**Product Data Sheet**
April 2013
00813-0100-4101, Rev JA

# Rosemount 2051 Pressure Transmitter

- 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 (WirelessHART™) 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 safety certification to IEC 61508 is available with the full 4-20 mA HART offering to simplify compliance

ROSEMOUNT

EMERSON.
Process Management

# 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.

## Industry leading capabilities extended to IEC 62591 (WirelessHART)

- 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%
- Quickly deploy new pressure, level and flow measurements in 70% 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 2.00% 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

## Table of Contents

# Rosemount 2051C Coplanar Pressure Transmitter

2051C Coplanar
Pressure Transmitter

| Configuration | Transmitter Output Code |
|---|---|
| 4-20 mA HART®<br>2051<br>2051 with Selectable HART(1) | A |
| Lower Power<br>2051<br>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**

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**Table 1. Rosemount 2051C Coplanar Pressure Transmitters 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 | | |
|---|---|---|---|
| 2051C | Coplanar Pressure Transmitter | | |
| **Measurement Type** | | | |
| **Standard** | | | **Standard** |
| D | Differential | | ★ |
| G | Gage | | ★ |
| **Pressure Range** | | | |
| **Standard** | | | **Standard** |
| | 2051CD | 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) | ★ |

## Table 1. Rosemount 2051C Coplanar Pressure Transmitters 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** | | | | |
|---|---|---|---|---|
| **Standard** | | | | **Standard** |
| A[1] | 4–20 mA with Digital Signal Based on HART Protocol | | | ★ |
| F | FOUNDATION fieldbus Protocol | | | ★ |
| W | PROFIBUS PA Protocol | | | ★ |
| X | Wireless | | | ★ |
| **Expanded** | | | | |
| M | Low-Power, 1–5 Vdc with Digital Signal Based on HART Protocol | | | |
| **Materials of Construction** | | | | |
| | **Process Flange Type** | **Flange Material** | **Drain/Vent** | |
| **Standard** | | | | **Standard** |
| 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** | | | | |
| **Standard** | | | | **Standard** |
| 2[2] | 316L SST | | | ★ |
| 3[2] | Alloy C-276 | | | ★ |
| **Expanded** | | | | |
| 5[3][4] | Tantalum | | | |
| **O-ring** | | | | |
| **Standard** | | | | **Standard** |
| A | Glass-filled PTFE | | | ★ |
| B | Graphite-filled PTFE | | | ★ |
| **Sensor Fill Fluid** | | | | |
| **Standard** | | | | **Standard** |
| 1 | Silicone | | | ★ |
| 2[4] | Inert | | | ★ |

**Table 1. Rosemount 2051C Coplanar Pressure Transmitters 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** | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| A | Aluminum | ½–14 NPT | ★ |
| B | Aluminum | M20 × 1.5 | ★ |
| J | SST | ½–14 NPT | ★ |
| K[5] | SST | M20 × 1.5 | ★ |
| P[6] | Engineered Polymer | No Conduit Entries | ★ |
| **Expanded** | | | |
| D | Aluminum | G½ | |
| M[5] | SST | G½ | |

## Wireless options (Requires Wireless output code X and Engineered Polymer housing code P)

| **Wireless Transmit Rate, Operating Frequency and Protocol** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |
| **Antenna and SmartPower** | | |
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **PlantWeb Control Functionality** | | |
|---|---|---|
| **Standard** | | **Standard** |
| A01 | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |
| **Alternate Flange[7]** | | |
| **Standard** | | **Standard** |
| 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 | ★ |

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

| | | |
|---|---|---|
| **Expanded** | | |
| HK[8] | DIN Compliant Traditional Flange, SST, 10 mm Adapter/Manifold Bolting | |
| HL | DIN Compliant Traditional Flange, SST, 12 mm Adapter/Manifold Bolting | |
| **Manifold Assembly[8][9]** | | |
| **Standard** | | **Standard** |
| S5 | Assemble to Rosemount 305 Integral Manifold | ★ |
| S6 | Assemble to Rosemount 304 Manifold or Connection System | ★ |
| **Integral Mount Primary Element[8][9]** | | |
| **Standard** | | **Standard** |
| S4[10] | Assemble to Rosemount Annubar® Flowmeter or Rosemount 1195 Integral Orifice | ★ |
| S3 | Assemble to Rosemount 405 Primary Element | ★ |
| **Seal Assemblies[9]** | | |
| **Standard** | | **Standard** |
| S1[11] | Assemble to one Rosemount 1199 diaphragm seal | ★ |
| S2[12] | Assemble to two Rosemount 1199 diaphragm seals | ★ |
| **Mounting Brackets** | | |
| **Standard** | | **Standard** |
| 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 | ★ |

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

| **Product Certifications** | | |
|---|---|---|
| **Standard** | | **Standard** |
| E1[5] | ATEX Flameproof | ★ |
| E2[5] | INMETRO Flameproof | ★ |
| E3[5] | China Flameproof | ★ |
| E4[5] | TIIS Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA 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 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[5] | IECEx Intrinsic Safety | ★ |
| IA[13] | ATEX FISCO Intrinsic Safety | ★ |
| IE[14] | FM FISCO Intrinsically Safe | ★ |
| IF[14] | CSA FISCO Intrinsically Safe | ★ |
| IG[14] | 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 | ★ |
| K5 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[5] | IECEx Flameproof, Intrinsic Safety, Type n and Dust | ★ |
| KA[5] | ATEX and CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| KC[5] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[5] | FM, CSA, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[5] | ATEX Type n | ★ |
| N7[5] | IECEx Type n | ★ |
| ND[5] | ATEX Dust | ★ |
| **Drinking Water Approval** | | |
| **Standard** | | **Standard** |
| DW[15] | NSF Drinking Water Approval | ★ |

## Table 1. Rosemount 2051C Coplanar Pressure Transmitters 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.**

| | | |
|---|---|---|
| **Shipboard Approvals** | | |
| **Standard** | | **Standard** |
| SBS[4] | American Bureau of Shipping (ABS) Type Approval | ★ |
| SBV[4] | Bureau Veritas (BV) Type Approval | ★ |
| SDN[4] | Det Norske Veritas (DNV) Type Approval | ★ |
| SLL[4] | Lloyds Register (LR) Type Approval | ★ |
| **Bolting Materials** | | |
| **Standard** | | **Standard** |
| 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** | | |
| **Standard** | | **Standard** |
| M4[14] | LCD Display with Local Operator Interface | ★ |
| M5 | LCD display | ★ |
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[16] | Zero and Span Configuration Buttons | ★ |
| DZ[17] | Digital Zero Trim | ★ |
| **Flange Adapters** | | |
| **Standard** | | **Standard** |
| DF[18] | 1/2-14 NPT Flange Adapters | ★ |
| **Conduit Plug** | | |
| **Standard** | | **Standard** |
| DO[4][19] | 316 SST Conduit Plug | ★ |
| **RC 1/4 RC 1/2 Process Connection** | | |
| **Expanded** | | |
| D9[20] | RC 1/4 Flange with RC 1/2 Flange Adapter - SST | |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[4][21] | External Ground Screw Assembly | ★ |
| **Performance** | | |
| **Standard** | | **Standard** |
| P8[22] | High Performance Option | ★ |

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

**★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.**
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| | | |
|---|---|---|
| **Transient Protection** | | |
| **Standard** | | **Standard** |
| T1[(4)(23)] | Transient Protection Terminal Block | ★ |
| **Software Configuration** | | |
| **Standard** | | **Standard** |
| C1 [(17)] | Custom Software Configuration (Completed CDS 00806-0100-4101 or 00806-0100-4100 for Wireless required with order) | ★ |
| **Alarm Limit** | | |
| **Standard** | | **Standard** |
| C4[(16)(24)] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[(16)(24)] | NAMUR alarm and saturation levels, high alarm | ★ |
| CR[(16)] | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[(16)] | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[(16)] | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Pressure Testing** | | |
| **Expanded** | | |
| P1 | Hydrostatic testing with certificate | |
| **Cleaning Process Area** | | |
| **Expanded** | | |
| P2 | Cleaning for Special Service | |
| P3 | Cleaning for < 1 PPM Chlorine/Flourine | |
| **Maximum Static Line Pressure** | | |
| **Standard** | | **Standard** |
| P9 | 4500 psig (310 bar) Static Pressure Limit (2051CD Ranges 2-5 only) | ★ |
| **Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4 | Calibration Certificate | ★ |
| QG | Calibration Certificate and GOST Verification Certificate | ★ |
| QP | Calibration certification and tamper evident seal | ★ |
| **Material Traceability Certification** | | |
| **Standard** | | **Standard** |
| Q8 | Material Traceability Certification per EN 10204 3.1 | ★ |

## Table 1. Rosemount 2051C Coplanar Pressure Transmitters 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.**

| | | |
|---|---|---|
| **Quality Certification for Safety** | | |
| **Standard** | | **Standard** |
| QS[25] | Prior-use certificate of FMEDA data | ★ |
| QT[25] | Safety Certified to IEC 61508 with certificate of FMEDA | ★ |
| **Surface Finish** | | |
| **Standard** | | **Standard** |
| Q16 | Surface finish certification for sanitary remote seals | ★ |
| **Toolkit Total System Performance Reports** | | |
| **Standard** | | **Standard** |
| QZ | Remote Seal System Performance Calculation Report | ★ |
| **Conduit Electrical Connection** | | |
| **Standard** | | **Standard** |
| GE[4] | M12, 4-pin, Male Connector (eurorast®) | ★ |
| GM[4] | A size Mini, 4-pin, Male Connector (minifast®) | ★ |
| **HART Revision Configuration** | | |
| **Standard** | | **Standard** |
| HR5[16][26] | Configured for HART Revision 5 | ★ |
| HR7[16][27] | Configured for HART Revision 7 | ★ |
| **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.

(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) Requires 0 code in Materials of Construction for Alternate Process Connection.

(8) Not valid with optional code P9 for 4500 psi Static Pressure.

(9) "Assemble-to" items are specified separately and require a completed model number.

(10) Process Flange limited to Coplanar (codes 2, 3, 5, 7, 8) or Traditional (H2, H3, H7).

(11) Not valid with optional code D9 for RC1/2 Adaptors.

(12) Not valid with optional codes DF and D9 for Adaptors.

(13) Only valid with FOUNDATION fieldbus output code F.

(14) Not available with FOUNDATION fieldbus output code F and Wireless Output Code X.

(15) 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).

(16) Only Available with HART 4-20 mA (output codes A and M).

(17) Only available with HART 4-20 mA Output (Output Codes A and M) and Wireless Output (Output Code X).

(18) Not valid with Alternate Process Connection options S3, S4, S5, S6.

(19) Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.

(20) Not available with Alternate Process Connection: DIN Flanges and Level Flanges.

(21) The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

(22) Available with 4-20 mA HART output code A, Wireless output code X, FOUNDATION fieldbus output code F, 2051C Ranges 2-5 or 2051T Ranges 1-4, SST diaphragms and silicone fill fluid. High Performance Option includes 0.05% Reference Accuracy, 5 year stability and improved ambient temperature effect specifications. See Performance specifications for details.

(23) The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA and IE.

(24) NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.

(25) Only available with HART 4-20 mA output (output code A).

(26) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(27) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

# Rosemount 2051T In-Line Pressure Transmitter

2051T In-Line
Wireless Pressure Transmitter

| Configuration | Transmitter Output Code |
|---|---|
| 4-20 mA HART®<br>2051<br>2051 with Selectable HART(1) | A |
| Lower Power<br>2051<br>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 50
Certifications: page 60
Dimensional Drawings: page 68

### 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 | | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| 2051T | In-Line Pressure Transmitter | | ★ |
| **Pressure Type** | | | |
| **Standard** | | | **Standard** |
| G | Gage | | ★ |
| A(1) | Absolute | | ★ |
| **Pressure Range** | | | |
| **Standard** | | | **Standard** |
| | 2051TG | 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) | ★ |

### 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** | | | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| A[2] | 4–20 mA with Digital Signal Based on HART Protocol | | ★ |
| F | FOUNDATION fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| **Expanded** | | | |
| M | Low-Power, 1–5 Vdc with Digital Signal Based on HART Protocol | | |
| **Process Connection Style** | | | |
| **Standard** | | | **Standard** |
| 2B | 1/2–14 NPT female | | ★ |
| 2C[3] | G1/2 A DIN 16288 male (Available in SST for Range 1-4 only) | | ★ |
| **Expanded** | | | |
| 2F[4] | Coned and Threaded, Compatible with Autoclave Type F-250-C (Range 5 only) | | |
| **Isolating Diaphragm** | | **Process Connection Wetted Parts Material** | |
| **Standard** | | | **Standard** |
| 2[5] | 316L SST | 316L SST | ★ |
| 3[5] | Alloy C-276 | Alloy C-276 | ★ |
| **Sensor Fill Fluid** | | | |
| **Standard** | | | **Standard** |
| 1 | Silicone | | ★ |
| 2[4] | Inert | | ★ |
| **Housing Material** | | **Conduit Entry Size** | |
| **Standard** | | | **Standard** |
| A | Aluminum | ½–14 NPT | ★ |
| B | Aluminum | M20 × 1.5 | ★ |
| J | SST | ½–14 NPT | ★ |
| K[6] | SST | M20 × 1.5 | ★ |
| P[7] | Engineered Polymer | No Conduit Entries | ★ |
| **Expanded** | | | |
| D | Aluminum | G½ | |
| M[6] | SST | G½ | |

**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.**

## Wireless options (Requires Wireless output code X and Engineered Polymer housing code P)

| **Wireless Transmit Rate, Operating Frequency and Protocol** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |
| **Antenna and SmartPower** | | |
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **PlantWeb Control Functionality** | | |
|---|---|---|
| **Standard** | | **Standard** |
| A01 | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |
| **Manifold Assemblies** | | |
| **Standard** | | **Standard** |
| S5(8) | Assemble to Rosemount 306 Integral Manifold | ★ |
| **Seal Assemblies** | | |
| **Standard** | | **Standard** |
| S1(8) | Assemble to one Rosemount 1199 diaphragm seal | ★ |
| **Mounting Bracket** | | |
| **Standard** | | **Standard** |
| B4 | Bracket for 2-in. Pipe or Panel Mounting, All SST | ★ |

### 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.**

| **Product Certifications** | | |
|---|---|---|
| **Standard** | | **Standard** |
| E1[6] | ATEX Flameproof | ★ |
| E2[6] | INMETRO Flameproof | ★ |
| E3[6] | China Flameproof | ★ |
| E4[6] | TIIS Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA 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 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[6] | IECEx Intrinsic Safety | ★ |
| IA[10] | ATEX FISCO Intrinsic Safety | ★ |
| IE[10] | FM FISCO Intrinsically Safe | ★ |
| IF[10] | CSA FISCO Intrinsically Safe | ★ |
| IG[10] | IECEx FISCO Intrinsically Safe | ★ |
| IW[6] | India (CCOE) Intrinsic Safety Approval | ★ |
| K1[6] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[6] | IECEx Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| KA[6] | ATEX and CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| KC[6] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[6] | FM, CSA, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[6] | ATEX Type n | ★ |
| N7[6] | IECEx Type n | ★ |
| ND[6] | ATEX Dust | ★ |
| **Drinking Water Approval** | | |
| **Standard** | | **Standard** |
| DW[9] | NSF Drinking Water Approval | ★ |

### 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.**

| | | |
|---|---|---|
| **Shipboard Approvals** | | |
| **Standard** | | **Standard** |
| SBS[4] | American Bureau of Shipping (ABS) Type Approval | ★ |
| SBV[4] | Bureau Veritas (BV) Type Approval | ★ |
| SDN[4] | Det Norske Veritas (DNV) Type Approval | ★ |
| SLL[4] | Lloyds Register (LR) Type Approval | ★ |
| **Display and Interface Options** | | |
| **Standard** | | **Standard** |
| M4[10] | LCD Display with Local Operator Interface | ★ |
| M5 | LCD display | ★ |
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[11] | Zero and Span Configuration Buttons | ★ |
| DZ[12] | Digital Zero Trim | ★ |
| **Wireless SST Sensor Module** | | |
| **Standard** | | **Standard** |
| WSM[7] | Wireless SST Sensor Module | ★ |
| **Conduit Plug** | | |
| **Standard** | | **Standard** |
| DO[4][13] | 316 SST Conduit Plug | ★ |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[4][14] | External Ground Screw Assembly | ★ |
| **Performance** | | |
| **Standard** | | **Standard** |
| P8[15] | High Performance Option | ★ |
| **Terminal Blocks** | | |
| **Standard** | | **Standard** |
| T1[4][16] | Transient Protection Terminal Block | ★ |
| **Software Configuration** | | |
| **Standard** | | **Standard** |
| C1[12] | Custom Software Configuration (Completed CDS 00806-0100-4101 or 00806-0100-4100 for Wireless required with order) | ★ |

**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.**

| | | |
|---|---|---|
| **Alarm Limits** | | |
| **Standard** | | **Standard** |
| C4[11][17] | Analog Output Levels Compliant with NAMUR Recommendation NE 43, Alarm High | ★ |
| CN[11][18] | Analog Output Levels Compliant with NAMUR Recommendation NE 43, Alarm Low | ★ |
| CR[11] | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[11] | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[11] | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Pressure Testing** | | |
| **Expanded** | | |
| P1 | Hydrostatic testing with certificate | |
| **Cleaning Process Area[19]** | | |
| **Expanded** | | |
| P2 | Cleaning for Special Service | |
| P3 | Cleaning for <1 PPM Chlorine/Fluorine | |
| **Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4 | Calibration Certificate | ★ |
| QG | Calibration Certificate and GOST Verification Certificate | ★ |
| QP | Calibration Certificate and tamper evident seal | ★ |
| **Material Traceability Certification** | | |
| **Standard** | | **Standard** |
| Q8 | Material Traceability Certification per EN 10204 3.1 | ★ |
| **Quality Certification for Safety** | | |
| **Standard** | | **Standard** |
| QS[18] | Prior-use certificate of FMEDA data | ★ |
| QT[18] | Safety Certified to IEC 61508 with certificate of FMEDA | ★ |
| **Surface Finish** | | |
| **Standard** | | **Standard** |
| Q16 | Surface finish certification for sanitary remote seals | ★ |
| **Toolkit Total System Performance Reports** | | |
| **Standard** | | **Standard** |
| QZ | Remote Seal System Performance Calculation Report | ★ |

## 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.**

| **Conduit Electrical Connector** | | |
|---|---|---|
| **Standard** | | |
| GE[4] | M12, 4-pin, Male Connector (eurofast®) | ★ |
| GM[4] | A size Mini, 4-pin, Male Connector (minifast®) | ★ |
| **HART Revision Configuration** | | |
| **Standard** | | **Standard** |
| HR5[11][20] | Configured for HART Revision 5 | ★ |
| HR7[11][21] | Configured for HART Revision 7 | ★ |
| **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 (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 G1/2 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 (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.

(6) Not available with Low Power output code M.

(7) Only available with output code X.

(8) "Assemble-to" items are specified separately and require a completed model number.

(9) 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).

(10) Not available with FOUNDATION fieldbus output code F or Wireless output code X

(11) Only Available with HART 4-20 mA (output codes A and M).

(12) Only available with HART 4-20 mA Output (output code A and M) and Wireless Output (output code X).

(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) Available with 4-20 mA HART output code A, Wireless output code X, FOUNDATION fieldbus output code F, 2051C Ranges 2-5 or 2051T Ranges 1-4, SST diaphragms and silicone fill fluid. High Performance Option includes 0.05% Reference Accuracy, 5 year stability and improved ambient temperature effect specifications. See Performance Specifications for details.

(16) The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA and IE.

(17) NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.

(18) Only available with HART 4-20 mA output (output code A).

(19) Not valid with Alternate Process Connection S5.

(20) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(21) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

# Rosemount 2051CF Flowmeters

| Configuration | Transmitter Output Code |
|---|---|
| 4-20 mA HART®<br>2051<br>2051 with Selectable HART(1) | A |
| Lower Power<br>2051<br>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 50
Certifications: page 60
Dimensional Drawings: page 68

### Table 3. 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** | | |
| **Standard** | | **Standard** |
| D | Differential Pressure | ★ |
| **Fluid Type** | | |
| **Standard** | | **Standard** |
| L | Liquid | ★ |
| G | Gas | ★ |
| S | Steam | ★ |

### Table 3. 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.**

| **Line Size** | | |
|---|---|---|
| **Standard** | | **Standard** |
| 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) | ★ |
| 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** | | |
| **Standard** | | **Standard** |
| C | Range C from the Pipe I.D. table | ★ |
| D | Range D from the Pipe I.D. table | ★ |
| **Expanded** | | |
| 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** | | |
| **Standard** | | **Standard** |
| C | Carbon steel (A105) | ★ |
| S | 316 Stainless Steel | ★ |
| 0(1) | No Mounting (Customer Supplied) | |
| **Expanded** | | |
| G | Chrome-Moly Grade F-11 | |
| N | Chrome-Moly Grade F-22 | |
| J | Chrome-Moly Grade F-91 | |
| **Piping Orientation** | | |
| **Standard** | | **Standard** |
| H | Horizontal Piping | ★ |
| D | Vertical Piping with Downwards Flow | ★ |
| U | Vertical Piping with Upwards Flow | ★ |

### Table 3. 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.**

| **Annubar Type** | | |
|---|---|---|
| **Standard** | | **Standard** |
| P | Pak-Lok | ★ |
| F | Flanged with opposite side support | ★ |
| **Sensor Material** | | |
| **Standard** | | **Standard** |
| S | 316 Stainless Steel | ★ |
| **Sensor Size** | | |
| **Standard** | | **Standard** |
| 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** | | |
| **Standard** | | **Standard** |
| T1 | Compression or Threaded Connection | ★ |
| A1 | 150# RF ANSI | ★ |
| A3 | 300# RF ANSI | ★ |
| A6 | 600# RF ANSI | ★ |
| D1 | DN PN16 Flange | ★ |
| D3 | DN PN40 Flange | ★ |
| D6 | DN PN100 Flange | ★ |
| **Expanded** | | |
| R1 | 150# RTJ Flange | |
| R3 | 300# RTJ Flange | |
| R6 | 600# RTJ Flange | |
| **Opposite Side Support or Packing Gland** | | |
| **Standard** | | **Standard** |
| 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** | | |
| **Standard** | | **Standard** |
| 0[(1)] | Not Applicable or Customer Supplied | ★ |

### Table 3. 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.**

| **Temperature Measurement** | | | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| T | Integral RTD – not available with Flanged model greater than class 600# | | ★ |
| 0 | No Temperature Sensor | | ★ |
| **Expanded** | | | |
| R | Remote Thermowell and RTD | | |
| **Transmitter Connection Platform** | | | |
| **Standard** | | | **Standard** |
| 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) | | ★ |
| **Expanded** | | | |
| 8 | Remote-mount SW Connections ($^1/_2$-in.) | | |
| **Differential Pressure Range** | | | |
| **Standard** | | | **Standard** |
| 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** | | | |
| **Standard** | | | **Standard** |
| A(2) | 4–20 mA with digital signal based on HART Protocol | | ★ |
| F | FOUNDATION fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| **Expanded** | | | |
| M | Low-Power, 1-5 Vdc with Digital Signal Based on HART Protocol | | |
| **Transmitter Housing Material** | | **Conduit Entry Size** | |
| **Standard** | | | **Standard** |
| 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 | ★ |
| **Expanded** | | | |
| D | Aluminum | G$^1/_2$ | |
| M(3) | SST | G$^1/_2$ | |

### Table 3. 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.**

| **Transmitter Performance Class** | | |
|---|---|---|
| **Standard** | | **Standard** |
| 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** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |
| **Antenna and SmartPower** | | |
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **Pressure Testing** | | |
|---|---|---|
| **Expanded** | | |
| P1[3][5] | Hydrostatic Testing with Certificate | |
| PX[3][5] | Extended Hydrostatic Testing | |
| **Special Cleaning** | | |
| **Expanded** | | |
| P2[3] | Cleaning for Special Services | |
| PA[3] | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Material Testing** | | |
| **Expanded** | | |
| V1[3] | Dye Penetrant Exam | |
| **Material Examination** | | |
| **Expanded** | | |
| V2[3] | Radiographic Examination | |
| **Special Inspection** | | |
| **Standard** | | **Standard** |
| QC1[3] | Visual & Dimensional Inspection with Certificate | ★ |
| QC7[3] | Inspection & Performance Certificate | ★ |
| **Surface Finish** | | |
| **Standard** | | **Standard** |
| RL[3] | Surface finish for Low Pipe Reynolds # in Gas & Steam | ★ |
| RH[3] | Surface finish for High Pipe Reynolds # in Liquid | ★ |

### Table 3. 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.**

| | | |
|---|---|---|
| **Material Traceability Certification** | | |
| **Standard** | | **Standard** |
| Q8[(3)(6)] | Material Traceability Certification per EN 10474:2004 3.1 | ★ |
| **Code Conformance** | | |
| **Expanded** | | |
| J2 [(3)] | ANSI/ASME B31.1 | |
| J3[(3)] | ANSI/ASME B31.3 | |
| **Materials Conformance** | | |
| **Expanded** | | |
| J5[(3)(7)] | NACE MR-0175 / ISO 15156 | |
| **Country Certification** | | |
| **Standard** | | **Standard** |
| J6[(3)] | European Pressure Directive (PED) | ★ |
| **Expanded** | | |
| J1[(3)] | Canadian Registration | |
| **Instrument Connections for Remote Mount Options** | | |
| **Standard** | | **Standard** |
| G2[(3)] | Needle Valves, Stainless Steel | ★ |
| G6[(3)] | OS&Y Gate Valve, Stainless Steel | ★ |
| **Expanded** | | |
| G1[(3)] | Needle Valves, Carbon Steel | |
| G3[(3)] | Needle Valves, Alloy C-276 | |
| G5[(3)] | OS&Y Gate Valve, Carbon Steel | |
| G7[(3)] | OS&Y Gate Valve, Alloy C-276 | |
| **Special Shipment** | | |
| **Standard** | | **Standard** |
| Y1[(3)] | Mounting Hardware Shipped Separately | ★ |

### Table 3. 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.**

| **Product Certifications** | | |
|---|---|---|
| **Standard** | | **Standard** |
| E1[3] | ATEX Flameproof | ★ |
| E2[3] | INMETRO Flameproof | ★ |
| E3[3] | China Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA 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 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[3] | IECEx Intrinsic Safety | ★ |
| IA[3][8] | ATEX FISCO Intrinsic Safety; for FOUNDATION fieldbus protocol only | ★ |
| IE[3][8] | FM FISCO Intrinsically Safe | ★ |
| IF[3][8] | CSA FISCO Intrinsically Safe | ★ |
| IG[3][8] | IECEx FISCO Intrinsically Safe | ★ |
| K1[3] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | CSA 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 | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[3] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[3] | FM, CSA, 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** | | |
| **Standard** | | **Standard** |
| L1[3][9] | Inert Sensor Fill Fluid | ★ |
| L2[3] | Graphite-Filled (PTFE) O-ring | ★ |
| LA[3][9] | Inert Sensor Fill Fluid and Graphite-Filled (PTFE) O-ring | ★ |
| **Display and Interface Options** | | |
| **Standard** | | **Standard** |
| M4[3][10] | LCD Display with Local Operator Interface | ★ |
| M5[3] | LCD display | ★ |

### Table 3. 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.**

| | | |
|---|---|---|
| **Transmitter Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4[3] | Calibration Certificate for Transmitter | ★ |
| **Quality Certification for Safety** | | |
| **Standard** | | **Standard** |
| QS[3][11] | Prior-use certificate of FMEDA data | ★ |
| QT[3][11] | Safety Certified to IEC 61508 with certificate of FMEDA | ★ |
| **Transient Protection** | | |
| **Standard** | | **Standard** |
| T1[3][9][12] | Transient terminal block | ★ |
| **Manifold for Remote Mount Option** | | |
| **Standard** | | **Standard** |
| F2[3] | 3-Valve Manifold, Stainless Steel | ★ |
| F6[3] | 5-Valve Manifold, Stainless Steel | ★ |
| **Expanded** | | |
| F1[3] | 3-Valve Manifold, Carbon Steel | |
| F5[3] | 5-Valve Manifold, Carbon Steel | |
| **PlantWeb Control Functionality** | | |
| **Standard** | | **Standard** |
| A01[3][8] | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[3][13] | Zero and Span Hardware Adjustments | ★ |
| DZ[3][14] | Digital Zero Trim | ★ |
| **Alarm Limit** | | |
| **Standard** | | **Standard** |
| C4[3][13][15] | NAMUR Alarm and Saturation Levels, High Alarm | ★ |
| CN[3][13][15] | NAMUR Alarm and Saturation Levels, Low Alarm | ★ |
| CR[3][13] | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[3][13] | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[3][13] | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[3][9][16] | External Ground Screw Assembly | ★ |

## Table 3. 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.**

| **HART Revision Configuration** | | |
|---|---|---|
| **Standard** | | **Standard** |
| HR5(3)(13)(17) | Configured for HART Revision 5 | ★ |
| HR7(3)(13)(18) | 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) Provide the "A" dimension for Flanged (page 77) and Pak-Lok (page 77).

(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) Applies to assembled flowmeter only, mounting not tested.

(6) Instrument Connections for Remote Mount Options and Isolation Valves for Flo-tap Models are not included in the Material Traceability Certification.

(7) 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.

(8) Only valid with FOUNDATION fieldbus Output Code F.

(9) Not available with output code X.

(10) Not available with FOUNDATION Fieldbus (Output Code F) or Wireless (Output Code X)

(11) Only available with 4-20 mA HART (Output Code A).

(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 and M).

(14) Only available with HART 4-20 mA Output (output codes A and M) and Wireless Output (output code X).

(15) NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.

(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.

**Rosemount 2051CFC Compact Flowmeter**

**Additional Information**
Specifications: page 50
Certifications: page 60
Dimensional Drawings: page 68

### Table 4. 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** | | |
| **Standard** | | **Standard** |
| D | Differential Pressure | ★ |
| **Primary Element Technology** | | |
| **Standard** | | **Standard** |
| C | Conditioning Orifice Plate | ★ |
| P | Orifice Plate | ★ |
| **Material Type** | | |
| **Standard** | | **Standard** |
| S | 316 SST | ★ |
| **Line Size** | | |
| **Standard** | | **Standard** |
| 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 | 10-in. (250 mm) | ★ |
| 120 | 12-in. (300 mm) | ★ |
| **Primary Element Style** | | |
| **Standard** | | **Standard** |
| N | Square Edged | ★ |

### Table 4. 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.**

| **Primary Element Type** | | | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| 040 | 0.40 Beta Ratio | | ★ |
| 065[2] | 0.65 Beta Ratio | | ★ |
| **Temperature Measurement** | | | |
| **Standard** | | | **Standard** |
| 0 | No Temperature Sensor | | ★ |
| **Expanded** | | | |
| R | Remote Thermowell and RTD | | |
| **Transmitter Connection Platform** | | | |
| **Standard** | | | **Standard** |
| 3 | Direct-mount, Integral 3-valve Manifold | | ★ |
| 7 | Remote-mount, 1/4-in. NPT Connections | | ★ |
| **Differential Pressure Range** | | | |
| **Standard** | | | **Standard** |
| 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** | | | |
| **Standard** | | | **Standard** |
| A[3] | 4–20 mA with digital signal based on HART Protocol | | ★ |
| F | FOUNDATION fieldbus Protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| **Expanded** | | | |
| M | Low-Power, 1-5 Vdc with Digital Signal Based on HART Protocol | | |
| **Transmitter Housing Material** | | **Conduit Entry Size** | |
| **Standard** | | | **Standard** |
| 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 | ★ |
| **Expanded** | | | |
| D | Aluminum | G1/2 | |
| M[4] | SST | G1/2 | |

### Table 4. 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.**

| **Transmitter Performance Class** | | |
|---|---|---|
| **Standard** | | **Standard** |
| 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** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |
| **Antenna and SmartPower** | | |
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **Installation Accessories** | | |
|---|---|---|
| **Standard** | | **Standard** |
| AB[4] | ANSI Alignment Ring (150#) (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes) | ★ |
| AC[4] | ANSI Alignment Ring (300#) (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes) | ★ |
| AD [4] | ANSI Alignment Ring (600#) (Only required for 10-in. (250 mm) and 12-in. (300 mm) line sizes) | ★ |
| DG[4] | DIN Alignment Ring (PN16) | ★ |
| DH[4] | DIN Alignment Ring (PN40) | ★ |
| DJ[4] | DIN Alignment Ring (PN100) | ★ |
| **Expanded** | | |
| JB[4] | JIS Alignment Ring (10K) | |
| JR[4] | JIS Alignment Ring (20K) | |
| JS[4] | JIS Alignment Ring (40K) | |
| **Remote Adapters** | | |
| **Standard** | | **Standard** |
| FE[4] | Flange Adapters 316 SST (1/2-in NPT) | ★ |
| **High Temperature Application** | | |
| **Expanded** | | |
| HT[4] | Graphite Valve Packing (Tmax = 850 °F) | |
| **Flow Calibration** | | |
| **Expanded** | | |
| WC[4][6] | Flow Calibration Certification (3 point) | |
| WD[4][6] | Discharge Coefficient Verification (full 10 point) | |

### Table 4. 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.**

| | | |
|---|---|---|
| **Pressure Testing** | | |
| **Expanded** | | |
| P1[4] | Hydrostatic Testing with Certificate | |
| **Special Cleaning** | | |
| **Expanded** | | |
| P2[4] | Cleaning for Special Services | |
| PA[4] | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Special Inspection** | | |
| **Standard** | | **Standard** |
| QC1[4] | Visual & Dimensional Inspection with Certificate | ★ |
| QC7[4] | Inspection and Performance Certificate | ★ |
| **Transmitter Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4[4] | Calibration Certificate for Transmitter | ★ |
| **Quality Certification for Safety** | | |
| **Standard** | | **Standard** |
| QS[4][7] | Prior-use certificate of FMEDA data | ★ |
| QT[4][7] | Safety Certified to IEC 61508 with certificate of FMEDA | ★ |
| **Material Traceability Certification** | | |
| **Standard** | | **Standard** |
| Q8[4] | Material Traceability Certification per EN 10204:2004 3.1 | ★ |
| **Code Conformance** | | |
| **Expanded** | | |
| J2[4] | ANSI/ASME B31.1 | |
| J3[4] | ANSI/ASME B31.3 | |
| J4[4] | ANSI/ASME B31.8 | |
| **Materials Conformance** | | |
| **Expanded** | | |
| J5[4][8] | NACE MR-0175 / ISO 15156 | |
| **Country Certification** | | |
| **Expanded** | | |
| J1[4] | Canadian Registration | |

### Table 4. 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.**

| **Product Certifications** | | |
|---|---|---|
| **Standard** | | **Standard** |
| E1[4] | ATEX Flameproof | ★ |
| E2[4] | INMETRO Flameproof | ★ |
| E3[4] | China Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA 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 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[4] | IECEx Intrinsic Safety | ★ |
| IA[4][9] | ATEX FISCO Intrinsic Safety; for FOUNDATION fieldbus protocol only | ★ |
| IE[4][9] | FM FISCO Intrinsically Safe | ★ |
| IF[4][9] | CSA FISCO Intrinsically Safe | ★ |
| IG[4][9] | IECEx FISCO Intrinsically Safe | ★ |
| K1[4] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | CSA 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 CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[4] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[4] | FM, CSA, 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** | | |
| **Standard** | | **Standard** |
| L1[4][10] | Inert Sensor Fill Fluid | ★ |
| L2[4] | Graphite-Filled (PTFE) O-ring | ★ |
| LA[4][10] | Inert Sensor Fill Fluid and Graphite-Filled (PTFE) O-ring | ★ |
| **Display and Interface Options** | | |
| **Standard** | | **Standard** |
| M4[4][7] | LCD Display with Local Operator Interface | ★ |
| M5[4] | LCD Display | ★ |

### Table 4. 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.**

| | | |
|---|---|---|
| **Transient Protection** | | |
| **Standard** | | **Standard** |
| T1[4][10](11) | Transient terminal block | ★ |
| **Manifold for Remote Mount Option** | | |
| **Standard** | | **Standard** |
| F2[4] | 3-Valve Manifold, Stainless Steel | ★ |
| F6[4] | 5-Valve Manifold, Stainless Steel | ★ |
| **Alarm Limit** | | |
| **Standard** | | **Standard** |
| C4[4](12)(13) | NAMUR Alarm and Saturation Levels, High Alarm | ★ |
| CN[4](12)(13) | NAMUR Alarm and Saturation Levels, Low Alarm | ★ |
| CR[4](12) | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[4](12) | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[4](12) | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **PlantWeb Control Functionality** | | |
| **Standard** | | **Standard** |
| A01[4][9] | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[4](12) | Zero and Span Hardware Adjustments | ★ |
| DZ[4](14) | Digital Zero Trim | ★ |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[4][10](15) | External Ground Screw Assembly | ★ |
| **HART Revision Configuration** | | |
| **Standard** | | **Standard** |
| HR5[4](12)(16) | Configured for HART Revision 5 | ★ |
| HR7[4](12)(17) | 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 2-in. (50 mm) line sizes the Primary Element Type is 0.6 for Primary Element Technology Code C.

(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) Not available with Primary Element Technology P.

(7) Not available with FOUNDATION Fieldbus (Output Code F) or Wireless (Output Code X).

(8) 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.

(9) Only valid with FOUNDATION fieldbus Output Code F.

(10) Not available with output code X.

(11) 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.

(12) Only available with 4-20 mA HART (output codes A and M).

(13) NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.

(14) Only available with HART 4-20 mA (Output Codes A and M) and Wireless (Output Code X).

(15) The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

(16) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(17) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if 14 needed.

**Rosemount 2051CFP Integral Orifice Flowmeter**

**Additional Information**
Specifications: page 50
Certifications: page 60
Dimensional Drawings: page 68

### Table 5. 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** | | |
| **Standard** | | **Standard** |
| D | Differential Pressure | ★ |
| **Material Type** | | |
| **Standard** | | **Standard** |
| S | 316 SST | ★ |
| **Line Size** | | |
| **Standard** | | **Standard** |
| 005 | 1/2-in. (15 mm) | ★ |
| 010 | 1-in. (25 mm) | ★ |
| 015 | 1 1/2-in. (40 mm) | ★ |
| **Process Connection** | | |
| **Standard** | | **Standard** |
| T1 | NPT Female Body (Not Available with Remote Thermowell and RTD) | ★ |
| S1(1) | Socket Weld Body (Not Available with Remote 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 | ★ |

### Table 5. 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.**

| **Expanded** | | |
|---|---|---|
| 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 | |
| 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** | | |
| **Standard** | | **Standard** |
| S | 316 SST | ★ |
| **Bore Size Option** | | |
| **Standard** | | **Standard** |
| 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 | ★ |
| **Expanded** | | |
| 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 | |

### Table 5. 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.**

| **Transmitter Connection Platform** | | | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| 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** | | | |
| **Standard** | | | **Standard** |
| 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** | | | |
| **Standard** | | | **Standard** |
| A(2) | 4–20 mA with digital signal based on HART protocol | | ★ |
| F | FOUNDATION fieldbus protocol | | ★ |
| W | PROFIBUS PA Protocol | | ★ |
| X | Wireless | | ★ |
| **Expanded** | | | |
| M | Low-Power, 1-5 Vdc with Digital Signal Based on HART Protocol | | |
| **Transmitter Housing Material** | | **Conduit Entry Size** | |
| **Standard** | | | **Standard** |
| 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 | ★ |
| **Expanded** | | | |
| D | Aluminum | G1/2 | |
| M(3) | SST | G1/2 | |
| **Transmitter Performance Class** | | | |
| **Standard** | | | **Standard** |
| 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** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |

### Table 5. 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.**

| **Antenna and SmartPower** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **Temperature Sensor** | | |
|---|---|---|
| **Expanded** | | |
| RT(3)(5) | Thermowell and RTD | |
| **Optional Connection** | | |
| **Standard** | | **Standard** |
| G1(3) | DIN 19213 Transmitter Connection | ★ |
| **Pressure Testing** | | |
| **Expanded** | | |
| P1(3)(6) | Hydrostatic Testing with Certificate | |
| **Special Cleaning** | | |
| **Expanded** | | |
| P2(3) | Cleaning for Special Services | |
| PA(3) | Cleaning per ASTM G93 Level D (Section 11.4) | |
| **Material Testing** | | |
| **Expanded** | | |
| V1(3) | Dye Penetrant Exam | |
| **Material Examination** | | |
| **Expanded** | | |
| V2(3) | Radiographic Examination | |
| **Flow Calibration** | | |
| **Expanded** | | |
| WD(3)(7) | Discharge Coefficient Verification | |
| **Special Inspection** | | |
| **Standard** | | **Standard** |
| QC1(3) | Visual & Dimensional Inspection with Certificate | ★ |
| QC7(3) | Inspection and Performance Certificate | ★ |
| **Material Traceability Certification** | | |
| **Standard** | | **Standard** |
| Q8(3) | Material Traceability Certification per EN 10204:2004 3.1 | ★ |

### Table 5. 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.**

| **Code Conformance** | | |
|---|---|---|
| **Expanded** | | |
| J2[3][8] | ANSI/ASME B31.1 | |
| J3[3][8] | ANSI/ASME B31.3 | |
| J4[3][8] | ANSI/ASME B31.8 | |
| **Materials Conformance** | | |
| **Expanded** | | |
| J5[3][9] | NACE MR-0175 / ISO 15156 | |
| **Country Certification** | | |
| **Standard** | | **Standard** |
| J6[3] | European Pressure Directive (PED) | ★ |
| **Expanded** | | |
| J1[3] | Canadian Registration | |
| **Transmitter Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4[3] | Calibration Certificate for Transmitter | ★ |
| **Quality Certification for Safety** | | |
| **Standard** | | **Standard** |
| QS[3][10] | Prior-use certificate of FMEDA data | ★ |
| QT[3][10] | Safety Certified to IEC 61508 with certificate of FMEDA | ★ |
| **Product Certifications** | | |
| **Standard** | | **Standard** |
| E1[3] | ATEX Flameproof | ★ |
| E2[3] | INMETRO Flameproof | ★ |
| E3[3] | China Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA 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 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[3] | IECEx Intrinsic Safety | ★ |

### Table 5. 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.**

| | | |
|---|---|---|
| IA[3][11] | ATEX FISCO Intrinsic Safety; for FOUNDATION fieldbus protocol only | ★ |
| IE[3][11] | FM FISCO Intrinsically Safe | ★ |
| IF[3][11] | CSA FISCO Intrinsically Safe | ★ |
| IG[3][11] | IECEx FISCO Intrinsically Safe | ★ |
| K1[3][11] | ATEX Flameproof, Intrinsic Safety, Type n, Dust | ★ |
| K5 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5 and I5) | ★ |
| K6 | CSA 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 | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 (combination of E5, E6, I5, and I6) | ★ |
| KC[3] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[3] | FM, CSA, 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** | | |
| **Standard** | | **Standard** |
| L1[3][12] | Inert Sensor Fill Fluid | ★ |
| L2[3] | Graphite-Filled (PTFE) O-ring | ★ |
| LA[3][12] | Inert Sensor Fill Fluid and Graphite-Filled (PTFE) O-ring | ★ |
| **Display and Interface Options** | | |
| **Standard** | | **Standard** |
| M4[3][10] | LCD Display with Local Operator Interface | ★ |
| M5[3] | LCD display | ★ |
| **Transient Protection** | | |
| **Standard** | | **Standard** |
| T1[3][12][13] | Transient terminal block | ★ |
| **Alarm Limit** | | |
| **Standard** | | **Standard** |
| C4[3][14][15] | NAMUR Alarm and Saturation Levels, High Alarm | ★ |
| CN[3][14][15] | NAMUR Alarm and Saturation Levels, Low Alarm | ★ |
| CR[3][14] | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[3][14] | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[3][14] | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **PlantWeb Control Functionality** | | |
| **Standard** | | **Standard** |
| A01[3][11] | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |

## Table 5. 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.**

| | | |
|---|---|---|
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[3][14] | Zero and Span Hardware Adjustments | ★ |
| DZ[3](16) | Digital Zero Trim | ★ |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[3][12](17) | External Ground Screw Assembly | ★ |
| **HART Revision Configuration** | | |
| **Standard** | | **Standard** |
| HR5[3][14](18) | Configured for HART Revision 5 | ★ |
| HR7[3][14](19) | 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) Not available with FOUNDATION Fieldbus (Output Code F) or Wireless (Output Code X).

(11) Only valid with FOUNDATION fieldbus Output Code F.

(12) Not available with output code X.

(13) 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.

(14) Only available with 4-20 mA HART (output codes A and M).

(15) NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.

(16) Only available with HART 4-10 mA (Output Codes A and M) and Wireless (Output Code X).

(17) The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

(18) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(19) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

# Rosemount 2051L Liquid Level Transmitter

2051L Liquid Level Transmitter

| Configuration | Transmitter Output Code |
|---|---|
| 4-20 mA HART®<br>2051<br>2051 with Selectable HART(1) | A |
| Lower Power<br>2051<br>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 50
Certifications: page 60
Dimensional Drawings: page 68

**Table 6. 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 | |
|---|---|---|
| **Standard** | | **Standard** |
| 2051L | Liquid Level Transmitter | ★ |
| **Pressure Range** | | |
| **Standard** | | **Standard** |
| 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** | | |
| **Standard** | | **Standard** |
| A(1) | 4–20 mA with Digital Signal Based on HART Protocol | ★ |
| F | FOUNDATION fieldbus Protocol | ★ |
| W | PROFIBUS PA Protocol | ★ |
| X | Wireless | ★ |
| **Expanded** | | |
| M | Low-Power, 1–5 V dc with Digital Signal Based on HART Protocol | |

**Table 6. 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.**

| **Process Connection Size, Diaphragm Material (High Side)** | | | |
|---|---|---|---|
| | **Process Connection Size** | **Diaphragm** | |
| Standard | | | **Standard** |
| 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 | ★ |
| 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)** | | | |
| **Standard** | | | **Standard** |
| 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** |
| **Standard** | | | **Standard** |
| 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 | ★ |

**Table 6. 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.**

| Seal Fill Fluid (High Side) | | | Specific Gravity | Temperature Limits (Ambient Temperature of 70 °F (21 °C)) | |
|---|---|---|---|---|---|
| **Standard** | | | | | **Standard** |
| A | Sylltherm 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) | ★ |
| 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) | ★ |
| 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** | | | |
| **Standard** | | | | | **Standard** |
| 1[(2)] | Gage | SST | | | ★ |
| 2[(2)] | Differential | SST | | | ★ |
| 3[(2)(3)] | Tuned-System with Remote Seal | None | | | ★ |
| **Sensor Module Diaphragm Material, Sensor Fill Fluid (Low Side)** | | | | | |
| | **Diaphragm Material** | **Sensor Fill Fluid** | | | |
| **Standard** | | | | | **Standard** |
| 1[(2)] | 316L SST | Silicone | | | ★ |
| 2[(2)] | Alloy C-276 (SST Valve Seat) | Silicone | | | ★ |
| 7[(2)] | Alloy C-276 (Alloy C-276 Valve Seat) | Silicone | | | ★ |
| A[(2)(4)] | 316L SST | Inert (Halocarbon) | | | ★ |
| B[(2)(4)] | Alloy C-276 (SST Valve Seat) | Inert (Halocarbon) | | | ★ |
| G[(2)(4)] | Alloy C-276 (Alloy C-276 Valve Seat) | Inert (Halocarbon) | | | ★ |
| **O-ring** | | | | | |
| **Standard** | | | | | **Standard** |
| A | Glass-filled PTFE | | | | ★ |

**Table 6. 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.**

| **Housing Material** | | **Conduit Entry Size** | |
|---|---|---|---|
| **Standard** | | | **Standard** |
| A | Aluminum | ½–14 NPT | ★ |
| B | Aluminum | M20 × 1.5 | ★ |
| J | SST | ½–14 NPT | ★ |
| K[5] | SST | M20 × 1.5 | ★ |
| P[6] | Engineered Polymer | No Conduit Entries | ★ |
| **Expanded** | | | |
| D | Aluminum | G½ | |
| M[5] | SST | G½ | |

## Wireless options (Requires Wireless output code X and Engineered Polymer housing code P)

| **Wireless Transmit Rate, Operating Frequency and Protocol** | | |
|---|---|---|
| **Standard** | | **Standard** |
| WA3 | User Configurable Transmit Rate, 2.4GHz WirelessHART | ★ |
| **Antenna and SmartPower** | | |
| **Standard** | | **Standard** |
| WP5 | Internal Antenna, Compatible with Green Power Module (I.S. Power Module Sold Separately) | ★ |

## Options (Include with selected model number)

| **PlantWeb Control Functionality** | | |
|---|---|---|
| **Standard** | | **Standard** |
| A01[7] | FOUNDATION fieldbus Advanced Control Function Block Suite | ★ |
| **Seal Assemblies** | | |
| **Standard** | | **Standard** |
| S1[8] | Assemble to One Rosemount 1199 Seal (Requires 1199M) | ★ |
| **Product Certifications** | | |
| **Standard** | | **Standard** |
| E1[5] | ATEX Flameproof | ★ |
| E2[5] | INMETRO Flameproof | ★ |
| E3[5] | China Flameproof | ★ |
| E4 | TIIS Flameproof | ★ |
| E5 | FM Explosion-proof, Dust Ignition-proof | ★ |
| E6 | CSA Explosion-proof, Dust Ignition-proof, Division 2 | ★ |
| E7[5] | IECEx Flameproof | ★ |
| EW[5] | India (CCOE) Flameproof Approval | ★ |

**Table 6. 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.**

| **Standard** | | **Standard** |
|---|---|---|
| I1[5] | ATEX Intrinsic Safety | ★ |
| I2[5] | INMETRO Intrinsically Safe | ★ |
| I3[5] | China Intrinsic Safety | ★ |
| I4[5][6] | TIIS Intrinsic Safety | ★ |
| I5 | FM Intrinsically Safe, Division 2 | ★ |
| I6 | CSA Intrinsically Safe | ★ |
| I7[5] | IECEx Intrinsic Safety | ★ |
| IA[7] | ATEX FISCO Intrinsic Safety | ★ |
| IE[7] | FM FISCO Intrinsically Safe | ★ |
| IF[7] | CSA 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 | FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K6 | CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| K7[5] | IECEx Flameproof, Intrinsic Safety, Type n and Dust | ★ |
| KA[5] | ATEX and CSA Flameproof, Intrinsically Safe, Division 2 | ★ |
| KB | FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2 | ★ |
| KC[5] | FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 | ★ |
| KD[5] | FM, CSA, and ATEX Explosion-proof, Intrinsically Safe | ★ |
| N1[5] | ATEX Type n | ★ |
| N7[5] | IECEx Type n | ★ |
| ND[5] | ATEX Dust | ★ |
| **Shipboard Approvals** | | |
| **Standard** | | **Standard** |
| SBS[4] | American Bureau of Shipping (ABS) Type Approval | ★ |
| SBV[4] | Bureau Veritas (BV) Type Approval | ★ |
| SDN[4] | Det Norske Veritas (DNV) Type Approval | ★ |
| SLL[4] | Lloyds Register (LR) Type Approval | ★ |
| **Display and Interface Options** | | |
| **Standard** | | **Standard** |
| M4[9] | LCD Display with Local Operator Interface | ★ |
| M5 | LCD display | ★ |

**Table 6. 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.**

| | | |
|---|---|---|
| **Hardware Adjustments** | | |
| **Standard** | | **Standard** |
| D4[10] | Zero and Span Configuration Buttons | ★ |
| DZ[11] | Digital Zero Trim | ★ |
| **Flange Adapters** | | |
| **Standard** | | **Standard** |
| DF[12] | 1/2-14 NPT Flange Adapters | ★ |
| **Conduit Plug** | | |
| **Standard** | | **Standard** |
| DO[4][13] | 316 SST Conduit Plug | ★ |
| **Ground Screw** | | |
| **Standard** | | **Standard** |
| V5[4][14] | External Ground Screw Assembly | ★ |
| **Transient Protection** | | |
| **Standard** | | **Standard** |
| T1[4][15] | Transient Terminal Block | ★ |
| **Software Configuration** | | |
| **Standard** | | **Standard** |
| C1[11] | Custom Software Configuration (Requires completed Configuration Data Sheet) | ★ |
| **Alarm Limit** | | |
| **Standard** | | **Standard** |
| C4[10][16] | NAMUR alarm and saturation levels, high alarm | ★ |
| CN[10][16] | NAMUR alarm and saturation levels, low alarm | ★ |
| CR[10] | Custom Alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS[10] | Custom Alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet) | ★ |
| CT[10] | Low Alarm (standard Rosemount alarm and saturation levels) | ★ |
| **Calibration Certification** | | |
| **Standard** | | **Standard** |
| Q4 | Calibration Certificate | ★ |
| QG | Calibration Certificate and GOST Verification Certificate | ★ |
| GP | Calibration Certificate and tamper evident seal | ★ |

**Table 6. 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.**

| | | | | |
|---|---|---|---|---|
| **Material Traceability Certification** | | | | |
| **Standard** | | | | **Standard** |
| Q8 | Material Traceability Certification per EN 10204 3.1 | | | ★ |
| **Quality Certification for Safety** | | | | |
| **Standard** | | | | **Standard** |
| QS(17) | Prior-use certificate of FMEDA data | | | ★ |
| QT(17) | Safety Certified to IEC 61508 with certificate of FMEDA | | | ★ |
| **Toolkit Total System Performance Reports** | | | | |
| **Standard** | | | | **Standard** |
| QZ | Remote Seal System Performance Calculation Report | | | ★ |
| **Conduit Electrical Connector** | | | | |
| **Standard** | | | | **Standard** |
| GE(4) | M12, 4-pin, Male Connector (eurofast®) | | | ★ |
| GM(4) | A size Mini, 4-pin, Male Connector (minifast®) | | | ★ |
| **Lower Housing Flushing Connection Options** | | | | |
| | **Ring Material** | **Number** | **Size (NPT)** | |
| **Standard** | | | | **Standard** |
| F1 | 316 SST | 1 | 1/4-18 NPT | ★ |
| F2 | 316 SST | 2 | 1/4-18 NPT | ★ |
| F3(18) | Alloy C-276 | 1 | 1/4-18 NPT | ★ |
| F4(18) | 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 | ★ |
| **HART Revision Configuration** | | | | |
| **Standard** | | | | **Standard** |
| HR5(10)(19) | Configured for HART Revision 5 | | | ★ |
| HR7(10)(20) | Configured for HART Revision 7 | | | ★ |
| **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.

(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.

(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 (output codes A and M) and Wireless output (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 (output code A).

(18) Not available with Option Codes A0, B0, and G0.

(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.

# 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 | |
|---|---|---|---|
| **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 | | |
| 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, 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 |
| **2051T** 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, accuracy =<br>$\pm\left[0.0075\left(\frac{URL}{Span}\right)\right]$% of Span |
| Range 5 | ±0.075% of span<br>For spans less than 10:1,<br>accuracy = $\pm\left[0.075\left(\frac{URL}{Span}\right)\right]$% of Span | | |
| **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 | | |

**Flow performance - Flow reference accuracy**

| | | |
|---|---|---|
| **2051CFA Annubar Flowmeter** | | |
| Ranges 2-3 | | ±2.00% of Flow Rate at 5:1 flow turndown |
| **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 |
| **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 |
| **2051CFP Integral Orifice Flowmeter** | | |
| Ranges 2-3 | β <0.1 | ±3.10% of Flow Rate at 5:1 flow turndown |
| | 0.1<β <0.2 | ±2.75% of Flow Rate at 5:1 flow turndown |
| | 0.2<β <0.6 | ±2.25% of Flow Rate at 5:1 flow turndown |
| | 0.6<β <0.8 | ±3.00% of Flow Rate at 5:1 flow turndown |

(1) For smaller line sizes, see Rosemount Compact Orifice

**Long term stability**

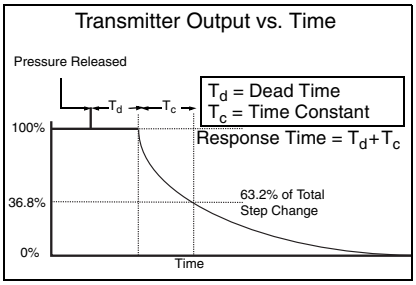
± 50 °F (28 °C) temperature changes and up to 1000 psi (6,9 MPa) line pressure.

| Models | Standard | High Performance Option, P8 |
|---|---|---|
| 2051C<br>Range 1 (CD)<br>Ranges 2-5 | <br>±0.2% of URL for 1 year<br>±0.1% of URL for 2 years | <br><br>±0.125% of URL for 5 years |
| 2051T<br>Ranges 1-5 | <br>±0.1% of URL for 2 years | <br>±0.125% of URL for 5 years |

**Dynamic performance**

| | 4-20 mA HART(1)<br>1-5 Vdc HART Low Power | FOUNDATION fieldbus and PROFIBUS PA protocols (3) | Typical HART Transmitter Response Time |
|---|---|---|---|
| **Total Response Time ($T_d$ + $T_c$)(2):** | | | |
| 2051C, Range 3-5:<br>Range 1:<br>Range 2:<br>2051T:<br>2051L: | 115 ms<br>270 ms<br>130 ms<br>100 ms<br>See *Instrument Toolkit*® | 152 ms<br>307 ms<br>152 ms<br>152 ms<br>See *Instrument Toolkit* | |
| **Dead Time (Td)** | 60 ms (nominal) | 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) Nominal total response time at 75 °F (24 °C) reference conditions.
(3) Transducer block response time, Analog Input block execution time not included.
(4) Does not apply to wireless (Output Code X). See "Wireless (Output Code X)" on page 55 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 user manual (Document number 00809-0100-4001 for HART, 00809-0100-4102 for WirelessHART, 00809-0100-4774 for FOUNDATION fieldbus, and 00809-0300-4101 for PROFIBUS PA) | |
|---|---|
| **Models** | **Line Pressure Effect** |
| **2051CD, 2051CF** | Zero Error(1) |
| Range 1 | ±0.25% of URL/1000 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) |
| | Span Error |
| Range 1 | ±0.4% of reading/1,000 psi (68.9 bar) |
| Ranges 2-3 | ±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 | High Performance Option, P8 |
|---|---|---|
| **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 | ±(0.0125% URL + 0.0625% span) from 1:1 to 5:1<br>±(0.025% URL + 0.125% span) from 5:1 to 100:1 |
| Range 1 | ±(0.1% URL + 0.25% span) from 1:1 to 30:1 | |
| **2051T** Range 2-4 | ±(0.05% URL + 0.25% span) from 1:1 to 30:1<br>±(0.07% URL + 0.25% span) from 30:1 to 100:1 | ±(0.025% URL + 0.125% span) from 1:1 to 30:1<br>±(0.035% URL + 0.125% span) from 30:1 to 100:1 |
| Range 1 | ±(0.05% URL + 0.25% span) from 1:1 to 10:1<br>±(0.10% URL + 0.25% span) from 10:1 to 100:1 | ±(0.025% URL + 0.125% span) from 1:1 to 10:1<br>±(0.05% URL + 0.125% span) from 10:1 to 100:1 |
| Range 5 | ±(0.1% URL + 0.15% span) | |
| **2051L** | See *Instrument Toolkit* | |

**Mounting position effects**

| Models | Mounting Position Effects |
|---|---|
| **2051C** | Zero shifts up to ±1.25 in$H_2O$ (3.1 mbar), which can be calibrated out. No span effect. |
| **2051T** | Zero shifts up to ±2.5 in$H_2O$ (6.2 mbar), which can be calibrated out. No span effect. |
| **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.(1)

**Electromagnetic Compatibility (EMC)**

Meets all relevant requirements of EN 61326 and NAMUR NE-21.(2)

(1) Does not apply to Wireless (Output Code X).

(2) NAMUR NE-21 does not apply to wireless output code X.

**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)

# Functional specifications

## Range and Sensor limits

**Table 7. Range and sensor limits**

| Range | 2051CD, 2051CF, 2051CG, 2051L | | | | | |
|---|---|---|---|---|---|---|
| | Minimum Span | Range and Sensor Limits | | | | |
| | | Upper (URL) | Lower (LRL) | | | |
| | | | 2051C Differential 2051CF Flowmeters | 2051C Gage(1) | 2051L Differential | 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 (20.6 bar) | -300 psi (-20,6 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 8. Range and sensor limits**

| Range | 2051T | | | |
|---|---|---|---|---|
| | Minimum Span | Range and Sensor Limits | | |
| | | Upper (URL) | Lower (LRL) (Abs) | Lower(1) (LRL) (Gage) |
| 1 | 0.3 psi (20.6 mbar) | 30 psi (2.06 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 | 2,000 psi (137.9 bar) | 10,000 psi (689.4 bar) | 0 psia (0 bar) | –14.7 psig (–1.01 bar) |

(1) Assumes atmospheric pressure of 14.7 psig.

## Service

Liquid, gas, and vapor applications

## Protocols

### 4–20 mA HART (Output Code A)

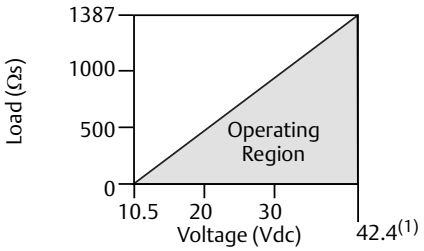
***Power supply***

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 minimum loop resistance of 250 ohms.*

*(1) For CSA approval, power supply must not exceed 42.4 V.*

**Indication**

Optional two line LCD/LOI Display

**Zero and span adjustment requirements**

Zero and span values can be set anywhere within the range limits stated in Table 7 and Table 8.

Span must be greater than or equal to the minimum span stated in Table 7 and Table 8.

**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.

**2051**

Digital communications based on HART Revision 5 protocol.

**2051 with selectable HART**

The 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 local operator interface (LOI).

**Local Operator Interface**

The LOI utilizes a 2 button menu with internal and external configuration buttons. Internal buttons are always configured for Local Operator Interface. 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 2051 with Selectable HART product manual (00809-0100-4107) 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.

**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 | - |
| Transducer | - |
| LCD Block | - |
| Analog Input 1, 2 | 30 milliseconds |
| PID | 45 milliseconds |
| Input Selector | 30 milliseconds |
| Arithmetic | 35 milliseconds |
| Signal Characterizer | 40 milliseconds |
| Integrator | 35 milliseconds |

**FOUNDATION fieldbus parameters**

| | |
|---|---|
| Schedule Entries | 7 (max.) |
| Links | 20 (max.) |
| Virtual Communications Relationships (VCR) | 12 (max.) |

**Standard function blocks**

***Resource block***

Contains 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.

***LCD block***

Configures the local display.

***2 Analog input blocks***

Processes the measurements for input into other function blocks. The output value is in engineering units or custom and contains a status indicating measurement quality.

***PID block***

Contains all logic to perform PID control in the field including cascade and feedforward.

**Backup Link Active Scheduler (LAS)**

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

**Advanced control function block suite (Option Code A01)**

***Input selector block***

Selects between inputs and generates an output using specific selection strategies such as minimum, maximum, midpoint, average or first "good."

***Arithmetic block***

Provides pre-defined application-based equations including flow with partial density compensation, electronic remote seals, hydrostatic tank gauging, ratio control, and others.

***Signal characterizer block***

Characterizes or approximates any function that defines an input/output relationship by configuring up to twenty X, Y coordinates. The block interpolates an output value for a given input value using the curve defined by the configured coordinates.

***Integrator block***

Compares the integrated or accumulated value from one or two variables to pre-trip and trip limits and generates discrete output signals when the limits are reached. This block is useful for calculating total flow, total mass, or volume over time.

## 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.

**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.

**Local Operator Interface**

Optional external configuration buttons.

## Wireless (Output Code X)

**Output**

IEC 62591 (WirelessHART), 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

**Local display**

The optional 3-line, 7-digit LCD 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 sec. to 60 min.

**Wireless sensor module for in-line transmitters**

The 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 or 185 °F (-40 °C or 85 °C) may reduce specified life by less than 20 percent.

### 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.

***2051***

Digital communications based on HART Revision 5 protocol.

***2051 with selectable HART***

The 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 local operator interface (LOI).

***Local Operator Interface***

The LOI utilizes a 2 button menu with internal and external configuration buttons. Internal buttons are always configured for Local Operator Interface. 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 2051 with Selectable HART product manual (00809-0100-4107) 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 2.0 seconds after power is applied to the transmitter.

## Overpressure limits

Transmitters withstand the following limits without damage:

### 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)

### 2051T

- 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)

### 2051L

Limit is flange rating or sensor rating, whichever is lower (Table 9 on page 56).

**Table 9. 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

### 2051CD, 2051CF

- Operates within specifications between static line pressures of -14.2 psig (0.034 bar) and 3,626 psig (250 bar)
  - For Option Code P9, 4,500 psig (310,3 bar)
- Range 1: 0.5 psia to 2,000 psig (34 mbar and 137,9 bar)

## Burst pressure limits

### 2051C, 2051CF Coplanar or traditional process flange

- 10,000 psig (689.5 bar)

### 2051T in-line

- Ranges 1–4: 11,000 psi (758.4 bar)
- Range 5: 26,000 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) 2051 LCD display may not be readable and LCD updates may be slower at temperatures below -4 °F (-20 °C).

(2) Wireless LCD display may not be readable and LCD updates will be slower at temperatures below -4 °F (-20 °C)

### Process

At atmospheric pressures and above. See Table 10.

**Table 10. Process Temperature Limits**

| 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 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) |
| **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) |
| **2051L Low-Side Temperature Limits** | |
| 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) |
| **2051L High-Side Temperature Limits (Process Fill Fluid)** | |
| Syltherm® XLT | –100 to 300 °F (–73 to 149 °C) |
| D.C. Silicone 704® | 60 to 400 °F (15 to 205 °C) |
| D.C. Silicone 200 | –40 to 400 °F (–40 to 205 °C) |
| Inert | –50 to 350 °F (–45 to 177 °C) |
| Glycerin and Water | 0 to 200 °F (–17 to 93 °C) |
| Neobee M-20 | 0 to 400 °F (–17 to 205 °C) |
| Propylene Glycol and Water | 0 to 200 °F (–17 to 93 °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 $cm^3$)

### Damping

#### 4-20 mA HART

***2051 with selectable HART***

Analog output response to a step input change is user-enterable from 0.0 to 60 seconds for one time constant. This software damping is in addition to sensor module response time.

***2051***

Analog output response to a step input change is user-selectable from 0 to 36 seconds for one time constant. This software damping is in addition to sensor module response time.

#### FOUNDATION fieldbus

Transducer block: 0.4 seconds fixed

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:

| 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 |

| 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

### Electrical connections

$^1/_2$–14 NPT, G$^1/_2$, and M20 × 1.5 conduit.

### Process connections

#### 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)

#### 2051T

- $^1/_2$–14 NPT female
- G$^1/_2$ 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; $^1/_4$ OD high pressure tube 60° cone; available in SST for Range 5 transmitters only)

### 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

### 2051CF

- For 2051CFA wetted parts, see 00813-01000-4485 in the 485 section
- For 2051CFC wetted parts, see 00813-01000-4485 in the 405 section
- For 2051CFP wetted parts, see 00813-01000-4485 in the 1195 section

## 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

## 2051T process wetted parts

### Process connections
- 316L SST or Alloy C-276

### Process Isolating diaphragms
- 316L SST or Alloy C-276

## 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 2051C/T/L

### Electronics housing
Low-copper aluminum or CF-8M (Cast version of 316 SST).
Enclosure Type 4X, IP 65, IP 66, IP68
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)
Sylthern XLT, D.C. Silicone 704,
D.C. 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 11. Transmitter weights without Options(1)**

| Transmitter | Standard 2051 In lb. (kg) | Wireless In lb. (kg) |
|---|---|---|
| 2051C | 4.9 (2.2) | 3.9 (1,8) |
| 2051L | Table 12 below | Table 12 below |
| 2051T | 3.1 (1.4) | 1.9 (0,86) |

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

**Table 12. 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., 150 | 12.5 (5,7) | — | — | — |
| 3-in., 150 | 17.5 (7,9) | 19.5 (8,8) | 20.5 (9,3) | 21.5 (9,7) |
| 4-in., 150 | 23.5 (10,7) | 26.5 (12,0) | 28.5 (12,9) | 30.5 (13,8) |
| 2-in., 300 | 17.5 (7,9) | — | — | — |
| 3-in., 300 | 22.5 (10,2) | 24.5 (11,1) | 25.5 (11,6) | 26.5 (12,0) |
| 4-in., 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) | — | — | — |
| 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 13. 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., 150 | 12.7 (5,8) |
| FD | Level Flange—3 in., 300 | 15.9 (7,2) |
| FA | Level Flange—2 in., 150 | 8.0 (3,6) |
| FB | Level Flange—2 in., 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) |

# Product certifications

## Approved manufacturing locations

Rosemount Inc. — Chanhassen, Minnesota USA
Emerson Process Management GmbH & Co. — Wessling, Germany
Emerson Process Management Asia Pacific Private Limited — Singapore
Beijing Rosemount Far East Instrument Co., LTD — Beijing, China
Emerson Process Management LTDA — Sorocaba, Brazil
Emerson Process Management (India) Pvt. Ltd — Daman, India

## European directive information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting an Emerson Process Management representative.

**Ordinary location certification for Factory Mutual**

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

# HART Protocol

## Hazardous locations certifications

**North American certifications**

**FM Approvals**

**E5** Explosion-Proof and Dust-Ignition-Proof
Certificate No: 3032938
Applicable Standards: FM Class 3600 – 1998, FM Class 3615 – 2006, FM Class 3810 – 2005, ANSI/NEMA 250 – 1991, ANSI/IEC 60529 – 2004
Markings: Explosion-Proof for Class I, Division 1, Groups B, C, and D
Dust-Ignition-Proof for Class II, Division 1, Groups E, F, G; and Class III, Division 1.
T5 ($T_a$= -50 °C to +85 °C), Factory Sealed, Enclosure Type 4X

**I5** Intrinsically-Safe and Non-incendive
Certificate No: 3033457
Applicable Standards: FM Class 3600 – 1998, FM Class 3610 – 2007, FM Class 3611 – 2004, FM Class 3810 – 2005
Markings: Intrinsically Safe for use in Class I, Division 1, Groups A, B, C, and D; Class II, Divisions 1, Groups E, F, and G; Class III, Division 1; Class I, Zone 0, AEx ia IIC; Nonincendive for use in Class I, Division 2, Groups A, B, C and D; in accordance with Control Drawing 02051-1009
T4 (-50 °C to +70 °C) Enclosure Type 4X
Temperature Code:T4 ($T_a$ = -50 °C to +70 °C), Enclosure Type 4X
For input parameters see control drawing 02051-1009.

**Special Conditions for Safe Use:**

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.

2. The Model 2051 transmitter with the transient terminal block (Option code T1) will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.

**Canadian Standards Association (CSA)**

All CSA hazardous approved transmitters are certified per ANSI/ISA 12.27.01-2003.

**E6** Explosion-Proof, Dust Ignition Proof
Certificate No: 2041384
Applicable Standards: CSA Std. C22.2 No. 142 - M1987, CSA Std. C22.2 No. 30 - M1986, CSA Std. C22.2 No. 213 - M1987, CAN/CSA-E60079-0:07, CAN/CSA-E60079-1:07
Markings: Explosion-Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignitions 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** Intrinsically Safe
Certificate no.: 2041384
Applicable 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 drawings 02051-1008. Temperature code T3C. Class I Zone 1 Ex ia IIC T3C. Single Seal. Enclosure Type 4X.

**European Certifications**

**I1** ATEX Intrinsic Safety
Certificate No: Baseefa08ATEX0129X
Applicable Standards: EN60079-0:2012, EN60079-11:2012
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga(–60 °C ≤ Ta ≤ +70 °C)
IP66 IP68
CE 1180

**Table 14. Input Parameters**

| |
|---|
| $U_i$ = 30 V |
| $I_i$ = 200 mA |
| $P_i$ = 1.0 W |
| Ci = 0.012 µF |

**Special Conditions for Safe Use (X):**
When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of EN60079-11. This must be taken into account when installing the apparatus.

**N1** ATEX Type n
Certification No. Baseefa08ATEX0130X
Applicable Standards: EN60079-0:2012, EN60079-15:2010
Markings: ⟨Ex⟩ II 3 G
Ex nA IIC T4 Gc (–40 °C ≤ $T_a$ ≤ +70 °C)
$U_i$ = 42.4 Vdc max
IP66
CE

**Special Conditions for Safe Use (X):**
When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding a 500 V r.m.s. test to case. This must be taken into account on any installation in which it is used, for example by assuring that the supply to the apparatus is galvanically isolated.

**E1** ATEX Flame-Proof
Certification No. KEMA 08ATEX0090X
Applicable Standards: EN60079-0:2009, IEC60079-0:2011, EN60079-1:2007, EN60079-26:2007
Markings ⟨Ex⟩ II 1/2 G
Ex d IIC T6 Ga/Gb (–50 °C ≤ $T_a$ ≤ 65 °C)
Ex d IIC T5 Ga/Gb (–50 °C ≤ $T_a$ ≤ 80 °C)
IP66
CE 1180
$U_i$ = 42.4 Vdc

**Special Conditions for Safe Use (X):**
1. Appropriate ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.
2. This 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 maintenance shall be followed in detail to assure safety during its expected lifetime.
3. In case of repair, Contact Emerson Process Management for information on the dimensions of flameproof joints.

**ND** ATEX Dust
Certification No. Baseefa08ATEX0182X
Applicable Standards: EN60079-0:2012, EN 60079-31:2009
Markings: ⟨Ex⟩ II 1 D Ex t IIIC T50 °C $T_{500}$ 60 °C Da
IP66 IP68
$U_i$ = 42.4 Vdc
CE 1180

**Special Conditions for Safe Use (X):**
If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of isolation from earth test and this must be taken into account during installation.

**IECEx Certifications**

**I7** IECEx Intrinsic Safety
Certification No. IECExBAS08.0045X
Applicable Standards: IEC60079-0:2011, IEC60079-11:2011
Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

**Table 15. Input Parameters**

| |
|---|
| $U_i$ = 30 V |
| $I_i$ = 200 mA |
| $P_i$ = 1.0 W |
| $C_i$ = 0.012 µF |

**Special Conditions for Safe Use (X):**
When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding the 500V insulation test required by Clause 6.3.12 of EN60079-11. This must be taken into account when installing the apparatus.

**E7** IECEx Flame-Proof
Certification No. IECEx KEM 08.0024X
Applicable Standards: IEC60079-0:2011, IEC60079-1:2007-04, IEC60079-26:2006
Ex d IIC T6 Ga/Gb (–50 °C ≤ $T_a$ ≤ 65 °C)
Ex d IIC T5 Ga/Gb (–50 °C ≤ $T_a$ ≤ 80 °C)
$U_i$ = 42.4 Vdc

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

1. Appropriate ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.
2. This 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 maintenance shall be followed in detail to assure safety during its expected lifetime.
3. In case of repair, Contact Emerson Process Management for information on the dimensions of flameproof joints.

**N7** IECEx Type 'n'
Certification No. IECExBAS08.0046X
Applicable Standards: IEC60079-0: 2011, IEC60079-15: 2010
Ex nA IIC T4 Gc (–40 °C ≤ $T_a$ ≤ +70 °C)
$U_i$ = 42.4 Vdc max

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

When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding a 500 V r.m.s. test to case. This must be taken into account on any installation in which it is used, for example by assuring that the supply to the apparatus is galvanically isolated.

**TIIS Certifications**

**E4** TIIS Flame-Proof
Ex d IIC T6

**Inmetro Certifications**

**E3** Flame-Proof
NEPSI Certificate No: GYJ101321X
Applicable standards: GB3836.1-2000, GB3836.2-2000
Markings: Ex d II C T5/T6
T6 = -50 °C ≤ $T_{amb}$ ≤ 80 °C
T5 = -50 °C ≤ $T_{amb}$ ≤ 65 °C

**I3** Intrinsic Safety
Certificate No: GYJ101320X
Applicable Standards: GB3836.1-2000, GB3836.4-2000
Markings: Ex ia IIC T4
T4: -60 °C ≤ $T_{amb}$ ≤ 70 °C

**China (NEPSI) Certifications**

**E3** Flame-Proof
Ex d IIC T5/T6

**I3** Intrinsic Safety
Ex ia IIC T4

**CCOE Certifications**

**IW** Intrinsic Safety
Ex ia IIC T4

**EW** Flame-Proof
Ex d IIC T5

**Combinations of Certifications**

Stainless steel certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

**K1** E1, I1, N1, and ND combination

**K2** E2 and I2 combination

**K5** E5 and I5 combination

**K6** I6 and E6 combination

**K7** E7, I7, and N7 combination

**KA** E1, I1, E6, and I6 combination

**KB** E5, I5, E6, and I6 combination

**KC** E1, I1, E5, and I5 combination

**KD** E1, I1, E5, I5, E6, and I6 combination

# FOUNDATION FIELDBUS AND PROFIBUS PA PROTOCOLS

## Hazardous Locations Certifications

### North American Certifications
### FM Approvals

**E5** Explosion-Proof and Dust-Ignition-Proof
Certificate No: 3032938
Applicable Standards: FM Class 3600 – 1998, FM Class 3615 – 2006, FM Class 3810 – 2005, ANSI/NEMA 250 – 1991, ANSI/IEC 60529 – 2004
Markings: Explosion-Proof for Class I, Division 1, Groups B, C, and D
Dust-Ignition-Proof for Class II, Division 1, Groups E, F, G; and Class III, Division 1.

T5 ($T_a$= -50 °C to +85 °C), Factory Sealed, Enclosure Type 4X

**IE/I5** Intrinsically Safe for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Zone 0, AEx ia IIC; Nonincendive for use in Class I, Division 2, Groups A, B, C and D; in accordance with Control Drawing 02051-1009.

For FOUNDATION fieldbus and PROFIBUS PA, Temperature Code: T4 ($T_a$ = -50 °C to +70 °C)

For FISCO,
Temperature Code: T4 ($T_a$ = -50 °C to +60 °C)

Enclosure Type 4X
For input parameters see control drawing 02051-1009.

### Canadian Standards Association (CSA)

All CSA hazardous approved transmitters are certified per ANSI/ISA 12.27.01-2003.

**E6** Explosion-Proof, Dust Ignition Proof
Certificate No: 2041384
Applicable Standards: CSA Std. C22.2 No. 142 - M1987, CSA Std. C22.2 No. 30 - M1986, CSA Std. C22.2 No. 213 - M1987, CAN/CSA-E60079-0:07, CAN/CSA-E60079-1:07

Markings: Explosion-Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignitions 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/IF** Intrinsically Safe
Certificate no.: 2041384
Applicable 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 drawings 02051-1008. Temperature code T3C. Class I Zone 1 Ex ia IIC T3C. Single Seal. Enclosure Type 4X.

### European Certifications

**I1** ATEX Intrinsic Safety
Certificate No: Baseefa08ATEX0129X
Applicable Standards: EN60079-0:2012, EN60079-11:2012
Markings: Ⓔx II 1 G Ex ia IIC T4 Ga(–60 °C ≤ Ta ≤ +70 °C)
IP66 IP68
CE 1180

**Table 16. Input Parameters**

| |
|---|
| $U_i$ = 30 V |
| $I_i$ = 300 mA |
| $P_i$ = 1.3 W |
| $C_i$ = 0 µF |

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

When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of EN60079-11. This must be taken into account when installing the apparatus.

**IA** ATEX FISCO Intrinsic Safety
Certificate No: Baseefa08ATEX0129X
Applicable Standards: EN60079-0:2012, EN60079-11:2012
Markings: Ⓔx II 1 G Ex ia IIC T4 Ga(–60 °C ≤ Ta ≤ +60 °C)
IP66 IP68
1180

**Table 17. Input Parameters**

| |
|---|
| $U_i$ = 30 V |
| $I_i$ = 200 mA |
| $P_i$ = 1.0 W |
| $C_i$ = ≤ 0.012 µF |

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

When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of EN60079-11. This must be taken into account when installing the apparatus.

**N1** ATEX Type n
Certification No. Baseefa08ATEX0130X
Applicable Standards: EN60079-0:2012, EN60079-15:2010
Markings: ⟨Ex⟩ II 3 G
Ex nA IIC T4 Gc (–40 °C ≤ Ta ≤ +70 °C)
$U_i$ = 42.4 Vdc max
IP66 CE

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

When the optional transient protection terminal block is installed, the apparatus is not capable of withstanding a 500 V r.m.s. test to case. This must be taken into account on any installation in which it is used, for example by assuring that the supply to the apparatus is galvanically isolated.

**E1** ATEX Flame-Proof
Certification No. KEMA 08ATEX0090X
Applicable Standards: EN60079-0:2009, IEC60079-0:2011, EN60079-1:2007, EN60079-26:2007
Markings ⟨Ex⟩ II 1/2 G
Ex d IIC T6 Ga/Gb (–50 °C ≤ Ta ≤ 65 °C)
Ex d IIC T5 Ga/Gb (–50 °C ≤ Ta ≤ 80 °C)
IP66
CE1180
Ui = 32 Vdc

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

1. Appropriate ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.

2. This 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 maintenance shall be followed in detail to assure safety during its expected lifetime.

3. In case of repair, Contact Emerson Process Management for information on the dimensions of flameproof joints.

**ND** ATEX Dust
Certification No. Baseefa08ATEX0182X
Applicable Standards: EN60079-0:2012, EN 60079-31:2009
Markings: ⟨Ex⟩ II 1 D Ex t IIIC T50 °C $T_{500}$ 60 °C Da
IP66 IP68
$U_i$ = 42.4 Vdc
CE 1180

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

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

**IECEx Certifications**

**I7** IECEx Intrinsic Safety
Certification No. IECExBAS08.0045X
Applicable Standards: IEC60079-0:2011, IEC60079-11:2011
Ex ia IIC T4 Ga (–60 °C ≤ $T_a$ ≤ +70 °C)

**Table 18. Input Parameters**

| |
|---|
| $U_i$ = 30 V |
| $I_i$ = 300 mA |
| $P_i$ = 1.3 W |
| $C_i$ = 0 µF |

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

The device is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of IEC60079-11. This must be taken into account when installing the apparatus.

**IG** IECEx FISCO Intrinsic Safety
Certification No. IECExBAS08.0045X
Applicable Standards: IEC60079-0:2011, IEC60079-11:2011
Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +70 °C)
IP66
CE 1180

**Table 19. Input Parameters**

| |
|---|
| $U_i$ = 17.5 V |
| $I_i$ = 380 mA |
| $P_i$ = 5.32 W |
| $C_i$ = ≤ 5 µF |
| $L_i$ = ≤ 10 µH |

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

The device is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of IEC 60079-11. This must be taken into account when installing the apparatus.

**E7** IECEx Flame-Proof
Certification No. IECEx KEM 08.0024X
Applicable Standards: IEC60079-0:2011, IEC60079-1:2007-04, IEC60079-26:2006
Ex d IIC T6 Ga/Gb (–50 °C ≤ $T_a$ ≤ 65 °C)
Ex d IIC T5 Ga/Gb (–50 °C ≤ $T_a$ ≤ 80 °C)
Ui = 32 Vdc

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

Appropriate ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.

This 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 maintenance shall be followed in detail to assure safety during its expected lifetime.

In case of repair, Contact Emerson Process Management for information on the dimensions of flameproof joints.

**N7** IECEx Type 'n'
Certification No. IECExBAS08.0046X
Applicable Standards: IEC60079-0: 2011, IEC60079-15: 2010
Ex nA IIC T4 Gc (–40 °C ≤ $T_a$ ≤ +70 °C)
Ui = 42.4 Vdc max

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

The device is not capable of withstanding the 500 V insulation test required by Clause 6.8.1 of IEC60079-15. This must be taken into account when installing the device.

**TIIS Certifications**

**E4** TIIS Flame-Proof
Ex d IIC T6

**China (NEPSI) Certifications**

**E3** Flameproof
NEPSI Certificate No.: GYJ101321X
Applicable Standards: GB3836.1-2000, GB3836.2-2000
Markings: Ex d II C T5/T6
T5: –50 °C ≤ $T_a$ ≤ +80 °C
T6: –50 °C ≤ $T_a$ ≤ +65 °C

**I3** Intrinsic Safety
NEPSI Certificate No.: GYJ101320X
Applicable Standards: GB3836.1-2000, GB3836.4-2000
Markings: Ex ia IIC T4
T4: –60 °C ≤ $T_a$ ≤ +70 °C

**Inmetro Certifications**

**E2** Flameproof
Certificate No: CEPEL 09.1767X
Ex d IIC T* Ga/Gb IP66
T6 = -50 °C < $T_{amb}$ < 65 °C
T5 = -50 °C < $T_{amb}$ < 80 °C

**I2** Intrinsic Safety
Certificate No: CEPEL 09.1768X
Ex ia IIC T4 Ga (-60°C < Tamb < +70°C) IP66

**IB** FISCO Intrinsic Safety
Certificate No: CEPEL 09.1768X
Ex ia IIC T4 Ga (-60°C < Tamb < +60°C) IP66

**Combinations of Certifications**

Stainless steel certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

**K1** E1, I1, N1 and ND combination

**K2** E2 and I2 combination

**K5** E5 and I5 combination

**K6** E6 and I6 combination

**K7** E7, I7 and N7 combination

**KA** E1, I1 E6 and I6 combination

**KB** E5, I5, E6 and I6 combination

**KC** E1, I1, E5 and I5 combination

**KD** E1, I1, E5, I5, E6 and I6 combination

# IEC 62591 (WirelessHART Protocol)

## Approved manufacturing locations

Rosemount Inc. — Chanhassen, Minnesota USA
Fisher-Rosemount GmbH & Co. — Wessling, Germany
Emerson Process Management Asia Pacific Private Limited — Singapore
Beijing Rosemount Far East Instrument Co., LTD — Beijing, China

## European directive information

The most recent revision of the EC declaration of conformity can be found at www.rosemount.com.

## 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 for FM

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

## North American certifications

### Factory Mutual (FM) approvals

**I5** FM Intrinsically Safe
Certificate No: 3045342
Applicable Standards: Class 3600:2011, Class 3610:2010, Class 3810: 2005
Markings: Intrinsically Safe for Class I, Division I, Groups A, B, C, D
Zone Marking: Class I Zone 0, AEx ia IIC
T4 (-40 °C to 70 °C)
Intrinsically Safe when installed according to Rosemount Drawing 03031-1062
Enclosure Type 4X/IP66/IP68

### Specific Conditions for Safe Use:

The inline 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 use to prevent impact and friction.

The surface resistivity of the transmitter is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

The Model 2051 Wireless pressure Transmitter shall only be used with the 701PGNKF Rosemount Smartpower Battery Pack.

### CSA - Canadian Standards Association

**I6** CSA Intrinsically Safe
Certificate No: 2526009
Applicable Standards: CSA C22.2 No. 0-M91, CSA C22.2 No. 159-92
Markings: Intrinsically Safe For Class I, Division I, Groups A, B, C, D
T4 (-40 °C to 70 °C)
Intrinsically safe when installed according to Rosemount drawing 03031-1063
Enclosure Type 4X/IP66/IP68

### European certifications

**I1** ATEX Intrinsic Safety
Certificate No: Baseefa12ATEX0228X
Applicable Standards: EN60079-11:2012, EN60079-0:2012
Markings: Ex ia IIC T4 Ga (-40 °C ≤ Ta ≤ 70 °C)
⟨Ex⟩ II 1G
IP66/68
CE 1180

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

The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.

For use with Rosemount 701PGNKF only

**I7** IECEx Intrinsic Safety
Certificate No: IECEx BAS 12.0124X
Applicable Standards: IEC60079-11:2011, IEC60079-0:2011
Markings: Ex ia IIC T4 Ga (-40 °C ≤ Ta ≤ 70 °C)
IP66/68

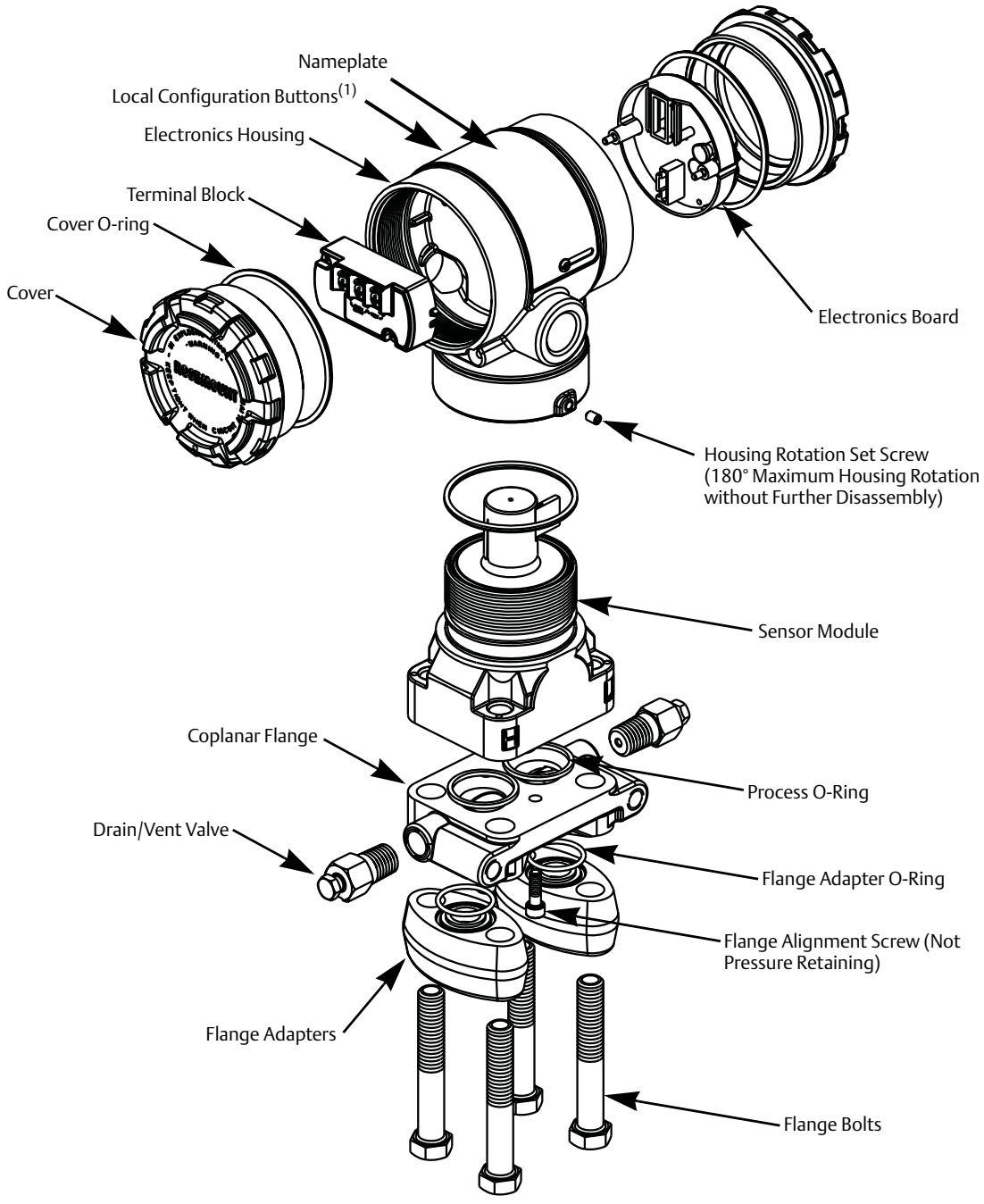
**Specific Conditions for Safe Use:**

The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.

For Use with Rosemount 701PGNKF only

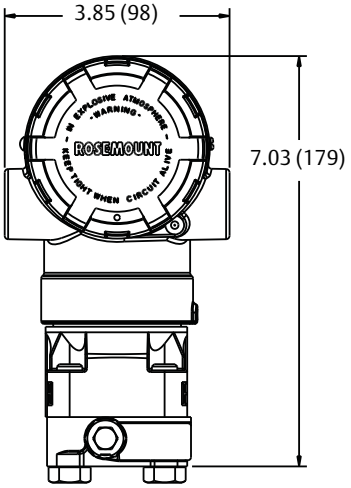
# Dimensional drawings

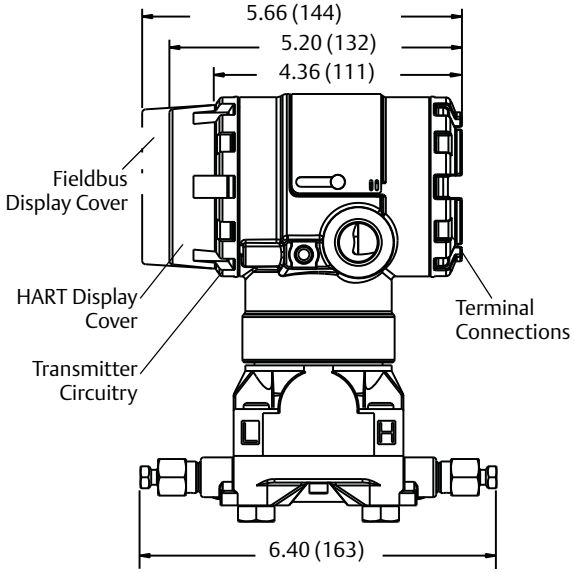
**2051C Exploded View**



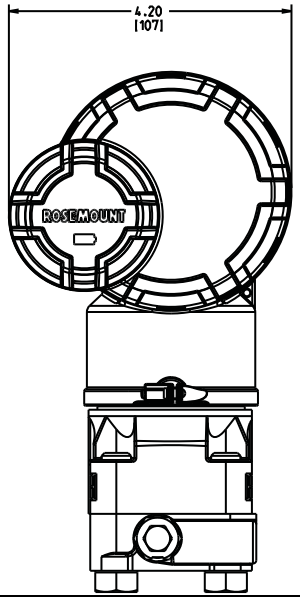

*1) Span and Zero Adjustment Buttons are optional with 4-20 mA and 1-5 Vdc HART protocol. Local Operator Interface buttons are optional for PROFIBUS PA protocol. Local Configuration Buttons are not available with FOUNDATION fieldbus.*

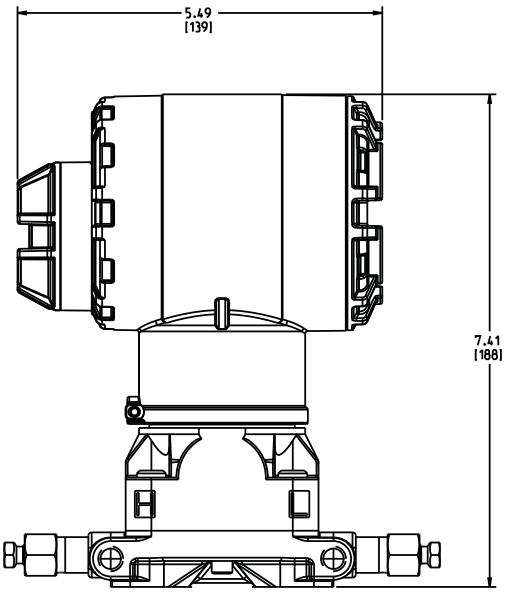
**2051C Coplanar Flange**



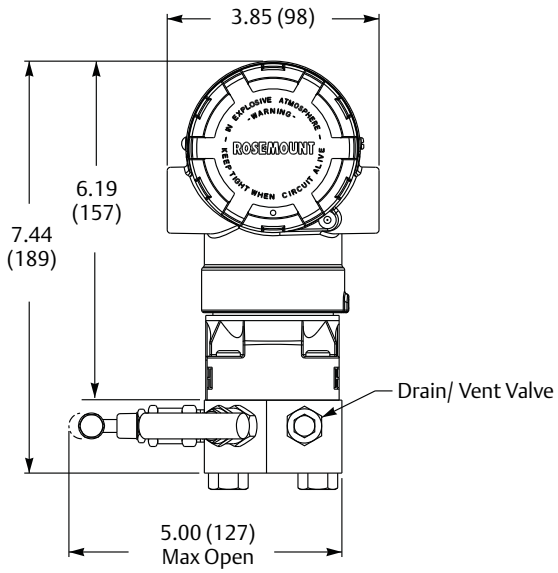

**2051 Wireless Housing with Coplanar Platform**

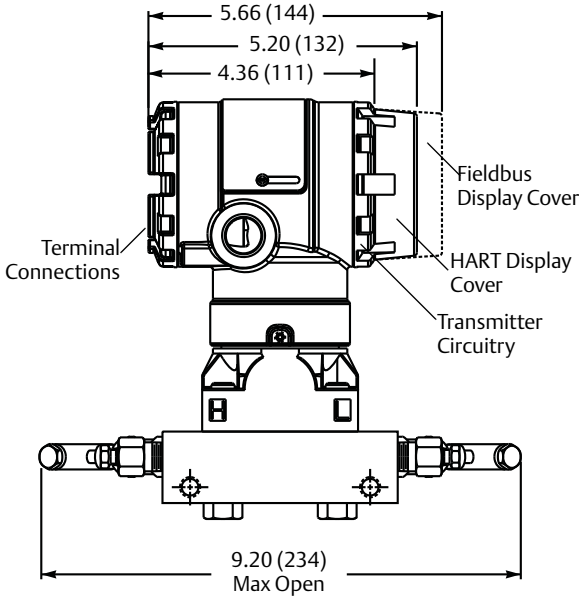


**2051C Coplanar Flange**

**2051C Coplanar with Rosemount 305 3-Valve Coplanar Integral Manifold**

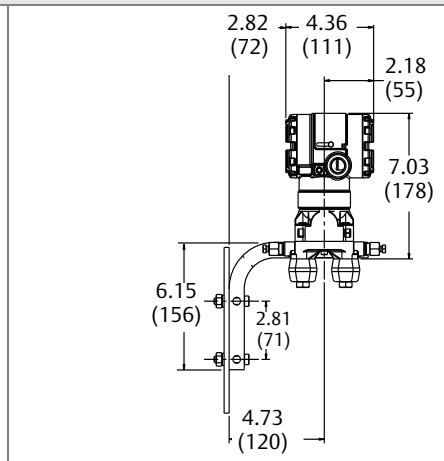


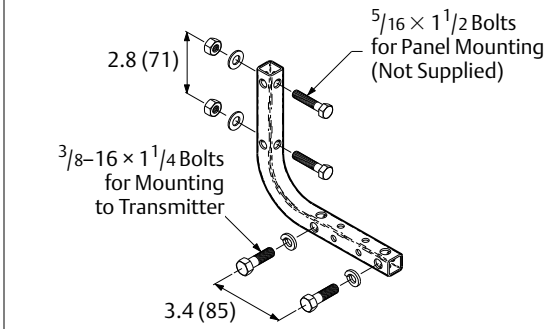




*Dimensions are in inches (millimeters).*

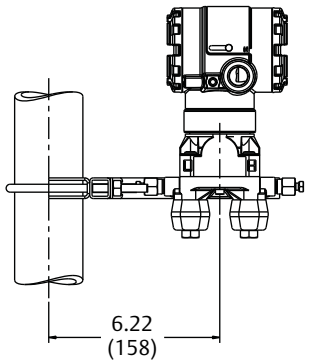
**Coplanar Flange Mounting Configurations with Optional Bracket (B4) for 2-in. Pipe or Panel Mounting**

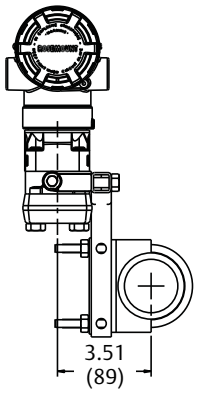
**PANEL MOUNTING**

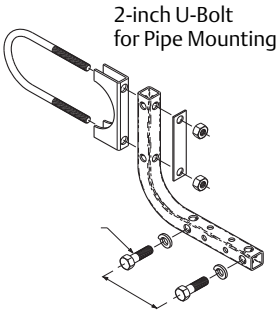



**PIPE MOUNTING**

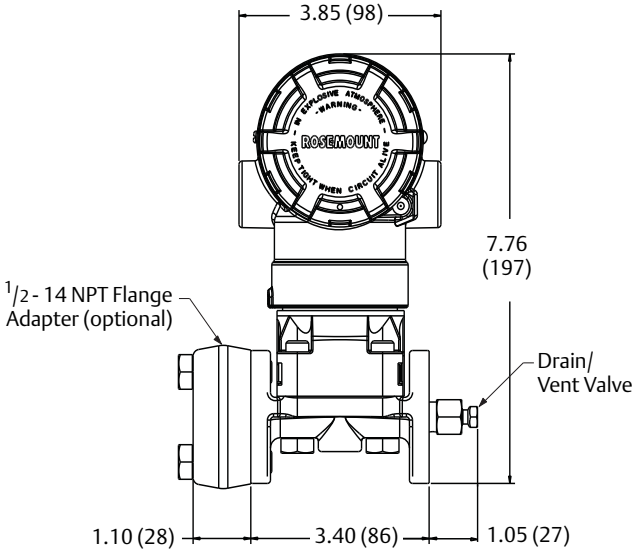


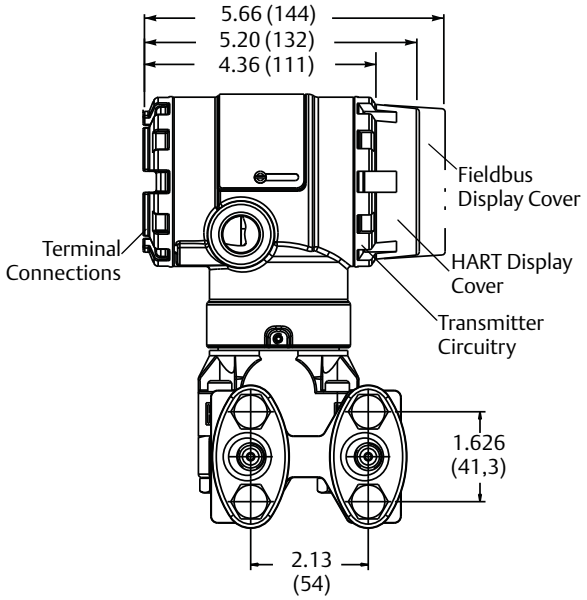



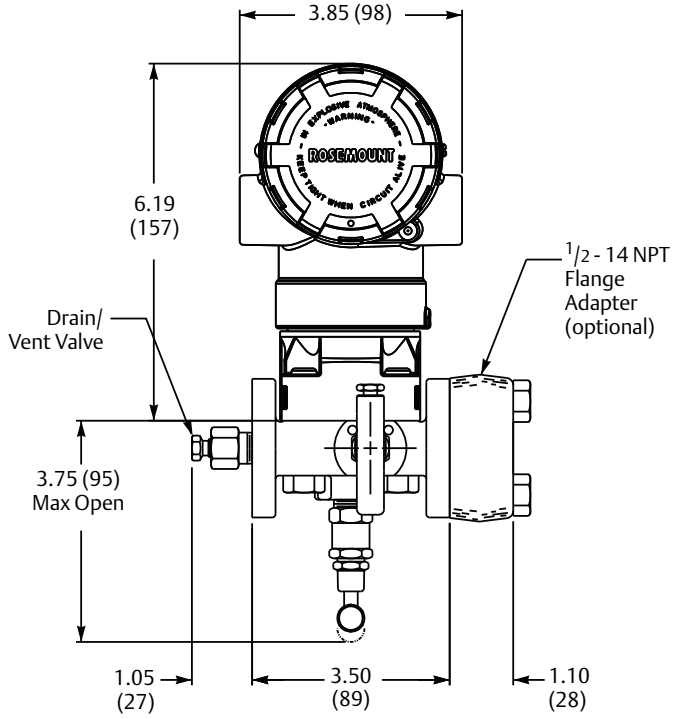

*Dimensions are in inches (millimeters).*

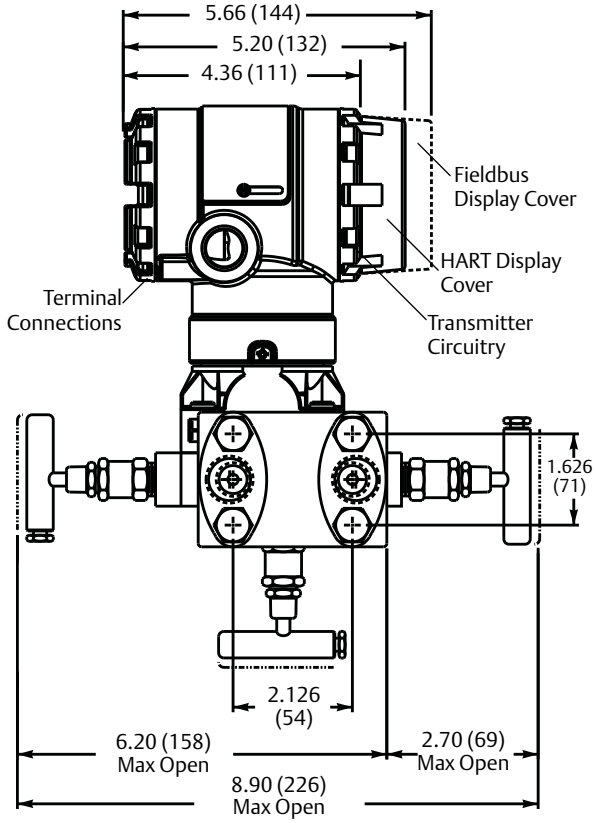
**2051C Coplanar with Traditional Flange**




**2051C Coplanar with Rosemount 305 3-Valve Traditional Integral Manifold**

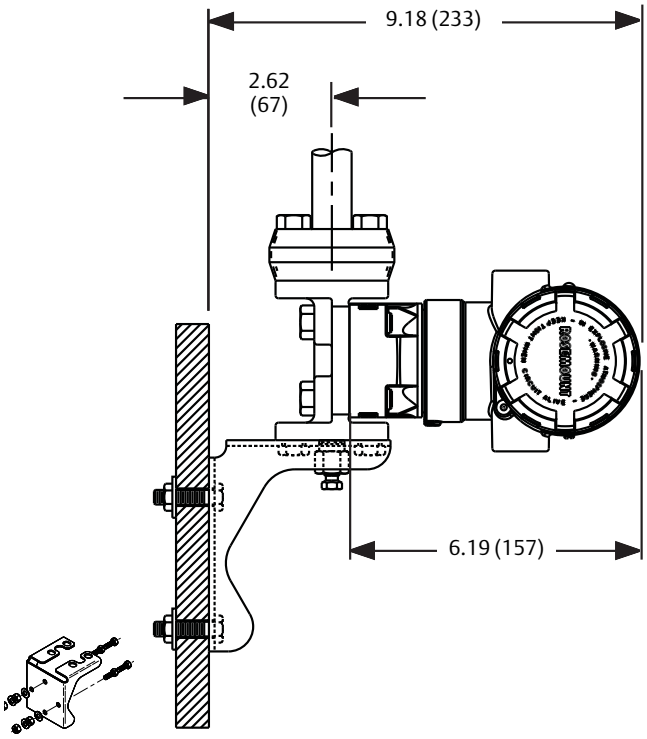


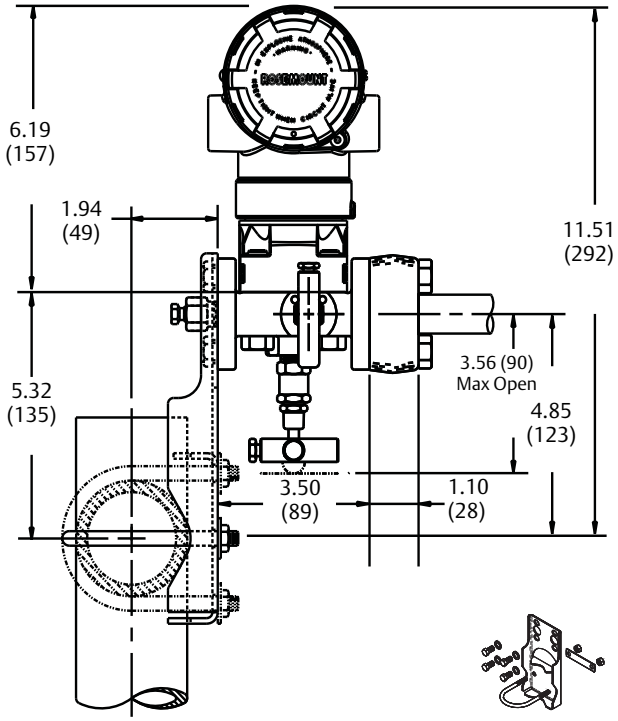

*Dimensions are in inches (millimeters).*

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

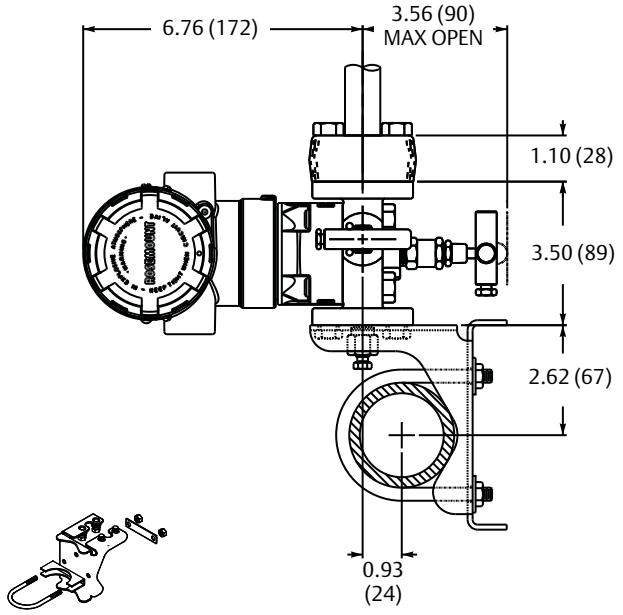
**Panel Mount (Bracket Option B2/B8)**



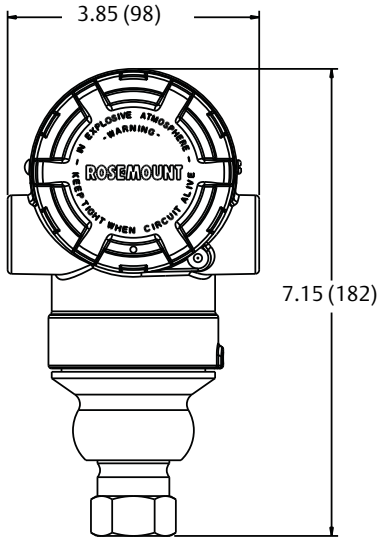

**Pipe Mount (Bracket Option B3/B9/BC)**

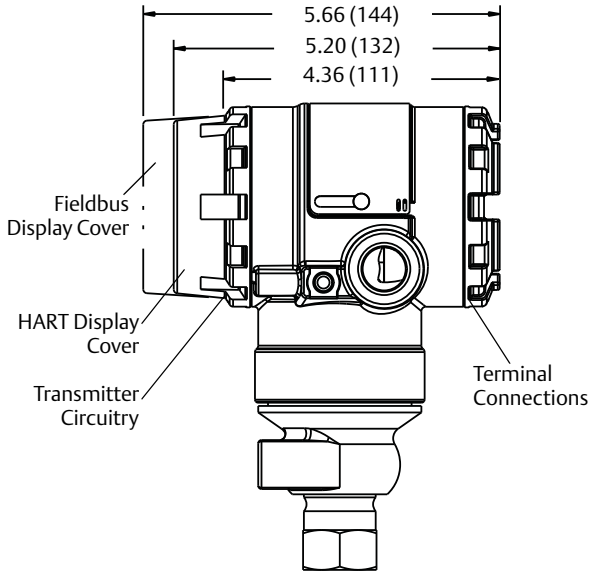



**Pipe Mount (Bracket Option B1 / B7 / BA)**

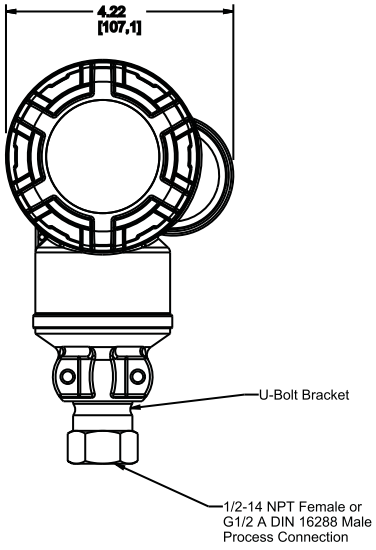


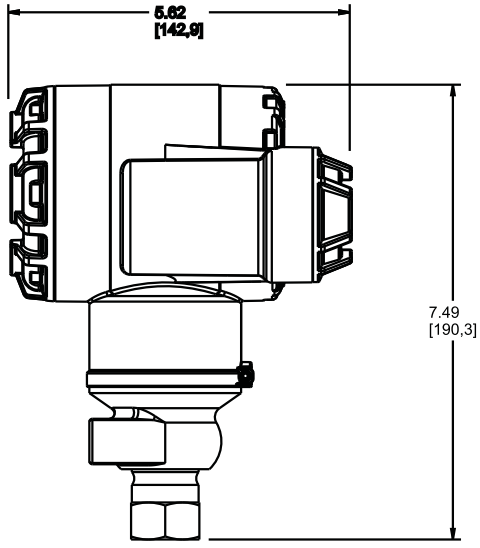
## 2051T Dimensional Drawings



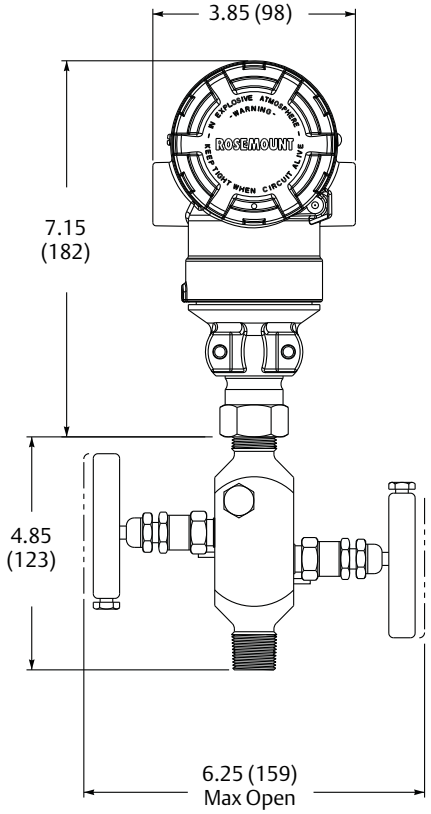

## 2051 Wireless Housing with Inline Platform

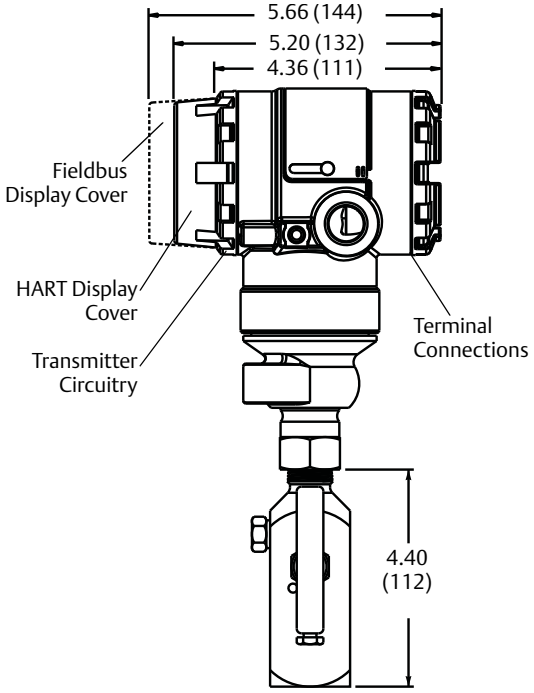


**2051T Dimensional Drawings**

**2051T with Rosemount 306 2-Valve Integral Manifold**

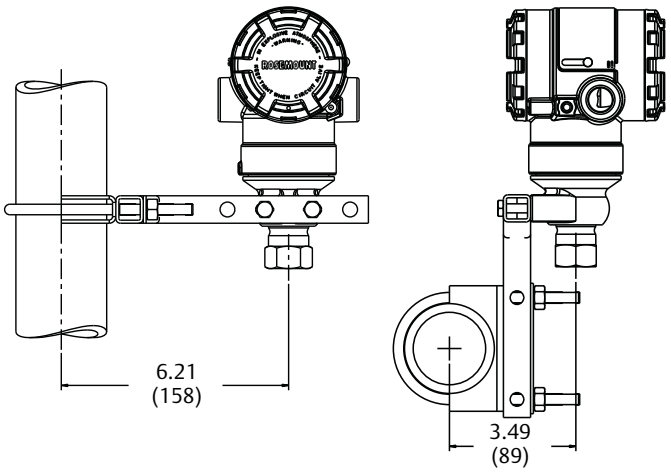


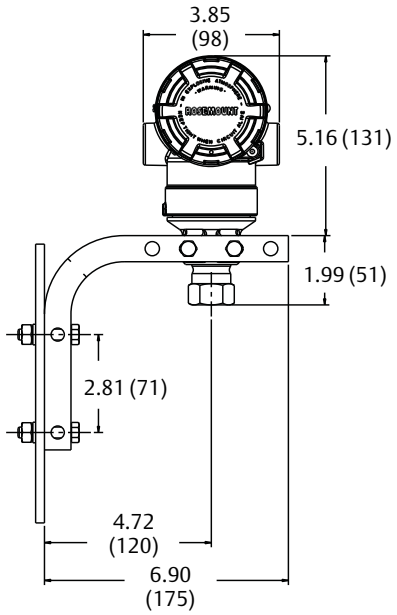

*Dimensions are in inches (millimeters).*

**2051T Typical Mounting Configurations with Optional Mounting Bracket**

**Pipe Mounting**



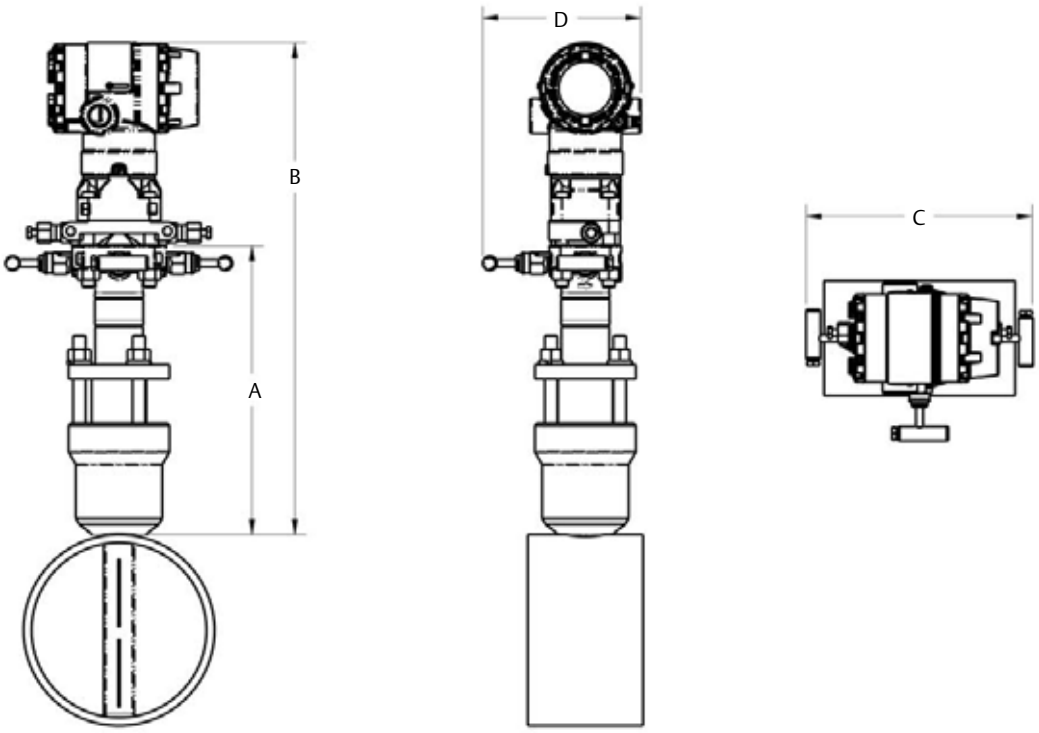

**Panel Mounting**




*Dimensions are in inches (millimeters).*

**Rosemount 2051CFA Pak-Lok Annubar Flowmeter(1)**

| Front View | Side View | Top View |
|---|---|---|




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

**Table 20. 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)* | | | | |

**Rosemount 2051CFC Compact Orifice Flowmeter**

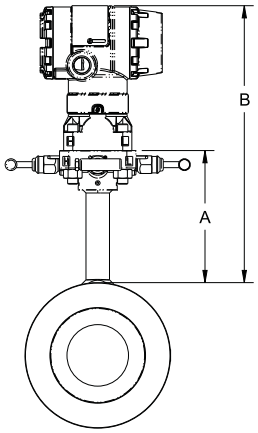
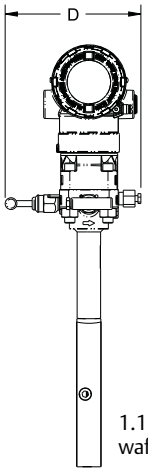
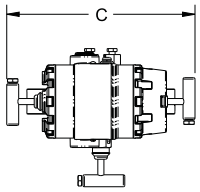
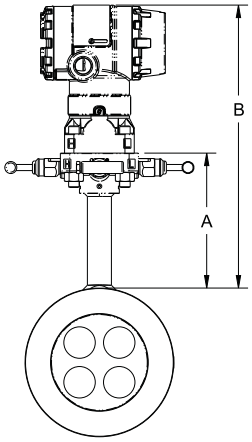
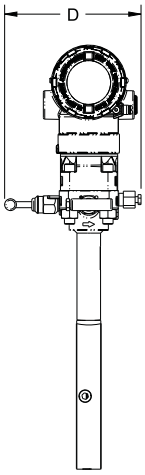
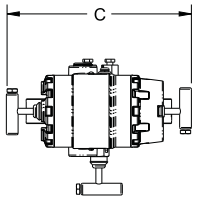
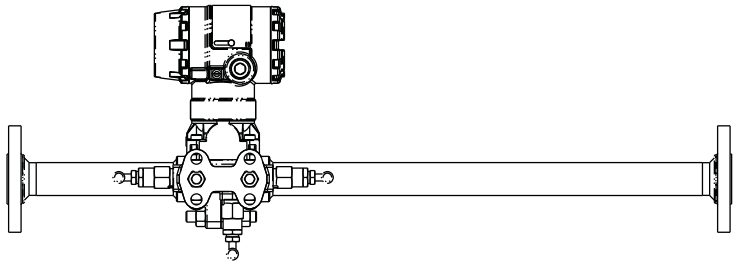
| | Orifice Plate Side View | Orifice Plate Front View | Orifice Plate Top View |
|---|---|---|---|
| **Compact Orifice Plate (Primary Element Type code P)** |  |  1.13-in. (28.7 mm) wafer thickness |  |
| **Conditioning Orifice Plate (Primary Element Type code C)** |  |  |  |

**Table 21. 2051CFC Dimensional drawings**

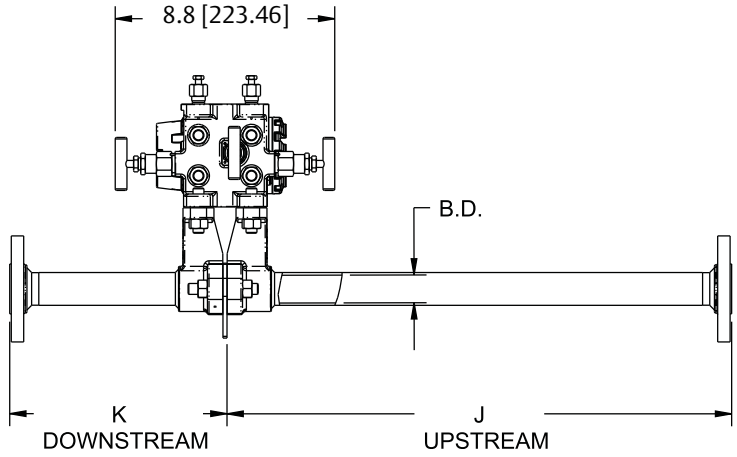
| Primary Element Type | A | B | Transmitter Height | C | D |
|---|---|---|---|---|---|
| Type P and C | 5.62 (143) | Transmitter Height + A | 6.27 (159) | 7.75 (197) - closed<br>8.25 (210) - open | 6.00 (152) - closed<br>6.25 (159) - open |
| *Dimensions are in inches (millimeters).* | | | | | |

**Rosemount 2051CFP Integral Orifice Flowmeter**

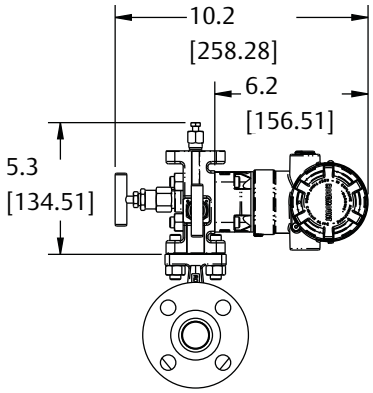
**Side View**



**Bottom View**




**Front View**




*Dimensions are in inches (millimeters).*

**Table 22. 2051CFP Dimensional Drawings**

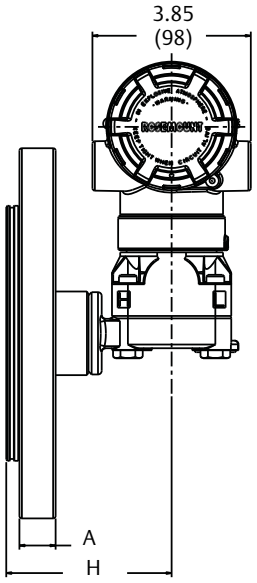
| | Line Size | | |
|---|---|---|---|
| **Dimension** | **1/2-in. (15 mm)** | **1-in. (25 mm)** | **1 1/2-in. (40 mm)** |
| J (Beveled/Threaded pipe ends) | 12.54 (318.4) | 20.24 (514.0) | 28.44 (722.4) |
| J (RF slip-on, RTJ slip-on, RF-DIN slip on) | 12.62 (320.4) | 20.32 (516.0) | 28.52 (724.4) |
| J (RF 150#, weld neck) | 14.37 (364.9) | 22.37 (568.1) | 30.82 (782.9) |
| J (RF 300#, weld neck) | 14.56 (369.8) | 22.63 (574.7) | 31.06 (789.0) |
| J (RF 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 150#, weld neck) | 7.57 (192.3) | 10.88 (276.3) | 14.29 (363.1) |
| K (RF 300#, weld neck) | 7.76 (197.1) | 11.14 (282.9) | 14.53 (369.2) |
| K (RF 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).*

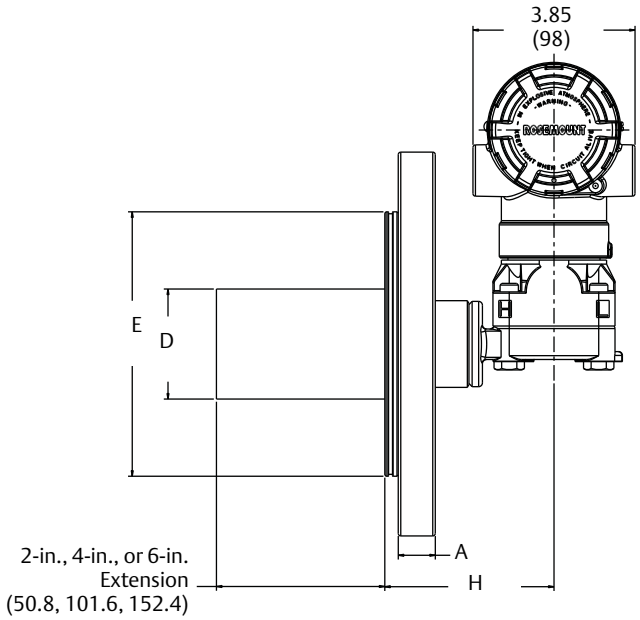
(1) Downstream length shown here includes plate thickness of 0.162-in. (4.11 mm).

**2051L Liquid Level**

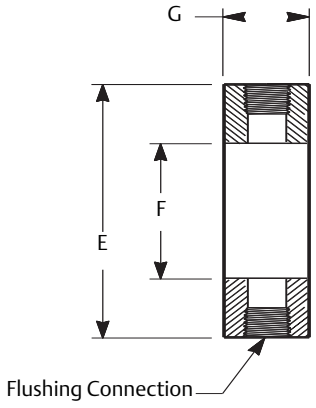
**2-in. Flange Configuration (Flush Mount Only)**



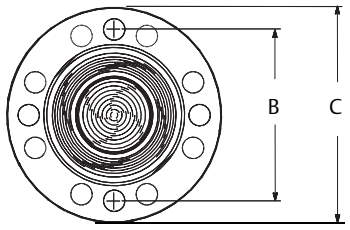

**3- and 4-in. Flange Configuration**

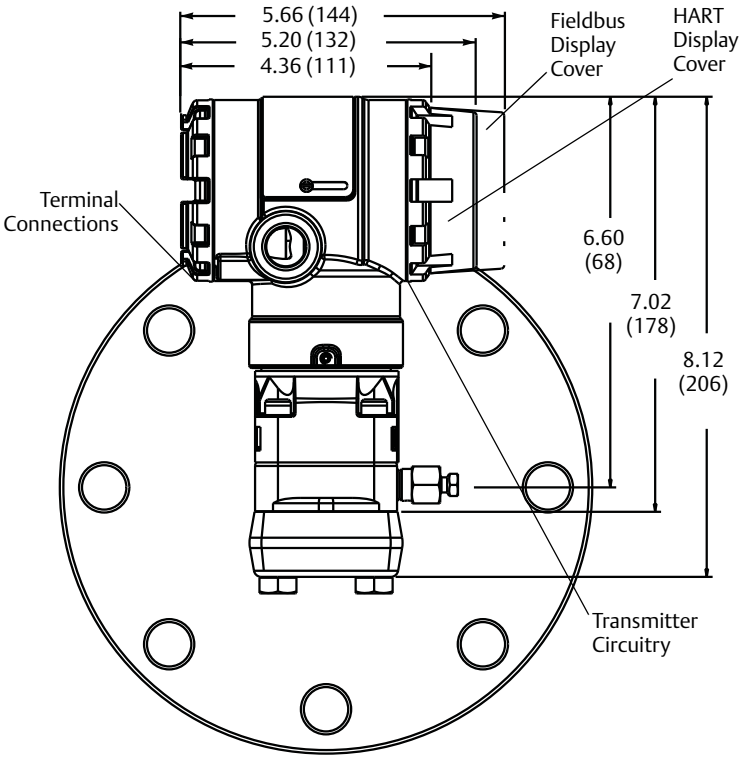



**Optional Flushing Connection Ring (Lower Housing)**




**Diaphragm Assembly and Mounting Flange**




*Dimensions are in inches (millimeters).*

**Table 23. 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) | NA | 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) | NA | 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 | NA | 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) |

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

# Options

## Standard Configuration

Unless otherwise specified, transmitter is shipped as follows:

| | |
|---|---|
| ENGINEERING UNITS<br>Differential/Gage<br>2051TA | $inH_2O$ (Ranges 1, 2, and 3)<br>psi (Ranges 4-5)<br>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” document number 00806-0100-4101.

For Wireless refer to the “Rosemount 2051 Wireless Configuration Data Sheet” document number 00806-0100-4102.

(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.

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

Factory assembled to 2051C and 2051T transmitters. Refer to Product Data Sheet (document number 00813-0100-4839 for Rosemount 304 and 00813-0100-4733 for Rosemount 305 and 306) for additional information.

### Other seals

Refer to the Rosemount 1199 Seal Systems Product Data Sheet (document number 00813-0100-4016) for additional information.

### Output information

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

| **Pressure** | | | |
|---|---|---|---|
| atm | $inH_20@4\ °C$(1) | $g/cm^2$ | psi |
| mbar | $mmH_2O$ | $kg/cm^2$ | torr |
| bar | mmHg | Pa | $cmH_20@4\ °C$(1) |
| $inH_20$ | $mmH_20@4\ °C$(1) | kPa | $cmHG@0\ °C$(1) |
| inHg | $ftH_20$ | MPa(1)(2) | $ftH_20@60\ °F$(1) |
| hPa(1) | $inH_20@60\ °F$(1) | kg/SqM(1) | $mH_20@4\ °C$(1) |
| $mHg@0\ °C$(1) | Psf(1) | $ftH_2O@4C$(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.

(1) Only applicable to FOUNDATION fieldbus.

### Display and Interface Options

**M4** Digital Display with Local Operator Interface (LOI)

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

**M5** Digital Display

- 2-Line, 5-Digit LCD for 4-20 mA HART
- 2-Line, 5-Digit LCD for 1-5 Vdc HART Low Power
- 2-Line, 8-Digit LCD for FOUNDATION fieldbus and PROFIBUS PA
- 3-Line, 7-Digit LCD 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

**D0** 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

### 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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