Model 3051CD0 Draft Range

Digital Pressure Transmitter
for Draft Range Applications

TRUE DRAFT RANGE OFFERING

- Pressure range –3.0 to 3.0 inH₂O (–750 to 750 Pa) with spans as small as 0.1 inH₂O (25 Pa)
- Accuracy: ± 0.10% of range
- Redesigned capacitance sensor optimized for draft measurements
- Stable, accurate, and reliable for years of maintenance-free performance
- Based on standard Model 3051 design, reducing spare parts requirements

APPLICATIONS

- Furnace and boiler draft
- HVAC: duct flow and clogging filter detection
- Room and chamber pressurization
- Clean room pressurization control systems
- Flow measurements with low differential pressures

COMPLETE POINT SOLUTIONS™

- Engineered solutions including primary flow elements
- Reduced engineering, procurement, and installation costs
INTRODUCING THE MODEL 3051CD0

The Rosemount Model 3051CD0 Draft Range pressure transmitter is a precision instrument of superior quality and performance. The Model 3051CD0 measures low to extremely low pressure differentials, with positive and negative pressure capabilities. The Model 3051CD0 transmitter is ideal for all types of combustion process air flow measurements, particularly designed for accurate monitoring of:

- Furnace and boiler pressure
- Combustion air flows
- Total, primary, and secondary air flows
- Draft loss

Additionally, the Model 3051CD0 is ideal for HVAC systems, Clean Room applications, and other flow applications that require small differential pressure measurements.

APPLICATIONS

The traditional uses for draft measurements are associated with boiler pressures, furnace pressures, and flow measurements. With increased environmental regulations, high performance draft range applications are also becoming increasingly prevalent.

Furnace and Boiler Draft

The Model 3051CD0 is ideal for furnace and boiler draft range needs. The Model 3051CD0 measures combustion air flow, exhaust gas flow, and combustion chamber pressures, accurately and reliably.

For more detailed information on furnace and boiler applications, see pages 113 and 114.

HVAC Systems

Heating ventilation and air conditioning (HVAC) systems have several draft applications including air flow measurement, building and zone pressurization, and filter and heat exchanger clogging detection. The Model 3051CD0 can improve efficiency and help predict maintenance of all of these processes by monitoring pressure loss to a system and pressure changes across sections.

Clean Rooms

Clean rooms have extensive draft range HVAC requirements. The Model 3051CD0 measures clean room pressures accurately and efficiently, helping to eliminate problems of both contamination and out of balance pressurization.

Flow

A small differential pressure generated from a primary element can result in a lower permanent pressure loss. With a static pressure limit of 750 psi (5171 kPa), the Model 3051CD0 is well-suited for measuring flows in pipes where only a small differential pressure is generated across a primary element.

FEATURES

The Model 3051CD0 Transmitter is based on the design of the Model 3051 transmitter, sharing the same electronics board, electronics housing, LCD meter, and terminal block. The Model 3051CD0 has a redesigned capacitance sensor that is optimized for low differential pressure measurements. The standardized parts significantly reduce your spares inventory.

Installation, calibration, and commissioning are made easy by the compact modular design, with separate sealed compartments for electronics and wiring terminals, and external span and zero adjustments. The housing is explosion proof and weatherproof, and the optional local display LCD meter simplifies inspection, maintenance, and troubleshooting.
Model 3051CD0 Boiler Applications

Pressure

Most boilers are designed to maintain a slight negative pressure (approximately -0.25 inH2O [62 Pa]) in the furnace. This is accomplished by modulating induced draft dampers or boiler outlet dampers. A pressure tap is located in the chamber where combustion takes place. If the pressure is too low, it can cause air infiltration and reduce efficiency. If the pressure is too high, it can cause harmful gases to escape into the boiler room. Efficient operation, safety, and protection of equipment depends upon this measurement, and the Model 3051CD0 offers the solution.

Differential Pressure—Drops Across Sections

Pressure drops across air heaters, scrubbers, economizers, and other parts of the boiler must be known to determine if these components are dirty or becoming plugged with soot or ash. The efficiency of the boiler depends on the proper operation of these devices. Electrostatic precipitators often have their own fans, and pressure within these must be closely controlled. The Model 3051CD0 can accurately measure these pressure drops to improve the overall efficiency of a system.

Flow

In many boiler applications, air flow can be the most difficult measurement. Primary elements such as annubars, air foils, piezometer rings, or restrictions in the duct work are used to create a usable differential. However, in many cases, pressure drops of approximately only 1 inH2O (249 Pa) are developed. A good air flow measurement is necessary for precise control of fuel-to-air ratios, a critical parameter in maintaining boiler combustion efficiency and attaining fuel savings. The Model 3051CD0 can measure this air flow to provide the most efficient combustion possible.

Other Flows

Many waste gases or other combustion-related air flows are supplied at very low static pressures. Primary measurement devices used in these applications will not develop large differential pressures. Low range transmitters must be used for these installations to assure compliance with environmental regulations.
Combustion air fans force air into the furnace for combustion of the fuel. Waste gases exiting the furnace are regulated by a damper in the stack. The stack damper must be properly positioned to create a very slight positive pressure in the furnace for efficient operation.

- If the furnace pressure is too high, it will cause the hot air needed for heating to escape through the furnace casing, reducing efficiency.
- If the furnace pressure is too low, it will cause excessive air leaks through the furnace casing from the atmosphere into the furnace.

Energy conservation has become an important issue. Good furnace pressure control is an effective means of reducing fuel consumption. Accurate, reliable process measurement is a necessity, and the Model 3051CD0 provides it.

Ideally, a slight positive pressure of 0.05 inH2O should be maintained to minimize losses. A pressure transmitter to control these losses should be selected on the basis of resolution, repeatability, stability, and accuracy. Whether it be a reheat furnace, soaking pit, kiln, or smelter, the Rosemount Model 3051CD0 is an ideal measurement choice.

FIGURE 2. Model 3051CD0 Furnace Applications.
MODEL 3051CD0
PRESSURE TRANSMITTER
• Superior performance: 0.10% accuracy, 30:1 rangeability
• Differential pressure: – 3.0 to 3.0 inH₂O (–750 to 750 Pa). Minimum span of 0.1 inH₂O (25 Pa)
• Stainless steel process isolators and flange bolts
• Compact, rugged, and lightweight design for easy installation

Traditional Flange
• Stainless steel construction

DIAMOND II+ ANNUBAR®
• Assembled, pressure-tested, calibrated, and ready-to-install primary element and pressure transmitter combination
• Innovative, patented Diamond II+ Annubar design requires a single pipe penetration, enabling easy installation
• Low operating costs due to low permanent pressure drop
• Integral isolation and equalization valving removes the need for a manifold
• No moving parts to maintain

LOCAL SPAN AND ZERO ADJUSTMENTS
Local span and zero adjustments are standard unless otherwise specified
• Non-interactive external zero and span adjustments simplify reranging
• Magnetic switches replace standard potentiometer adjustments to optimize performance
• Local span and zero adjustments can be disabled using the transmitter software

J1 Local Zero Adjustment Only
J3 No Local Zero or Span Adjustment
LOCAL DISPLAY LCD METER

M5 Two-line, Five Digit Display
- Direct reading of digital data for higher accuracy
- Displays digital output in pressure engineering units, percent of analog range values, or custom-defined flow, level, or pressure units.
- Displays diagnostic messages for local troubleshooting
- 90-degree rotation capability for upright viewing regardless of transmitter mounting orientation

M6 Digital Meter with 316 Stainless Steel Cover
For use with stainless steel housing option (housing codes J, K, and L)

TRANSIENT PROTECTION
- Integral transient protection terminal block
- Meets IEEE Standard 587, Category B
  1kV crest (10 x 1000 microseconds)
  3kV crest (8 x 20 microseconds)
  6kV crest (1.2 x 50 microseconds)
- Meets IEEE Standard 472, Surge Withstand Capability
  SWC 2.5kV crest, 1 MHz wave form

T1 Integral Transient Protection Terminal Block
TRADITIONAL FLANGE
BRACKET OPTIONS

B1  Bracket for 2-in. Pipe Mounting
• Bracket for mounting transmitter on 2-in. pipe
• Carbon steel construction with carbon steel bolts
• Coated with polyurethane paint

B2  Bracket for Panel Mounting
• Bracket for mounting transmitter on wall or panel
• Carbon steel construction with carbon steel bolts
• Coated with polyurethane paint

B3  Flat Bracket for 2-in. Pipe Mounting
• For vertical mounting of transmitter on 2-in. pipe
• Carbon steel construction with carbon steel bolts
• Coated with polyurethane paint

B7  –B1 Bracket with SST Bolts
Same bracket as the B1 option with Series 300 stainless steel bolts

BA  SST B3 Bracket with SST Bolts
B1 bracket in SST with Series 300 SST bolts

B8  –B2 Bracket with SST Bolts
Same bracket as the B2 option with Series 300 stainless steel bolts

B9  –B3 Bracket with SST Bolts
Same bracket as the B3 option with Series 300 stainless steel bolts

BC  Stainless Steel B3 Bracket with SST Bolts
B3 bracket in stainless steel with Series 300 stainless steel bolts
PERFORMANCE SPECIFICATIONS
(Note: Zero-based spans, reference conditions, silicone oil fill, transmitter mounted in vertical orientation, and digital trim values equal to the span set points.)

Accuracy
±0.10% of span.

Note
For rangedowns greater than 1:2 and up to 1:30, accuracy = ±0.05% URL.

Ambient Temperature Effect per 50 °F (28 °C)
±(0.25% URL + 0.05% span).

Static Pressure Effect
Zero Error (can be calibrated out at line pressure)
±0.125% of URL/100 psi (689 kPa).

Span Error
±0.15% of span/100 psi (689 kPa).

Stability
0.20% URL for one year.

Mounting Position Effect
Zero shifts up to 2.5 inH₂O (0.62 kPa), which can be calibrated out. No span effect.

FUNCTIONAL SPECIFICATIONS

Range and Sensor Limits
Upper (URL): 3.0 inH₂O (750 Pa).
Lower (LRL): -3.0 inH₂O (~750 Pa).
Minimum Span: 0.1 inH₂O (25 Pa).

Time Response
Dead Time (T_d): 45 milliseconds (nominal).
Time Constant (T_c): 0.7 seconds (nominal).
Update Rate: 20 times per second (minimum).

Vibration Effect
±0.2% URL per g when tested from 15 to 2000 Hz in any axis relative to pipe-mounted process connections.

Power Supply Effect
Less than 0.005% of calibrated span per volt.

RFI Effect
± 0.1% of span from 20 to 1000 MHz, and for field strength up to 30 V/m.

Service
Liquid, gas, and vapor applications.

Note: Calibrations at 68 °F (20 °C) per ANSI Z210.1.

Transient Protection
Meets IEEE Standard 587, Category B.
1kV crest (10³ 1000 microseconds).
3 kV crest (8³ 20 microseconds).
6 kV crest (1.2³ 50 microseconds).

Meets IEEE Standard 472, Surge Withstand Capability SEC 2.5 kV crest, 1 MHz wave form.

General Specifications:
Response Time: < 1 nanosecond
Peak Surge Current: 5000 amps to housing
Peak Transient Voltage: 100 V dc
Loop Impedance: < 25 ohms

4–20 mA 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 the HART protocol.

Power Supply
External power supply required. Standard transmitter (4–20 mA) operates on 10.5–55 V dc with no load.

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

\[ \text{Max. Loop Resistance} = 43.5 \times (\text{Power Supply Voltage} - 10.5) \]

Communication requires a minimum loop resistance of 250 ohms.

Overpressure Limits
0.5 psia to 750 psi (3.4 to 5171 kPa).

Static Pressure Limit
Operates within specifications between static line pressures of 0.5 psia and 750 psig.

Burst Pressure Limits
Burst pressure is 10,000 psig (69 M Pa).
Failure Mode Alarm
If self-diagnostics detect a gross transmitter failure, the analog signal will be driven either below 3.75 mA or above 21.75 mA to alert the user. High or low alarm signal is user-selectable by internal jumper.

Temperature Limits
- **Ambient**
  - Silicone: -40 to 185 °F (−40 to 85 °C).
  - Inert: 32 to 185 °F (0 to 85 °C).
- **Ambient with Integral Meter**:
  - -4 to 175 °F (−20 to 80 °C).
- **Process**
  - -40 to 212 °F (−40 to 100 °C).
- **Storage**
  - -50 to 212 °F (−46 to 100 °C).
- **Storage with Integral Meter**:
  - -40 to 185 °F (−40 to 85 °C).

Humidity Limits
0-100% relative humidity.

Turn-on Time
Performance within specifications less than 2.0 seconds after power is applied to transmitter.

Volumetric Displacement
Less than 0.005 in³ (0.08 cm³).

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

Indication
Optional 5-digit LCD meter.

Hazardous Locations Certifications
See Certifications section.

**PHYSICAL SPECIFICATIONS**

**Electrical Connections**
- ½–14 NPT, PG 13.5, G½, and M20 x 1.5 (CM20) conduit. HART interface connections fixed to terminal block.

**Process Connections**
- ½–18 NPT on 2½-in. centers;
- ½–14 NPT on 2-, 2½-, or 2½-in. centers.

**Process-Wetted Parts**
- **Process Isolated Diaphragms**
  - 316L SST.
- **Drain/Vent Valves**
  - 316 SST.
- **Process Flanges and Adapters**
  - CF-8M (Cast version of 316 SST, material per ASTM-A743).
- **Wetted O-rings**
  - Glass-filled TFE.

**Non-Wetted Parts**
- **Electronics Housing**
  - Low-copper aluminum or CF-8M (Cast version of 316 SST, material per ASTM-A743). NEMA 4X, IP 65, IP 66.
- **Coplanar Sensor Module Housing**
  - CF-3M (Cast version of 316L SST, material per ASTM-A743).
- **Bolts**
  - Austenitic 316 SST.
- **Sensor Module Fill Fluid**
  - Silicone or inert halocarbon.
- **Paint**
  - Polyurethane.
- **Cover O-rings**
  - Buna-N.

**Shipping Weights**
Without options: 8.1 lb. (3.7 kg). The following table lists shipping weights of Model 3051CD0 options:

<table>
<thead>
<tr>
<th>Code</th>
<th>Option</th>
<th>Add lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J, K, L</td>
<td>Stainless Steel Housing</td>
<td>3.1 (1.4)</td>
</tr>
<tr>
<td>M5</td>
<td>LCD Meter for Aluminum Housing</td>
<td>0.5 (0.2)</td>
</tr>
<tr>
<td>M6</td>
<td>LCD Meter for SST Housing</td>
<td>1.25 (0.6)</td>
</tr>
<tr>
<td>B1, B2, B3</td>
<td>Mounting Bracket for Traditional Flange</td>
<td>2.3 (1.0)</td>
</tr>
<tr>
<td>B7, B8, B9</td>
<td>Mounting Bracket for Traditional Flange</td>
<td>2.3 (1.0)</td>
</tr>
<tr>
<td>BA, BC</td>
<td>SST Bracket for Traditional Flange</td>
<td>2.3 (1.0)</td>
</tr>
</tbody>
</table>

**Installation Considerations**
Temperature performance will be optimized if the transmitter is mounted with the isolators parallel to the ground, reducing oil head effect.

Care should be taken to assure the transmitter is mounted securely. Tilting of the transmitter will appear as a zero shift in the output of the transmitter.
Certifications

Stainless steel certification tag provided when optional approval is specified.

**Factory Mutual (FM) Approvals**

**E5**  Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II, Division 1, Groups E, F, and G. Suitable for Class III, Division 1, indoor and outdoor (NEMA 4X) hazardous locations. Factory Sealed.

**I5**  Intrinsically Safe for use in Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 when connected in accordance with Rosemount drawings 03031-1019 and 00275-0081 (when used with HART Communicator Model 275), or 00268-0031 (when used with Rosemount Model 268 Communicator). Temperature Code T4. Non-incendive for Class I, Division 2, Groups A, B, C, and D. NEMA 4X. Factory Sealed.

**K5**  Combination of E5 and I5.

<table>
<thead>
<tr>
<th>FM Approved Entity Parameters for Model 3051C (1)</th>
<th>FM Approved for Class I, II, III, Division 1 and 2, Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{\text{Max}} = 40 \text{ V dc}$</td>
<td>A–G</td>
</tr>
<tr>
<td>$I_{\text{Max}} = 165 \text{ mA}$</td>
<td>A–G</td>
</tr>
<tr>
<td>$I_{\text{Max}} = 225 \text{ mA}$</td>
<td>C–G</td>
</tr>
<tr>
<td>$I_{\text{Max}} = 160 \text{ mA}$ (Option Code T1)</td>
<td>A–G</td>
</tr>
<tr>
<td>$P_{\text{Max}} = 1 \text{ W}$</td>
<td>A–G</td>
</tr>
<tr>
<td>$C_{\text{L}} = 0.01 \text{ mF}$ (Output Code A)</td>
<td>A–G</td>
</tr>
<tr>
<td>$L_{\text{L}} = 10 \text{ mH}$</td>
<td>A–G</td>
</tr>
<tr>
<td>$L_{\text{L}} = 1.05 \text{ mH}$ (Output Code A with T1)</td>
<td>A–G</td>
</tr>
<tr>
<td>$L_{\text{L}} = 0.75 \text{ mH}$ (Output Code T1)</td>
<td>A–G</td>
</tr>
</tbody>
</table>

(1) When connected in accordance with Rosemount drawings 3031-1019 and 00275-0081 (for use with the HART Communicator Model 275), or 00268-0031 (for use with the Rosemount Model 268 Communicator).

**BASEEFA/CENELEC Intrinsic Safety Certification**

**I1**  EEx ia IIC T5 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$).
        EEx ia IIC T4 ($T_{\text{amb}} = 70 \, ^\circ \text{C}$).

**CENELEC Approved Entity Parameters**

$U_{\text{Max}} = 30 \text{ V}$

$I_{\text{Max}} = 200 \text{ mA}$

$W_{\text{Max}} = 0.9 \text{ W}$

$C_{\text{eq}} = 0.012 \text{ mF}$

**BASEEFA Non-incendive Type N Certification**

**N1**  Ex N IIC T5 ($T_{\text{amb}} = 70 \, ^\circ \text{C}$).

**CESI/CENELEC Flameproof Certification**

**E8**  EEx d IIC T6 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$).
        EEx d IIC T5 ($T_{\text{amb}} = 70 \, ^\circ \text{C}$).

**Japanese Industrial Standard (JIS) Flameproof Certification**

**E4** (3051C) Ex d IIB T4 + sG4 ($T_{\text{amb}} = 60 \, ^\circ \text{C}$)
        (3051T) Ex d IIB T5 ($T_{\text{amb}} = 60 \, ^\circ \text{C}$)

**Canadian Standards Association (CSA) Approvals**

**C6**  Explosion Proof for Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof for Class II, Division 1, Groups E, F, and G. Suitable for Class III, indoor and outdoor (NEMA 4X) hazardous locations. Factory Sealed.

**K6**  Combined C6, I1, and E8.

**BASEEFA/CENELEC Intrinsic Safety Certification**

**I7**  Ex ia IIC T4 ($T_{\text{amb}} = 70 \, ^\circ \text{C}$).
        Ex ia IIC T5 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$).

**Special Conditions for Safe Use**

Observe barriers/entity parameters during installation.

**SAA Approved Entity Parameters**

$U_{\text{Max}} = 30 \text{ V}$

$I_{\text{Max}} = 200 \text{ mA}$

$I_{\text{Max}} = 160 \text{ mA}$ (Option Code T1)

$P_{\text{Max}} = 0.9 \text{ W}$

$C_{\text{L}} = 0.01 \text{ mF}$ (Output Code A)

$C_{\text{L}} = 0.042 \text{ mF}$ (Output Code M)

$L_{\text{L}} = 10 \text{ mH}$

$L_{\text{L}} = 1.05 \text{ mH}$ (Output Code A with T1)

$L_{\text{L}} = 0.75 \text{ mH}$ (Output Code M with T1)

**Explosion Proof (Flameproof) Certification**

$\psi_{\text{p}}$  Ex d IIC T6 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$)
        Ex d IIC T5 ($T_{\text{amb}} = 80 \, ^\circ \text{C}$)
        DIP T6 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$)
        DIP T5 ($T_{\text{amb}} = 80 \, ^\circ \text{C}$)

**Type N Certification**

**N7**  Ex n IIC T4 ($T_{\text{amb}} = 70 \, ^\circ \text{C}$)
        Ex n IIC T5 ($T_{\text{amb}} = 40 \, ^\circ \text{C}$)

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Pressure-120
FIGURE 3. Model 3051CD0 Pressure Transmitter Exploded View.
OPTION B2/B8: TRADITIONAL FLANGE PANEL MOUNTING BRACKET

OPTION B1/B7/BA: TRADITIONAL FLANGE 2-IN. PIPE MOUNTING BRACKET

NOTE
Dimensions are in inches (millimeters).

FIGURE 4. Traditional Flange Mounting Configurations with Optional Brackets for 2-inch Pipe or Panel Mounting.

FIGURE 5. Traditional Flange Dimensional Drawing.
# ORDERING INFORMATION

**TABLE 2. Model 3051CD0 Pressure Transmitter Ordering Information.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Transmitter Type (Select One)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3051CD</td>
<td>Differential Pressure Transmitter</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Pressure Range/Min. Span</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>–3 to 3.0 inH2O/0.1 inH2O (~750 to 750 Pa/25 Pa)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4–20 mA with Digital Signal Based on HART Protocol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Process Flange Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Alternate Flange—Traditional Flange (Option H2) required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Isolating Diaphragm</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>316L SST</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>O-ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Glass-filled TFE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Fill Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Silicone</td>
</tr>
<tr>
<td>2</td>
<td>Inert fill (Halocarbon)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Housing Material</th>
<th>Conduit Entry Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Polyurethane-covered Aluminum</td>
<td>½–14 NPT</td>
</tr>
<tr>
<td>B</td>
<td>Polyurethane-covered Aluminum</td>
<td>M20 x 1.5 (CM20)</td>
</tr>
<tr>
<td>C</td>
<td>Polyurethane-covered Aluminum</td>
<td>PG 13.5</td>
</tr>
<tr>
<td>D</td>
<td>Polyurethane-covered Aluminum</td>
<td>G½</td>
</tr>
<tr>
<td>J</td>
<td>SST</td>
<td>½–14 NPT</td>
</tr>
<tr>
<td>K</td>
<td>SST</td>
<td>M20 x 1.5 (CM20)</td>
</tr>
<tr>
<td>L</td>
<td>SST</td>
<td>PG 13.5</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2(1)</td>
<td>ALTERNATE FLANGE</td>
</tr>
<tr>
<td></td>
<td>Traditional Flange, 316 SST, SST Drain/Vent, SST Flange Adapter</td>
</tr>
<tr>
<td>B1</td>
<td>MOUNTING BRACKETS</td>
</tr>
<tr>
<td></td>
<td>Traditional Flange Bracket for 2-in. Pipe Mounting, CS Bolts</td>
</tr>
<tr>
<td>B2</td>
<td>Traditional Flange Bracket for Panel Mounting, CS Bolts</td>
</tr>
<tr>
<td>B3</td>
<td>Traditional Flange Flat Bracket for 2-in. Pipe Mounting, CS Bolts</td>
</tr>
<tr>
<td>B7</td>
<td>B1 Bracket with Series 300 SST Bolts</td>
</tr>
<tr>
<td>B8</td>
<td>B2 Bracket with Series 300 SST Bolts</td>
</tr>
<tr>
<td>B9</td>
<td>B3 Bracket with Series 300 SST Bolts</td>
</tr>
<tr>
<td>BA</td>
<td>SST B1 Bracket with Series 300 SST Bolts</td>
</tr>
<tr>
<td>BC</td>
<td>SST B3 Bracket with Series 300 SST Bolts</td>
</tr>
<tr>
<td>S4</td>
<td>INTEGRAL MOUNT PRIMARY ELEMENTS</td>
</tr>
<tr>
<td></td>
<td>Factory Assembly to Rosemount Primary Element (Diamond II+ Annubar)</td>
</tr>
</tbody>
</table>

**HAZARDOUS LOCATIONS CERTIFICATIONS**

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
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<tbody>
<tr>
<td>E5</td>
<td>FM Explosion-Proof Approval</td>
</tr>
<tr>
<td>I5</td>
<td>FM Non- incendive and Intrinsic Safety Approval</td>
</tr>
<tr>
<td>K5</td>
<td>FM Explosion-Proof and Intrinsic Safety Approval</td>
</tr>
<tr>
<td>C6</td>
<td>CSA Explosion-Proof and Intrinsic Safety Approval (Requires 42.4 V dc max. power supply)</td>
</tr>
<tr>
<td>K6</td>
<td>Combination of CSA and CENELEC Explosion-Proof and Intrinsic Safety Approval</td>
</tr>
<tr>
<td>I1</td>
<td>BASEEFA/CENELEC Intrinsic Safety Certification</td>
</tr>
<tr>
<td>N1</td>
<td>BASEEEFA Type N Certification</td>
</tr>
<tr>
<td>E8</td>
<td>CESI/CENELEC Flameproof Certification</td>
</tr>
<tr>
<td>E4</td>
<td>JIS Flameproof Certification</td>
</tr>
<tr>
<td>E7</td>
<td>SAA Flameproof Certification</td>
</tr>
<tr>
<td>I7</td>
<td>SAA Intrinsic Safety Certification</td>
</tr>
<tr>
<td>N7</td>
<td>SAA Type N Certification</td>
</tr>
</tbody>
</table>

**BOLTING**

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L4(1)</td>
<td>Austenitic 316 SST Bolts</td>
</tr>
</tbody>
</table>

**METERS**

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>LCD Meter for Aluminum Housing (Housing Codes A, B, C, and D only)</td>
</tr>
<tr>
<td>M6</td>
<td>LCD Meter for SST Housing (Housing Codes J, K, and L only)</td>
</tr>
</tbody>
</table>

(1) Required option for Model 3051CD0 transmitter.
<table>
<thead>
<tr>
<th>Code</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4</td>
<td>Calibration Data Sheet</td>
</tr>
<tr>
<td>Q8</td>
<td>Material Traceability Certification per EN 10204 3.1B</td>
</tr>
<tr>
<td>J1(^{(1)})</td>
<td>Local Zero Adjustment Only</td>
</tr>
<tr>
<td>J3(^{(1)})</td>
<td>No Local Zero or Span Adjustment</td>
</tr>
<tr>
<td>T1(^{(2)})</td>
<td>Transient Protection Terminal Block</td>
</tr>
<tr>
<td>C1</td>
<td>Custom Software Configuration (Completed CDS 00806-0100-4001 required with order)</td>
</tr>
<tr>
<td>C4(^{(3)})</td>
<td>Analog Output Levels Compliant with NAMUR Recommendation NE43, 18-January-1994</td>
</tr>
<tr>
<td>P2</td>
<td>Cleaning for Special Service</td>
</tr>
<tr>
<td>P3</td>
<td>Cleaning for &lt;1 PPM Chlorine/Fluorine</td>
</tr>
<tr>
<td>D3</td>
<td>(\frac{1}{4})–18 NPT Process Connections (No flange adapters)</td>
</tr>
<tr>
<td>D8</td>
<td>Ceramic Ball Drain/Vents</td>
</tr>
<tr>
<td>V5</td>
<td>External Ground Screw Assembly</td>
</tr>
</tbody>
</table>

**TABLE 2. (continued).**

Typical Model Number: 3051CD 0 A 0 2 A 1 A H2 L4 B4

1. Local zero and span adjustments are standard unless Option Codes J1 or J3 is specified.
2. Not available with hazardous locations certification Option Code I1 or K6.
3. NAMUR-Compliant operation is pre-set at the factory and cannot be changed to standard operation in the field.
ORDERING INFORMATION (CONTINUED)

Standard Configuration
Unless otherwise specified, transmitter is shipped as follows:

- Engineering units: inH₂O
- 4 mA (1 V dc): 0 (engineering units above)
- 20 mA (5 V dc): Upper range limit
- Output: Linear
- Flange type: Traditional
- Flange material: Stainless Steel (316 SST)
- O-ring material: Glass-filled TFE
- Drain/vent: Stainless Steel (316 SST)
- Integral meter: Installed or none
- Alarm: Upscale
- Software tag: (Blank)

Customer may specify the above items at no charge.

Custom Configuration (Option Code C1)
If Option Code C1 is ordered, the customer may specify the following data in addition to the standard configuration parameters. Refer to Configuration Data Sheet CDS 00806-0100-4001.

- Descriptor: 16 alphanumeric characters.
- Message: 32 alphanumeric characters.
- Date: Day, month, year.
- Damping: Seconds.
- Custom Meter Output
- Burst Mode of HART
- Multidrop Communication Rosemount Smart Family® Instruments

Tagging
Three customer tagging options are available:

1. Standard SST tag is wired to the transmitter. Tag character height is 0.125 in. (3.18 mm), 85 characters maximum.
2. Tag may be permanently stamped on transmitter nameplate upon request, 65 characters maximum.
3. Tag may be stored in transmitter memory. Software tag (8 characters maximum) is left blank unless specified.

Output Information
Analog output range points must be the same unit of measure. Available units of measure:

- inH₂O mbar mmHg kPa
- inHg g/cm² psi torr
- ftH₂O kg/cm² bar atm
- mmH₂O Pa inH₂O@4°C
- mmH₂O@4°C

Related Product Data Sheets
Model 3051 Smart Pressure Transmitter Family see page Pressure-5
Diamond II+ Annubar® see page Flow-375

ROSEMOUNT SMART FAMILY® INSTRUMENTS
Rosemount SMART FAMILY instruments may be installed in pressure, temperature, level, and flow applications.

All SMART FAMILY instruments are designed to communicate using Highway Addressable Remote Transducer (HART) protocol with the hand-held HART Communicator and Fisher-Rosemount Control Systems.