

Rosemount™ 585 Main Steam Annubar™ with Opposite Side Support



NOTICE

This installation guide provides basic guidelines for Rosemount 585 Annubar. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, Explosion-proof, Flame-Proof, or intrinsically safe (I.S.) installations. Refer to the 585 Annubar reference manual (document number 00809-0100-4585) for more instruction. This manual is also available electronically on www.rosemount.com.

⚠ WARNING

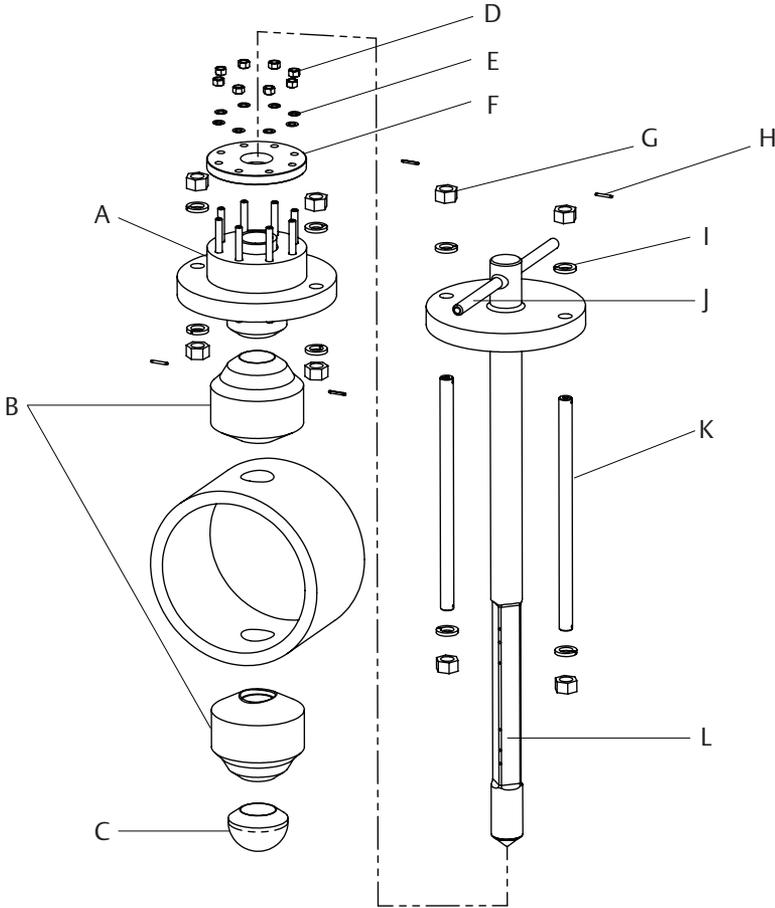
Process leaks may cause harm or result in death. Flowing medium will cause the Rosemount 585 Annubar Assembly to become hot and could result in burns.

Emerson™ Process Management recommends using an experienced pipe fabrication facility to perform the welding of the mounting hardware. This process can be difficult and mistakes could cause failures that result in serious injuries or death.

Contents

Location and orientation	4	Insert the Rosemount Annubar Sensor	8
Drill mounting holes	6	Mount the transmitter	10
Weld mounting hardware	7	Product certifications	12

Figure 1. Rosemount 585 Annubar Assembly Exploded View



- A. Packing gland
- B. Butt weld branch connection
- C. Opposite side support cap
- D. Packing gland nuts
- E. Packing gland washers
- F. Packing gland cover

- G. Locking nuts
- H. Roll pins
- I. Locking washers
- J. Remote mount instrument connections
- K. Locking rods
- L. Rosemount 585 Sensor

Note

Use an appropriate pipe sealing compound rated for the service temperature on all threaded connections.

⚠ WARNING

For the Rosemount 585, it is critical to install the product correctly and in alignment to prevent failure that could result in serious injury or death.

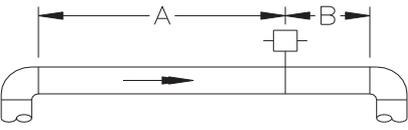
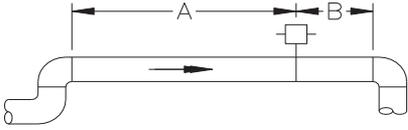
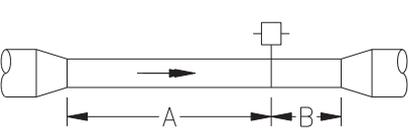
Follow these installation guidelines completely for the best procedure for installation. It is recommended that an experienced pipe fabrication facility be contracted to install the mounting hardware as the alignment and welding are critical to a safe installation. Contact Emerson Process Management for the list of approved facilities.

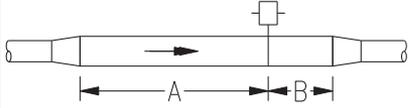
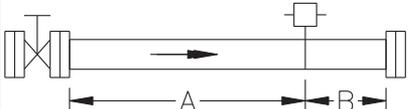
For best results, order the alignment bar (Option Code A1) to ensure acceptable alignment of the installation hardware and opposite side support.

1.0 Location and orientation

Correct orientation and straight run requirements must be met for accurate and repeatable flow measurements. Refer to [Table 1](#) for minimum pipe diameter distances from upstream disturbances.

Table 1. Straight Run Requirements

		Upstream dimensions		Downstream dimensions
		In plane	Out of plane	
		A	A	
1		8	10	4
2		11	16	4
3		23	28	4
4		12	12	4

		Upstream dimensions		Downstream dimensions
		In plane	Out of plane	
		A	A	
5		18	18	4
6		30	30	4

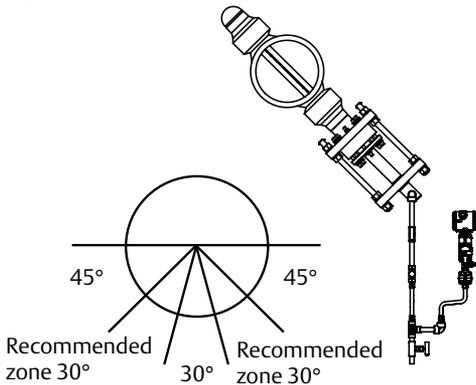
Note

- “In plane A” means the bar is in the same plane as the elbow. “Out of plane A” means the bar is perpendicular to the plane of the elbow.
- Row 6 in Table 1 applies to gate throttling valves that are partially opened, as well as control valves.

1.1 Horizontal orientation

For steam applications, the sensor should be located in the bottom half of the pipe.

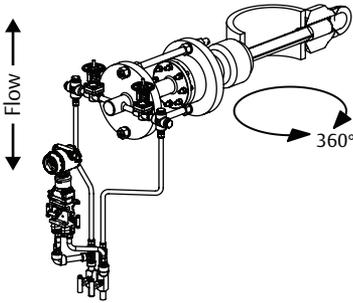
Figure 2. Horizontal Orientation



1.2 Vertical orientation

The sensor can be installed in any position around the circumference of the pipe.

Figure 3. Vertical Orientation



2.0 Drill mounting holes

Follow the steps below to drill the hole in the pipe:

1. Depressurize and drain the pipe.
2. Select the location to drill the mounting hole. Select a location anywhere around the circumference of the pipe for vertical pipes. For horizontal pipes, see [Figure 2 on page 5](#).
3. Drill the hole into the pipe wall in accordance with the instructions provided by the drilling machine manufacturer. Drill a 2.5-in. (64 mm) hole. Drill hole has a tolerance of $+1/16$ -in./ -0 -in. (1,6 mm/ -0 mm).
4. After the hole is drilled, deburr the hole on the inside of the pipe.
5. A second identically sized hole must be drilled opposite the first hole so that the sensor can pass completely through the pipe. To drill the second hole, follow these steps:
 - a. Measure the pipe circumference with a pipe tape, soft wire, or string. (For the most accurate measurement the pipe tape needs to be perpendicular to the axis of flow.)
 - b. Divide the measured circumference by two to determine the location of the second hole.
 - c. Re-wrap the pipe tape, soft wire, or string from the center of the first hole. Then, using the number calculated in the preceding step, mark the center of what will become the second hole.
 - d. Using the diameter determined in step 3, drill the hole into the pipe with a hole saw or drill. **DO NOT TORCH CUT THE HOLE.**
6. Deburr the drilled holes on the inside of the pipe.

3.0 Weld mounting hardware

1. An alignment bar is needed during the welding of the heavy wall butt weld branch connection to the steam pipeline. The alignment bar can be ordered from Emerson Process Management.
2. Weld the heavy wall butt weld branch connection to the packing gland assembly with a full penetration-groove weld.
 - a. Place the alignment bar through the packing gland and the butt weld branch connection. The butt weld branch connection will also have a bearing sleeve in it and it should be near the radius end of the butt weld branch connection which will be the end welded to the pipe. Ensure the support plate is attached to the packing gland before making the weld.
 - b. Tack weld the butt weld branch connection to the packing gland. Remove the alignment bar.
 - c. Weld the first pass. Recheck alignment with the alignment bar. Adjust alignment as necessary. Do not allow the alignment bar to get too hot, as it will be difficult to remove. Use it only briefly to check alignment between weld passes.
 - d. Complete remaining weld passes, using alignment bar to verify alignment several times during the process. Emerson Process Management recommends that the weld thickness is equal to the base metal thickness.
3. Weld the butt weld branch connection and packing gland assembly to the pipe.
 - a. Place alignment bar back into the pipe, slide the butt weld branch connection and packing gland assembly down the alignment bar, and let it rest on the pipe.
 - b. Ensure the 1¹/₈-in. (29 mm) holes in the support plate are perpendicular to the pipe centerline within $\pm 3^\circ$ for horizontal lines and parallel to the pipe centerline within $\pm 3^\circ$ for vertical lines. This will ensure that the impact and static holes will be in line with the flow stream. See [Figure 4 on page 8](#).
 - c. Tack weld the butt weld branch connection to the pipe. Check alignment. Remove the alignment bar and weld the first pass. Emerson Process Management recommends using TIG welding for the first two passes.

Note

It is very helpful to have two welders welding the assemblies to pipe, with one welder starting 180° from the other. This helps prevent movement of the fittings during the temperature changes associated with welding.

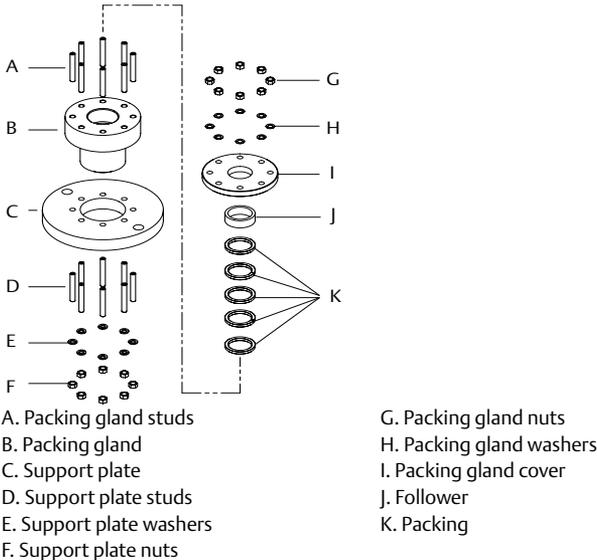
- d. Check the alignment after the first pass. Remove the alignment bar and weld the next pass. Recheck alignment.
 - e. Continue applying weld passes and rechecking alignment until welding is complete. The fillet welds will be approximately 1¹/₈-in. (29 mm).
4. Weld the opposite side butt weld branch connection to the pipe.

- a. Slide the alignment bar through mounting and hole in top side of pipe and place the opposite-side support butt weld branch connection over the end of the alignment bar.
 - b. Visually center the opposite-side butt weld branch connection over the hole. Tack weld the butt weld branch connection, using tack bars or an equivalent method.
 - c. Weld the first pass and check alignment using the alignment bar and continue welding. Check alignment frequently during welding. Adjust butt weld branch connection as you are making tacks to keep aligned. Do not leave alignment bar in too long as it will heat up and make it very difficult to remove.
 - d. When welding is complete, the alignment bar should slide freely through the packing into the opposite-side butt weld branch connection.
 - e. Weld opposite end cap to butt weld branch connection using a full penetration groove weld.
5. Perform required heat treatment.
 6. Reinstall Rosemount 585 after heat treating and ensure flow arrow is pointing in the direction of flow.

4.0 Insert the Rosemount Annubar Sensor

1. Place the packing into the packing gland with the two split rings (garlock style 1303FEP) on the outside and the three garlock carbon/graphite solid die-formed rings on the inside. Make sure the splits in the outer packing are 180° apart.

Figure 4. Packing Gland Assembly

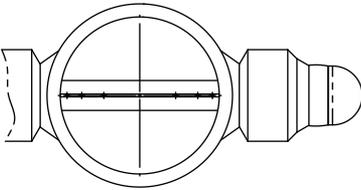


Note

The packing gland and support plate will be shipped fully assembled.

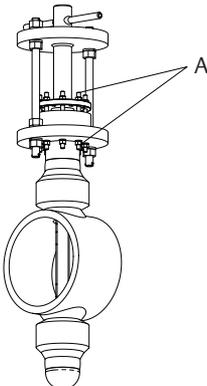
2. Slide the Rosemount 585 through the packing and install the locking rods, nuts, and lock washers. The dimension between the plates should be 11-in. (279 mm). See [Figure 5 on page 9](#). If there is visual access to the inside of the pipe, ensure that the sensing holes are equally spaced from the inner diameter (ID) of the pipe.
3. Make the small adjustment (if necessary), then lock the Rosemount 585 in place with the locking rods, nuts, and lock washers. When installed, the Rosemount 585 will have a dimension of 29.6-in. (716 mm) from pipe outer diameter (OD) to top of head.
4. The last thing to be done is to tighten the packing gland nuts to 25 to 30 ft-lb (34 to 41 N-m). See [Figure 6 on page 9](#).

Figure 5. Install the Rosemount 585 Sensor

**Note**

If you have visual access of the inside of the pipe, the sensing holes should be equally spaced from each side of the pipe ID.

Figure 6. Tighten the Packing Gland Nuts



A. Packing gland nuts

5.0 Mount the transmitter

5.1 Transmitter mounting with remote mount head

Temperatures in excess of 250 °F (121 °C) at the electronics will damage the transmitter. Remote mounted transmitters are connected to the sensor by means of impulse piping, which allows service flow temperatures to decrease to a point where the transmitter is no longer vulnerable.

Impulse piping guidelines

The following restrictions and recommendations apply to impulse piping location.

1. Impulse piping that runs horizontally must slope downward at least one inch per foot (83 mm/m).
2. Impulse piping should have a minimum length of 1 ft. (0,3048 m) for every 100 °F (38 °C) temperature increase over 250 °F (121 °C). Impulse piping must be non-insulated to reduce fluid temperature. Any threaded connections should be checked after the system reaches the intended temperature because connections may come loose with contraction and expansion caused by temperature change.
3. Outdoor installations may require insulation and heat tracing to prevent freezing.
4. When impulse piping is longer than 6 ft. (1,8 m) the high and low impulse lines must be positioned together to maintain equal temperature. They must be supported to prevent sagging and vibration.
5. Impulse lines should be positioned in protected areas or against walls or ceilings. Use appropriate pipe sealing compound rated for the service temperature on all threaded connections. Do not place the impulse piping near high temperature piping or equipment.

General guidelines

- a. An instrument manifold is recommended for all installations. Manifolds allow an operator to equalize the pressures prior to zeroing and isolates the process fluid from the transmitter.
- b. Use only valves and fittings rated for the design pressure and temperature (in some cases the primary instrument valve may be supplied by Emerson Process Management with the Rosemount 585).
- c. Use a pipe thread sealant compound that is rated for use at the service temperature and pressure for all valves and fittings.
- d. Verify that all connections are tight and that all instrument valves are fully closed.
- e. Verify that the sensor probe is properly oriented as per the submitted outline drawings.
- f. The piping used to connect the sensor probe and transmitter must be rated for continuous operation at the pipeline-designed pressure and temperature. A minimum of one-half inch ($1/2$ -in., 12 mm) OD stainless steel tubing with a wall thickness of at least $1/16$ -in. (1,6 mm) is recommended.

5.2 Recommended installations

Mount the transmitter below the process piping. Route the impulse piping down to the transmitter and fill the system with cool water through the two tee fittings.

Figure 7. Horizontal Line

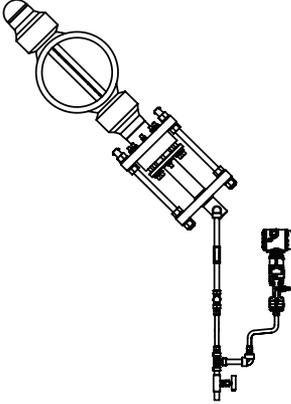
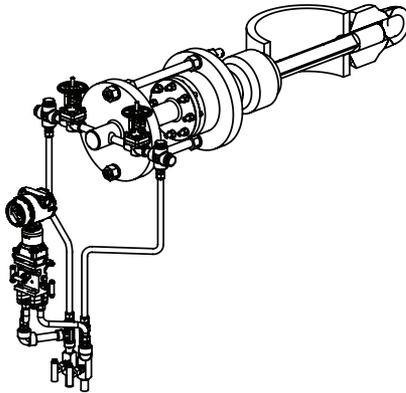


Figure 8. Vertical Line



6.0 Product certifications

6.1 Approved Manufacturing Locations

Rosemount Inc. – Shakopee, Minnesota USA

Rosemount DP Flow Design and Operations – Boulder, Colorado USA

Emerson Process Management GmbH & Co. OHG – Wessling, Germany

Emerson Process Management Asia Pacific Private Limited – Singapore

Emerson Beijing Instrument Co., Ltd – Beijing, China

6.2 European Directive Information

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

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

Rosemount 585 Annubar — Refer to EC declaration of conformity for conformity assessment

Pressure Transmitter — See appropriate Pressure Transmitter QSG

6.3 Hazardous Locations Certifications

For information regarding the transmitter product certification, see the appropriate transmitter QSG:

- Rosemount 3051S Series Pressure Transmitter and Rosemount 3051SF Series Flowmeter [Quick Start Guide](#).
- Rosemount 3051S MultiVariable Transmitter and Rosemount 3051SF Series Flowmeter MultiVariable Transmitter [Quick Start Guide](#).
- Rosemount 3051 Pressure Transmitter and Rosemount 3051CF Series Flowmeter Transmitter [Quick Start Guide](#).
- Rosemount 2051 Pressure Transmitter and Rosemount 2051CF Series Flowmeter Transmitter [Quick Start Guide](#).

Figure 9. Rosemount 585 Declaration of Conformity

	<h1>EU Declaration of Conformity</h1>	
<p>No: DSI 1000 Rev. L</p>		
<p>We,</p>		
<p>Rosemount, Inc. 8200 Market Boulevard Chanhausen, MN 55317-9685 USA</p>		
<p>declare under our sole responsibility that the products,</p>		
<p>Rosemount Primary Elements: 405x, 485, 585, 1195, 1495, 1595 Rosemount DP Flowmeters: 2051CFx, 3051CFx, 3051SFx</p>		
<p>manufactured by,</p>		
<p>Rosemount / Dieterich Standard, Inc. 5601 North 71st Street Boulder, CO 80301 USA</p>		
<p>to which this declaration relates, is in conformity with the provisions of the European Union Directives as shown in the attached schedule.</p>		
<p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>		
	<p>Vice President of Global Quality (function)</p>	
<p>Kelly Klein (name)</p>	<p>19 Apr 2016 (date of issue)</p>	
<p>Page 1 of 3</p>		<p>DSI 1000.docx</p>



EU Declaration of Conformity



No: DSI 1000 Rev. L

PED Directive (97/23/EC) This directive is valid until 18 July 2016

PED Directive (2014/68/EU) This directive is valid from 19 July 2016

Summary of Classifications		
Model/Range	PED Category	
	Group 1 Fluid	Group 2 Fluid
Rosemount 585 - 150#-900# All Lines	SEP	SEP
Rosemount 585 - 1500# & 2500# All Lines	III	SEP
Rosemount 405C, 405A, x051xFC	SEP	SEP
Rosemount 1195, x051xFP with 150#, 1-1/2" Flange	I	SEP
Rosemount 1195, x051xFP with 300# or 600#, 1" or 1-1/2" Flange	II	I
Rosemount 1195, x051xFP with 1" or 1-1/2" Threaded & Welded Connection	II	I
Rosemount 485/x051SxFA: 1500# & 2500# All Line Sizes, Flanged	III	SEP
Rosemount 485/x051xFA: Sensor Size 2, 150#, 6" to 24" Line Sizes, FloTap	I	SEP
Rosemount 485/x051xFA: Sensor Size 2, 300#, 6" to 24" Line Sizes, FloTap	II	I
Rosemount 485/x051xFA: Sensor Size 2, 600#, 6" to 16" Line Sizes, FloTap	II	I
Rosemount 485/x051xFA: Sensor Size 2, 600#, 18" to 24" Line Sizes, FloTap	III	II
Rosemount 485/x051xFA: Sensor Size 3, 150#, 12" to 44" Line Sizes, FloTap	II	I
Rosemount 485/x051xFA: Sensor Size 3, 150#, 46" to 72" Line Sizes, FloTap	III	II
Rosemount 485/x051xFA: Sensor Size 3, 300#, 12" to 72" Line Sizes, FloTap	III	II
Rosemount 485/x051xFA: Sensor Size 3, 600#, 12" to 36" Line Sizes, FloTap	III	II
Rosemount 485/x051xFA: Sensor Size 3, 600#, 48" to 72" Line Sizes, FloTap	IV*	III
All other Rosemount Primary Elements and DP Flowmeters	SEP	SEP

Certificate of Assessment – CE-0041-H-RMT-001-13-USA

IV* Category IV Flo Tap requires a B1 Certificate for design examination and H1 Certificate for special surveillance



EU Declaration of Conformity



No: DSI 1000 Rev. L

Pressure Equipment Directive Notified Body:

Bureau Veritas UK Limited [Notified Body Number: 0041]
Parklands, Wilmslow Road, Didsbury
Manchester M20 2RE
United Kingdom

表格 1B: 含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 585
Table 1B: List of Rosemount 585 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers 多溴联苯醚 (PBDE)
铝制温度传感器外壳组件 Aluminum RTD Housing Assembly	O	O	O	X	O	O

本表格系依据 SJ/T11364 的规定而制作。

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

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。

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

X: 意为在该部件所使用的均质材料里，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。

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.

上述申明仅适用于选择铝制外壳组件的产品。其他所有差压流量一次元件的组件所含有的 China RoHS 管控物质浓度均低于 GB/T 26572 所规定的限量要求。关于差压流量计变送器组件的管控物质浓度的申明，请参看变送器的快速安装指南。

The disclosure above applies to units supplied with aluminum connection heads. No other components supplied with DP Flow primary elements contain any restricted substances. Please consult the transmitter Quick Start Guide (QIG) for disclosure information on transmitter components.



Global Headquarters

Emerson Process Management

6021 Innovation Blvd.
Shakopee, MN 55379, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RFQ.RMD-RCC@EmersonProcess.com

North America Regional Office

Emerson Process Management

8200 Market Blvd.
Chanhassen, MN 55317, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RMT-NA.RCCRFQ@Emerson.com

Latin America Regional Office

Emerson Process Management

1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA
+1 954 846 5030
+1 954 846 5121
RFQ.RMD-RCC@EmersonProcess.com

Europe Regional Office

Emerson Process Management 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@EmersonProcess.com

Asia Pacific Regional Office

Emerson Process Management Asia Pacific Pte Ltd

1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.EmersonProcess.com

Middle East and Africa Regional Office

Emerson Process Management

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



Linkedin.com/company/Emerson-Process-Management



Twitter.com/Rosemount_News



Facebook.com/Rosemount



Youtube.com/user/RosemountMeasurement



Google.com/+RosemountMeasurement

Standard Terms and Conditions of Sale can be found at

www.Emerson.com/en-us/pages/Terms-of-Use.aspx

The Emerson logo is a trademark and service mark of Emerson Electric Co.

Annubar, Rosemount and Rosemount logotype are trademarks of Emerson Process Management.

All other marks are the property of their respective owners.

© 2016 Emerson Process Management. All rights reserved.