

## ST 3000 Smart Transmitter Series 900 Gauge Pressure Models

STG944	0 to 500 psi	0 to 35 bar
STG94L	0 to 500 psi	0 to 35 bar
STG974	0 to 3000 psi	0 to 210 bar
STG97L	0 to 3000 psi	0 to 210 bar
STG98L	0 to 6000 psi	0 to 415 bar
STG99L	0 to 10000 psi	0 to 690 bar

34-ST-03-67  
05/2003

## 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 In-line, Gauge Pressure Transmitters continue to bring proven “smart” technology to a wide spectrum of pressure measurement applications. Typical applications include high-pressure measurement in boilers, fuel feeds, and high-pressure reaction vessels in the petrochemical and hydrocarbon recovery industries – any location where accuracy and reliability are crucial to safe, economical operation. As with the rest of the line of Honeywell transmitters, the in-line transmitters offer the ability to be installed in a wide variety of hazardous environments for accurate repeatable pressure 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 Gauge 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 between the operator and the transmitter through our Smart Field Configurator (SFC). You can connect the SFC anywhere that you can access the transmitter signal lines.

The SCT 3000 Smartline<sup>®</sup> 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 downline 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

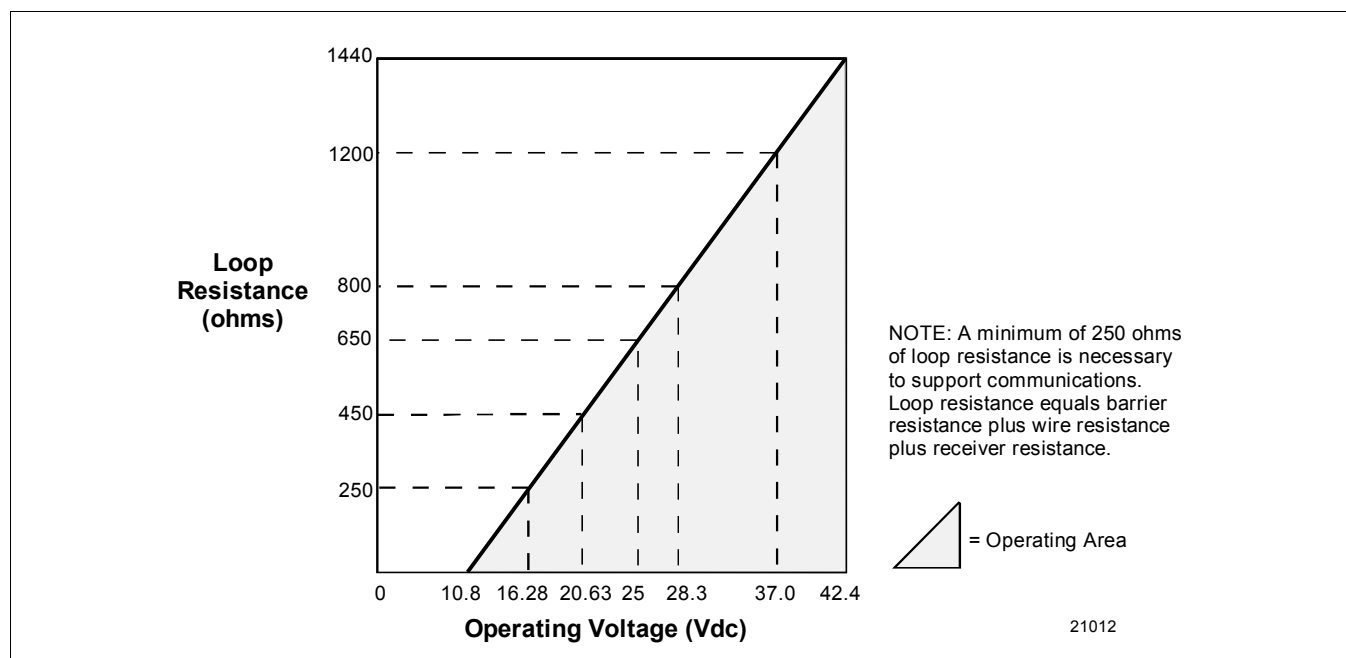
### Operating Conditions – All Models

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
<b>Ambient Temperature</b>	25 ±1	77 ±2	-40 to 70	-40 to 158	-40 to 85	-40 to 185	-55 to 125	-67 to 257
<b>Meter Body Temperature</b>	25 ±1	77 ±2	-40 to 110*	-40 to 230*	-40 to 125**	-40 to 257**	-55 to 125	-67 to 257
<b>Humidity</b> %RH	10 to 55		0 to 100		0 to 100		0 to 100	
<b>Overpressure</b>								
STG944, 94L <b>psi</b>	0		750		750			
<b>bar</b>	0		50		50			
STG974, 97L <b>psi</b>	0		4500		4500			
<b>bar</b>	0		310		310			
STG98L <b>psi</b>	0		9000		9000			
<b>bar</b>	0		620		620			
STG99L <b>psi</b>	0		15000		15000			
<b>bar</b>	0		1034		1034			
<b>Vacuum Region - Minimum Pressure</b>								
<b>mmHg absolute</b>	atmospheric		25		2 (short term ***)			
<b>inH<sub>2</sub>O absolute</b>	atmospheric		13		1 (short term ***)			
<b>Supply Voltage, Current, and Load Resistance</b>	<b>Voltage Range:</b> 10.8 to 42.4 Vdc at terminals <b>Current Range:</b> 3.0 to 21.8 mA <b>Load Resistance:</b> 0 to 1440 ohms (as shown in Figure 2)							

\* For model 944 with CTFE fill fluid, the rating is -15 to 70°C (5 to 158°F); for model 98L with CTFE fill fluid, the rating is -15 to 110°C (5 to 230°F).

\*\* For Models STG94L, STG97L, and STG98L, STG99L the upper limit is 110°C (230°F).

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



**Performance Under Rated Conditions\* - Models STG944 & 94L (0 to 500 psi/35 bar)**

Parameter	Description
<b>Upper Range Limit</b> <b>psi</b> <b>bar</b>	500 35
<b>Minimum Span</b> <b>psi</b> <b>bar</b>	20 1.4
<b>Turndown Ratio</b>	25 to 1
<b>Zero Elevation and Suppression</b>	No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
<b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> <li>Accuracy includes residual error after averaging successive readings.</li> <li>For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.</li> </ul>	<p><b>In Analog Mode:</b> <math>\pm 0.075\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (20 psi), accuracy equals:</p> $\pm 0.025 + 0.05 \left( \frac{20 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.025 + 0.05 \left( \frac{1.4 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.0625\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (20 psi), accuracy equals:</p> $\pm 0.0125 + 0.05 \left( \frac{20 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.0125 + 0.05 \left( \frac{1.4 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Zero Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.1625\%</math> of span.</p> <p>For URV below reference point (50 psi), effect equals:</p> $\pm 0.0125 + 0.15 \left( \frac{50 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.0125 + 0.15 \left( \frac{3.5 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.15\%</math> of span.</p> <p>For URV below reference point (50 psi), effect equals:</p> $\pm 0.15 \left( \frac{50 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.15 \left( \frac{3.5 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.25\%</math> of span.</p> <p>For URV below reference point (50 psi), effect equals:</p> $\pm 0.10 + 0.15 \left( \frac{50 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.10 + 0.15 \left( \frac{3.5 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.225\%</math> of span.</p> <p>For URV below reference point (50 psi), effect equals:</p> $\pm 0.075 + 0.15 \left( \frac{50 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.075 + 0.15 \left( \frac{3.5 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Stability</b>	$\pm 0.015\%$ of URL per year

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

## Performance Under Rated Conditions\* - Models STG974 & 97L (0 to 3000 psi/210 bar)

Parameter	Description
<b>Upper Range Limit</b> <b>psi</b> <b>bar</b>	3000 210
<b>Minimum Span</b> <b>psi</b> <b>bar</b>	300 21
<b>Turndown Ratio</b>	10 to 1
<b>Zero Elevation and Suppression</b>	No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
<b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> <li>• Accuracy includes residual error after averaging successive readings.</li> <li>• For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.</li> </ul>	<p><b>In Analog Mode:</b> <math>\pm 0.10\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (750 psi), accuracy equals:</p> $\pm 0.05 + 0.05 \left( \frac{750 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.05 + 0.05 \left( \frac{52 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.075\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (300 psi), accuracy equals:</p> $\pm 0.025 + 0.05 \left( \frac{750 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.025 + 0.05 \left( \frac{52 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Zero Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.2125\%</math> of span.</p> <p>For URV below reference point (500 psi), effect equals:</p> $\pm 0.0125 + 0.20 \left( \frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.0125 + 0.20 \left( \frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.20\%</math> of span.</p> <p>For URV below reference point (500 psi), effect equals:</p> $\pm 0.20 \left( \frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.20 \left( \frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.325\%</math> of span.</p> <p>For URV below reference point (500 psi), effect equals:</p> $\pm 0.125 + 0.20 \left( \frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.125 + 0.20 \left( \frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.30\%</math> of span.</p> <p>For URV below reference point (500 psi), effect equals:</p> $\pm 0.10 + 0.20 \left( \frac{500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.10 + 0.20 \left( \frac{35 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Stability</b>	$\pm 0.03\%$ of URL per year

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

# Performance Under Rated Conditions\* - Model STG98L (0 to 6000 psi/415 bar)

Parameter	Description
<b>Upper Range Limit</b> <b>psi</b> <b>bar</b>	6000 415
<b>Minimum Span</b> <b>psi</b> <b>bar</b>	500 35
<b>Turndown Ratio</b>	12 to 1
<b>Zero Elevation and Suppression</b>	No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
<b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> <li>Accuracy includes residual error after averaging successive readings.</li> <li>For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.</li> </ul>	<p><b>In Analog Mode:</b> <math>\pm 0.10\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (1500 psi), accuracy equals:</p> $\pm 0.05 + 0.05 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.05 + 0.05 \left( \frac{104 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.075\%</math> of calibrated span or upper range value (URV), whichever is greater, terminal based.</p> <p>For URV below reference point (1500 psi), accuracy equals:</p> $\pm 0.025 + 0.05 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.025 + 0.05 \left( \frac{104 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Zero Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.2125\%</math> of span.</p> <p>For URV below reference point (1500 psi), effect equals:</p> $\pm 0.0125 + 0.20 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.0125 + 0.20 \left( \frac{104 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.20\%</math> of span.</p> <p>For URV below reference point (1500 psi), effect equals:</p> $\pm 0.20 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.20 \left( \frac{70 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> <math>\pm 0.325\%</math> of span.</p> <p>For URV below reference point (1500 psi), effect equals:</p> $\pm 0.125 + 0.20 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.125 + 0.20 \left( \frac{104 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> <math>\pm 0.30\%</math> of span.</p> <p>For URV below reference point (1500 psi), effect equals:</p> $\pm 0.10 + 0.20 \left( \frac{1500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.10 + 0.20 \left( \frac{104 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Stability</b>	$\pm 0.03\%$ of URL per year

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

# Performance Under Rated Conditions\* - Model STG99L (0 to 10000 psi/690 bar)

Parameter	Description
<b>Upper Range Limit</b> <b>psi</b> <b>bar</b>	10000 690
<b>Minimum Span</b> <b>psi</b> <b>bar</b>	500 35
<b>Turndown Ratio</b>	20 to 1
<b>Zero Elevation and Suppression</b>	No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
<b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> <li>Accuracy includes residual error after averaging successive readings.</li> <li>For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.</li> </ul>	<p><b>In Analog Mode:</b> ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (2500 psi), accuracy equals:</p> $\pm 0.05 + 0.05 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.05 + 0.05 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (2500 psi), accuracy equals:</p> $\pm 0.025 + 0.05 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.025 + 0.05 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Zero Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> ±0.2125% of span. For URV below reference point (2500 psi), effect equals:</p> $\pm 0.0125 + 0.20 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.0125 + 0.20 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> ±0.20% of span. For URV below reference point (2500 psi), effect equals:</p> $\pm 0.20 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.20 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b>	<p><b>In Analog Mode:</b> ±0.325% of span. For URV below reference point (2500 psi), effect equals:</p> $\pm 0.125 + 0.20 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.125 + 0.20 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$ <p><b>In Digital Mode:</b> ±0.30% of span. For URV below reference point (2500 psi), effect equals:</p> $\pm 0.10 + 0.20 \left( \frac{2500 \text{ psi}}{\text{span psi}} \right) \text{ or } \pm 0.10 + 0.20 \left( \frac{172 \text{ bar}}{\text{span bar}} \right) \text{ in } \% \text{ span}$
<b>Stability</b>	±0.03% of URL per year

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

## Performance Under Rated Conditions - General for all Models

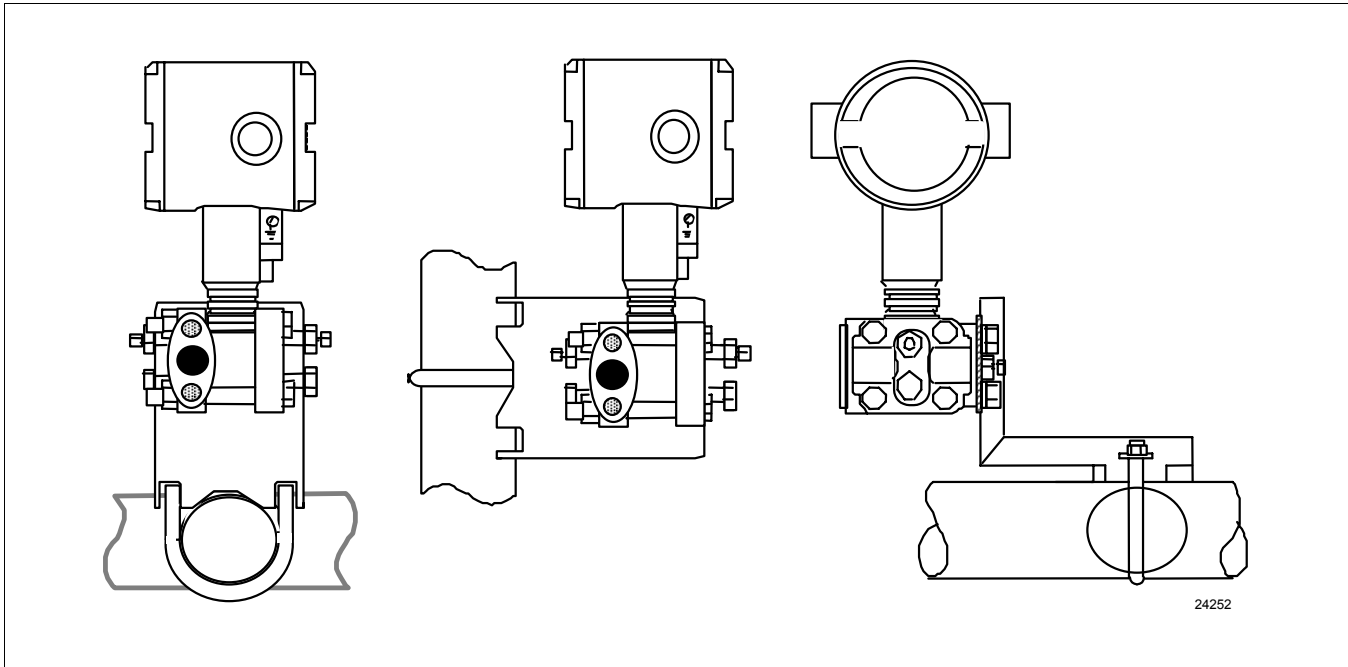
Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or DE digital communications mode. Options available for FOUNDATION Fieldbus and HART protocol.
Supply Voltage Effect	0.005% span per volt.
Damping Time Constant	Adjustable from 0 to 32 seconds digital damping.
CE Conformity (Europe)	89/336/EEC, Electromagnetic Compatibility (EMC) Directive.
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)



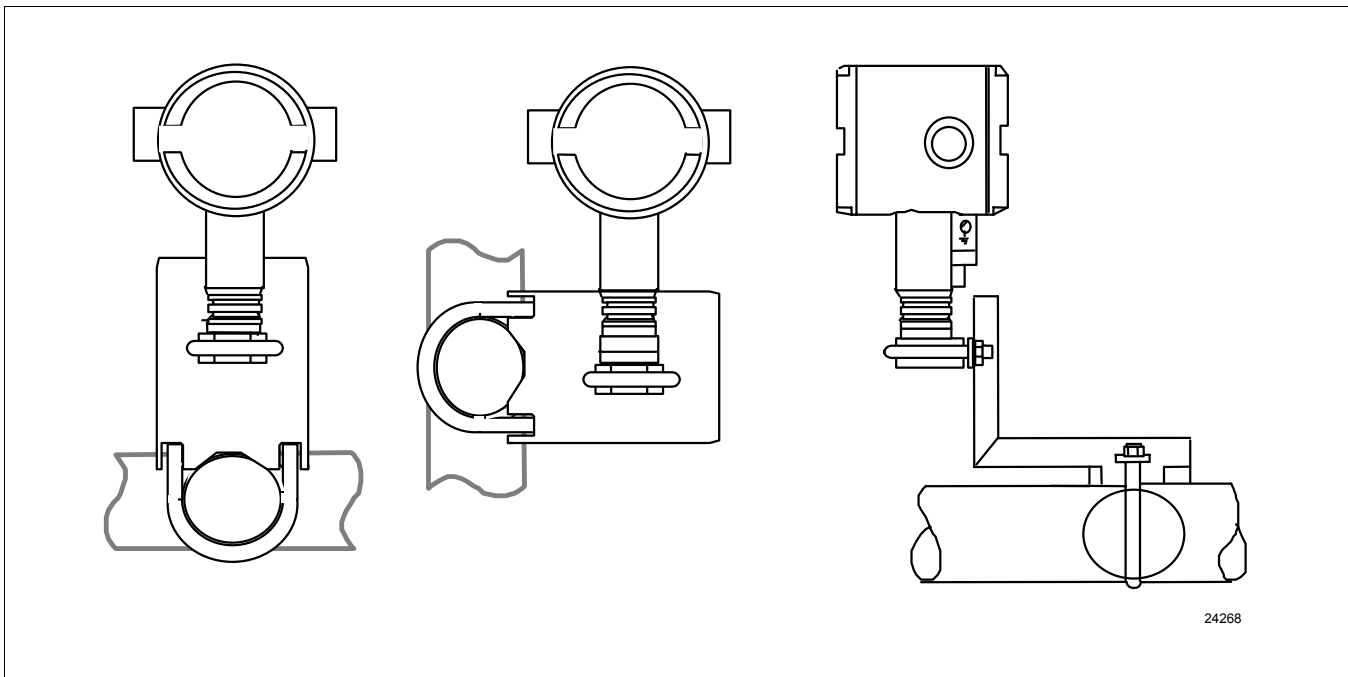
## Physical and Approval Bodies

Parameter	Description
<b>Barrier Diaphragms Material</b>	<b>Dual-Head Meter Body:</b> 316L SS, Hastelloy C-276 <b>In-Line Meter Body:</b> 316L SS, Hastelloy C-276
<b>Process Head Material</b>	<b>Dual-Head Meter Body:</b> 316 SS, Carbon Steel (zinc-plated), Hastelloy. [Reference head is Carbon Steel (zinc-plated).] <b>In-Line Meter Body:</b> 316 SS process interface.
<b>Head Gaskets</b>	Teflon is standard. Viton is available.
<b>Meter Body Bolting</b>	Carbon Steel (Zinc plated, standard) or A286 SS (NACE) bolts and 302/304 SS (NACE) nuts for heads and 316 SS (NACE) bolts for adapters (standard option).
<b>Mounting Bracket</b>	Carbon Steel (Zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available.
<b>Fill Fluid</b>	Silicone oil or CTFE (Chlorotrifluoroethylene)
<b>Electronic Housing</b>	Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosion proof). Stainless steel optional.
<b>Process Connections</b>	<b>Dual-Head Meter Body:</b> 1/4-inch NPT; 1/2-inch NPT with adapter or DIN, standard option. <b>In-Line Meter Body:</b> 1/2-inch NPT
<b>Wiring</b>	Accepts up to 16 AWG (1.5 mm diameter).
<b>Mounting</b>	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 for dual-head models, and Figure 4 for in-line models.
<b>Dimensions</b>	See Figures 5 and 6.
<b>Net Weight</b>	<b>With Dual-Head Meter Body:</b> 9 pounds (4.1 Kg) <b>With In-Line Meter Body:</b> 3.8 pounds (1.7 Kg)
<b>Approval Bodies - Hazardous Areas</b>	Approved as explosion proof and intrinsically safe for use in Class I, Division 1, Groups A, B, C, D locations, and nonincendive for Class I, Division 2, Groups A, B, C, D locations. Approved EEx ia IIC T4, T5, T6 and EEx d IIC T5, T6 per ATEX standards. See attached Model Selection Guide for options.
<b>Pressure Equipment Directive (97/23/EC)</b>	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.

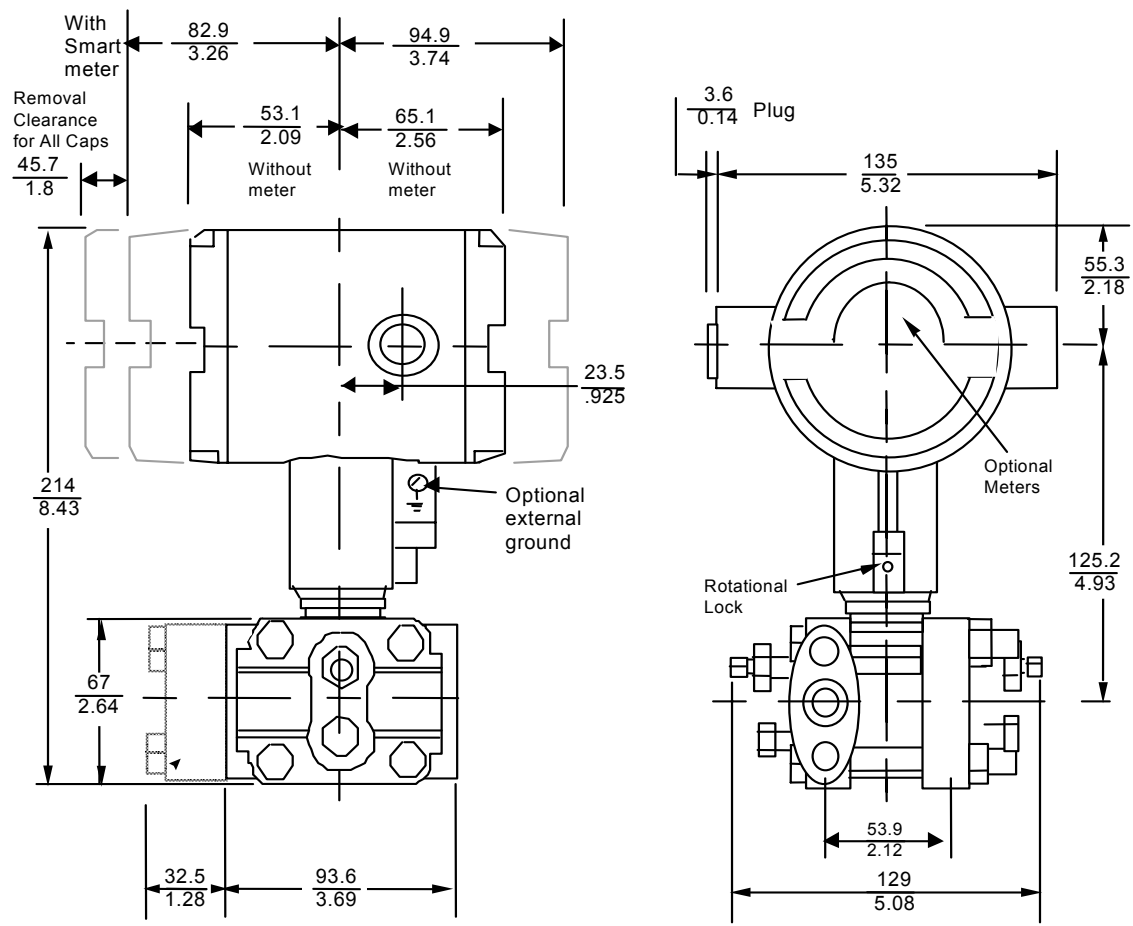


**Figure 3**—Examples of typical mounting positions for dual-head models STG944 and STG974



**Figure 4**—Examples of typical mounting positions for in-line models STG94L, STG97L, STG98L, and STG99L. Note that a mounting bracket is not required for in-line models.

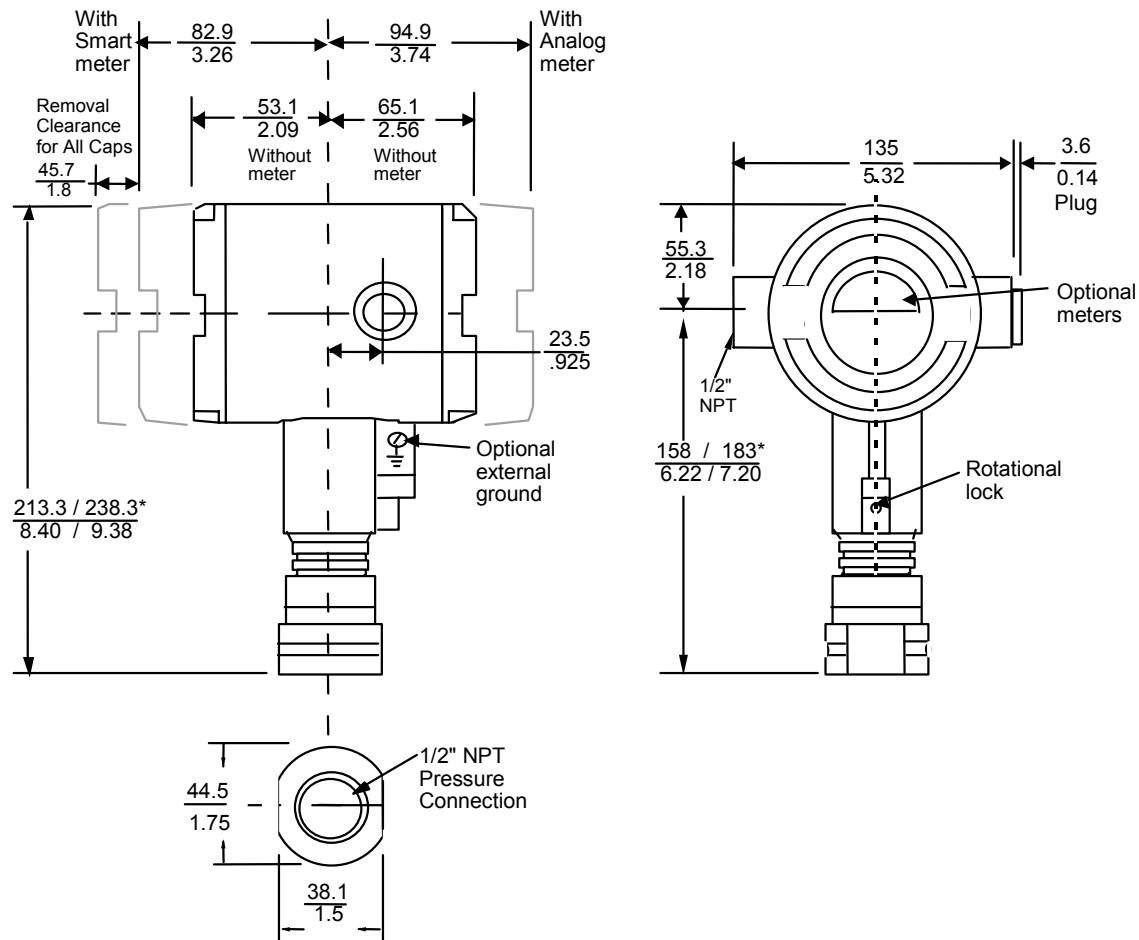
Reference Dimensions:  $\frac{\text{millimeters}}{\text{inches}}$



2425

**Figure 5**—Typical mounting dimensions for dual-head models STG944 and STG974 for reference

**Reference Dimensions:**  $\frac{\text{millimeters}}{\text{inches}}$



\*Dimensions vary due to slight differences in electronics housing designs.

**Figure 6**—Typical mounting dimensions for in-line models STG94L, STG97L, STG98L, and STG99L for reference

Options	Ordering Information
<p><b>Mounting Bracket</b> 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><b>Indicating Meter (ME and SM Options)</b> 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><b>Lightning Protection (Option LP)</b> A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.</p> <p><b>HART Protocol Compatibility (Option HC)</b> An optional electronics module is available for the ST 3000 that provides HART Protocol compatibility. Transmitters with the HART Option are compatible with the AMS System. (Contact your AMS Supplier if an upgrade is required.)</p> <p><b>Indicator Configuration (Option CI)</b> Provides custom configuration of Smart Meters</p> <p><b>Tagging (Option TG)</b> 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><b>Transmitter Configuration (Option TC)</b> 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><b>Custom Calibration and ID in Memory (Option CC)</b> 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><b>FOUNDATION Fieldbus (Option FF)</b> 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>Contact your nearest Honeywell sales office, or</p> <p>In the U.S.: Honeywell Industrial Automation &amp; 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: <a href="http://www.honeywell.com">http://www.honeywell.com</a></p>

*Specifications are subject to change without notice.*

*(Note that specifications may differ slightly for transmitters manufactured before October 30, 1995.)*

## Model Selection Guide (34-ST-16-26)

### 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

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ + \_\_\_\_\_

KEY NUMBER		Selection	Availability	
Span				
Gage	0-20 to 0-500 psi/0-1.4 to 0-35 bar	STG944	↓	
Pressure	0-300 to 0-3000 psi/0-21 to 0-210 bar	STG974	↓	
Absolute	0-50 to 0-780 mmHgA/0-67 to 1040 mbar A.	STA922		↓
Pressure	0-20 to 0-500 psia/0-1.4 to 0-35 bar abs	STA940		↓

TABLE I - METER BODY

	Wetted Process Head ***	Vent/Drain Valve **	Barrier Diaphragms			
Material of Construction	Carbon Steel *	316 St. St.	316 LSS	A _ _	♦	♦
	Carbon Steel *	316 St. St.	Hastelloy C	B _ _	♦	♦
	316 St. St.	316 St. St.	316 LSS	E _ _	♦	♦
	316 St. St.	316 St. St.	Hastelloy C	F _ _	♦	♦
	Hastelloy C	Hastelloy C	Hastelloy C	J _ _	♦	♦
Fill Fluid	Silicone DC200 ****			_ 1 _	♦	♦
	CTFE			_ 2 _	♦	♦
Process Head Configuration	1/4" NPT			_ _ A	♦	
	1/2" NPT with Adapter			_ _ G	t	
	1/2" NPT			_ _ G		♦

TABLE II

No Selection	00000	♦	♦
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\* Carbon Steel heads are zinc-plated. Not recommended for water service due to hydrogen migration.  
Use Stainless Steel heads.

\*\* Vent/Drains are Teflon coated for lubricity.

\*\*\* The standard reference head for the STG9XX is carbon steel (zinc-plated).  
See Table III for a stainless steel reference (HR) head option.

\*\*\*\* If STA922 operating below 50mm HgA, see Figure 2 in Specification 34-ST-03-65 and  
contact Marketing Applications for a "Special" Silicone DC704 quote.

**Note:** End vent drain valve standard for STG9XX.  
End vent drain valves are not available on STA9XX.

		Availability	
		STA9 STG9	
TABLE III - OPTIONS		44 74	22 40
Selection			
None	00	♦	♦
HART Protocol Compatible Electronics	HC	♦	♦
FOUNDATION Fieldbus Communications	FF	r	r
Analog Meter (0-100 Even 0-10 Square Root)	ME	♦	♦
Smart Meter	SM	♦	♦
Custom Configuration of Smart Meter	CI	m	m
Local Zero	LZ	x	
Local Zero and Span	ZS	s	
Lightning Protection	LP	♦	♦
Custom Calibration and I.D. in Memory	CC	♦	♦
Transmitter Configuration	TC	♦	♦
Write Protection	WP	♦	♦
A286SS (NACE) Bolts and 302/304SS (NACE) Nuts for Heads	CR	♦	♦
Stainless Steel Customer Wired-On Tag (4 lines, 28 characters per line, customer supplied information)	TG	♦	♦
Stainless Steel Customer Wired-On Tag (blank)	TB	♦	♦
Adapter Flange - 1/2" NPT St. Steel	S1	c	
Adapter Flange - 1/2" NPT Hastelloy-C	T1	c	
Modified DIN Process Heads - 316SS	DN	w	v
Viton Process Head Gaskets (teflon is standard)	VT	♦	
Mounting Bracket - Carbon Steel	MB	♦	♦
Mounting Bracket - ST. ST.	SB	♦	♦
Flat Mounting Bracket - Carbon Steel	FB	♦	♦
316 ST.ST. Electronics Housing - with M20 Conduit Connections	SH	n	n
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n	n
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u	u
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter (use for FM and CSA Approvals)	A3	i	i
Side Vent/Drain	SV	d	
Blind DIN SS Flanges Mounted with NACE Bolts	B1	y	
Low Temperature - -50°C Ambient Limit	LT	z	
St. St. Reference Head (Carbon Steel Standard)	HR	♦	
Clean Transmitter for Oxygen or Chlorine Service with Certificate	OX	h	h
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 (SIL) Certificate	F6	♦	♦
NACE Certificate (F0198)	F7	o	o
Additional Warranty - 1 year	W1	♦	♦
Additional Warranty - 2 years	W2	♦	♦
Additional Warranty - 3 years	W3	♦	♦
Additional Warranty - 4 years	W4	♦	♦

## Model Selection Guide, cont.

				Availability	
				STA9 STG9	
				44	22
				74	40
TABLE III - OPTIONS (continued)				Selection	
Approval Body	Approval Type	Location or Classification			
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	♦	♦
	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	<del>Ex</del> II 1 G EEx ia IIC T4, T5, T6	3S	♦	♦
	Flameproof, Zone 1	<del>Ex</del> II 2 G EEx d IIC T5, T6, Enclosure IP 66/67	3D	♦	♦
	Non-Sparking, Zone 2	<del>Ex</del> II 3 G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	♦	♦

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

### 97/23/EC Pressure Equipment Directive (PED)

The ST 3000 pressure transmitters listed in this Model Selection Guide are in conformity with the essential requirements of the PED. 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, is available upon request

TABLE IV

Factory Identification	XXXX	♦	♦
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## Model Selection Guide, cont.

### RESTRICTIONS

Restriction		Available Only With		Not Available With
Letter	Table	Selection	Table	Selection
a		Approval Body Pending		
b		Select only one option from this group		
c	I	__ G		
d			III	DN, B1
e			III	4G
h	I	_ 2 _		
i	III	1C or 2J		
m	III	SM		
n			III	1C, 2J
o	III	CR or B1		
r			III	TC, ME, 4G, 3S
s			III	FF, ME
t		Select adapter from Table III S1, T1		
u	III	1C, 2J		
v	I	E _ G, F _ G		
w	I	E _ A, F _ A	III	SV
x	III	FF, SM		
y	I	E _ A, F _ A	III	SV
	III	DN		
z			III	STG974

**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.  
See ST-OE-9 for OMS Order Entry Information including TC, manuals,

## Model Selection Guide (34-ST-16-28)

### 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  
 [ ] - [ ] - [ ] - [ ] + [ ]

KEY NUMBER	Span	Selection	Availability
Gage Pressure	0-20 to 0-500 psi/0-1.4 to 0-35 bar	STG94L	↓
	0-300 to 0-3000 psi/0-21 to 0-210 bar	STG97L	↓
	0-500 to 0-6000 psi/0-35 to 0-415 bar	STG98L	↓
	0-500 to 0-10000 psi/0-35 to 0-690 bar	STG99L	↓

TABLE I - METER BODY

Material of Construction	Wetted Process Heads	Vent/Drain Valves **	Barrier Diaphragms		
	316 St. St.	--	316 LSS	E _ _	♦
	316 St. St.	--	Hastelloy C	F _ _	♦
Fill Fluid	Silicone CTFE			_ 1 _	♦
				_ 2 _	♦
Process Head Configuration	1/2" NPT (female)			_ _ G	♦

TABLE II

No Selection	00000	♦
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\*\* Vent/Drains are Teflon coated for lubricity.

Model Selection Guide, cont.

		Availability	
		STG9 _ L	
		4	
		7	
		8	
TABLE III - OPTIONS	Selection		
None	00	♦	
HART™ Protocol Compatible Electronics	HC	y	b
FOUNDATION Fieldbus Communications	FF	r	
Analog Meter (0-100 Even 0-10 Square Root)	ME	♦	b
Smart Meter	SM	♦	
Custom Configuration of Smart Meter	CI	m	
Local Zero	LZ	x	b
Local Zero and Span	ZS	s	
Lightning Protection	LP	♦	
Custom Calibration and I.D. in Memory	CC	♦	
Transmitter Configuration	TC	♦	
Write Protection	WP	♦	
Stainless Steel Customer Wired-On Tag	TG	♦	
(4 lines, 28 characters per line, customer supplied information)			
Stainless Steel Customer Wired-On Tag (blank)	TB	♦	
Mounting Bracket - Carbon Steel	MB	♦	b
Mounting Bracket - ST. ST.	SB	♦	
Flat Mounting Bracket - Carbon Steel	FB	♦	
316 ST.ST. Electronics Housing - with M20 Conduit Connections	SH	n	
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n	b
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u	
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter (use for FM and CSA Approvals)	A3	i	
Low Temperature - -50°C Ambient Limit	LT	♦	
Clean Transmitter for Oxygen or Chlorine Service with Certificate	OX	h	
Over-Pressure Leak Test with F3392 Certificate	TP	♦	
Calibration Test Report and Certificate of Conformance (F3399)	F1	♦	b
Certificate of Conformance (F3391)	F3	♦	
Certificate of Origin (F0195)	F5	♦	
FMEDA (SIL) Certificate	F6	♦	
NACE Certificate (F0198)	F7	♦	
Additional Warranty - 1 year	W1	♦	b
Additional Warranty - 2 years	W2	♦	
Additional Warranty - 3 years	W3	♦	
Additional Warranty - 4 years	W4	♦	

Table III continued next page

## Model Selection Guide, cont.

Availability  
STG9 \_ L

TABLE III - OPTIONS (continued)

Approval Body	Approval Type	Location or Classification	Selection	4 7 8
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	♦
	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	♦

\*See ATEX installation requirements in the ST 3000 User's Manual 97/23/EC Pressure Equipment Directive (PED)

The ST 3000 pressure transmitters listed in this Model Selection Guide are in conformity with the essential requirements of the PED. 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, is available upon request

TABLE IV

Factory Identification	XXXX	♦
------------------------	------	---

### RESTRICTIONS

Restriction	Available Only With	Not Available With
Letter	Table	Selection
a	Approval Body Pending	
b	Select only one option from this group	
h	I	_ 2 _
i	III	1C or 2J
m	III	SM
n		III
r		III
s		III
u	III	F1D3, C1C3, 1C, 2J
x	III	FF, SM
y		III
		4G

**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.

**Model Selection Guide, cont.**

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**Honeywell**

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