Product Data Sheet
December 2012
00813-0100-4027, Rev BB

Rosemount 4500 Hygienic Pressure Transmitter

Product Discontinued

- Hygienic design conforms to 3-A and EHEDG standards
- Demonstrated best-in-class performance during SIP/CIP for process temperatures up to 400 °F (204 °C)
- Proven Rosemount technology improves process reliability and robustness
- Unparalleled stability reduces calibration frequency
- 4-20 mA/HART® output and AMS™ Suite: Intelligent Device Manager compatibility ensures easier configurations, calibrations, and operation

ROSEMOUNT

EMERSON.
Process Management

Now you can have the best, most reliable performance... in a hygienic package

The Rosemount 4500 Hygienic Pressure Transmitter brings best-in-class performance, application expertise, operational and maintenance cost savings to the biotechnology, pharmaceuticals, and food and beverage industries.

Hygienic design conforms to 3-A and EHEDG standards

The hygienic design of the Rosemount 4500 feature 15 µ-in. Ra mechanically polished and 10 µ-in. Ra electropolished wetted surfaces. The stainless steel design is free of voids and crevices to ensure easy cleaning and wipedowns. The 4500 is also 3-A authorized, EHEDG approved and designed according to strict ASME BPE guidelines.

Demonstrated best-in-class performance during SIP/CIP for process temperatures up to 400 °F (204 °C)

The 4500 was designed and thoroughly tested to ensure that not only does the 4500 minimize temperature induced errors from SIP/CIP processes, but that it also recovers rapidly. This can reduce your downtime between cleaning cycles, enabling faster turnarounds and increased plant availability.

Proven Rosemount technology improves process reliability and robustness

The Rosemount 4500 uses the same proven sensor and electronics technology found in other industry leading Rosemount products, ensuring that the transmitter is robust and reliable, improving your process reliability and increasing plant availability.

Unparalleled stability reduces calibration frequency

Competitor devices can drift out of specification in just a few months and require re-calibration, consuming your time and money and risking regulatory non-compliance. The 4500 provides a better stability so that you can confidently extend calibration frequencies to reduce maintenance costs.

4-20 mA/HART output and AMS Suite™ compatibility ensures easier configurations, calibrations and operation

Lower maintenance costs with AMS Suite software, improve device performance and enable easier configuration and setup. Combining AMS Suite with the 4500 can also provide you with advanced functionality including predictive diagnostics and audit trail information to make FDA compliance simpler and paper free.

Contents

Ordering Information

Table 1. Rosemount 4500 Hygienic Pressure Transmitter Ordering Information
The entire 4500 offering is Expanded, and therefore subject to additional delivery lead time.

Model	Transmitter Type	
Expanded		
4500	Hygienic Pressure Transmitter	
Measurement Type		
Expanded		
G	Gauge	
A	Absolute	
Pressure Range		
	Gauge	**Absolute**
Expanded		
1	-14.7 to 30 psi (-1, 0 bar to 2, 1 bar)	0 to 30 psia (0 bar to 2, 1 bar)
2	-14.7 to 150 psi (-1, 0 bar to 10, 3 bar)	0 to 150 psia (0 bar to 10, 3 bar)
Wetted Materials		
Expanded		
2	316L SST	
3	Alloy C-276	
Process Connection Style		
Expanded		
C11	1 1/2 -in. Tri-Clamp Connection	
C12	2 -in. Tri-Clamp Connection	
C13(1)	1 1/2 -in. Fractional Line Fitting Connection	
Oil Fill		
Expanded		
A	Neobee M-20	
Transmitter Output		
Expanded		
A	4-20 mA with Digital Signal Based on HART protocol	
Cable Entry		
Expanded		
2A	Cable Gland	

Options (Include with selected model number)

Surface Finish	
Expanded	
F1	Electropolished to 10 µ-in. (0.25µ-m) Ra
Software Configuration	
Expanded	
C1	Custom Software Configuration (CDS required with order)
Alarm Limits	
Expanded	
C6	Custom Alarm & Saturation Signal Levels, High Alarm
C7	Custom Alarm & Saturation Signal Levels, Low Alarm

Table 1. Rosemount 4500 Hygienic Pressure Transmitter Ordering Information
The entire 4500 offering is Expanded, and therefore subject to additional delivery lead time.

Hardware Adjustments	
Expanded	
D1	Zero & Span Adjustments
Product Certifications	
Expanded	
I1	CENELEC Intrinsically Safe, Non-incendive, Type n
I5	FM Intrinsically Safe, Non-incendive
I6	CSA Intrinsically Safe, Non-incendive
Digital Display	
Expanded	
M5	LCD Display
Calibration Certificate	
Expanded	
Q4	Calibration data certificate consistent with ISO 10474 2.1 or EN 10204 2.1
QP	Calibration Certificate and Tamper Evident Seal
Material Traceability Certification	
Expanded	
Q8	Material Traceability Certification per EN 10204 2.1
Surface Finish Certification	
Expanded	
Q16	Surface Finish Certification
Typical Model Number: 4500 G 2 2 C12 A A 2A	

(1) Intended for flow applications in line sizes less than 1 in. For use with Anderson Instruments CPM Flush-mount Style process connection supplied by customer.

Specifications

Performance Specifications

For zero-based spans, reference conditions, Neobee M-20 oil fill, SST materials, 1 1/2-in. tri-clamp process connections, digital trim values set to equal range points.

Conformance to Specification (±3 Sigma)

Technology leadership, advanced manufacturing techniques and statistical process control ensure specification conformance to at least ±3 sigma.

Reference Accuracy

Includes the effects of terminal based linearity, hysteresis, and repeatability.

±0.15% of calibrated span from 1:1 to 15:1 rangedown

$\pm 0.01\left(\frac{URL}{Span}\right)$ % of calibrated span from 15:1 to 50:1 rangedown

on Range 1 GP.

Long Term Stability

0.1% of Upper Range Limit (URL) for 3 years under normal operating conditions

Batch to Batch Repeatability

One batch is an exposure to a Clean in Place / Steam in Place (CIP/SIP) process with maximum temperature of 400°F (204°C) for 2 hours.

±0.025 psi (0.0017 bar) for 100 batches

Vibration Effect

Less than ±0.1% of URL when tested per the requirements of IEC 60770 control room level

Electromagnetic Compatibility (EMC)

Meets all relevant requirements of EN 61326

Table 2. Range and Sensor Limits

Rosemount 4500 Sanitary Pressure Transmitter Range Limits						
Units	**Range 1 AP**		**Range 1 GP**		**Range 2**	
	min.	**max.**	**min.**	**max.**	**min.**	**max.**
psi	2	30	0.6	30	10	150
kPa	13.78	206.8	4.136	206.8	68.94	1034
bar	0.138	2.068	0.041	2.068	0.689	10.34
kg/cm^2	0.141	2.109	0.042	2.109	0.703	10.54

Functional specifications

Dynamic Performance

250 milliseconds (response time + dead time)

Ambient Temperature Effect per 50°F (28°C)

0.2% Calibrated Span + 0.02% URL

Process Temperature Effect per 104°F (58°C)

0.3% Calibrated Span + 0.03% URL

Service

Liquid, gas, vapor, and steam applications

4–20 mA (output code A)

Zero and Span Adjustment

Zero and span values can be set anywhere within the range.

Span must be greater than or equal to the minimum span.

Output

Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to the HART protocol.

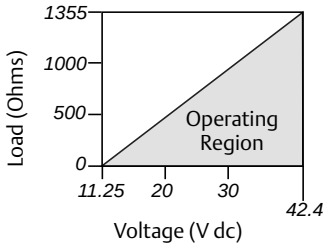
Power Supply

External power supply required. Standard transmitter (4–20 mA) operates on 11.25 to 42.4 V dc with no load.

Load Limitations

Maximum loop resistance is determined by the voltage level of the external power supply, as described by:

Max. Loop Resistance = 43.5 (Power Supply Voltage – 11.25)



Communication requires a minimum loop resistance of 250 ohms.

OverPressure Limits

Transmitters withstand the following pressure without damage:

Range 1: 150 psi (10.34 bar)

Range 2: 300 psi (20.68 bar)

Burst Pressure Limits

Range 1: 300 psi (20.68 bar)

Range 2: 450 psi (31.02 bar)

Temperature Limits

Ambient

32 to 140 °F (0 to 60 °C)

Storage

–22 to 185 °F (–30 to 85 °C)

Process Temperature Limits

32 to 400 °F (0 to 204 °C)

Horizontal Mount

For process temperatures above 293 °F (145 °C), derate ambient temperature by 7 °F (4 °C) for every 18 °F (10 °C) increase in process temperature.

Top Mount

For process temperatures above 266 °F (130 °C), derate ambient temperature by 9 °F (5 °C) for every 18 °F (10 °C) increase in process temperature.

Turn-On Time

Performance within specifications less than 2.0 seconds after power is applied to the transmitter

Damping

Analog output response to a step input change is user-selectable from 0 to 60 seconds for one time constant. This software damping is in addition to sensor module response time.

Failure Mode Alarm

HART 4-20mA (output code A)

If self-diagnostics detect a gross transmitter failure, the analog signal will be driven offscale to alert the user. Rosemount standard and custom alarm levels are available.

High or low alarm signal is software-selectable.

Alarm Configuration

Rosemount

High Alarm: ≥ 21.75 mA

Low Alarm: ≤ 3.75 mA

Custom Level (1)

High Alarm: 20.2 - 23.0 mA

Low Alarm: 3.6 - 3.8 mA

Humidity Limits

0-100% relative humidity

(1) Low alarm must be 0.1 mA less than low saturation and high alarm must be 0.1 mA greater than high saturation.

Physical specifications

Process Connections

- 1 1/2 -in. Tri-Clamp Connection
- 2 -in. Tri-Clamp Connection
- 1 1/2 -in. Fractional Line Connection

Process-Wetted Parts

Process Isolating Diaphragms

316L SST (1)
Alloy C-276® (1)

Surface Finish

15 µ-in. (0.38µ-m) Ra mechanically polished
10 µ-in. (0.25µ-m) Ra electropolished

Non-Wetted Parts

Electronics Housing

304 SST
NEMA 4X
IP 66

Surface Finish

32 µ-in. Ra mechanically polished

Sensor Module Fill Fluid

Neobee M-20

Shipping Weight for Rosemount 4500

3.0 lb. (1.36 kg.)

(1) Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

Product certifications

Approved Manufacturing Locations

Rosemount Inc. — Chanhassen, Minnesota, USA

Ordinary Locations Certifications

As standard, 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).

N0 Factory Mutual (FM) Ordinary Location;
Canadian Ordinary Location
CE Marking
3-A Symbol Authorization #876
EHEDG Type EL
Certified to meet Hygienic Equipment Design Criteria of Document 8 per TNO evaluation #V6069 and certificate #C05-6288

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 our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

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

Rosemount 4500 Pressure Transmitters-
Sound Engineering Practice

Electromagnetic Compatibility (EMC) (89/336/EEC)

All Models: EN 50081-1: 1992; EN 50082-2:1995;
EN 61326-1:1997 + A1, A2, and A3 - Industrial

Hazardous Locations Certifications

North American Certifications

Factory Mutual (FM) Approvals

I5 Intrinsically Safe for use in Class I, II, III, Division 1,
Groups A, B, C, D, E, F, and G;
Temperature Code T4 (T_{amb} = 0 to 60 °C);
Intrinsically Safe for use in Class I, Zone 0 AEx ia IIC
T4 (T_{amb} = 0 to 60 °C);
Non-incendive for Class I, Division 2, Groups A, B, C, and D;
When connected in accordance with
Rosemount drawing 04500-5001;
Enclosure Type 4X
For entity parameters see control drawing 04500-5001;

Canadian Standards Association (CSA) Approvals

I6 Intrinsically Safe for use in Class I, Division 1,
Groups A, B, C, and D;
Temperature Code T3C (T_{amb} = 0 to 60 °C);
Intrinsically Safe for use in Class I, Zone 0 Ex ia IIC
T4 (T_{amb} = 0 to 60 °C);
When connected in accordance with
Rosemount drawing 04500-5002;
Enclosure Type 4X
For entity parameters see control drawing 04500-5002;

European Certifications

I1 ATEX Intrinsic Safety
Certificate No. Baseefa05ATEX0091X
ATEX Marking:  II 1 G
EEx ia IIC T4 (T_{amb} = 60 °C)
IP66

CE 1180
Input Parameters:
U_i = 30V
I_i = 200mA
P_i = 1.0W
C_i = 0nF
L_i = 2.4µH

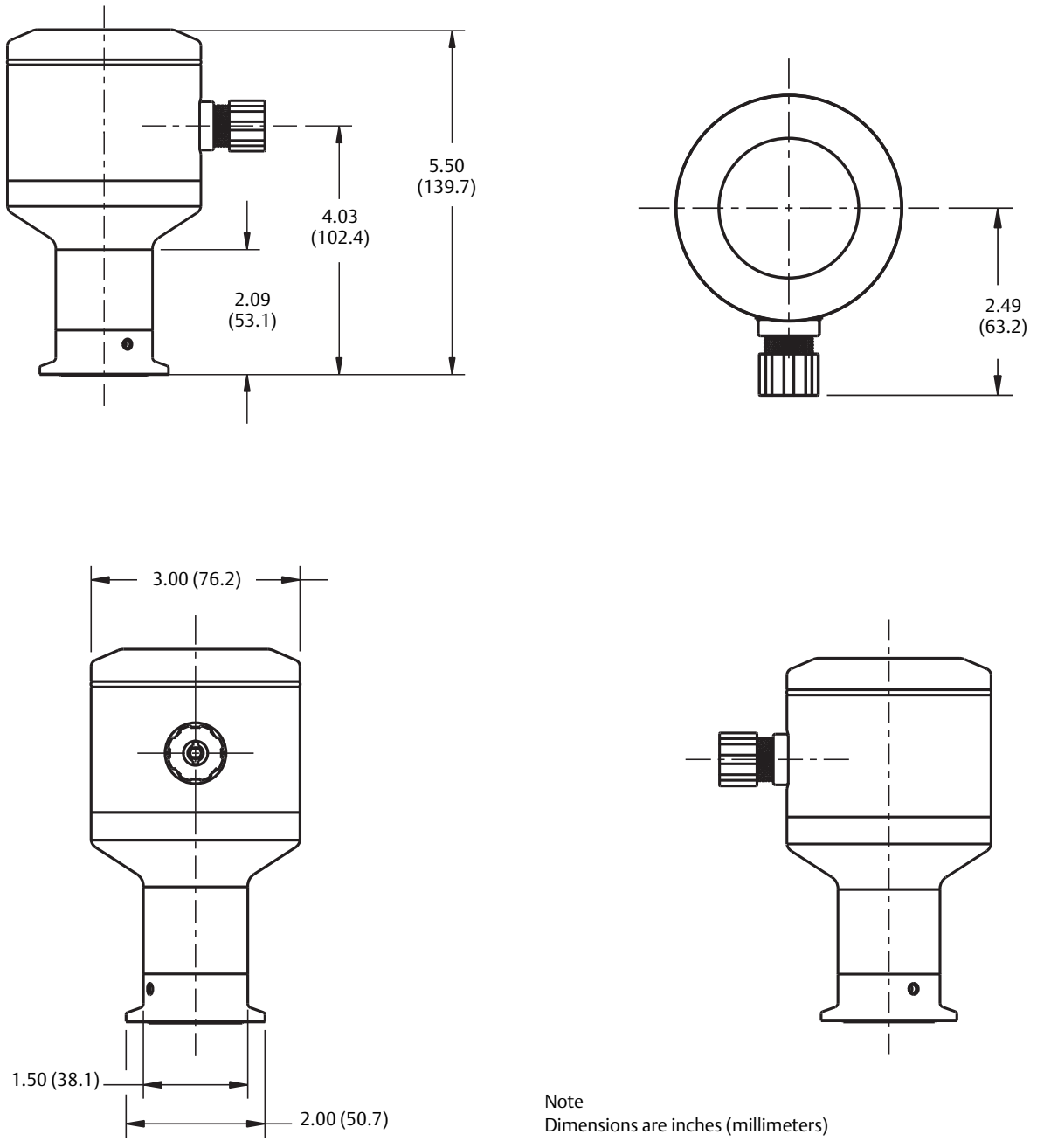
Special Conditions For Safe Use (x)

The plastic meter cover does not meet the surface resistivity requirements and, to avoid electrostatic charging, it must not be rubbed or cleaned with solvents.

Dimensional drawings

Figure 1. Rosemount 4500 Hygienic Pressure Transmitter Dimensional Drawings

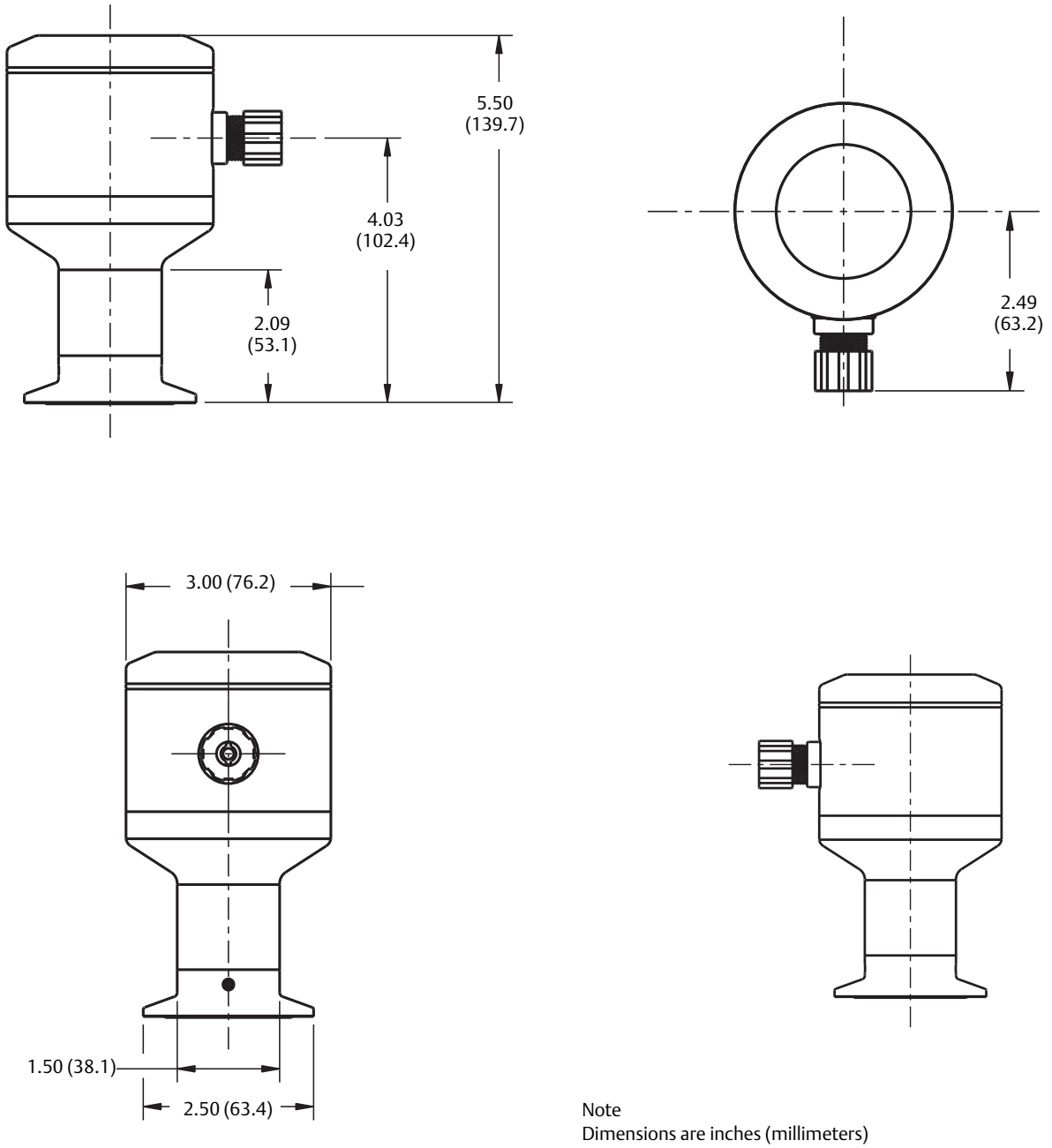
1 1/2 inch Tri-Clamp Module



Note
Dimensions are inches (millimeters)

Figure 2. Rosemount 4500 Hygienic Pressure Transmitter Dimensional Drawings

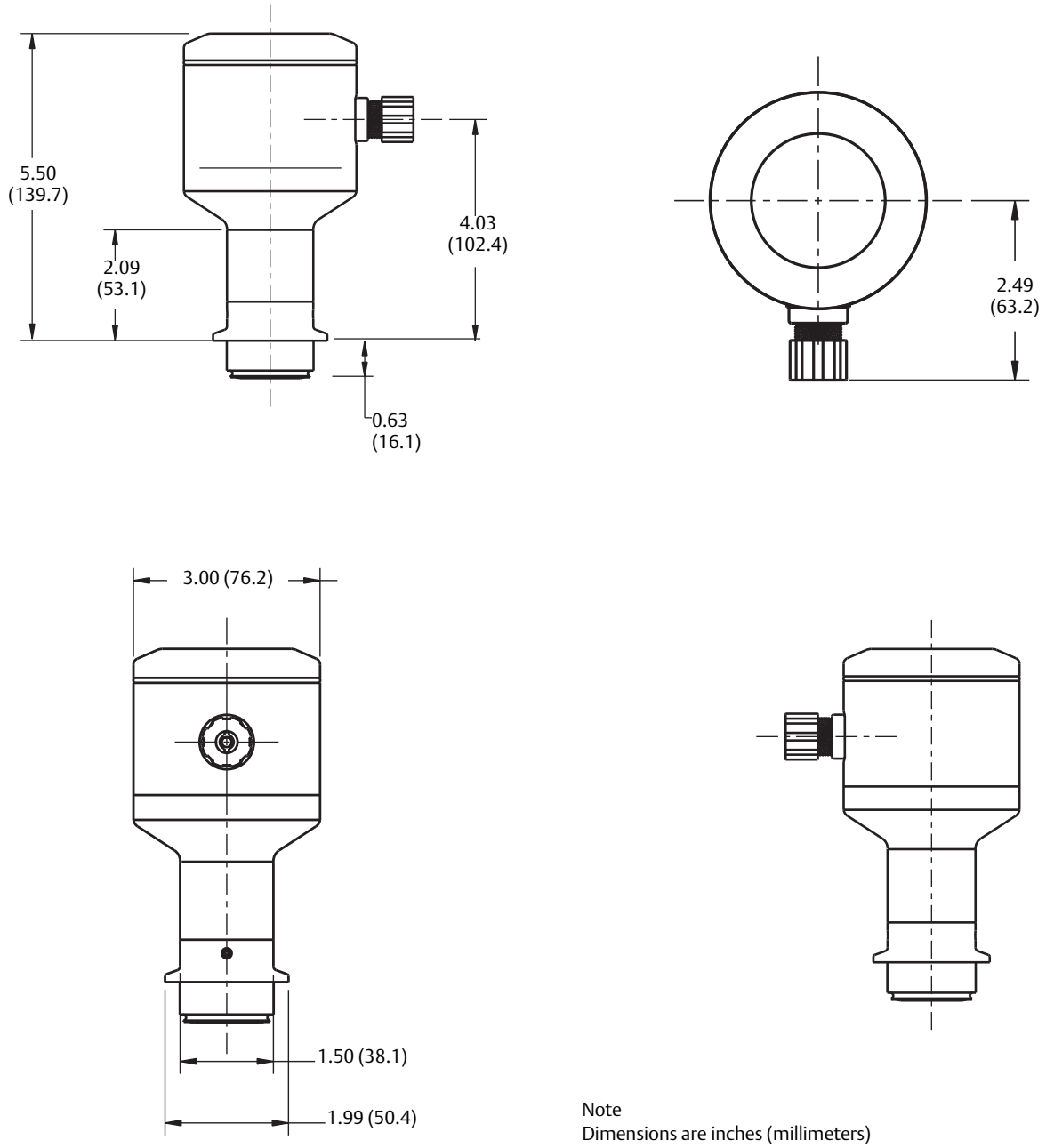
2 inch Tri-Clamp Module



Note
Dimensions are inches (millimeters)

Figure 3. Rosemount 4500 Hygienic Pressure Transmitter Dimensional Drawings

Fractional Line Fitting Module



Note
Dimensions are inches (millimeters)

Emerson Process Management
Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317 USA
T (U.S.) 1-800-999-9307
T (International) (952) 906-8888
F (952) 906-8889
www.rosemount.com

Emerson Process Management
Blegistrasse 23
P.O. Box 1046
CH 6341 Baar
Switzerland
T +41 (0) 41 768 6111
F +41 (0) 41 768 6300
www.rosemount.com

Emerson Process Management
Blegistrasse 23
P.O. Box 1046
CH 6341 Baar
Switzerland
T +41 (0) 41 768 6111
F +41 (0) 41 768 6300
www.rosemount.com

Emerson Process Management
Asia Pacific Pte Ltd
1 Pandan Crescent
Signapore 128461
T +65 6777 8211
F +65 6777 0947
Service Support Hotline: +65 6770 8711
Email: Enquiries@AP.EmersonProcess.com
www.rosemount.com

Emerson Process Management
Blegistrasse 23
P.O. Box 1046
CH 6341 Baar
Switzerland
T +41 (0) 41 768 6111
F +41 (0) 41 768 6300
www.rosemount.com

Emerson Process Management
Blegistrasse 23
P.O. Box 1046
CH 6341 Baar
Switzerland
T +41 (0) 41 768 6111
F +41 (0) 41 768 6300
www.rosemount.com

ROSEMOUNT

EMERSON.
Process Management