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**Product Data Sheet**
February 2017
00813-0100-4101, Rev MA

# Rosemount™ 2051 Pressure Transmitter



- Rosemount Coplanar™ platform enables integration of primary elements, manifolds, and remote seal solutions
- Best in Class performance with up to 0.05% high accuracy option
- IEC 62591 (*Wireless*HART®) Protocol enables cost effective installations
- Local Operator Interface (LOI) offers easy to use configuration capabilities at the transmitter
- Protocols available include HART® 4–20 mA, FOUNDATION™ Fieldbus, PROFIBUS® PA, HART 1–5 Vdc Low Power
- Selectable HART Revision prepares your plant for the latest HART capabilities while ensuring seamless integration with today's systems
- SIL2/3 safety certification to IEC 61508 is available with the full 4–20 mA HART offering to simplify compliance

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# Rosemount 2051 Pressure Transmitter product offering



## Foundation of reliable measurement

- Differential, gage, and absolute pressure measurement
- Select from an extensive offering of DP Flowmeters, liquid level, manifolds and flanges
- Available with variety of protocols and materials

## Best-in-class capabilities extended to IEC 62591 (*Wireless*HART)

- Cost effectively implement wireless on the industry's most proven platform
- Optimize safety with the industry's only intrinsically safe power module
- Eliminate wiring design and construction complexities to lower costs by 40–60 percent
- Quickly deploy new pressure, level, and flow measurements in 70 percent less time

## Innovative, integrated DP Flowmeters

- Fully assembled and leak tested for out-of-the-box installation
- Reduce straight pipe requirements, lower permanent pressure loss, and achieve accurate measurement in small line sizes
- Up to two percent volumetric flow accuracy at 5:1 turndown

## Proven, reliable, and innovative DP Level technologies

- Connect to virtually any process with a comprehensive offering of process connections, fill fluids, direct mount or capillary connections and materials.
- Quantify and optimize total system performance with QZ option.
- Optimize level measurement with cost efficient Tuned-System™ Assemblies

## Instrument manifolds — quality, convenient, and easy

- Designed and engineered for optimal performance with Rosemount transmitters
- Save installation time and money with factory assembly
- Offers a variety of styles, materials, and configurations

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# Rosemount 2051C Coplanar Pressure Transmitter



Rosemount 2051C Coplanar Pressure Transmitter

| Configuration | Transmitter output code |
|---|---|
| 4–20 mA HART<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | A |
| Lower Power<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | M |
| FOUNDATION Fieldbus | F |
| PROFIBUS | W |
| Wireless | X |

1. The 4-20 mA with Selectable HART device can be ordered with transmitter output option code A plus any of the following options codes: M4, QT, DZ, CR, CS, CT, HR5, HR7.

**Additional information**

Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 56 for more information on material selection.

**Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information**

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| Model | Transmitter type | | |
|---|---|---|---|
| 2051C | Coplanar Pressure Transmitter | | |
| **Measurement type** | | | |
| D | Differential | | ★ |
| G | Gage | | ★ |
| **Pressure range** | | | |
| | **Rosemount 2051CD** | **Rosemount 2051CG** | |
| 1 | –25 to 25 in$H_2O$ (–62,2 to 62,2 mbar) | –25 to 25 in$H_2O$ (–62,2 to 62,2 mbar) | ★ |
| 2 | –250 to 250 in$H_2O$ (–623 to 623 mbar) | –250 to 250 in$H_2O$ (–623 to 623 mbar) | ★ |
| 3 | –1000 to 1000 in$H_2O$ (–2,5 to 2,5 bar) | –393 to 1000 in$H_2O$ (–0,98 to 2,5 bar) | ★ |
| 4 | –300 to 300 psi (–20,7 to 20,7 bar) | –14.2 to 300 psi (–0,98 to 20,7 bar) | ★ |
| 5 | –2000 to 2000 psi (–137,9 to 137,9 bar) | –14.2 to 2000 psi (–0,98 to 137,9 bar) | ★ |



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## Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| **Transmitter output** | | | | |
|---|---|---|---|---|
| A[1] | 4–20 mA with digital signal based on HART Protocol | | | ★ |
| F | FOUNDATION Fieldbus Protocol | | | ★ |
| W | PROFIBUS PA Protocol | | | ★ |
| X | Wireless | | | ★ |
| M | Low Power, 1–5 Vdc with digital signal based on HART Protocol | | | |
| **Materials of construction** | | | | |
| | **Process flange type** | **Flange material** | **Drain/vent** | |
| 2 | Coplanar | SST | SST | ★ |
| 3[2] | Coplanar | Cast C-276 | Alloy C-276 | ★ |
| 5 | Coplanar | Plated CS | SST | ★ |
| 7[2] | Coplanar | SST | Alloy C-276 | ★ |
| 8[2] | Coplanar | Plated CS | Alloy C-276 | ★ |
| 0 | Alternate process connection | | | ★ |
| **Isolating diaphragm** | | | | |
| 2[2] | 316L SST | | | ★ |
| 3[2] | Alloy C-276 | | | ★ |
| 5[3][4] | Tantalum | | | |
| **O-ring** | | | | |
| A | Glass-filled PTFE | | | ★ |
| B | Graphite-filled PTFE | | | ★ |
| **Sensor fill fluid** | | | | |
| 1 | Silicone | | | ★ |
| 2[4] | Inert | | | ★ |
| **Housing material** | | | **Conduit entry size** | |
| A | Aluminum | | 1/2–14 NPT | ★ |
| B | Aluminum | | M20 × 1.5 | ★ |
| J | SST | | 1/2–14 NPT | ★ |
| K[5] | SST | | M20 × 1.5 | ★ |
| P[6] | Engineered polymer | | No conduit entries | ★ |
| D | Aluminum | | G1/2 | |
| M[5] | SST | | G1/2 | |



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### Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| | | |
|---|---|---|
| **Wireless transmit rate, operating frequency and protocol** | | |
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower™** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |

## Options (include with selected model number)

| | | |
|---|---|---|
| **Extended product warranty** | | |
| WR3 | 3-year limited warranty | ★ |
| WR5 | 5-year limited warranty | ★ |
| **HART revision configuration[18]** | | |
| HR5[7] | Configured for HART Revision 5 | ★ |
| HR7[8] | Configured for HART Revision 7 | ★ |
| **PlantWeb control functionality** | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Alternate flange[9]** | | |
| H2 | Traditional flange, 316 SST, SST drain/vent | ★ |
| H3[2] | Traditional flange, Cast C-276, Alloy C-276 drain/vent | ★ |
| H7[2] | Traditional flange, 316 SST, Alloy C-276 drain/vent | ★ |
| HJ | DIN compliant traditional flange, SST, 7/16-in. adapter/manifold bolting | ★ |
| FA | Level flange, SST, 2-in., ANSI Class 150, vertical mount | ★ |
| FB | Level flange, SST, 2-in., ANSI Class 300, vertical mount | ★ |
| FC | Level flange, SST, 3-in., ANSI Class 150, vertical mount | ★ |
| FD | Level flange, SST, 3-in., ANSI Class 300, vertical mount | ★ |
| FP | DIN level flange, SST, DN 50, PN 40, vertical mount | ★ |
| FQ | DIN level flange, SST, DN 80, PN 40, vertical mount | ★ |
| **Alternate flange[9]** | | |
| HK[10] | DIN compliant traditional flange, SST, 10 mm adapter/manifold bolting | |
| HL | DIN compliant traditional flange, SST, 12 mm adapter/manifold bolting | |
| **Manifold assembly[10][11]** | | |
| S5 | Assemble to Rosemount 305 Integral Manifold | ★ |
| S6 | Assemble to Rosemount 304 Manifold or connection system | ★ |
| **Integral mount primary element[10][11]** | | |
| S4[12] | Assemble to Rosemount 405A, 485, or 585 Annubar™ Primary Element or 1195 Integral Orifice Primary Element | ★ |
| S3 | Assemble to Rosemount 405C or 405P Compact Orifice Plate | ★ |



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## Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Seal assemblies**[11] | | |
| S1[13] | Assemble to one Rosemount 1199 Diaphragm Seal | ★ |
| S2[14] | Assemble to two Rosemount 1199 Diaphragm Seals | ★ |
| **Mounting brackets** | | |
| B1 | Traditional flange bracket for 2-in. pipe mounting, CS bolts | ★ |
| B2 | Traditional flange bracket for panel mounting, CS bolts | ★ |
| B3 | Traditional flange flat bracket for 2-in. pipe mounting, CS bolts | ★ |
| B4 | Coplanar flange bracket for 2-in. pipe or panel mounting, all SST | ★ |
| B7 | B1 bracket with Series 300 SST bolts | ★ |
| B8 | B2 bracket with Series 300 SST bolts | ★ |
| B9 | B3 bracket with Series 300 SST bolts | ★ |
| BA | SST B1 bracket with Series 300 SST bolts | ★ |
| BC | SST B3 bracket with Series 300 SST bolts | ★ |
| **Product certifications** | | |
| E1[5] | ATEX Flameproof | ★ |
| E2[5] | INMETRO Flameproof | ★ |
| E3[5] | China Flameproof | ★ |
| E4[5] | TIIS Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[5] | IECEx Flameproof | ★ |
| EW | India (CCOE) Flameproof Approval | ★ |
| I1[5] | ATEX Intrinsic Safety | ★ |
| I2[5] | INMETRO Intrinsically Safe | ★ |
| I3[5] | China Intrinsic Safety | ★ |
| I4[5][6] | TIIS Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada intrinsically Safe | ★ |
| I7[5] | IECEx Intrinsic Safety | ★ |
| IA[15] | ATEX FISCO Intrinsic Safety | ★ |
| IE[15] | USA FISCO Intrinsically Safe | ★ |
| IF[15] | Canada FISCO Intrinsically Safe | ★ |
| IG[15] | IECEx FISCO Intrinsically Safe | ★ |
| IW[5] | India (CCOE) Intrinsically Safe | ★ |
| K1[5] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K2 | INMETRO Flameproof and Intrinsic Safety | ★ |



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**Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information**

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| | | |
|---|---|---|
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[5] | IECEx Flameproof, Intrinsic Safety, Type n and Dust | ★ |
| KA[5] | ATEX and Canada Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| KC[5] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[5] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[5] | ATEX Type n | ★ |
| N7[5] | IECEx Type n | ★ |
| ND[5] | ATEX Dust | ★ |
| EM | Technical Regulations Customs Union (EAC) Flameproof | ★ |
| IM | Technical Regulations Customs Union (EAC) Intrinsic Safety | ★ |
| KM | Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety | ★ |
| **Drinking water approval** | | |
| DW[16] | NSF drinking water approval | ★ |
| **Shipboard approvals[4]** | | |
| SBS | American Bureau of Shipping (ABS) type approval | ★ |
| SBV | Bureau Veritas (BV) type approval | ★ |
| SDN | Det Norske Veritas (DNV) type approval | ★ |
| SLL | Lloyds Register (LR) type approval | ★ |
| **Bolting materials** | | |
| L4 | Austenitic 316 SST bolts | ★ |
| L5 | ASTM A 193, Grade B7M bolts | ★ |
| L6 | Alloy K-500 bolts | ★ |
| L8 | ASTM A 193 Class 2, Grade B8M bolts | ★ |
| **Display and interface options** | | |
| M4[17] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Hardware adjustments** | | |
| D4[18] | Zero and span configuration buttons | ★ |
| DZ[19] | Digital zero trim | ★ |
| **Flange adapters[20]** | | |
| DF | 1/2–14 NPT flange adapters | ★ |
| **Conduit plug[4][21]** | | |
| DO | 316 SST conduit plug | ★ |



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### Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| | | |
|---|---|---|
| **RC 1/4 RC 1/2 process connection[22]** | | |
| D9 | RC 1/4 flange with RC 1/2 flange adapter - SST | |
| **Ground screw[4][23]** | | |
| V5 | External ground screw assembly | ★ |
| **Performance[24]** | | |
| P8 | High performance option | ★ |
| **Transient protection[4][25]** | | |
| T1 | Transient protection terminal block | ★ |
| **Software configuration[19]** | | |
| C1 | Custom Software Configuration (Completed Rosemount 2051 Configuration Data Sheet or Rosemount 3051 Configuration Data Sheet for Wireless required with order) | ★ |
| **Alarm limit[18]** | | |
| C4[26] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[26] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Pressure testing** | | |
| P1 | Hydrostatic testing with certificate | |
| **Cleaning process area** | | |
| P2 | Cleaning for special service | |
| P3 | Cleaning for < 1 PPM Chlorine/Flourine | |
| **Maximum static line pressure** | | |
| P9 | 4500 psig (310 bar) static pressure limit (2051CD Ranges 2–5 only) | ★ |
| **Calibration certification** | | |
| Q4 | Calibration certificate | ★ |
| QG | Calibration certificate and GOST verification certificate | ★ |
| QP | Calibration certification and tamper evident seal | ★ |
| **Material traceability certification** | | |
| Q8 | Material traceability certification per EN 10204 3.1 | ★ |
| **Quality certification for safety[27]** | | |
| QS | Prior-use certificate of FMEDA data | ★ |



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## Table 1. Rosemount 2051C Coplanar Pressure Transmitters Ordering Information

**The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.**

| | | |
|---|---|---|
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |
| **Surface finish** | | |
| Q16 | Surface finish certification for sanitary remote seals | ★ |
| **Toolkit total system performance reports** | | |
| QZ | Remote seal system performance calculation report | ★ |
| **Conduit electrical connection(4)** | | |
| GE | M12, 4-pin, male connector (eurofast®) | ★ |
| GM | A size mini, 4-pin, male connector (minifast®) | ★ |
| **NACE certificate(28)** | | |
| Q15 | Certificate of compliance to NACE® MR0175/ISO 15156 for wetted materials | ★ |
| Q25 | Certificate of compliance to NACE MR0103 for wetted materials | ★ |
| **Typical model number: 2051C D 2 A 2 2 A 1 A B4 M5** | | |

1. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
2. 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. Order with Q15 or Q25 to receive a NACE certificate.
3. Available in Ranges 2–5 only.
4. Not available with output code X.
5. Not available with low power output code M.
6. Only available with output code X.
7. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
8. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.
9. Requires 0 code in Materials of Construction for alternate process connection.
10. Not valid with optional code P9 for 4500 psi static pressure.
11. “Assemble-to” items are specified separately and require a completed model number.
12. Process flange limited to coplanar (codes 2, 3, 5, 7, 8) or traditional (H2, H3, H7).
13. Not valid with optional code D9 for RC1/2 adapters.
14. Not valid with optional codes DF or D9 for adapters.
15. Only valid with FOUNDATION Fieldbus output code F.
16. Not available with Alloy C-276 isolator (3 code), tantalum isolator (5 code), all cast C-276 flanges, all plated CS flanges, all DIN flanges, all Level flanges, assemble-to manifolds (S5 and S6 codes), assemble-to seals (S1 and S2 codes), assemble-to primary elements (S3 and S4 codes), surface finish certification (Q16 code), and remote seal system report (QZ code).
17. Not available with FOUNDATION Fieldbus output code F or wireless output code X.
18. Only Available with HART 4–20 mA (output codes A and M).
19. Only available with HART 4–20 mA output(output codes A) and wireless output (code X).
20. Not valid with alternate process connection options S3, S4, S5, S6.
21. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
22. Not available with alternate process connection: DIN flanges and Level flanges.
23. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
24. Available with 4–20 mA HART output code A, wireless output code X, FOUNDATION Fieldbus output code F, Rosemount 2051C Ranges 2–5 or Rosemount 2051T Ranges 1–4, SST and Alloy C 276 diaphragms and silicone fill fluid. High performance option includes 0.05% reference accuracy, and five year stability. See Performance specifications for details.
25. The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA and IE.
26. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
27. Only available with HART 4–20 mA output (code A).
28. NACE-Compliant wetted materials are identified by Footnote 2.



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# Rosemount 2051T In-line Pressure Transmitter



Rosemount 2051T In-line
Wireless Pressure Transmitter

| Configuration | Transmitter output code |
|---|---|
| 4–20 mA HART<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | A |
| Lower Power<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | M |
| FOUNDATION Fieldbus | F |
| PROFIBUS | W |
| Wireless | X |

1. The 4–20mA with Selectable HART device can be ordered with transmitter output option code A plus any of the following options codes: M4, QT, DZ, CR, CS, CT, HR5, HR7.

**Additional information**

Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 56 for more information on material selection.

### Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Transmitter type | | |
|---|---|---|---|
| 2051T | In-line Pressure Transmitter | | ★ |
| **Pressure type** | | | |
| G | Gage | | ★ |
| A(1) | Absolute | | ★ |
| **Pressure range** | | | |
| | **Rosemount 2051TG** | **Rosemount 2051TA** | ★ |
| 1 | -14.7 to 30 psi (–1,0 to 2,1 bar) | 0 to 30 psi (0 to 2,1 bar) | ★ |
| 2 | –14.7 to 150 psi (–1,0 to 10,3 bar) | 0 to 150 psi (0 to 10,3 bar) | ★ |
| 3 | –14.7 to 800 psi (–1,0 to 55 bar) | 0 to 800 psi (0 to 55 bar) | ★ |
| 4 | –14.7 to 4000 psi (–1,0 to 276 bar) | 0 to 4000 psi (0 to 276 bar) | ★ |
| 5 | –14.7 to 10000 psi (–1,0 to 689 bar) | 0 to 10000 psi (0 to 689 bar) | ★ |



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### Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| **Transmitter output** | | | |
|---|---|---|---|
| A[2] | 4–20 mA with Digital Signal Based on HART Protocol | | ★ |
| F | FOUNDATION Fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| M | Low-Power, 1–5 Vdc with Digital Signal Based on HART Protocol | | |
| **Process connection style** | | | |
| 2B | 1/2–14 NPT female | | ★ |
| 2C[3] | G1/2 A DIN 16288 male | | ★ |
| 2F[4] | Coned and threaded, compatible with autoclave type F-250-C (Range 5 only) | | |
| **Isolating diaphragm** | | **Process connection wetted parts material** | |
| 2[5] | 316L SST | 316L SST | ★ |
| 3[5] | Alloy C-276 | Alloy C-276 | ★ |
| **Sensor fill fluid** | | | |
| 1 | Silicone | | ★ |
| 2[4] | Inert | | ★ |
| **Housing material** | | **Conduit entry size** | |
| A | Aluminum | 1/2–14 NPT | ★ |
| B | Aluminum | M20 x 1.5 | ★ |
| J | SST | 1/2–14 NPT | ★ |
| K[6] | SST | M20 x 1.5 | ★ |
| P[7] | Engineered polymer | No conduit entries | ★ |
| D | Aluminum | G1/2 | |
| M[6] | SST | G1/2 | |

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| **Wireless transmit rate, operating frequency and protocol** | | |
|---|---|---|
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |

## Options (include with selected model number)

| **Extended product warranty** | | |
|---|---|---|
| WR3 | 3-year limited warranty | ★ |



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### Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| WR5 | 5-year limited warranty | ★ |
| **HART revision configuration[18]** | | |
| HR5[8] | Configured for HART Revision 5 | ★ |
| HR7[9] | Configured for HART Revision 7 | ★ |
| **PlantWeb control functionality** | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Manifold assemblies[10]** | | |
| S5 | Assemble to Rosemount 306 Integral Manifold | ★ |
| **Seal assemblies[10]** | | |
| S1[10] | Assemble to one Rosemount 1199 Diaphragm Seal | ★ |
| **Mounting bracket** | | |
| B4 | Bracket for 2-in. pipe or panel mounting, All SST | ★ |
| **Product certifications** | | |
| E1[6] | ATEX Flameproof | ★ |
| E2[6] | INMETRO Flameproof | ★ |
| E3[6] | China Flameproof | ★ |
| E4[6] | TIIS Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[6] | IECEx Flameproof | ★ |
| EW[6] | India (CCOE) Flameproof Approval | ★ |
| I1[6] | ATEX Intrinsic Safety | ★ |
| I2[6] | INMETRO Intrinsically Safe | ★ |
| I3[6] | China Intrinsic Safety | ★ |
| I4[6][7] | TIIS Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7[6] | IECEx Intrinsic Safety | ★ |
| IA[13] | ATEX FISCO Intrinsic Safety | ★ |
| IE[11] | USA FISCO Intrinsically Safe | ★ |
| IF[11] | Canada FISCO Intrinsically Safe | ★ |
| IG[11] | IECEx FISCO Intrinsically Safe | ★ |
| IW[6] | India (CCOE) Intrinsic Safety Approval | ★ |
| K1[6] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |



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### Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[6] | IECEx Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| KA[6] | ATEX and Canada Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| KC[6] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[6] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[6] | ATEX Type n | ★ |
| N7[6] | IECEx Type n | ★ |
| ND[6] | ATEX Dust | ★ |
| EM | Technical Regulations Customs Union (EAC) Flameproof | ★ |
| IM | Technical Regulations Customs Union (EAC) Intrinsic Safety | ★ |
| KM | Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety | ★ |
| **Drinking water approval[12]** | | |
| DW | NSF drinking water approval | ★ |
| **Shipboard approvals[4]** | | |
| SBS | American Bureau of Shipping (ABS) type approval | ★ |
| SBV | Bureau Veritas (BV) type approval | ★ |
| SDN | Det Norske Veritas (DNV) type approval | ★ |
| SLL | Lloyds Register (LR) type approval | ★ |
| **Display and interface options** | | |
| M4[13] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Hardware adjustments** | | |
| D4[14] | Zero and span configuration buttons | ★ |
| DZ[15] | Digital zero trim | ★ |
| **Wireless SST sensor module[7]** | | |
| WSM | Wireless SST sensor module | ★ |
| **Conduit plug[4][16]** | | |
| DO | 316 SST conduit plug | ★ |
| **Ground screw[4][17]** | | |
| V5 | External ground screw assembly | ★ |
| **Performance[18]** | | |
| P8 | High performance option | ★ |



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### Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Terminal blocks[4][19]** | | |
| T1 | Transient protection terminal block | ★ |
| **Software configuration[15]** | | |
| C1 | Custom Software Configuration (Completed Rosemount 2051 Configuration Data Sheet or Rosemount 3051 Configuration Data Sheet for Wireless required with order) | ★ |
| **Alarm limits[14]** | | |
| C4[20] | Analog output levels compliant with NAMUR recommendation NE 43, alarm high | ★ |
| CN[21] | Analog output levels compliant with NAMUR recommendation NE 43, alarm low | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Pressure testing** | | |
| P1 | Hydrostatic testing with certificate | |
| **Cleaning process area[22]** | | |
| P2 | Cleaning for special service | |
| P3 | Cleaning for <1 PPM Chlorine/Fluorine | |
| **Calibration certification** | | |
| Q4 | Calibration certificate | ★ |
| QG | Calibration certificate and GOST verification certificate | ★ |
| QP | Calibration certificate and tamper evident seal | ★ |
| **Material traceability certification** | | |
| Q8 | Material traceability certification per EN 10204 3.1 | ★ |
| **Quality certification for safety[21]** | | |
| QS | Prior-use certificate of FMEDA data | ★ |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |
| **Surface finish** | | |
| Q16 | Surface finish certification for sanitary remote seals | ★ |
| **Toolkit total system performance reports** | | |
| QZ | Remote seal system performance calculation report | ★ |
| **Conduit electrical connector[4]** | | |
| GE | M12, 4-pin, male connector (eurofast) | ★ |
| GM | A size mini, 4-pin, male connector (minifast) | ★ |



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## Table 2. Rosemount 2051T In-line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| **NACE certificate**[23] | | |
|---|---|---|
| Q15 | Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials | ★ |
| Q25 | Certificate of compliance to NACE MR0103 for wetted materials | ★ |
| **Typical model number:** | **2051T G 3 A 2B 2 1 A B4 M5** | |

1. Wireless output (code X) only available in absolute measurement type (code A) in range 1–5 with $^{1}/_{2}$–14 NPT process connection (code 2B), and housing (code P).
2. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
3. Wireless output (code X) only available in G$^{1}/_{2}$ A DIN 16288 Male process connection (code 2C) with range 1–4, 316 SST isolating diaphragm (code 2), silicone fill fluid (code 1), and housing (code P).
4. Not available with output code X.
5. 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. Order with Q15 or Q25 to receive a NACE certificate.
6. Not available with low power output code M.
7. Only available with output code X.
8. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
9. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.
10. “Assemble-to” items are specified separately and require a completed model number.
11. Only valid with FOUNDATION Fieldbus output code F.
12. Not available with coned and threaded connection (2F code), assemble-to manifold (S5 code), assemble-to seal (S1 code), surface finish certification (Q16 code), remote seal system report (QZ code).
13. Not available with FOUNDATION Fieldbus output code F or wireless output code X.
14. Only Available with HART (output codes A and M).
15. Only available with HART 4–20 mA output (code A) and wireless output (code X).
16. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
17. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
18. Available with 4–20 mA HART output code A, wireless output code X, FOUNDATION Fieldbus output code F, Rosemount 2051C Ranges 2–5 or Rosemount 2051T Ranges 1–4, SST and Alloy C 276 diaphragms and silicone fill fluid. High performance option includes 0.05% reference accuracy, and five year stability. See Performance specifications for details.
19. The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA and IE.
20. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
21. Only available with HART 4–20 mA output (code A).
22. Not valid with alternate process connection S5.
23. NACE Compliant wetted materials are identified by Footnote 5.



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# Rosemount 2051G In-Line Pressure Transmitter



Rosemount 2051G In-Line Pressure Transmitter

| Configuration | Transmitter output code |
|---|---|
| 4–20 mA HART | A |

**Additional Information**

**Specifications:** page 47
**Certifications:** page 59
**Dimensional Drawings:** page 69

### Table 3. Rosemount 2051G In-Line Pressure Transmitter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Transmitter type | | |
|---|---|---|---|
| 2051G | In-line pressure transmitter | | |
| **Pressure type** | | | |
| P | Gage | | ★ |
| A | Absolute | | ★ |
| **Pressure range** | | | |
| | **Rosemount 2051GP** | **Rosemount 2051GA** | ★ |
| 1 | -14.7 to 30 psi (-1.0 to 2.1 bar) | 0 to 30 psi (0 to 2.1 bar) | ★ |
| 2 | -14.7 to 150 psi (-1.0 to 10.3 bar) | 0 to 150 psi (0 to 10.3 bar) | ★ |
| 3 | -14.7 to 800 psi (-1.0 to 55 bar) | 0 to 800 psi (0 to 55 bar) | ★ |
| 4 | -14.7 to 4000 psi (-1.0 to 276 bar) | 0 to 4000 psi (0 to 276 bar) | ★ |
| **Transmitter output** | | | |
| A | 4–20 mA with Digital Signal Based on HART Protocol | | ★ |
| **Process connection style** | | | |
| 2B | 1/2–14 NPT female | | ★ |
| 2C | G1/2 DIN 16288 male | | ★ |
| **Isolating diaphragm(1)** | | **Process connection wetted parts material** | |
| 2 | 316L SST | 316L SST | ★ |
| 3 | Alloy C-276 | Alloy C-276 | ★ |
| **Sensor fill fluid** | | | |
| 1 | Silicone | | ★ |
| 2 | Inert | | ★ |



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**Table 3. Rosemount 2051G In-Line Pressure Transmitter Ordering Information**

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Housing material | | Conduit entry size | |
|---|---|---|---|
| A | Aluminum | ½–14 NPT | ★ |
| B | Aluminum | M20 × 1.5 | ★ |
| D | Aluminum | G 1/2 | ★ |

**Options (Include with selected model number)**

| | | |
|---|---|---|
| **Integral manifold assembly**[2] | | |
| S5 | Assemble to Rosemount 306 Integral Manifold | ★ |
| **Seal assemblies**[2] | | |
| S1 | Assemble to one Rosemount 1199 Diaphragm Seal | ★ |
| **Mounting bracket**[3] | | |
| B4 | Bracket for 2-in. pipe or panel mounting, All SST | ★ |
| BE | 316 SST B4 Bracket with 316 SST Bolts | ★ |
| **Product certifications**[4] | | |
| E1 | ATEX Flameproof | |
| E2 | INMETRO Flameproof | |
| E3 | China Flameproof | |
| E5 | USA Explosion-proof, Dust Ignition-proof | |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | |
| E7 | IECEx Flameproof | |
| EM | Technical Regulations Customs Union (EAC) Flameproof | |
| EP | Republic of Korea Flameproof | |
| EW | India (CCOE) Flameproof | |
| I1 | ATEX Intrinsic Safety | |
| I2 | INMETRO Intrinsic Safety | |
| I3 | China Intrinsic Safety | |
| I5 | USA Intrinsic Safety, Nonincendive | |
| I6 | Canada Intrinsic Safety | |
| I7 | IECEx Intrinsic Safety | |
| IM | Technical Regulations Customs Union (EAC) Intrinsic Safety | |
| IP | Republic of Korea Intrinsic Safety | |
| IW | India (CCOE) Intrinsic Safety | |
| K1 | ATEX Flame-proof, Intrinsic Safety, Type n, Dust (combination of E1, I1 and N1) | |
| K2 | INMETRO Flameproof, Intrinsic Safety | |
| K3 | China Flameproof, Intrinsic Safety | |



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### Table 3. Rosemount 2051G In-Line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsic Safety, and Nonincendive | |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsic Safety, and Division 2 | |
| K7 | IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combo of I7, E7, N7 and NK) | |
| KA | Canada and ATEX Explosion proof, Dust Ignition-proof, Intrinsically Safety, division | |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsic Safety, and Division 2 (combo of K5 and K6) | |
| KD | USA, Canada and ATEX Explosion proof, Intrinsically Safety (combination of K5, K6 I1 and E1) | |
| KM | Technical Regulations Customs Union (EAC) Flame-proof, Intrinsic Safety | |
| KP | Republic of Korea Flame-proof, Intrinsic Safety | |
| N1 | ATEX Type n | |
| N3 | China Type n | |
| N7 | IECEx Type n | |
| ND | ATEX Dust | |
| NK | IECEx Dust | |
| **Drinking water approval[(5)]** | | |
| DW | NSF drinking water approval | ★ |
| **Pressure testing** | | |
| P1 | Hydrostatic testing with certificate | ★ |
| **Cleaning process area[(6)]** | | |
| P2 | Cleaning for special service | ★ |
| P3 | Cleaning for <1PPM Chlorine/Flourine | ★ |
| **Calibration certification** | | |
| Q4 | Calibration certificate | ★ |
| QG | Calibration certificate and GOST verification certificate | ★ |
| QP | Calibration certificate and tamper evident seal | ★ |
| **Material traceability certification** | | |
| Q8 | Material traceability certification per EN 10204 3.1 | ★ |
| **Quality certification for safety** | | |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |
| QS | Prior-use certificate of FMEDA data | ★ |
| **Configuration buttons** | | |
| D4 | Analog zero and span | ★ |
| DZ | Digital zero trim | ★ |



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**Table 3. Rosemount 2051G In-Line Pressure Transmitter Ordering Information**

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Conduit plug**[7] | | |
| DO | 316 SST conduit plug | ★ |
| **Ground screw**[8] | | |
| V5 | External ground screw assembly | ★ |
| **Performance**[9] | | |
| P8 | High performance option | ★ |
| **Display and interface options**[10] | | |
| M4 | LCD display and Local Operator Interface | ★ |
| M5 | LCD display | ★ |
| **Transient terminal block** | | |
| T1 | Transient protection terminal block | ★ |
| **Software configuration** | | |
| C1 | Custom Software Configuration (requires Configuration Data Sheet) | ★ |
| **Alarm levels** | | |
| C4 | Analog output levels compliant with NAMUR recommendation NE 43, high alarm | ★ |
| CN | Analog output levels compliant with NAMUR recommendation NE 43, low alarm | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Extended product warranty** | | |
| WR3 | 3-year warranty | |
| WR5 | 5-year warranty | |
| **HART revision configuration** | | |
| HR5[11] | Configured for HART Revision 5 | ★ |
| HR7[12] | Configured for HART Revision 7 | ★ |
| **Surface finish** | | |
| Q16 | Surface finish certification for sanitary remote seals | ★ |
| **Toolkit total system performance reports** | | |
| QZ | Remote seals system performance calculation report | ★ |



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### Table 3. Rosemount 2051G In-Line Pressure Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Conduit electrical connection** | | |
| GE | M12, 4-pin, male connector (eurofast(R)) | ★ |
| GM | A size mini, 4-pin, male connector (minifast(R)) | ★ |
| **NACE certificate(13)** | | |
| Q15 | Certificate of compliance to NACE(R) MR0175/ISO 15156 for wetted materials | ★ |
| Q25 | Certificate of compliance to NACE MR0103 for wetted materials | ★ |
| **Stainless steel tagging** | | |
| Y2 | 316SST Nameplates, Labels, Tags, and Fasteners | |
| **Typical model number:** | **2051G P 5 F 2A 2 1 A HR5 B4** | |

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.
2. "Assemble-to" items are specified separately and require a completed model number.
3. Panel mounting bolts are not supplied.
4. Consult an Emerson Representative for availability of Product Certifications.
5. Not available with coned and threaded connection (2F code), assemble-to manifold (S5 code), assemble-to seal (S1 code), surface finish certification (Q16 code), remote seal system report (QZ code).
6. Not valid with alternate process connection S5.
7. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
8. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
9. High performance option includes 0.15% reference accuracy, and seven years stability. See Performance specifications for details.
10. Select Configuration Buttons (option code D4 or DZ) if local configuration buttons are required.
11. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
12. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.
13. NACE Compliant wetted materials are identified by Footnote 1.



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# Rosemount 2051CF Flowmeters



| Configuration | Transmitter output code |
|---|---|
| 4–20 mA HART<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | A |
| Lower Power<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | M |
| FOUNDATION Fieldbus | F |
| PROFIBUS | W |
| Wireless | X |

1. The 4–20 mA with Selectable HART device can be ordered with transmitter output option code A plus any of the following options codes: M4, QT, DZ, CR, CS, CT, HR5, HR7.

## Rosemount 2051CFA Annubar Flowmeter



**Additional information**
Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 56 for more information on material selection.

### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Product description | |
|---|---|---|
| 2051CFA | Annubar Flowmeter | |
| **Measurement type** | | |
| D | Differential pressure | ★ |
| **Fluid type** | | |
| L | Liquid | ★ |
| G | Gas | ★ |
| S | Steam | ★ |
| **Line size** | | |
| 020 | 2-in. (50 mm) | ★ |
| 025 | 2 1/2-in. (63,5 mm) | ★ |
| 030 | 3-in. (80 mm) | ★ |
| 035 | 3 1/2-in. (89 mm) | ★ |
| 040 | 4-in. (100 mm) | ★ |



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### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| 050 | 5-in. (125 mm) | ★ |
| 060 | 6-in. (150 mm) | ★ |
| 070 | 7-in. (175 mm) | ★ |
| 080 | 8-in. (200 mm) | ★ |
| 100 | 10-in. (250 mm) | ★ |
| 120 | 12-in. (300 mm) | ★ |
| **Pipe I.D. range[1]** | | |
| C | Range C from the pipe I.D. table | ★ |
| D | Range D from the pipe I.D. table | ★ |
| A | Range A from the pipe I.D. table | |
| B | Range B from the pipe I.D. table | |
| E | Range E from the pipe I.D. table | |
| Z | Non-standard pipe I.D. range or line sizes greater than 12-in. | |
| **Pipe material/mounting assembly material** | | |
| C | Carbon steel (A105) | ★ |
| S | 316 stainless steel | ★ |
| 0[2] | No mounting (customer supplied) | |
| G | Chrome-Moly Grade F-11 | |
| N | Chrome-Moly Grade F-22 | |
| J | Chrome-Moly Grade F-91 | |
| **Piping orientation** | | |
| H | Horizontal piping | ★ |
| D | Vertical piping with downwards flow | ★ |
| U | Vertical piping with upwards flow | ★ |
| **Annubar type** | | |
| P | Pak-Lok | ★ |
| F | Flanged with opposite side support | ★ |
| **Sensor material** | | |
| S | 316 stainless steel | ★ |
| **Sensor size** | | |
| 1 | Sensor size 1 — line sizes 2-in. (50 mm) to 8-in. (200 mm) | ★ |
| 2 | Sensor size 2 — line sizes 6-in. (150 mm) to 96-in. (2400 mm) | ★ |
| 3 | Sensor size 3 — line sizes greater than 12-in. (300 mm) | ★ |
| **Mounting type** | | |
| T1 | Compression or threaded connection | ★ |



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### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| A1 | Class 150 RF ANSI | ★ |
| A3 | Class 300 RF ANSI | ★ |
| A6 | Class 600 RF ANSI | ★ |
| D1 | DN PN16 flange | ★ |
| D3 | DN PN40 flange | ★ |
| D6 | DN PN100 flange | ★ |
| R1 | Class 150 RTJ flange | |
| R3 | Class 300 RTJ flange | |
| R6 | Class 600 RTJ flange | |
| **Opposite side support or packing gland** | | |
| 0 | No opposite side support or packing gland (required for Pak-Lok and Flange-Lok models) | ★ |
| **Opposite side support (required for flanged models)** | | |
| C | NPT threaded opposite support assembly — extended tip | ★ |
| D | Welded opposite support assembly — extended tip | ★ |
| **Isolation valve for Flo-Tap models** | | |
| 0[(2)] | Not applicable or customer supplied | ★ |
| **Temperature measurement** | | |
| T | Integral RTD – not available with flanged model greater than Class 600 | ★ |
| 0 | No temperature sensor | ★ |
| R | Remote thermowell and RTD | |
| **Transmitter connection platform** | | |
| 3 | Direct mount, Integral 3-valve manifold — not available with flanged model greater than Class 600 | ★ |
| 5 | Direct mount, 5-valve manifold — not available with flanged model greater than Class 600 | ★ |
| 7 | Remote mount NPT connections (1/2-in. FNPT) | ★ |
| 8 | Remote mount SW connections (1/2-in.) | |
| **Differential pressure range** | | |
| 1 | 0 to 25 in $H_2O$ (0 to 62,3 mbar) | ★ |
| 2 | 0 to 250 in $H_2O$ (0 to 623 mbar) | ★ |
| 3 | 0 to 1000 in $H_2O$ (0 to 2,5 bar) | ★ |
| **Transmitter output** | | |
| A[(3)] | 4–20 mA with digital signal based on HART Protocol | ★ |
| F | FOUNDATION Fieldbus Protocol | ★ |
| W | PROFIBUS PA Protocol | ★ |
| X | Wireless | ★ |



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### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | | |
|---|---|---|---|
| M | Low-Power, 1–5 Vdc with digital signal based on HART Protocol | | |
| **Transmitter housing material** | | **Conduit entry size** | |
| A | Aluminum | 1/2–14 NPT | ★ |
| B | Aluminum | M20 x 1.5 | ★ |
| J | SST | 1/2–14 NPT | ★ |
| K[4] | SST | M20 x 1.5 | ★ |
| P[5] | Engineered polymer | No conduit entries | ★ |
| D | Aluminum | G1/2 | |
| M[4] | SST | G1/2 | |
| **Transmitter performance class** | | | |
| 1 | 2.0% flow rate accuracy, 5:1 flow turndown, 2-year stability | | ★ |

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| | | |
|---|---|---|
| **Wireless transmit rate, operating frequency and protocol** | | |
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |

## Options (include with selected model number)

| | | |
|---|---|---|
| **Extended product warranty** | | |
| WR3 | 3-year limited warranty | ★ |
| WR5 | 5-year limited warranty | ★ |
| **Special cleaning[4]** | | |
| P2 | Cleaning for special services | |
| PA | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Material testing[4]** | | |
| V1 | Dye penetrant exam | |
| **Material examination[4]** | | |
| V2 | Radiographic examination | |
| **Special inspection[4]** | | |
| QC1 | Visual and dimensional inspection with certificate | ★ |
| QC7 | Inspection and performance certificate | ★ |
| **Surface finish[4]** | | |
| RL | Surface finish for low pipe Reynolds number in gas and steam | ★ |



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**Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information**

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| RH | Surface finish for high pipe Reynolds number in liquid | ★ |
| **Material traceability certification[4][6]** | | |
| Q8 | Material traceability certification per EN 10474:2004 3.1 | ★ |
| **Code conformance[4]** | | |
| J2 | ANSI/ASME B31.1 | |
| J3 | ANSI/ASME B31.3 | |
| **Materials conformance[4][6]** | | |
| J5 | NACE MR-0175/ISO 15156 | |
| **Country certification[4]** | | |
| J6 | European Pressure Directive (PED) | ★ |
| J1 | Canadian registration | |
| **Instrument connections for remote mount options[4]** | | |
| G2 | Needle valves, stainless steel | ★ |
| G6 | OS&Y gate valve, stainless steel | ★ |
| G1 | Needle valves, carbon steel | |
| G3 | Needle valves, Alloy C-276 | |
| G5 | OS&Y gate valve, carbon steel | |
| G7 | OS&Y gate valve, Alloy C-276 | |
| **Special shipment[4]** | | |
| Y1 | Mounting hardware shipped separately | ★ |
| **Product certifications** | | |
| E1[4] | ATEX Flameproof | ★ |
| E2[4] | INMETRO Flameproof | ★ |
| E3[4] | China Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[4] | IECEx Flameproof | ★ |
| I1[4] | ATEX Intrinsic Safety | ★ |
| I2[4] | INMETRO Intrinsically Safe | ★ |
| I3[4] | China Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7[4] | IECEx Intrinsic Safety | ★ |
| IA[4][6] | ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus protocol only | ★ |



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### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| IE[4][6] | USA FISCO Intrinsically Safe | ★ |
| IF[4][6] | Canada FISCO Intrinsically Safe | ★ |
| IG[4][6] | IECEx FISCO Intrinsically Safe | ★ |
| K1[4] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E6 and I6) | ★ |
| K7[4] | IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, Type n (combination of E7, I7, and N7) | ★ |
| KA[4] | ATEX and Canada Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[4] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[4] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe (combination of E5, I5, E6, I6, E1, and I1) | ★ |
| N1[4] | ATEX Type n | ★ |
| N7[4] | IECEx Type n | ★ |
| ND[4] | ATEX Dust | ★ |
| **Sensor fill fluid and O-ring options[4]** | | |
| L1[7] | Inert sensor fill fluid | ★ |
| L2 | Graphite-filled (PTFE) O-ring | ★ |
| LA[7] | Inert sensor fill fluid and graphite-filled (PTFE) O-ring | ★ |
| **Display and interface options[4]** | | |
| M4[8] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Transmitter calibration certification[4]** | | |
| Q4 | Calibration certificate for transmitter | ★ |
| **Quality certification for safety[9]** | | |
| QS | Prior-use certificate of FMEDA data | ★ |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |
| **Transient protection[4][7][10]** | | |
| T1 | Transient terminal block | ★ |
| **Manifold for remote mount option[4]** | | |
| F2 | 3-valve manifold, stainless steel | ★ |
| F6 | 5-valve manifold, stainless steel | ★ |
| F1 | 3-valve manifold, carbon steel | |
| F5 | 5-valve manifold, carbon steel | |



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### Table 4. Rosemount 2051CFA Annubar Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **PlantWeb control functionality**[4][6] | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Hardware adjustments**[4] | | |
| D4[11] | Zero and span hardware adjustments | ★ |
| DZ[12] | Digital zero trim | ★ |
| **Alarm limit**[4][11] | | |
| C4[13] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[13] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Ground screw**[4][7][14] | | |
| V5 | External ground screw assembly | ★ |
| **HART revision configuration**[4][11] | | |
| HR5[15] | Configured for HART Revision 5 | ★ |
| HR7[16] | Configured for HART Revision 7 | ★ |
| **Typical model number: 2051CFA D L 060 D C H P S 2 T1 0 0 0 3 2A A 1A 3** | | |

1. See the Rosemount DP Flowmeters and Primary Elements Product Data Sheet for Pipe I.D. table.
2. Provide the "A" dimension for flanged (page 79) and Pak-Lok (page 79).
3. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
4. Not available with low power output code M.
5. Only available with output code X.
6. Only valid with FOUNDATION Fieldbus output code F.
7. Not available with output code X.
8. Not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).
9. Only available with 4–20 mA HART (output code A).
10. Not available with housing code 00, 5A or 7J. The T1 option is not needed with FISCO Product Certifications, transient protection is included with the FISCO Product Certification code IA.
11. Only available with 4–20 mA HART (output codes A and M).
12. Only available with HART 4–20 mA output (codes A and M) and wireless output (code X).
13. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
14. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
15. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
16. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.



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# Rosemount 2051CFC Compact Flowmeter



**Additional information**
Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 56 for more information on material selection.

### Table 5. Rosemount 2051CFC Compact Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Product description | |
|---|---|---|
| 2051CFC | Compact Flowmeter | |
| **Measurement type** | | |
| D | Differential pressure | ★ |
| **Primary element technology** | | |
| A | Annubar averaging pitot tube | |
| C | Conditioning orifice plate | ★ |
| P | Orifice plate | ★ |
| **Material type** | | |
| S | 316 SST | ★ |
| **Line size** | | |
| 005(1) | 1/2-in. (15 mm) | ★ |
| 010(1) | 1-in. (25 mm) | ★ |
| 015(1) | 1 1/2-in. (40 mm) | ★ |
| 020 | 2-in. (50 mm) | ★ |
| 030 | 3-in. (80 mm) | ★ |
| 040 | 4-in. (100 mm) | ★ |
| 060 | 6-in. (150 mm) | ★ |
| 080 | 8-in. (200 mm) | ★ |
| 100(2)(3) | 10-in. (250 mm) | ★ |
| 120 (2)(3) | 12-in. (300 mm) | ★ |
| **Primary element type** | | |
| N000 | Annubar sensor size 1 | ★ |
| N040 | 0.40 Beta ratio | ★ |
| N050 | 0.50 Beta ratio | ★ |
| N065(4) | 0.65 Beta ratio | ★ |



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### Table 5. Rosemount 2051CFC Compact Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Temperature measurement** | | |
| 0 | No temperature sensor | ★ |
| T[5] | Integral RTD | |
| R | Remote thermowell and RTD | |
| **Transmitter connection platform** | | |
| 3 | Direct mount | ★ |
| 7 | Remote mount, NPT connections | ★ |
| **Differential pressure range** | | |
| 1 | 0 to 25 in $H_2O$ (0 to 62,3 mbar) | ★ |
| 2 | 0 to 250 in $H_2O$ (0 to 623 mbar) | ★ |
| 3 | 0 to 1000 in $H_2O$ (0 to 2,5 bar) | ★ |
| **Transmitter output** | | |
| A[6] | 4–20 mA with digital signal based on HART Protocol | ★ |
| F | FOUNDATION Fieldbus Protocol | ★ |
| W | PROFIBUS PA Protocol | ★ |
| X | Wireless | ★ |
| M | Low-Power, 1–5 Vdc with Digital Signal Based on HART Protocol | |
| **Transmitter housing material** | **Conduit entry size** | |
| A | Aluminum | 1/2–14 NPT ★ |
| B | Aluminum | M20 x 1.5 ★ |
| J | SST | 1/2–14 NPT ★ |
| K[7] | SST | M20 x 1.5 ★ |
| P[8] | Engineered polymer | No conduit entries ★ |
| D | Aluminum | G1/2 |
| M[7] | SST | G1/2 |
| **Transmitter performance class** | | |
| 1 | up to ±2.25% flow rate accuracy, 5:1 flow turndown, 2-year stability | ★ |

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| | | |
|---|---|---|
| **Wireless transmit rate, operating frequency and protocol** | | |
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |



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### Table 5. Rosemount 2051CFC Compact Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

## Options (include with selected model number)

| | | |
|---|---|---|
| **Extended product warranty** | | |
| WR3 | 3-year limited warranty | ★ |
| WR5 | 5-year limited warranty | ★ |
| **Installation accessories**[7] | | |
| AB | ANSI alignment ring (Class 150) [only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes] | ★ |
| AC | ANSI alignment ring (Class 300) [only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes] | ★ |
| AD | ANSI alignment ring (Class 600) [only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes] | ★ |
| DG | DIN alignment ring (PN16) | ★ |
| DH | DIN alignment ring (PN40) | ★ |
| DJ | DIN alignment ring (PN100) | ★ |
| JB | JIS alignment ring (10K) | |
| JR | JIS alignment ring (20K) | |
| JS | JIS alignment ring (40K) | |
| **Remote adapters**[7] | | |
| FE | Flange adapters 316 SST (1/2-in. NPT) | ★ |
| **High temperature application**[7] | | |
| HT | Graphite valve packing ($T_{max}$ = 850 °F) | |
| **Flow calibration**[7][9] | | |
| WC | Flow calibration, 3 Pt, conditioning orifice option C (all pipe schedules) | |
| WD | Flow calibration, 10 Pt, conditioning option C (all schedules), Annubar option A (Schedule 40) | |
| **Pressure testing**[7] | | |
| P1 | Hydrostatic Testing with certificate | |
| **Special cleaning**[7] | | |
| P2 | Cleaning for special services | |
| PA | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Special inspection**[7] | | |
| QC1 | Visual and dimensional inspection with certificate | ★ |
| QC7 | Inspection and performance certificate | ★ |
| **Transmitter calibration certification**[7] | | |
| Q4 | Calibration certificate for Transmitter | ★ |
| **Quality certification for safety**[7][10][13][15] | | |
| QS | Prior-use certificate of FMEDA data | ★ |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |



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### Table 5. Rosemount 2051CFC Compact Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Material traceability certification**[7] | | |
| Q8 | Material traceability certification per EN 10204:2004 3.1 | ★ |
| **Code conformance**[7] | | |
| J2 | ANSI/ASME B31.1 | |
| J3 | ANSI/ASME B31.3 | |
| J4 | ANSI/ASME B31.8 | |
| **Materials conformance**[7][11] | | |
| J5 | NACE MR-0175/ISO 15156 | |
| **Country certification**[7] | | |
| J1 | Canadian registration | |
| **Product certifications** | | |
| E1[7] | ATEX Flameproof | ★ |
| E2[7] | INMETRO Flameproof | ★ |
| E3[7] | China Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[7] | IECEx Flameproof | ★ |
| I1[7] | ATEX Intrinsic Safety | ★ |
| I2[7] | INMETRO Intrinsically Safe | ★ |
| I3[7] | China Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7[7] | IECEx Intrinsic Safety | ★ |
| IA[7][12] | ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus Protocol only | ★ |
| IE[7][12] | USA FISCO Intrinsically Safe | ★ |
| IF[7][12] | Canada FISCO Intrinsically Safe | ★ |
| IG[7][12] | IECEx FISCO Intrinsically Safe | ★ |
| K1[7] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E6 and I6) | ★ |
| K7[7] | IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, Type n (combination of E7, I7, and N7) | ★ |
| KA[7] | ATEX and CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USAM and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[7] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[7] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe (combination of E5, I5, E6, I6, E1, and I1) | ★ |



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### Table 5. Rosemount 2051CFC Compact Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| N1[7] | ATEX Type n | ★ |
| N7[7] | IECEx Type n | ★ |
| ND[7] | ATEX Dust | ★ |
| **Sensor fill fluid and O-ring options[7]** | | |
| L1[13] | Inert sensor fill fluid | ★ |
| L2 | Graphite-filled (PTFE) O-ring | ★ |
| LA[13] | Inert sensor fill fluid and graphite-filled (PTFE) O-ring | ★ |
| **Display and interface options[7]** | | |
| M[10] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Transient protection[7][13][14]** | | |
| T1 | Transient terminal block | ★ |
| **Manifold for remote mount option[7]** | | |
| F2 | 3-valve manifold, stainless steel | ★ |
| F6 | 5-valve manifold, stainless steel | ★ |
| **Alarm limit[7][15]** | | |
| C4[16] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[16] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |
| **PlantWeb control functionality[7][12]** | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Hardware adjustments[7]** | | |
| D4[15] | Zero and span hardware adjustments | ★ |
| DZ[17] | Digital zero trim | ★ |
| **Ground screw[7][13][18]** | | |
| V5 | External ground screw assembly | ★ |
| **HART revision configuration[7][15]** | | |
| HR5[19] | Configured for HART Revision 5 | ★ |
| HR7[20] | Configured for HART Revision 7 | ★ |
| **Typical model number: 2051CFC D C S 060 N 065 0 3 2 A A 1 WC E5 M5** | | |

1. Not available for Primary Element Technology C.
2. For the 10-in. (250 mm) and 12-in. (300 mm) line size, the alignment ring must be ordered (installation accessories).



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3. 10-in. (250 mm) and 12-in. (300 mm) line sizes not available with Primary Element Technology A.
4. For 2-in. (50 mm) line sizes the Primary Element type is 0.6 for Primary Element Technology code C.
5. Available with Primary Element Technology A only.
6. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
7. Not available with low power output code M.
8. Only available with output code X.
9. Not available with Primary Element Technology P.
10. Not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).
11. Materials of Construction comply with metallurgical requirements within NACE MR0175/ISO 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.
12. Only valid with FOUNDATION Fieldbus output code F.
13. Not available with output code X.
14. Not available with housing code 00, 5A, or 7J. The T1 option is not needed with FISCO Product Certifications, transient protection is included with the FISCO Product Certification code IA.
15. Only available with 4–20 mA HART (output codes A and M).
16. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
17. Only available with HART 4–20 mA (output codes A and M) and wireless (output code X).
18. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
19. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
20. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.



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# Rosemount 2051CFP Integral Orifice Flowmeter



**Additional information**
Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 56 for more information on material selection.

### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Product description | |
|---|---|---|
| 2051CFP | Integral Orifice Flowmeter | |
| **Measurement type** | | |
| D | Differential pressure | ★ |
| **Material type** | | |
| S | 316 SST | ★ |
| **Line size** | | |
| 005 | 1/2-in. (15 mm) | ★ |
| 010 | 1-in. (25 mm) | ★ |
| 015 | 1 1/2-in. (40 mm) | ★ |
| **Process connection** | | |
| T1 | NPT female body (not available with thermowell and RTD) | ★ |
| S1(1) | Socket weld body (not available with thermowell and RTD) | ★ |
| P1 | Pipe ends: NPT threaded | ★ |
| P2 | Pipe ends: beveled | ★ |
| D1 | Pipe ends: flanged, DIN PN16, slip-on | ★ |
| D2 | Pipe ends: flanged, DIN PN40, slip-on | ★ |
| D3 | Pipe ends: flanged, DIN PN100, slip-on | ★ |
| W1 | Pipe ends: flanged, RF, ANSI Class 150, weld-neck | ★ |
| W3 | Pipe ends: flanged, RF, ANSI Class 300, weld-neck | ★ |
| W6 | Pipe ends: flanged, RF, ANSI Class 600, weld-neck | ★ |
| A1 | Pipe ends: flanged, RF, ANSI Class 150, slip-on | |
| A3 | Pipe ends: flanged, RF, ANSI Class 300, slip-on | |
| A6 | Pipe ends: flanged, RF, ANSI Class 600, slip-on | |



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### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| R1 | Pipe ends: flanged, RTJ, ANSI Class 150, slip-on | |
| R3 | Pipe ends: flanged, RTJ, ANSI Class 300, slip-on | |
| R6 | Pipe ends: flanged, RTJ, ANSI Class 600, slip-on | |
| **Orifice plate material** | | |
| S | 316 SST | ★ |
| **Bore size option** | | |
| 0066 | 0.066-in. (1,68 mm) for 1/2-in. pipe | ★ |
| 0109 | 0.109-in. (2,77 mm) for 1/2-in. pipe | ★ |
| 0160 | 0.160-in. (4,06 mm) for 1/2-in. pipe | ★ |
| 0196 | 0.196-in. (4,98 mm) for 1/2-in. pipe | ★ |
| 0260 | 0.260-in. (6,60 mm) for 1/2-in. pipe | ★ |
| 0340 | 0.340-in. (8,64 mm) for 1/2-in. pipe | ★ |
| 0150 | 0.150-in. (3,81 mm) for 1-in. pipe | ★ |
| 0250 | 0.250-in. (6,35 mm) for 1-in. pipe | ★ |
| 0345 | 0.345-in. (8,76 mm) for 1-in. pipe | ★ |
| 0500 | 0.500-in. (12,70 mm) for 1-in. pipe | ★ |
| 0630 | 0.630-in. (16,00 mm) for 1-in. pipe | ★ |
| 0800 | 0.800-in. (20,32 mm) for 1-in. pipe | ★ |
| 0295 | 0.295-in. (7,49 mm) for 1 1/2-in. pipe | ★ |
| 0376 | 0.376-in. (9,55 mm) for 1 1/2-in. pipe | ★ |
| 0512 | 0.512-in. (13,00 mm) for 1 1/2-in. pipe | ★ |
| 0748 | 0.748-in. (19,00 mm) for 1 1/2-in. pipe | ★ |
| 1022 | 1.022-in. (25,96 mm) for 1 1/2-in. pipe | ★ |
| 1184 | 1.184-in. (30,07 mm) for 1 1/2-in. pipe | ★ |
| 0010 | 0.010-in. (0,25 mm) for 1/2-in. pipe | |
| 0014 | 0.014-in. (0,36 mm) for 1/2-in. pipe | |
| 0020 | 0.020-in. (0,51 mm) for 1/2-in. pipe | |
| 0034 | 0.034-in. (0,86 mm) for 1/2-in. pipe | |
| **Transmitter connection platform** | | |
| D3 | Direct mount, 3-valve manifold, SST | ★ |
| D5 | Direct mount, 5-valve manifold, SST | ★ |
| R3 | Remote mount, 3-valve manifold, SST | ★ |
| R5 | Remote mount, 5-valve manifold, SST | ★ |
| **Differential pressure ranges** | | |
| 1 | 0 to 25 in $H_2O$ (0 to 62,3 mbar) | ★ |



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### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | | |
|---|---|---|---|
| 2 | 0 to 250 in $H_2O$ (0 to 623 mbar) | | ★ |
| 3 | 0 to 1000 in $H_2O$ (0 to 2,5 bar) | | ★ |
| **Transmitter output** | | | |
| A[2] | 4–20 mA with digital signal based on HART Protocol | | ★ |
| F | FOUNDATION Fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| M | Low-Power, 1–5 Vdc with digital signal based on HART Protocol | | |
| **Transmitter housing material** | | **Conduit entry size** | |
| A | Aluminum | 1/2–14 NPT | ★ |
| B | Aluminum | M20 x 1.5 | ★ |
| J | SST | 1/2–14 NPT | ★ |
| K[3] | SST | M20 x 1.5 | ★ |
| P[4] | Engineered polymer | No conduit entries | ★ |
| D | Aluminum | G1/2 | |
| M[3] | SST | G1/2 | |
| **Transmitter performance class** | | | |
| 1 | up to ±2.25% flow rate accuracy, 5:1 flow turndown, 2-year stability | | ★ |

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| | | |
|---|---|---|
| **Wireless transmit rate, operating frequency and protocol** | | |
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |

## Options (include with selected model number)

| | | |
|---|---|---|
| **Extended product warranty** | | |
| WR3 | 3-year limited warranty | ★ |
| WR5 | 5-year limited warranty | ★ |
| **Temperature sensor[3][5]** | | |
| RT | Thermowell and RTD | |
| **Optional connection[3]** | | |
| G1 | DIN 19213 transmitter connection | ★ |
| **Pressure testing[3][6]** | | |
| P1 | Hydrostatic testing with certificate | |



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### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

★ **The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Special cleaning**[3] | | |
| P2 | Cleaning for special services | |
| PA | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Material testing**[3] | | |
| V1 | Dye penetrant exam | |
| **Material examination**[3] | | |
| V2 | Radiographic examination | |
| **Flow calibration**[3][7] | | |
| WD | Discharge coefficient verification | |
| **Special inspection**[3] | | |
| QC1 | Visual and dimensional inspection with certificate | ★ |
| QC7 | Inspection and performance certificate | ★ |
| **Material traceability certification**[3] | | |
| Q8 | Material traceability certification per EN 10204:2004 3.1 | ★ |
| **Code conformance**[3][8] | | |
| J2 | ANSI/ASME B31.1 | |
| J3 | ANSI/ASME B31.3 | |
| J4 | ANSI/ASME B31.8 | |
| **Materials conformance**[3][9] | | |
| J5 | NACE MR-0175/ISO 15156 | |
| **Country certification**[3] | | |
| J6 | European Pressure Directive (PED) | ★ |
| J1 | Canadian registration | |
| **Transmitter calibration certification**[3] | | |
| Q4 | Calibration certificate for transmitter | ★ |
| **Quality certification for safety**[3][10][12][13] | | |
| QS | Prior-use certificate of FMEDA data | ★ |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | ★ |
| **Product certifications** | | |
| E1[3] | ATEX Flameproof | ★ |
| E2[3] | INMETRO Flameproof | ★ |
| E3[3] | China Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |



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### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[3] | IECEx Flameproof | ★ |
| I1[3] | ATEX Intrinsic Safety | ★ |
| I2[3] | INMETRO Intrinsically Safe | ★ |
| I3[3] | China Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7[3] | IECEx Intrinsic Safety | ★ |
| IA[3][10] | ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus Protocol only | ★ |
| IE[3][10] | USA FISCO Intrinsically Safe | ★ |
| IF[3][10] | Canada FISCO Intrinsically Safe | ★ |
| IG[3][10] | IECEx FISCO Intrinsically Safe | ★ |
| K1[3][10] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E6 and I6) | ★ |
| K7[3] | IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, Type n (combination of E7, I7, and N7) | ★ |
| KA[3] | ATEX and CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[3] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[3] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe (combination of E5, I5, E6, I6, E1, and I1) | ★ |
| N1[3] | ATEX Type n | ★ |
| N7[3] | IECEx Type n | ★ |
| ND[3] | ATEX Dust | ★ |
| **Sensor fill fluid and O-ring options[3]** | | |
| L1[11] | Inert sensor fill fluid | ★ |
| L2 | Graphite-filled (PTFE) O-ring | ★ |
| LA[11] | Inert sensor fill fluid and graphite-filled (PTFE) O-ring | ★ |
| **Display and interface options[3]** | | |
| M4[12] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Transient protection[3][11][12]** | | |
| T1 | Transient terminal block | ★ |



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### Table 6. Rosemount 2051CFP Integral Orifice Flowmeter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| **Alarm limit[3][13]** | | |
| C4[14] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[14] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |
| **PlantWeb control functionality[3][10]** | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Hardware adjustments[3]** | | |
| D4[13] | Zero and span hardware adjustments | ★ |
| DZ[15] | Digital zero trim | ★ |
| **Ground screw[3][11][16]** | | |
| V5 | External ground screw assembly | ★ |
| **HART revision configuration[3][13]** | | |
| HR5[17] | Configured for HART Revision 5 | ★ |
| HR7[18] | Configured for HART Revision 7 | ★ |
| **Typical model number: 2051CFP D S 010 W1 S 0500 D3 2 A A 1 E5 M5** | | |

1. To improve pipe perpendicularity for gasket sealing, socket diameter is smaller than standard pipe O.D.
2. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
3. Not available with low power output code M.
4. Only available with output code X.
5. Thermowell Material is the same as the body material.
6. Does not apply to process connection codes T1 and S1.
7. Not available for bore sizes 0010, 0014, 0020, or 0034.
8. Not available with DIN process connection codes D1, D2, or D3.
9. Materials of Construction comply with metallurgical requirements within NACE MR0175/ISO 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.
10. Only valid with FOUNDATION Fieldbus output code F.
11. Not available with output code X.
12. Not available with housing code 00, 5A, or 7J. The T1 option is not needed with FISCO Product Certifications, transient protection is included with the FISCO Product Certification code IA.
13. Only available with 4–20 mA HART (output codes A).
14. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
15. Only available with HART 4–20 mA (output codes A and M) and wireless (output code X).
16. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
17. Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
18. Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.



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# Rosemount 2051L Liquid Level Transmitter



Rosemount 2051L Liquid Level Transmitter

| Configuration | Transmitter output code |
|---|---|
| 4–20 mA HART<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | A |
| Lower Power<br>Rosemount 2051<br>Rosemount 2051 with Selectable HART(1) | M |
| FOUNDATION Fieldbus | F |
| PROFIBUS | W |
| Wireless | X |

1. The 4–20mA with Selectable HART device can be ordered with transmitter output option code A plus any of the following options codes: M4, QT, DZ, CR, CS, CT, HR5, HR7.

**Additional information**

Specifications: page 47
Certifications: page 59
Dimensional Drawings: page 69

## Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| Model | Transmitter type | | |
|---|---|---|---|
| 2051L | Liquid Level Transmitter | | ★ |
| **Pressure range** | | | |
| 2 | –250 to 250 in$H_2O$ (–0,6 to 0,6 bar) | | ★ |
| 3 | –1000 to 1000 in$H_2O$ (–2,5 to 2,5 bar) | | ★ |
| 4 | –300 to 300 psi (–20,7 to 20,7 bar) | | ★ |
| **Transmitter output** | | | |
| A(1) | 4–20 mA with digital signal based on HART Protocol | | ★ |
| F | FOUNDATION Fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| M | Low-Power, 1–5 V dc with digital signal based on HART Protocol | | |
| **Process connection size, diaphragm material (high side)** | | | |
| | **Process connection size** | **Diaphragm** | |
| G(2) | 2-in./DN 50 | 316L SST | ★ |
| H(2) | 2-in./DN 50 | Alloy C-276 | ★ |
| J | 2-in./DN 50 | Tantalum | ★ |
| A(2) | 3-in./DN 80 | 316L SST | ★ |
| B(2) | 4-in./DN 100 | 316L SST | ★ |



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### Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | | | |
|---|---|---|---|---|
| C[2] | 3-in./DN 80 | Alloy C-276 | | ★ |
| D[2] | 4-in./DN 100 | Alloy C-276 | | ★ |
| E | 3-in./DN 80 | Tantalum | | ★ |
| F | 4-in./DN 100 | Tantalum | | ★ |
| **Extension length (high side)** | | | | |
| 0 | None, flush mount | | | ★ |
| 2 | 2-in./50 mm | | | ★ |
| 4 | 4-in./100 mm | | | ★ |
| 6 | 6-in./150 mm | | | ★ |
| **Mounting flange size, rating, material (high side)** | | | | |
| | **Size** | **Rating** | **Material** | |
| M | 2-in. | ANSI/ASME B16.5 Class 150 | CS | ★ |
| A | 3-in. | ANSI/ASME B16.5 Class 150 | CS | ★ |
| B | 4-in. | ANSI/ASME B16.5 Class 150 | CS | ★ |
| N | 2-in. | ANSI/ASME B16.5 Class 300 | CS | ★ |
| C | 3-in. | ANSI/ASME B16.5 Class 300 | CS | ★ |
| D | 4-in. | ANSI/ASME B16.5 Class 300 | CS | ★ |
| X[2] | 2-in. | ANSI/ASME B16.5 Class 150 | SST | ★ |
| F[2] | 3-in. | ANSI/ASME B16.5 Class 150 | SST | ★ |
| G[2] | 4-in. | ANSI/ASME B16.5 Class 150 | SST | ★ |
| Y[2] | Displayed | ANSI/ASME B16.5 Class 300 | SST | ★ |
| H[2] | 3-in. | ANSI/ASME B16.5 Class 300 | SST | ★ |
| J[2] | 4-in. | ANSI/ASME B16.5 Class 300 | SST | ★ |
| Q | DN50 | PN 10-40 per EN 1092-1 | CS | ★ |
| R | DN80 | PN 40 per EN 1092-1 | CS | ★ |
| K[2] | DN50 | PN 10-40 per EN 1092-1 | SST | ★ |
| T[2] | DN80 | PN 40 per EN 1092-1 | SST | ★ |
| **Seal fill fluid (high side)** | | **Specific gravity at 77 °F (25 °C)** | **Temperature limits (ambient temperature of 70 °F [21 °C])** | |
| A | SYLTHERM™ XLT | 0.85 | –102 to 293 °F (–75 to 145 °C) | ★ |
| C | Silicone 704 | 1.07 | 32 to 401 °F (0 to 205 °C) | ★ |
| D | Silicone 200 | 0.93 | –49 to 401 °F (–45 to 205 °C) | ★ |
| F | Silicone 200 for vacuum applications limits: For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note. | | | |
| H | Inert (halocarbon) | 1.85 | 5 to 401 °F (–15 to 205 °C) | ★ |
| G | Glycerin and water | 1.13 | –49 to 320 °F (–45 to 160 °C) | ★ |



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### Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | | | |
|---|---|---|---|---|
| L | Silicone 704 for Vacuum Applications Limits: For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specification Technical Note. | | | |
| N | Neobee® M-20 | 0.92 | 5 to 401 °F (–15 to 205 °C) | ★ |
| P | Propylene glycol and water | 1.02 | 5 to 203 °F (–15 to 95 °C) | ★ |
| **Sensor module configuration, flange adapter (low side)** | | | | |
| | **Configuration** | **Flange adapter** | | |
| 1 | Gage | SST | | ★ |
| 2 | Differential | SST | | ★ |
| 3(3) | Tuned-System with remote seal | None | | ★ |
| **Sensor module diaphragm material, sensor fill fluid (low side)** | | | | |
| | **Diaphragm material** | **Sensor fill fluid** | | |
| 1 | 316L SST | Silicone | | ★ |
| 2 | Alloy C-276 (SST valve seat) | Silicone | | ★ |
| 7 | Alloy C-276 (Alloy C-276 valve seat) | Silicone | | ★ |
| A(4) | 316L SST | Inert (halocarbon) | | ★ |
| B(2)(4) | Alloy C-276 (SST valve seat) | Inert (halocarbon) | | ★ |
| G(4) | Alloy C-276 (Alloy C-276 valve seat) | Inert (halocarbon) | | ★ |
| **O-ring** | | | | |
| A | Glass-filled PTFE | | | ★ |
| **Housing material** | | **Conduit entry size** | | |
| A | Aluminum | 1/2–14 NPT | | ★ |
| B | Aluminum | M20 x 1.5 | | ★ |
| J | SST | 1/2–14 NPT | | ★ |
| K(5) | SST | M20 x 1.5 | | ★ |
| P(6) | Engineered polymer | No conduit entries | | ★ |
| D | Aluminum | G1/2 | | |
| M(5) | SST | G1/2 | | |

## Wireless options (requires wireless output code X and engineered polymer housing code P)

| | | |
|---|---|---|
| **Wireless transmit rate, operating frequency and protocol** | | |
| WA3 | User configurable transmit rate, 2.4 GHz *Wireless*HART | ★ |
| **Antenna and SmartPower** | | |
| WP5 | Internal antenna, compatible with green power module (I.S. power module sold separately) | ★ |



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### Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

## Options (include with selected model number)

| | | |
|---|---|---|
| **Extended product warranty** | | |
| WR3 | 3-year limited warranty | ★ |
| WR5 | 5-year limited warranty | ★ |
| **PlantWeb control functionality**[7] | | |
| A01 | FOUNDATION Fieldbus advanced control function block suite | ★ |
| **Seal assemblies**[8] | | |
| S1 | Assemble to one Rosemount 1199 Seal (requires 1199M) | ★ |
| **Product certifications** | | |
| E1[5] | ATEX Flameproof | ★ |
| E2[5] | INMETRO Flameproof | ★ |
| E3[5] | China Flameproof | ★ |
| E4 | TIIS Flameproof | ★ |
| E5 | USA Explosion-proof, Dust Ignition-proof | ★ |
| E6 | Canada Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[5] | IECEx Flameproof | ★ |
| EW[5] | India (CCOE) Flameproof Approval | ★ |
| I1[5] | ATEX Intrinsic Safety | ★ |
| I2[5] | INMETRO Intrinsically Safe | ★ |
| I3[5] | China Intrinsic Safety | ★ |
| I4[5][6] | TIIS Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe, Division 2 | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7[5] | IECEx Intrinsic Safety | ★ |
| IA[7] | ATEX FISCO Intrinsic Safety | ★ |
| IE[7] | USA FISCO Intrinsically Safe | ★ |
| IF[7] | Canada FISCO Intrinsically Safe | ★ |
| IG[7] | IECEx FISCO Intrinsically Safe | ★ |
| IW[5] | India (CCOE) Intrinsically Safety Approval | ★ |
| K1[5] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K2 | INMETRO Flameproof and Intrinsic Safety | ★ |
| K5 | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[5] | IECEx Flameproof, Intrinsic Safety, Type n and Dust | ★ |
| KA[5] | ATEX and Canada Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |



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### Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | |
|---|---|---|
| KC[5] | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[5] | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[5] | ATEX Type n | ★ |
| N7[5] | IECEx Type n | ★ |
| ND[5] | ATEX Dust | ★ |
| EM | Technical Regulations Customs Union (EAC) Flameproof | ★ |
| IM | Technical Regulations Customs Union (EAC) Intrinsic Safety | ★ |
| KM | Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety | ★ |
| **Shipboard approvals[4]** | | |
| SBS | American Bureau of Shipping (ABS) type approval | ★ |
| SBV | Bureau Veritas (BV) type approval | ★ |
| SDN | Det Norske Veritas (DNV) type approval | ★ |
| SLL | Lloyds Register (LR) type approval | ★ |
| **Display and interface options** | | |
| M4[9] | LCD display with local operator interface | ★ |
| M5 | LCD display | ★ |
| **Hardware adjustments** | | |
| D4[10] | Zero and span configuration buttons | ★ |
| DZ[11] | Digital zero trim | ★ |
| **Flange adapters[12]** | | |
| DF | 1/2–14 NPT flange adapters | ★ |
| **Conduit plug[4][13]** | | |
| DO | 316 SST conduit plug | ★ |
| **Ground screw[4][14]** | | |
| V5 | External ground screw assembly | ★ |
| **Transient protection[4][15]** | | |
| T1 | Transient terminal block | ★ |
| **Software configuration[11]** | | |
| C1 | Custom software configuration (requires completed Configuration Data Sheet) | ★ |
| **Alarm limit[10]** | | |
| C4[16] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[16] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT | Low alarm (standard Rosemount alarm and saturation levels) | ★ |



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### Table 7. Rosemount 2051L Liquid Level Transmitter Ordering Information

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.**

| | | | | |
|---|---|---|---|---|
| **Calibration certification** | | | | |
| Q4 | Calibration certificate | | | ★ |
| QG | Calibration certificate and GOST verification certificate | | | ★ |
| GP | Calibration certificate and tamper evident seal | | | ★ |
| **Material traceability certification** | | | | |
| Q8 | Material traceability certification per EN 10204 3.1 | | | ★ |
| **Quality certification for safety**(17) | | | | |
| QS | Prior-use certificate of FMEDA data | | | ★ |
| QT | Safety certified to IEC 61508 with certificate of FMEDA | | | ★ |
| **Toolkit total system performance reports** | | | | |
| QZ | Remote seal system performance calculation report | | | ★ |
| **Conduit electrical connector**(4) | | | | |
| GE | M12, 4-pin, male connector (eurofast) | | | ★ |
| GM | A size mini, 4-pin, male connector (minifast) | | | ★ |
| **NACE certificate**(18) | | | | |
| Q15 | Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials | | | ★ |
| Q25 | Certificate of compliance to NACE MR0103 for wetted materials | | | ★ |
| **Lower housing flushing connection options** | | | | |
| | **Ring material** | **Number** | **Size (NPT)** | |
| F1 | 316 SST | 1 | 1/4–18 NPT | ★ |
| F2 | 316 SST | 2 | 1/4–18 NPT | ★ |
| F3(19) | Alloy C-276 | 1 | 1/4–18 NPT | ★ |
| F4(19) | Alloy C-276 | 2 | 1/4–18 NPT | ★ |
| F7 | 316 SST | 1 | 1/2–14 NPT | ★ |
| F8 | 316 SST | 2 | 1/2–14 NPT | ★ |
| F9 | Alloy C-276 | 1 | 1/2–14 NPT | ★ |
| F0 | Alloy C-276 | 2 | 1/2–14 NPT | ★ |
| **Typical model number:** | **2051L 2 A A0 X D 21 A A B4 M5 F1** | | | |

1. HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
2. Materials of Construction comply with metallurgical requirements highlighted within 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. Order with Q15 or Q25 to receive a NACE certificate.
3. Requires option code S1.
4. Not available with output code X.
5. Not available with low power output code M.
6. Only available with output code X.
7. Only valid with FOUNDATION Fieldbus output code F.



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8. “Assemble-to” items are specified separately and require a completed model number.
9. Not valid with FOUNDATION Fieldbus output code F and wireless output code X.
10. Only available with 4–20 mA HART (output codes A and M).
11. Only available with HART 4–20 mA output (codes A) and wireless output (code X).
12. Not available with remote mount seal assembly option S1.
13. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
14. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
15. The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA, IE, IF, and IG.
16. NAMUR-Compliant operation is pre-set at the factory.
17. Only available with HART 4–20 mA output (code A).
18. NACE Compliant wetted materials are identified by Footnote 2.
19. Not available with option codes A0, B0, and G0.



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# Specifications

## Performance specifications

This product data sheet covers HART, Wireless, FOUNDATION Fieldbus, and PROFIBUS PA Protocols unless specified.

### Conformance to specification (±3σ [sigma])

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

### Reference accuracy

Stated reference accuracy equations include terminal based linearity, hysteresis, and repeatability. For Wireless, FOUNDATION Fieldbus, and PROFIBUS PA devices, use calibrated range in place of span.

| Models | Standard | High performance option, P8 | |
|---|---|---|---|
| **Rosemount 2051C** | | | |
| Range 1 | ±0.10% of span<br>For spans less than 15:1, accuracy =<br>$\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span | N/A | N/A |
| Ranges 2–4 | ±0.065% of span<br>For spans less than 10:1, accuracy =<br>$\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span | Ranges 2–4 | High accuracy option, P8<br>±0.05% of span<br>For spans less than 10:1[1], accuracy =<br>$\pm\left(0.015 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span |
| Range 5 | ±0.075% of span<br>For spans less than 10:1, accuracy=<br>$\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span | Range 5 | High performance option, P8<br>±0.065% of span<br>For spans less than 10:1, accuracy=<br>$\pm\left(0.015 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span |
| **Rosemount 2051T, 2051G** | | | |
| Ranges 1–4 | ±0.065% of span<br>For spans less than 10:1, accuracy =<br>$\pm\left(0.0075\left[\frac{URL}{Span}\right]\right)$ % of span | Ranges 1–4 | High accuracy option, P8<br>±0.05% of span<br>For spans less than 10:1[1], accuracy =<br>$\pm\left(0.0075\left[\frac{URL}{Span}\right]\right)$ % of span |
| Range 5[2] | ±0.075% of span<br>For spans less than 10:1, accuracy =<br>$\pm\left(0.0075\left[\frac{URL}{Span}\right]\right)$ % of span | N/A | N/A |
| **Rosemount 2051L** | | | |
| Ranges 2–4 | ±0.075% of span<br>For spans less than 10:1, accuracy =<br>$\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)$ % of span | N/A | N/A |

1. For protocol code F, accuracy specification is for spans less than 7:1. Not available with output code W.
2. Rosemount 2051G is not available with Range 5.



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## Flow performance

### Flow reference accuracy

| Rosemount 2051CFA Annubar Flowmeter | | |
|---|---|---|
| Ranges 2–3 | | ±2.00% of flow rate at 5:1 flow turndown |
| **Rosemount 2051CFC_A Compact Annubar Flowmeter — Annubar option A** | | |
| Ranges 2–3 | Standard | ±2.60% of flow rate at 5:1 flow turndown |
| | Calibrated | ±2.30% of flow rate at 5:1 flow turndown |
| **Rosemount 2051CFC Compact Orifice Flowmeter — conditioning option C** | | |
| Ranges 2–3 | β = 0.4 | ±2.25% of flow rate at 5:1 flow turndown |
| | β = 0.65 | ±2.45% of flow rate at 5:1 flow turndown |
| **Rosemount 2051CFC Compact Orifice Flowmeter — orifice type option P(1)** | | |
| Ranges 2–3 | β =0.4 | ±2.50% of flow rate at 5:1 flow turndown |
| | β =0.65 | ±2.50% of flow rate at 5:1 flow turndown |

| Rosemount 2051CFP Integral Orifice Flowmeter | | |
|---|---|---|
| Ranges 2–3 | Bore < 0.1 | ±3.10% of flow rate at 5:1 flow turndown |
| | 0.1 < Bore < 0.2 | ±2.75% of flow rate at 5:1 flow turndown |
| | 0.2 < Bore < 0.6 | ±2.25% of flow rate at 5:1 flow turndown |
| | 0.6 < Bore < 0.8 | ±3.00% of flow rate at 5:1 flow turndown |

1. For smaller line sizes, see Rosemount Compact Orifice.

### Long-term stability

±50 °F (28 °C) temperature changes and up to 1000 psi (6,9 MPa) line pressure.

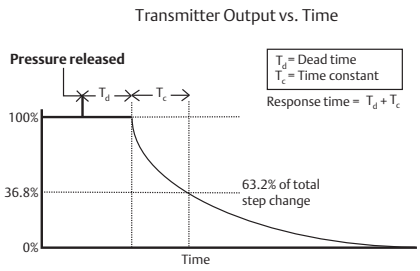
| Models | Standard | High performance option, P8 |
|---|---|---|
| **Rosemount 2051C** | | |
| Range 1 (CD) | ±0.2% of URL for 1 year | ±0.175% of URL for 7 years |
| Ranges 2–5 | ±0.125% of URL for 5 years | |
| **Rosemount 2051T, 2051G** | | |
| Ranges 1–5(1) | ±0.125% of URL for 5 years | ±0.15% of URL for 7 years |

1. Rosemount 2051G is not available with range 5.



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## Dynamic performance

| | 4–20 mA HART[1]<br>1–5 Vdc HART Low Power | FOUNDATION Fieldbus and PROFIBUS PA Protocols[2] | Typical HART transmitter response time |
|---|---|---|---|
| **Total response time ($T_d + T_c$):** | | |  |
| Rosemount 2051C<br>Range 3–5:<br>Range 1:<br>Range 2:<br>2051T and 2051G:<br>2051L: | <br>115 ms<br>270 ms<br>130 ms<br>100 ms<br>See Instrument Toolkit™ | <br>152 ms<br>307 ms<br>152 ms<br>152 ms<br>See Instrument Toolkit | |
| **Dead time ($T_d$)** | 60 ms (nominal[3]) | 97 ms | |
| **Update rate**[4] | 22 times per second | 22 times per second | |



1. Dead time and update rate apply to all models and ranges; analog output only.
2. Transducer block response time, Analog Input block execution time not included.
3. Nominal total response time at 75 °F (24 °C) reference conditions.
4. Does not apply to wireless (output code X). See "Wireless (output code X)" on page 53 for wireless update rate.

### Line pressure effect per 1000 psi (6,9 MPa)

For line pressures above 2000 psi (13,7 MPa) and Ranges 4–5, see Rosemount 2051 Reference Manual for HART, Rosemount 2051 Reference Manual for *Wireless*HART, Rosemount 2051 Reference Manual for FOUNDATION Fieldbus, and Rosemount 2051 Reference Manual PROFIBUS PA.

| Models | Line pressure effect | |
|---|---|---|
| **Rosemount 2051CD, 2051CF** | **Zero Error**[1] | **Span Error** |
| Range 1 | ±0.25% of URL/ 1000 psi (68,9 bar) | ±0.4% of reading/ 1,000 psi (68,9 bar) |
| Ranges 2–3 | ±0.05% of URL/ 1000 psi (68,9 bar) for line pressures from 0 to 2000 psi (0 to 13,7 MPa) | ±0.1% of reading/ 1,000 psi (68,9 bar) |

1. Can be calibrated out at line pressure.

### Ambient temperature effect per 50 °F (28 °C)

| Models | Ambient temperature effect |
|---|---|
| **Rosemount 2051C, 2051CF** | |
| Ranges 2–5 | ±(0.025% URL + 0.125% span) from 1:1 to 5:1<br>±(0.05% URL + 0.25% span) from 5:1 to 100:1 |
| Range 1 | ±(0.1% URL + 0.25% span) from 1:1 to 30:1 |
| **Rosemount 2051T, 2051G** | |
| Range 2–4 | ±(0.05% URL + 0.25% span) from 1:1 to 10:1<br>±(0.07% URL + 0.125% span) from 10:1 to 100:1 |
| Range 1 | ±(0.05% URL + 0.25% span) from 1:1 to 5:1<br>±(0.10% URL + 0.125% span) from 5:1 to 100:1 |
| Range 5[1] | ±(0.1% URL + 0.15% span) |
| **Rosemount 2051L** | See Instrument Toolkit (TM) |

1. Rosemount 2051G is not available with range 5.



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### Mounting position effects

| Models | Mounting position effects |
|---|---|
| Rosemount 2051C | Zero shifts up to ±1.25 in$H_2O$ (3,1 mbar), which can be calibrated out. No span effect. |
| Rosemount 2051T and 2051G | Zero shifts up to ±2.5 in$H_2O$ (6,2 mbar), which can be calibrated out. No span effect. |
| Rosemount 2051L | With liquid level diaphragm in vertical plane, zero shift of up to 1 in$H_2O$ (2,49 mbar). With diaphragm in horizontal plane, zero shift of up to 5 in$H_2O$ (12,43 mbar) plus extension length on extended units. Zero shifts can be calibrated out. No span effect. |

### Vibration effect

Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21mm displacement peak amplitude/60–2000 Hz 3g).

### Power supply effect

Less than ±0.005% of calibrated span per volt.

### Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21[(1)]. Maximum deviation < 1% span during EMC disturbance[(2)].

1. NAMUR NE-21 does not apply to Low-Power (Transmitter output option code M) and Wireless (Transmitter output code X).
2. During surge event device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

### Transient protection (option code T1)

Meets IEEE C62.41, category location B

- 6 kV crest (0.5 µs–100 kHz)
- 3 kA crest (8 × 20 microseconds)
- 6 kV crest (1.2 × 50 microseconds)



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# Functional specifications

## Range and sensor limits

**Table 8. Range and Sensor Limits for Rosemount 2051CD, 2051CF, 2051CG, 2051L models**

| Range | Minimum span | Upper (URL) | Lower (LRL) | | | |
|---|---|---|---|---|---|---|
| | | | Rosemount 2051C Differential, 2051CF flowmeters | Rosemount 2051C Gage[1] | Rosemount 2051L Differential | Rosemount 2051L Gage[1] |
| 1 | 0.5 $inH_2O$ (1,2 mbar) | 25 $inH_2O$ (62,3 mbar) | –25 $inH_2O$ (–62,1 mbar) | –25 $inH_2O$ (–62,1 mbar) | N/A | N/A |
| 2 | 2.5 $inH_2O$ (6,2 mbar) | 250 $inH_2O$ (0,62 bar) | –250 $inH_2O$ (–0,62 bar) | –250 $inH_2O$ (–0,62 bar) | –250 $inH_2O$ (–0,62 bar) | –250 $inH_2O$ (–0,62 bar) |
| 3 | 10 $inH_2O$ (24,9 mbar) | 1000 $inH_2O$ (2,49 bar) | –1000 $inH_2O$ (–2,49 bar) | –393 $inH_2O$ (–979 mbar) | –1000 $inH_2O$ (–2,49 bar) | –393 $inH_2O$ (–979 mbar) |
| 4 | 3 psi (0,207 bar) | 300 psi (20,7 bar) | –300 psi (–20,7 bar) | –14.2 psig (–979 mbar) | –300 psi (–20,7 bar) | –14.2 psig (–979 mbar) |
| 5 | 20 psi (1,38 bar) | 2000 psi (137,9 bar) | –2000 psi (–137,9 bar) | –14.2 psig (–979 mbar) | N/A | N/A |

1. Assumes atmospheric pressure of 14.7 psig.

**Table 9. Range and Sensor Limits for Rosemount 2051T and 2051G model**

| Range | Minimum span | Upper (URL) | Lower (LRL)(Abs) | Lower[1] (LRL)(Gage) |
|---|---|---|---|---|
| 1 | 0.3 psi (20,7 mbar) | 30 psi (2,07 bar) | 0 psia (0 bar) | –14.7 psig (–1,01 bar) |
| 2 | 1.5 psi (0,103 bar) | 150 psi (10,3 bar) | 0 psia (0 bar) | –14.7 psig (–1,01 bar) |
| 3 | 8 psi (0,55 bar) | 800 psi (55,2 bar) | 0 psia (0 bar) | –14.7 psig (–1,01 bar) |
| 4 | 40 psi (2,76 bar) | 4000 psi (275,8 bar) | 0 psia (0 bar) | –14.7 psig (–1,01 bar) |
| 5[2] | 2,000 psi (137,9 bar) | 10,000 psi (689,5 bar) | 0 psia (0 bar) | –14.7 psig (–1,01 bar) |

1. Assumes atmospheric pressure of 14.7 psig.
2. Rosemount 2051G is not available with Range 5.

## Service

Liquid, gas, and vapor applications

## Protocols

## 4–20 mA HART (output code A)

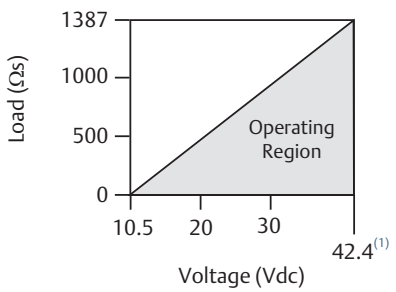
### Power supply

External power supply required. Standard transmitter operates on 10.5 to 42.4 Vdc 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 – 10.5)




Communication requires a minimumloop resistance of 250 ohms.

1. For Canada approval, power supply must not exceed 42.4 V.



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**Indication**

Optional two line LOI/LCD display

**Zero and span adjustment requirements**

Zero and span values can be set anywhere within the range limits stated in Table 8 and Table 9.

Span must be greater than or equal to the minimum span stated in Table 8 and Table 9.

**Output**

Two-wire 4–20mA, user selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to HART Protocol.

**Rosemount 2051**

Digital communications based on HART Revision 5 Protocol.

**Rosemount 2051 with Selectable HART**

The Rosemount 2051 with Selectable HART comes with Selectable HART Revisions. Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) Protocol can be selected. The HART revision can be switched in the field using any HART based configuration tool or the optional LOI.

**LOI**

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI, (option code M4), analog zero and span (option code D4) or digital zero trim (option code DZ). See Rosemount 2051 with Selectable HART Reference Manual for LOI configuration menu.

## FOUNDATION Fieldbus (output code F)

**Power supply**

External power supply required; transmitters operate on 9.0 to 32.0 Vdc transmitter terminal voltage for non-I.S. applications, 9.0 to 30 Vdc for entity model intrinsically safe applications and 9.0 to 17.5 Vdc for FISCO intrinsically safe applications.

**Current draw**

17.5 mA for all configurations (including LCD display option)

**Indication**

Optional two-line LCD display

**FOUNDATION Fieldbus function block**

**Execution times**

| Block | Execution time |
|---|---|
| Resource | N/A |
| Transducer | N/A |
| LCD display block | N/A |
| Analog input 1, 2 | 20 milliseconds |
| PID | 25 milliseconds |
| Arithmetic | 20 milliseconds |
| Input selection | 20 milliseconds |
| Signal characterizer | 20 milliseconds |
| Integrator | 20 milliseconds |
| Output splitter | 20 milliseconds |
| Control selector | 20 milliseconds |

**FOUNDATION Fieldbus parameters**

| | |
|---|---|
| Schedule entries | 7 (max.) |
| Links | 25 (max.) |
| Virtual communications relationships (VCR) | 20 (max.) |

**Standard function blocks**

**Resource block**

The resource block contains diagnostic, hardware and electronics information. There are no linkable inputs or outputs to the resource block.

**Sensor transducer block**

The sensor transducer block contains sensor information including the sensor diagnostics and the ability to trim the pressure sensor or recall factory calibration.

**LCD display transducer block**

The LCD display transducer block is used to configure the LCD display meter.

**Analog input block**

The Analog input (AI) function block processes the measurements from the sensor and makes them available to other function blocks. The output value from the AI block is in engineering units and contains a status indicating the quality of the measurement. The AI block is widely used for scaling functionality.

**Note**

The channel, Set XD_Scale, Set L_Type, and sometimes Set Out_Scale are typically configured by instrument personnel. Other AI block parameters, block links, and schedule are typically configured by the control systems configuration engineer.



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**Input selector block**

The input selector (ISEL) function block can be used to select the first good, Hot Backup™, maximum, minimum, or average of as many as eight input values and place it at the output. The block supports signal status propagation.

**Integrator block**

The integrator (INT) function block integrates one or two variables over time. The block compares the integrated or accumulated value to pre-trip and trip limits and generates discrete output signals when the limits are reached.
The Integrator Block is used as a totalizer. This block will accept up to two inputs, has six options how to totalize the inputs, and two trip outputs.

**Arithmetic block**

The arithmetic (ARTH) function block provides the ability to configure a range extension function for a primary input. It can also be used to compute nine different arithmetic functions including flow with partial density compensation, electronic remote seals, hydrostatic tank gauging, ratio control and others.

**Signal characterizer block**

The signal characterizer (SGCR) function block characterizes or approximates any function that defines an input/output relationship. The function is defined by configuring as many as twenty X,Y coordinates. The block interpolates an output value for a given input value using the curve defined by the configured coordinates. Two separate analog input signals can be processed simultaneously to give two corresponding separate output values using the same defined curve.

**PID block**

The PID function block combines all of the necessary logic to perform proportional/integral/derivative (PID) control. The block supports mode control, signal scaling and limiting, feed forward control, override tracking, alarm limit detection, and signal status propagation.

**Control selector block**

The control selector function block selects one of two or three inputs to be the output. The inputs are normally connected to the outputs of PID or other function blocks. One of the inputs would be considered Normal and the other two overrides.

**Output splitter block**

The output splitter function block provides the capability to drive two control outputs from a single input. It takes the output of one PID or other control block to control two valves or other actuators.

## Backup link active scheduler (LAS)

The transmitter can function as a LAS if the current link master device fails or is removed from the segment.

## PROFIBUS PA (output code W)

**Profile version**

3.02

**Power supply**

External power supply required; transmitters operate on 9.0 to 32.0 Vdc transmitter terminal voltage for non-I.S. applications, 9.0 to 30 Vdc for entity model intrinsically safe applications and 9.0 to 17.5 Vdc for FISCO intrinsically safe applications.

**Current draw**

17.5 mA for all configurations (including LCD display option)

**Output update rate**

Four times per second

**Standard function blocks**

**Analog Input (AI block)**

The AI function block processes the measurements and makes them available to the host device. The output value from the AI block is in engineering units and contains a status indicating the quality of the measurement.

**Physical block**

The physical block defines the physical resources of the device including type of memory, hardware, electronics, and diagnostic information.

**Transducer block**

Contains actual sensor measurement data including the sensor diagnostics and the ability to trim the pressure sensor or recall factory defaults.

**Indication**

Optional two-line LCD display

**LOI**

Optional external configuration buttons

## Wireless (output code X)

**Output**

IEC 62591 (*Wireless*HART), 2.4 GHz DSSS

**Wireless radio (internal antenna, WP5 option)**

- Frequency: 2.400–2.485 GHz
- Channels: 15
- Modulation: IEEE 802.15.4 compliant DSSS
- Transmission: maximum of 10 dBm EIRP



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### Local display

The optional three-line, seven-digit LCD display can display user-selectable information such as primary variable in engineering units, scaled variable, percent of range, sensor module temperature, and electronics temperature. The display updates based on the wireless update rate.

### Digital zero trim

Digital zero trim (option DZ) is an offset adjustment to compensate for mounting position effects, up to 5% of URL.

### Update rate

User selectable 1 second to 60 minutes

### Wireless sensor module for in-line transmitters

The Rosemount 2051 Wireless Transmitter requires the engineered polymer housing to be selected. The standard sensor module will come with aluminum material. If stainless steel is required, the option WSM must be selected.

### Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with PBT/PC enclosure. Ten-year life at one minute update rate.(1)

1. Reference conditions are 70 °F (21 °C), and routing data for three additional network devices.

   Note: Continuous exposure to ambient temperature limits of –40 °F to 185 °F (–40 °C to 85 °C) may reduce specified life by less than 20%.

## HART 1–5 Vdc Low Power (output code M)

### Output

Three-wire 1–5 Vdc output, user-selectable for linear or square root output. Digital process variable superimposed on voltage signal, available to any host conforming to the HART Protocol.

### Rosemount 2051

Digital communications based on HART Revision 5 Protocol.

### Rosemount 2051 with Selectable HART

The Rosemount 2051 with Selectable HART comes with Selectable HART Revisions. Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) Protocol can be selected. The HART revision can be switched in the field using any HART based configuration tool or the optional LOI.

### LOI

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI, (option code M4), analog zero and span (option code D4) or digital zero trim (option code DZ). See Rosemount 2051 with Selectable HART Reference Manual for LOI configuration menu.

### Power supply

External power supply required. Standard transmitter operates on 9 to 28 Vdc with no load.

### Power consumption

3.0 mA, 27–84 mW

### Output load

100 kΩ or greater (meter input impedance)

### Turn-on time

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

## Overpressure limits

Transmitters withstand the following limits without damage:

### Rosemount 2051C, 2051CF

- Ranges 2–5: 3,626 psig (250 bar)
  4,500 psig (310,3 bar) for option code P9
- Range 1: 2,000 psig (137,9 bar)

### Rosemount 2051T, 2051G

- Range 1: 750 psi (51,7 bar)
- Range 2: 1,500 psi (103,4 bar)
- Range 3: 1,600 psi (110,3 bar)
- Range 4: 6,000 psi (413,7 bar)
- Range 5: 15,000 psi (1034,2 bar)(1)

1. *The Rosemount 2051G is not available with Range 5.*



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### Rosemount 2051L

Limit is flange rating or sensor rating, whichever is lower (See Table 10).

**Table 10. Rosemount 2051L Flange Rating**

| Standard | Type | CS rating | SST rating |
|---|---|---|---|
| ANSI/ASME | Class 150 | 285 psig | 275 psig |
| ANSI/ASME | Class 300 | 740 psig | 720 psig |
| At 100 °F (38 °C), the rating decreases with increasing temperature, per ANSI/ASME B16.5. | | | |
| DIN | PN 10–40 | 40 bar | 40 bar |
| DIN | PN 10/16 | 16 bar | 16 bar |
| At 248 °F (120 °C), the rating decreases with increasing temperature, per DIN 2401. | | | |

## Static pressure limit

### Rosemount 2051CD, 2051CF

- Operates within specifications between static line pressures of –14.2 psig (0,034 bar) and 3626 psig (250 bar)
- For Option Code P9, 4500 psig (310,3 bar)
- Range 1: 0.5 psia to 2000 psig (34 mbar and 137,9 bar)

## Burst pressure limits

### Rosemount 2051C, 2051CF coplanar or traditional process flange

10,000 psig (689.5 bar)

### Rosemount 2051T in-line

- Ranges 1–4: 11000 psi (758,4 bar)
- Range 5: 26000 psi (1792,6 bar)

## Temperature limits

### Ambient

–40 to 185 °F (–40 to 85 °C)
With LCD display(1)(2): –40 to 175 °F (–40 to 80 °C)

### Storage(1)

–50 to 230 °F (–46 to 110 °C)
With LCD display: –40 to 185 °F (–40 to 85 °C)
With Wireless output: –40 °F to 185 °F (–40 °C to 85 °C)

1. Rosemount 2051 LCD display may not be readable and LCD display updates may be slower at temperatures below –22 °F (–30 °C).
2. Wireless LCD display may not be readable and LCD display updates will be slower at temperatures below –4 °F (–20 °C).

## Process

At atmospheric pressures and above. See Table 11.

**Table 11. Process Temperature Limits**

| | |
|---|---|
| **Rosemount 2051C, 2051CF** | |
| Silicone fill sensor(1) | |
| with coplanar flange | –40 to 250 °F (–40 to 121 °C)(2) |
| with traditional flange | –40 to 300 °F (–40 to 149 °C)(2)(3) |
| with level flange | –40 to 300 °F (–40 to 149 °C)(2) |
| with Rosemount 305 Integral Manifold | –40 to 300 °F (–40 to 149 °C)(2) |
| Inert fill sensor(1) | –40 to 185 °F (–40 to 85 °C)(3) |
| **Rosemount 2051T (process fill fluid)** | |
| Silicone fill sensor(1) | –40 to 250 °F (–40 to 121 °C)(2) |
| Inert fill sensor(1) | –22 to 250 °F (–30 to 121 °C)(2) |
| **Rosemount 2051L low side temperature limits** | |
| Silicone fill sensor(1) | –40 to 250 °F (–40 to 121 °C)(2) |
| Inert fill Sensor(1) | –40 to 185 °F (–40 to 85 °C) (2) |
| **Rosemount 2051L high side temperature limits (process fill fluid)** | |
| SYLTHERM XLT | –102 to 293 °F (–75 to 145°C) |
| Silicone 704 | 32 to 401 °F (0 to 205 °C) |
| Silicone 200 | –49 to 401 °F (–45 to 205 °C) |
| Inert | –49 to 320 °F (–45 to 160 °C) |
| Glycerin and water | 5 to 203 °F (–15 to 95 °C) |
| Neobee M-20 | 5 to 401 °F (–15 to 205 °C) |
| Propylene glycol and water | 5 to 203 °F (–15 to 95 °C) |

1. Process temperatures above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio.
2. 220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.
3. 160 °F (71 °C) limit in vacuum service.

## Humidity limits

0–100% relative humidity

## Volumetric displacement

Less than 0.005 $in^3$ (0,08 $cm^3$)



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## Damping

### 4–20 mA HART

**Rosemount 2051 with selectable HART**

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

**Rosemount 2051**

Analog output response to a step input change is user-selectable from 0.4 to 60 seconds for one time constant. This software damping is in addition to sensor module response time.

### FOUNDATION Fieldbus

Transducer block: User configurable
AI block: User configurable

### PROFIBUS PA

AI block only: User configurable

## Failure mode alarm

### HART 4–20 mA (output code A)

If self-diagnostics detect a sensor or microprocessor failure, the analog signal is driven either high or low to alert the user. High or low failure mode is user-selectable with a jumper on the transmitter. The values to which the transmitter drives its output in failure mode depend on whether it is factory-configured to standard or NAMUR-compliant operation. The values for each are as follows:

**Table 12. Standard Operation**

| Output code | Linear output | Fail high | Fail low |
|---|---|---|---|
| A | 3.9 ≤ I ≤ 20.8 | I ≥ 21.75 mA | I ≤ 3.75 mA |
| M | 0.97 ≤ V ≤ 5.2 | V ≥ 5.4 V | V ≤ 0.95 V |

**Table 13. NAMUR-Compliant Operation**

| Output code | Linear output | Fail high | Fail low |
|---|---|---|---|
| A | 3.8 ≤ I ≤ 20.5 | I ≥ 22.5 mA | I ≤ 3.6 mA |

### Output code F and X

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable.

# Physical specifications

## Material selection

Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

## Electrical connections

1/2–14 NPT, G1/2, and M20 x 1.5 conduit

## Process connections

### Rosemount 2051C

- 1/4–18 NPT on 2 1/8-in. centers
- 1/2–14 NPT and RC 1/2 on 2-in. (50,8 mm), 2 1/8-in. (54,0 mm), or 2 1/4-in. (57,2 mm) centers (process adapters)

### Rosemount 2051T, 2051G

- 1/2–14 NPT female
- G1/2 A DIN 16288 male (available in SST for Range 1–4 transmitters only)
- Autoclave type F-250-C (pressure relieved 9/16–18 gland thread; 1/4 O.D. high pressure tube 60° cone; available in SST for Range 5 transmitters only)

### Rosemount 2051L

- High pressure side: 2-in.(50,8 mm), 3-in. (72 mm), or 4-in. (102 mm), ASME B 16.5 (ANSI) Class 150 or 300 flange; 50, 80, or 100 mm, DIN 2501 PN 40 or 10/16 flange
- Low pressure side: 1/4–18 NPT on flange, 1/2–14 NPT on process adapter



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**Rosemount 2051CF**

- For Rosemount 2051CFA wetted parts, see Rosemount DP Flowmeters and Primary Elements Product Data Sheet in the 485 section
- For Rosemount 2051CFC wetted parts, see Rosemount DP Flowmeters and Primary Elements Product Data Sheet in the 405 section
- For Rosemount 2051CFP wetted parts, see Rosemount DP Flowmeters and Primary Elements Product Data Sheet in the 1195 section

## Rosemount 2051C process wetted parts

**Drain/vent valves**

316 SST or Alloy C-276

**Process flanges and adapters**

Plated carbon steel, SST CF-8M (cast version of 316 SST, material per ASTM-A743), or CW2M (cast version of Alloy C)

**Wetted O-rings**

Glass-filled PTFE or graphite-filled PTFE

**Process isolating diaphragms**

316L SST, Alloy C-276, or Tantalum

## Rosemount 2051T process wetted parts

**Process connections**

316L SST or Alloy C-276

**Process Isolating diaphragms**

316L SST or Alloy C-276

## Rosemount 2051L Process wetted parts

**Flanged process connection (transmitter high side)**

**Process diaphragms, including process gasket surface**

316L SST, Alloy C-276, or Tantalum

**Extension**

CF-3M (Cast version of 316L SST, material per ASTM-A743), or Cast C-276. Fits schedule 40 and 80 pipe.

**Mounting flange**

Zinc-cobalt plated CS or SST

**Reference process connection (transmitter low side)**

**Isolating diaphragms**

316L SST or Alloy C-276

**Reference flange and adapter**

CF-8M (cast version of 316 SST, material per ASTM-A743)

## Non-wetted parts for Rosemount 2051C, 2051T, 2051L, 2051G

**Electronics housing**

Low-copper aluminum or CF-8M (cast version of 316 SST)
Enclosures meet NEMA® Type 4X, IP66, and IP68 when properly installed.
Housing material code P: PBT/PC with NEMA 4X and IP66/67/68

**Paint for aluminum housing**

Polyurethane

**Coplanar sensor module housing**

CF-3M (cast version of 316L SST)

**Bolts**

ASTM A449, Type 1 (zinc-cobalt plated carbon steel)
ASTM F593G, Condition CW1 (Austenitic 316 SST)
ASTM A193, Grade B7M (zinc plated alloy steel)
Alloy K-500

**Sensor module fill fluid**

Silicone or inert halocarbon
In-line series uses Fluorinert® FC-43

**Process fill fluid (2051L only)**

SYLTHERM XLT, Silicone 704, Silicone 200, inert, glycerin and water, Neobee M-20, or propylene glycol and water

**Cover O-rings**

Buna-N
Silicone (for wireless option code X)

**Power module**

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride power module with PBT enclosure.

## Shipping weights

**Table 14. Transmitter Weights without Options(1)**

| Transmitter | Standard lb (kg) | Wireless lb (kg) |
|---|---|---|
| Rosemount 2051C | 4.9 (2.2) | 3.9 (1,8) |
| Rosemount 2051L | See Table 15 | See Table 15 |
| Rosemount 2051T | 3.1 (1.4) | 1.9 (0,86) |
| Rosemount 2051G | 2.4 (1,1) | N/A |

1. Transmitter weights include the sensor module and housing only (aluminum for standard Rosemount 2051 and polymer for wireless).



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**Table 15. Rosemount 2051L Weights without Options**

| Flange | Flush lb (kg) | 2-in. ext. lb (kg) | 4-in. ext. lb (kg) | 6-in. ext. lb (kg) |
|---|---|---|---|---|
| 2-in., Class 150 | 12.5 (5,7) | N/A | N/A | N/A |
| 3-in., Class 150 | 17.5 (7,9) | 19.5 (8,8) | 20.5 (9,3) | 21.5 (9,7) |
| 4-in., Class 150 | 23.5 (10,7) | 26.5 (12,0) | 28.5 (12,9) | 30.5 (13,8) |
| 2-in., Class 300 | 17.5 (7,9) | N/A | N/A | N/A |
| 3-in., Class 300 | 22.5 (10,2) | 24.5 (11,1) | 25.5 (11,6) | 26.5 (12,0) |
| 4-in., Class 300 | 32.5 (14,7) | 35.5 (16,1) | 37.5 (17,0) | 39.5 (17,9) |
| DN 50/PN 40 | 13.8 (6,2) | N/A | N/A | N/A |
| DN 80/PN 40 | 19.5 (8,8) | 21.5 (9,7) | 22.5 (10,2) | 23.5 (10,6) |
| DN 100/PN 10/16 | 17.8 (8,1) | 19.8 (9,0) | 20.8 (9,5) | 21.8 (9,9) |
| DN 100/PN 40 | 23.2 (10,5) | 25.2 (11,5) | 26.2 (11,9) | 27.2 (12,3) |

**Table 16. Transmitter Options Weights**

| Code | Option | Add lb (kg) |
|---|---|---|
| J, K, L, M | Stainless steel housing | 3.9 (1,8) |
| M5 | LCD display for aluminum housing | 0.5 (0,2) |
| M5 | LCD display for wireless output | 0.1 (0,04) |
| B4 | SST mounting bracket for coplanar flange | 1.0 (0,5) |
| B1, B2, B3 | Mounting bracket for traditional flange | 2.3 (1,0) |
| B7, B8, B9 | Mounting bracket for traditional flange | 2.3 (1,0) |
| BA, BC | SST bracket for traditional flange | 2.3 (1,0) |
| H2 | Traditional flange | 2.6 (1,2) |
| H3 | Traditional flange | 3.0 (1,4) |
| H4 | Traditional flange | 3.0 (1,4) |
| H7 | Traditional Flange | 2.7 (1,2) |
| FC | Level flange—3-in., Class 150 | 12.7 (5,8) |
| FD | Level flange—3-in., Class 300 | 15.9 (7,2) |
| FA | Level flange—2-in., Class 150 | 8.0 (3,6) |
| FB | Level flange—2-in., Class 300 | 8.4 (3,3) |
| FP | DIN Level flange, SST, DN 50, PN 40 | 7.8 (3,5) |
| FQ | DIN Level flange, SST, DN 80, PN 40 | 12.7 (5,8) |
| WSM | SST sensor module | 1.0 (0,45) |
| | Power module (701PGNKF) | 0.4 (0,18) |



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# Product certifications

## Rosemount 2051C/T/L

Rev 1.5

### European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

### Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

### North America

**E5** USA Explosionproof (XP) and Dust-Ignitionproof (DIP)
Certificate: FM16US0232
Standards: FM Class 3600 – 2011, FM Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008. ANSI/IEC 60529 2004
Markings: XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(–50 °C ≤ $T_a$ ≤ +85 °C); Factory Sealed; Type 4X

**I5** USA Intrinsic Safety (IS) and Nonincendive (NI)
Certificate: FM16US0231X
Standards: FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008
Markings: IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02051-1009; Class I, Zone 0; AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D; T4(–50 °C ≤ $T_a$ ≤ +70 °C); Type 4X

***Special Condition for Safe Use (X):***

1. The Model 2051 transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.

**IE** USA FISCO
Certificate: FM16US0231X
Standards: FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005
Markings: IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 02051-1009 (–50 °C ≤ $T_a$ ≤ +60 °C); Type 4X

**E6** Canada Explosion-Proof, Dust Ignition Proof
Certificate: 2041384
Standards: CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No.142-M1987, CAN/CSA-C22.2 No.157-92, CSA Std C22.2 No. 213-M1987, CAN/CSA-E60079-0:07, CAN/CSA-E60079-1:07, CAN/CSA-E60079-11-02, CAN/CSA-C22.2 No.60529:05, ANSI/ISA-12.27.01–2003
Markings: Explosion-Proof for Class I, Divisions 1, Groups B, C, and D. Dust-Ignition Proof for Class II and Class III, Division 1, Groups E, F, and G. Suitable for Class I, Division 2; Groups A, B, C, and D for indoor and outdoor hazardous locations. Class I Zone 1 Ex d IIC T5. Enclosure type 4X, factory sealed. Single Seal.

**I6** Canada Intrinsic Safety
Certificate: 2041384
Standards: CSA Std. C22.2 No. 142 - M1987, CSA Std.C22.2 No. 213 - M1987, CSA Std. C22.2 No.157 - 92, CSA Std. C22.2 No. 213 - M1987, ANSI/ISA 12.27.01 – 2003, CAN/CSA-E60079-0:07, CAN/CSA-E60079-11:02
Markings: Intrinsically safe for Class I, Division 1, Groups A,B, C, and D when connected in accordance with Rosemount drawing 02051-1008. Ex ia IIC T3C. Single Seal. Enclosure Type 4X

### Europe

**E1** ATEX Flameproof
Certificate: KEMA 08ATEX0090X
Standards: EN 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-26:2015
Markings: ⟨Ex⟩ II 1/2 G Ex db IIC Ga/Gb T6(–60 °C ≤ $T_a$ ≤ +70 °C), T4/T5 (–60 °C ≤ $T_a$ ≤ +80 °C)



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**Table 17. Process Connection Temperature**

| Temperature class | Process temperature | Ambient temperature |
|---|---|---|
| T6 | –60 °C to +70 °C | –60 °C to +70 °C |
| T5 | –60 °C to +80 °C | –60 °C to +80 °C |
| T4 | –60 °C to +120 °C | –60 °C to +80 °C |

***Special Conditions for Safe Use (X):***

1. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.
2. Non- standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
3. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and data sheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm shall be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
4. Flameproof joints are not intended for repair.

**I1** ATEX Intrinsic Safety
Certificate: Baseefa08ATEX0129X
Standards: EN60079-0:2012, EN60079-11:2012
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

**Table 18. Input Parameters**

| Parameter | HART | Fieldbus/PROFIBUS |
|---|---|---|
| Voltage $U_i$ | 30 V | 30 V |
| Current $I_i$ | 200 mA | 300 mA |
| Power $P_i$ | 1.0 W | 1.3 W |
| Capacitance $C_i$ | 0.012 µF | 0 µF |
| Inductance $L_i$ | 0 mH | 0 mH |

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

**IA** ATEX FISCO
Certificate: Baseefa08ATEX0129X
Standards: EN60079-0:2012, EN60079-11:2012
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +60 °C)

**Table 19. Input Parameters**

| Parameter | FISCO |
|---|---|
| Voltage $U_i$ | 17.5 V |
| Current $I_i$ | 380 mA |
| Power $P_i$ | 5.32 W |
| Capacitance $C_i$ | 0 µF |
| Inductance $L_i$ | 0 mH |

***Special Conditions for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

**N1** ATEX Type n
Certificate: Baseefa08ATEX0130X
Standards: EN60079-0:2012, EN60079-15:2010
Markings: ⟨Ex⟩ II 3G Ex nA IIC T4 Gc (–40 °C ≤ $T_a$ ≤ +70 °C)

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of by EN 60079-15:2010. This must be taken into account during installation.

**ND** ATEX Dust
Certificate: Baseefa08ATEX0182X
Standards: EN60079-0:2012, EN60079-31:2009
Markings: ⟨Ex⟩ II 1 D Ex ta IIIC T95 °C $T_{500}$ 105 °C Da (–20 °C ≤ $T_a$ ≤ +85 °C)

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.

## International

**E7** IECEx Flameproof
Certificate: IECExKEM08.0024X
Standards: IEC 60079-0:2011, IEC 60079-1:2014-06, IEC 60079-26:2014-10
Markings: Ex db IIC T6...T4 Ga/Gb; T6(–60 °C ≤ $T_a$ ≤ +70 °C), T4/T5(–60 °C ≤ $T_a$ ≤ +80 °C)



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**Table 20. Process Connection Temperature**

| Temperature class | Process temperature | Ambient temperature |
|---|---|---|
| T6 | –60 °C to +70 °C | –60 °C to +70 °C |
| T5 | –60 °C to +80 °C | –60 °C to +80 °C |
| T4 | –60 °C to +120 °C | –60 °C to +80 °C |

***Special Conditions for Safe Use (X):***

1. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and data sheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm shall be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.
3. Flameproof joints are not intended for repair.
4. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

**I7** IECEx Intrinsic Safety
Certificate: IECExBAS08.0045X
Standards: IEC60079-0:2011, IEC60079-11:2011
Markings: Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

**Table 21. Input Parameters**

| Parameter | HART | Fieldbus/PROFIBUS |
|---|---|---|
| Voltage $U_i$ | 30 V | 30 V |
| Current $I_i$ | 200 mA | 300 mA |
| Power $P_i$ | 1.0 W | 1.3 W |
| Capacitance $C_i$ | 0.012 µF | 0 µF |
| Inductance $L_i$ | 0 mH | 0 mH |

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

**IG** IECEx FISCO
Certificate: IECExBAS08.0045X
Standards: IEC60079-0:2011, IEC60079-11:2011
Markings: Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +60 °C)

**Table 22. Input Parameters**

| Parameter | FISCO |
|---|---|
| Voltage $U_i$ | 17.5 V |
| Current $I_i$ | 380 mA |
| Power $P_i$ | 5.32 W |
| Capacitance $C_i$ | 0 µF |
| Inductance $L_i$ | 0 mH |

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

**N7** IECEx Type n
Certificate: IECExBAS08.0046X
Standards: IEC60079-0:2011, IEC60079-15:2010
Markings: Ex nA IIC T4 Gc (–40 °C ≤ $T_a$ ≤ +70 °C)

***Special Condition for Safe Use (X):***

1. If fitted with a 90 V transient suppressor, the equipment is not capable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of IEC60079-15:2010. This must be taken into account during installation.

## Brazil

**E2** INMETRO Flameproof
Certificate: UL-BR 14.0375X
Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-1:2009 + Errata 1:2011,ABNT NBR IEC 60079-26:2008 + Errata 1:2009
Markings: Ex d IIC T6/T5 Gb IP66, T6(–50 °C ≤ $T_a$ ≤ +65 °C), T5(–50 °C ≤ $T_a$ ≤ +80 °C)



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***Special Condition for Safe Use (X):***

1. The device contains a thin wall diaphragm. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. The Ex d blanking elements, cable glands, and wiring shall be suitable for a temperature of 90 °C
3. In case of repair, contact the manufacturer for information on the dimensions of the flameproof joints.

**I2 INMETRO Intrinsic Safety**
Certificate: UL-BR 14.0759X
Standards: ABNT NBR IEC 60079-0:2008 + Errata 1:2011; ABNT NBR IEC 60079-11:2009
Markings: Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

**Table 23. Input Parameters**

| Parameter | HART | Fieldbus/PROFIBUS |
|---|---|---|
| Voltage $U_i$ | 30 V | 30 V |
| Current $I_i$ | 200 mA | 300 mA |
| Power $P_i$ | 1 W | 1.3 W |
| Capacitance $C_i$ | 0.012 µF | 0 µF |
| Inductance $L_i$ | 0 mH | 0 mH |

***Special Conditions for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in atmospheres that require ELP Ga.

**IB** INMETRO FISCO
Certificate: UL-BR 14.0759X
Standards: ABNT NBR IEC 60079-0:2008 + Errata 1:2011; ABNT NBR IEC 60079-11:2009
Markings: Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +60 °C)

**Table 24. Input Parameters**

| Parameter | FISCO |
|---|---|
| Voltage $U_i$ | 17.5 V |
| Current $I_i$ | 380 mA |
| Power $P_i$ | 5.32 W |
| Capacitance $C_i$ | 0 µF |
| Inductance $L_i$ | 0 mH |

***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in atmospheres that require ELP Ga.

## China

**E3** China Flameproof
Certificate: GYJ13.1386X; GYJ5.1366X [Flowmeters]
Standards: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010-2010
Markings:
Pressure Transmitter: Ex d IIC Gb, T6(–50 °C ≤ $T_a$ ≤ +65 °C), T5(–50 °C ≤ $T_a$ ≤ +80 °C)
Flowmeter: Ex d IIC Ga/Gb, T6(–50 °C ≤ $T_a$ ≤ +65 °C), T5(–50 °C ≤ $T_a$ ≤ +80 °C)

***Special Conditions for Safe Use (X):***

1. Symbol "X" is used to denote specific conditions of use:
   - The Ex d blanking elements, cable glands, and wiring shall be suitable for a temperature of 90 °C.
   - This device contains a thin wall diaphragm. Installation, maintenance and use shall take into account the environment conditions to which the diaphragm will be subjected.
2. The relation between T code and ambient temperature range is:

| $T_a$ | Temperature class |
|---|---|
| –50 °C ≤ $T_a$ ≤ +80 °C | T5 |
| –50 °C ≤ $T_a$ ≤ +65 °C | T6 |

3. The earth connection facility in the enclosure should be connected reliably.
4. During installation, use and maintenance of the product, observe the warning "Don't open the cover when the circuit is alive."
5. During installation, there should be no mixture harmful to flameproof housing
6. Cable entry and conduit, certified by NEPSI with type of protection Ex d IIC and appropriate thread form, should be applied when installed in a hazardous location. Blanking elements should be used on the redundant cable entries.
7. End users are not permitted to change any internal components, but to settle the problem in conjunction with the manufacturer to avoid damage to the product.
8. Maintenance should be done in a non-hazardous location.
9. During installation, use and maintenance of this product, observe the following standards: GB3836.13-2013, GB3836.15-2000, GB3836.16-2006, GB50257-2014.



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**I3** China Intrinsic Safety
Certificate: GYJ12.1295X; GYJ15.1365X [Flowmeters]
Standards: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings: Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

***Special Conditions for Safe Use (X):***

1. Symbol "X" is used to denote specific conditions of use:
   a. If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test for 1 minute. This must be taken into account when installing the apparatus.
   b. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.
2. The relation between T code and ambient temperature range is:

| Model | T code | Temperature range |
|---|---|---|
| HART, Fieldbus, PROFIBUS, and Low Power | T4 | –60 °C ≤ $T_a$ ≤ +70 °C |

3. Intrinsically safe parameters:

| Parameter | HART | Fieldbus/ PROFIBUS | FISCO |
|---|---|---|---|
| Voltage $U_i$ | 30 V | 30 V | 17.5 V |
| Current $I_i$ | 200 mA | 300 mA | 380 mA |
| Power $P_i$ | 1 W | 1.3 W | 5.32 W |
| Capacitance $C_i$ | 0.012 µF | 0 µF | 0 nF |
| Inductance $L_i$ | 0 mH | 0 mH | 0 µF |

Note 1: FISCO parameters comply with the requirements for FISCO field devices in GB3836.19-2010.
Note 2: [For Flowmeters] When Rosemount 644 Temperature Transmitter is used, the transmitter should be used with Ex-certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of both Rosemount 644 and associated apparatus. The cables between Rosemount 644 and associated apparatus should be shielded cables (the cables must have insulated shield). The shielded cable has to be grounded reliably in a non-hazardous area.

4. The product should be used with Ex-certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of the product and associated apparatus.
5. The cables between this product and associated apparatus should be shielded cables (the cables must have insulated shield). The shielded cable has to be grounded reliably in a non-hazardous area.
6. End users are not permitted to change any internal components, and needs to settle the problem in conjunction with the manufacturer to avoid damage to the product.
7. During installation, use and maintenance of this product, observe the following standards: GB3836.13-2013, GB3836.15-2000, GB3836.16-2006, GB3836.18-2010, GB50257-2014.

## Japan

**E4** Japan Flameproof
Certificate: TC20598, TC20599, TC20602, TC20603 [HART]; TC20600, TC20601, TC20604, TC20605 [Fieldbus]
Markings: Ex d IIC T5

## Technical Regulations Customs Union (EAC)

**EM** EAC Flameproof
Certificate: RU C-US.GB05.B.01199
Markings: Ga/Gb Ex d IIC T5/T6 X, T5(–50 °C ≤ $T_a$ ≤ +80 °C), T6(–50 °C ≤ $T_a$ ≤ +65 °C)

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

**IM** EAC Intrinsically Safe
Certificate: RU C-US.GB05.B.01199
Markings: 0Ex ia IIC T4 Ga X (–60 °C ≤ $T_a$ ≤ +70 °C)

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

## Combinations

**K1** Combination of E1, I1, N1, and ND

**K2** Combination of E2 and I2

**K5** Combination of E5 and I5

**K6** Combination of E6 and I6

**K7** Combination of E7, I7, N7 and IECEx Dust

IECEx Dust
Certificate: IECExBAS08.0058X
Standards: IEC60079-0:2011, IEC60079-15:2010
Markings: Ex nA IIIC T95 °C $T_{500}$ 105 °C Da (–20 °C ≤ $T_a$ ≤ +85 °C)



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***Special Condition for Safe Use (X):***

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding a 500 V isolation from earth test and this must be taken into account during installation.

**KA** Combination of E1, I1, and K6

**KB** Combination of K5 and K6

**KC** Combination of E1, I1, and K5

**KD** Combination of K1, K5, and K6

**KM** Combination of EM and IM

## Additional Certifications

**SBS** American Bureau of Shipping (ABS) Type Approval
Certificate: 09-HS446883B-3-PDA
Intended Use: Marine and Offshore Applications
Measurement of either Gauge or Absolute Pressure for Liquid, Gas, and Vapor
ABS Rules: 2013 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 4-8-3/1.7, 4-8-3/13.1

**SBV** Bureau Veritas (BV) Type Approval
Certificate: 23157/B0 BV
BV Rules: Bureau Veritas Rules for the Classification of Steel Ships

Application: Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 2051 cannot be installed on diesel engines.

**SDN** Det Norske Veritas (DNV) Type Approval
Certificate: TAA00004F
Intended Use: DNV GL Rules for Classification — Ships and offshore units
Application:

| Locations classes | |
|---|---|
| Type | 2051 |
| Temperature | D |
| Humidity | B |
| Vibration | A |
| EMC | B |
| Enclosure | D |

**SLL** Lloyds Register (LR) Type Approval
Certificate: 11/60002
Application: Environmental categories ENV1, ENV2, ENV3, and ENV5



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# Rosemount 2051G

Rev 1.0

## European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

## Europe

**E1** ATEX Flameproof
Certificate: KEMA97ATEX2378X
Standards: EN 60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015
Markings: Ex II 1/2 G Ex db IIC T6.T4 Ga/Gb, T6(–60 °C ≤ $T_a$ ≤ +70°C)), T5/T4 (–60 °C ≤ $T_a$ ≤ +80 °C)

**Table 25. Process Connection Temperature**

| Temperature class | Process connection temperature | Ambient temperature |
|---|---|---|
| T6 | –60 °C to +70 °C | –60 °C to +70 °C |
| T5 | –60 °C to +80 °C | –60 °C to +80 °C |
| T4 | –60 °C to +120 °C | –60 °C to +80 °C |

***Special Conditions for Safe Use (X):***

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and data sheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5°C greater than maximum specified temperature for location where installed.

**I1** ATEX Flameproof
Certificate: BAS00ATEX1166X
Standards: EN60079-0:2012 + A11:2013, EN60079-11:2012
Markings: Ex II 1 G Ex ia IIC T4 Ga (–55°C ≤ $T_a$ ≤ +70°C)

**Table 26. Input Parameters**

| | HART |
|---|---|
| **Voltage $U_i$** | 30 V |
| **Current $I_i$** | 200 mA |
| **Power $P_i$** | 0.9 W |
| **Capacitance $C_i$** | 0.012 µF |

***Special Conditions for Safe Use (X):***

1. The apparatus is not capable of withstanding the 500 V insulation test required by EN60079-11. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

## International

**E7** IECEx Flameproof
Certificate: IECEx KEM 06.0021X
Standards: IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-26:2014
Markings: Ex db IIC T6...T4 Ga/Gb T6(–60 °C ≤ $T_a$ ≤ +70 °C), T5/T4(–60 °C ≤ $T_a$ ≤ +80 °C)

**Table 27. Process Connection Temperature**

| Temperature class | Process connection temperature | Ambient temperature |
|---|---|---|
| T6 | –60 °C to +70 °C | –60 °C to +70 °C |
| T5 | –60 °C to +80 °C | –60 °C to +80 °C |
| T4 | –60 °C to +120 °C | –60 °C to +80 °C |



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***Special Conditions for Safe Use (X):***

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and data sheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5°C greater than maximum specified temperature for location where installed.

**I7** IECEx Intrinsic Safety
Certificate: IECEx BAS 12.0071X
Standards: IEC60079-0:2011, IEC60079-11:2011
Markings: Ex ia IIC T4 Ga (-55°C ≤ $T_a$ ≤+70°C)

**Table 28. Input Parameters**

| | |
|---|---|
| **Voltage $U_i$** | 30 V |
| **Current $I_i$** | 200 mA |
| **Power $P_i$** | 0.9 W |
| **Capacitance $C_i$** | 0.012 µF |

***Special Conditions for Safe Use (X):***

1. When fitted with a transient suppression terminal block, the Model 2088 is incapable of passing the 500V isolation test. This must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

## Conduit Plugs and Adapters

IECEx Flameproof and Increased Safety
Certificate: IECEx FMG 13.0032X
Standards: IEC60079-0:2011, IEC60079-1:2007, IEC60079-7:2006-2007
Markings: Ex d e IIC Gb

ATEX Flameproof and Increased Safety
Certificate: FM13ATEX0076X
Standards: EN60079-0:2012, EN60079-1:2007, IEC60079-7:2007
Markings: II 2 G Ex d e IIC Gb

**Table 29. Conduit Plug Thread Sizes**

| Thread | Identification Mark |
|---|---|
| M20 x 1.5 | M20 |
| 1/2 - 14 NPT | 1/2 NPT |
| G 1/2 | G 1/2 |

**Table 30. Thread Adapter Thread Sizes**

| Male Thread | Identification Mark |
|---|---|
| M20 x 1.5 – 6H | M20 |
| 1/2 - 14 NPT | 1/2 - 14 NPT |
| 3/4 - 14 NPT | 3/4 - 14 NPT |
| **Female Thread** | **Identification Mark** |
| M20 x 1.5 – 6H | M20 |
| 1/2 - 14 NPT | 1/2 - 14 NPT |
| G1/2 | G1/2 |

***Special Conditions for Safe Use (X):***

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety “e” the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure.
2. The blanking plug shall not be used with an adapter.
3. Blanking Plug and Threaded Adapter shall be either NPT or Metric thread forms. G1/2 thread forms are only acceptable for existing (legacy) equipment installations.



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# Rosemount 2051 Wireless

Rev 1.2

## European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

## Telecommunication compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

## FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

## Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

## Installing in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

## USA

**I5** U.S.A. Intrinsically Safe (IS)
Certificate: FM 3046325
Standards: FM Class 3600 – 2011,
FM Class 3610 – 2010,
FM Class 3810 – 2005,
ANSI/ISA 60079-0 – 2009,
ANSI/ISA 60079-11 – 2009,
NEMA 250 – 2003, ANSI/IEC 60529
Markings: IS CL I, DIV 1, GP A, B, C, D T4;
CL 1, Zone 0 AEx ia IIC T4;
T4(–40 °C ≤ $T_a$ ≤ +70 °C) when installed per Rosemount drawing 03031-1062;
Type 4X/IP66/IP68

***Special Conditions for Safe Use (X):***

1. The Rosemount 2051 Wireless Pressure Transmitter shall only be used with the 701PGNKF Rosemount SmartPower Battery Pack.
2. The in-line pressure sensor may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and used to prevent impact and friction.
3. The surface resistivity of the transmitter housing is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

## Canada

**I6** Canada Intrinsically Safe
Certificate: CSA 2526009
Standards: CAN/CSA C22.2 No. 0-M91,
CAN/CSA C22.2 No. 94-M91,
CSA Std C22.2 No. 142-M1987,
CSA Std C22.2 No. 157-92,
CSA Std C22.2 No. 60529:05
Markings: Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, T4 when installed per Rosemount drawing 03031-1063;
Type 4X/IP66/IP68

## Europe

**I1** ATEX Intrinsic Safety
Certificate: Baseefa12ATEX0228X
Standards: EN 60079-0:2012, EN 60079-11:2012
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga,
T4(–40 °C ≤ $T_a$ ≤ +70 °C) IP66/IP68



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***Special Conditions for Safe Use (X):***

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Rosemount 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

## International

**I7** IECEx Intrinsic Safety
Certificate: IECEx BAS 12.0124X
Standards: IEC 60079-0:2011, IEC 60079-11:2011
Markings: Ex ia IIC T4 Ga, T4(–40 °C ≤ $T_a$ ≤ +70 °C)
IP66/IP68

***Special Conditions for Safe Use (X):***

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Rosemount 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

## Brazil

**I2** INMETRO Intrinsic Safety
Certificate: UL-BR 13.0534X
Standards: ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009
Markings: Ex ia IIC T4 IP66 Ga, T4(–40 °C ≤ $T_a$ ≤ +70 °C)

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

## China

**I3** China Intrinsic Safety
Certificate: GYJ12.1295X
GYJ15.1365X [Flowmeters]
Standards: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings: Ex ia IIC Ga T4, –40 ~ +70 °C

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

## Japan

**I4** TIIS Intrinsic Safety
Certificate: TC22022X (2051C/L)
TC22023X (2051T)
TC22024X (2051CFx)
Markings: Ex ia IIC T4 Ga, T4(–20 ~ +60 °C)

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

## EAC - Belarus, Kazakhstan, Russia

**IM** Technical Regulation Customs Union (EAC) Intrinsic Safety
Certificate: RU C-US.ГБ05.B.00390
Markings: 0Ex ia IIC T4 Ga X;

***Special Condition for Safe Use (X):***

1. See certificate for special conditions.

## Korea

**IP** Korea Intrinsic Safety
Certificate: 13-KB4BO-0295X
Markings: Ex ia IIC T4 (–40 °C ≤ $T_a$ ≤ +70 °C)

***Special Condition for Safe Use (X):***

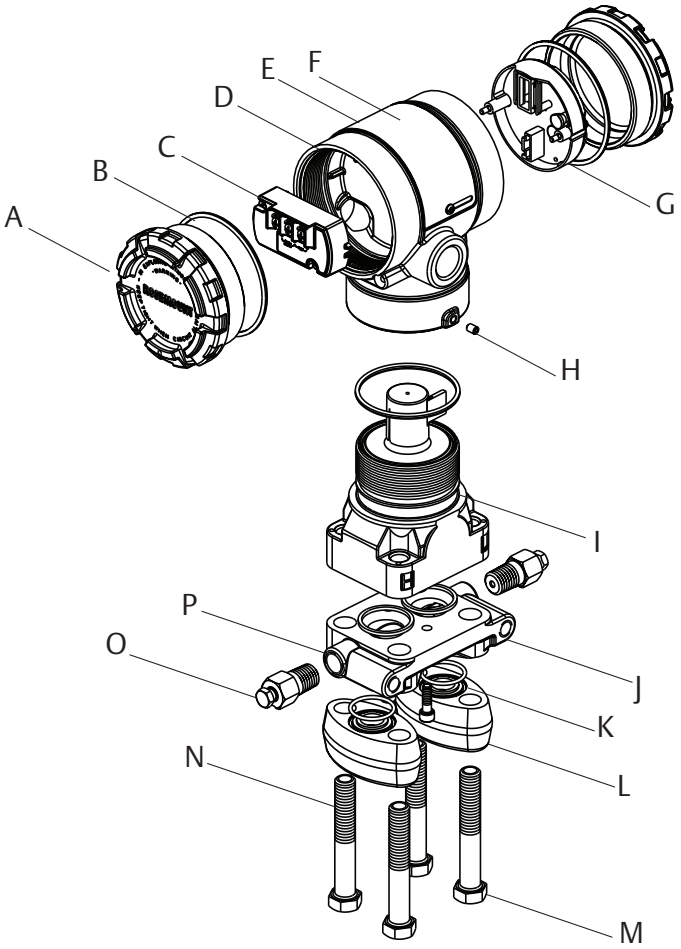
1. See certificate for special conditions.



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# Dimensional drawings

**Figure 1. Rosemount 2051C Exploded View**



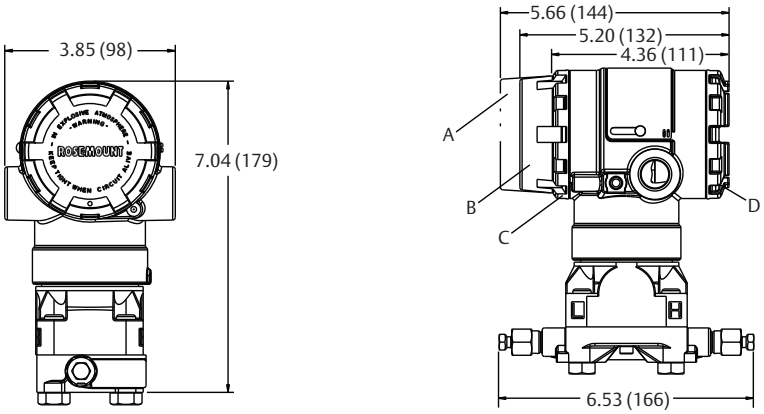

A. Cover
B. Cover O-ring
C. Terminal block
D. Electronics housing
E. Local configuration buttons[1]
F. Nameplate
G. Electronics board
H. Housing rotation set screw
(180° maximum housing rotation without further disassembly)
I. Sensor module
J. Process O-ring
K. Flange adapter O-ring
L. Flange alignment screw (not pressure retaining)
M. Flange bolts
N. Flange adapters
O. Drain/vent valve
P. Coplanar flange

1. Span and zero adjustment buttons are optional with 4–20 mA and 1–5 Vdc HART Protocol. LOI buttons are optional for PROFIBUS PA Protocol. Local configuration buttons are not available with FOUNDATION Fieldbus.



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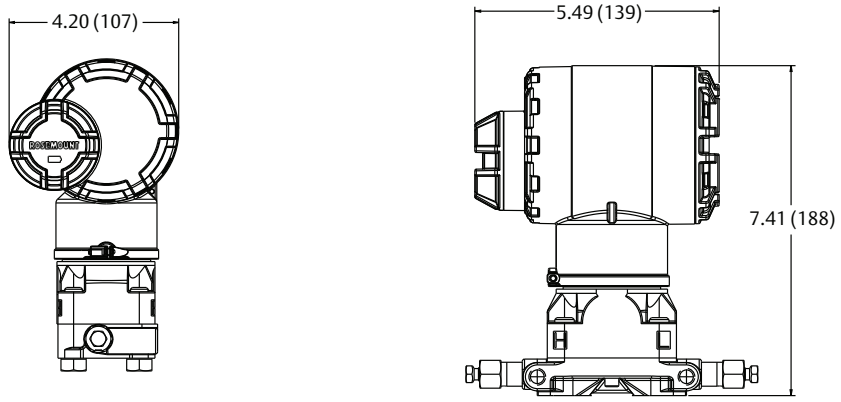
**Figure 2. Rosemount 2051C Coplanar Flange**




A. Fieldbus display cover
B. HART display cover
C. Transmitter circuitry
D. Terminal connections

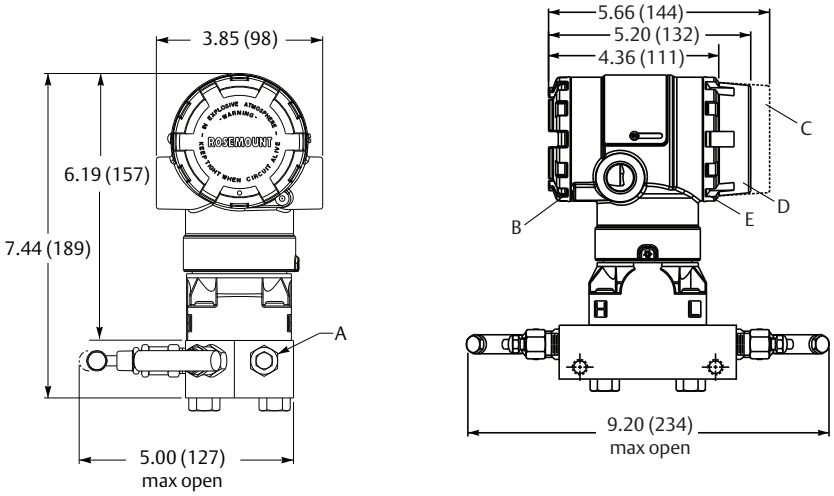
Dimensions are in inches (millimeters).

**Figure 3. Rosemount 2051 Wireless Housing with Coplanar Platform**




Dimensions are in inches (millimeters).

**Figure 4. Rosemount 2051C Coplanar with Rosemount 305 Three-Valve Coplanar Integral Manifold**




A. Drain/Vent valve
B. Terminal connections
C. Fieldbus display cover
D. HART display cover
E. Transmitter circuitry

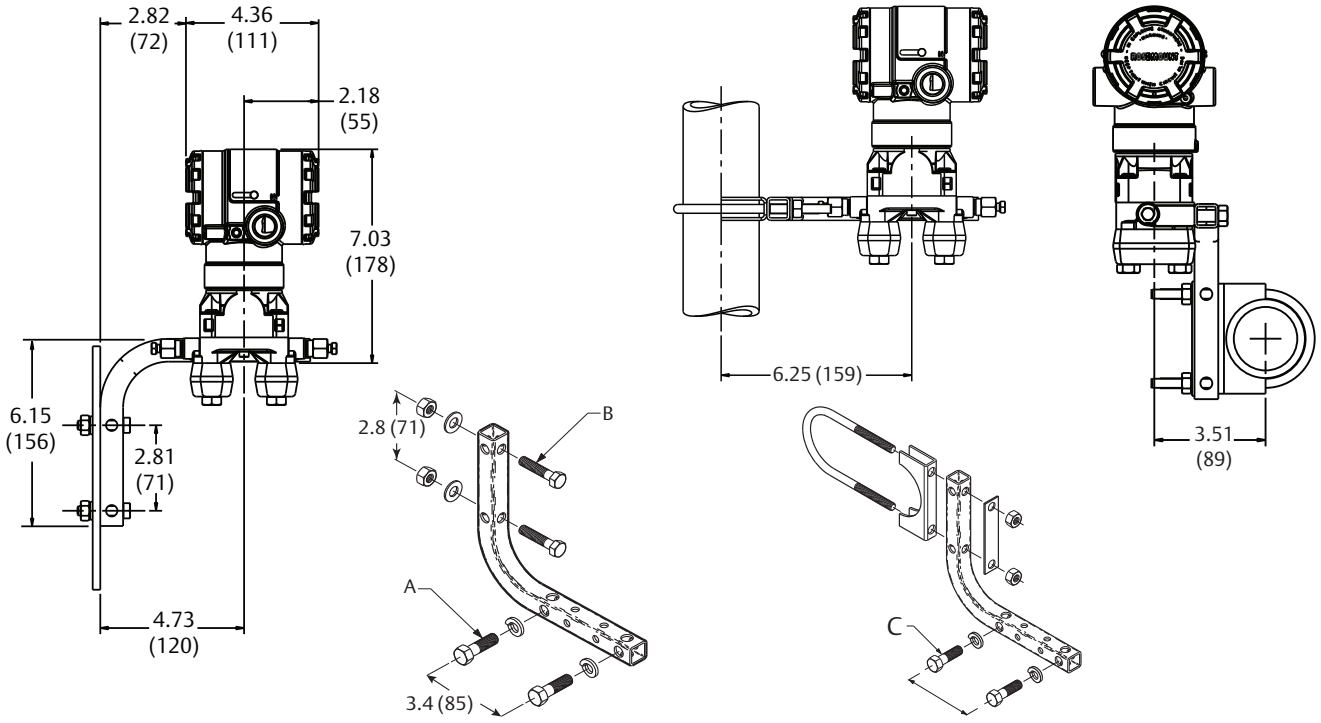
Dimensions are in inches (millimeters).



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**Figure 5. Coplanar Flange Mounting Configurations with Optional Bracket (B4) for 2-in. Pipe or Panel Mounting**

**Panel mounting** **Pipe mounting**

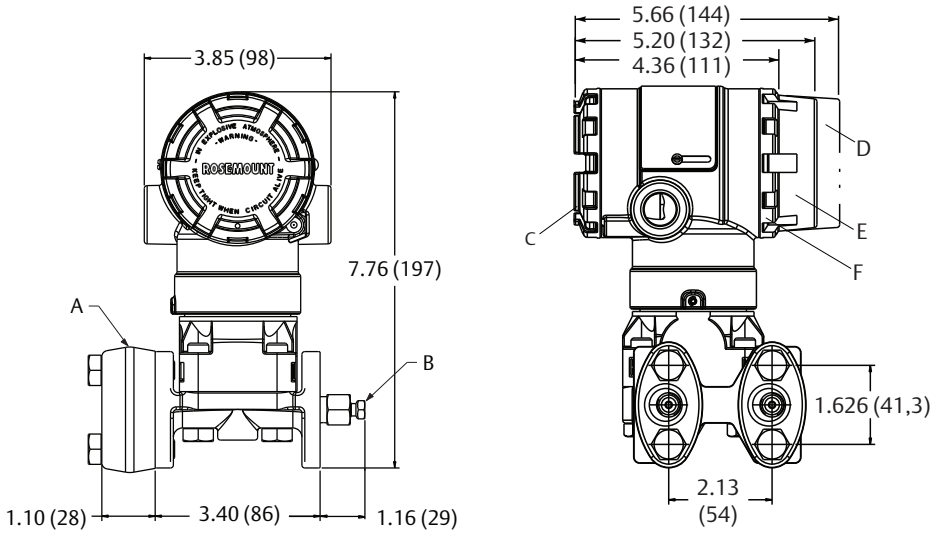



A. $^{3}/_{8}$–16 × $1^{1}/_{4}$ bolts for mounting to transmitter
B. $^{5}/_{16}$ × $1^{1}/_{2}$ bolts for panel mounting (not supplied)
C. 2-in. U-bolt for pipe mounting
Dimensions are in inches (millimeters).



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**Figure 6. Rosemount 2051C Coplanar with Traditional Flange**

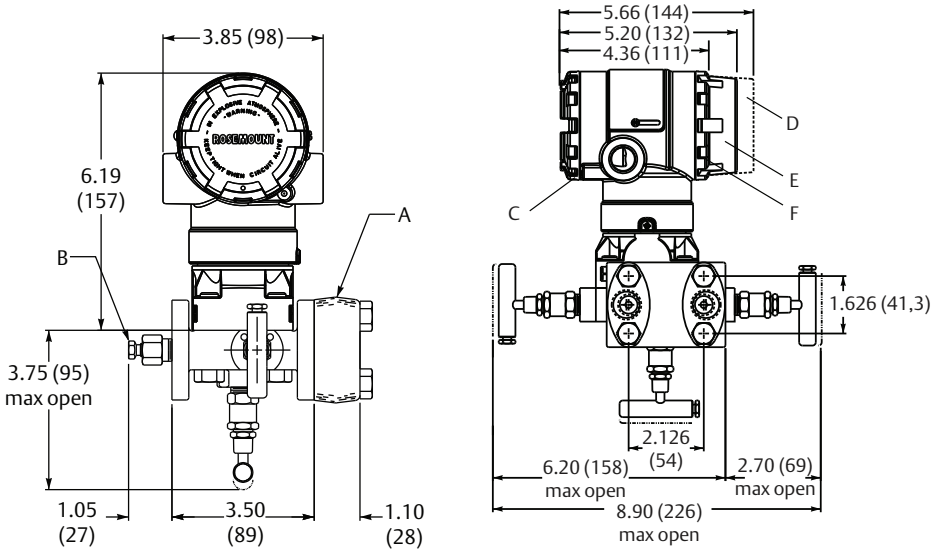



A. 1/2–14 NPT flange adapter (optional)
B. Drain/vent valve
C. Terminal connections
D. Fieldbus display cover
E. HART display cover
F. Transmitter circuitry
Dimensions are in inches (millimeters).



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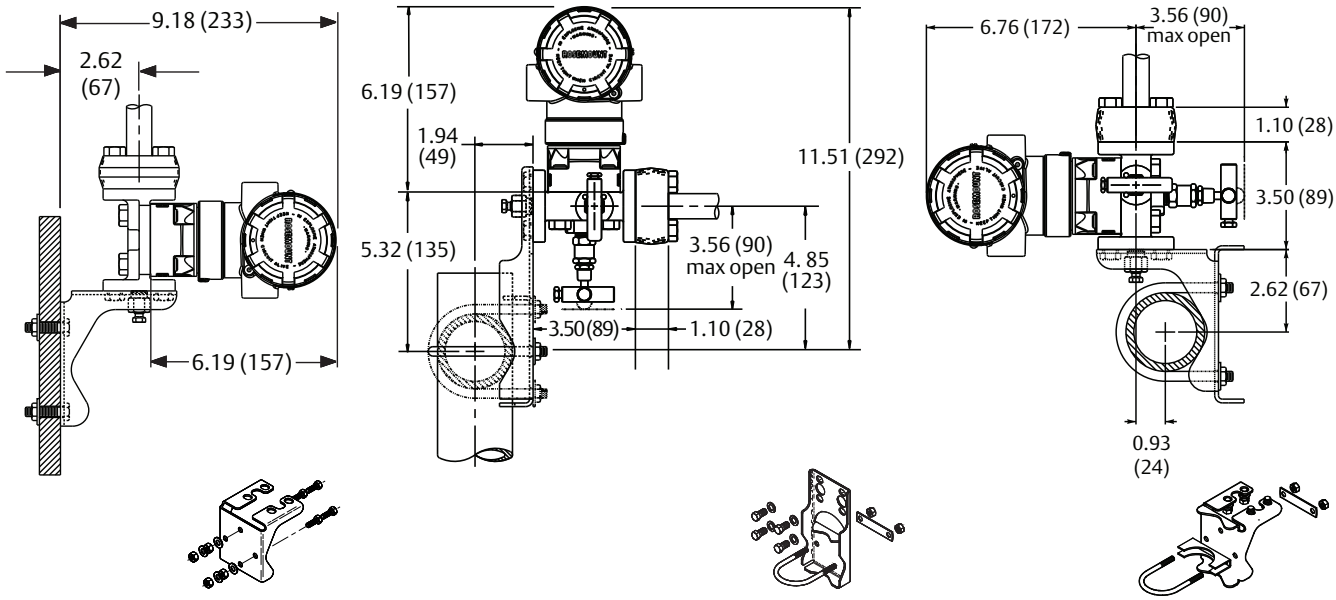
**Figure 7. Rosemount 2051C Coplanar with Rosemount 305 Three-Valve Traditional Integral Manifold**




A. 1/2–14 NPT flange adapter (optional)
B. Drain/vent valve
C. Terminal connections
D. Fieldbus display cover
E. HART display cover
F. Transmitter circuitry
Dimensions are in inches (millimeters).

**Figure 8. Traditional Flange Mounting Configurations with Optional Brackets for 2-in. Pipe or Panel Mounting**

**Panel mount (bracket option B2/B8)** | **Pipe mount (bracket option B3/B9/BC)** | **Pipe mount (bracket option B1/B7/BA)**

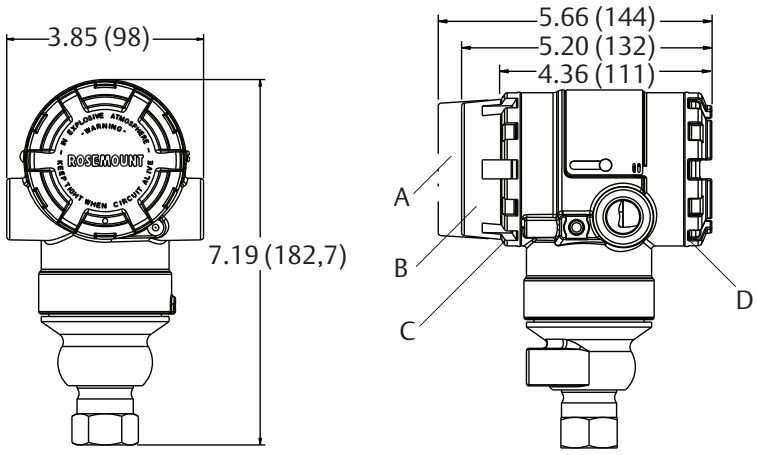



Dimensions are in inches (millimeters).



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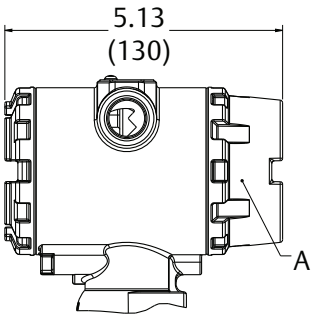
**Figure 9. Rosemount 2051T**




A. Fieldbus display cover
B. HART display cover
C. Transmitter circuitry
D. Terminal connections

Dimensions are in inches (millimeters).

**Figure 10. Rosemount 2051G with Optional Display**

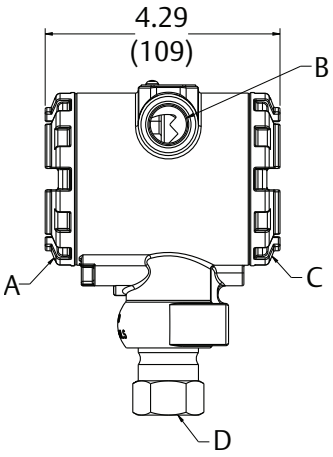



A. Digital display cover



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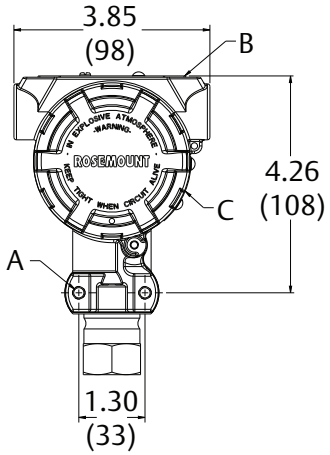
**Figure 11. Rosemount 2051G Process Connection**




A. Field terminals
B. Conduit connection
C. Transmitter electronics
D. 1/2–14 NPT female connection(1)

1. RC 1/2 female (PT 1/2 female), and M20 female also available as options.

**Figure 12. Rosemount 2051G Nameplate and Labels**

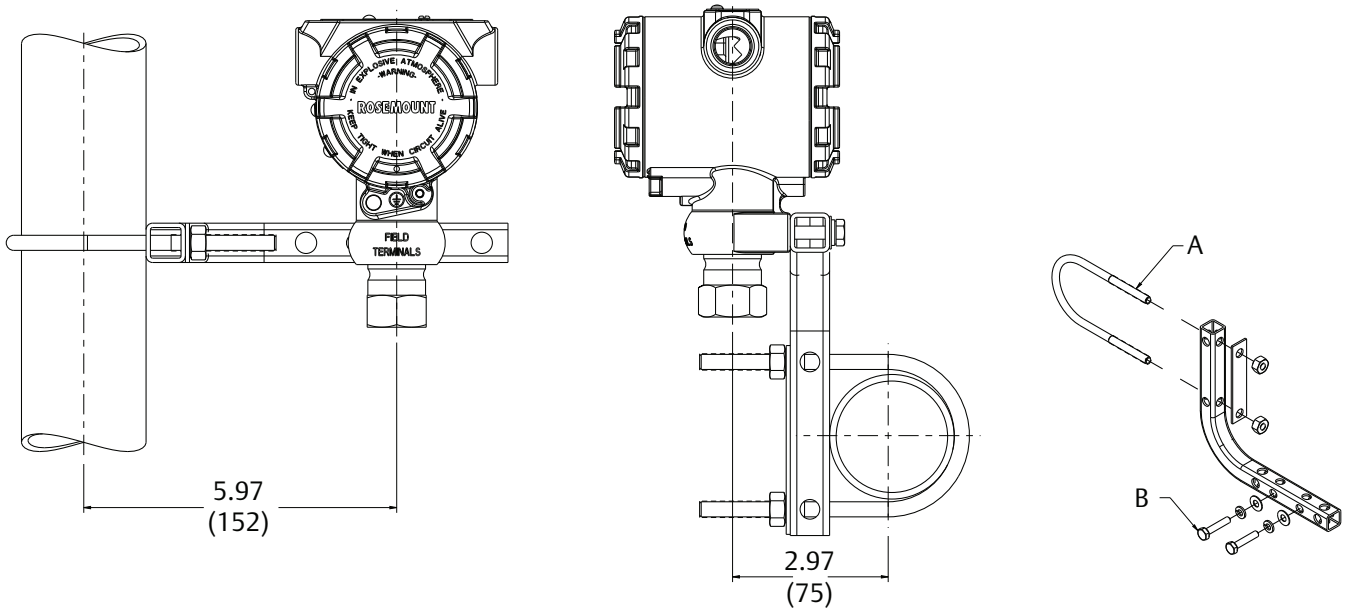



A. Bracket mounting holes (1/4–20 UNC)
B. Nameplate
C. Certification label (located on side)



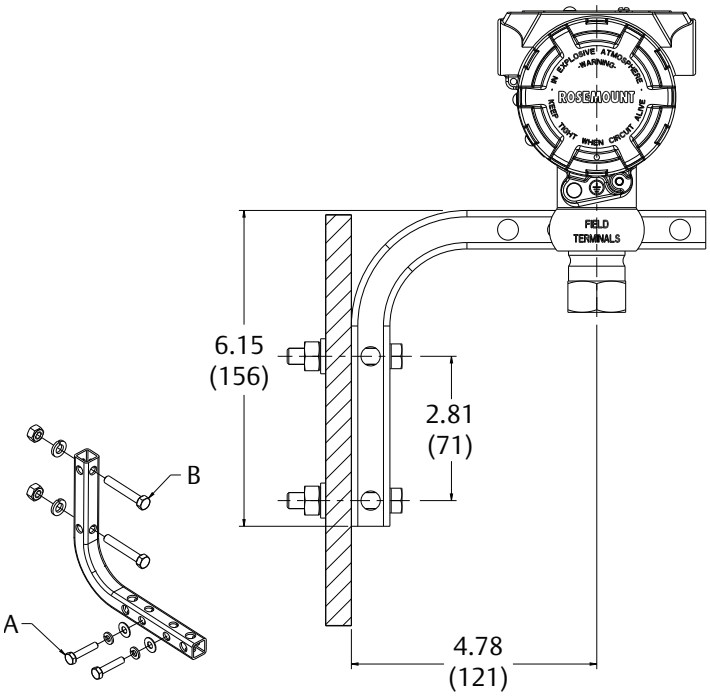
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**Figure 13. Rosemount 2051G with Optional Pipe Mounting Bracket**




A. 2–in. U-bolt for pipe mounting (clamp shown)
B. 1/4 x 1 1/4 bolts for transmitter mounting
Dimensions are in inches (millimeters).

**Figure 14. Rosemount 2051G with Optional Mounting Bracket**

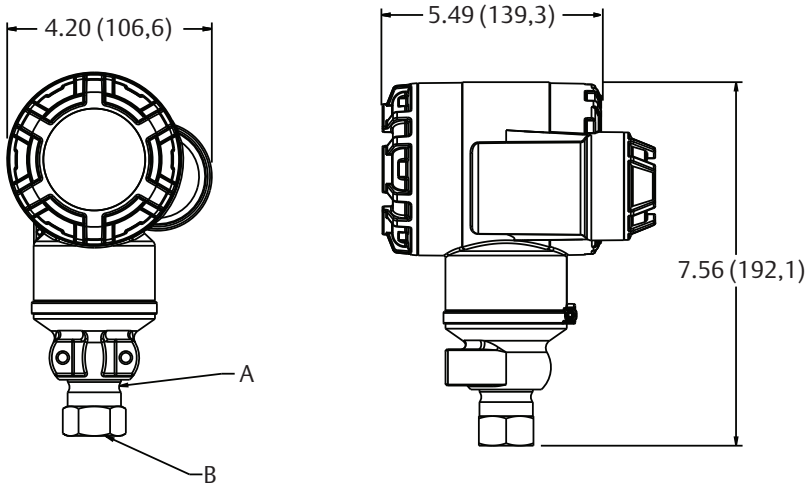



A. 1/4 x 1 1/4 bolts for transmitter mounting
B. 5/16 x 1/2 bolts for panel mounting (not supplied)
Dimensions are in inches (millimeters)



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**Figure 15. Rosemount 2051 Wireless Housing with In-line Platform**

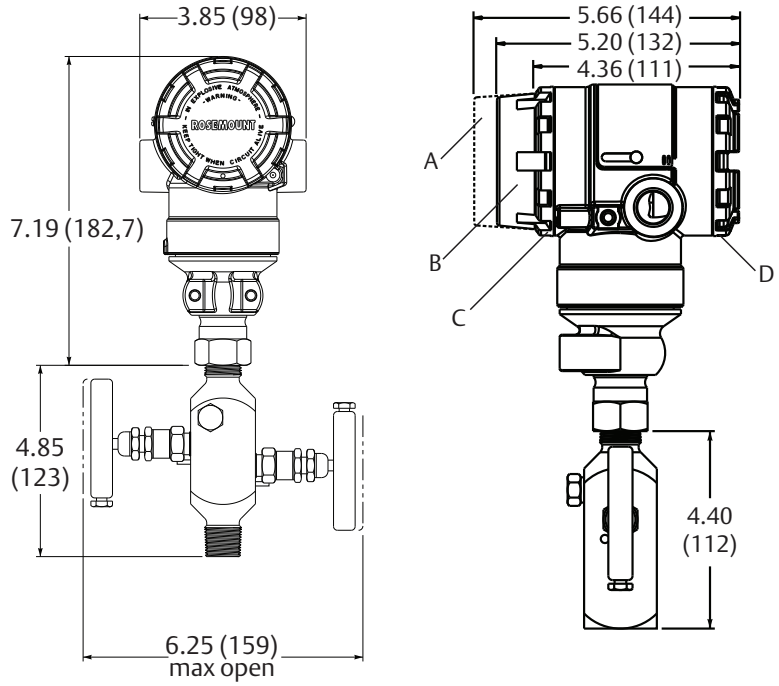



A. U-Bolt bracket
B. 1/2–14 NPT female or G1/2 A DIN 16288 make process connection
Dimensions are in inches (millimeters).



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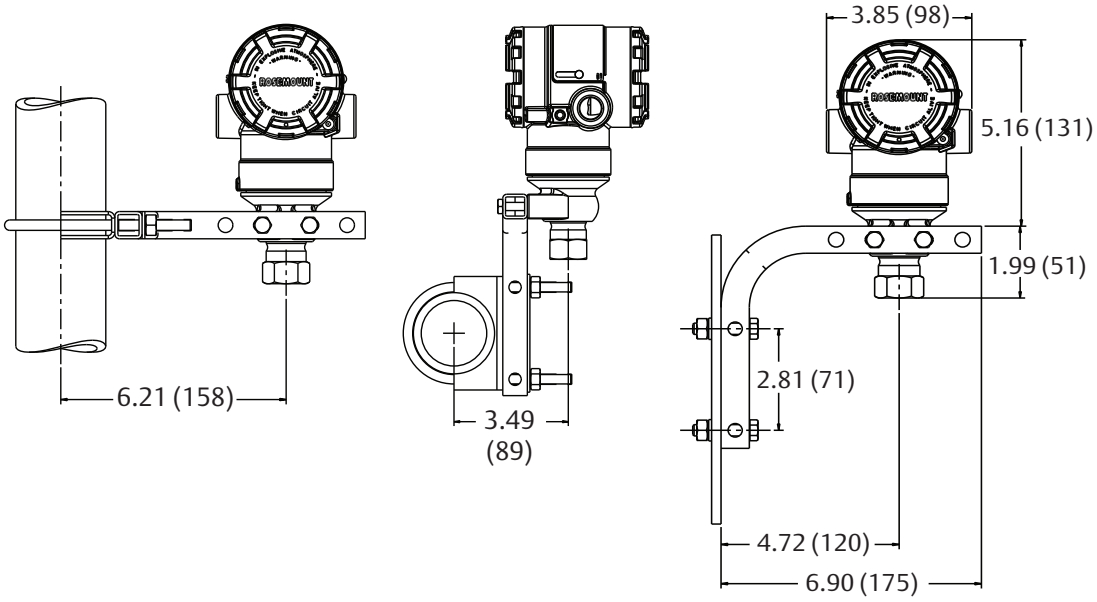
**Figure 16. Rosemount 2051T with Rosemount 306 Two-Valve Integral Manifold**




A. Fieldbus display cover
B. HART display cover
C. Transmitter circuitry
D. Terminal connections
Dimensions are in inches (millimeters).

**Figure 17. Rosemount 2051T Typical Mounting Configurations with Optional Mounting Bracket**

**Pipe mounting** **Panel mounting**




Dimensions are in inches (millimeters).



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**Figure 18. Rosemount 2051CFA Pak-Lok Annubar Flowmeter[1]**

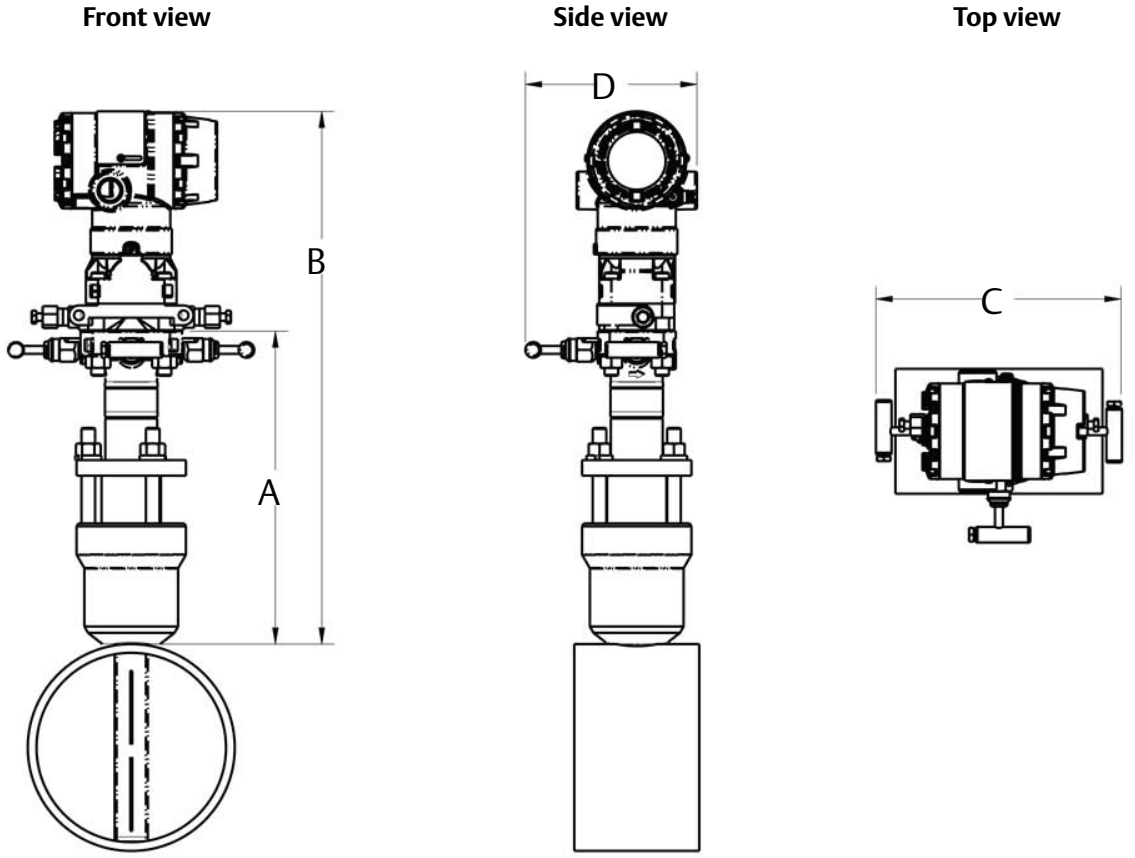



**Table 31. Rosemount 2051CFA Pak-Lok Annubar Flowmeter Dimensional Data**

| Sensor size | A (max) | B (max) | C (max) | D (max) |
|---|---|---|---|---|
| 1 | 8.50 (215.9) | 14.55 (369.6) | 9.00 (228.6) | 6.00 (152.4) |
| 2 | 11.00 (279.4) | 16.30 (414.0) | 9.00 (228.6) | 6.00 (152.4) |
| 3 | 12.00 (304.8) | 19.05 (483.9) | 9.00 (228.6) | 6.00 (152.4) |

Dimensions are in inches (millimeters).

1. *The Pak-Lok Annubar model is available up to Class 600 ANSI (1,440 psig at 100 °F [99 bar at 38 °C]).*



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**Figure 19. Rosemount 2051CFC Compact Orifice Flowmeter**

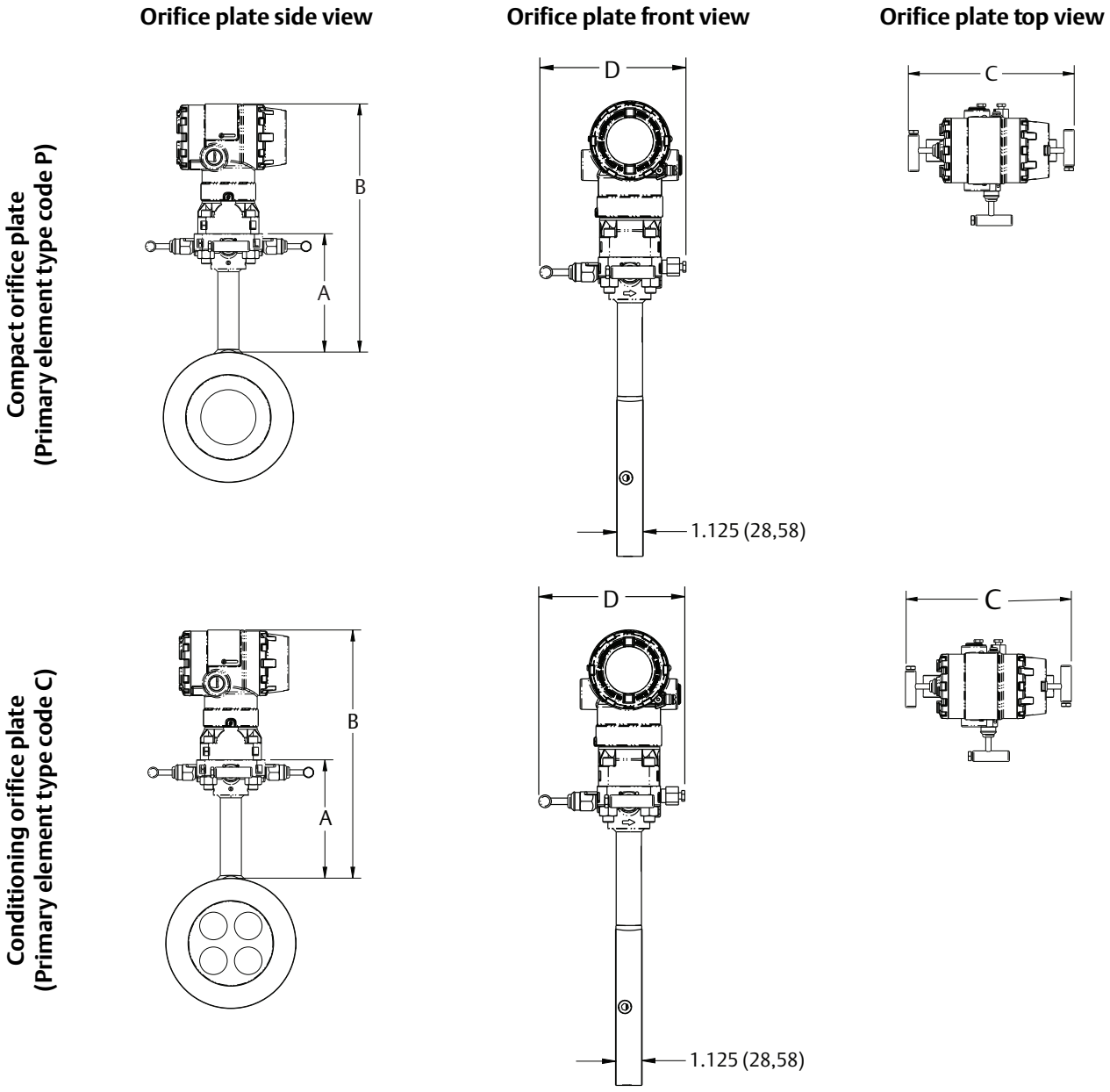



**Table 32. Rosemount 2051CFC Dimensional Data**

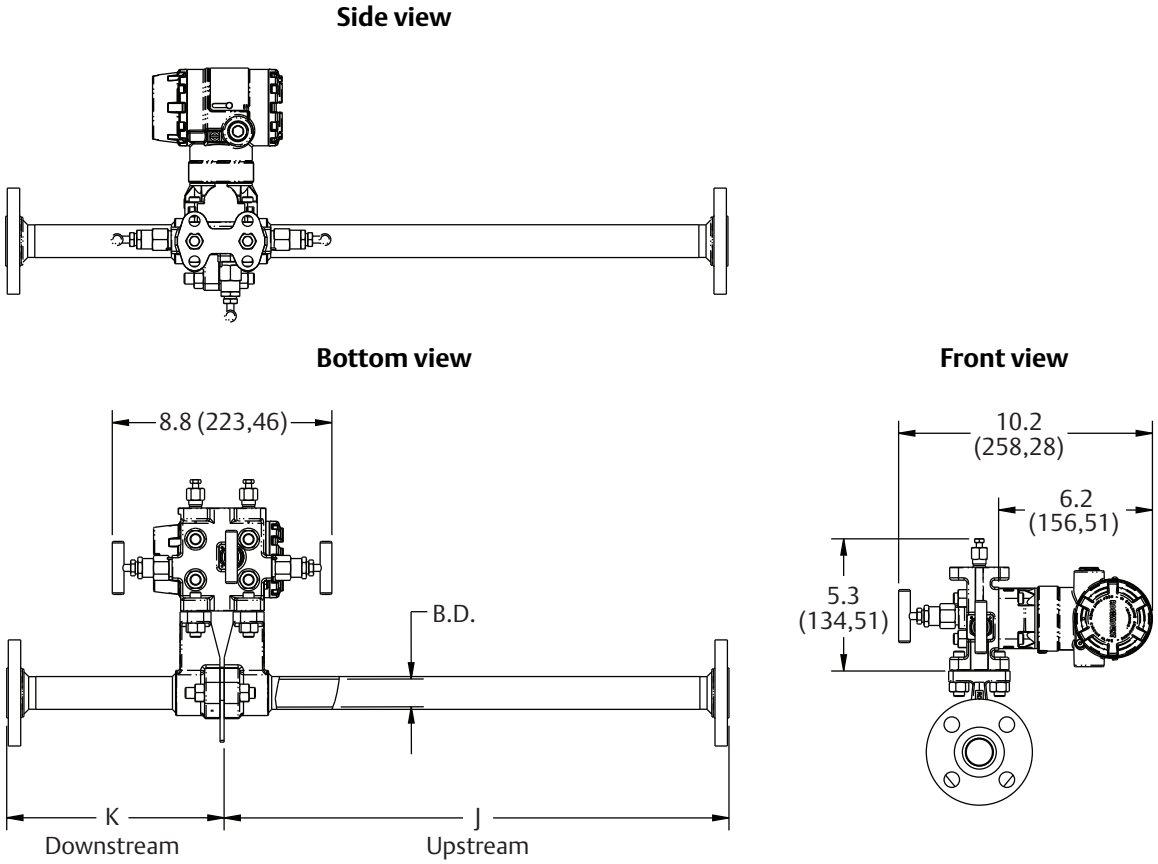
| Primary element type | A | B | Transmitter height | C | D |
|---|---|---|---|---|---|
| Type P and C | 5.62 (143) | Transmitter Height + A | 6.27 (159) | 7.75 (197) - closed<br>8.25 (210) - open | 6.00 (152) - closed<br>6.25 (159) - open |

Dimensions are in inches (millimeters).



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**Figure 20. Rosemount 2051CFP Integral Orifice Flowmeter**




Dimensions are in inches (millimeters).

**Table 33. Rosemount 2051CFP Dimensional Data**

| Dimension | Line size | | |
|---|---|---|---|
| | 1/2-in. (15 mm) | 1-in. (25 mm) | 1 1/2-in. (40 mm) |
| J (beveled/threaded pipe ends) | 12.54 (318.4) | 20.24 (514,0) | 28.44 (722,4) |
| J (RF slip-on, RTJ slip-on, RF-DIN slip on) | 12.62 (320,4) | 20.32 (516,0) | 28.52 (724,4) |
| J (RF Class 150, weld neck) | 14.37 (364,9) | 22.37 (568,1) | 30.82 (782,9) |
| J (RF Class 300, weld neck) | 14.56 (369,8) | 22.63 (574,7) | 31.06 (789,0) |
| J (RF Class 600, weld neck) | 14.81 (376,0) | 22.88 (581,0) | 31.38 (797,1) |
| K (beveled/threaded pipe ends) | 5.74 (145,7) | 8.75 (222,2) | 11.91 (302,6) |
| K (RF slip-on, RTJ slip-on, RF-DIN slip on)(1) | 5.82 (147,8) | 8.83 (224,2) | 11.99 (304,6) |
| K (RF Class 150, weld neck) | 7.57 (192,3) | 10.88 (276,3) | 14.29 (363,1) |
| K (RF Class 300, weld neck) | 7.76 (197,1) | 11.14 (282,9) | 14.53 (369,2) |
| K (RF Class 600, weld neck) | 8.01 (203,4) | 11.39 (289,2) | 14.85 (377,2) |
| B.D. (bore diameter) | 0.664 (16,87) | 1.097 (27,86) | 1.567 (39,80) |

Dimensions are in inches (millimeters).

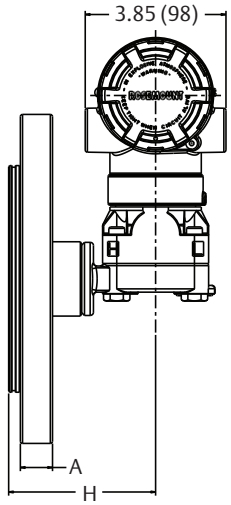
1. Downstream length shown here includes plate thickness of 0.162-in. (4.11 mm).



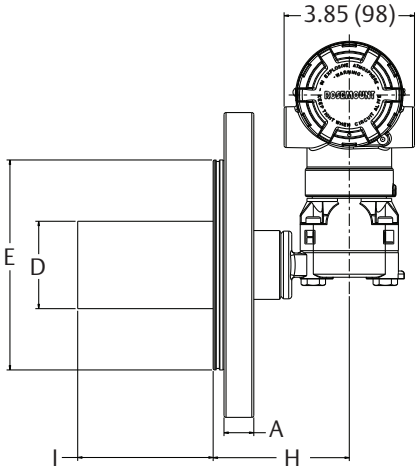
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**Figure 21. Rosemount 2051L Liquid Level**

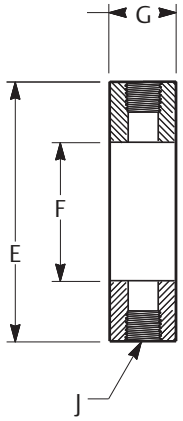
**2-in. flange configuration (flush mount only)**

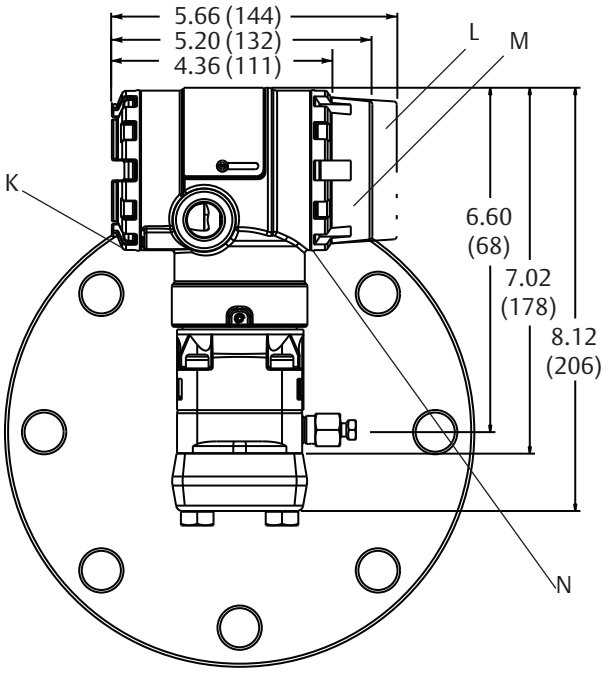



**3- and 4-in. flange configuration**

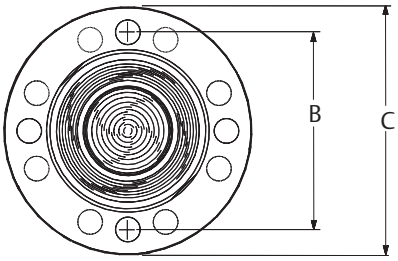



**Optional flushing connection ring (lower housing)**




**Diaphragm assembly and mounting flange**




A–H. Refer to Table 34
I. 2-, 4-, or 6-in. extension (50.8, 101.6, 152.4)
J. Flushing connection
Dimensions are in inches (millimeters).

K. Terminal connections
L. Fieldbus display cover
M. HART display cover
N. Transmitter circuitry



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**Table 34. 2051L Dimensional Specifications**

| Class[1] | Pipe size | Flange thickness A | Bolt circle diameter B | Outside diameter C | No. of bolts | Bolt hole diameter | Extension diameter[1] D | O.D. gasket surface E |
|---|---|---|---|---|---|---|---|---|
| ASME B16.5 (ANSI) 150 | 2 (51) | 0.69 (18) | 4.75 (121) | 6.0 (152) | 4 | 0.75 (19) | N/A | 3.6 (92) |
| | 3 (76) | 0.88 (22) | 6.0 (152) | 7.5 (191) | 4 | 0.75 (19) | 2.58 (66) | 5.0 (127) |
| | 4 (102) | 0.88 (22) | 7.5 (191) | 9.0 (229) | 8 | 0.75 (19) | 3.5 (89) | 6.2 (158) |
| ASME B16.5 (ANSI) 300 | 2 (51) | 0.82 (21) | 5.0 (127) | 6.5 (165) | 8 | 0.75 (19) | N/A | 3.6 (92) |
| | 3 (76) | 1.06 (27) | 6.62 (168) | 8.25 (210) | 8 | 0.88 (22) | 2.58 (66) | 5.0 (127) |
| | 4 (102) | 1.19 (30) | 7.88 (200) | 10.0 (254) | 8 | 0.88 (22) | 3.5 (89) | 6.2 (158) |
| DIN 2501 PN 10–40 | DN 50 | 20 mm | 125 mm | 165 mm | 4 | 18 mm | N/A | 4.0 (102) |
| DIN 2501 PN 25/40 | DN 80 | 24 mm | 160 mm | 200 mm | 8 | 18 mm | 66 mm | 5.4 (138) |
| | DN 100 | 24 mm | 190 mm | 235 mm | 8 | 22 mm | 89 mm | 6.2 (158) |

Dimensions are in inches (millimeters).

| Class[1] | Pipe size | Process side F | Lower housing G | | H |
|---|---|---|---|---|---|
| | | | 1/4 NPT | 1/2 NPT | |
| ASME B16.5 (ANSI) 150 | 2 (51) | 2.12 (54) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| | 3 (76) | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| | 4 (102) | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| ASME B16.5 (ANSI) 300 | 2 (51) | 2.12 (54) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| | 3 (76) | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| | 4 (102) | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| DIN 2501 PN 10–40 | DN 50 | 2.4 (61) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| DIN 2501 PN 25/40 | DN 80 | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |
| | DN 100 | 3.6 (91) | 0.97 (25) | 1.31 (33) | 5.65 (143) |

Dimensions are in inches (millimeters).

1. Tolerances are –0.020 and +0.040 (–0,51 and +1,02).



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# Options

## Standard configuration

Unless otherwise specified, transmitter is shipped as follows:

| | |
|---|---|
| Engineering units | in$H_2O$ (Ranges 1, 2, and 3) |
| Differential/Gage | psi (Ranges 4–5) |
| 2051TA | psi (all ranges) |
| 4 mA (1 Vdc)(1) | 0 (engineering units) |
| 20 mA (5 Vdc)(1): | Upper range limit |
| Output: | Linear |
| Flange type | Specified model code option |
| Flange material | Specified model code option |
| O-ring material | Specified model code option |
| Drain/vent: | Specified model code option |
| LCD display | Installed or none |
| Alarm(1) | High |
| Software tag | (Blank) |

1. Not applicable to FOUNDATION Fieldbus, PROFIBUS PA, or Wireless.

## Custom configuration(1)

If option code C1 is ordered, the customer may specify the following data in addition to the standard configuration parameters.

- Output information
- Transmitter information
- LCD display configuration
- Hardware selectable information
- Signal selection
- Wireless information
- Scaled variable
- and more

Refer to the Rosemount 2051 Configuration Data Sheet and the Rosemount 2051 Wireless Configuration Data Sheet.

1. Not applicable to FOUNDATION Fieldbus or PROFIBUS PA Protocols.

## Tagging (3 options available)

Standard SST hardware tag is permanently affixed on transmitter. Tag character height is 0.125-in. (3,18 mm), 84 characters maximum.

Tag may be wired to the transmitter nameplate upon request, 85 characters maximum.

Tag may be stored in transmitter memory. Character limit is dependent on Protocol.

- HART Revision 5: 8 characters
- HART Revision 7 and Wireless: 32 characters
- FOUNDATION Fieldbus: 32 characters
- PROFIBUS PA: 32 characters

## Commissioning tag(1)

A temporary commissioning tag is attached to all transmitters. The tag indicates the device ID and allows an area for writing the location.

1. Only applicable to FOUNDATION Fieldbus.

## Optional Rosemount 304, 305, or 306 Integral manifolds

Factory assembled to Rosemount 2051C, 2051T, and 2051G Transmitters. Refer to the Rosemount Manifolds Product Data Sheet for additional information.

## Other seals

Refer to the Rosemount DP Level Transmitters and 1199 Seal Systems Product Data Sheet for additional information.



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## Output information

Output range points must be the same unit of measure. Available units of measure include:

| Pressure | | |
|---|---|---|
| atm | $mmH_2O$ @ 4 °C(1) | $ftH_2O$ @ 4 °C(1) |
| mbar | $ftH_2O$ | psi |
| bar | $inH_2O$ @ 60 °F(1) | torr |
| $inH_2O$ | Psf(1) | $cmH_2O$ @ 4 °C(1) |
| inHg | $g/cm^2$ | cmHg @ 0 °C(1) |
| hPa(1) | $kg/cm^2$ | $ftH_2O$ @ 60 °F(1) |
| mHg @ 0 °C(1) | Pa | $mH_2O$ @ 4 °C(1) |
| $inH_2O$ @ 4 °C(1) | kPa | mHg @ 0 °C(1) |
| $mmH_2O$ | MPa(1)(2) | hPa(1) |
| mmHg | $kg/m^2$(1) | |
| **Flow(2)(3)** | | |
| bbl | kg | $cm^3$ |
| $ft^3$ | lb | $m^3$ |
| gal | L | ton |
| **Level(3)** | | |
| % | ft | cm |
| in | mm | |

1. Available with enhanced 2051 and wireless.
2. Available on PROFIBUS PA.
3. All flow units are available per second, minute, hour or day.

## Display and interface options

**M4** Digital display with LOI

- Available for 4–20 mA HART, 4–20 mA HART Low Power, and PROFIBUS PA

**M5** Digital display

- 2-line, 5-digit LCD display for 4–20 mA HART
- 2-line, 5-digit LCD display for 1–5 Vdc HART Low Power
- 2-line, 8-digit LCD display for FOUNDATION Fieldbus and PROFIBUS PA
- 3-line, 7-digit LCD display for wireless
- Direct reading of digital data for higher accuracy
- Displays user-defined flow, level, volume, or pressure units
- Displays diagnostic messages for local troubleshooting
- 90-degree rotation capability for easy viewing

## Configuration buttons(1)

Rosemount 2051 requires option **D4** (analog zero and span), **DZ** (digital trim), **M4** (LOI) for local configuration buttons.

## Transient protection

**T1** Integral transient protection terminal block
Meets IEEE C62.41, category location B

- 6 kV crest (0.5 µs–100 kHz)
- 3 kA crest (8 × 20 microseconds)
- 6 kV crest (1.2 × 50 microseconds)

## Bolts for flanges and adapters

Standard material is plated carbon steel per ASTM A449, type 1

**L4** Austenitic 316 stainless steel bolts
**L5** ASTM A 193, Grade B7M bolts
**L6** Alloy K-500 bolts
**L8** ASTM A 193 Class 2, Grade B8M bolts

## Conduit plug

**DO** 316 SST conduit plug
Single 316 SST conduit plug replaces carbon steel plug

## Rosemount 2051C coplanar flange and 2051T bracket option

**B4** Bracket for 2-in. pipe or panel mounting

- For use with the standard coplanar flange configuration
- Bracket for mounting of transmitter on 2-in. pipe or panel
- Stainless steel construction with stainless steel bolts



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## Rosemount 2051C traditional flange bracket options

**B1** Bracket for 2-in. pipe mounting

- For use with the traditional flange option
- Bracket for mounting on 2-in. pipe
- Carbon steel construction with carbon steel bolts
- Coated with polyurethane paint

**B2** Bracket for panel mounting

- For use with the traditional flange option
- Bracket for mounting transmitter on wall or panel
- Carbon steel construction with carbon steel bolts
- Coated with polyurethane paint

**B3** Flat bracket for 2-in. pipe mounting

- For use with the traditional flange option
- Bracket for vertical mounting of transmitter on 2-in. pipe
- Carbon steel construction with carbon steel bolts
- Coated with polyurethane paint

**B7** B1 bracket with SST bolts

- Same bracket as the B1 option with Series 300 stainless steel bolts

**B8** B2 bracket with SST bolts

- Same bracket as the B2 option with Series 300 stainless steel bolts

**B9** B3 bracket with SST bolts

- Same bracket as the B3 option with Series 300 stainless steel bolts

**BA** Stainless steel B1 bracket with SST bolts

- B1 bracket in stainless steel with Series 300 stainless steel bolts

**BC** Stainless steel B3 bracket with SST bolts

- B3 bracket in stainless steel with Series 300 stainless steel bolts



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