

# Rosemount™ 2051 Pressure Transmitter



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

## Detailed Item Summary

| Cust Line | Item | Qty  | Units | Description   |
|-----------|------|------|-------|---|
| 1         | 2    | Each |       | Rosemount 2051 In-Line Pressure Transmitter                                 |
|           |      |      |       | <b>2051TG2A2B22AB4DWM4T1</b>  |
|           |      |      |       | 2051T Rosemount 2051 In-Line Pressure Transmitter                           |
|           |      |      |       | G Measurement Type: Gage  |
|           |      |      |       | 2 Pressure Range: -14.7 to 150 psi (-1,0 to 10,3 bar)                       |
|           |      |      |       | A Transmitter Output: 4-20 mA with Digital Signal Based on HART Protocol    |
|           |      |      |       | 2B Process Connection Style: 1/2-14 NPT Female                              |
|           |      |      |       | 2 Isolating Diaphragm: 316L SST   |
|           |      |      |       | 2 Sensor Fill Fluid: Inert fill   |
|           |      |      |       | A Housing Material   Conduit Entry Size: Aluminum   1/2-14 NPT              |
|           |      |      |       | B4 Mounting Bracket: Bracket for 2-in. Pipe or Panel Mounting,All SST       |
|           |      |      |       | DW Drinking Water Approval: NSF Drinking Water Approval                     |
|           |      |      |       | M4 Display and Interface Options: LCD Display With Local Operator Interface |
|           |      |      |       | T1 Transient Protection: Transient Terminal Block                           |
|           |      |      |       | Qty Primary Tag Primary Tag Calibration                                     |
|           |      |      |       | 1 NAME 0 to 150 PSI   |
|           |      |      |       | 1 NAME 0 to 150 PSI   |

# Rosemount 2051 Pressure Transmitter product offering



## Foundation of reliable measurement

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

## Best-in-class capabilities extended to IEC 62591 (WirelessHART Protocol)

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

## Innovative, integrated DP flow meters

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

## Proven, reliable, and innovative DP level technologies

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

## Instrument manifolds — quality, convenient, and easy

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

# Rosemount 2051T In-line Pressure Transmitter ordering information



- Intuitive Local Operator Interface streamlines commissioning for simple and cost-effective installation
- SIL 2/3 certified to IEC 61508 (via 3rd party) and prior-use certificate of FMEDA data for safety installations

CONFIGURE >
VIEW PRODUCT >

## Online Product Configurator

Many products are configurable online using our Product Configurator. Select the **Configure** button or visit our [website](#) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

## Specifications and options

See the Specifications and options section for more details on each configuration. Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See the Material selection section for more information on material selection.

## Model codes

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in [Figure 2](#).

**Figure 2: Model Code Example**

|                            |                |              |
|----------------------------|----------------|--------------|
| <b>3051C D 2 X 2 2 1 A</b> | <b>WA3 WP5</b> | <b>M5 B4</b> |
| <b>1</b>                   | <b>2</b>       | <b>3</b>     |

1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

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

## Required model components

### Model

| Code  | Description                  |   |
|-------|------------------------------|---|
| 2051T | In-Line Pressure Transmitter | ★ |

### Pressure type

| Code             | Description |   |
|------------------|-------------|---|
| G                | Gage        | ★ |
| A <sup>(1)</sup> | Absolute    | ★ |

(1) *Wireless (output code X) only available in absolute measurement type in range 1–5 with ½–14 NPT process connection (code 2B), and housing (code P).*

### Pressure range

| Code | (Rosemount 2051TG)                      | Rosemount 2051TA)                |   |
|------|---|----------------------------------|---|
| 1    | –14.7 to 30 psi<br>(–1.0 to 2.1 bar)    | 0 to 30 psia<br>(0 to 2.1 bar)   | ★ |
| 2    | –14.7 to 150 psi<br>(–1.0 to 10.3 bar)  | 0 to 150 psi<br>(0 to 10.3 bar)  | ★ |
| 3    | –14.7 to 800 psi<br>(–1.0 to 55 bar)    | 0 to 800 psi<br>(0 to 55 bar)    | ★ |
| 4    | –14.7 to 4000 psi<br>(0 to 276 bar)     | 0 to 4000 psi<br>(0 to 276 bar)  | ★ |
| 5    | –14.7 to 10000 psi<br>(–1.0 to 689 bar) | 0 to 10000 psi<br>(0 to 689 bar) | ★ |

### Transmitter output

| Code             | Description   |   |
|------------------|---|---|
| A <sup>(1)</sup> | 4–20 mA with digital signal based on HART® Protocol           | ★ |
| F                | FOUNDATION™ Fieldbus Protocol                                 | ★ |
| W                | PROFIBUS® PA Protocol   | ★ |
| X                | Wireless  | ★ |
| M                | Low-power, 1–5 Vdc with digital signal based on HART Protocol |   |

(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.*

### Process connection style

| Code              | Description         |   |
|-------------------|---------------------|---|
| 2B                | ½–14 NPT female     | ★ |
| 2C <sup>(1)</sup> | G½ A DIN 16288 male | ★ |

| Code              | Description   |  |
|-------------------|---|--|
| 2F <sup>(2)</sup> | Coned and threaded, compatible with autoclave type F-250-C (range 5 only) |  |

(1) *Wireless (output code X) only available in G½ A DIN 16288 Male process connection (code 2C) with range 1–4, 316 SST isolating diaphragm (code 2), silicone fill fluid (code 1), and housing (code P).*

(2) *Not available with output code X.*

### Isolating diaphragm

| Code | Isolating diaphragm | Process connection wetted parts material |   |
|------|---------------------|--|---|
| 2    | 316L SST            | 316L SST                                 | ★ |
| 3    | Alloy C-276         | Alloy C-276                              | ★ |

### Sensor fill fluid

| Code             | Description |   |
|------------------|-------------|---|
| 1                | Silicone    | ★ |
| 2 <sup>(1)</sup> | Inert       | ★ |

(1) *Not available with output code X.*

### Housing material

| Code             | Description        | Conduit entry size |   |
|------------------|--------------------|--------------------|---|
| A                | Aluminum           | ½–14 NPT           | ★ |
| B                | Aluminum           | M20 x 1.5          | ★ |
| J                | SST                | ½–14 NPT           | ★ |
| K <sup>(1)</sup> | SST                | M20 x 1.5          | ★ |
| P <sup>(2)</sup> | Engineered polymer | No conduit entries | ★ |
| D                | Aluminum           | G½                 | ★ |
| M <sup>(2)</sup> | SST                | G½                 |   |

(1) *Not available with low power (output code M).*

(2) *Only available with output code X.*

### Wireless options

Requires wireless output code X and engineered polymer housing code P.

### Wireless transmit rate, operating frequency, and protocol

| Code | Description  |   |
|------|--|---|
| WA3  | User configurable transmit rate, 2.4 GHz <b>WirelessHART</b> ® | ★ |

### Antenna and SmartPower™

| Code | Description  |   |
|------|--|---|
| WP5  | Internal antenna, compatible with Green Power Module (I.S. Power Module sold separately) | ★ |

## Additional options

### Extended product warranty

| Code | Description             |   |
|------|-------------------------|---|
| WR3  | 3-year limited warranty | ★ |
| WR5  | 5-year limited warranty | ★ |

### HART revision configuration

Available with 4–20 mA HART (output code A), wireless (output code X), FOUNDATION™ Fieldbus (output code F), Rosemount 2051C Ranges 2–5 or Rosemount 2051T Ranges 1–4, SST and Alloy C 276 diaphragms and silicone fill fluid. High performance option includes 0.05 percent reference accuracy, and five year stability.

| Code               | Description                    |   |
|--------------------|--------------------------------|---|
| HR5 <sup>(1)</sup> | Configured for HART Revision 5 | ★ |
| HR7 <sup>(2)</sup> | Configured for HART Revision 7 | ★ |

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

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

### Plantweb™ control functionality

| Code | Description   |   |
|------|---|---|
| A01  | FOUNDATION Fieldbus advanced control function block suite | ★ |

### Manifold assemblies

“Assemble-to” items are specified separately and require a completed model number.

| Code | Description                                 |   |
|------|---|---|
| S5   | Assemble to Rosemount 306 Integral Manifold | ★ |

### Seal assemblies

“Assemble-to” items are specified separately and require a completed model number.

| Code | Description                                   |   |
|------|---|---|
| S5   | Assemble to one Rosemount 1199 diaphragm seal | ★ |

### Mounting bracket

| Code | Description                                       |   |
|------|---|---|
| B4   | Bracket for 2-in. pipe or panel mounting, all SST | ★ |

### Product certifications

| Code              | Description        |   |
|-------------------|--------------------|---|
| E1 <sup>(1)</sup> | ATEX Flameproof    | ★ |
| E2 <sup>(1)</sup> | INMETRO Flameproof | ★ |

| Code                 | Description   |   |
|----------------------|---|---|
| E3 <sup>(1)</sup>    | China Flameproof  | ★ |
| E4 <sup>(1)</sup>    | TIIS Flameproof   | ★ |
| E5                   | USA Explosion-proof, Dust Ignition-proof  | ★ |
| E6                   | Canada Explosion-proof, Dust Ignition-proof, Division 2   | ★ |
| E7 <sup>(1)</sup>    | IECEX Flameproof  | ★ |
| EW <sup>(1)</sup>    | India (CCOE) Flameproof Approval  | ★ |
| I1 <sup>(1)</sup>    | ATEX Intrinsic Safety   | ★ |
| I2 <sup>(1)</sup>    | INMETRO Intrinsically Safe  | ★ |
| I3 <sup>(1)(2)</sup> | China Intrinsic Safety  | ★ |
| I4 <sup>(1)(2)</sup> | TIIS Intrinsic Safety   | ★ |
| I5                   | USA Intrinsically Safe, Division 2  | ★ |
| I6                   | Canada intrinsically Safe   | ★ |
| I7 <sup>(1)</sup>    | IECEX Intrinsic Safety  | ★ |
| IA <sup>(3)</sup>    | ATEX FISCO Intrinsic Safety   | ★ |
| IE <sup>(4)</sup>    | USA FISCO Intrinsically Safe  | ★ |
| IF <sup>(4)</sup>    | Canada FISCO Intrinsically Safe   | ★ |
| IG <sup>(4)</sup>    | IECEX FISCO Intrinsically Safe  | ★ |
| IW <sup>(1)</sup>    | India (CCOE) Intrinsically Safe   | ★ |
| K1 <sup>(1)</sup>    | ATEX Flameproof, Intrinsic Safety, Type n, Dust   | ★ |
| K5                   | USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2                          | ★ |
| K6                   | Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2                       | ★ |
| K7 <sup>(1)</sup>    | IECEX Flameproof, Intrinsic Safety, Type n and Dust   | ★ |
| KA <sup>(1)</sup>    | ATEX and Canada Flameproof, Intrinsically Safe, Division 2  | ★ |
| KB                   | USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, Division 2               | ★ |
| KC <sup>(1)</sup>    | USA and ATEX Explosion-proof, Intrinsically Safe, Division 2                                      | ★ |
| KD <sup>(1)</sup>    | USA, Canada, and ATEX Explosion-proof, Intrinsically Safe   | ★ |
| N1 <sup>(1)</sup>    | ATEX Type n   | ★ |
| N7 <sup>(1)</sup>    | IECEX Type n  | ★ |
| ND <sup>(1)</sup>    | ATEX Dust   | ★ |
| EM                   | Technical Regulations Customs Union (EAC) Flameproof  | ★ |
| IM                   | Technical Regulations Customs Union (EAC) Intrinsic Safety  | ★ |
| KM                   | Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety                         | ★ |
| KL                   | USA, Canada, IECEX, ATEX Intrinsic Safety Combination   | ★ |
| KS                   | USA, Canada, IECEX, ATEX Explosion Proof, Intrinsically Safe, Dust, Non-Incendive, Type-N, Div. 2 | ★ |

(1) Not available with low power (output code M).

(2) Only available with output code X.

(3) Not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).



(4) Only valid with FOUNDATION Fieldbus (output code F).

**Drinking water approval**

This option is 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).

| Code | Description                 |   |
|------|-----------------------------|---|
| DW   | NSF drinking water approval | ★ |

**Shipboard approvals**

Shipyard approvals are not available with wireless output (code X).

| Code | Description                 |   |
|------|-----------------------------|---|
| SBS  | American Bureau of Shipping | ★ |
| SBV  | Bureau Veritas (BV)         | ★ |
| SDN  | Det Norske Veritas          | ★ |
| SLL  | Lloyds Register (LR)        | ★ |

**Display and interface options**

| Code              | Description          |   |
|-------------------|----------------------|---|
| M4 <sup>(1)</sup> | LCD display with LOI | ★ |
| M5                | LCD display          | ★ |

(1) Not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).

**Hardware adjustments**

| Code              | Description                         |   |
|-------------------|-------------------------------------|---|
| D4 <sup>(1)</sup> | Zero and span configuration buttons | ★ |
| DZ <sup>(2)</sup> | Digital zero trim                   | ★ |

(1) Not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).

(2) Only available with 4–20 mA HART (output codes A) and wireless (output code X).

**Wireless SST sensor module**

This option is only available with output code X.

| Code | Description                |   |
|------|----------------------------|---|
| WSM  | Wireless SST sensor module | ★ |

**Conduit plug**

Not available with output code X. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard CS conduit plug.

| Code | Description          |   |
|------|----------------------|---|
| DO   | 316 SST conduit plug | ★ |

### Ground screw

This option is not available with output code x. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

| Code | Description                    |   |
|------|--------------------------------|---|
| V5   | External ground screw assembly | ★ |

### Performance

Available with 4–20 mA HART (output code A), wireless (output code X), FOUNDATION Fieldbus (output code F), Rosemount 2051C Ranges 2–5 or Rosemount 2051T Ranges 1–4, SST and, alloy C-276 diaphragms and silicone fill fluid. High performance option includes 0.05 percent reference accuracy, and five year stability. See Performance specifications for details.

| Code | Description             |   |
|------|-------------------------|---|
| P8   | High performance option | ★ |

### Terminal blocks

This option is not available with output code x. The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA and IE.

| Code | Description                         |   |
|------|-------------------------------------|---|
| T1   | Transient protection terminal block | ★ |

### Software configuration

The software configuration option is only available with HART 4–20 mA output (output code A) and wireless output (output code X).

| Code | Description   |   |
|------|---|---|
| C1   | Custom software configuration (completed Rosemount 2051 <a href="#">Configuration Data Sheet</a> or Rosemount 2051 Wireless <a href="#">Configuration Data Sheet</a> .) | ★ |

### Alarm limit

The option is not available with FOUNDATION Fieldbus (output code F) or wireless (output code X).

| Code              | Description  |   |
|-------------------|--|---|
| C4                | NAMUR alarm and saturation levels, high alarm  | ★ |
| CN <sup>(1)</sup> | NAMUR alarm and saturation levels, low alarm   | ★ |
| CR                | Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet) | ★ |
| CS                | Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)  | ★ |
| CT                | Low alarm (standard Rosemount alarm and saturation levels)                                       | ★ |

(1) Only available with 4–20 mA HART (output code A).

### Pressure testing

| Code | Description                          |   |
|------|--------------------------------------|---|
| P1   | Hydrostatic testing with certificate | ★ |

**Cleaning process area**

This option is not valid with alternate process connection S5.

| Code | Description                            |  |
|------|--|--|
| P2   | Cleaning for special service           |  |
| P3   | Cleaning for < 1 ppm chlorine/fluorine |  |

**Calibration certification**

| Code | Description   |   |
|------|---|---|
| Q4   | Calibration certificate                                   | ★ |
| QG   | Calibration certificate and GOST verification certificate | ★ |
| QP   | Calibration certificate and tamper evident seal           | ★ |

**Material traceability certification**

| Code | Description  |   |
|------|--|---|
| Q8   | Material traceability certification per EN 10204 3.1 | ★ |

**Positive material identification (PMI)**

| Code | Description                      |   |
|------|----------------------------------|---|
| Q76  | PMI verification and certificate | ★ |

**Quality certification for safety**

This option is only available with 4–20 mA HART (output code A).

| Code | Description   |   |
|------|---|---|
| Q5   | Prior-use certificate of FMEDA data                     | ★ |
| QT   | Safety certified to IEC 61508 with certificate of FMEDA | ★ |

**Surface finish**

| Code | Description  |   |
|------|--|---|
| Q16  | Surface finish certification for sanitary remote seals | ★ |

**Toolkit total system performance reports**

| Code | Description                                       |   |
|------|---|---|
| QZ   | Remote seal system performance calculation report | ★ |

**Conduit electrical connector**

This option is not available with output code X.

| Code | Description                                    |   |
|------|--|---|
| GE   | M12, 4-pin, male connector (eurofast®)         | ★ |
| GM   | A size mini, 4-pin, male connector (minifast®) | ★ |

**NACE® certificate**

NACE Compliant wetted materials are identified by materials of construction that 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).

| Code | Description   |   |
|------|---|---|
| Q15  | Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials | ★ |
| Q25  | Certificate of compliance to NACE MR0103 for wetted materials           | ★ |

# Specifications

## Performance specifications

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

### Conformance to specification ( $\pm 3\sigma$ [sigma])

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

### 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 |  |
|---|---|-----------------------------|--|
| <b>Rosemount 2051C3</b>                     |   |                             |  |
| Range 1                                     | $\pm 0.10$ percent of span<br>For spans less than 15:1, accuracy =<br>$\pm \left( 0.025 + 0.005 \left[ \frac{URL}{Span} \right] \right)$ % of span  | N/A                         | N/A  |
| Ranges 2–4                                  | $\pm 0.065$ percent 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>$\pm 0.05$ percent of span<br>For spans less than 10:1 <sup>(1)</sup> , accuracy =<br>$\pm \left( 0.015 + 0.005 \left[ \frac{URL}{Span} \right] \right)$ % of span |
| Range 5                                     | $\pm 0.075$ percent 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>$\pm 0.065$ percent 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             |
| <b>Rosemount 2051T, 2051G<sup>(2)</sup></b> |   |                             |  |
| Ranges 1–4                                  | $\pm 0.065$ percent 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>$\pm 0.05$ percent of span<br>For spans less than 10:1 <sup>(1)</sup> , accuracy =<br>$\pm \left( 0.0075 \left[ \frac{URL}{Span} \right] \right)$ % of span        |
| Range 5 <sup>(3)</sup>                      | $\pm 0.075$ percent of span<br>For spans less than 10:1, accuracy =<br>$\pm \left( 0.0075 \left[ \frac{URL}{Span} \right] \right)$ % of span        | N/A                         | N/A  |

| Models                 | Standard  | High performance option, P8 |     |
|------------------------|---|-----------------------------|-----|
| <b>Rosemount 2051L</b> |   |                             |     |
| Ranges 2–4             | ±0.075 percent of span<br>For spans less than 10:1, accuracy =<br>$\pm \left( 0.025 + 0.005 \left[ \frac{URL}{Span} \right] \right) \% \text{ of span}$ | N/A                         | N/A |

- (1) For protocol code F, accuracy specification is for spans less than 7:1. Not available with output code W.  
(2) For Rosemount 2051C, 2051T, and 2051G with 1199 assemble to code S1, use 3051L specification.  
(3) Rosemount 2051G is not available with range 5.

## Flow performance

### Flow reference accuracy

|   |                  |   |
|---|------------------|---|
| <b>Rosemount 2051CFA Annubar Flow Meter</b>   |                  |   |
| Ranges 2–3  |                  | ±2.00 percent of flow rate at 5:1 flow turndown |
| <b>Rosemount 2051CFC_A Compact Annubar Flow Meter — Annubar option A</b>                  |                  |   |
| Ranges 2–3  | Standard         | ±2.60 percent of flow rate at 5:1 flow turndown |
|   | Calibrated       | ±2.30 percent of flow rate at 5:1 flow turndown |
| <b>Rosemount 2051CFC Compact Orifice Flow Meter — conditioning option C</b>               |                  |   |
| Ranges 2–3  | $\beta = 0.4$    | ±2.25 percent of flow rate at 5:1 flow turndown |
|   | $\beta = 0.65$   | ±2.45 percent of flow rate at 5:1 flow turndown |
| <b>Rosemount 2051CFC Compact Orifice Flow Meter — Orifice Type Option P<sup>(1)</sup></b> |                  |   |
| Ranges 2–3  | $\beta = 0.4$    | ±2.50 percent of flow rate at 5:1 flow turndown |
|   | $\beta = 0.65$   | ±2.50 percent of flow rate at 5:1 flow turndown |
| <b>Rosemount 2051CFP Integral Orifice Flow Meter</b>                                      |                  |   |
| Ranges 2–3  | Bore < 0.1       | ±3.10 percent of flow rate at 5:1 flow turndown |
|   | 0.1 < bore < 0.2 | ±2.75 percent of flow rate at 5:1 flow turndown |
|   | 0.2 < bore < 0.6 | ±2.25 percent of flow rate at 5:1 flow turndown |
|   | 0.6 < bore < 0.8 | ±3.00 percent 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       |
|-------------------------------|-----------------------------------|-----------------------------------|
| <b>Rosemount 2051C</b>        |                                   |                                   |
| Range 1 (CD)                  | ±0.2 percent of URL for 1 year    | ±0.175 percent of URL for 7 years |
| Ranges 2–5                    | ±0.125 percent of URL for 5 years |                                   |
| <b>Rosemount 2051T, 2051G</b> |                                   |                                   |
| Ranges 1–5 <sup>(1)</sup>     | ±0.125 percent of URL for 5 years | ±0.15 percent of URL for 7 years  |

- (1) Rosemount 2051G is not available with range 5.

**Dynamic performance**

|   | 4–20 mA HART <sup>(1)</sup><br>1–5 Vdc HART Low Power | FOUNDATION Fieldbus and<br>PROFIBUS PA Protocols <sup>(2)</sup> | Typical HART Transmitter Response Time   |
|---|---|---|--|
| Total response time ( $T_d + T_c$ ):            |   |   | <p>Transmitter Output vs. Time</p> <p>Pressure released</p> <p>100%</p> <p>36.8%</p> <p>0%</p> <p>Time</p> <p><math>T_d</math> = Dead time<br/><math>T_c</math> = Time constant<br/>Response time = <math>T_d + T_c</math></p> <p>63.2% of total step change</p> |
| Rosemount 2051C<br>Range 3–5:                   | 115 ms  | 152 ms  |  |
| Range 1: Range 2:<br>2051T and 2051G:<br>2051L: | 270 ms 130 ms 100 ms See<br>Instrument Toolkit™       | 307 ms 152 ms 152 ms See<br>Instrument Toolkit                  |  |
| Dead time ( $T_d$ )                             | 60 ms (nominal <sup>(3)</sup> )                       | 97 ms   |  |
| Update rate <sup>(4)</sup>                      | 22 times per second                                   |   |  |

- (1) Dead time and update rate apply to all models and ranges; analog output only.
- (2) Transducer block response time, analog input block execution time not included.
- (3) Nominal total response time at 75 °F (24 °C) reference conditions.
- (4) Does not apply to wireless (output code X). See [Wireless \(output code X\)](#) for wireless update rate.

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

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

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

- (1) Can be calibrated out at line pressure.

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

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

- (1) Rosemount 2051G is not available with range 5.

**Mounting position effects**

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

**Vibration effect**

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

**Power supply effect**

Less than  $\pm 0.005$  percent of calibrated span per volt.

**Electromagnetic compatibility (EMC)**

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation  $< 1\%$  Span during EMC disturbance.

**Note**

NAMUR NE-21 does not apply to Low-Power (Transmitter output option code M) or Wireless (Transmitter output code X).

**Note**

During surge event, device with 4-20mA (Transmitter output option code A) may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

**Transient protection (option code T1)**

Meets IEEE C62.41, category location B

- 6 kV crest (0.5  $\mu$ s–100 kHz)
- 3 kA crest (8 x 20 microseconds)
- 6 kV crest (1.2 x 50 microseconds)

**Functional specifications****Range and sensor limits**

**Table 1: Rosemount 2051CD, 2051CF, 2051CG, and 2051L**

| Range | Minimum span                      | Upper (URL)                       | Lower (LRL)                                      |                                     |                                     |                                     |
|-------|-----------------------------------|-----------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|
|       |                                   |                                   | Rosemount 2051C Differential, 2051CF Flow Meters | Rosemount 2051C Gage <sup>(1)</sup> | Rosemount 2051L Differential        | Rosemount 2051L Gage <sup>(1)</sup> |
| 1     | 0.5 inH <sub>2</sub> O (1,2 mbar) | 25 inH <sub>2</sub> O (62,3 mbar) | -25 inH <sub>2</sub> O (-62,1 mbar)              | -25 inH <sub>2</sub> O (-62,1 mbar) | N/A                                 | N/A                                 |
| 2     | 2.5 inH <sub>2</sub> O (6,2 mbar) | 250 inH <sub>2</sub> O (0,62 bar) | -250 inH <sub>2</sub> O (-0,62 bar)              | -250 inH <sub>2</sub> O (-0,62 bar) | -250 inH <sub>2</sub> O (-0,62 bar) | -250 inH <sub>2</sub> O (-0,62 bar) |



**Table 1: Rosemount 2051CD, 2051CF, 2051CG, and 2051L (continued)**

| Range | Minimum span                      | Upper (URL)                        | Lower (LRL)                                      |                                     |                                      |                                     |
|-------|-----------------------------------|------------------------------------|--|-------------------------------------|--------------------------------------|-------------------------------------|
|       |                                   |                                    | Rosemount 2051C Differential, 2051CF Flow Meters | Rosemount 2051C Gage <sup>(1)</sup> | Rosemount 2051L Differential         | Rosemount 2051L Gage <sup>(1)</sup> |
| 3     | 10 inH <sub>2</sub> O (24,9 mbar) | 1000 inH <sub>2</sub> O (2,49 bar) | -1000 inH <sub>2</sub> O (-2,49 bar)             | -393 inH <sub>2</sub> O (-979 mbar) | -1000 inH <sub>2</sub> O (-2,49 bar) | -393 inH <sub>2</sub> O (-979 mbar) |
| 4     | 3 psi (0,207 bar)                 | 300 psi (20,7 bar)                 | -300 psi (-20,7 bar)                             | -14.2 psig (-979 mbar)              | -300 psi (-20,7 bar)                 | -14.2 psig (-979 mbar)              |
| 5     | 20 psi (1,38 bar)                 | 2000 psi (137,9 bar)               | -2000 psi (-137,9 bar)                           |                                     | N/A                                  | N/A                                 |

(1) Assumes atmospheric pressure of 14.7 psig.

**Table 2: Rosemount 2051T and 2051G**

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

(1) Assumes atmospheric pressure of 14.7 psig.

(2) Rosemount 2051G is not available with range 5.

**Service**

Liquid, gas, and vapor applications

**Protocols**

**4–20 mA HART(output code A)**

**Power supply**

External power supply required. Standard transmitter operates on 10.5–42.4 Vdc with no load.

**Load limitations**

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

**Indication**

Optional two line LOI/LCD display

**Zero and span adjustment requirements**

Zero and span values can be set anywhere within the range limits stated in [Table 1](#) and [Table 2](#).

Span must be greater than or equal to the minimum span stated in [Table 1](#) and [Table 2](#).

**Output**

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

**Rosemount 2051**

Digital communications based on HART Revision 5 Protocol.

**Rosemount 2051 with Selectable HART**

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

**LOI**

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

**FOUNDATION Fieldbus (output code F)****Power supply**

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

**Current draw**

17.5 mA for all configurations (including LCD display option)

**Indication**

Optional two-line LCD display

**FOUNDATION Fieldbus Function block Execution times**

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

**FOUNDATION Fieldbus parameters**

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

**Standard function blocks****Resource block**

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

**Sensor transducer block**

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

**LCD display transducer block**

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

**Analog input (AI) block**

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

**Note**

The channel, Set XD\_Scale, Set L\_Type, and sometimes Set Out\_Scale are typically configured by instrument personnel. Other AI block parameters, block links, and schedule are typically configured by the control systems configuration engineer.

**Input selector (ISEL) block**

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

**Integrator (INT) block**

The INT function block integrates one or two variables over time. The block compares the integrated or accumulated value to pre-trip and trip limits and generates discrete output signals when the limits are reached.

The Integrator block is used as a totalizer. This block will accept up to two inputs, has six options how to totalize the inputs, and two trip outputs.

**Arithmetic (ARTH) block**

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

**Signal characterizer (SGCR) block**

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

**Proportional/integral/derivative (PID) block**

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

**Control selector block**

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

**Output splitter block**

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

**Backup link active scheduler (LAS)**

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

**PROFIBUS PA (output code W)****Profile version**

3.02

**Power supply**

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

**Current draw**

17.5 mA for all configurations (including LCD display option)

**Output update rate**

Four times per second

**Standard function blocks****Resource block**

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

**Sensor transducer block**

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

**LCD display transducer block**

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

**Analog input (AI) block**

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

**Note**

The channel, Set XD\_Scale, Set L\_Type, and sometimes Set Out\_Scale are typically configured by instrument personnel. Other AI block parameters, block links, and schedule are typically configured by the control systems configuration engineer.

**Input selector (ISEL) block**

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

### **Integrator (INT) block**

The INT function block integrates one or two variables over time. The block compares the integrated or accumulated value to pre-trip and trip limits and generates discrete output signals when the limits are reached.

The Integrator block is used as a totalizer. This block will accept up to two inputs, has six options how to totalize the inputs, and two trip outputs.

### **Arithmetic (ARTH) block**

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

### **Signal characterizer (SGCR) block**

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

### **Proportional/integral/derivative (PID) block**

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

### **Control selector block**

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

### **Output splitter block**

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

### **Indication**

Optional two-line LCD display

### **LOI**

Optional external configuration buttons

## **Wireless (output code X)**

### **Output**

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

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

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

### Local display

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

### Digital zero trim

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

### Update rate

User selectable 1 second to 60 minutes

### Wireless sensor module for in-line transmitters

The Rosemount 2051 Wireless Transmitter requires the engineered polymer housing to be selected. The standard sensor module will come with aluminum material. If SST 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. 10-year life at one minute update rate.

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### Note

Reference conditions are 70 °F (21 °C), and routing data for three additional network devices. Continuous exposure to ambient temperature limits of –40 to 185 °F (–40 to 85 °C) may reduce specified life by less than 20 percent.

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## HART 1–5 Vdc low power (output code M)

### Output

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

### Rosemount 2051

Digital communications based on HART Revision 5 Protocol.

### Rosemount 2051 with Selectable HART

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

### LOI

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

### Power supply

External power supply required. Standard transmitter operates on 90–28 Vdc with no load.

### Power consumption

3.0 mA, 27–84 mW

### Output load

100 kΩ or greater (meter input impedance)

### Turn-on time

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

**Output**

IEC 62591 (*WirelessHART*), 2.4 GHz DSSS

**LOI**

Optional external configuration buttons

**Power supply**

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

**Overpressure limits**

Transmitters withstand the following limits without damage:

**Rosemount 2051C, 2051CF**

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

**Rosemount 2051T, 2051G**

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

**Rosemount 2051L**

Limit is flange rating or sensor rating, whichever is lower (See [Table 3](#)).

**Table 3: Rosemount 2051L Flange Rating**

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

**Static pressure limit**

**Rosemount 2051CD, 2051CF**

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

(1) The Rosemount 2051G is not available with range 5.

## Burst pressure limits

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

10,000 psig (689.5 bar)

### Rosemount 2051T in-line

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

## Temperature limits

### Ambient

–40 to 185 °F (–40 to 85 °C)

with LCD display: –40 to 175 °F (–40 to 80 °C)

#### Note

Rosemount 2051 LCD display may not be readable and LCD display updates may be slower at temperatures below –22 °F (–30 °C).

#### Note

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

### Storage

–50 to 230 °F (–46 to 110 °C)

#### Note

Rosemount 2051 LCD display may not be readable and LCD display updates may be slower at temperatures below –22 °F (–30 °C).

with LCD display: –40 to 185 °F (–40 to 85 °C)

with Wireless output: –40 to 185 °F (–40 to 85 °C)

### Process

At atmospheric pressures and above. See [Table 4](#).

**Table 4: Process Temperature Limits**

| <b>Rosemount 2051C, 2051CF</b>                     |   |
|--|---|
| <b>Silicone fill sensor<sup>(1)</sup></b>          |   |
| with Coplanar flange                               | –40 to 250 °F (–40 to 121 °C) <sup>(2)</sup>    |
| with Traditional flange                            | –40 to 300 °F (–40 to 149 °C) <sup>(2)(3)</sup> |
| with Level flange                                  | –40 to 300 °F (–40 to 149 °C) <sup>(2)</sup>    |
| with Rosemount 305 Integral Manifold               | –40 to 300 °F (–40 to 149 °C) <sup>(2)</sup>    |
| Inert fill sensor <sup>(1)</sup>                   | –40 to 185 °F (–40 to 85 °C) <sup>(3)</sup>     |
| <b>Rosemount 2051T (process fill fluid)</b>        |   |
| Silicone fill sensor <sup>(1)</sup>                | –40 to 250 °F (–40 to 121 °C) <sup>(2)</sup>    |
| Inert fill sensor <sup>(1)</sup>                   | –22 to 250 °F (–30 to 121 °C) <sup>(2)</sup>    |
| <b>Rosemount 2051L low side temperature limits</b> |   |
| Silicone fill sensor <sup>(1)</sup>                | –40 to 250 °F (–40 to 121 °C) <sup>(2)</sup>    |
| Inert fill sensor <sup>(1)</sup>                   | –40 to 185 °F (–40 to 85 °C) <sup>(2)</sup>     |



**Table 4: Process Temperature Limits (continued)**

| Rosemount 2051L high side temperature limits (process fill fluid) |                               |
|---|-------------------------------|
| SYLTHERM™ XLT   | -102 to 293 °F (-75 to 145°C) |
| Silicone 704  | 32 to 401 °F (0 to 205 °C)    |
| Silicone 200  | -49 to 401 °F (-45 to 205 °C) |
| Inert   | -49 to 320 °F (-45 to 160 °C) |
| Glycerin and water  | 5 to 203 °F (-15 to 95 °C)    |
| Neobee® M-20  | 5 to 401 °F (-15 to 205 °C)   |
| Propylene glycol and water  | 5 to 203 °F (-15 to 95 °C)    |

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

### Humidity limits

0–100 percent relative humidity

### Volumetric displacement

Less than 0.005 in<sup>3</sup> (0,08 cm<sup>3</sup>)

### Damping

#### 4–20 mA HART Protocol

#### Rosemount 2051 with selectable HART

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

#### Rosemount 2051

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

#### FOUNDATION Fieldbus Protocol

Transducer block: User configurable

AI block: User configurable

#### PROFIBUS PA Protocol

AI block only: User configurable

### Failure mode alarm

#### 4–20 mA HART Protocol (output code A)

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

**Table 5: Standard Operation**

| Output code | Linear output          | Fail high                 | Fail low                 |
|-------------|------------------------|---------------------------|--------------------------|
| A           | $3.9 \leq I \leq 20.8$ | $I \geq 21.75 \text{ mA}$ | $I \leq 3.75 \text{ mA}$ |
| M           | $0.97 \leq V \leq 5.2$ | $V \geq 5.4 \text{ V}$    | $V \leq 0.95 \text{ V}$  |

**Table 6: NAMUR-Compliant Operation**

| Output code | Linear output          | Fail high                | Fail low                |
|-------------|------------------------|--------------------------|-------------------------|
| A           | $3.8 \leq I \leq 20.5$ | $I \geq 22.5 \text{ mA}$ | $I \leq 3.6 \text{ mA}$ |

**Output code F and X**

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

## Physical specifications

### Material selection

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

### Electrical connections

½–14 NPT, G½, and M20 x 1.5 conduit

### Process connections

**Rosemount 2051C**

- ¼–18 NPT on 2½-in. centers
- ½–14 NPT and RC½ on 2-in. (50,8 mm), 2½-in. (54,0 mm), or 2¼-in. (57,2 mm) centers (process adapters)

**Rosemount 2051T, 2051G**

- ½–14 NPT female
- G½ 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; ¼ O.D. high pressure tube 60° cone; available in SST for range 5 transmitters only)

**Rosemount 2051L**

- High pressure side: 2-in. (50,8 mm), 3-in. (72 mm), or 4-in. (102 mm), ASME B 16.5 (ANSI) Class 150 or 300 flange; 50, 80, or 100 mm, DIN 2501 PN 40 or 10/16 flange
- Low pressure side: ¼–18 NPT on flange, ½–14 NPT on process adapter

**Rosemount 2051CF**

- For Rosemount 2051CFA wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 485 section
- For Rosemount 2051CFC wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 405 section
- For Rosemount 2051CFP wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 1195 section

**Rosemount 2051C process wetted parts**

**Drain/vent valves**

316 SST or alloy C-276

**Process flanges and adapters**

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

**Wetted O-rings**

Glass-filled PTFE or graphite-filled PTFE

**Process isolating diaphragms**

316L SST, alloy C-276, or tantalum

**Rosemount 2051T process wetted parts**

**Process connections**

316L SST or alloy C-276

**Process Isolating diaphragms**

316L SST or alloy C-276

**Rosemount 2051L process wetted parts**

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

|   |  |
|---|--|
| <b>Process diaphragms, including process gasket surface</b> | 316L SST, alloy C-276, or Tantalum   |
| <b>Extension</b>  | CF-3M (cast version of 316L SST, material per ASTM-A743), or cast C-276. Fits schedule 40 and 80 pipe. |
| <b>Mounting flange</b>                                      | Zinc-cobalt plated CS or SST   |

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

|                                     |   |
|-------------------------------------|---|
| <b>Isolating diaphragms</b>         | 316L SST or alloy C-276                                 |
| <b>Reference flange and adapter</b> | CF-8M (cast version of 316 SST, material per ASTM-A743) |

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

**Electronics housing**

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

**Paint for aluminum housing**

Polyurethane

**Coplanar sensor module housing**

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

**Bolts**

ASTM A449, Type 1 (zinc-cobalt plated CS) 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 (Rosemount 2051L only)**

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

**Cover O-rings**

Buna-N

Silicone (for wireless option code X)

**Power module**

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

**Shipping weights**

**Table 7: Transmitter Weights without Options**

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

| Transmitter     | Standard in lb (kg)         | Wireless in lb (kg)         |
|-----------------|-----------------------------|-----------------------------|
| Rosemount 2051C | 4.9 (2.2)                   | 3.9 (1,8)                   |
| Rosemount 2051L | See <a href="#">Table 8</a> | See <a href="#">Table 8</a> |
| Rosemount 2051T | 3.1 (1.4)                   | 1.9 (0,86)                  |
| Rosemount 2051G | 2.4 (1,1)                   | N/A                         |

**Table 8: Rosemount 2051L Weights without Options**

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

**Table 8: Rosemount 2051L Weights without Options (continued)**

| Flange          | Flush in lb (kg) | 2-in. ext. in lb (kg) | 4-in. ext. in lb (kg) | 6-in. ext. in lb (kg) |
|-----------------|------------------|-----------------------|-----------------------|-----------------------|
| 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 9: Transmitter Option Weights**

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

## Product certifications

### Rosemount 2051C/T/L

Rev 1.15

#### European directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at [www.Emerson.com](http://www.Emerson.com).

#### Ordinary Location Certification

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

#### Hazardous location certifications

##### Note

Device ambient temperature ratings and electrical parameters may be limited to the levels dictated by the hazardous location certificate parameters.

### North America

#### E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)

**Certificate:** FM16US0232

**Standards:** FM Class 3600 – 2011, FM Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008, ANSI/IEC 60529 2004

**Markings:** XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(-50 °C ≤ T<sub>a</sub> ≤ +85 °C); Factory Sealed; Type 4X

#### I5 USA Intrinsic Safety (IS) and Nonincendive (NI)

**Certificate:** FM16US0231X (HART)

**Standards:** FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008

**Markings:** IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02051-1009; Class I, Zone 0; AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D; T4(-50 °C ≤ T<sub>a</sub> ≤ +70 °C); Type 4X

#### Specific Condition of Use (X):

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

**Certificate:** 2041384 (HART/Fieldbus/Profibus)

**Standards:** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92

**Markings:** IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02051-1009; Class I, Zone 0; AEx ia IIC T4; NI CL 1, DIV 2, GP A, B, C, D; T4(-50 °C ≤ T<sub>a</sub> ≤ +70 °C); Type 4x

#### IE USA FISCO

**Certificate:** FM16US0231X (HART)

**Standards:** FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005

**Markings:** IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 02051-1009 (-50 °C ≤ T<sub>a</sub> ≤ +60 °C); Type 4X

**Specific Condition of Use (X):**

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

**Certificate:** 2041384 (HART/Fieldbus/Profibus)

**Standards:** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987

**Markings:** IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 02051-1009 (-50°C ≤ Ta ≤ +60°C); Type 4x

**E6 Canada Explosion-Proof, Dust Ignition Proof**

**Certificate:** 2041384

**Standards:** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No.142-M1987, CAN/CSA-C22.2 No.157-92, CSA Std C22.2 No. 213-M1987, CAN/CSA-E60079-0:07, CAN/CSA-E60079-1:07, CAN/CSA-E60079-11-02, CAN/CSA-C22.2 No. 60529:05, ANSI/ISA-12.27.01-2003

**Markings:** Explosion-Proof for Class I, Divisions 1, Groups B, C, and D. Dust-Ignition Proof for Class II and Class III, Division 1, Groups E, F, and G. Suitable for Class I, Division 2; Groups A, B, C, and D for indoor and outdoor hazardous locations. Class I Zone 1 Ex d IIC T5. Enclosure type 4X, factory sealed. Single Seal.

**I6 Canada Intrinsic Safety**

**Certificate:** 2041384

**Standards:** CSA Std. C22.2 No. 142 - M1987, CSA Std. C22.2 No. 213 - M1987, CSA Std. C22.2 No. 157 - 92, CSA Std. C22.2 No. 213 - M1987, ANSI/ISA 12.27.01 – 2003, CAN/CSA-E60079-0:07, CAN/CSA-E60079-11:02

**Markings:** Intrinsically safe for Class I, Division 1, Groups A,B, C, and D when connected in accordance with Rosemount drawing 02051-1008. Ex ia IIC T3C. Single Seal. Enclosure Type 4X.

**Europe**

**E1 ATEX Flameproof**

**Certificate:** KEMA 08ATEX0090X

**Standards:** EN 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-26:2015

**Markings:** Ⓜ II 1/2 G Ex db IIC T6 (-60 °C ≤ Ta ≤ +70°C); T4/T5 (-60 °C ≤ Ta ≤ +80 °C)

**Table 10: Process Connection Temperature**

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

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

1. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.
2. Non- standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

3. The device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm shall be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
4. Flameproof joints are not intended for repair.

### I1 ATEX Intrinsic Safety

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | Baseefa08ATEX0129X  |
| <b>Standards:</b>   | EN60079-0:2012+A11:2013, EN60079-11:2012                    |
| <b>Markings:</b>    | Ⓜ II 1 G Ex ia IIC T4 Ga (-60 °C ≤ T <sub>a</sub> ≤ +70 °C) |

**Table 11: Input Parameters**

|                            | HART     | Fieldbus/PROFIBUS |
|----------------------------|----------|-------------------|
| Voltage U <sub>i</sub>     | 30 V     | 30 V              |
| Current I <sub>i</sub>     | 200 mA   | 300 mA            |
| Power P <sub>i</sub>       | 1 W      | 1.3 W             |
| Capacitance C <sub>i</sub> | 0.012 μF | 0 μF              |
| Inductance L <sub>i</sub>  | 0 mH     | 0 mH              |

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

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

### IA ATEX FISCO

|                     |  |
|---------------------|--|
| <b>Certificate:</b> | Baseefa08ATEX0129X   |
| <b>Standards:</b>   | EN60079-0:2012+A11:2013, EN60079-11:2012                       |
| <b>Markings:</b>    | Ⓜ II 1 G Ex ia IIC T4 Ga<br>(-60 °C ≤ T <sub>a</sub> ≤ +60 °C) |

**Table 12: Input Parameters**

|                            | FISCO  |
|----------------------------|--------|
| Voltage U <sub>i</sub>     | 17.5 V |
| Current I <sub>i</sub>     | 380 mA |
| Power P <sub>i</sub>       | 5.32 W |
| Capacitance C <sub>i</sub> | 0 μF   |
| Inductance L <sub>i</sub>  | 0 mH   |

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

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



- The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.

**N1 ATEX Type n**

**Certificate:** Baseefa08ATEX0130X  
**Standards:** EN60079-0:2012, EN60079-15:2010  
**Markings:** Ⓢ II 3G Ex nA IIC T4 Gc (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

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

**ND ATEX Dust**

**Certificate:** Baseefa08ATEX0182X  
**Standards:** EN60079-0:2012+A11:2013, EN60079-31:2009  
**Markings:** Ⓢ II 1 D Ex ta IIIC T95 °C T<sub>500</sub> 105 °C Da (-20 °C ≤ T<sub>a</sub> ≤ +85 °C)

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

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

**International**

**E7 IECEx Flameproof**

**Certificate:** IECExKEM08.0024X  
**Standards:** IEC 60079-0:2011, IEC 60079-1:2014-06, IEC 60079-26:2014-10  
**Markings:** Ex db IIC T6... T4 Ga/Gb T6(-60 °C ≤ T<sub>a</sub> ≤ +70 °C), T4/T5(-60 °C ≤ T<sub>a</sub> ≤ +80 °C)

**Table 13: Process Connection Temperature**

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

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

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

**I7 IECEx Intrinsic Safety**

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | IECEXBAS 08.0045X   |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-11:2011                               |
| <b>Markings:</b>    | Ex ia IIC T4 Ga ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ ) |

**Table 14: Input Parameters**

|                   | HART   | Fieldbus/PROFIBUS |
|-------------------|--------|-------------------|
| Voltage $U_i$     | 30 V   | 30 V              |
| Current $I_i$     | 200 mA | 300 mA            |
| Power $P_i$       | 1 W    | 1.3 W             |
| Capacitance $C_i$ | 12 nF  | 0 $\mu$ F         |
| Inductance $L_i$  | 0 mH   | 0 mH              |

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

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.
3. The equipment contains thin wall diaphragms. The installation, maintenance and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

**I9 IECEx FISCO**

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | IECEXBAS 08.0045X   |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-11:2011                               |
| <b>Markings:</b>    | Ex ia IIC T4 Ga ( $-60\text{ °C} \leq T_a \leq +60\text{ °C}$ ) |

**Table 15: Input Parameters**

|                   | FISCO     |
|-------------------|-----------|
| Voltage $U_i$     | 17.5 V    |
| Current $I_i$     | 380 mA    |
| Power $P_i$       | 5.32 W    |
| Capacitance $C_i$ | 0 nF      |
| Inductance $L_i$  | 0 $\mu$ H |

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

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact and abrasion when located in Zone 0.
3. The equipment contains thin wall diaphragms. The installation, maintenance and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

**N7 IECEx Type n**

**Certificate:** IECExBAS 08.0046X  
**Standards:** IEC60079-0:2011, IEC60079-15:2010  
**Markings:** Ex nA IIC T4 Gc (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

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

**Brazil**

**E2 INMETRO Flameproof**

**Certificate:** UL-BR 14.0375X  
**Standards:** ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-1:2009 + Errata 1:2011, ABNT NBR IEC 60079-26:2008 + Errata 1:2009  
**Markings:** Ex db IIC T6...T4 Ga/Gb IP66, T6(-60 °C ≤ T<sub>a</sub> ≤ +70 °C), T4/T5(-60 °C ≤ T<sub>a</sub> ≤ +80 °C)

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

1. The device contains a thin wall diaphragm. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer’s instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

**I2 INMETRO Intrinsic Safety**

**Certificate:** UL-BR 14.0759X  
**Standards:** ABNT NBR IEC 60079-0:2013; ABNT NBR IEC 60079-11:2013  
**Markings:** Ex ia IIC T4 Ga (-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

**Table 16: Input Parameters**

|                            | HART   | Fieldbus/PROFIBUS |
|----------------------------|--------|-------------------|
| Voltage U <sub>i</sub>     | 30 V   | 30 V              |
| Current I <sub>i</sub>     | 200 mA | 300 mA            |
| Power P <sub>i</sub>       | 1 W    | 1.3 W             |
| Capacitance C <sub>i</sub> | 12 nF  | 0                 |
| Inductance L <sub>i</sub>  | 0      | 0                 |

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

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

**IB INMETRO FISCO**

**Certificate:** UL-BR 14.0759X  
**Standards:** ABNT NBR IEC 60079-0:2008 + Errata 1:2011; ABNT NBR IEC 60079-11:2009  
**Markings:** Ex ia IIC T4 Ga ( $-60\text{ °C} \leq T_a \leq +60\text{ °C}$ )

**Table 17: Input Parameters**

|                   | <b>FISCO</b> |
|-------------------|--------------|
| Voltage $U_i$     | 17.5 V       |
| Current $I_i$     | 380 mA       |
| Power $P_i$       | 5.32 W       |
| Capacitance $C_i$ | 0 nF         |
| Inductance $L_i$  | 0 $\mu$ H    |

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

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

**China****E3 China Flameproof**

**Certificate:** GYJ18.1432X; GYJ15.1366X [Flow meters]  
**Standards:** GB3836.1-2010, GB3836.2-2010, GB3836.20-2010-2010  
**Markings:** Pressure Transmitter: Ex d IIC Gb, T6~T4 Ga/Gb  
 Flow meter: Ex d IIC T5/T6 Ga/Gb

**I3 China Intrinsic Safety**

**Certificate:** GYJ17.1225X; GYJ15.1365X [Flow meters]  
**Standards:** GB3836.1-2010, GB3836.4-2010, GB3836.20-2010  
**Markings:** Ex ia IIC T4 Ga

**Korea****EP Korea Flameproof**

**Certificate:** 12-KB4BO-0342X, 12-KB4BO-0344X, 19-KB4BO-0978X  
**Markings:** Ex d IIC T6...T4 Ga/Gb, T4/T5 ( $-60\text{ °C} \leq T_a \leq +80\text{ °C}$ ), T6 ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )

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

1. See certificate for special conditions.

**IP Korea Intrinsic Safety**

**Certificate:** 12-KB4BO-0343X, 12-KB4BO-0345X, 13-KB4BO-0205X, 13-KB4BO-0207X, 18-KA4BO-0309X

**Markings:** Ex ia IIC T4 Ga ( $-60^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ )

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

1. See certificate for special conditions.

## Japan

### E4 Japan Flameproof

**Certificate:** TC20598, TC20599, TC20602, TC20603 [HART]; TC20600, TC20601, TC20604, TC20605 [Fieldbus]

**Markings:** Ex d IIC T5

## Technical Regulations Customs Union (EAC)

### EM EAC Flameproof

**Certificate:** TC RU C-US.AA87.B.00588

**Markings:** Ga/Gb Ex d IIC X, T5 ( $-50^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$ ), T6 ( $-50^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C}$ )

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

1. See certificate for special conditions.

### IM EAC Intrinsically Safe

**Certificate:** TC RU C-US.AA87.B.00588

**Markings:** 0Ex ia IIC T4 Ga X ( $-60^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ )

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

1. See certificate for special conditions.

## Combinations

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

**K2 combination of E2 and I2**

**K5 combination of E5 and I5**

**K6 combination of E6 and I6**

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

### IECEx Dust

**Certificate:** IECExBAS 08.0058X

**Standards:** IEC60079-0:2011, IEC60079-31:2008

**Markings:** Ex tA IIIC T95 °C T500 105 °C Da ( $-20^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$ )

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

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

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

**KB combination of K5 and K6**

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

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

**KP combination of EP and IP**

**KM Combination of EM and IM**

**Additional Certifications**

**SBS American Bureau of Shipping (ABS) Type Approval**

**Certificate:** 18-HS1753847-PDA

**Intended Use:** Marine and Offshore Applications Measurement of either Gauge or Absolute Pressure for Liquid, Gas, and Vapor

**ABS Rules:** 2018 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 1-1-Appendix 4

**SBV Bureau Veritas (BV) Type Approval**

**Certificate:** 23157 BV

**BV Rules:** Bureau Veritas Rules for the Classification of Steel Ships

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

**SDN Det Norske Veritas (DNV) Type Approval**

**Certificate:** TAA00004F

**Intended Use:** DNV GL Rules for Classification — Ships and offshore units

**Application:**

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

**SLL Lloyds Register (LR) Type Approval**

**Certificate:** 11/60002

**Application:** Environmental categories ENV1, ENV2, ENV3, and ENV5

## Rosemount 2051G

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### European Directive Information

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

### North America

#### E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)

**Certificate** 1015441

**Standards** FM Class 3600 – 2011, FM, Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005

**Markings** XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(-50°C ≤ Ta ≤ +85°C); Factory Sealed; Type 4X

#### I5 USA Intrinsic Safety (IS) and Nonincendive (NI)

**Certificate** 1015441

**Standards** FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005

**Markings** IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02088-1024; NI CL 1, DIV 2, GP A, B, C, D; T4(-50°C ≤ Ta ≤ +70°C); Type 4x

#### E6 Canada Explosionproof, Division 2, Dust-Ignitionproof

**Certificate** 1015441

**Standards** CAN/CSA C22.2 No. 0-M91 (R2001), CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, ANSI-ISA-12.27.01-2003

**Markings** Class I, Division 1, Groups B, C and D; Class II, Groups E, F, and G; Class III; Class I Division 2 Groups A, B, C and D; Type 4X; Factory Sealed; Single Seal

#### I6 Canada Intrinsic Safety

**Certificate** 1015441

**Standards** CAN/CSA C22.2 No. 0-M91 (R2001), CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, ANSI-ISA-12.27.01-2003

**Markings** Intrinsically Safe Class I, Division 1 when connected in accordance with Rosemount drawing 02088-1024, Temperature Code T4; Ex ia; Type 4X; Factory Sealed; Single Seal

### Europe

#### E1 ATEX Flameproof

**Certificate** KEMA97ATEX2378X

**Standards** EN 60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015

**Markings** ⓈII 1/2 G Ex db IIC T6..T4 Ga/Gb, T6(-60 °C ≤ Ta ≤ +70 °C), T5/T4 (-60 °C ≤ Ta ≤ +80 °C)

**Table 18: Process Connection Temperature**

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

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

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

**I1 ATEX Flameproof**

|                    |   |
|--------------------|---|
| <b>Certificate</b> | BAS00ATEX1166X                                  |
| <b>Standards</b>   | EN60079-0:2012 + A11:2013, EN60079-11:2012      |
| <b>Markings</b>    | ⊕ II 1 G Ex ia IIC T4 Ga (-55 °C ≤ Ta ≤ +70 °C) |

**Table 19: Input Parameters**

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

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

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

**N1 ATEX Type n**

|                    |   |
|--------------------|---|
| <b>Certificate</b> | BAS00ATEX3167X                                  |
| <b>Standards</b>   | EN60079-0:2012 + A11:2013, EN60079-15:2010      |
| <b>Markings</b>    | ⊕ II 3 G Ex nA IIC T5 Gc (-55 °C ≤ Ta ≤ +70 °C) |



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

1. This apparatus is not capable of withstanding the 500V insulation test required by EN60079-15. This must be taken into account when installing the apparatus.

**ND ATEX Dust**

**Certificate:** BAS01ATEX1427X  
**Standards:** EN60079-0:2012 + A11:2013, EN60079-31:2009  
**Markings:** Ⓢ II 1 D Ex t IIIC T50 °C T<sub>500</sub> 60 °C Da

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

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7J impact test.

**International**

**E7 IECEx Flameproof**

**Certificate:** IECEx KEM 06.0021X  
**Standards:** IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-26:2014  
**Markings:** Ex db IIC T6...T4 Ga/Gb  
 T6(-60 °C ≤ T<sub>a</sub> ≤ +70 °C),  
 T5/T4(-60 °C ≤ T<sub>a</sub> ≤ +80 °C)

**Table 20: Process Connection Temperature**

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

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

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

**I7 IECEx Intrinsic Safety**

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | IECEx BAS 12.0071X  |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-11:2011   |
| <b>Markings:</b>    | Ex ia IIC T4 Ga ( $-55\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ) |

**Table 21: Input Parameters**

|                   |                     |
|-------------------|---------------------|
| Voltage $U_i$     | 30 V                |
| Current $I_i$     | 200 mA              |
| Power $P_i$       | 0.9 W               |
| Capacitance $C_i$ | 0.012 $\mu\text{F}$ |

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

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

**N7 IECEx Type n**

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | IECEx BAS 12.0072X  |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-15:2010   |
| <b>Markings:</b>    | Ex nA IIC T5 Gc ( $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ) |

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

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 sV isolation test. This must be taken into account during installation.

**NK IECEx Dust**

|                     |  |
|---------------------|--|
| <b>Certificate:</b> | IECEx BAS12.0073X  |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-31:2008  |
| <b>Markings:</b>    | Ex t IIIC T55 $^{\circ}\text{C} \leq T_{500} \leq 60\text{ }^{\circ}\text{C}$ Da |

**Table 22: Input Parameters**

|               | <b>HART®</b> |
|---------------|--------------|
| Voltage $U_i$ | 36 V         |
| Current $I_i$ | 24 mA        |

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

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7J impact test.

## Brazil

### E2 INMETRO Flameproof

- Certificate:** UL-BR 15.0728X
- Standards:** ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-1:2016, ABNT NBR IEC 60079-26:2016
- Markings:** Ex db IIC T6...T4 Ga/Gb T4/T5( $-60\text{ °C} \leq T_a \leq +80\text{ °C}$ ),  
T6( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )

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

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

### I2 INMETRO Intrinsic Safety

- Certificate:** UL-BR 13.0246X
- Standards:** ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11:2009
- Markings:** Ex ia IIC T4 Ga ( $-55\text{ °C} \leq T_a \leq +70\text{ °C}$ ),  
T6( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )

**Table 23: Input Parameters**

|                   |               |
|-------------------|---------------|
| Voltage $U_i$     | 30 V          |
| Current $I_i$     | 200 mA        |
| Power $P_i$       | 0.9 W         |
| Capacitance $C_i$ | 0.012 $\mu$ F |
| Inductance $L_i$  | 0 mH          |

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

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

## China

### E3 China Flameproof

- Certificate:** GYJ17.1158X
- Standards:** GB3836.1-2010, GB3836.2-2010, GB3836.20-2010
- Markings:** : Ex d IIC T6~T4 Ga/Gb, T5/T4( $-60\text{ °C} \leq T_a \leq +80\text{ °C}$ ), T6( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )

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

1. Contact the original manufacturer when repair work relates to the flamepath.

**I3 China Intrinsic Safety**

|                     |  |
|---------------------|--|
| <b>Certificate:</b> | GYJ17.1157X  |
| <b>Standards:</b>   | GB3836.1-2010, GB3836.4-2010, GB3836.20-2010       |
| <b>Markings:</b>    | Ex ia IIC T4 Ga (-55 °C ≤ T <sub>a</sub> ≤ +70 °C) |

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

1. The enclosure may contain light metal, attention should be taken to avoid ignition hazard due to impact or friction when used in Zone 0.
2. When transient protection board is chosen (option code T1), this apparatus is not capable of withstanding the 500 V r.m.s insulation test required by clause 6.3.12 of GB3836.4-2010.

**N3 China Type n**

|                     |  |
|---------------------|--|
| <b>Certificate:</b> | GYJ17.1159X  |
| <b>Standards:</b>   | GB3836.1-2010, GB3836.8-2014                       |
| <b>Markings:</b>    | Ex nA IIC T5 Gc (-40 °C ≤ T <sub>a</sub> ≤ +70 °C) |

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

1. When transient protection board is chosen (option code T1), this apparatus is not capable of withstanding the 500 V r.m.s insulation test required by Clause 6.3.12 of GB3836.4-2010.

**Technical Regulations Customs Union (EAC)****EM EAC Flameproof**

|                    |  |
|--------------------|--|
| <b>Certificate</b> | EAEC RU C-US.EX01.B.00176  |
| <b>Standards</b>   | GB3836.1-2010, GB3836.2-2010, GB3836.20-2010   |
| <b>Markings</b>    | :Ga/Gb Ex db IIC T5/T6 X, T5(-60 °C ≤ T <sub>a</sub> ≤ +80 °C), T6(-60 °C ≤ T <sub>a</sub> ≤ +70 °C) |

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

1. See certificate for special conditions.

**IM EAC Intrinsic Safety**

|                    |  |
|--------------------|--|
| <b>Certificate</b> | EAEC RU C-US.EX01.B.00176                                |
| <b>Standards</b>   | GB3836.1-2010, GB3836.4-2010, GB3836.20-2010             |
| <b>Markings</b>    | 0Ex ia IIC T4 Ga X, T4(-55 °C ≤ T <sub>a</sub> ≤ +70 °C) |

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

1. See certificate for special conditions.

**Combinations**

|           |                                   |
|-----------|-----------------------------------|
| <b>K1</b> | Combination of E1, I1, N1, and ND |
| <b>K2</b> | Combination of E2 and I2          |

|           |                                   |
|-----------|-----------------------------------|
| <b>K3</b> | Combination of E3 and I3          |
| <b>K5</b> | Combination of E5 and I5          |
| <b>K6</b> | Combination of E6 and I6          |
| <b>K7</b> | Combination of E7, I7, N7, and NK |
| <b>KB</b> | Combination of K5 and K6          |
| <b>KD</b> | Combination of E1, I1, K5 and K6  |
| <b>KM</b> | Combination of EM and IM          |

### Conduit plugs and adapters

#### IECEx Flameproof and Increased Safety

|                     |  |
|---------------------|--|
| <b>Certificate:</b> | IECEx FMG 13.0032X                                     |
| <b>Standards:</b>   | IEC60079-0:2011, IEC60079-1:2007, IEC60079-7:2006-2007 |
| <b>Markings:</b>    | Ex d e IIC Gb  |

#### ATEX Flameproof and Increased Safety

|                     |   |
|---------------------|---|
| <b>Certificate:</b> | FM13ATEX0076X                                   |
| <b>Standards:</b>   | EN60079-0:2012, EN60079-1:2007, IEC60079-7:2007 |
| <b>Markings:</b>    | Ⓔ II 2 G Ex d e IIC Gb                          |

**Table 24: Conduit Plug Thread Sizes**

| Thread     | Identification mark |
|------------|---------------------|
| M20 x 1.5  | M20                 |
| ½ – 14 NPT | ½ NPT               |
| G½         | G½                  |

**Table 25: Thread Adapter Thread Sizes**

| Male thread    | Identification mark |
|----------------|---------------------|
| M20 x 1.5 – 6H | M20                 |
| ½ – 14 NPT     | ½ – 14 NPT          |
| ¾ – 14 NPT     | ¾ – 14 NPT          |
| Female thread  | Identification mark |
| M20 x 1.5 – 6H | M20                 |
| ½ – 14 NPT     | ½ – 14 NPT          |
| G½             | G½                  |

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

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety “e” the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure.
2. The blanking plug shall not be used with an adapter.

3. Blanking plug and threaded adapter shall be either NPT or metric thread forms. G $\frac{1}{2}$  thread forms are only acceptable for existing (legacy) equipment installations.

## Rosemount 2051 Wireless

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### European Directive Information

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

### Telecommunication compliance

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

### FCC and IC

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

### Ordinary Location Certification

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

### Installing in North America

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

## USA

### I5 U.S.A. Intrinsically Safe (IS)

**Certificate:** FM19US0050X

**Standards:** FM Class 3600 – 2018, FM Class 3610 – 2018, FM Class 3810 – 2018, ANSI/ISA 60079-0:2013, ANSI/UL 60079-11:2014, NEMA 250: 2003, ANSI/IEC 60529:2014, ANSI/UL 61010:2016

**Markings:** IS CL I, DIV 1, GP A, B, C, D T4; CL 1, Zone 0 AEx ia IIC T4; T4 (–40 °C ≤ T<sub>a</sub> ≤ +70 °C) when installed per Rosemount drawing 03031-1062; Type 4X/IP66/IP68

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

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

## Canada

### I6 Canada Intrinsically Safe

**Certificate:** CSA 2526009

**Standards:** CAN/CSA C22.2 No. 0-M91, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, CSA Std C22.2 No. 60529:05

**Markings:** Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, T4 when installed per Rosemount drawing 03031-1063; Type 4X/IP66/IP68

## Europe

### I1 ATEX Intrinsic Safety

**Certificate:** Baseefa12ATEX0228X

**Standards:** EN 60079-0:2012, EN 60079-11:2012

**Markings:** Ⓔ II 1 G Ex ia IIC T4 Ga, T4 (-40 °C ≤ T<sub>a</sub> ≤ +70 °C) IP66/IP68

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

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

## International

### I7 IECEx Intrinsic Safety

**Certificate:** IECEx BAS 12.0124X

**Standards:** IEC 60079-0:2011, IEC 60079-11:2011

**Markings:** Ex ia IIC T4 Ga, T4 (-40 °C ≤ T<sub>a</sub> ≤ +70 °C) IP66/IP68

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

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

## Brazil

### I2 INMETRO Intrinsic Safety

**Certificate:** UL-BR 13.0534X

**Standards:** ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009

**Markings:** Ex ia IIC T4 IP66 Ga, T4 (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

1. See certificate for special conditions.



## China

### I3 China Intrinsic Safety

**Certificate:** GYJ17.1225X GYJ15.1365X [Flow meters]  
**Standards:** GB3836.1-2010, GB3836.4-2010, GB3836.20-2010  
**Markings:** Ex ia IIC Ga T4, -40 ~ +70°C

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

1. See certificate for special conditions.

## Japan

### I4 TIIS Intrinsic Safety

**Certificate:** TC22022X (Rosemount™ 2051C/L) TC22023X (Rosemount 2051T) TC22024X (Rosemount 2051CFx)  
**Markings:** Ex ia IIC T4 Ga, T4 (-20 ~ +60 °C)

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

1. See certificate for special conditions.

## EAC - Belarus, Kazakhstan, Russia

### IM Technical Regulation Customs Union (EAC) Intrinsic Safety

**Certificate:** TC RU C-US.AA87.B.00588  
**Markings:** 0Ex ia IIC T4 Ga X; (-40°C ≤ T<sub>a</sub> ≤ +70°C)

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

1. See certificate for special conditions.

## Korea

### IP Korea Intrinsic Safety

**Certificate:** 13-KB4BO-0220X  
**Markings:** Ex ia IIC T4 (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

1. See certificate for special conditions.

## Additional certifications

### SBS American Bureau of Shipping (ABS) Type Approval

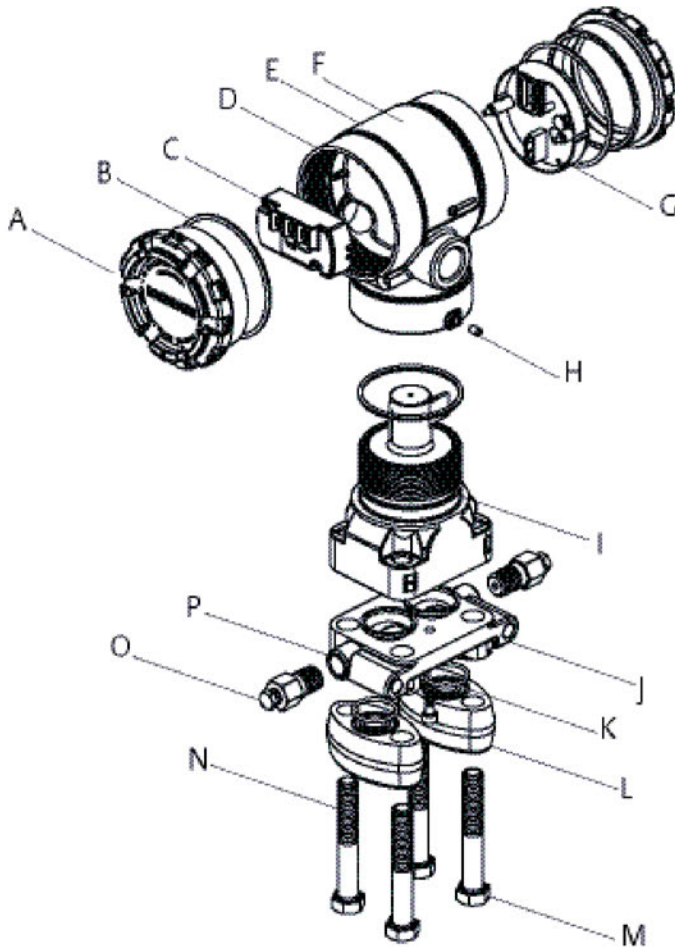
**Certificate:** 15-HS1405241-PDA  
**Intended use:** Marine & Offshore Applications – Measurement of either gauge or absolute pressure for liquid, gas and vapor.  
**ABS rules:** 2015 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 1-1-Appendix 4

**SBV Bureau Veritas (BV) Type Approval****Certificate:** 23157 BV**BV rules:** Bureau Veritas Rules for the Classification of Steel Ships**Application:** Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 2051 cannot be installed on diesel engines.**SDN Det Norske Veritas (DNV) Type Approval****Certificate:** TAA000004F**Intended use:** DNV GL Rules for Classification - Ships and offshore units**Application:**

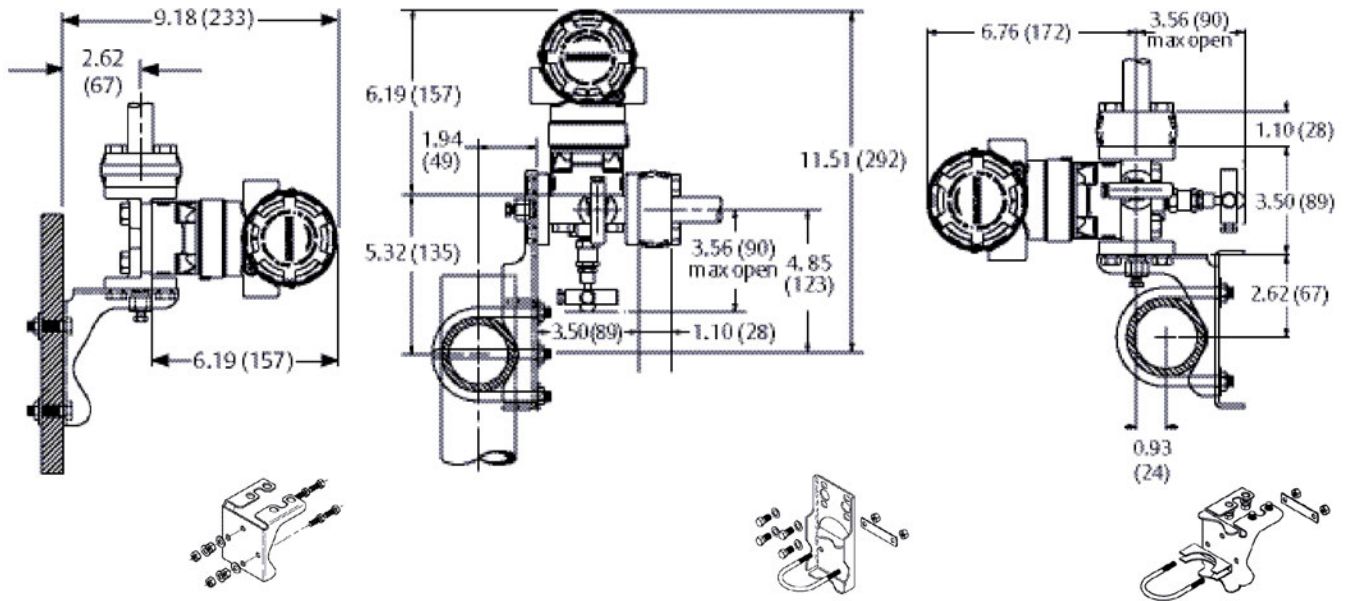
| Location classes |      |
|------------------|------|
| Type             | 2051 |
| Temperature      | B    |
| Humidity         | B    |
| Vibration        | A    |
| EMC              | B    |
| Enclosure        | D    |

# Dimensional drawings

**Figure 8: Rosemount 2051C Exploded View**

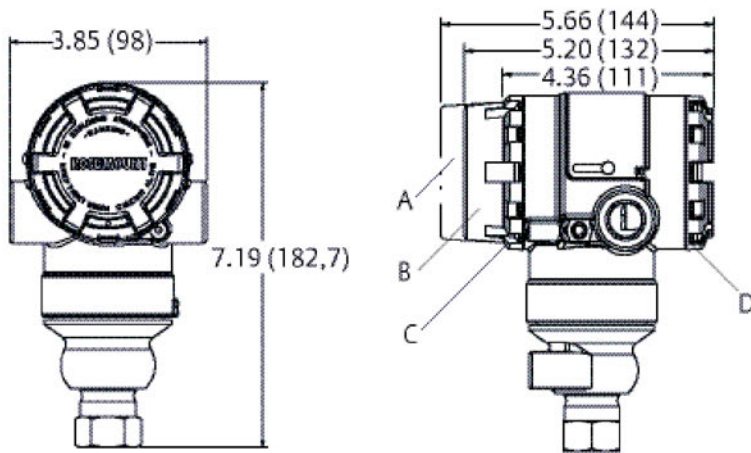


- A. Cover
- B. Cover O-ring
- C. Terminal block
- D. Electronics housing
- E. Local configuration buttons
- F. Nameplate
- G. Electronics board
- H. Housing rotation set screw (180° maximum housing rotation without further disassembly)
- I. Sensor module
- J. Process O-ring
- K. Flange adapter O-ring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



Dimensions are in inches (millimeters).

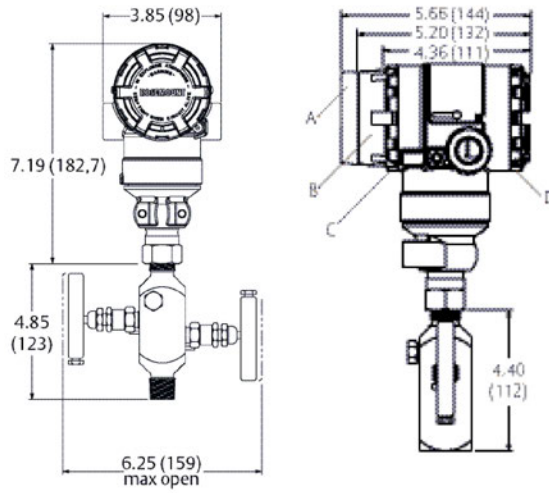
Figure 16: Rosemount 2051T



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

Dimensions are in inches (millimeters).

**Figure 23: Rosemount 2051T with Rosemount 306 Two-Valve Integral Manifold**



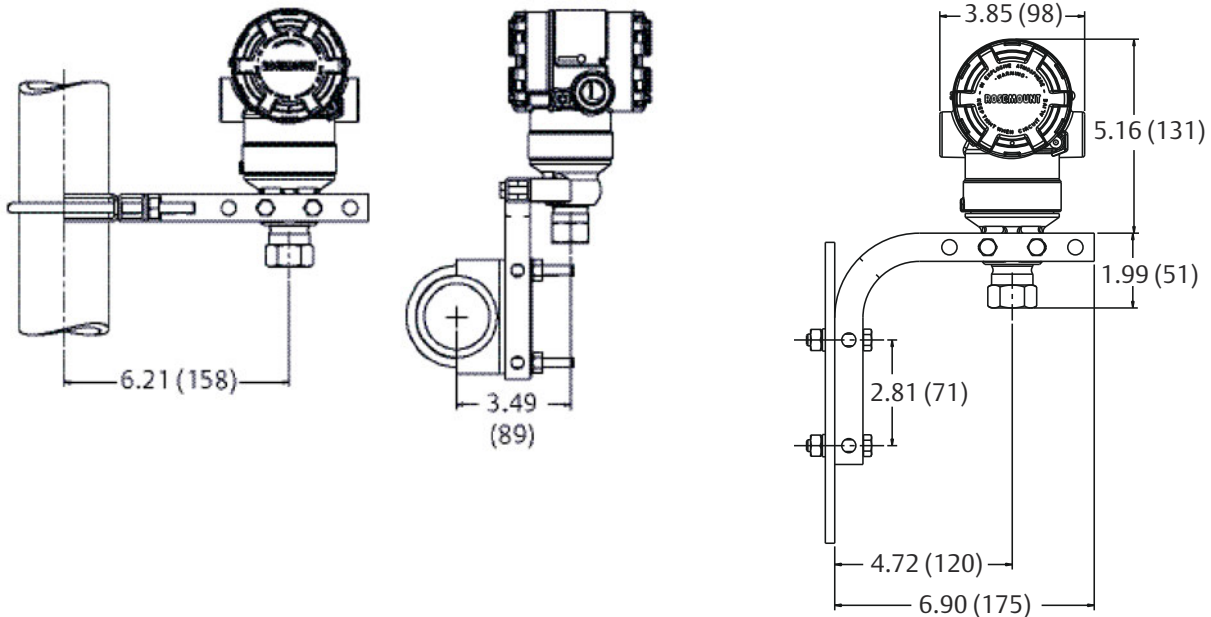
- A. FOUNDATION Fieldbus display cover
- B. HART display cover
- C. Transmitter circuitry
- D. Terminal connections

Dimensions are in inches (millimeters).

**Figure 24: Rosemount 2051T Typical Mounting Configurations with Optional Mounting Bracket**

Pipe mounting

Panel mounting



Dimensions are in inches (millimeters).

Dimensions are in inches (millimeters).

**Table 29: 2051L Dimensional Specifications**

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

Dimensions are in inches (millimeters).

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

| Class <sup>(1)</sup>  | Pipe size | Process side F | Lower housing G |           | H          |
|-----------------------|-----------|----------------|-----------------|-----------|------------|
|                       |           |                | ¼ NPT           | ½ 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).

Dimensions are in inches (millimeters).

## Options

### Standard configuration

Unless otherwise specified, transmitter is shipped as follows:

|                   |   |
|-------------------|---|
| Engineering units | inH <sub>2</sub> O (ranges 1, 2, and 3) |
| Differential/gage | psi (ranges 4–5)                        |
| Rosemount 2051TA  | psi (all ranges)                        |

|                                |                             |
|--------------------------------|-----------------------------|
| 4 mA (1 Vdc) <sup>(1)</sup>    | 0 (engineering units)       |
| 20 mA (5 Vdc) <sup>(1)</sup> : | 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 <sup>(1)</sup>           | High                        |
| Software tag                   | (Blank)                     |

(1) Not applicable to FOUNDATION Fieldbus, PROFIBUS PA, or wireless.

## Custom configuration

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

### Note

Custom configurations are not applicable to FOUNDATION Fieldbus or PROFIBUS PA Protocols.

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

Refer to the Rosemount 2051 [Configuration Data Sheet](#) and the Rosemount 2051 Wireless [Configuration Data Sheet](#).

## 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 tags are temporarily attached to all transmitters. The tag indicates the device ID and allows an area for writing the location.

**Note**

The commissioning tag applies only to FOUNDATION Fieldbus Protocol.

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

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

## Other seals

Refer to the Rosemount DP Level Transmitters and 1199 Seal Systems [Product Data Sheet](#) for additional information.

## Output information

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

| Pressure                                  |  |  |
|---|--|--|
| atm                                       | mmH <sub>2</sub> O at 4 °C <sup>(1)</sup>  | ftH <sub>2</sub> O at 4 °C <sup>(1)</sup>  |
| mbar                                      | ftH <sub>2</sub> O                         | psi  |
| bar                                       | inH <sub>2</sub> O at 60 °F <sup>(1)</sup> | torr                                       |
| inH <sub>2</sub> O                        | Psf <sup>(1)</sup>                         | cmH <sub>2</sub> O at 4 °C <sup>(1)</sup>  |
| inHg                                      | g/cm <sup>2</sup>                          | cmHg at 0 °C <sup>(1)</sup>                |
| hPa <sup>(1)</sup>                        | kg/cm <sup>2</sup>                         | ftH <sub>2</sub> O at 60 °F <sup>(1)</sup> |
| mHg at 0 °C <sup>(1)</sup>                | Pa   | mH <sub>2</sub> O at 4 °C <sup>(1)</sup>   |
| inH <sub>2</sub> O at 4 °C <sup>(1)</sup> | kPa  | mHg at 0 °C <sup>(1)</sup>                 |
| mmH <sub>2</sub> O                        | MPa <sup>(1)(2)</sup>                      | hPa <sup>(1)</sup>                         |
| mmHg                                      | kg/m <sup>2(1)</sup>                       |  |
| Flow <sup>(2)(3)</sup>                    |  |  |
| bbbl                                      | kg   | cm <sup>3</sup>                            |
| ft <sup>3</sup>                           | lb   | m <sup>3</sup>                             |
| gal                                       | L  | ton  |
| Level <sup>(3)</sup>                      |  |  |
| %   | ft   | cm   |
| in  | mm   |  |

(1) Available with enhanced Rosemount 2051 and wireless.

(2) Available on PROFIBUS PA Protocol.

(3) All flow units are available per second, minute, hour or day.

## Display and interface options

M4 Digital display with LOI



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

#### M5 Digital display

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

## Configuration buttons

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 x 20 microseconds)
- 6 kV crest (1.2 x 50 microseconds)

## Bolts for flanges and adapters

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

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

## Conduit plug

DO 316 SST conduit plug

Single 316 SST conduit plug replaces CS 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
- SST construction with SST 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
- CS construction with CS 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
- CS construction with CS 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 SST bolts

### B8 B2 bracket with SST bolts

- Same bracket as the B2 option with Series 300 SST bolts

### B9 B3 bracket with SST bolts

- Same bracket as the B3 option with Series 300 SST bolts

### BA SST B1 bracket with SST bolts

- B1 bracket in SST with Series 300 SST bolts

### BC SST B3 bracket with SST bolts

- B3 bracket in stainless steel with Series 300 SST bolts

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