

Micro Motion® R-Series Coriolis Flow and Density Meters



Detailed Specifications

R-Series accuracy

| Model | Liquid mass flow accuracy | | Gas mass flow accuracy | Density accuracy (g/cm ³) | |
|-------|---------------------------|-------|------------------------|---------------------------------------|-------|
| | 0.50% | 0.40% | 0.75% | 0.01 | 0.003 |
| R025 | • | • | • | • | • |
| R050 | • | • | • | • | • |
| R100 | • | • | • | • | • |
| R200 | • | • | • | • | • |

Flow tube information

| Model | Number of tubes | Tube inside diameter inches | Tube inside diameter mm | Tube length inches | Tube length mm |
|-------|-----------------|-----------------------------|-------------------------|--------------------|----------------|
| R025 | 2 | 0.21 | 5.3 | 14.6 | 370 |
| R050 | 2 | 0.35 | 8.8 | 18.8 | 478 |
| R100 | 2 | 0.65 | 16 | 25.1 | 637 |
| R200 | 2 | 1.1 | 27 | 23.5 | 598 |

ASME B16.5 specification flange compatibility

| Model | 1/2" | 3/4" | 1" | 1-1/2" | 2" | 3" |
|-------|------|------|----|--------|----|----|
| R025 | • | • | • | | | |
| R050 | • | • | • | | | |
| R100 | | | • | • | • | |
| R200 | | | | • | • | • |

DIN specification flange compatibility

| Model | DN15 | DN25 | DN40 | DN50 |
|-------|------|------|------|------|
| R025 | • | | | |
| R050 | • | • | | |
| R100 | | • | | |
| R200 | | | • | • |

Contents

| | | | |
|---|---|--------------------------------------|---|
| Detailed Specifications | 2 | Hazardous area classifications | 8 |
| Process Pressure Ratings | 4 | Process connections | 9 |
| Temperature and Pressure De-Ratings | 4 | | |

EN1092-1 specification flange compatibility

| Model | DN15 | DN25 | DN40 | DN50 |
|-------|------|------|------|------|
| R025 | • | • | | |
| R050 | • | • | | |
| R100 | | • | | |
| R200 | | | • | • |

JIS B 2220⁽¹⁾ specification flange compatibility




| Model | 15mm | 25mm | 40mm | 50mm |
|-------|------|------|------|------|
| R025 | • | | | |
| R050 | • | | | |
| R100 | | • | | |
| R200 | | | • | • |

(1) Sensors with JIS process connections do not meet ASME B31.1 power piping code.

VCO/VCR specification flange compatibility and Tri-clamp compatible flanges

| Model | VCO specification | | | | Tri-clamp compatible | | | | |
|-------|-------------------|----|-----|-----|----------------------|------|----|--------|----|
| | #4 | #8 | #12 | #16 | 1/2" | 3/4" | 1" | 1-1/2" | 2" |
| R025 | | • | • | | • | • | | | |
| R050 | | • | • | | • | • | | | |
| R100 | | | | • | | | • | | |
| R200 | | | | | | | | • | • |

Transmitter compatibility

| Sensor model | Transmitter model | | |
|---------------------|---|---|---|
| | 1500/2500 | 1700/2700 | 3000 Series |
| |  |  |  |
| All R-Series models | • | • | • |

Process Pressure Ratings

Sensor maximum working pressure reflects the highest possible pressure rating for a given sensor. Process connection type and environmental and process fluid temperatures may reduce the maximum rating. See Temperature and Pressure De-Ratings for common sensor and fitting combinations.

R-Series sensors comply with ASME B31.1 power piping code, ASME B31.3 process piping code, and Council Directive 97/23/EC of 29 May 1997 on pressure equipment.

Note

R-Series sensors with JIS process connections do not comply with ASME B31.1 power piping code.

Sensor maximum working pressure for all models

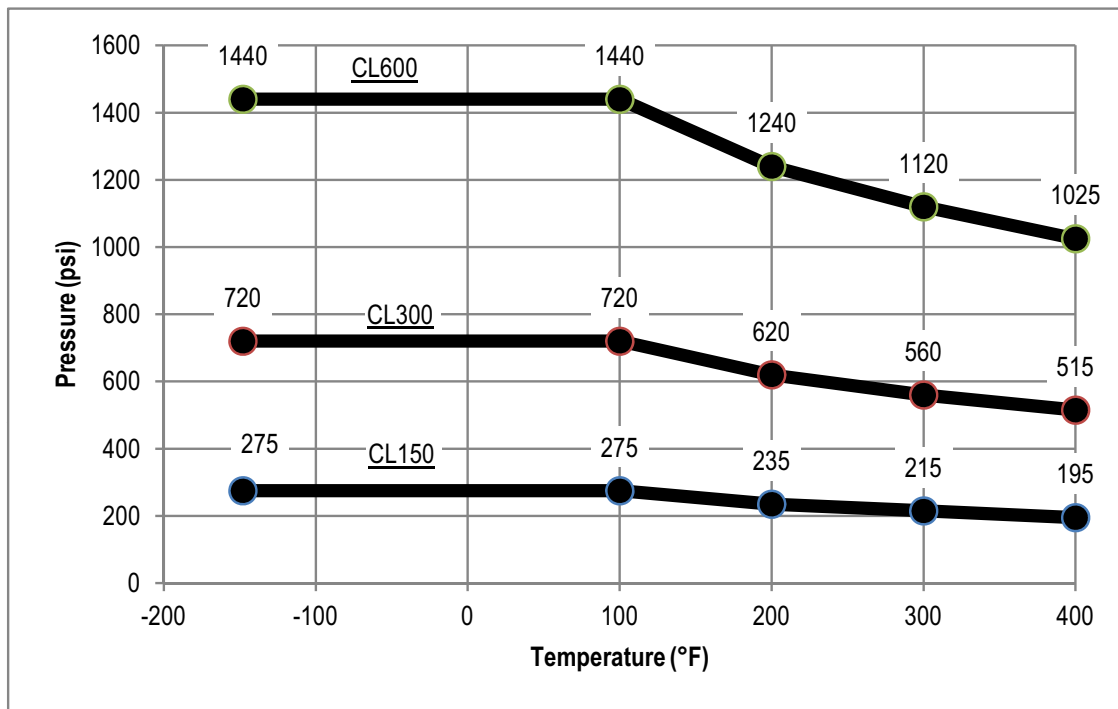
| Model | psig | barg |
|----------------------------|-------|------|
| R025S, R050S, R100S, R200S | 1,450 | 103 |
| R025P | 2,300 | 159 |

Temperature and Pressure De-Ratings

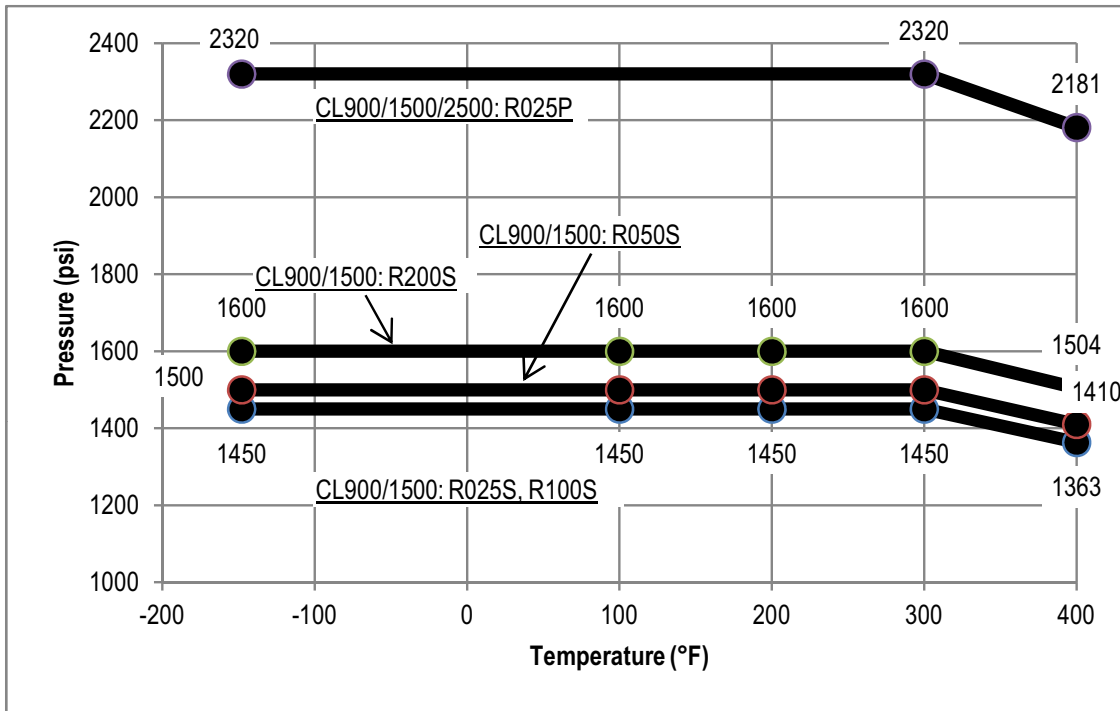
Notes:

- The ratings in this section apply to the combined sensor and process connection to ensure that the meter does not exceed the limits of either component.
- The temperature and pressure de-ratings graphs do not represent all possible model and fitting combinations. For combinations not listed here, contact a sales representative or the factory.

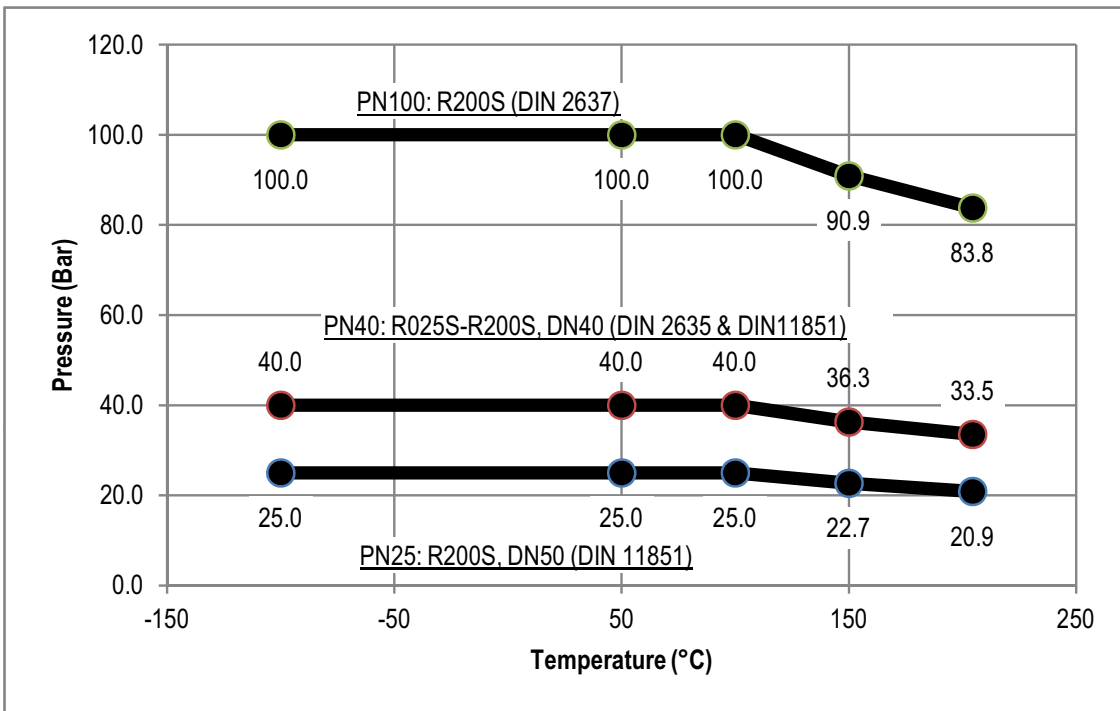
ASME B16.5 (CL150-CL600)



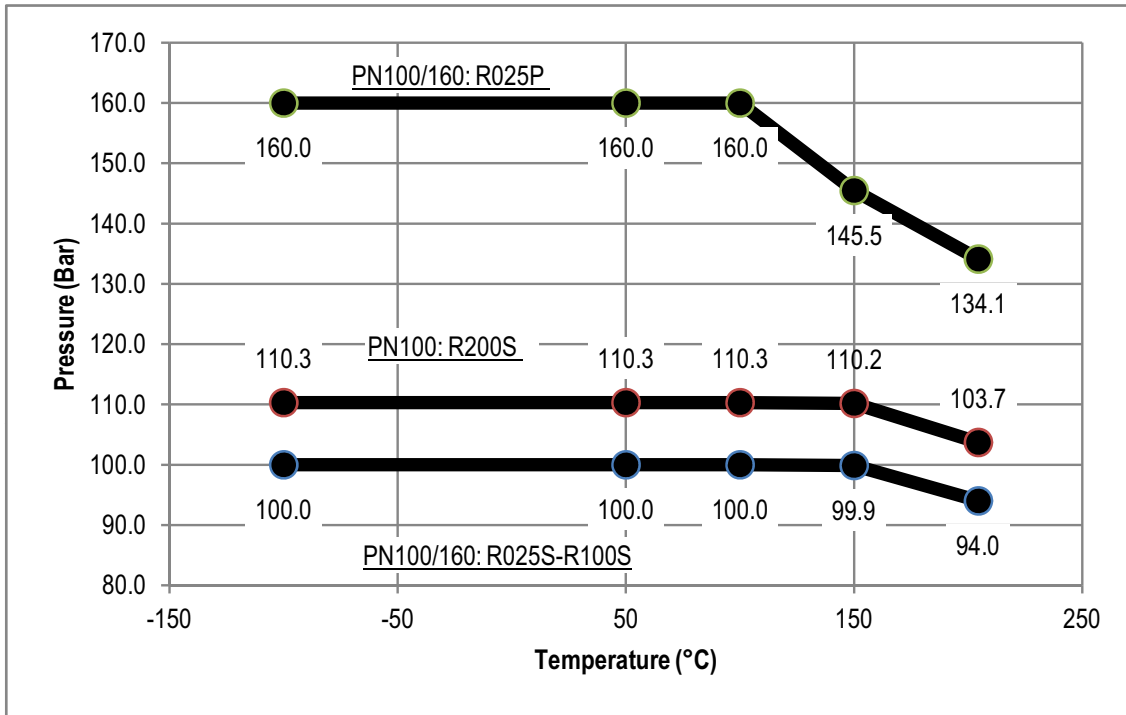
ASME B16.5 (CL900-CL2500)



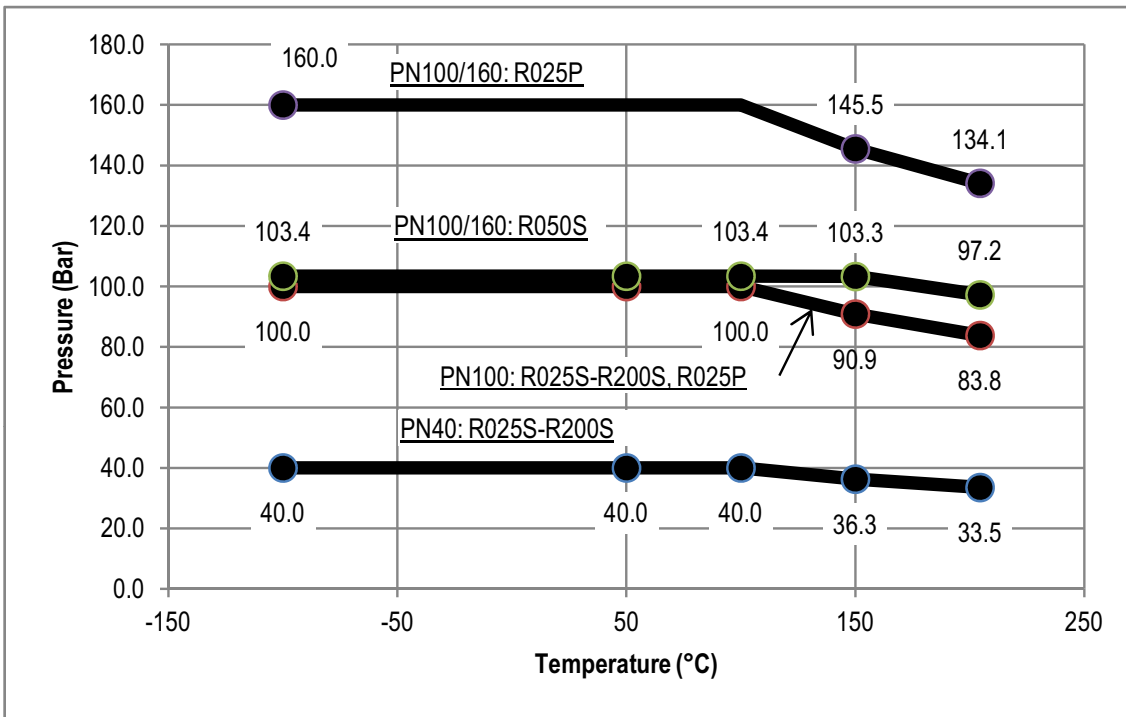
DIN 2635 & 11851 F316/F316L



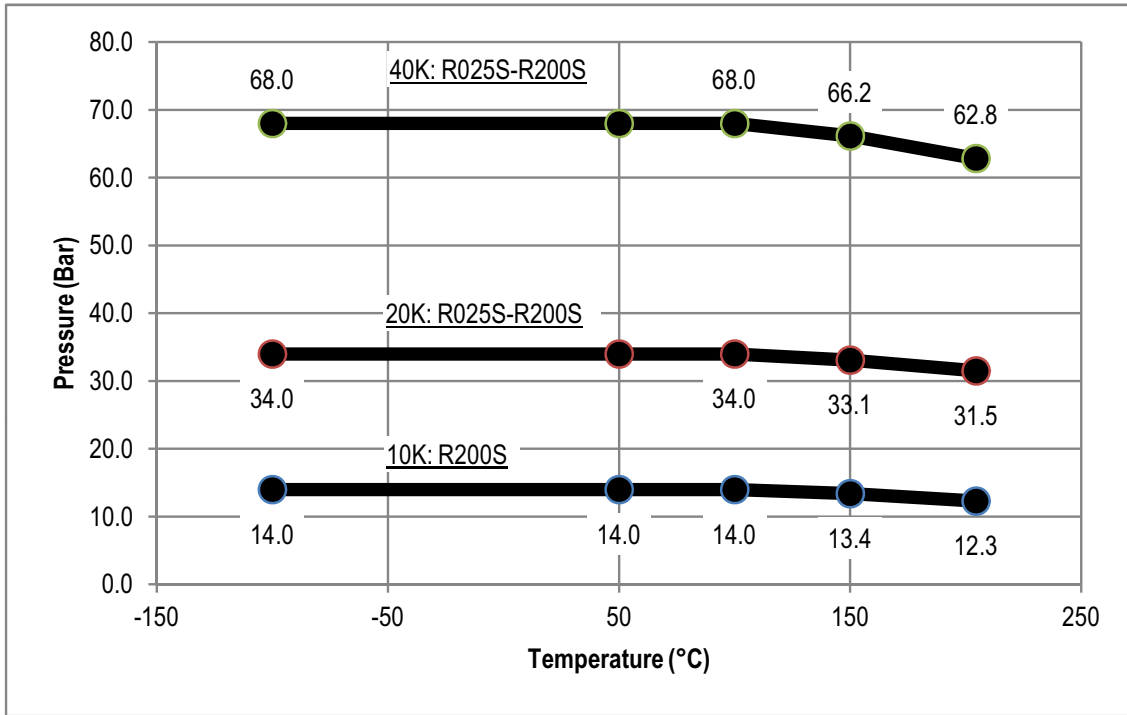
DIN 2638 F316/F316L



EN 1092-1 F316/F316L



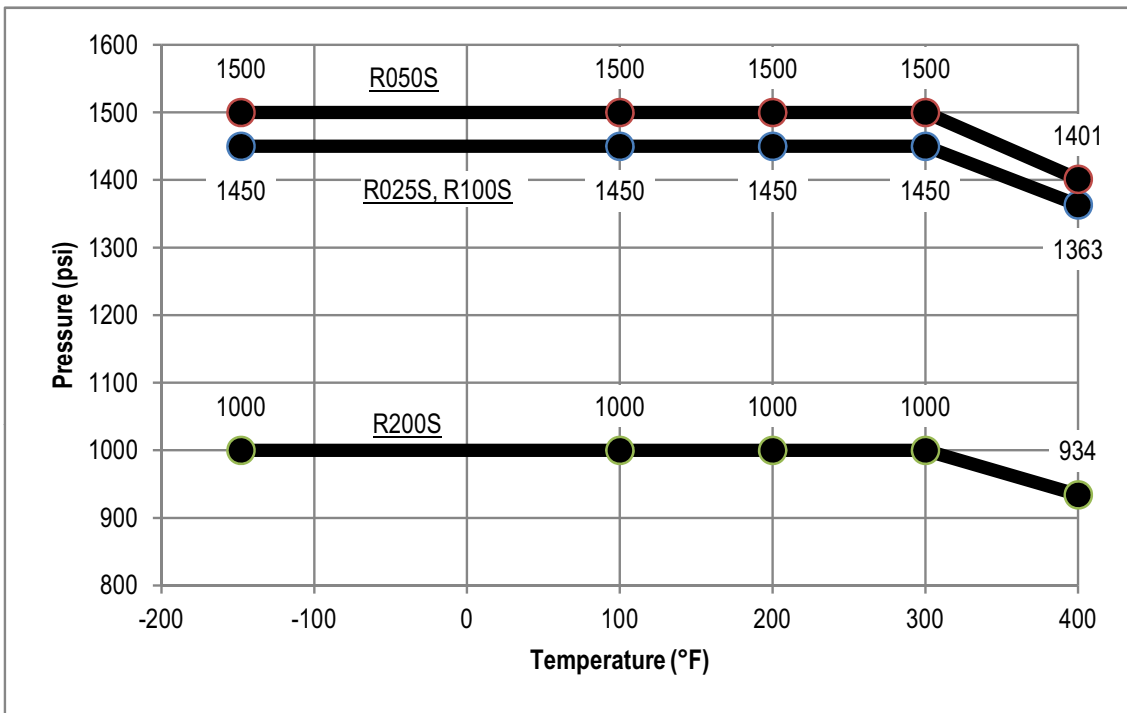
JIS B 2220 F316/F316L



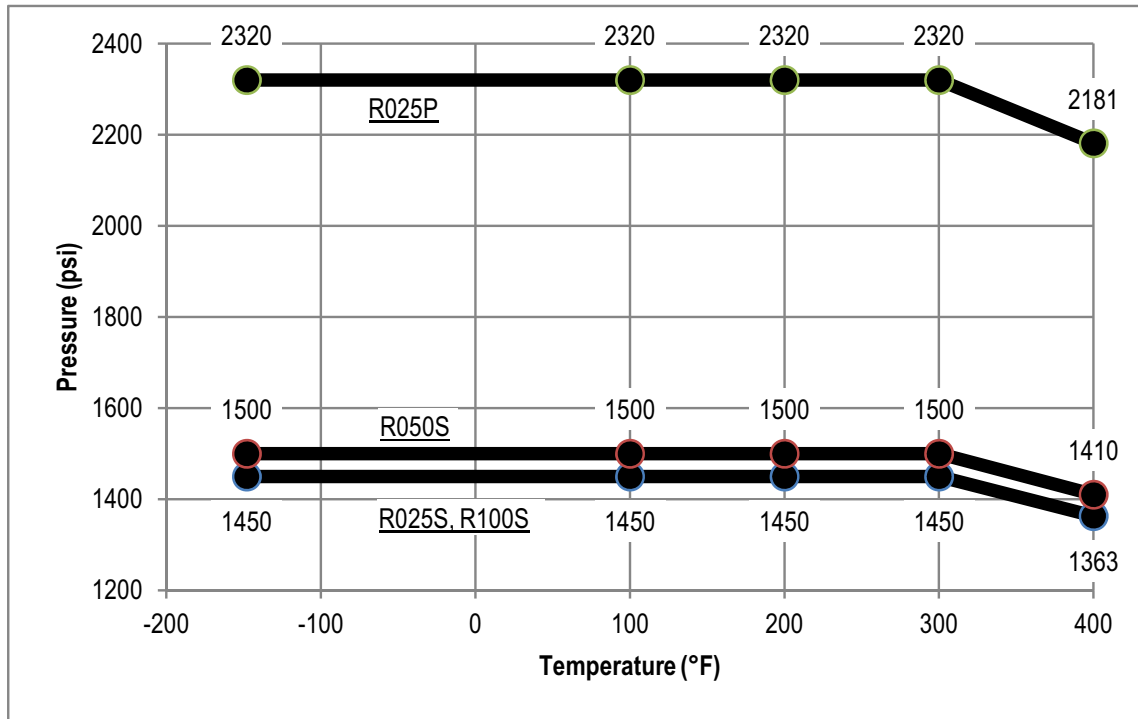
Note:

Sensors with JIS process connections do not comply with ASME B31.1 power piping code.

Tri-Clamp compatible 316L



VCO & VCR 316/316L



Hazardous area classifications

Detailed classifications⁽¹⁾

| CSA and CSA C-US | |
|---|--|
| Sensor with integrally mounted Model 1700/2700 transmitter or with core processor | Ambient temperature: -40 to +140 °F (-40 to +60 °C) Class I, Div. 1, Groups C and D Class I, Div. 2, Groups A, B, C, and D Class II, Div. 1, Groups E, F, and G |
| IECEx and NEPSI | |
| Sensor with integrally mounted Model 1700/2700 transmitter or with core processor | Ex ib IIC T1-T5 Gb |
| Sensor with Model 1700/2700 with THUM adapter | Ex ib IIC T1-T4 |
| ATEX | |
| All models (CIC A2) with core processor or Model 1700/2700 transmitter | CE 0575 Ex II 2G Ex ib IIC T1-T5 Gb II 2D Ex ib IIIC T ⁽²⁾ °C Db IP65 |

- (1) All information and approvals may change depending on sensor/transmitter configurations and operating conditions. Please reference appropriate certificates for exact approvals.
- (2) For ambient and process temperature limits, refer to the appropriate approval certificate.

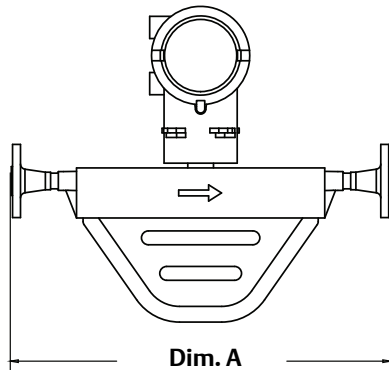
Process connections

Note:

The tables in this section do not represent all possible model and flange combinations. For combinations not listed here, contact a sales representative or the factory.

Dimensions with process connections

Dimension "A" is provided for each process fitting type, when available. It is the finished face-to-face dimension of the sensor with the process connection $\pm 1/8$ inch (± 3 mm).



Weight with process connections

Product weights in this section include the weight of the sensor with the process connection and integral core processor, except where noted. Values are rounded to ± 1 lb (0.5 kg). Contact the factory for product shipping weight.

Fitting options

Model R025S

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|-------------|-----------|-------------------------|------------|---------------------|-------------|--------------------|-------------------|
| 113 | 1/2-inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 16.0 (406) | 14 (6.5) |
| 114 | 1/2-inch | CL300 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 16.4 (416) | 15 (7) |
| 115 | 1/2-inch | CL600 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 16.9 (428) | 16 (7) |
| 116 | DN15 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | Form C face | 15.3 (387) | 15 (7) |
| 120 | DN15 | PN100/160 | DIN 2638 | F316/F316L | Weld neck flange | Form E face | 15.8 (401) | 17 (8) |
| 121 | 1/2-inch | | Tri-Clamp compatible | 316L | Hygienic fitting | | 14.0 (355) | 12 (5.5) |

Model R025S (Continued)

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|-------------|-----------|------------|------------|-----------------------------------|--------------------------------|---------------------------|-------------------|
| 122 | 15mm | 20K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 15.4 (392) | 15 (7) |
| 170 | DN15 | PN100/160 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 15.4 (391) | 17 (8) |
| 172 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 15.3 (387) | 17 (8) |
| 176 | DN15 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 15.8 (401) | 15 (7) |
| 178 | DN15 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 15.4 (391) | 17 (7.5) |
| 183 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 13.9 (353) | 17 (8) |
| 221 | 15mm | 40K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 16.5 (419) | 19 (9) |
| 222 | DN15 | | DIN11851 | 316/316L | Hygienic coupling | | 15.3 (387) | 12 (5.5) |
| 310 | DN15 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 14.0 (355) | 15 (7) |
| 319 | #8 | | VCO | 316/316L | Swagelok compatible fitting | 1/2-inch NPT female adapter | 15.8 (401) ⁽¹⁾ | 12 (5.5) |

(1) Dimension specified in table does NOT include fitting length. For installation, modify Dim. A value to include fitting.

Model R025P

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|-------------|-----------|-----------|------------|-----------------------------------|--------------------------------|---------------------------|-------------------|
| 120 | DN15 | PN100/160 | DIN 2638 | F316/F316L | Weld neck flange | Form E face | 15.8 (401) | 17 (8) |
| 170 | DN15 | PN100/160 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 15.8 (401) | 17 (8) |
| 178 | DN15 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 15.8 (401) | 17 (7.5) |
| 180 | DN25 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 16.8 (427) | 24 (10.5) |
| 319 | #8 | | VCO | 316/316L | Swagelok compatible fitting | 1/2-inch NPT female adapter | 14.0 (355) ⁽¹⁾ | 12 (5.5) |

(1) Dimension specified in table does NOT include fitting length. For installation, modify Dim. A value to include fitting.

Model R050S

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|-------------|-----------|-------------------------|------------|-----------------------------------|--------------------------------|--------------------|-------------------|
| 113 | 1/2-inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 18.1 (460) | 15 (7) |
| 114 | 1/2-inch | CL300 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 18.5 (469) | 16 (7.5) |
| 115 | 1/2-inch | CL600 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 19.0 (482) | 17 (7.5) |
| 116 | DN15 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | Form C face | 17.4 (441) | 16 (7.5) |
| 120 | DN15 | PN100/160 | DIN 2638 | F316/F316L | Weld neck flange | Form E face | 17.9 (455) | 18 (8.5) |
| 122 | 15mm | 20K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 17.6 (446) | 18 (8) |
| 131 | DN25 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | Form C face | 17.5 (444) | 18 (8.5) |
| 170 | DN15 | PN100/160 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 17.9 (455) | 18 (8.5) |
| 172 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 17.5 (445) | 18 (8.5) |
| 176 | DN15 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 17.4 (441) | 16 (7.5) |
| 178 | DN15 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 17.9 (455) | 18 (8) |
| 183 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 17.5 (445) | 18 (8.5) |
| 221 | 15mm | 40K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 18.6 (473) | 19 (9) |
| 222 | DN15 | | DIN11851 | 316/316L | Hygienic coupling | | 16.0 (407) | 13 (6) |
| 239 | #12 | | VCO | 316/316L | Swagelok compatible fitting | 3/4-inch NPT female adapter | 16.4 (415) | 14 (6) |
| 310 | DN15 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 17.4 (441) | 16 (7.5) |
| 322 | 3/4-inch | | Tri-Clamp compatible | 316L | Hygienic fitting | | 15.9 (403) | 13 (6) |

Model R100S

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|-------------|-----------|-------------------------|------------|----------------------|-------------|--------------------|-------------------|
| 128 | 1-inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 22.7 (576) | 24 (11) |
| 129 | 1-inch | CL300 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 23.2 (588) | 27 (12) |
| 130 | 1-inch | CL600 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 23.7 (601) | 27 (12.5) |
| 131 | DN25 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | Form C face | 21.4 (544) | 25 (11.5) |
| 137 | DN25 | PN100/160 | DIN 2638 | F316/F316L | Weld neck flange | Form E face | 22.8 (580) | 31 (14) |
| 138 | 1-inch | | Tri-Clamp compatible | 316L | Hygienic fitting | | | |
| 139 | 25mm | 20K | JIS B 2220 | F316/F316L | Weld neck flange | Raised face | | |
| 179 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 21.4 (544) | 25 (11.5) |
| 180 | DN25 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 22.9 (580) | 31 (14) |
| 181 | DN25 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 22.9 (580) | 31 (14) |
| 209 | 2-inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 23.1 (585) | 32 (14.5) |
| 229 | 25mm | 40K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 22.9 (582) | 31 (14) |
| 230 | DN25 | | DIN11851 | 316/316L | Hygienic coupling | | 20.6 (522) | 20 (9) |
| 311 | DN25 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 21.4 (544) | 25 (11.5) |

Model R200S

| Code | Description | | | | | | Dim A inch (mm) | Weight lb (kg) |
|------|----------------|-------|-------------------------|------------|----------------------|-------------|--------------------|-------------------|
| 312 | DN40 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 23.4 (595) | 48 (21.5) |
| 316 | DN50 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 23.7 (601) | 51 (23) |
| 341 | 1-1/2- inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 24.8 (629) | 46 (21) |
| 342 | 1-1/2- inch | CL300 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 25.3 (642) | 52 (23.5) |
| 343 | 1-1/2- inch | CL600 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 25.8 (654) | 55 (25) |
| 351 | 1-1/2- inch | | Tri-Clamp compatible | 316L | Hygienic fitting | | 23.3 (591) | 39 (17.5) |
| 352 | 2-inch | | Tri-Clamp compatible | 316L | Hygienic fitting | | 22.9 (581) | 39 (18) |
| 353 | DN40 | | DIN11851 | 316/316L | Hygienic coupling | | 23.2 (589) | 46 (21) |
| 363 | DN40 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 24.8 (629) | 56 (25.5) |
| 365 | DN50 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type B2 | 25.3 (641) | 64 (29) |
| 366 | DN40 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 24.8 (629) | 56 (25.5) |
| 367 | DN50 | PN100 | EN 1092-1 | F316/F316L | Weld neck flange | Type D | 25.3 (641) | 64 (29) |
| 368 | DN40 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 23.4 (595) | 48 (21.5) |
| 369 | DN50 | PN40 | EN 1092-1 | F316/F316L | Weld neck flange | Type B1 | 23.7 (601) | 51 (23) |
| 378 | DN50 | PN100 | DIN 2637 | F316/F316L | Weld neck flange | FormE face | 25.4 (646) | 64 (29) |
| 381 | DN40 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | FormC face | 23.6 (599) | 48 (21.5) |
| 382 | DN50 | PN40 | DIN 2635 | F316/F316L | Weld neck flange | Type C face | 23.8 (605) | 51 (23) |
| 385 | 40mm | 10K | JIS B 2220 | F316/F316L | Weld neck flange | Raised face | 23.4 (595) | 46 (21) |
| 386 | 50mm | 10K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 23.7 (602) | 48 (22) |
| 387 | 40mm | 20K | JIS B 2220 | F316/F316L | Weld neck flange | Raised face | 23.4 (595) | 47 (21) |
| 388 | 50mm | 20K | JIS B 2220 | F316/316L | Weld neck flange | Raised face | 23.7 (602) | 48 (22) |
| 418 | 2-inch | CL150 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 24.9 (632) | 50 (22.5) |
| 419 | 2-inch | CL300 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 25.4 (645) | 54 (24.5) |
| 420 | 2-inch | CL600 | ASME B16.5 | F316/F316L | Weld neck flange | Raised face | 26.1 (664) | 58 (26) |

**Emerson Process Management
Americas**

7070 Winchester Circle
Boulder, Colorado USA 80301
www.MicroMotion.com
www.Rosemount.com
T: +1 800 522 6277
T: +1 (303) 527 5200
F: +1 (303) 530 8459

Mexico T: 52 55 5809 5300
Argentina T: 54 11 4837 7000
Brazil T: 55 15 3413 8000
Venezuela T: 58 26 1300 8100
Chile T: 56 2 2928 4800

**Emerson Process Management
Europe/Middle East**

Central & Eastern Europe T: +41 41 7686 111
Dubai T: +971 4 811 8100
Abu Dhabi T: +971 2 697 2000
France T: 0800 917 901
Germany T: 0800 182 5347
Italy T: 8008 77334
The Netherlands T: +31 (0) 70 413 6666
Belgium T: +32 2 716 77 11
Spain T: +34 913 586 000
U.K. T: 0870 240 1978
Russia/CIS T: +7 495 981 9811

**Emerson Process Management
Asia Pacific**

Australia T: (61) 3 9721 0200
China T: (86) 21 2892 9000
India T: (91) 22 6662 0566
Japan T: (81) 3 5769 6803
South Korea T: (82) 2 3438 4600
Singapore T: (65) 6 777 8211

© 2015 Micro Motion, Inc. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. Micro Motion, ELITE, ProLink, MVD and MVD Direct Connect marks are marks of one of the Emerson Process Management family of companies. All other marks are property of their respective owners.

Micro Motion supplies this publication for informational purposes only. While every effort has been made to ensure accuracy, this publication is not intended to make performance claims or process recommendations. Micro Motion does not warrant, guarantee, or assume any legal liability for the accuracy, completeness, timeliness, reliability, or usefulness of any information, product, or process described herein. We reserve the right to modify or improve the designs or specifications of our products at any time without notice. For actual product information and recommendations, please contact your local Micro Motion representative.

