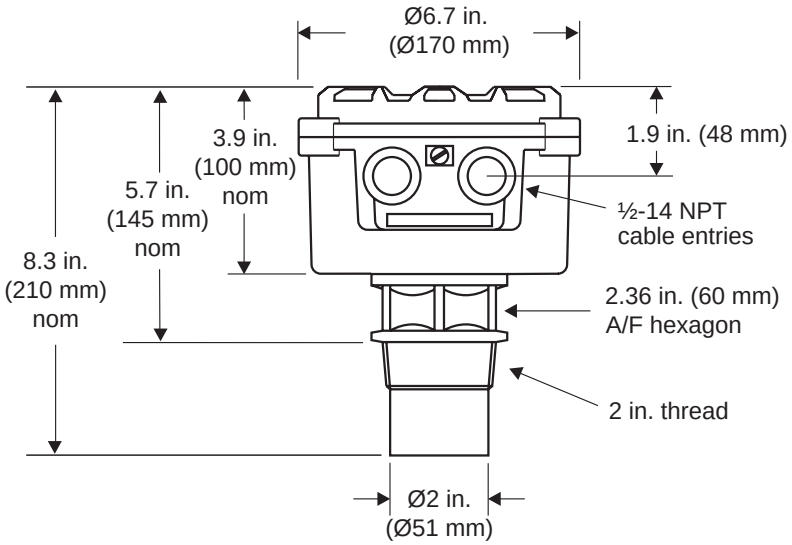
Special conditions for safe use:

1. All transmitter models have external plastic parts, which could present a risk of ignition due to electrostatic charge build-up. They shall not be directly installed in any process where its enclosure might be charged by the rapid flow of non-conductive media.
2. All transmitter models shall only be cleaned with a cloth.
3. When the transmitter housing uses aluminum alloy in its construction, this presents a risk of ignition due to impact and shall be taken into consideration on installation and use.

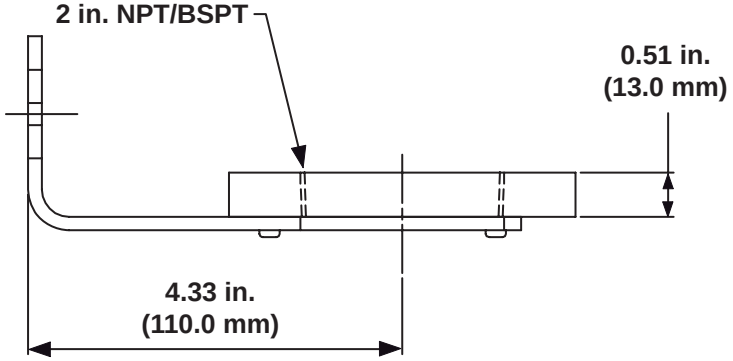
Dimensional Drawings

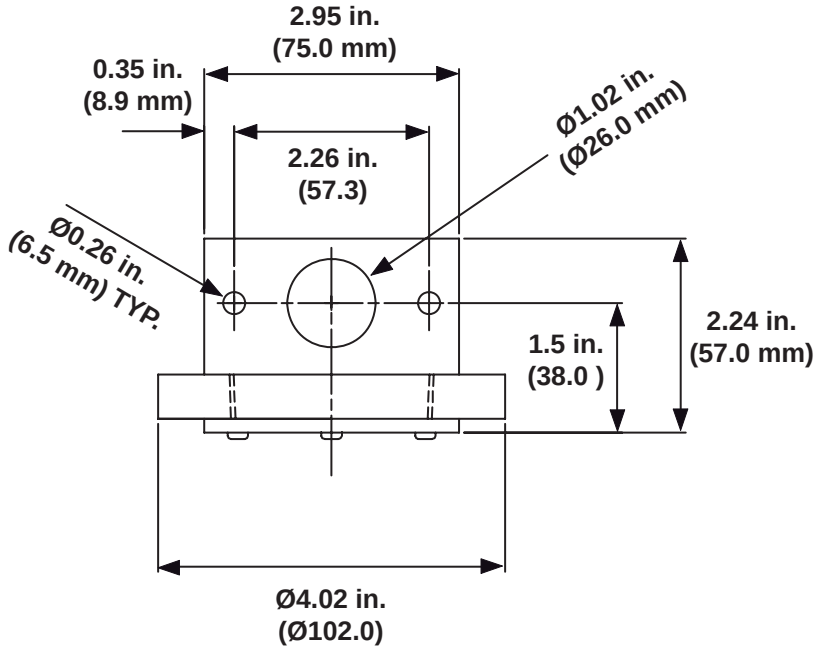
Threaded Mounting





2-in. NPT/BSPT Bracket Kits





Ordering Information

The Rosemount 3101, Level of liquids

Model	Product Description
3101	Ultrasonic level transmitter
Code	**Signal Output**
L	4–20 mA
Code	**Housing Material**
A	Polyurethane-covered Aluminum
Code	**Conduit / Cable Threads**
1	½ –14 NPT
2	M20 x 1.5 adaptor
Code	**Wet-side material**
F	PVDF
Code	**Process Connection**
RC	2-in. NPT thread (1)
SC	2-in. BSPT thread (2)
Code	**Certificates**
NA	No certification
G5	FM Ordinary Location
G6	CSA Ordinary Location
Code	**Options**
Tag Plate	
ST	Stainless Steel engraved tag plate
WT	Laminated paper tag plate

(1) Choosing this option implies US (Imperial) units of measurement are required for the default configuration. Configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement are required for the default configuration. Configuration can be changed on-site.

Example model order code: 3101-L-A-1-F-RC-G5-ST

The Rosemount 3102, Level, Volume or Flow of liquids

Model	Product Description
3102	Ultrasonic level transmitter with 2 integral relays
Code	**Signal Output**
H	4–20 mA with HART® communication
Code	**Housing Material**
A	Polyurethane-covered Aluminum
Code	**Conduit / Cable Threads**
1	½–14 NPT
2	M20 x 1.5 adaptor
Code	**Wet-side material**
F	PVDF
Code	**Process Connection**
RC	2-in. NPT thread (1)
SC	2-in. BSPT thread (2)
Code	**Certificates**
NA	No certification
G5	FM Ordinary Location
G6	CSA Ordinary Location
Code	**Options**
Alarms	
C4	Namur alarm and saturation levels; high alarm.
C5	Namur alarm and saturation levels; low alarm.
C8	Low alarm setting with standard Rosemount alarm and saturation levels.
Tag Plate	
ST	Stainless Steel engraved tag plate
WT	Laminated paper tag plate

(1) Choosing this option implies US (Imperial) units of measurement are required for the default configuration. Configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement are required for the default configuration. Configuration can be changed on-site.

Example model order code: 3102-H-A-1-F-RC-G5-C4-ST

The Rosemount 3105, Level, Volume or Flow of liquids

Model	Product Description
3105	Ultrasonic level transmitter for hazardous areas
Code	**Signal Output**
H	4–20 mA with HART® communication
Code	**Housing Material**
A	Polyurethane-covered Aluminum
Code	**Conduit / Cable Threads**
1	½ –14 NPT
2	M20 x 1.5 adaptor
Code	**Wet-side material**
F	PVDF
Code	**Process Connection**
RC	2-in. NPT thread (1)
SC	2-in. BSPT thread (2)
Code	**Certificates**
I1	ATEX Intrinsically Safe
I5	FM Intrinsically Safe and Non-Incendive
I6	CSA Intrinsically Safe and Non-Incendive
I7	IEC Ex Intrinsically Safe
Code	**Options**
Alarms	
C4	Namur alarm and saturation levels; high alarm.
C5	Namur alarm and saturation levels; low alarm.
C8	Low alarm setting with standard Rosemount alarm and saturation levels.
Tag Plate	
ST	Stainless Steel engraved tag plate
WT	Laminated paper tag plate

(1) Choosing this option implies US (Imperial) units of measurement are required for the default configuration. Configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement are required for the default configuration. Configuration can be changed on-site.

Example model order code: 3105-H-A-1-F-RC-I5-ST

Spare Parts and Accessories

Code	Accessory/Spare
Accessories	
03100-1001-0001	2-in. NPT to 2-in. ANSI Class 150 PVC Flange
03100-1001-0002	2-in. NPT to 3-in. ANSI Class 150 PVC Flange
03100-1001-0003	2-in. NPT to 4-in. ANSI Class 150 PVC Flange
03100-1001-0004	2-in. NPT to 6-in. ANSI Class 150 PVC Flange
03100-1002-0001	2-in. BSPT to DN50 PN16 PVC Flange
03100-1002-0003	2-in. BSPT to DN80 PN16 PVC Flange
03100-1002-0004	2-in. BSPT to DN100 PN16 PVC Flange
03100-1002-0005	2-in. BSPT to DN150 PN16 PVC Flange
03100-1003-0001 (1)	2-in. NPT Mounting Bracket
03100-1003-0002 (1)	2-in. BSPT Mounting Bracket
03100-0001-0001	Remote Temperature Sensor (Rosemount 3102 and Rosemount 3105 only)
03100-0001-0002	1/2–14 NPT to M20 x 1.5 Conduit Adaptor (Pack of two)

(1) See Mounting with optional bracket kit on page 7, and dimension drawings on page 14.

NOTES:

Product Data Sheet
00809-0100-4840, Rev. AC
February 2008

Rosemount 3100 Series

Rosemount Level Solutions

Emerson provides a complete range of Rosemount products for level measurement applications.

Pressure – Level or Interface Measurement

Emerson has a complete line of Rosemount pressure transmitters and remote seals for measuring level or interfaces in liquid applications. Optimize performance with direct mount, Tuned Seal systems:

- Rosemount 3051S_L, 3051L, and 1151LT Liquid Level Transmitters
- Rosemount 1199 Remote Diaphragm Seals with direct mount or capillary connections

Vibrating Fork Switches – Point Level Detection

The Rosemount 2100 Series is developed for reliable point level detection of liquids and consists of:

- Rosemount 2110 Compact Vibrating Fork Liquid Level Switch
- Rosemount 2120 Full-featured Vibrating Fork Liquid Level Switch

Guided Wave Radar – Level and Interface Measurement

Multivariable, loop-powered Guided Wave Radar transmitters with a wide range of probe styles to fit different liquids and solids applications. The product line consists of:

- Rosemount 3300 Series – Versatile and easy-to-use transmitter with proven reliability
- Rosemount 5300 Series – Accurate, high performance transmitter with FOUNDATION™ fieldbus support

Non-contacting Radar – Level Measurement

The Rosemount non-contacting radar family consists of:

- Rosemount 5400 Series Transmitters – Loop-powered transmitter with a wide range of antennas, for liquid level measurement in most applications and process conditions
- Rosemount 5600 Series Transmitters – Transmitters with ultra-high sensitivity for measurement of level in liquids and solids, even for the most challenging applications

Non-contacting Ultrasonic – Level Measurement

The Rosemount 3100 Series ultrasonic level transmitters provide continuous non-contacting level measurement of liquids. The range consisits of:

- Rosemount 3101 for simple continuous level measurement
- Rosemount 3102 for continuous measurement with two integral relays for local control functionality
- Rosemount 3105 Intrinsically safe certified version for hazardous areas

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