

ST 3000 Smart Pressure Transmitter Series 900 Differential Pressure Models Specifications

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Introduction

In 1983, Honeywell introduced the first Smart Pressure Transmitter—the ST 3000®. In 1989, Honeywell launched the first all digital, bi-directional protocol for smart field devices. Today, its ST 3000 Series 900 Differential Pressure Transmitters continue to bring proven “smart” technology to a wide spectrum of pressure measurement applications, from furnace combustion airflow rate to hydrostatic tank gauging. The ST 3000 S900 Differential Pressure Transmitter can be used with any primary flow element to provide proven, repeatable flow measurement.

All ST 3000 transmitters can provide a 4-20 mA output, Honeywell Digitally Enhanced (DE) output, HART® output, or FOUNDATION™ Fieldbus output. When digitally integrated with Honeywell’s Process Knowledge System™, EXPERION PKS™, ST 3000 instruments provide a more accurate process variable as well as advanced diagnostics.

Honeywell’s cost-effective ST 3000 S900 transmitters lead the industry in reliability and stability:

- Stability = ±0.01% per year
- Reliability = 470 years MTBF

| Models | | |
|--------|-----------------------------|-----------------|
| STD924 | 0 to 400 inH ₂ O | 0 to 1,000 mbar |
| STD930 | 0 to 100 psi | 0 to 7 bar |
| STD974 | 0 to 3,000 psi | 0 to 210 bar |



Figure 1 - Series 900 Differential Pressure Transmitters feature proven piezoresistive sensor technology.

The devices provide comprehensive self-diagnostics to help users maintain high uptime, meet regulatory requirements, and attain high quality standards. S900 transmitters allow smart performance at analog prices. Accurate, reliable and stable, Series 900 transmitters offer greater turndown ratio than conventional transmitters

All ST 3000 transmitters can be ordered to provide one of the following output communication options.

| Communications options |
|-----------------------------------|
| 4-20 mA |
| Honeywell Digitally Enhanced (DE) |
| HART® (versions 5.x or 6.x) |
| FOUNDATION™ Fieldbus |

Description

The ST 3000 transmitter can replace any 4 to 20 mA output transmitter in use today and operates over a standard two-wire system.

The measuring means is a piezoresistive sensor, which actually contains three sensors in one. It contains a differential pressure sensor, a temperature sensor, and a static pressure sensor.

Microprocessor-based electronics provide higher span-turndown ratio, improved temperature and pressure compensation, and improved accuracy.

The transmitter's meter body and electronics housing resist shock, vibration, corrosion, and moisture. The electronics housing contains a compartment for the single-board electronics, which is isolated from an integral junction box. The single-board electronics is replaceable and interchangeable with any other ST 3000 Series 100 or Series 900 model transmitter.

Like other Honeywell transmitters, the ST 3000 features two-way communication and configuration capability between the operator and the transmitter through several Honeywell field-rated portable configuration devices, including the Smart Field Communicator (SFC) and the Multiple Communication Configurator (MC ToolKit). While both are made for in-field use, the MC Toolkit also can be ordered for use in intrinsically safe environments.

The SCT 3000 Smartline® Configuration Toolkit provides an easy way to configure instruments using a personal computer. The toolkit enables configuration of devices before shipping or installation. The SCT 3000 can operate in the offline mode to configure an unlimited number of devices. The database can then be loaded down-line during commissioning.

When digitally integrated with Honeywell's Experion® Process Knowledge System or other TDC/TPS systems, ST 3000 instruments provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies as well as providing advantages from the many other on-board advanced diagnostic features. Honeywell's high-performance ST 3000 S100 transmitters lead the industry in: Accuracy, Stability, Reliability, Rangeability and Warranty.

Features

- Choice of linear or square root output conformity is a simple configuration selection.
- Direct digital integration with Experion PKS and other control systems provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies.
- Unique piezoresistive sensor automatically compensates input for temperature and static pressure. Added "smart" features include configuring lower and upper range values, simulating accurate analog output, and selecting preprogrammed engineering units for display.
- Smart transmitter capabilities with local or remote interfacing means significant manpower efficiency improvements in commissioning, start-up, and ongoing maintenance functions.

Advanced Diagnostics

ST 3000 is now available for both HART® 6 and Foundation™ Fieldbus with advanced diagnostics that minimize unplanned plant outages, minimize maintenance costs and by providing the industry's most reliable transmitter.

- Provide advanced warning of possible failure events and avoid costly shutdowns.
- Three levels of failure reporting
- Comprehensive list of on-board diagnostics (Ref. ST 3000 User manual with HART® 6, 34-ST-25-17 Rev: June 09 and Foundation™ Fieldbus option manual 34-ST-25-15 Rev: June 09)

Operating Conditions – All Models

| Parameter | Reference Condition (at zero static) | | Rated Condition | | Operative Limits | | Transportation and Storage | |
|---|---|------|-------------------------|-------------------------|--|------------|----------------------------|------------|
| | °C | °F | °C | °F | °C | °F | °C | °F |
| Ambient Temperature | 25±1 | 77±2 | -40 to 85 | -40 to 185 | -40 to 85 | -40 to 185 | -55 to 125 | -67 to 257 |
| Meter Body Temperature | 25±1 | 77±2 | -40 to 110 ¹ | -40 to 230 ¹ | -40 to 125 | -40 to 257 | -55 to 125 | -67 to 257 |
| Humidity %RH | 10 to 55 | | 0 to 100 | | 0 to 100 | | 0 to 100 | |
| Vacuum Region – Minimum Pressure All Models Except STD110 mmHg absolute inH ₂ O absolute | Atmospheric Atmospheric | | 25 13 | | 2 (short term ²) 1 (short term ²) | | | |
| Supply Voltage, Current, and Load Resistance | Voltage Range: 10.8 to 42.4 Vdc at terminals Current Range: 3.0 to 21.8 mA Load Resistance: 0 to 1,440 ohms (as shown in Figure 2) | | | | | | | |
| Maximum Allowable Working Pressure (MAWP) ⁴ <small>(ST 3000 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)</small> | STD924, STD930, STD974 = 4,500psi, 310 bar ³ Static Pressure Limit = Maximum Allowable Working Pressure (MAWP) = Overpressure Limit | | | | | | | |

¹ For CTFE fill fluid, the rating is -15 to 110°C (5 to 230°F)

² Short term equals 2 hours at 70°C (158°F)

³ MAWP applies for temperature range -40 to 125°C. However, Static Pressure Limit is de-rated to 3,000 psi from -26°C to -40°C. Use of graphite o-rings de-rates transmitter to 3,625 psi. Use of adaptor with graphite o-rings de-rates transmitter to 3,000 psi.

⁴ Consult factory for MAWP of ST 3000 transmitters with CSA approval.

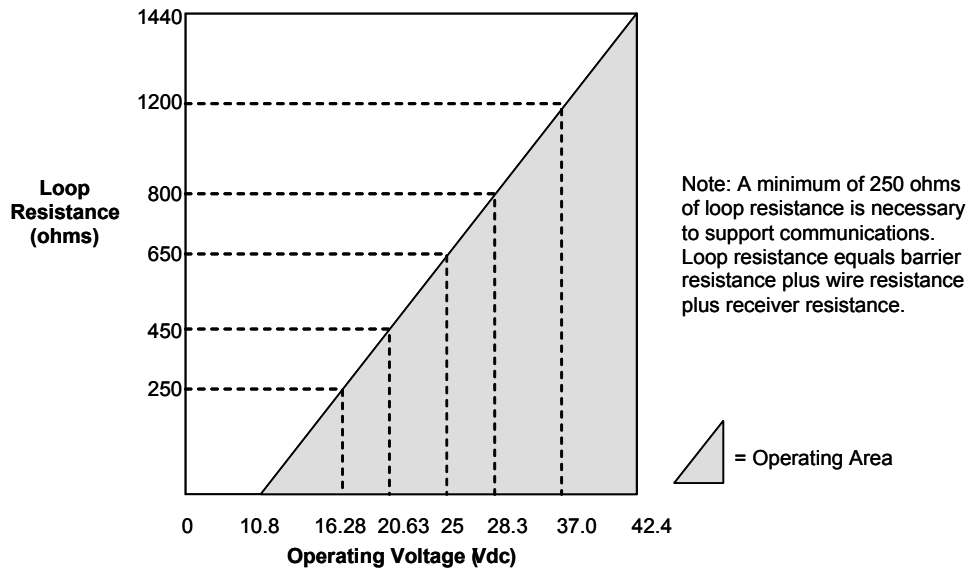


Figure 2 - Supply voltage and loop resistance chart

Performance Under Rated Conditions* - Model STD924 (0 to 400 inH₂O/1,000 mbar)

| Parameter | Description |
|--|---|
| Upper Range Limit inH ₂ O mbar | 400 (39.2°F/4°C is standard reference temperature for inH ₂ O range.) 1,000 |
| Minimum Span inH ₂ O mbar | 4 Note: Recommended minimum span in square root mode is 20 inH ₂ O (50 mbar). 10 |
| Turndown Ratio | 100 to 1 |
| Zero Elevation and Suppression | -5 to ±100% URL. |
| Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • Accuracy includes residual error after averaging successive readings. • For FOUNDATION™ Fieldbus use Digital Mode specifications. • For HART® use Analog Mode specifications. | In Analog Mode: ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH ₂ O), accuracy equals: $\pm \left[0.025 + 0.05 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.025 + 0.05 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ In Digital Mode: ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH ₂ O), accuracy equals: $\pm \left[0.125 + 0.05 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.05 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Zero Temperature Effect per 28°C (50°F) | In Analog Mode: ±0.1625% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ In Digital Mode: ±0.15% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \text{ or } \pm 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \text{ in } \% \text{ of span}$ |
| Combined Zero and Span Temperature Effect per 28°C (50°F) | In Analog Mode: ±0.25% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.10 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.10 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ In Digital Mode: ±0.225% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.075 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.075 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Zero Static Pressure Effect per 1,000 psi (70 bar) | ±0.1625% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Combined Zero and Span Static Pressure Effect per 1,000 psi (70 bar) | ±0.30% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.15 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Stability | ±0.015% of URL per year |

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316 Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STD930 (0 to 100 psi/7,000 mbar)

| Parameter | Description |
|--|--|
| Upper Range Limit psi bar | 100 7 |
| Minimum Span psi bar | 1 0.07 |
| Turndown Ratio | 100 to 1 |
| Zero Elevation and Suppression | No limit except minimum span within $\pm 100\%$ URL. |
| Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability). | <p>In Analog Mode: $\pm 0.075\%$ of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH₂O), accuracy equals:</p> $\pm \left[0.025 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.025 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ <p>In Digital Mode: $\pm 0.0625\%$ of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals:</p> $\pm \left[0.0125 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Zero Temperature Effect per 28°C (50°F) | <p>In Analog Mode: $\pm 0.1625\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm \left[0.0125 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ <p>In Digital Mode: $\pm 0.15\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ of span}$ |
| Combined Zero and Span Temperature Effect per 28°C (50°F) | <p>In Analog Mode: $\pm 0.25\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm \left[0.10 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.10 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ <p>In Digital Mode: $\pm 0.225\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm \left[0.075 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.075 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Zero Static Pressure Effect per 1000 psi (70 bar) | <p>$\pm 0.1625\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm \left[0.0125 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Combined Zero and Span Static Pressure Effect per 1000 psi (70 bar) | <p>$\pm 0.30\%$ of span. For URV below reference point (30 psi), effect equals:</p> $\pm \left[0.15 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$ |
| Stability | $\pm 0.04\%$ of URL per year |

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STD974 (0 to 3,000 psi/210 bar)

| Parameter | Description |
|--|---|
| Upper Range Limit psi bar | 3,000 210 |
| Minimum Span psi bar | 30 2.1 |
| Turndown Ratio | 100 to 1 |
| Zero Elevation and Suppression | -0.6 and +100% URL. |
| Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> Accuracy includes residual error after averaging successive readings. For FOUNDATION™ Fieldbus use Digital Mode specifications. For HART® use Analog Mode specifications. | In Analog Mode: ±0.2% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (300 psi), accuracy equals: $\pm \left[0.05 + 0.15 \left(\frac{300 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.05 + 0.15 \left(\frac{21 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ In Digital Mode: ±0.175% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (300 psi), accuracy equals: $\pm \left[0.025 + 0.15 \left(\frac{300 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.025 + 0.15 \left(\frac{21 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ |
| Zero Temperature Effect per 28°C (50°F) | In Analog Mode: ±0.2125% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ In Digital Mode: ±0.20% of span. For URV below reference point (500 psi), effect equals: $\pm 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in \% of span}$ |
| Combined Zero and Span Temperature Effect per 28°C (50°F) | In Analog Mode: ±0.325% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ In Digital Mode: ±0.30% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.10 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.10 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ |
| Zero Static Pressure Effect per 1,000 psi (70 bar) | ±0.1625% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right]$ |
| Combined Zero and Span Static Pressure Effect per 1,000 psi (70 bar) | ±0.30% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.15 + 0.15 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$ |
| Stability | ±0.03% of URL per year |

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions - General for all Models

| Parameter | Description |
|--|---|
| Output (two-wire) | Analog 4 to 20 mA or DE digital communications mode. Options available for FOUNDATION™ Fieldbus and HART® protocol. |
| Supply Voltage Effect | 0.005% span per volt. |
| Damping Time Constant | Adjustable from 0 to 32 seconds digital damping. |
| CE Conformity (Europe) | 89/336/EEC, Electromagnetic Compatibility (EMC) Directive. |
| NAMUR NE 43 Compliance Option | Transmitter failure information is generated when the measuring information is invalid or no longer present. Failure information is transmitted as a current signal but outside the normal 4-20 mA measurement signal level. Transmitter failure values are: ≤ 3.6 mA and ≥ 21.0 mA. The normal signal range is ≥ 3.8 mA and ≤ 20.5 mA. |
| SIL 2/3 Compliance | SIL certified to IEC 61508 for non-redundant use in SIL 2 related Safety Systems (single use) and for redundant (multiple) use in SIL 3 Safety Systems through TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 1998; IEC 61508-2: 2000; IEC61508-3: 1998. |
| Lightning Protection Option (Code "LP") | Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: 10/20 μ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) (rise/decay) 10/1,000 μ sec. 250 Amps (1,000 strikes) 500 Amps (400 strikes) |

Physical and Approval Bodies

| Parameter | Description |
|--|--|
| Barrier Diaphragms Material STD924, STD930, STD974 | 316L SS, Hastelloy® C-276 ² , Monel® 400 ³ , Tantalum, Gold plated 316LSS, Gold plated Hastelloy® C-276 ² , Gold plated Monel® 400 ³ |
| Process Head Material STD924, STD930, STD974 | 316 SS ⁴ , Carbon Steel (zinc-plated) ⁵ , Monel® 400 ⁷ , Hastelloy® C-276 ⁶ |
| Head Gaskets | Glass filled PTFE standard. Viton® and graphite optional. |
| Meter Body Bolting | Carbon Steel (Zinc plated) ⁵ standard. Options include 316 SS, NACE A286 SS bolts with NACE 304 SS nuts, and B7M. |
| Optional Adapter Flange and Bolts | Adapter Flange materials include 316 SS ⁴ , Hastelloy® C-276 ⁶ and Monel® 400 ⁷ . Options for bolting include carbon steel, 316SS ⁴ , NACE A286SS and B7M. Standard adapter flange gasket material is glass filled PTFE. Viton® and graphite optional. |
| Mounting Bracket | Carbon Steel (Zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available (standard options). |
| Fill Fluid | Silicone DC® 200 oil or CTFE (Chlorotrifluoroethylene) |
| Electronic Housing | Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosionproof). Stainless steel optional. |
| Process Connections | 1/4-inch NPT; 1/2-inch NPT with adapter. Process heads meet DIN 19,213 requirements. |
| Wiring | Accepts up to 16 AWG (1.5 mm diameter). |
| Mounting | Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 3. |
| Dimensions | See Figure 4. |
| Net Weight | Approximately 9 pounds (4.1 Kg). |

² Hastelloy® C-276 or UNS N10276³ Monel® 400 or UNS N04400⁴ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.⁵ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.⁶ Hastelloy® C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276⁷ Monel® 400 or UNS N04400. Supplied as indicated or as Grade M30C, the casting equivalent of Monel® 400

Note: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination

Certifications

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes |
|----------------------------------|--|-------------------------------|--|------------------------------|
| FM ApprovalsSM | Explosionproof: Class I, Division 1, Groups A, B, C, D locations Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G locations, Enclosure Type 4X | All | All | T5 Ta = 93°C |
| | Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations, Enclosure Type 4X | 4-20 mA / DE | Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C |
| | | 4-20 mA / | Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C |
| | Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations; Class 1, Zone 0, AEx ia Group IIC, Enclosure Type 4X / IP 66/67 | Fieldbus – Entity (Not FISCO) | Vmax = 32V Imax = 120mA Ci = 4.2nF Li = 0 Pi = 0.84W | T4 Ta = 40°C T3 Ta = 93°C |
| | | Fieldbus – Entity (Not FISCO) | Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T4 Ta = 40°C T3 Ta = 93°C |
| | | FISCO | Vmax = 17.5V Imax = 380mA Ci = 4.2nF Li = 0 Pi = 5.32W | T4 Ta = 40°C T3 Ta = 93°C |
| | Nonincendive: Class I, Division 2, Groups A, B, C, D locations, Enclosure Type 4X | 4-20 mA / DE | Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C |
| | | 4-20 mA / HART | Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C |
| | Nonincendive: Class I, Division 2, Groups A, B, C, D; Suitable for: Class II, Division 2, Groups F&G; Class III, Division 2; Class I, Zone 2, Group IIC, Enclosure Type 4X / IP 66/67 | Fieldbus – Entity (Not FNICO) | Vmax = 32V Imax = 120mA Ci = 4.2nF Li = 0 Pi = 0.84W | T4 Ta = 40°C T3 Ta = 93°C |
| | | Fieldbus – Entity (Not FNICO) | Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T4 Ta = 40°C T3 Ta = 93°C |
| | | FNICO | Vmax = 32V Ci = 4.2nF Li = 0 | T4 Ta = 40°C T3 Ta = 93°C |

*Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

FM ApprovalsSM is a service mark of FM Global

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes | |
|---|---|--|---|------------------------------|--|
| Canadian Standards Association (CSA) | Explosion Proof: Class I, Division 1, Groups B, C, D locations Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G locations, Enclosure Type 4X | All | All | T4 Ta = 93°C | |
| | Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations, Enclosure Type 4X | 4-20 mA / DE | Vmax = 42V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C | |
| | | 4-20 mA / HART | Vmax = 42V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C | |
| | | Fieldbus – Entity (Not FISCO) | Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T4 Ta = 40°C T3 Ta = 93°C | |
| | Nonincendive: Class I, Division 2, Groups A, B, C, D locations, Enclosure Type 4X | 4-20 mA / DE | Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C | |
| | | 4-20 mA / HART | Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = 93°C | |
| | | Fieldbus – Entity (Not FNICO) | Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T4 Ta = 40°C T3 Ta = 93°C | |
| | Canadian Registration Number (CRN): | All ST 3000 models except STG19L, STG99L, STG170 and STG180 have been registered in all provinces and territories in Canada and are marked CRN: 0F8914.5C. | | | |

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes |
|---|---|-------------------------|---|---|
| IECEX International Electrotechnical Commission (LCIE) | Flameproof, Zone 1: Ex d IIC, Enclosure IP 66/67 | All | All | T5 Ta = -50 to 93°C T6 Ta = -50 to 78°C |
| | Intrinsically Safe, Zone 0/1: Ex ia IIC, Enclosure IP 66/67 | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |

Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes |
|--------------------------------|---|-------------------------|---|---|
| SAEx (South Africa) | Flameproof, Zone 1: Ex d IIC, Enclosure IP 66/67 | All | All | T5 Ta = -50 to 93°C T6 Ta = -50 to 78°C |
| | Intrinsically Safe, Zone 0/1: Ex ia IIC, Enclosure IP 66/67 | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |
| | Multiple Marking: Flameproof, Zone 1: Ex d IIC, Enclosure IP 66/67 Intrinsically Safe, Zone 0/1: Ex ia IIC, Enclosure IP 66/67 NOTE: The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types. | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes |
|------------------------|--|-------------------------------|---|---|
| ATEX (LCIE) | Flameproof, Zone 0: ⊕ II 1 D, Ex tD Enclosure IP 66/67 | All | All | A20 IP6X T95°C Ta = 93°C or T80°C Ta = 78°C |
| | Flameproof, Zone 1: ⊕ II 2 GD, Ex d IIC, Ex tD Enclosure IP 66/67 | All | All | T5 Ta = -50 to +93°C T6 Ta = -50 to +78°C, A21 IP6X T95°C Ta = 93°C or T80°C Ta = 78°C |
| | Intrinsically Safe, Zone 0/1: ⊕ II 1 G, Ex ia IIC, Enclosure IP 66/67 | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |
| | Non-Sparking, Zone 2: ⊕ II 3 G, Ex nA IIC (Honeywell), Enclosure IP 66/67 | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FNICO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |
| | Multiple Marking: Flameproof, Zone 1: ⊕ II 2 G, Ex d IIC Intrinsically Safe, Zone 0/1: ⊕ II 1 G, Ex ia IIC Non-Sparking, Zone 2: ⊕ II 3 G, Ex nA IIC NOTE: The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types. | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO/FNICO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |
| | | | | |

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

| | Type of Protection | Comm. Option | Field Parameters | Temp. Codes |
|---|--|-------------------------|---|---|
| INMETRO (CERTUSP) Brazil | Flameproof, Zone 1: BR-Ex d IIC Enclosure IP 66/67 | All | All | T5 Ta = -50 to 93°C T6 Ta = -50 to 78°C |
| | Intrinsically Safe, Zone 0/1: BR-Ex ia IIC Enclosure IP 66/67 | 4-20 mA / DE | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 85°C T6 Ta = -50 to 70°C |
| | | 4-20 mA / HART | Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi = 1.2W | T4 Ta = -50 to 93°C T5 Ta = -50 to 63°C T6 Ta = -50 to 48°C |
| | | Fieldbus (Not FISCO) | Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi = 1.2W | T3 Ta = -50 to 93°C T4 Ta = -50 to 40°C |

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

| | |
|--|---|
| ST 3000 Pressure Transmitter Marine Certificate (MT Option) | This certificate defines the certifications covered for the ST 3000 Pressure Transmitter family of products, including the SMV 3000 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications. For ST 3000 Smart Pressure Transmitter and SMV 3000 Smart Multivariable Transmitter |
| | American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA |
| | Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV |
| | Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476 |
| | Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001 |
| | Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2) |

| | |
|--|--|
| <p>European Pressure Equipment Directive (PED) (97/23/EC)</p> | <p>The ST 3000 Smart Pressure Transmitters are in conformity with the essential requirements of the Pressure Equipment Directive.</p> <p>Honeywell ST 3000 Smart Pressure Transmitters are designed and manufactured in accordance with the applicable portions of Annex I, Essential Safety Requirements, and sound engineering practices. These transmitters have no pressurized internal volume, or have a pressurized internal volume rated less than 200 bar (2,900 psig), and/or have a maximum volume of less than 0.1 liter (Article 3, 1.1.(a) first indent, Group 1 fluids). Therefore, these transmitters are not subject to the essential requirements of the directive 97/23/EC (PED, Annex I) and shall not have the CE mark applied.</p> <p>For transmitters rated > 200 bar (2,900 psig) < 1,000 bar (14,500 psig) Honeywell maintains a technical file in accordance with Annex III, Module A, (internal production control) when the CE mark is required. Transmitter Attachments: Diaphragm Seals, Process Flanges and Manifolds comply with Sound Engineering Practice.</p> <p>NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination.</p> <p>A formal statement from TÜV Industry Service Group of TÜV America, Inc., a division of TÜV Süddeutschland, a Notified Body regarding the Pressure Equipment Directive, can be found at www.honeywell.com. A hard copy may be obtained by contacting a Honeywell representative.</p> |
| <p>CE Mark</p> | <p><i>Electro Magnetic Compatibility (EMC) (2004/108/EC)</i> All Models: EN 50081-1: 1992; EN 50082-2:1995; EN 61326-1:1997 + A1, A2, and A3 – Industrial Locations</p> |
| <p>Dual Seal Certification</p> | <p>Dual Seal Certification based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.01 requirements without the use of additional seal protection elements.</p> |
| <p>Recommended Frequency of Calibration</p> | <p>Honeywell recommends verifying the calibration of these devices once every four years.</p> |
| <p>Approved Manufacturing Locations</p> | <p>Honeywell Process Solutions - York, PA USA Honeywell (Tianjin) Limited – Tianjin, P.R. China Honeywell Automation India Ltd. – Pune 411013 India</p> |

Foundation™ Fieldbus is a trademark of the Fieldbus Foundation.

HART® is a registered trademark of HART Communications Foundation.

Hastelloy® C-276 is a registered trademark of Haynes International.

Monel® 400 is a registered trademark of Special Metals Corporation.

ST 3000® and Experion® are registered trademarks of Honeywell International Inc.

Viton® is a registered trademark of DuPont

Teflon® is a registered trademark of DuPont.

DC® 200 is a registered trademark of Dow Corning.

FM ApprovalsSM is a service mark of FM Global

Mounting

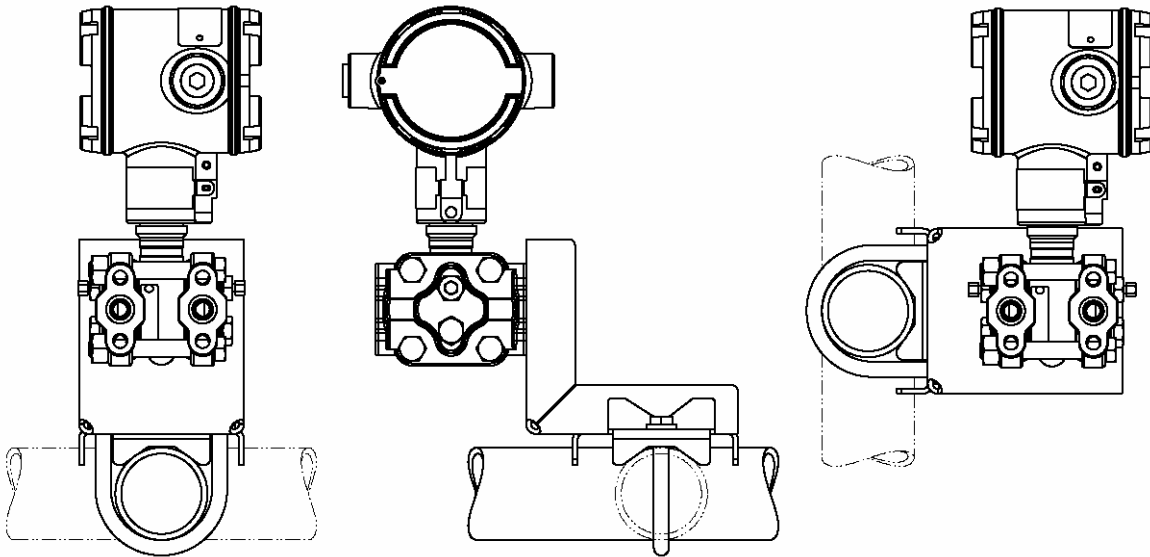


Figure 3 – Examples of typical mounting positions for Models STD924, STD930 and STD974

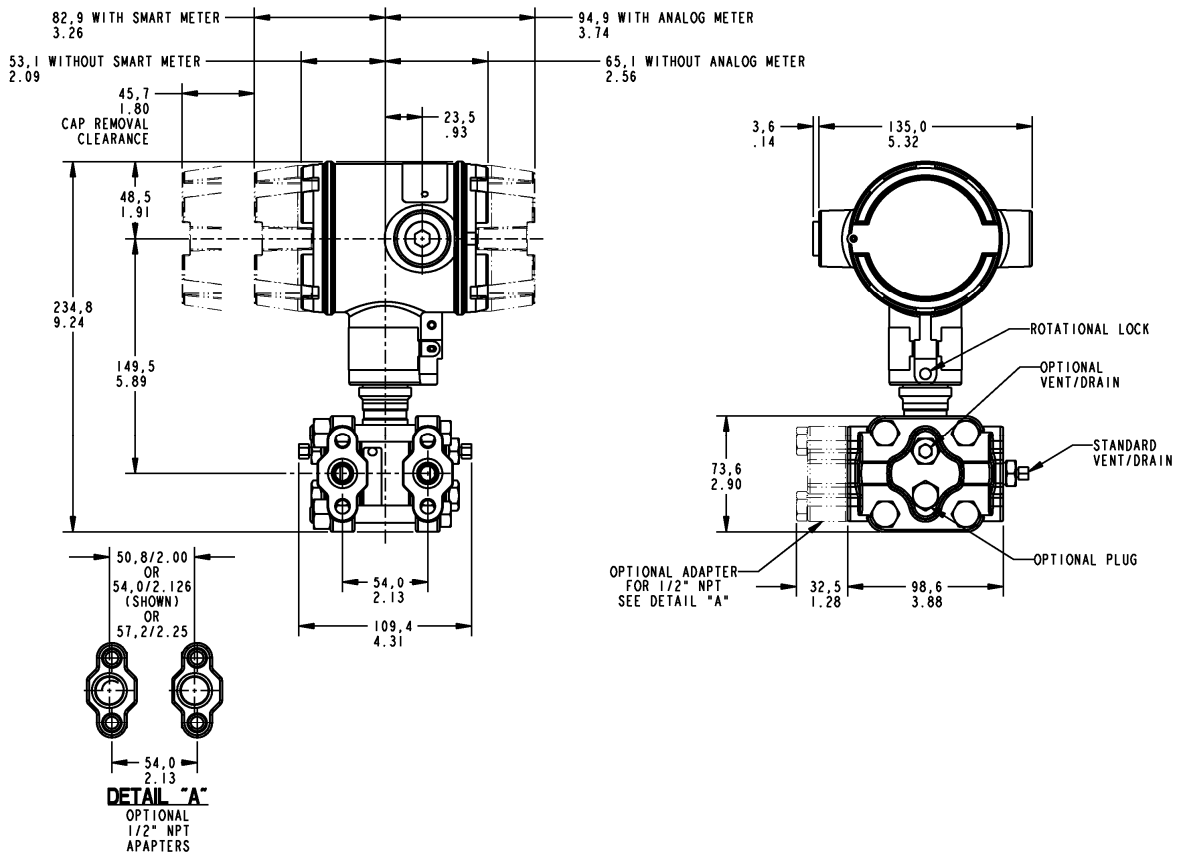


Figure 4 – Typical mounting dimensions of STD924, STD930 and STD974 for reference

Options

- **Mounting Bracket (Options MB, MX, SB, SX, FB)**

The angle mounting bracket is available in either zinc-plated carbon steel or stainless steel and is suitable for horizontal or vertical mounting on a two inch (50 millimeter) pipe, as well as wall mounting. An optional flat mounting bracket is also available in carbon steel for two inch (50 millimeter) pipe mounting.
- **Indicating Meter (Options ME and SM)**

Two integral meter options are available. An analog meter (option ME) is available with a 0 to 100% linear scale. The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display pressure in pre-selected engineering units.
- **Lightning Protection (Option LP)**

A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.
- **HART® Protocol Compatibility (Options HC and H6)**

Optional electronics modules for the ST 3000 that provides HART protocol compatibility in either the HART 5.x or 6.x formats. Transmitters with a HART option are compatible with any HART enabled system that provides either 5.x or 6.x format support.
- **FOUNDATION Fieldbus (Option FF)**

Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.
- **SIL2/SIL3 Certification (Option SL)**

This ST 3000 product is available for use with safety systems. With the SL option, we are fully certified to SIL 2 capability for single transmitters and SIL 3 capability for multiple transmitter use through TÜV Nord Sys Tec GmbH & Co. KG. We are in compliance with the following SIL standards:

 - IEC 61508-1: 1998;
 - IEC 61508-2: 2000;
 - IEC 61508-3: 1998.
- **NAMUR NE43 Compliance (Option NE)**

This option provides software that meets the NAMUR NE43 requirements for failsafe software. Transmitter failure information is generated when the measuring information is no longer valid.

Transmitter failure values are ≤ 3.6 mA and ≥ 21.0 mA. The normal ST 3000 ranges are ≤ 3.8 mA and ≥ 20.8 mA.
- **Indicator Configuration (Option CI)**

Provides custom configuration of Smart Meters
- **Stainless Steel Tagging (Option TG)**

Up to 30 characters can be added on the stainless steel nameplate mounted on the transmitter's electronics housing at no extra cost. A stainless steel wired on tag with additional data of up to 4 lines of 28 characters is also available. The number of characters for tagging includes spaces.
- **Transmitter Configuration (Options TC and FC)**

With Option TC, the factory can configure the analog, DE or HART® transmitter's linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

With Option FC, the Device ID, Transmitter Tag, Unit Level Node Address, Output Mode and Damping Time Constants can be specified.
- **Custom Calibration and ID in Memory (Option CC)**

The factory can calibrate any range within the scope of the transmitter's range and enter an ID tag of up to eight characters in the transmitter's memory.

Ordering information

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below. Or, visit Honeywell on the World Wide Web at: <http://www.honeywell.com>.

ASIA PACIFIC

Control Products

Asia Pacific Headquarters
Phone: +(65) 6355-2828
Fax: +(65) 6445-3033

Asia Pacific Global Technical Support

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Fax: +65 6445-3033

Process Instruments

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Honeywell Limited
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FAX: +(61) 7-3840 6481
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Toll Free Fax:
1300-36-04-70

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Fax: +(64-9) 623-5060
Toll Free (0800) 202-088

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Singapore

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ZAO "Honeywell"
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FAX: +90 216 575 66 35

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Fax: +380-44-201-44-75

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Kuwait

Honeywell Kuwait KSC
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Fax: +965 242 8315
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Mediterranean & African Distributors

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South Africa (Republic of) and sub saharan

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FAX +27 118051504

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Honeywell CA
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Model Selection Guides are subject to change and are inserted into the specifications as guidance only. Prior to specifying or ordering a model check for the latest revision Model Selection Guides which are published at: <http://hpsweb.honeywell.com/Cultures/en-US/Products/Instrumentation/ProductModelSelectionGuides/default.htm>

Model Selection Guide



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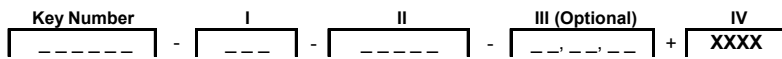
ST 3000 Smart Transmitter Differential Pressure (DP) Series 900

Model Selection Guide



Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each table, I and II, using the column below the proper arrow.
- Select as many Table III options as desired (if no options or approvals are desired, specify 9X).
- A (●) denotes unrestricted availability. A letter denotes restricted availability.
- Restrictions follow Table IV.



KEY NUMBER

| Span | Selection | Availability |
|--|-----------|--------------|
| 0-10" to 0-400" H₂O/0-25 to 0-1,000 mbar Body Rating: 4,500 psi (310 bar) | STD924 | ↓ |
| 0-5 to 0-100 psi/0-0.34 to 0-7 bar Body Rating: 4,500 psi (310 bar) | STD930 | ↓ |
| 0-100 to 0-3,000 psi/0-7 to 0-210 bar Body Rating: 4,500 psi (310 bar) | STD974 | ↓ |

Important Note: Base STD models no longer include a default communications option. All units now require the selection of a communication option from Table III (AN, DE, HC, H6 or FF).

TABLE I - METER BODY

| | Process Wetted Heads | Vent/Drain Valves and Plugs ² | Barrier Diaphragms | Selection | | | |
|-----------------------------------|--|---|---|-----------|----|----|----|
| Materials of Construction | Carbon Steel ¹ | 316 SS | 316L SS | A __ | ● | ● | ● |
| | Carbon Steel ¹ | 316 SS | Hastelloy [®] C-276 ³ | B __ | ● | ● | ● |
| | Carbon Steel ¹ | 316 SS | Monel 400 ^{®4} | C __ | 19 | 19 | 19 |
| | Carbon Steel ¹ | 316 SS | Tantalum | D __ | ● | ● | ● |
| | 316 SS ⁵ | 316 SS | 316L SS | E __ | ● | ● | ● |
| | 316 SS ⁵ | 316 SS | Hastelloy [®] C-276 ³ | F __ | ● | ● | ● |
| | 316 SS ⁵ | 316 SS | Monel 400 ^{®4} | G __ | 19 | 19 | 19 |
| | 316 SS ⁵ | 316 SS | Tantalum | H __ | ● | ● | ● |
| | Hastelloy [®] C ^{3,6} | Hastelloy [®] C-276 ³ | Hastelloy [®] C-276 ³ | J __ | ● | ● | ● |
| | Hastelloy [®] C ^{3,6} | Hastelloy [®] C-276 ³ | Tantalum | K __ | ● | ● | ● |
| Monel 400 ^{®4,7} | Monel 400 ^{®9} | Monel 400 ^{®4} | L __ | 19 | 19 | 19 | |
| Fill Fluid | DC [®] 200 Silicone | | | - 1 - | ● | ● | ● |
| | CTFE | | | - 2 - | ● | ● | ● |
| Process Head Configuration | 1/4" NPT | | | -- A | ● | ● | ● |
| | 1/2" NPT with Adapter (on 1/4" NPT Head) | | | -- H | t | t | t |

TABLE II

| | | | | |
|---------------------|-------|---|---|---|
| No Selection | 00000 | ● | ● | ● |
|---------------------|-------|---|---|---|

¹ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.
² Vent/Drains are sealed with Teflon[®] or PTFE.
³ Hastelloy[®] C-276 or UNS N10276
⁴ Monel 400[®] or UNS N04400
⁵ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.
⁶ Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy[®] C-276
⁷ Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400[®]
⁹ Monel 400[®] or UNS N04400 or UNS N04405

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| TABLE III - OPTIONS | Selection | Availability | | |
|--|-----------|--------------|----|----|
| | | 24 | 30 | 74 |
| Communication Options (Must choose a communications option) | | | | |
| Analog only (can be configured using appropriate Honeywell DE tool) | AN | • | • | • |
| DE Protocol communications | DE | • | • | • |
| HART [®] 5.x Protocol Compatible Electronics | HC | • | • | • |
| HART [®] 6.x Protocol Compatible Electronics | H6 | • | • | • |
| FOUNDATION [™] Fieldbus Communications | FF | r | r | r |
| Indicating Meter Options | | | | |
| Analog Meter (0-100 Even 0-10 Square Root) | ME | • | • | • |
| Smart Meter | SM | • | • | • |
| Custom Configuration of Smart Meter | CI | e | e | e |
| Local Zero | LZ | x | x | x |
| Local Zero and Span | ZS | m | m | m |
| Transmitter Housing & Electronics Options | | | | |
| NAMUR Failsafe Software | NE | 15 | 15 | 15 |
| SIL 2 - TÜV Certified transmitter (requires HC/H6 and WP options) | SL | p | p | p |
| Lightning Protection | LP | • | • | • |
| Custom Calibration and I.D. in Memory | CC | • | • | • |
| Transmitter Configuration - (non-Fieldbus) | TC | 15 | 15 | 15 |
| Transmitter Configuration - (Fieldbus) | FC | 21 | 21 | 21 |
| Write Protection (Delivered in the "enabled" position) | WP | • | • | • |
| Write Protection (Delivered in the "disabled" position) | WX | • | • | • |
| 316 SS ⁵ Electronics Housing - with M20 Conduit Connections | SH | n | n | n |
| 1/2" NPT to M20 316 SS Conduit Adapter (BASEEFA EEx d IIC) | A1 | n | n | n |
| 1/2" NPT to 3/4" NPT 316 SS Conduit Adapter | A2 | • | • | • |
| 316 SS ⁵ Housing with M20 to 1/2" NPT 316 SS Conduit Adapter (use for FM and CSA Approvals) | A3 | i | i | i |
| Stainless Steel Customer Wired-On Tag (4 lines, 28 characters per line, customer supplied information) | TG | • | • | • |
| Stainless Steel Customer Wired-On Tag (blank) | TB | • | • | • |
| Low Temperature - -50°C Ambient Limit | LT | 18 | | |
| End Cap Live Circuit Warning Label in Spanish (only with ATEX 3D) | SP | a | a | a |
| End Cap Live Circuit Warning Label in Portuguese (only with ATEX 3D) | PG | a | a | a |
| End Cap Live Circuit Warning Label in Italian (only with ATEX 3D) | TL | a | a | a |
| End Cap Live Circuit Warning Label in German (only with ATEX 3D) | GE | a | a | a |
| Meter Body Options (Seal bolt material depends on Transmitter bolt material) | | | | |
| 316 SS Bolts and 316 SS Nuts for Process Heads | SS | • | • | • |
| B7M Bolts and Nuts for Process Heads | B7 | • | • | • |
| NACE A286 SS Bolts and NACE 304 SS Nuts for Process Heads | CR | • | • | • |
| 316 SS ⁵ Adapter Flange - 1/2" NPT with CS Bolts | S2 | c | c | c |
| 316 SS ⁵ Adapter Flange - 1/2" NPT with 316 SS Bolts | S3 | c | c | c |
| 316 SS ⁵ Adapter Flange - 1/2" NPT with NACE A286 SS Bolts | S4 | c | c | c |
| 316 SS ⁵ Adapter Flange - 1/2" NPT with B7M Bolts | S5 | c | c | c |
| Hastelloy [®] C-276 ^{3,6} Adapter Flange - 1/2" NPT with CS Bolts | T2 | c | c | c |
| Hastelloy [®] C-276 ^{3,6} Adapter Flange - 1/2" NPT with 316 SS Bolts | T3 | c | c | c |
| Monel 400 ^{®4,7} Adapter Flange - 1/2" NPT with CS Bolts | V2 | c | c | c |
| Monel 400 ^{®4,7} Adapter Flange - 1/2" NPT with 316 SS Bolts | V3 | c | c | c |
| 316 SS ⁵ Blind Adapter Flange with CS Bolts | B3 | • | • | • |
| 316 SS ⁵ Blind Adapter Flange with 316 SS Bolts | B4 | • | • | • |
| 316 SS ⁵ Blind Adapter Flange with NACE A286 SS Bolts | B5 | • | • | • |
| 316 SS ⁵ Blind Adapter Flange with B7M Bolts | B6 | • | • | • |
| Side Vent/Drain (End Vent Drain is standard) | SV | • | • | • |
| 316 SS Center Vent Drain and Bushing | CV | • | • | • |
| Viton ^{®8} Process Head Gaskets (adapter gaskets ordered separately) | VT | • | • | • |
| Graphite Process Head & Adapter Flange Gaskets | GF | • | • | • |
| Viton ^{®8} Adapter Flange Gaskets | VF | 17 | 17 | 17 |

Table III continued next page

³ Hastelloy[®] C-276 or UNS N10276

⁴ Monel 400[®] or UNS N04400

⁵ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.

⁶ Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy[®] C-276

⁷ Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400[®]

⁸ Viton[®] or Fluorocarbon Elastomer

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| TABLE III - OPTIONS (continued) | Selection | Availability | | | | |
|---|-----------|--------------|----|----|---|---|
| | | 24 | 30 | 74 | | |
| Transmitter Mounting Bracket Options | | | | | | |
| Angle Mounting Bracket - Carbon Steel | MB | • | • | • | b | |
| Marine Approved Angle Mounting Bracket - Carbon Steel | MX | • | • | • | | |
| Angle Mounting Bracket - 304 SS | SB | • | • | • | | |
| Marine Approved Angle Mounting Bracket - 304 SS | SX | • | • | • | | |
| Flat Mounting Bracket (pipe mounting) - Carbon Steel | FB | • | • | • | | |
| Diaphragm Options | | | | | | |
| Gold plated diaphragm(s) on 316 SS | G1 | • | • | • | b | |
| Gold plated diaphragm(s) on Monel 400 ^{®4} or Hastelloy [®] C-276 ³ ONLY | G2 | • | • | • | | |
| Services/Certificates/Marine Type Approvals Options | | | | | | |
| User's Manual Paper Copy (Standard, HC, H6 or FF ships accordingly) | UM | • | • | • | b | |
| Clean Transmitter for Oxygen or Chlorine Service with Certificate | 0X | j | j | j | | |
| Over-Pressure Leak Test with F3392 Certificate | TP | • | • | • | | |
| Calibration Test Report and Certificate of Conformance (F3399) | F1 | • | • | • | | |
| Certificate of Conformance (F3391) | F3 | • | • | • | | |
| Certificate of Origin (F0195) | F5 | • | • | • | | |
| FMEDA Certificate (SIL 1) (FC33321) | F6 | • | • | • | | |
| SIL Certificate (SIL 2/3) (FC33337) | FE | 22 | 22 | 22 | | |
| NACE Certificate (Process-Wetted & Non-Process Wetted) (FC33339) | F7 | o | o | o | | |
| NACE Certificate (Process-Wetted) (FC33338) | FG | • | • | • | | |
| Material Traceability Certification per EN 10204 3.1 (FC33341) | FX | • | • | • | | |
| Marine Type Approvals (DNV, ABS, BV, KR & LR) (FC33340) | MT | 2 | 2 | 2 | | |
| Warranty Options | | | | | | |
| Additional Warranty - 1 year | W1 | • | • | • | | b |
| Additional Warranty - 2 years | W2 | • | • | • | | |
| Additional Warranty - 3 years | W3 | • | • | • | | |
| Additional Warranty - 4 years | W4 | • | • | • | | |

| Approval Body | Approval Type | Location or Classification | Selection | Availability | | | | |
|--------------------------------------|------------------------------|--|-----------|--------------|----|----|---|---|
| | | | | 24 | 30 | 74 | | |
| No hazardous location approvals | | | | 9X | • | • | • | b |
| FM Approvals SM | Explosion Proof | Class I, Div. 1, Groups A,B,C,D | 1C | • | • | • | | |
| | Dust Ignition Proof | Class II, III Div. 1, Groups E,F,G | | | | | | |
| | Non-Incendive | Class I, Div. 2, Groups A,B,C,D | | | | | | |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G | | | | | | |
| Canadian Standards Association (CSA) | Explosion Proof | Class I, Div. 1, Groups B,C,D | 2J | • | • | f | | |
| | Dust Ignition Proof | Class II, III, Div. 1, Groups E,F,G | | | | | | |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G | | | | | | |
| IECEX | Flameproof, Zone 1 | Ex d IIC T5 (Ta = -40 to +93°C), T6 (Ta = -40 to +78°C) | CA | • | • | • | | |
| | Intrinsically Safe, Zone 0/1 | Ex ia IIC ; T3, T4, T5, T6 See Spec for detailed temperature codes by Communications option | | | | | | |

Table III Approvals continued next page

³ Hastelloy[®] C-276 or UNS N10276

⁴ Monel 400[®] or UNS N04400

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TABLE III - OPTIONS (continued)

| Approval Body | Approval Type | Location or Classification | Selection | STD9xx | | |
|--------------------------------|---|---|-----------|--------|----|----|
| | | | | 24 | 30 | 74 |
| ATEX ¹⁰ (LCIE) | Intrinsically Safe, Zone 0 | Ex II 1 G Ex ia IIC T4 (Ta = -50°C to +93°C); T5 (Ta = -50°C to +85°C); T6 (Ta = -50°C to +70°C) Enclosure IP 66/67 | 3S | 23 | 23 | 23 |
| | Intrinsically Safe, Zone 1 | Ex II 2 G Ex ia IIC T4 (Ta = -50°C to +93°C); T5 (Ta = -50°C to +85°C); T6 (Ta = -50°C to +70°C) Enclosure IP 66/67 | | • | • | • |
| | Dust-Ignitionproof, Zone 0 | Ex II 1 D Ex tD A20 IP6X T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) Enclosure IP 66/67 | | | | |
| | Flameproof, Zone 1 | Ex II 2 GD Ex d IIC T5 (Ta = -40°C to +93°C), T6 (Ta = -40°C to +78°C) Supply 11- 42Vdc Ex tD A21 IP6X T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) Enclosure IP 66/67 | 33 | • | • | • |
| | Non-Sparking, Zone 2 | Ex II 3 G Ex nA, IIC T5 (Ta = -40°C to +93°C), T6 (Ta = -40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA (Honeywell). Enclosure IP 66/67 | 3N | • | • | • |
| | Multiple Marking ¹¹ Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking, Zone 2 | Ex II 1 GD Ex ia IIC T4 (Ta = -50°C to +93°C); T5 (Ta = -50°C to +85°C); T6 (Ta = -50°C to +70°C); Ui = 30V; Ii = 100mA Ex tD A20 IP6X T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) | 3C | • | • | • |
| | Ex II 2 GD Ex d IIC T5 (Ta = -40°C to +93°C), T6 (Ta = -40°C to +78°C) Supply 11- 42Vdc Ex tD A21 IP6X T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) | | | | | |
| | Ex II 3 GD Ex nA, IIC T5 (Ta = -40°C to +93°C), T6 (Ta = -40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA Ex tD A22 IP6X T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) (Honeywell) Enclosure IP 66/67 | | | | | |
| SAEx (South Africa) | Intrinsically Safe, Zone 0/1 | Ex ia IIC T4, T5, T6 | Z2 | • | • | • |
| | Flameproof, Zone 1 | Ex d IIC T5, T6 Enclosure IP 66/67 | ZD | • | • | • |
| | Multiple Marking ¹¹ Int. Safe, Zone 0/1, or Flameproof, Zone 1 | Ex ia IIC T4, T5, T6 Ex d IIC T5, T6 Enclosure IP 66/67 | ZA | • | • | • |
| CERTUSP INMETRO (Brazil) | Flameproof, Zone 1 | BR- Ex d IIC T5, T6 | 6D | • | • | • |
| | Intrinsically Safe, Zone 0/1 | BR- Ex ia IIC ; T4, T5, T6 (See CERTUSP certificate for detailed temperature codes by Communications option) | 6S | • | • | • |

³ Hastelloy® C-276 or UNS N10276

⁴ Monel 400® or UNS N04400

¹⁰ See ATEX installation requirements in the ST 3000 User's Manual

¹¹ The user must determine the type of protection required for installation of the equipment. The user shall then check the box [v] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.

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TABLE IV

| | | | | |
|------------------------|------|---|---|---|
| Factory Identification | XXXX | • | • | • |
|------------------------|------|---|---|---|

RESTRICTIONS

| Restriction Letter | Available Only With | | Not Available With | |
|--------------------|--|--------------------------------|--------------------|------------|
| | Table | Selection | Table | Selection |
| a | III | 33 or 3C | | |
| b | Select only one option from this group | | | |
| c | I | _ _ H | | |
| e | III | SM | | |
| f | | | I | L _ _ |
| i | III | 1C or 2J | | |
| j | I | _ 2 _ | | |
| m | | | III | ME, FF |
| n | | | III | 1C, 2J |
| o | III | CR, S4, B5 | | |
| p | III | HC or H6 <u>and</u> WP | III | FF, 00 |
| r | | | III | TC, ME, 4G |
| t | III | S2, S3, S4, S5, T2, T3, V2, V3 | | |
| x | III | FF, SM | | |
| 2 | III | MX, SX | III | FB, MB, SB |
| 15 | | | III | FF |
| 17 | III | VT | | |
| 18 | I | _ 1 _ | | |
| 19 | | | III | F7, FG |
| 21 | III | FF | | |
| 22 | III | SL | | |
| 23 | III | SH or A3 | | |

Ordering Example: STD924-A1A-00000-HC,WP,1C+XXXX

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Learn more about how Honeywell's ST 3000 Smart Pressure Transmitters can increase performance, reduce downtime and decrease configuration costs, visit our website www.honeywell.com/ps or contact your Honeywell account manager.

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