

## ST 3000 Smart Transmitter Series 100 Absolute Pressure Models

STA122/STA12L 0 to 780 mmHgA    0 to 1,040 mbarA  
STA140/STA14L 0 to 500 psia    0 to 35 barA

## 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 100 Absolute Pressure Transmitters continue to bring proven “smart” technology to a wide spectrum of measurement applications. Honeywell absolute pressure transmitters are used in applications in which high accuracy in the vacuum range of pressure is needed to include low-pressure measurement in vacuum distillation columns, where energy savings are directly proportional to the vacuum in the column. Honeywell transmitters can be used in a wide spectrum of hazardous environments in perfect safety to provide proven, repeatable pressure measurements.

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 high-performance ST 3000 S100 transmitters lead the industry in:

- Accuracy
- Stability
- Reliability
- Rangeability
- Warranty

Includes Lifetime™ Transmitters:

- Total Accuracy =  $\pm 0.0375\%$
- Stability =  $\pm 0.01\%$  per year
- Reliability = 470 years MTBF
- Rangeability = 400 to 1
- Lifetime Warranty = 15 years



**Figure 1**—Series 100 Absolute 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. S100 transmitters are ideal for critical applications, such as custody transfer of natural gas and energy and material balances, where accuracy and stability are of the utmost importance.

“Our commitment to Honeywell field instruments is based on seamless integration with our Honeywell system and the enhanced fault detection that the Honeywell DE protocol offers. Honeywell instruments also offer us a better way of ensuring database integrity over simple analog instruments. In addition, Honeywell’s high-quality support has enabled us to better implement solutions to some of our more difficult problems. We have used Honeywell differential pressure smart transmitters for the past eight years. Based on their accuracy and low failure rates, we are now targeting critical flow applications that require the robustness that these transmitters bring.”

DCS Systems Engineer  
International Integrated Oil Company

## 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<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 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   |      | 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 85       | -40 to 185 | -40 to 93        | -40 to 200 | -55 to 125                 | -67 to 257 |
| <b>Meter Body Temperature</b>  |   |      |                 |            |                  |            |                            |            |
| STA122/STA12L  | 25±1  | 77±2 | See Figure 2    |            | See Figure 2     |            | -55 to 125                 | -67 to 257 |
| STA140/STA14L  | 25±1  | 77±2 | -40 to 80       | -40 to 176 | -40 to 80        | -40 to 176 | -55 to 125                 | -67 to 257 |
| <b>Humidity</b> %RH  | 10 to 55  |      | 0 to 100        |            | 0 to 100         |            | 0 to 100                   |            |
| <b>Vacuum Region - Minimum Pressure</b>  | See Figure 2.<br>Operate within specifications above 25 mmHgA (33 mbarA). Short term exposure (2 hours at 70°C/158°F) to full vacuum will not result in damage. |      |                 |            |                  |            |                            |            |
| STA122/STA12L<br>STA140/STA14L   |   |      |                 |            |                  |            |                            |            |
| <b>Supply Voltage, Current, and Load Resistance</b>  | <b>Voltage Range:</b> 10.8 to 42.4 Vdc at terminals<br><b>Current Range:</b> 3.0 to 21.8 mA<br><b>Load Resistance:</b> 0 to 1440 ohms (as shown in Figure 3)    |      |                 |            |                  |            |                            |            |
| <b>Maximum Allowable Working Pressure (MAWP)</b><br>(ST 3000 products are rated to Maximum Allowable Working Pressure) | STA122/STA12L = 1550 mmHgA, 2066 mbarA<br>STA140/STA14L = 750 psia, 52 barA<br>Units can withstand overpressure of 1.5X MAWP without damage.                    |      |                 |            |                  |            |                            |            |

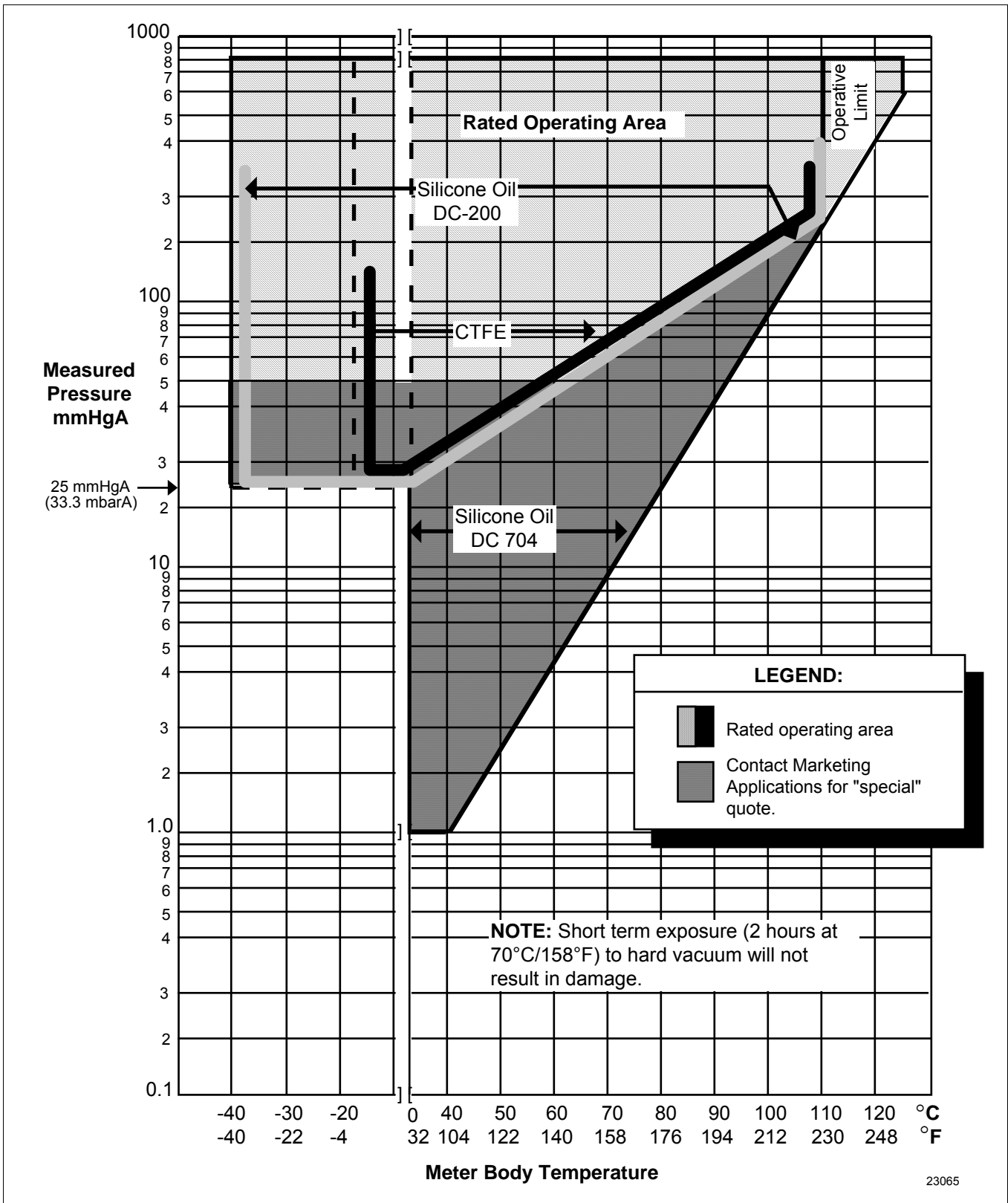


Figure 2 - Measured pressure versus meter body temperature chart for model STA122/STA12L.

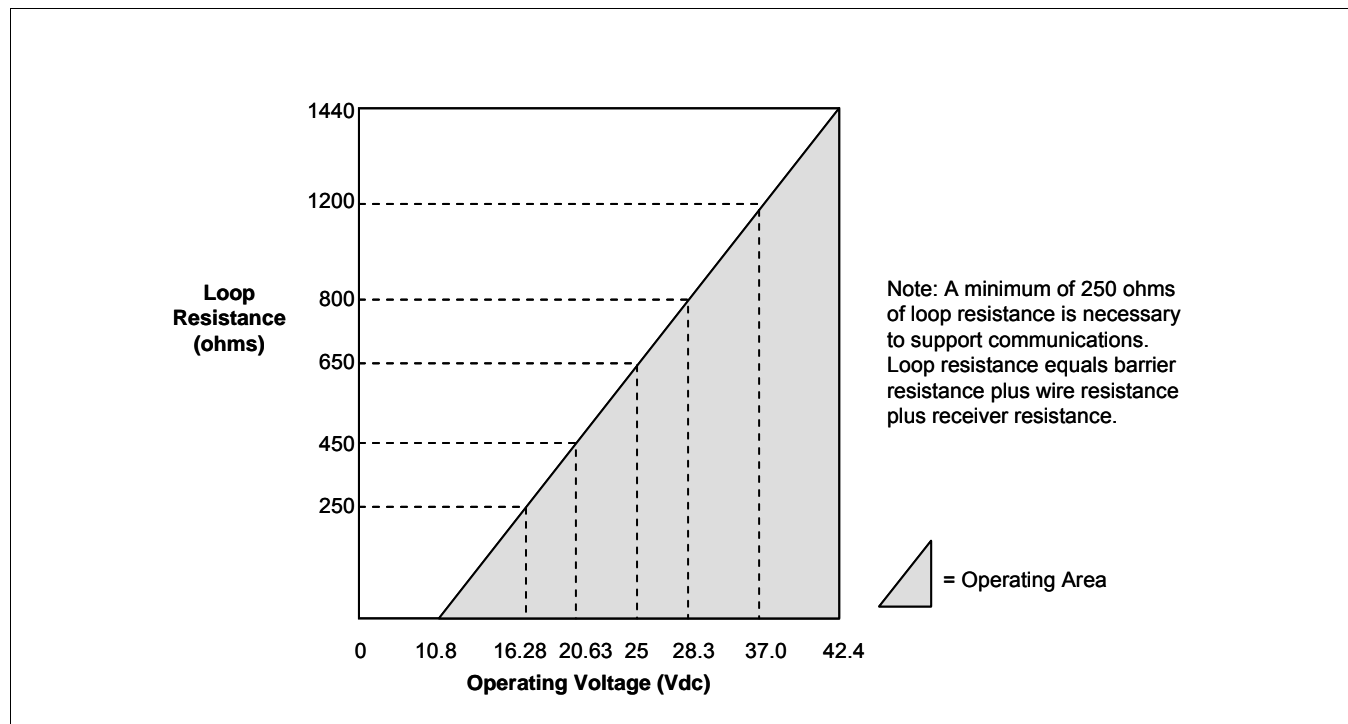


Figure 3 - Supply voltage and loop resistance chart.

**Performance Under Rated Conditions\* - Model STA122 (0 to 780 mmHgA)**

| Parameter   | Description  |
|---|--|
| <b>Upper Range Limit</b><br>mmHgA<br>mbarA  | 780 (0°C/32°F is standard reference temperature for mmHg range.)<br>1040   |
| <b>Minimum Span</b><br>mmHgA<br>mbarA   | 50<br>67   |
| <b>Turndown Ratio</b>   | 15 to 1  |
| <b>Zero Suppression</b>   | No limit except minimum span within 0 (absolute zero) to +100% URL.  |
| <b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability)<br>• Accuracy includes residual error after averaging successive readings.<br>• For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications. | <b>In Analog Mode:</b> ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br>For URV below reference point (90 mmHgA), accuracy equals:<br>$\pm 0.025 + 0.05 \left( \frac{90 \text{ mmHgA}}{\text{span mmHgA}} \right)$ or $\pm 0.025 + 0.05 \left( \frac{120 \text{ mbarA}}{\text{span mbarA}} \right)$ in % of span<br><b>In Digital Mode:</b> ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br>For URV below reference point (90 mmHgA), accuracy equals:<br>$\pm 0.0125 + 0.05 \left( \frac{90 \text{ mmHgA}}{\text{span mmHgA}} \right)$ or $\pm 0.0125 + 0.05 \left( \frac{120 \text{ mbarA}}{\text{span mbarA}} \right)$ in % of span |
| <b>Zero Temperature Effect per 28°C (50°F)</b>  | <b>In Analog Mode:</b> ±0.0875% of calibrated span.<br>For URV below reference point (180 mmHgA), effect equals:<br>$\pm 0.0125 + 0.075 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right)$ or $\pm 0.0125 + 0.075 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right)$ in % of span<br><b>In Digital Mode:</b> ±0.075% of calibrated span.<br>For URV below reference point (180 mmHgA), effect equals:<br>$\pm 0.075 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right)$ or $\pm 0.075 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right)$ in % of span   |

\* 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 STA122 (0 to 780 mmHgA), Continued

| Parameter  | Description   |
|--|---|
| <b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b> | <p><b>In Analog Mode:</b> ±0.175% of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.1 + 0.075 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.1 + 0.075 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> <p><b>In Digital Mode:</b> ±0.15% of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.075 + 0.075 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.075 + 0.075 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> |

## Performance Under Rated Conditions\* - Model STA12L (0 to 780 mmHgA)

| Parameter   | Description   |
|---|---|
| <b>Upper Range Limit</b> mmHgA<br>mbarA   | 780 (0°C/32°F is standard reference temperature for mmHg range.)<br>1040  |
| <b>Minimum Span</b> mmHgA<br>mbarA  | 50<br>67  |
| <b>Turndown Ratio</b>   | 15 to 1   |
| <b>Zero Suppression</b>   | No limit except minimum span within 0 (absolute zero) to +100% URL.   |
| <p><b>Accuracy</b> (Reference – Includes combined effects of linearity, hysteresis, and repeatability)</p> <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> ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br/>For URV below reference point (90 mmHgA), accuracy equals:<br/> <math display="block">\pm 0.025 + 0.05 \left( \frac{90 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.025 + 0.05 \left( \frac{120 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> <p><b>In Digital Mode:</b> ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br/>For URV below reference point (90 mmHgA), accuracy equals:<br/> <math display="block">\pm 0.0125 + 0.05 \left( \frac{90 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.0125 + 0.05 \left( \frac{120 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> |
| <b>Zero Temperature Effect per 28°C (50°F)</b>  | <p><b>In Analog Mode:</b> ±0.15 of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.0125 + 0.1375 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.0125 + 0.1375 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> <p><b>In Digital Mode:</b> ±0.1375% of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.1375 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.1375 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p>   |
| <b>Combined Zero and Span Temperature Effect per 28°C (50°F)</b>  | <p><b>In Analog Mode:</b> ±0.2375% of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.1 + 0.1375 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.1 + 0.1375 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p> <p><b>In Digital Mode:</b> ±0.2125% of calibrated span.<br/>For URV below reference point (180 mmHgA), effect equals:<br/> <math display="block">\pm 0.075 + 0.1375 \left( \frac{180 \text{ mmHgA}}{\text{span mmHgA}} \right) \text{ or } \pm 0.075 + 0.1375 \left( \frac{240 \text{ mbarA}}{\text{span mbarA}} \right) \text{ in \% of span}</math></p>  |

\* 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 STA140/STA14L (0 to 500 psia)**

| Parameter  |              | Description  |
|--|--------------|--|
| Upper Range Limit  | psia<br>barA | 500<br>35  |
| Minimum Span   | psia<br>barA | 5<br>0.35  |
| Turndown Ratio   |              | 100 to 1   |
| Zero Suppression   |              | No limit except minimum span within 0 (absolute zero) to +100% URL.  |
| <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> |              | <b>In Analog Mode:</b> ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br>For URV calibrated below reference point (20 psia), accuracy equals:<br>$\pm 0.025 + 0.05 \left( \frac{20 \text{ psia}}{\text{span psia}} \right)$ or $\pm 0.025 + 0.05 \left( \frac{1.4 \text{ barA}}{\text{span barA}} \right)$ in % of span<br><br><b>In Digital Mode:</b> ±0.0625% of calibrated span or upper range value (URV), whichever is greater, terminal based.<br>For URV calibrated below reference point (20 psia), accuracy equals:<br>$\pm 0.0125 + 0.05 \left( \frac{20 \text{ psia}}{\text{span psia}} \right)$ or $\pm 0.0125 + 0.05 \left( \frac{1.4 \text{ barA}}{\text{span barA}} \right)$ in % of span |
| Zero Temperature Effect per 28°C (50°F)  |              | <b>In Analog Mode:</b> ±0.0625% of calibrated span.<br>For URV below reference point (50 psia), effect equals:<br>$\pm 0.0125 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span psia}} \right)$ or $\pm 0.0125 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span barA}} \right)$ in % of span<br><br><b>In Digital Mode:</b> ±0.05% of calibrated span.<br>For URV below reference point (50 psia), effect equals:<br>$\pm 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span psia}} \right)$ or $\pm 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span barA}} \right)$ in % of span  |
| Combined Zero and Span Temperature Effect per 28°C (50°F)  |              | <b>In Analog Mode:</b> ±0.10% of calibrated span.<br>For URV below reference point (50 psia), effect equals:<br>$\pm 0.05 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span psia}} \right)$ or $\pm 0.05 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span barA}} \right)$ in % of span<br><br><b>In Digital Mode:</b> ±0.075% of calibrated span.<br>For URV below reference point (50 psia), effect equals:<br>$\pm 0.025 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span psia}} \right)$ or $\pm 0.025 + 0.05 \left( \frac{\text{Ref. span}^{**}}{\text{span barA}} \right)$ in % of span   |

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

\*\* Reference span Model STA140: 50 PSIA/ 3.5 barA, Model STA14L: 75 PSIA/ 5.25 barA

## Performance Under Rated Conditions - General for all Models

| Parameter                                  | Description   |
|--|---|
| Output (two-wire)                          | Analog 4 to 20 mA or digital communications DE mode. Options available for FOUNDATION Fieldbus and HART protocol.   |
| Supply Voltage Effect                      | 0.005% of 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: $\leq 3.6$ mA and $\geq 21.0$ mA. The normal signal range is $\geq 3.8$ mA and $\leq 20.5$ 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<br>(Code "LP") | Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C<br>Impulse Rating: 10/20 $\mu$ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes)<br>(rise/decay) 10/1000 $\mu$ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)  |

## Physical and Approval Bodies

| Parameter                             | Description   |
|---------------------------------------|---|
| Barrier Diaphragm Material            | STA122/STA140: 316L SS, Hastelloy C-276, Monel<br>STA12L/STA14L: 316L SS, Hastelloy   |
| Process Head Material                 | STA122/STA140: : 316 SS, Carbon Steel (Zinc-plated), Monel, Hastelloy C-276<br>STA12L/STA14L: 316 SS  |
| Head Gaskets                          | Viton is standard. Teflon is optional but not recommended for leak-proof service under full vacuum. Graphite is also optional – see MSG.  |
| Meter Body Bolting                    | Carbon Steel (Zinc plated, standard) or A286 SS (NACE) bolts and 302/304 SS (NACE) nuts for heads.  |
| Mounting Bracket                      | Carbon Steel (Zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available.   |
| Fill Fluid                            | Silicone DC 200 oil or CTFE (Chlorotrifluoroethylene)<br>Note that DC 704 is available – Please contact Product Marketing.  |
| Electronic Housing                    | Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosion proof).<br>Stainless steel optional.  |
| Process Connections                   | STA122/STA140: 1/2-inch FNPT, 9/16-18 Aminco, DIN.<br>STA12L/STA14L: 1/2-inch F-NPT, 9/16-18 Aminco, DIN, 1/2 inch MNPT.  |
| 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 Figures 4 and 4a.   |
| Dimensions                            | See Figures 5, 5a   |
| Net Weight                            | Single Head Meter Body: 7.0 pounds (3.2 Kg)<br>In-line Meter Body: 3.8 pounds (3.2 Kg)  |
| Approval Bodies<br><br>Factory Mutual | <b>Explosion Proof:</b> Approved as Explosion Proof for Class I, Division 1, Groups A, B, C, D locations,<br><b>Dust Ignition Proof:</b> Approved as Dust Ignition Proof for Class II, III, Division 1, Groups E, F, G locations,<br><b>Intrinsically Safe:</b> Approved as Intrinsically Safe for for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations.<br><b>Nonincendive:</b> Approved as Nonincendive for Class I, Division 2, Groups A, B, C, D locations. |

| Parameter                               | Description   |
|---|---|
| CSA                                     | <p><b>Explosion Proof:</b> Approved as Explosion Proof for Class I, Division 1, Groups B, C, D locations,</p> <p><b>Dust Ignition Proof:</b> Approved as Dust Ignition Proof for Class II, III, Division 1, Groups E, F, G locations,</p> <p><b>Intrinsically Safe:</b> 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><b>Intrinsically Safe, Zone 0/1:</b> EEx ia IIC T4, T5, T6</p> <p><b>Flameproof/Zone 1:</b> EEx d IIC T5, T6 (enclosure IP 66/67)</p> <p><b>Non-Sparking, Zone 2:</b> EEx nA, IIC T6 (enclosure IP 66/67)</p> <p><b>Multiple Markings:</b> - Ex II 1 G: EEx ia IIC T4, T5, T6, Ex II 2 G: EExd IIC T5, T6<br/>Ex II 3 G: EEx nA, IIC T6 (Honeywell) (enclosure IP 66/67)</p>   |
| SA (Australian)                         | <p><b>Intrinsically Safe:</b> EX ia IIC T4</p> <p><b>Non-Sparking:</b> Ex n IIC T6 (T4 with SM option)</p>  |
| INMETRO (Brazil)                        | <b>Flame-Proof, Zone 1:</b> 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.

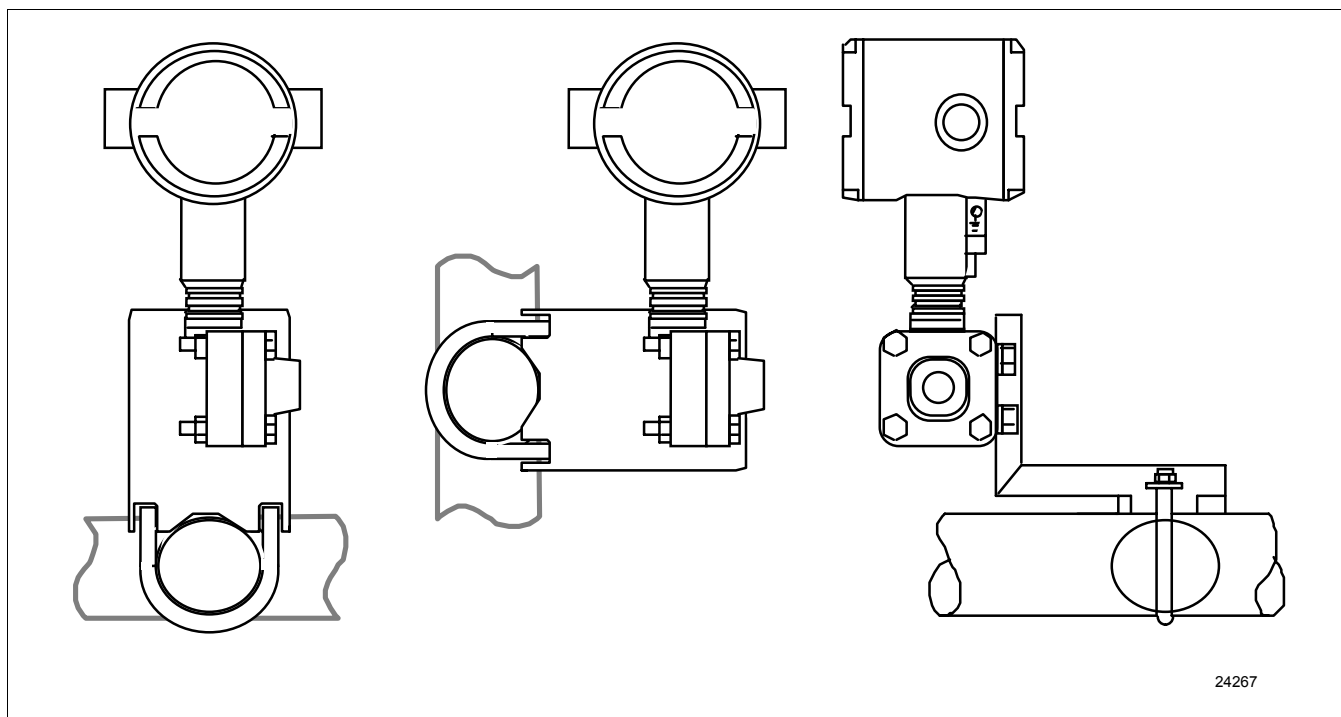
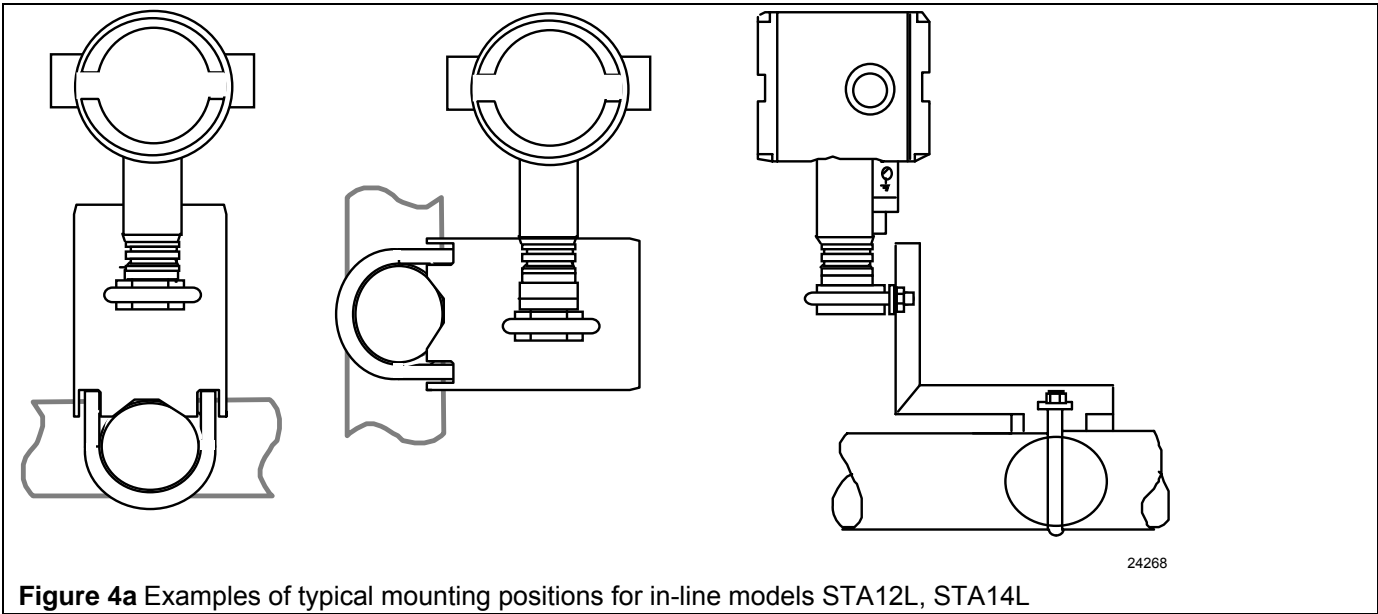
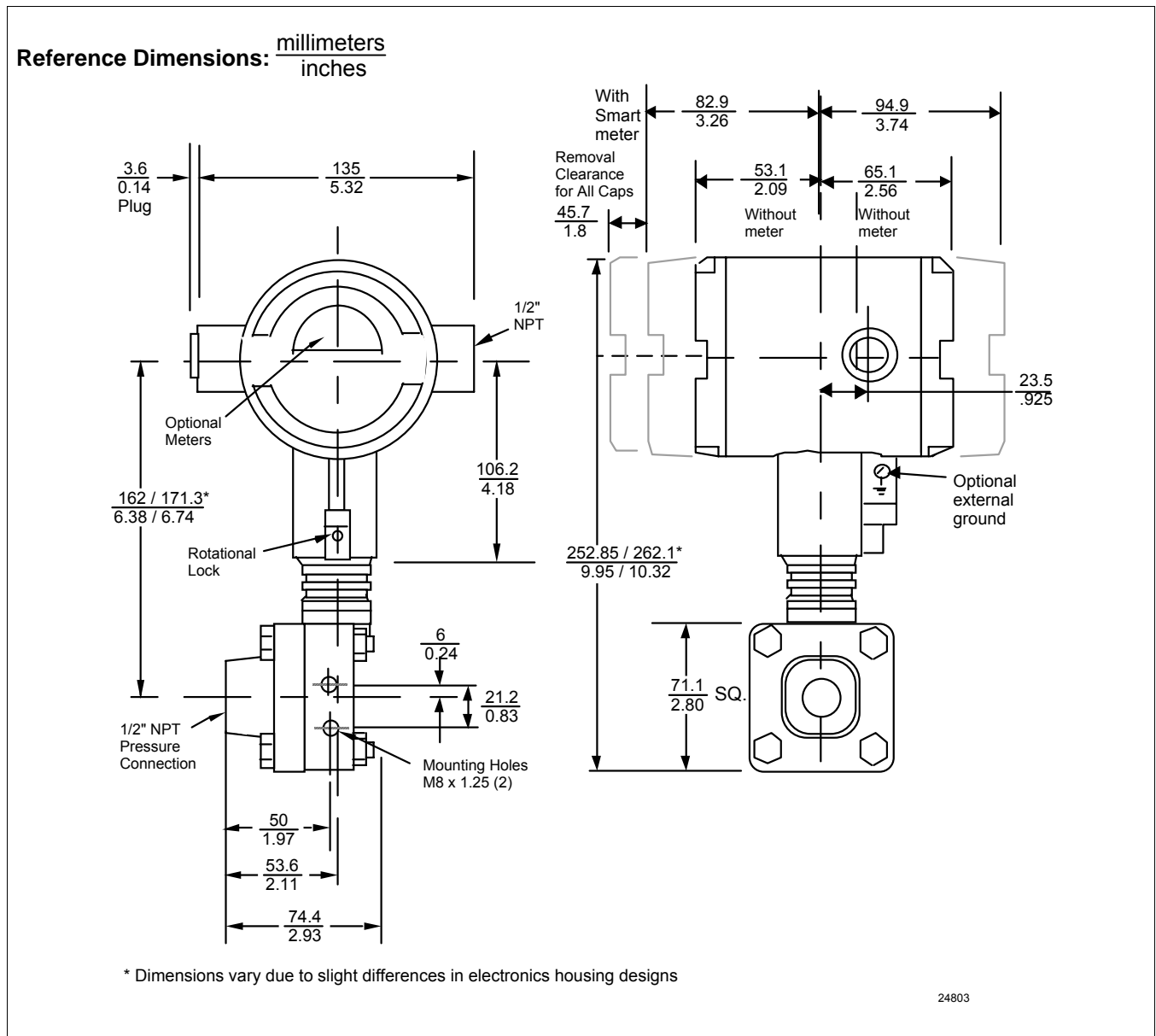


Figure 4 - Examples of typical mounting positions for single-head models STA122 and STA140.



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Figure 4a Examples of typical mounting positions for in-line models STA12L, STA14L



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Figure 5 - Typical mounting dimensions for single-head models for reference.

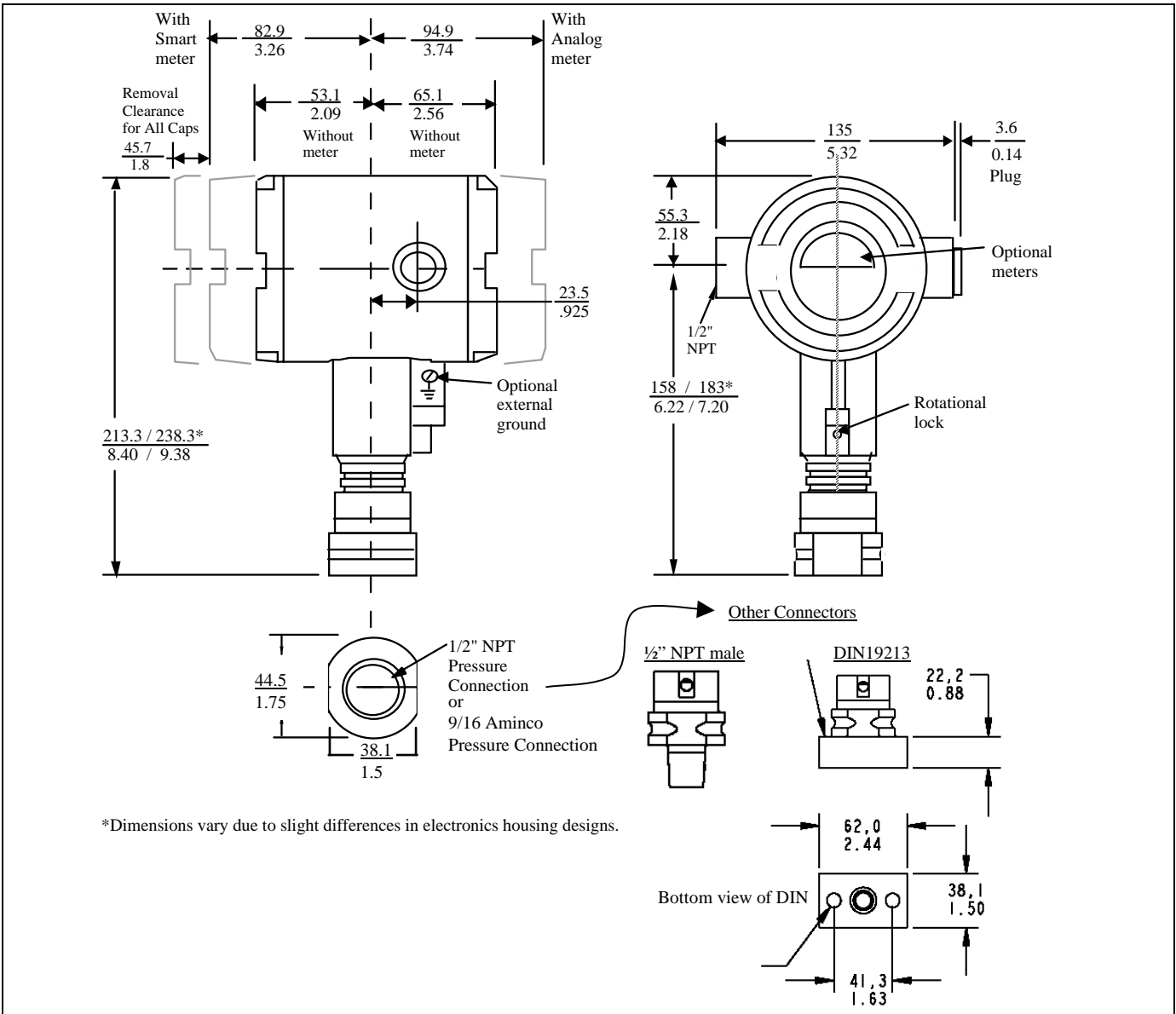


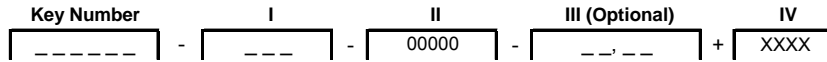
Figure 5a - Typical mounting dimensions for in-line models STA12L, STA14L

| Options   | Ordering Information   |
|---|--|
| <p><b>Mounting Bracket</b><br/>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 (Options ME and SM)</b><br/>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>HART<sup>®</sup> Protocol Compatibility (Options HC and H6)</b><br/>Optional electronics modules for the ST 3000 provides HART Protocol compatibility in either HART 5.x or 6.x formats. Transmitters with a HART Option are compatible with any HART enabled system that provides 5.x or 6.x format support.</p> <p><b>FOUNDATION Fieldbus (Option FF)</b><br/>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><b>SIL2/SIL3 Certification (Option SL)</b><br/>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 &amp; Co. KG. We are in compliance with the following SIL standards:<br/>IEC 61508-1: 1998;<br/>IEC 61508-2: 2000;<br/>IEC 61508-3: 1998</p> | <p>Contact your nearest Honeywell sales office, or</p> <p>In the U.S.:<br/>Honeywell<br/>Industrial Automation &amp; Control<br/>2500 W. Union Hills Ave<br/>Phoenix, AZ 85053<br/>1-800-288-7491</p> <p>In Canada:<br/>The Honeywell Centre<br/>155 Gordon Baker Rd.<br/>North York, Ontario M2H 3N7<br/>1-800-461-0013</p> <p>In Latin America:<br/>Honeywell Inc.<br/>480 Sawgrass Corporate Parkway,<br/>Suite 200<br/>Sunrise, FL 33325<br/>(954) 845-2600</p> <p>In Europe and Africa:<br/>Honeywell S. A.<br/>Avenue du Bourget 1<br/>1140 Brussels, Belgium</p> <p>In Eastern Europe:<br/>Honeywell Praha,<br/>s.r.o. Budejovicka 1<br/>140 21 Prague 4,<br/>Czech Republic</p> <p>In the Middle East:<br/>Honeywell Middle East Ltd.<br/>Khalifa Street,<br/>Sheikh Faisal Building<br/>Abu Dhabi, U. A. E.</p> <p>In Asia:<br/>Honeywell Asia Pacific Inc.<br/>Honeywell Building,<br/>17 Changi Business Park Central 1<br/>Singapore 486073<br/>Republic of Singapore</p> <p>In the Pacific:<br/>Honeywell Pty Ltd.<br/>5 Thomas Holt Drive<br/>North Ryde NSW Australia 2113<br/>(61 2) 9353 7000</p> <p>In Japan:<br/>Honeywell K.K.<br/>14-6 Shibaura 1-chrome<br/>Minato-ku, Tokyo, Japan 105-0023</p> <p>Or, visit Honeywell on the World Wide Web at:<br/><a href="http://www.honeywell.com">http://www.honeywell.com</a></p> <p><i>Specifications are subject to change without notice.</i></p> |

## Model Selection Guide (34-ST-16-03)

### 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

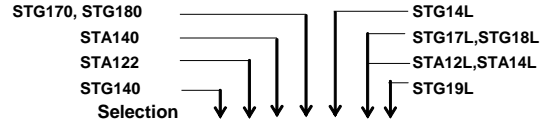
|                          | Design                                 | Span   | Selection | Availability |   |   |   |   |  |   |
|--------------------------|--|--|-----------|--------------|---|---|---|---|--|---|
| <b>Gage Pressure</b>     | Single Head                            | 0-5 to 0-500 psi/0-0.34 to 0-35 bar          | STG140    | ↓            |   |   |   |   |  |   |
|                          |  | 0-100 to 0-3000 psi/0-7 to 0-210 bar         | STG170    |              | ↓ |   |   |   |  |   |
|                          |  | 0-100 to 0-6000 psi/0-7 to 0-420 bar         | STG180    |              |   | ↓ |   |   |  |   |
|                          | In-Line                                | 0-5 to 0-500 psi/0-0.34 to 0-35 bar          | STG14L    |              |   |   | ↓ |   |  |   |
|                          |  | 0-100 to 0-3000 psi/0-7 to 0-210 bar         | STG17L    |              |   |   |   | ↓ |  |   |
|                          |  | 0-100 to 0-6000 psi/0-7 to 0-420 bar         | STG18L    |              |   |   |   | ↓ |  |   |
|                          | 0-200 to 0-10000 psi/0-14 to 0-690 bar | STG19L                                       |           |              |   |   | ↓ |   |  |   |
| <b>Absolute Pressure</b> | Single Head                            | 0-50 to 0-780 mm HgA/0-67 to 0-1040 mbarA    | STA122    | ↓            |   |   |   |   |  | * |
|                          |  | 0-5 to 0-500 psi/0-0.34 to 0-35 bar absolute | STA140    | ↓            |   |   |   |   |  |   |
|                          | In-Line                                | 0-50 to 0-780 mm HgA/0-67 to 0-1040 mbarA    | STA12L    |              |   |   |   | ↓ |  |   |
|                          |  | 0-5 to 0-500 psi/0-0.34 to 0-35 bar absolute | STA14L    |              |   |   |   | ↓ |  |   |

**TABLE I - METER BODY**

|                                  | Wetted Process Heads | Vent/Drain Valves *** | Barrier Diaphragms | Selection | Availability |   |   |   |   |   |   |
|----------------------------------|----------------------|-----------------------|--------------------|-----------|--------------|---|---|---|---|---|---|
| Materials of Construction        | Carbon Steel **      | -                     | 316L SS            | A __      | •            | • | • | • |   |   |   |
|                                  | Carbon Steel **      | -                     | Hastelloy C        | B __      | •            | • | • | • |   |   |   |
|                                  | Carbon Steel **      | -                     | Monel              | C __      | •            | • | • | • |   |   |   |
|                                  | 316 SS               | -                     | 316L SS            | E __      | •            | • | • | • |   |   |   |
|                                  | ****                 | -                     | 316L SS            | E __      |              |   |   |   | • | • | • |
|                                  | 316 SS               | -                     | Hastelloy C        | F __      | •            | • | • | • |   | • | • |
|                                  | ****                 | -                     | Hastelloy C        | F __      |              |   |   |   | • | • | • |
|                                  | 316 SS               | -                     | Monel              | G __      | •            | • | • | • |   |   |   |
|                                  | Hastelloy C          | -                     | Hastelloy C        | J __      | •            | • | • | • |   |   |   |
| Monel                            | -                    | Monel                 | L __               | •         | •            | • | • |   |   |   |   |
| Fill Fluid                       | Silicone DC200 ***** |                       |                    | _ 1 _     | •            | • | • | • | • | • | • |
|                                  | CTFE                 |                       |                    | _ 2 _     | •            | • | • | • | • | • | • |
| Process Connection Configuration | 9/16" - 18 Aminco    |                       |                    | _ _ A     | •            | • | • | • | • | • | • |
|                                  | 1/2" NPT (female)    |                       |                    | _ _ G     | •            | • | • | • | • | • | • |
|                                  | 1/2" NPT (male)      |                       |                    | _ _ H     |              |   |   |   | • | • | • |
|                                  | DIN 19213            |                       |                    | _ _ D     |              |   |   |   | • | • |   |

- \* For STA122 selections using Hastelloy C, both the meter body and diaphragms are Hastelloy C material.
- \*\* 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.
- \*\*\*\* STGIXL has 316L SS process interface.
- \*\*\*\*\* If STA122 operating below 50mm HgA, see Figure 2 in Specification 34-ST-03-61 and contact Marketing Applications for a "Special" Silicone DC704 quote.

**Model Selection Guide, cont.**



**TABLE II**

|              |       |   |   |   |   |   |   |   |   |
|--------------|-------|---|---|---|---|---|---|---|---|
| No Selection | 00000 | . | . | . | . | . | . | . | . |
|--------------|-------|---|---|---|---|---|---|---|---|

**TABLE III - OPTIONS**

|  |    |    |    |    |    |    |    |    |   |
|--|----|----|----|----|----|----|----|----|---|
| <b>None</b>  | 00 | .  | .  | .  | .  | .  | .  | .  | . |
| <b>Communication Options</b>   |    |    |    |    |    |    |    |    |   |
| HART 5.x Protocol Compatible Electronics   | HC | y  | y  | y  | y  | y  | y  | y  | b |
| HART 6.x Protocol Compatible Electronics   | H6 | y  | y  | y  | y  | y  | y  | y  |   |
| FOUNDATION Fieldbus Communications   | FF | r  | r  | r  | r  | r  | r  | r  |   |
| <b>Indicating Meter Options</b>  |    |    |    |    |    |    |    |    |   |
| Analog Meter (0-100 Even 0-10 Square Root)   | ME | .  | .  | .  | .  | .  | .  | .  | b |
| Smart Meter  | SM | .  | .  | .  | .  | .  | .  | .  |   |
| Custom Configuration of Smart Meter  | CI | e  | e  | e  | e  | e  | e  | e  | b |
| Local Zero & Span  | ZS | m  | m  | m  | m  | m  | m  | m  |   |
| Local Zero   | LZ | x  | x  | x  | x  | x  | x  | x  |   |
| <b>Transmitter Housing &amp; Electronics Options</b>   |    |    |    |    |    |    |    |    |   |
| NAMUR Failsafe Software  | NE | 15 | 15 | 15 | 15 | 15 | 15 | 15 | b |
| SIL 2 - TÜV Certified transmitter (requires HC and WP options)   | SL | p  | p  | p  | p  | p  | p  | p  |   |
| Lightning Protection   | LP | .  | .  | .  | .  | .  | .  | .  |   |
| Custom Calibration and I.D. in Memory  | CC | .  | .  | .  | .  | .  | .  | .  | b |
| Transmitter Configuration - non-Fieldbus   | TC | .  | .  | .  | .  | .  | .  | .  |   |
| Write Protection (Delivered in "ON" position)  | WP | .  | .  | .  | .  | .  | .  | .  |   |
| Write Protection (Delivered in "OFF" position)   | WX | g  | g  | g  | g  | g  | g  | g  | b |
| 316 SS Electronics Housing - (with M20 Conduit Connections)  | SH | n  | n  | n  | n  | n  | n  | n  |   |
| 1/2" NPT to M20 316 SS Conduit Adapter (BASEEFA EEx d IIC)   | A1 | n  | n  | n  | n  | n  | n  | n  |   |
| 1/2" NPT to 3/4" NPT 316 SS Conduit Adapter  | A2 | u  | u  | u  | u  | u  | u  | u  | b |
| Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter (use for FM and CSA Approvals)     | A3 | i  | i  | i  | i  | 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 | .  | .  | .  | .  | .  | .  | .  |   |
| High Accuracy  | HA | d  | .  | .  | .  | d  | .  | .  |   |
| End Cap Live Circuit Warning Label in Spanish (only with ATEX 3D)                                      | SP | a  | a  | a  | a  | a  | a  | a  | b |
| End Cap Live Circuit Warning Label in Portuguese (only with ATEX 3D)                                   | PG | a  | a  | a  | a  | a  | a  | a  |   |
| End Cap Live Circuit Warning Label in Italian (only with ATEX 3D)                                      | TL | a  | a  | a  | a  | a  | a  | a  |   |
| End Cap Live Circuit Warning Label in German (only with ATEX 3D)                                       | GE | a  | a  | a  | a  | a  | a  | a  |   |
| <b>Meter Body Options</b>  |    |    |    |    |    |    |    |    |   |
| A286 SS (NACE) Bolts and 304 SS (NACE) Nuts for Head   | CR | .  | .  | .  | .  | .  | .  | .  | b |
| 316 SS Bolts and 316 SS Nuts for Process Heads   | SS | f  | .  | f  | f  | .  | .  | .  |   |
| Modified DIN Process Heads - 316 SS  | DN | w  | w  | w  | w  | .  | .  | .  | b |
| Viton Process Head Gasket (Teflon is standard)   | VT | z  | .  | z  | z  | .  | .  | .  |   |
| Graphite Process Head Gasket   | GF | .  | .  | .  | .  | .  | .  | .  |   |
| Teflon Process Head Gasket (Viton is standard)   | TF | .  | .  | .  | .  | .  | .  | .  |   |
| <b>Transmitter Mounting Bracket Options</b>  |    |    |    |    |    |    |    |    |   |
| Mounting Bracket - Carbon Steel  | MB | .  | .  | .  | .  | .  | .  | .  | b |
| Mounting Bracket - 304 SS  | SB | .  | .  | .  | .  | .  | .  | .  |   |
| Flat Mounting Bracket - Carbon Steel   | FB | .  | .  | .  | .  | .  | .  | .  |   |
| <b>Services/Certificates/Marine Type Approval Options</b>  |    |    |    |    |    |    |    |    |   |
| User's Manual Paper Copy (Standard, HC, or FF ships accordingly)                                       | UM | .  | .  | .  | .  | .  | .  | .  | b |
| Clean Transmitter for Oxygen or Chlorine Service with Certificate                                      | OX | h  | h  | h  | h  | h  | h  | 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 Certificate (SIL 1)  | F6 | .  | .  | .  | .  | .  | .  | .  | b |
| NACE Certificate (F0198)   | F7 | o  | o  | o  | o  | .  | .  | .  |   |
| Marine Type Approvals (DNV, ABS, BV & LR)  | MT | 2  | 2  | 2  | 2  | 2  | 2  | 2  |   |
| <b>Warranty Options</b>  |    |    |    |    |    |    |    |    |   |
| Additional Warranty - 1 year   | W1 | .  | .  | .  | .  | .  | .  | .  | b |
| Additional Warranty - 2 years  | W2 | .  | .  | .  | .  | .  | .  | .  |   |
| Additional Warranty - 3 years  | W3 | .  | .  | .  | .  | .  | .  | .  |   |
| Additional Warranty - 4 years  | W4 | .  | .  | .  | .  | .  | .  | .  |   |
| Lifetime Warranty - 15 years   | WL | .  | .  | .  | .  | .  | .  | .  |   |

Model Selection Guide, cont.

| 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   |           | • | • | • | • | • | • | • | • |
| CSA                             | Intrinsically Safe  | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G  | 2J        | • | • | • | • | • | • | 3 | 4 |
|                                 | Explosion Proof   | Class I, Div. 1, Groups B,C,D   |           | • | • | • | • | • | • | • | • |
|                                 | Dust Ignition Proof   | Class II, III, Div. 1, Groups 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  | <input type="checkbox"/> II 1 G EEx ia IIC T4, T5, T6   | 3S        | • | • | • | • | • | • | • | • |
|                                 | Flameproof, Zone 1  | <input type="checkbox"/> II 2 G EEx d IIC T5, T6, Enclosure IP 66/67  | 3D        | • | • | • | • | • | • | • | • |
|                                 | Non-Sparking, Zone 2  | <input type="checkbox"/> II 3 G EEx nA, IIC T6 (Honeywell), Enclosure IP 66/67  | 3N        | • | • | • | • | • | • | • | • |
|                                 | Multiple Marking**<br>Int. Safe, Zone 0/1, or<br>Flameproof, Zone 1, or<br>Non-Sparking, Zone 2 | Ex II 1 G EEx ia IIC T4, T5, T6<br>Ex II 2 G EEx d IIC T5, T6<br>Ex II 3 G EEx nA, IIC T6 (Honeywell)<br>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 | • | • | • | • | • | • |
|------------------------|------|---|---|---|---|---|---|

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 |                     |                    |                         |
| d                  | I                                      | A _ _ , E _ _       |                    |                         |
| e                  | III                                    | SM                  |                    |                         |
| f                  |  |                     | III                | 2J                      |
| g                  |  |                     | III                | SL                      |
| h                  |  | _ 2 _               |                    |                         |
| i                  | III                                    | 1C or 2J            |                    |                         |
| m                  |  |                     | III                | ME, FF                  |
| n                  |  |                     | III                | 1C, 2J                  |
| o                  | III                                    | CR                  |                    |                         |
| p                  | III                                    | HC, WP              | III                | FF, 00, WX              |
| r                  |  |                     | III                | TC, ME, 4G, 3S          |
| u                  | III                                    | 1C, 2J              |                    |                         |
| w                  | I                                      | E _ G, F _ G, G _ G |                    |                         |
| x                  | III                                    | FF, SM              |                    |                         |
| z                  |  |                     | III                | B _ _ , F _ _ , J _ _   |
| y                  |  |                     | III                | 4G                      |
| 2                  |  |                     | III                | FB                      |
| 3                  |  |                     | Key #              | STA12L or STA14L        |
| 4                  |  |                     | III                | No CRN Number available |
| 15                 |  |                     | III                | FF                      |

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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FOUNDATION™ is a trademark of the Fieldbus Foundation.

**Honeywell**

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