Technical Information

Honeywell

ST 3000 Smart Transmitter Series 900 Flush Mount Models Specifications

34-ST-03-73 August 2011

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 Pressure Transmitters continue to bring proven "smart" technology to a wide spectrum of measurement applications. Honeywell offers the STG93P gauge pressure transmitter for direct insertion in processes with the use of a 1" sleeve, welded into the process line. The primary application is gauge pressure measurement in head box applications in pulp and paper plants. The flush mount capability eliminates the possibility of clogging while the insertion design makes transmitter change out rapid and trouble-free. The STG93P transmitter is available in ranges from 0-5 to 0-100 psig and can be installed in a variety of hazardous locations.

Model		
STG93P	0 to 100 psig	0 to 7 barg

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

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

Figure 1 — Model STG93P Series 900 Flush Mount Pressure Transmitters feature proven piezoresistive sensor technology.

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:

- Stability
- Reliability

ST 3000 S900 Transmitter Benefits
Stability = ±0.01% per year
Reliability = 470 years MTBF

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.

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 transmitters.

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.

Advanced Diagnostics

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

- Provide advanced warning of possible failure events and avoid costly shutdowns.
- Three levels of failure reporting
- Comprehensive list of on-board diagnostics (Ref. ST 3000 User manual with HART 6, 34-ST-25-17 Rev: June 09 and Foundation Fieldbus option manual 34-ST-25-15 Rev: June09)

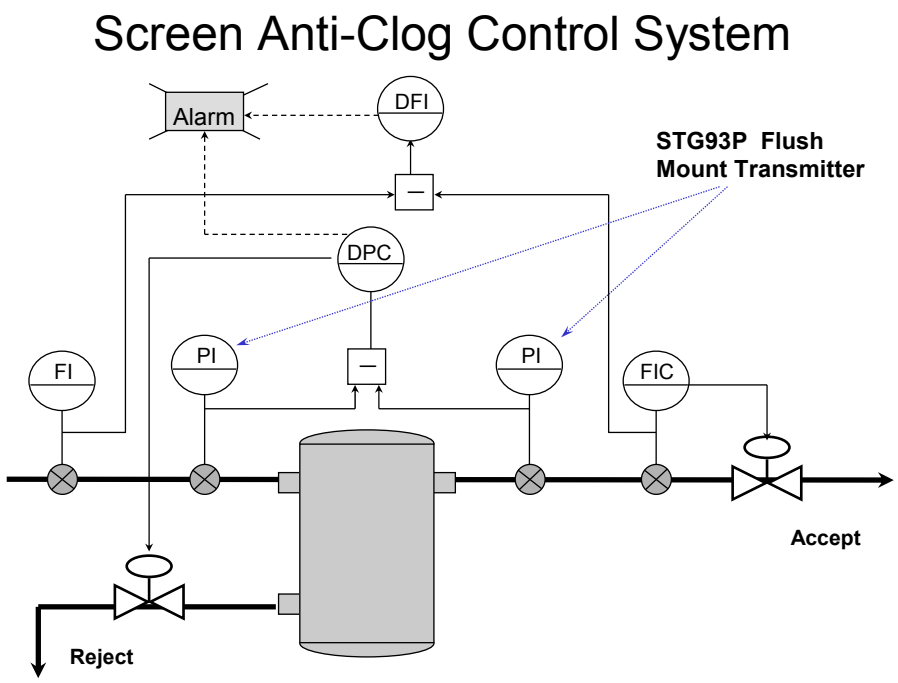

Figure 2 — ST 3000 STG93P Typical Installation.

Smart Technology Delivers Broad Benefits and Reduces Total Cost of Ownership

The ST 3000 Flush Mount Transmitter combines integrated sensor and microprocessor technologies to produce the most accurate and consistent measurement possible, and is based on ST 3000 technology which is the most reliable in the industry. These features help improve product yield, increase process efficiency and enhance plant safety.

In addition to the advantages of superior accuracy and reliability, the ST 3000 significantly lowers your lifetime cost of ownership in several ways:

- **Installation**
  Wiring cost savings are achieved, as well as reduced costs of piping, manifolds, mounting, safety barriers, etc., with the ST 3000.
- **Commissioning**
  The hand-held SFC III Smart Field Communicator lets a single technician remotely configure ST 3000 transmitters and re-range them when application requirements change.
- **Maintenance**
  The ST 3000 offers greater accuracy and stability, reducing the frequency of calibration. Self-diagnostics can automatically indicate impending problems before they affect reliability or accuracy. Also, a single technician can diagnose problems remotely, using the SFC or TPS Global User Station, saving time and reducing cost.
- **Inventory Stocking**
  Enhanced reliability, combined with the high turndown capability of the ST 3000, reduces the quantity of instruments needed to stock as backups for the installed transmitters.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25±1	77±2	-15 to 65	5 to 149	-15 to 65	5 to 149	-55 to 75	-67 to 167
Process Interface Temperature	25±1	77±2	-15 to 65	5 to 149	-15 to 95*	5 to 203	NA	NA
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vacuum Region – Minimum Pressure **mmHg absolute** **inH$_2$O absolute**	 Atmospheric Atmospheric		 300 150		 2 (short term) ** 1 (short term) **			
Supply Voltage, Current, and Load Resistance	**Voltage Range:** 10.8 to 42.4 Vdc at terminals **Current Range:** 3.8 to 21.8 mA **Load Resistance:** 0 to 1,440 ohms (as shown in Figure 3)							
Maximum Allowable Working Pressure (MAWP) (ST 3000 products are rated to Maximum Allowable Working Pressure.)	STG93P = 100 psi, 5.1 bar Units can withstand overpressure of 1.5X MAWP without damage.							

* Process temperatures above 65 °C (149 °F) require a 1:1 reduction in maximum ambient temperature.

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

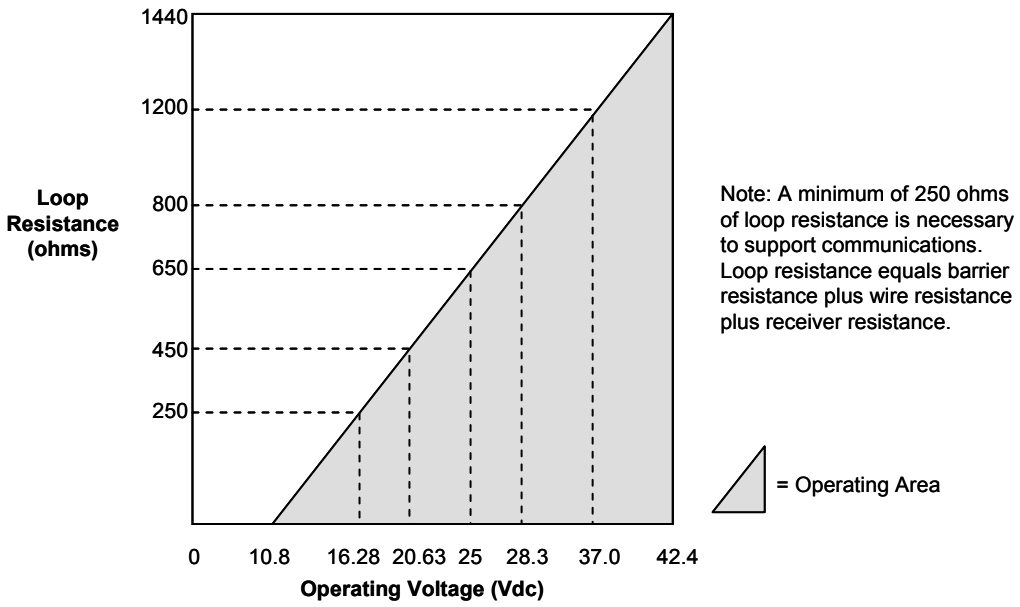

Figure 3 - Supply voltage and loop resistance chart

Performance under Rated Conditions* - Model STG93P 0-100 psig (0-7 barg)

Parameter	Description
Upper Range Limit** **psig** **barg**	100 7
Minimum Span **psig** **barg**	1 0.07
Turndown Ratio	100 to 1
Zero Elevation and Suppression	No limit (except minimum span) from zero to 100% of 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:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, - terminal based. For URV below reference point (25 psi), accuracy equals: $\pm\left[0.0125+0.0875\left(\frac{25\ \text{psi}}{\text{span}\ \ \text{psi}}\right)\right]$ or $\pm\left[0.0125+0.0875\left(\frac{1.7\ \text{bar}}{\text{span}\ \ \text{bar}}\right)\right]$ in % of span **In Digital Mode:** ±0.0875% of calibrated span or upper range value (URV), whichever is greater, - terminal based. For URV below reference point (25 psi), accuracy equals: $\pm 0.0875\left(\frac{25\,\text{psi}}{\text{span psi}}\right)$ or $\pm 0.0875\left(\frac{1.7\,\text{bar}}{\text{span bar}}\right)$ in % span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.40% of span. For URV below reference point (50 psi), effect equals: $\pm\left[0.05+0.35\left(\frac{50\ \text{psi}}{\text{span}\ \ \text{psi}}\right)\right]$ or $\pm\left[0.05+0.35\left(\frac{3.5\ \text{bar}}{\text{span}\ \ \text{bar}}\right)\right]$ in % of spa **In Digital Mode:** ±0.35% of span. For URV below reference point (50 psi), effect equals: $\pm 0.35\left(\frac{50\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.35\left(\frac{3.5\ \text{bar}}{\text{span bar}}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.50% of span. For URV below reference point (50 psi), effect equals: $\pm\left[0.05+0.45\left(\frac{50\ \text{psi}}{\text{span}\ \ \text{psi}}\right)\right]$ or $\pm\left[0.05+0.45\left(\frac{3.5\ \text{bar}}{\text{span}\ \ \text{bar}}\right)\right]$ in % of spa **In Digital Mode:** ±0.45% of span For URV below reference point (50 psi), effect equals: $\pm 0.45\left(\frac{50\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.45\left(\frac{3.5\ \text{bar}}{\text{span bar}}\right)$ in % span
Stability	±0.03% of URL per year.

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and Hastelloy C diaphragm.

** Transmitter URL limit or maximum process connection rating, whichever is lower.

Performance under Rated Conditions – 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 "NE")	Transmitter failure information is generated when the measuring information is invalid or no longer present. Failure information is transmitted as a current signal but outside the normal 4-20 mA measurement signal level. Transmitter failure values are: ≤ 3.6 mA and ≥ 21.0 mA. The normal signal range is ≥ 3.8 mA and ≤ 20.5 mA.
SIL 2/3 Compliance	SIL certified to IEC 61508 for non-redundant use in SIL 2 related Safety Systems (single use) and for redundant (multiple) use in SIL 3 Safety Systems through TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 1998; IEC 61508-2: 2000; IEC61508-3: 1998.
Lightning Protection Option (Code "LP")	Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: 10/20 µ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) (rise/decay) 10/1,000 µ sec. 250 Amps (1,000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Process Interface	See Model Selection Guide for Material Options for desired seal type.
Diaphragms Materials (wetted)	Hastelloy® C-276[2]
Meter Body Materials (wetted)	316L Stainless Steel
Fill Fluid	Silicone DC® 200 oil
Electronic Housing	Epoxy-Polyester hybrid paint. Low copper-aluminum alloy. Meets NEMA type 4X (watertight) and designed to meet NEMA 7 (explosion proof).
Process Connections	Flush mount in 1" weld sleeve, with O-ring and locking bolt.
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See Figure 4.
Net Weight	3.9 pounds (1.8 Kg).

[2] Hastelloy® C-276 or UNS N10276

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

Certifications

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

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

FM Approvals[SM] is a service mark of FM Global

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

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

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

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

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

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
ATEX (LCIE)	**Flameproof, Zone 0:** ⟨Ex⟩ II 1 D, Ex tD Enclosure IP 66/67	All	All	A20 IP6X T95ºC Ta = 93ºC or T80ºC Ta = 78ºC
	Flameproof, Zone 1: ⟨Ex⟩ II 2 GD, Ex d IIC, Ex tD Enclosure IP 66/67	All	All	T5 Ta = –50 to +93ºC T6 Ta = –50 to +78ºC, A21 IP6X T95ºC Ta = 93ºC or T80ºC Ta = 78ºC
	Intrinsically Safe, Zone 0/1: ⟨Ex⟩ II 1 G, Ex ia IIC, Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC
	Non-Sparking, Zone 2: ⟨Ex⟩ II 3 G, Ex nA IIC (Honeywell), Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FNICO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC
	Multiple Marking: **Flameproof, Zone 1:** ⟨Ex⟩ II 2 G, Ex d IIC **Intrinsically Safe, Zone 0/1:** ⟨Ex⟩ II 1 G, Ex ia IIC **Non-Sparking, Zone 2:** ⟨Ex⟩ II 3 G, Ex nA IIC **NOTE:** The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO/FNICO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC

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

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

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

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

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

Mounting

Reference Dimensions: millimeters / inches

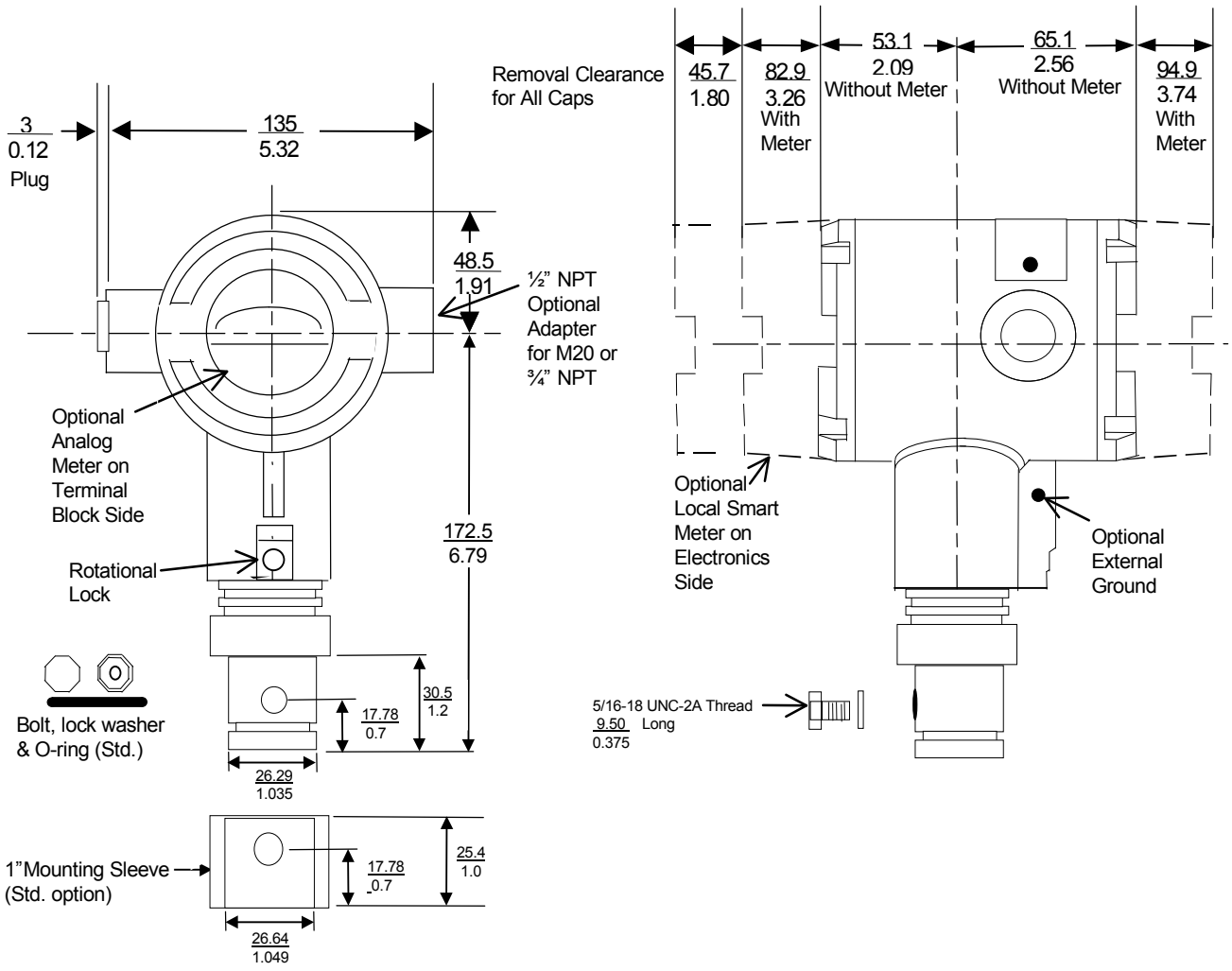

Figure 4 —Typical Mounting Dimensions for 1" Flush Mount Transmitter

Options

- **Indicating Meter (Options ME and SM)**
  The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display 0 to 100% pressure in selected engineering units.
- **Local Zero and Span (Option ZS)**
  A local zero and span adjustment option is available.
- **Lightning Protection (Option LP)**
  A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.
- **HART® Protocol Compatibility (Options HC and H6)**
  Optional electronics modules for the ST 3000 provide 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.
- **Foundation™ Fieldbus (Option FF)**
  Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.
- **SIL2/SIL3 Certification (Option SL)**
  This ST 3000 product is available for use with safety systems. With the SL option, we are fully certified to SIL 2 capability for single transmitters and SIL 3 capability for multiple transmitter use through TÜV Nord Sys Tec GmbH & Co. KG. We are in compliance with the following SIL standards:

  IEC 61508-1: 1998

  IEC 61508-2: 2000

  IEC 61508-3: 1998
- **NAMUR NE43 Compliance (Option NE**)
  This option provides software 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.
- **Transmitter Configuration (Options 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.
- **Indicator Configuration (Option CI)**
  Provides custom configuration of Smart Meters.
- **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.
- **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.

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

Model Selection Guide (34-ST-16-52)

Honeywell

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ST 3000 Smart Transmitter Flush Mount Gauge Pressure Transmitter Series 900

Model Selection Guide

Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make selections from each Table (I, II and IV), using the column below the proper arrow.
- Select as many Table III options as desired plus a communications option selection.
- A (●) denotes unrestricted availability. A letter denotes restricted availability.

Key Number		I		II	III (Optional)		IV
STG93P	-	_ _ _	-	0 0 0 0 0	_ _ , _ _	+	X X X X

Important Note: **Base STG 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).**

KEY NUMBER

	Span		Selection	Availability
Gauge	0-1 to 0-100 psi	0-0.07 to 0-7 bar	STG93P	↓

TABLE 1 METER BODY

	Process Interface	-	Barrier Diaphragms	Selection	
Materials of Construction	316 SS	-	Hastelloy® C-276 [1]	F _ _	●
Fill	DC®200 Silicone			_ 1 _	●
Process Head	1" Slip-in with Locking Screw (Sleeve not provided)			_ _ 1	●

TABLE II

No Selection	**0 0 0 0 0**	●

[1] Hastelloy® C-276 or UNS N10276

Ordering Example: STG93P-F11-H6,1C+XXXX

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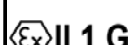
TABLE III - OPTIONS	Selection	Availability STG93P ↓	
Communication Options *(Must choose a communications option)*			
Analog only *(can be configured using appropriate Honeywell DE tool)*	AN	•	
DE Protocol communications	DE	•	
HART® 5.x Protocol compatible electronics	HC	•	b
HART® 6.x Protocol compatible electronics	H6	•	
FOUNDATION™ Fieldbus Communications	FF	r	
Indicating Meter Options			
Analog Meter *(0-100 Even 0-10 Square Root)*	ME	•	
Smart Meter	SM	•	b
Custom Configuration of Smart Meter	CI	m	
Local Zero	LZ	s	
Local Zero and Span	ZS	x	b
Transmitter Housing & Electronics Options			
*No housing conduit plugs or adaptors come standard with the ST 3000. For certain approval codes, you **must** select a certified conduit plug from below and it will come packaged in the box with your transmitter.*			
316 SS [2] Electronics Housing - *(with M20 conduit connections)*	SH	n	
316 SS [2] Electronics Housing - *(with M20 to 1/2 NPT 316 SS conduit adapter for use with FM and CSA Approval codes)*	A3	i	b
1/2 NPT Male to M20 Female 316 SS Certified Conduit Adapter *(ATEX, CSA & IECEx)*	A1	•	
1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter *(ATEX, CSA & IECEx)*	A2	•	
M20 Male to 1/2 NPT Female 316 SS Certified Conduit Adaptor *(ATEX, CSA & IECEx)*	A4	•	
1/2 NPT Zinc-plated Certified Conduit Plug *(ATEX, CSA & IECEx)*	A5	•	
1/2 NPT 316 SS Certified Conduit Plug *(ATEX, CSA & IECEx)*	A6	•	
M20 316 SS Certified Conduit Plug *(ATEX, CSA & IECEx)*	A7	•	
1/2 NPT Non-certified Conduit plug *(Zinc-plated carbon steel, general use)*	A8	•	
NAMUR Failsafe Software	NE	15	
SIL 2 - TÜV Certified transmitter *(requires HC or H6 and WP options)*	SL	p	
Lightning Protection	LP	•	
Custom Calibration and I.D. in Memory	CC	•	
Transmitter Configuration - *(non-Fieldbus)*	TC	15	b
Transmitter Configuration - *(Fieldbus)*	FC	21	
Write Protection *(Delivered in the "enabled" position)*	WP	•	b
Write Protection *(Delivered in the "disabled" position)*	WX	•	
Stainless Steel Customer Tag *(4 lines, 26 characters per line, customer supplied information)*	TG	•	
Stainless Steel Customer Tag *(Blank)*	TB	•	
Meter Body Options			
Calibration Fixture *(with 1/4 NPT Port for Pressure Source)*	CF	•	
316L SS Mounting Sleeve *(requires customer installation to process)*	MS	•	
Services/Certificates/Marine Type Approval Options			
User's Manual Paper Copy *(Standard, HC/H6, or FF ships accordingly)*	UM	•	
Calibration Test Report and Certificate of Conformance (F3399)	F1	•	b
Certificate of Conformance (F3391)	F3	•	
Certification of Origin (F0195)	F5	•	
SIL Certificate *(SIL 2/3)* (FC33337)	FE	22	
NACE Certificate *(Process-Wetted & Non-Process Wetted)* (FC33339)	F7	•	b
NACE Certificate *(Process-Wetted only)* (FC33338)	FG	•	
Material Traceability Certification per EN 10204 3.1 (FC33341)	FX	•	
Marine Type Approvals *(DNV, ABS, BV, KR & LR)* (FC33340)	MT	•	
Warranty Options			
Additional Warranty - 1 year	W1	•	
Additional Warranty - 2 years	W2	•	b
Additional Warranty - 3 years	W3	•	
Additional Warranty - 4 years	W4	•	

Table III continued next page

[2] Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.

TABLE III - OPTIONS

Approval Body	Approval Type	Location or Classification	Selection	Availability STG93P
No hazardous location approvals			9X	•
ATEX [10] (LCIE)	Intrinsically Safe, Zone 0	 **Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C) Enclosure IP 66/67	3S	•
	Intrinsically Safe, Zone 1	 **Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C) Enclosure IP 66/67		
	Dust-tight Enclosure, Zone 0	 **Ex tD A20 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) Enclosure IP 66/67	33	**24**
	Flameproof and Dust-tight Enclosure, Zone 1	 **Ex d IIC** T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C) Supply 11- 42Vdc **Ex tD A21 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C Enclosure IP 66/67)		
	Non-Sparking, Zone 2	**Ex nA, IIC** T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA **Ex tD A22 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) (Honeywell). Enclosure IP 66/67	3N	•
	Multiple Marking [11] Int. Safe, Zone 0/1 and Dust-tight Enclosure, or Flameproof, Zone 1 and Dust-tight Enclosure, or Non-Sparking, Zone 2	**Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C); Ui = 30V; Ii = 100mA **Ex tD A20 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C)	3C	**24**
		Ex d IIC T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C) Supply 11- 42Vdc **Ex tD A21 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C)		
		Ex nA, IIC T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA **Ex tD A22 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) (Honeywell) Enclosure IP 66/67		

Approvals continued on next page

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TABLE III - Approvals Options Continued

Approval Body	Approval Type	Location or Classification	Selection	Availability STG93P ↓
FM Approvals[SM]	Explosion Proof Dust-Ignitionproof Non-Incendive Intrinsically Safe	Class I, Div. 1, Groups A,B,C,D Class II, III, Div. 1, Groups E,F,G Class I, Div. 2, Groups A,B,C,D Class I, II, III, Div. 1, Grps. A,B,C,D,E,F,G	1C	•
Canadian Standards Association (CSA)	Explosion Proof Dust-Ignitionproof Intrinsically Safe	Class I, Div. 1, Groups B,C,D Class II, III, Div. 1, Groups E,F,G Class I, II, III, Div. 1, Grps. A,B,C,D,E,F,G	2J	24
IECEx	Flameproof, Zone 1	**Ex d IIC**; T5 (Ta = -40 to +93ºC), T6 (Ta = -40 to +78ºC)	CA	24
	Intrinsically Safe, Zone 0/1	**Ex ia IIC**; T3, T4, T5 , T6 (See IECEx certificate for detailed temperature codes by Communications option)		
SAEx (South Africa)	Intrinsically Safe, Zone 0/1	**Ex ia IIC** T4, T5, T6	Z2	•
	Flameproof, Zone 1	**Exd IIC** T5, T6 Enclosure IP 66/67	ZD	•
	Multiple Marking [11] Int. Safe, Zone 0/1, or Flameproof, Zone 1	**Ex ia IIC** T4, T5, T6 **Ex d IIC** T5, T6 Enclosure IP 66/67	ZA	•
CERTUSP INMETRO (Brazil)	Flameproof, Zone 1	**BR- Ex d IIC** T5, T6	6D	•
	Intrinsically Safe, Zone 0/1	**BR- Ex ia IIC**; T4, T5, T6 (See CERTUSP certificate for detailed temperature codes by Communications option)	6S	•

b

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

[11] The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] 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	**X X X X**	•

Restrictions Table

Restriction Letter	Available only with		Not available with	
	Table	Selection	Table	Selection
b	Select only one option from this group			
i	III	1C or 2J		
m	III	SM		
n			III	1C, 2J
p	III	HC or H6 and WP	III	FF
r	III	FISCO/FNICO compliance available only with 1C	III	TC, ME or FISCO/FNICO compliance not available with 3C, 3N, 33, 3S, 2J, CA, Z2, ZD, ZA, 6D & 6S
x			III	FF, ME
s	III	FF, SM		
15			III	FF
21	III	FF		
22	III	SL		
24	III	This approval code requires the selection of a certified conduit plug: A5, A6 or A7		

FM Approvals[SM] is a service mark of FM Global
DC® 200 is a registered trademark of Dow Corning
Hastelloy® is a registered trademark of Haynes International
HART® is a registered trademark of HART Communication Foundation.
FOUNDATION™ Fieldbus is a registered trademark of Fieldbus Foundation.

Specifications are subject to change without notice.

For More Information

Learn more about how Honeywell's ST 3000 Series 900 Pressure Transmitters increase performance, reduce downtime and decrease configuration costs, visit our website www.honeywell.com/ps/hfs or contact your Honeywell account manager.

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August 2011