

ST 3000 Smart Pressure Transmitter Series 900 Differential Pressure Models

STD924	0 to 400 inH ₂ O	0 to 1,000 mbar
STD930	0 to 100 psi	0 to 7,000 mbar
STD974	0 to 3000 psi	0 to 210,000 mbar

Specification and Model Selection Guide

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



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.

"Honeywell transmitters operating in the digital mode using Honeywell’s Digitally Enhanced (DE) protocol make diagnostics available right at the control system’s human interface. Equally important, transmitter status information is continuously displayed to alert the operator immediately of a fault condition. Because the process variable (PV) status transmission precedes the PV value, we are guaranteed that a bad PV is not used in a control algorithm. In addition, bi-directional communication provides for remote transmitter configuration directly from the human interface, enabling management of the complete loop."

Maureen Atchison, DuPont
Site Electrical & Instrumentation Leader

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.

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.

Specifications

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								
mmHg absolute	Atmospheric		25		2 (short term ²)			
inH₂O absolute	Atmospheric		13		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 1440 ohms (as shown in Figure 2)							
Maximum Allowable Working Pressure (MAWP) ⁴	STD924, STD930, STD974 = 4500psi, 310 bar ³ Static Pressure Limit = Maximum Allowable Working Pressure (MAWP) = Overpressure Limit (ST 3000 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)							

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 3000 psi from -26 to -40°C. Use of graphite o-rings de-rates transmitter to 3625 psi. Use of Adapter with graphite o-rings de-rates transmitter to 3000 psi.

⁴ Consult factory for MAWP of ST3000 transmitters with CSA approval.

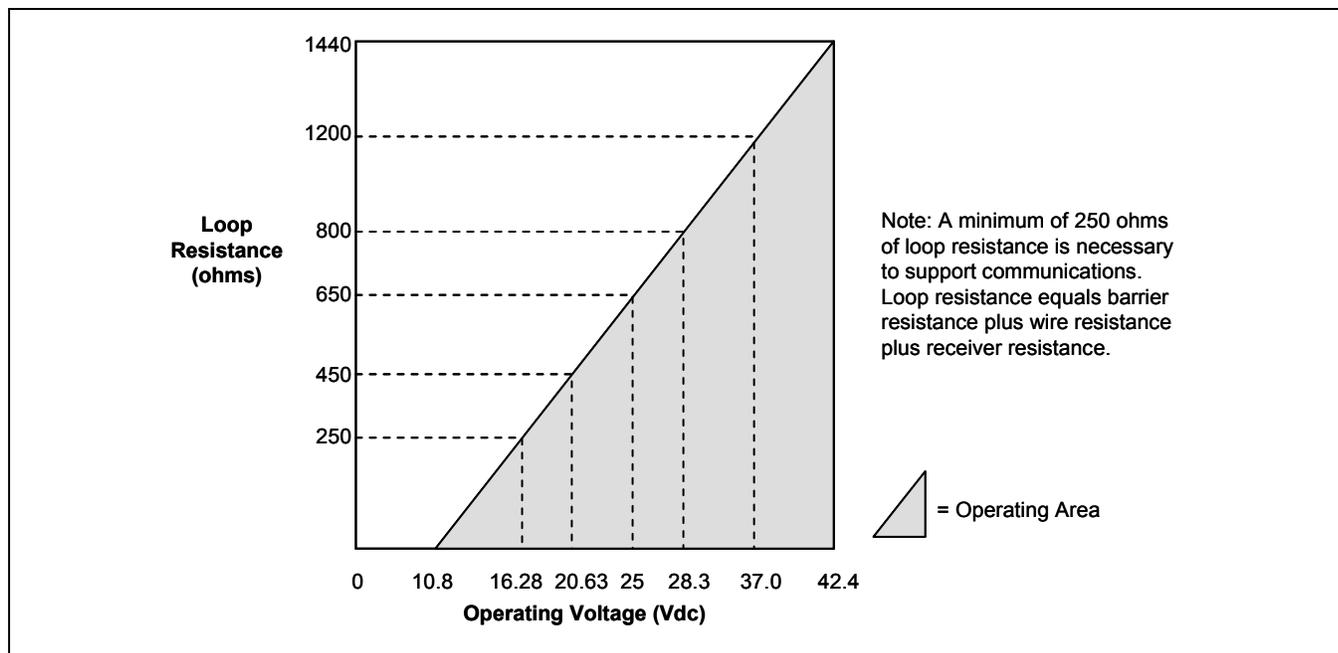


Figure 2—Supply voltage and loop resistance chart

Performance Under Rated Conditions* - Model STD924 (0 to 400 inH₂O/1000 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.) 1000
Minimum Span inH ₂ O mbar	10 Note: Recommended minimum span in square root mode is 20 inH ₂ O (50 mbar). 25
Turndown Ratio	40 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: $\pm \left[0.025 + 0.05 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.025 + 0.05 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$ 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: $\pm \left[0.125 + 0.05 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.05 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$
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: $\pm \left[0.0125 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$ In Digital Mode: ±0.15% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \text{ or } \pm 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \text{ in \% of span}$
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: $\pm \left[0.10 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.10 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$ In Digital Mode: ±0.225% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.075 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.075 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$
Zero Static Pressure Effect per 1000 psi (70 bar)	±0.1625% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$
Combined Zero and Span Static Pressure Effect per 1000 psi (70 bar)	±0.30% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm \left[0.15 + 0.15 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right) \right] \text{ in \% of span}$
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 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STD930 (0 to 100 psi/7000 mbar)

Parameter	Description
Upper Range Limit psi bar	100 7
Minimum Span psi bar	5 0.35
Turndown Ratio	20 to 1
Zero Elevation and Suppression	-5 to +100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • •	<p>In Analog Mode: ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm \left[0.025 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.025 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p> <p>In Digital Mode: ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm \left[0.0125 + 0.05 \left(\frac{20 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.05 \left(\frac{1.4 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p>
Zero Temperature Effect per 28°C (50°F)	<p>In Analog Mode: ±0.1625% of span. For URV below reference point (30 psi), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p> <p>In Digital Mode: ±0.15% of span. For URV below reference point (30 psi), effect equals: $\pm 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \text{ in \% of span}$</p>
Combined Zero and Span Temperature Effect per 28°C (50°F)	<p>In Analog Mode: ±0.25% of span. For URV below reference point (30 psi), effect equals: $\pm \left[0.10 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.10 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p> <p>In Digital Mode: ±0.225% of span. For URV below reference point (30 psi), effect equals: $\pm \left[0.075 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.075 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p>
Zero Static Pressure Effect per 1000 psi (70 bar)	<p>±0.1625% of span. For URV below reference point (30 psi), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p>
Combined Zero and Span Static Pressure Effect per 1000 psi (70 bar)	<p>±0.30% of span. For URV below reference point (30 psi), effect equals: $\pm \left[0.15 + 0.15 \left(\frac{30 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{2 \text{ bar}}{\text{span bar}} \right) \right] \text{ in \% of span}$</p>
Stability	±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 3000 psi/210 bar)

Parameter	Description
Upper Range Limit psi bar	3000 210
Minimum Span psi bar	100 7
Turndown Ratio	30 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. 	<p>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: $\pm \left[0.05 + 0.15 \left(\frac{300 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.05 + 0.15 \left(\frac{21 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p> <p>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: $\pm \left[0.025 + 0.15 \left(\frac{300 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.025 + 0.15 \left(\frac{21 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p>
Zero Temperature Effect per 28°C (50°F)	<p>In Analog Mode: ±0.2125% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p> <p>In Digital Mode: ±0.20% of span. For URV below reference point (500 psi), effect equals: $\pm 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ of span}$</p>
Combined Zero and Span Temperature Effect per 28°C (50°F)	<p>In Analog Mode: ±0.325% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p> <p>In Digital Mode: ±0.30% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.10 + 0.20 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.10 + 0.20 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p>
Zero Static Pressure Effect per 1000 psi (70 bar)	<p>±0.1625% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.0125 + 0.15 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.0125 + 0.15 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p>
Combined Zero and Span Static Pressure Effect per 1000 psi (70 bar)	<p>±0.30% of span. For URV below reference point (500 psi), effect equals: $\pm \left[0.15 + 0.15 \left(\frac{500 \text{ psi}}{\text{span psi}} \right) \right] \text{ or } \pm \left[0.15 + 0.15 \left(\frac{35 \text{ bar}}{\text{span bar}} \right) \right] \text{ in } \% \text{ of span}$</p>
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) 10/1000 μ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Barrier Diaphragms Material STD924, STD930, STD974	316L SS, Hastelloy C-276, Monel, Tantalum, Gold plated 316LSS, Gold plated Hastelloy C-276, Gold plated Monel
Process Head Material STD924, STD930, STD974	316 SS, Carbon Steel (zinc-plated), Monel, Hastelloy
Head Gaskets	Glass filled PTFE standard. Viton and graphite optional.
Meter Body Bolting	Carbon Steel (Zinc plated) 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, Hastelloy C-276 and Monel. Options for bolting include carbon steel, 316SS, 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 19213 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)

Physical and Approval Bodies *(continued)*

Parameter	Description
Approval Bodies	
Factory Mutual	<p>Explosion Proof: Approved as Explosion Proof for Class I, Division 1, Groups A, B, C, D locations, Dust Ignition Proof: Approved as Dust Ignition Proof for Class II, III, Division 1, Groups E, F, G locations, Intrinsically Safe: Approved as Intrinsically Safe for for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations. Nonincendive: Approved as Nonincendive for Class I, Division 2, Groups A, B, C, D locations.</p>
CSA	<p>Explosion Proof: Approved as Explosion Proof for Class I, Division 1, Groups B, C, D locations, Dust Ignition Proof: Approved as Dust Ignition Proof for Class II, III, Division 1, Groups E, F, G locations, Intrinsically Safe: Approved as Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations.</p>
Canadian Registration Number (CRN)	All ST 3000 model designs, except SATG19L, STG99L, STG170 and STG180 have been registered in all provinces and territories in Canada and are marked CRN:0F8914.5c.
ATEX	<p>Intrinsically Safe, Zone 0/1: EEx ia IIC T4, T5, T6 Flameproof/Zone 1: EEx d IIC T5, T6 (enclosure IP 66/67) Non-Sparking, Zone 2: EEx nA, IIC T6 (enclosure IP 66/67) Multiple Markings: - Ex II 1 G: EEx ia IIC T4, T5, T6, Ex II 2 G: EExd IIC T5, T6 Ex II 3 G: EEx nA, IIC T6 (Honeywell) (enclosure IP 66/67)</p>
SA (Australian)	<p>Intrinsically Safe: EX ia IIC T4 Non-Sparking: Ex n IIC T6 (T4 with SM option)</p>
INMETRO (Brazil)	Flame-Proof, Zone 1: EX d IIC T5
Pressure Equipment Directive (97/23/EC)	The ST 3000 pressure transmitters listed in this Specification have no pressurized internal volume or have a pressurized internal volume rated less than 1,000 bar (14,500 psig) and/or have a maximum volume of less than 0.1 liter. Therefore, these transmitters are either; not subject to the essential requirements of the directive 97/23/EC (PED, Annex 1) and shall not have the CE mark, or the manufacturer has the free choice of a module when the CE mark is required for pressures > 200 bar (2,900 psig).

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.

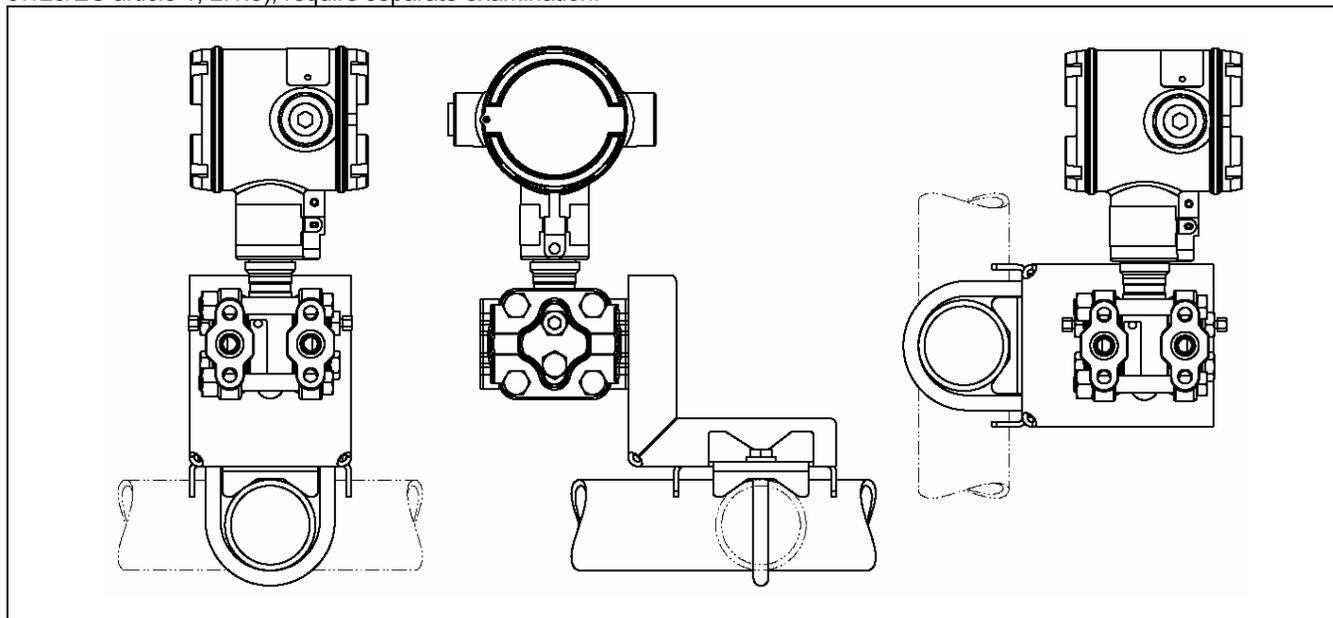


Figure 3—Examples of typical mounting positions

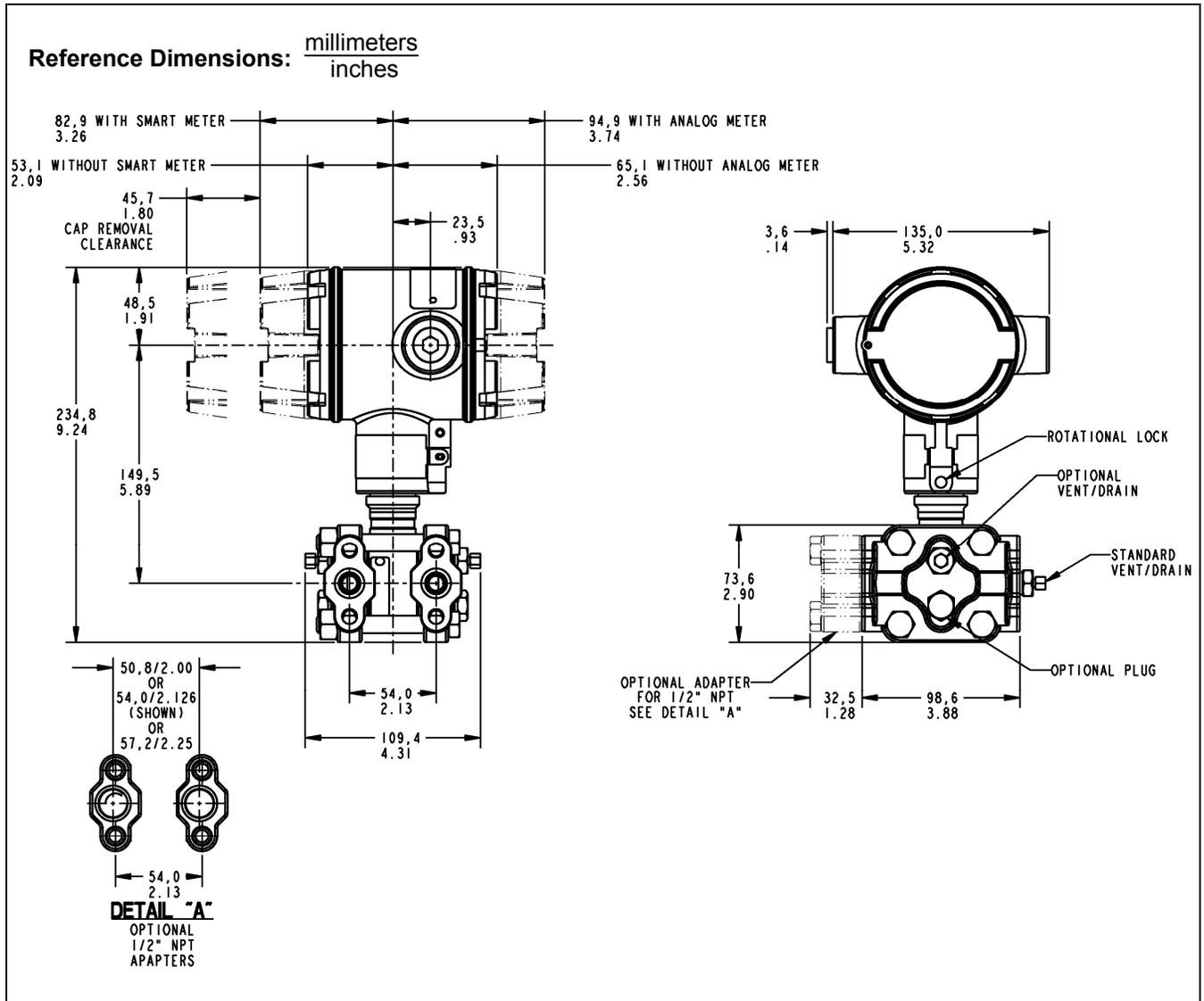


Figure 4—Typical mounting dimensions for STD924, STD930 and STD974 for reference.

Options	Ordering Information	
<p>Mounting Bracket 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.</p> <p>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.</p> <p>Lightning Protection (Option LP) A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>We are in compliance with the following SIL standards: IEC 61508-1: 1998; IEC 61508-2: 2000; IEC 61508-3: 1998</p> <p>NAMUR NE43 Compliance (Option NE) This option provides software the 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 ≥ 20.5 mA.</p> <p>Indicator Configuration (Option CI) Provides custom configuration of Smart Meters.</p> <p>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. Note that a separate nameplate on the meter body contains the serial number and body-related data. 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.</p> <p>Transmitter Configuration (Option TC) The factory can configure the transmitter 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.</p> <p>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.</p>	<p>Contact your nearest Honeywell sales office, or</p> <p>In the U.S.: Honeywell Industrial Automation & Control 16404 North Black Canyon Hwy. Phoenix, AZ 85053 1-800-288-7491</p> <p>In Canada: The Honeywell Centre 155 Gordon Baker Rd. North York, Ontario M2H 3N7 1-800-461-0013</p> <p>In Latin America: Honeywell Inc. 480 Sawgrass Corporate Parkway, Suite 200 Sunrise, FL 33325 (954) 845-2600</p> <p>In Europe and Africa: Honeywell S. A. Avenue du Bourget 1 1140 Brussels, Belgium</p> <p>In Eastern Europe: Honeywell Praha, s.r.o. Budejovicka 1 140 21 Prague 4, Czech Republic</p> <p>In the Middle East: Honeywell Middle East Ltd. Khalifa Street, Sheikh Faisal Building Abu Dhabi, U. A. E.</p> <p>In Asia: Honeywell Asia Pacific Inc. Honeywell Building, 17 Changi Business Park Central 1 Singapore 486073 Republic of Singapore</p> <p>In the Pacific: Honeywell Pty Ltd. 5 Thomas Holt Drive North Ryde NSW Australia 2113 (61 2) 9353 7000</p> <p>In Japan: Honeywell K.K. 14-6 Shibaura 1-chrome Minato-ku, Tokyo, Japan 105-0023</p> <p>Or, visit Honeywell on the World Wide Web at: http://www.honeywell.com Specifications are subject to change without notice. (Note that specifications may differ slightly for transmitters manufactured before October 30, 1995.)</p>

Model Selection Guide (34-ST-16-24)

Model Selection Guide
34-ST-16-24 Issue 43

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 | - | I | - | II | - | III (Optional) | + | IV |
| ----- | | --- | | ----- | | --',---',--- | | XXXX |

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	Barrier Diaphragms	Selection			
Materials of Construction	Carbon Steel *	316 SS	316L SS	A __	●	●	●
	Carbon Steel *	316 SS	Hastelloy C	B __	●	●	●
	Carbon Steel *	316 SS	Monel	C __	19	19	19
	Carbon Steel *	316 SS	Tantalum	D __	●	●	●
	316 SS	316 SS	316L SS	E __	●	●	●
	316 SS	316 SS	Hastelloy C	F __	●	●	●
	316 SS	316 SS	Monel	G __	19	19	19
	316 SS	316 SS	Tantalum	H __	●	●	●
	Hastelloy C	Hastelloy C	Hastelloy C	J __	●	●	●
	Hastelloy C	Hastelloy C	Tantalum	K __	●	●	●
Monel	Monel	Monel	L __	19	19	19	
Fill Fluid	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	●	●	●
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* 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.
 ** Vent/Drains are Teflon coated for lubricity.

TABLE III - OPTIONS	Selection	Availability			
		STD9xx	24	30	
Communication Options (Must choose a communications option)					
Analog only (can be configured using appropriate Honeywell DE tool)	AN	•	•	•	b
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	•	•	•	b
Smart Meter	SM	•	•	•	
Custom Configuration of Smart Meter	CI	e	e	e	b
Local Zero	LZ	x	x	x	
Local Zero and Span	ZS	m	m	m	b
Transmitter Housing & Electronics Options					
NAMUR Failsafe Software	NE	15	15	15	b
SIL 2 - TÜV Certified transmitter (requires HC/H6 <u>and</u> WP options)	SL	p	p	p	
Lightning Protection	LP	•	•	•	b
Custom Calibration and I.D. in Memory	CC	•	•	•	
Transmitter Configuration - (non-Fieldbus)	TC	15	15	15	b
Transmitter Configuration - (Fieldbus)	FC	21	21	21	
Write Protection (Delivered in the "enabled" position)	WP	•	•	•	b
Write Protection (Delivered in the "disabled" position)	WX	•	•	•	
316 SS Electronics Housing - with M20 Conduit Connections	SH	n	n	n	b
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	i	i	i	b
316 SS 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	•	•	•	b
Stainless Steel Customer Wired-On Tag (blank)	TB	•	•	•	
Low Temperature - -50°C Ambient Limit	LT	18			b
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	b
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	b
Meter Body Options (Seal bolt material depends on Transmitter bolt material)					
316 SS Bolts and 316 SS Nuts for Process Heads	SS	•	•	•	b
B7M Bolts and Nuts for Process Heads	B7	•	•	•	
NACE A286 SS Bolts and NACE 304 SS Nuts for Process Heads	CR	•	•	•	b
316 SS Adapter Flange - 1/2" NPT with CS Bolts	S2	c	c	c	
316 SS Adapter Flange - 1/2" NPT with 316 SS Bolts	S3	c	c	c	b
316 SS Adapter Flange - 1/2" NPT with NACE A286 SS Bolts	S4	c	c	c	
316 SS Adapter Flange - 1/2" NPT with B7M Bolts	S5	c	c	c	b
Hastelloy C Adapter Flange - 1/2" NPT with CS Bolts	T2	c	c	c	
Hastelloy C Adapter Flange - 1/2" NPT with 316 SS Bolts	T3	c	c	c	b
Monel Adapter Flange - 1/2" NPT with CS Bolts	V2	c	c	c	
Monel Adapter Flange - 1/2" NPT with 316 SS Bolts	V3	c	c	c	b
316 SS Blind Adapter Flange with CS Bolts	B3	•	•	•	
316 SS Blind Adapter Flange with 316 SS Bolts	B4	•	•	•	b
316 SS Blind Adapter Flange with NACE A286 SS Bolts	B5	•	•	•	
316 SS Blind Adapter Flange with B7M Bolts	B6	•	•	•	b
Side Vent/Drain (End Vent Drain is standard)	SV	•	•	•	
316 SS Center Vent Drain and Bushing	CV	•	•	•	b
Viton Process Head Gaskets (adapter gaskets ordered separately)	VT	•	•	•	
Graphite Process Head & Adapter Flange Gaskets	GF	•	•	•	b
Viton Adapter Flange Gaskets	VF	17	17	17	

TABLE III - OPTIONS (continued)	STD9xx Selection	Availability		
		24	30	74
Transmitter Mounting Brackets Options				
Mounting Bracket - Carbon Steel	MB	•	•	•
Marine Approved Mounting Bracket - Carbon Steel	MX	•	•	•
Mounting Bracket - 304 SS	SB	•	•	•
Marine Approved Mounting Bracket - 304 SS	SX	•	•	•
Flat Mounting Bracket - Carbon Steel	FB	•	•	•
Services/Certificates/Marine Type Approvals Options				
User's Manual Paper Copy (Standard, HC, H6 or FF ships accordingly)	UM	•	•	•
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	•	•	•
Diaphragm Options				
Gold plated diaphragm(s) on 316 SS	G1	•	•	•
Gold plated diaphragm(s) on Monel or Hastelloy ONLY	G2	•	•	•
Certificate Options				
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	•	•	•
Marine Type Approvals (DNV, ABS, BV, KR & LR) (FC33340)	MT	2	2	2
Warranty Options				
Additional Warranty - 1 year	W1	•	•	•
Additional Warranty - 2 years	W2	•	•	•
Additional Warranty - 3 years	W3	•	•	•
Additional Warranty - 4 years	W4	•	•	•

Approval Body	Approval Type	Location or Classification	Selection			
No hazardous location approvals			9X	•	•	•
Factory Mutual	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		•	•	•
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		•	•	•
SA (Australia)	Intrinsically Safe	Ex ia IIC T4	4G	•	•	•
	Non-Sparking	Ex n IIC T6 (T4 with SM option)		•	•	•
ATEX*	Intrinsically Safe, Zone 0/1	Ex II 1 G EEx ia IIC T4, T5, T6	3S	•	•	•
	Flameproof, Zone 1	Ex II 2 G EEx d IIC T5, T6, Enclosure IP 66/67	3D	•	•	•
	Non-Sparking, Zone 2	Ex II 3 G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	•	•	•
	Multiple Marking** Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4, T5, T6 Ex II 2 G EEx d IIC T5, T6 Ex II 3 G EEx nA, IIC T6 (Honeywell) Enclosure IP 66/67	3H	•	•	•
INMETRO (Brazil)	Flameproof, Zone 1	Ex d IIC T5	6D	•	•	•

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

** 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.

TABLE IV

Factory Identification	XXXX	•	•	•
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RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
a	III	3D or 3H		
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 and WP	III	FF, 00
r			III	TC, ME, 4G
t	III	Select from Table 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		

Note: See ST-83 for Published Specials with pricing.
 See ST-89 and User's Manual for part numbers.
 See ST-OE-9 for OMS Order Entry Information including TC, manuals, certificates, drawings and SPINS.
 See ST-OD-1 for tagging, ID, Transmitter Configuration (TC) and calibration including factory default values.
 To request a quotation for a non-published "special", fax RFQ to Marketing Applications

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