

ST 3000 Smart Transmitter Series 900 Models

STD904	Differential	0 to 400 inH ₂ O	0 to 1,000 mbar
STG90L	Gauge	0 to 500 psi	0 to 35 bar

Specification and Model Selection Guide

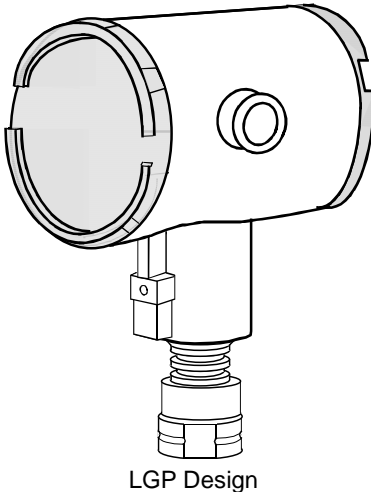
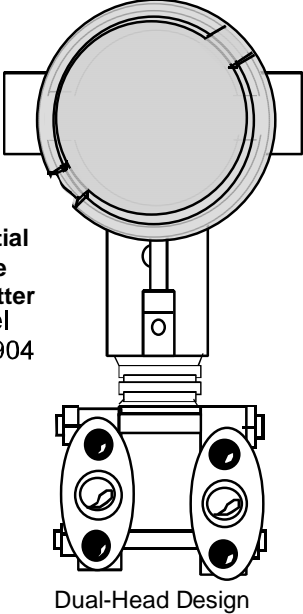
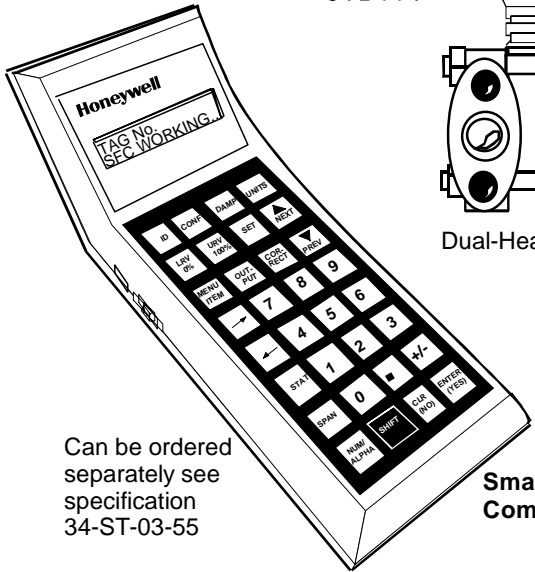
Function	Image
<p>Honeywell's STD904 and STG90L models offer an economical solution to many pressure measurement applications not requiring the tighter accuracy of the STD924 and STG94L. These models provide the same outstanding functionality and reliability found in our other ST 3000® models.</p>	 <p>ST 3000 Gauge Pressure Transmitter Model STG90L</p>
<p>Honeywell's proven piezoresistive sensor technology is used in these models and each unit is factory characterized to reduce the effects of ambient temperature and static pressure on process variable output.</p>	 <p>ST 3000 Differential Pressure Transmitter Model STD904</p>
<p>The materials of construction for the STD904 and STG90L is 316 SS for all process wetted materials. The units can be specified with either 4-20mA/DE or 4-20mA/HART¹ output depending on site preference.</p>	 <p>Smart Field Communicator</p> <p>Can be ordered separately see specification 34-ST-03-55</p>
<p>Configuration of the DE version is handled with either the Smart Field Communicator (SFC®) or the Smartline Configuration Toolkit, a Windows-based PC program. Both are common to all of Honeywell's DE-based Smartline® Transmitters. The HART Protocol version is configured using the Model 275 HART Communicator.</p>	<p>Dual-Head Design</p>

Figure 1 —Series 900 Pressure Transmitters feature proven “smart” technology and are available in several models to meet varying application needs.

¹ HART is a registered trademark of the Hart Communication Foundation.

Features	Description	
<ul style="list-style-type: none"> • The DP model offers a choice of linear or square root output conformity through a simple configuration selection. • Direct digital integration with TDC 3000^X system 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. • Local zero and span adjustments are available for alternate adjustment method, if desired. 	<p>The ST 3000 transmitter can replace any 4 to 20 milliampere output transmitter in use today, and operates over a standard two-wire system.</p> <p>The measuring means is a piezoresistive sensor that actually contains three sensors in on a single silicon die. The sensor measures process pressure sensor, static pressure and sensor temperature. During the manufacturing process each sensor is exercised over its temperature and pressure range and data is collected on how the individual sensor performs under these conditions. This data is then used to compute the correction factors that are stored in the EEPROM of the transmitter and used by the microprocessor to compensate for the effects of static pressure and ambient temperature.</p>	<p>Like other ST 3000 Transmitters, the STD904 and STG90L feature two-way communication between the operator and the transmitter through our SFC. You can connect the SFC anywhere that you can access the transmitter signal lines, and it provides the capabilities of transmitter adjustments and diagnostics from remote locations, such as the control room.</p> <p>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 ST3000 series 100 or series 900 model transmitter.</p>

Specifications

Operating Conditions

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25 ±1	77 ±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 125	-67 to 257
Meter Body Temperature	25 ±1	77 ±2	-40 to 110	-40 to 230	-40 to 125	-40 to 257	-55 to 125	-67 to 257
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Overpressure								
STD904 psi	0		3000		3000			
bar	0		210		210			
STG90L psi	0		750		750			
bar	0		50		50			
Vacuum Region - Minimum Pressure								
mmHg absolute	Atmospheric		25		2 (short term*)			
inH ₂ O absolute	Atmospheric		13		1 (short term*)			
Supply Voltage, Current, and Load Resistance	Voltage Range: 10.8 to 42.4 Vdc at terminals Current Range: 3.0 to 21.8 mA Load Resistance: 0 to 1440 ohms (as shown in Figure 2)							

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

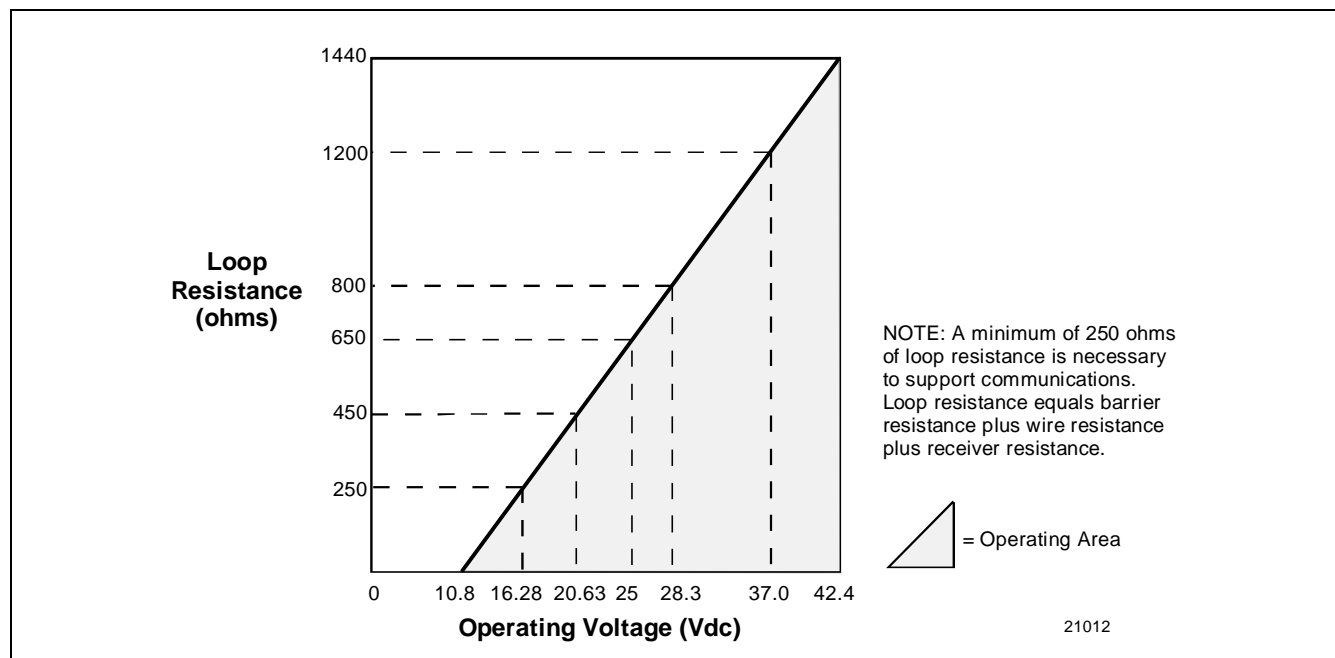


Figure 2 —Supply voltage and loop resistance chart.

Specifications - Performance Under Rated Conditions* - Model STD904

Parameter	Description
Upper Range Limit inH ₂ O mbar	400 (39.2°F/4°C is standard reference temperature for inH ₂ O range.) 1000
Minimum Span inH ₂ O mbar	16 Note: Recommended minimum span in square root mode is 20 inH ₂ O (50 mbar). 40
Turndown Ratio	25 to 1
Zero Elevation and Suppression	-5 to +100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • Accuracy includes residual error after averaging successive readings. • For HART use Analog Mode specifications.	In Analog Mode: ±0.15% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH ₂ O), accuracy equals: $\pm 0.075 + 0.075 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.075 + 0.075 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right)$ in % span In Digital Mode: ±0.125% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH ₂ O), accuracy equals: $\pm 0.05 + 0.075 \left(\frac{25 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.05 + 0.075 \left(\frac{62 \text{ mbar}}{\text{span mbar}} \right)$ in % span
Zero Temperature Effect per 28°C (50°F)	In Analog Mode: ±0.325% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.0125 + 0.3125 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.0125 + 0.3125 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span In Digital Mode: ±0.3125% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.3125 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.3125 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)	In Analog Mode: ±0.6% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.20 + 0.40 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.20 + 0.40 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span In Digital Mode: ±0.575% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.175 + 0.40 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.175 + 0.40 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span
Zero Static Pressure Effect per 1000 psi (70 bar)	±0.3% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.0125 + 0.2875 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.0125 + 0.2875 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span
Combined Zero and Span Static Pressure Effect per 1000 psi (70 bar)	±0.6% of span. For URV below reference point (50 inH ₂ O), effect equals: $\pm 0.20 + 0.40 \left(\frac{50 \text{ inH}_2\text{O}}{\text{span inH}_2\text{O}} \right)$ or $\pm 0.20 + 0.40 \left(\frac{125 \text{ mbar}}{\text{span mbar}} \right)$ in % span
Stability	±0.03% of URL per year

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

Specifications - Performance Under Rated Conditions* - Model STG90L

Parameter	Description
Upper Range Limit psi bar	500 35
Minimum Span psi bar	20 1.4
Turndown Ratio	25 to 1
Zero Elevation and Suppression	No limit except minimum span from absolute 0 (zero) to +100% URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) <ul style="list-style-type: none"> • Accuracy includes residual error after averaging successive readings. • For HART use Analog Mode specifications. 	In Analog Mode: ±0.15% of calibrated span or upper range value (URV), whichever is greater, terminal based. In Digital Mode: ±0.125% of calibrated span or upper range value (URV), whichever is greater, terminal based.
Zero Temperature Effect per 28°C (50°F)	In Analog Mode: ±0.325% of span. For URV below reference point (50 psi), effect equals: $\pm 0.0125 + 0.3125 \left(\frac{50 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.0125 + 0.3125 \left(\frac{3.5 \text{ bar}}{\text{span bar}} \right)$ in % span In Digital Mode: ±0.3125% of span. For URV below reference point (50 psi), effect equals: $\pm 0.3125 \left(\frac{50 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.3125 \left(\frac{3.5 \text{ bar}}{\text{span bar}} \right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)	In Analog Mode: ±0.6% of span. For URV below reference point (50 psi), effect equals: $\pm 0.20 + 0.40 \left(\frac{50 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.20 + 0.40 \left(\frac{3.5 \text{ bar}}{\text{span bar}} \right)$ in % span In Digital Mode: ±0.575% of span. For URV below reference point (50 psi), effect equals: $\pm 0.175 + 0.40 \left(\frac{50 \text{ psi}}{\text{span psi}} \right)$ or $\pm 0.175 + 0.40 \left(\frac{3.5 \text{ bar}}{\text{span bar}} \right)$ in % span
Stability	±0.03% of URL per year

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

Specifications - Performance Under Rated Conditions - All Models

Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or DE digital communications mode. Option available for 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.
Option Lightning Protection (Code "LP")	Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: 10/20 μ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) (rise/decay) 10/1000 μ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Barrier Diaphragms Material	316L Stainless Steel
Process Head Material	316 Stainless Steel
Head Gaskets (STD904 only)	Teflon
Meter Body Bolting (STD904 only)	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).
Mounting Bracket	Carbon Steel (Zinc-plated) or Stainless Steel angle bracket or Carbon Steel flat bracket available (standard options).
Fill Fluid	Silicone DC 200 oil
Electronic Housing	Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosionproof). Stainless steel optional.
Process Connections STD904 STG90L	1/4-inch NPT; 1/2-inch NPT with adapter, standard option; DIN. 1/2-inch NPT
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 3.
Dimensions	See Figures 4 and 5.
Net Weight STD904 STG90L	9 pounds (4.1 Kg) 3.8 pounds (1.7Kg)
Approval Bodies	Approved as explosionproof 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 T5 and EEx d IIC T6 per CENELEC standards; and Ex N II T5 per BS 6941. Series 900 with HC (HART) compatibility is self-certified for Zone 2, T5, maximum 42V/22 mA.

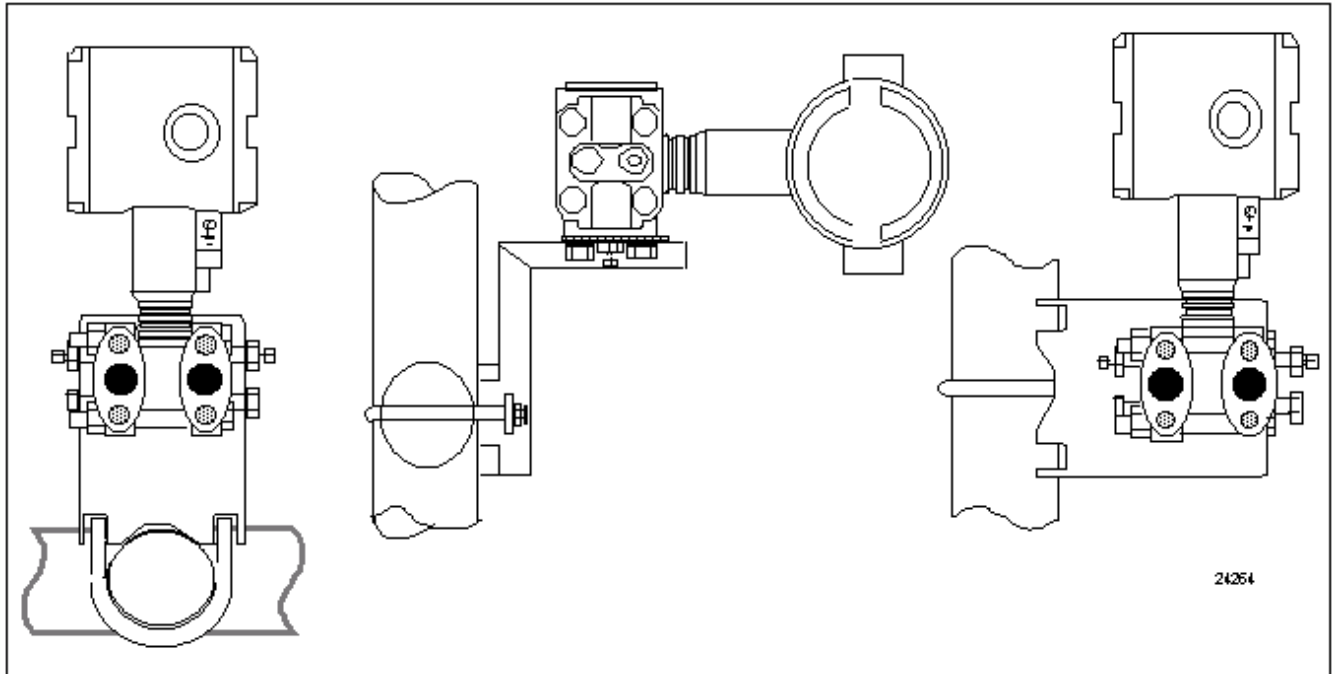


Figure 3 —Examples of typical mounting positions for model STD904.

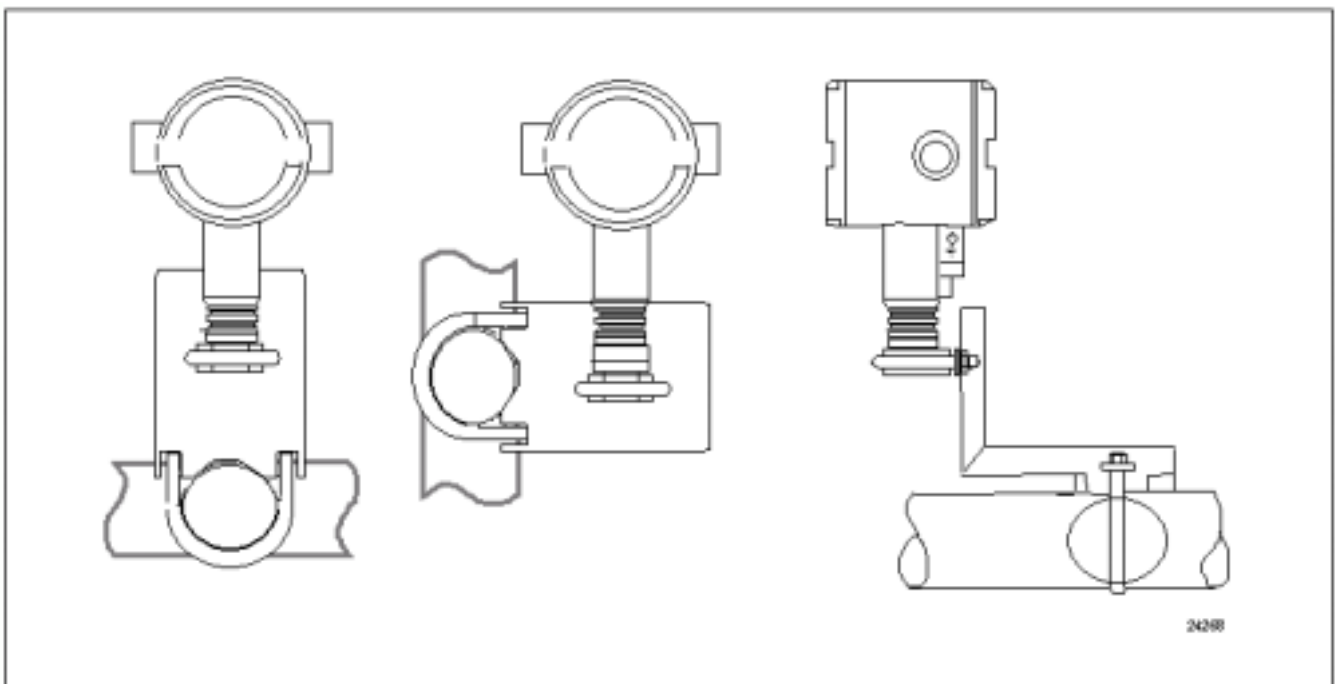


Figure 4 —Examples of typical mounting positions for model STG90L. Note that a mounting bracket is not required for in-line models.

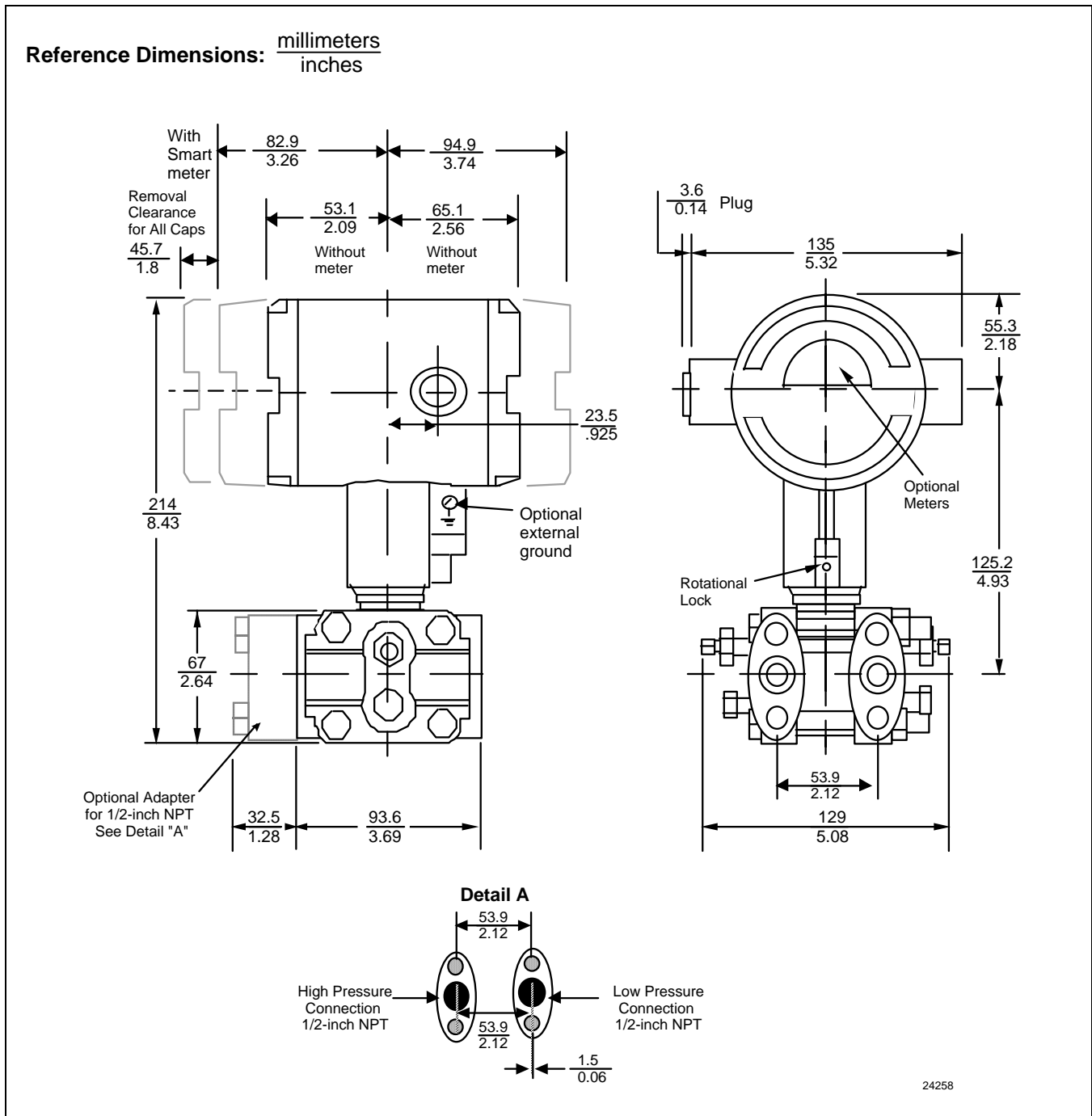


Figure 5 —Typical model STD904 mounting dimensions for reference.

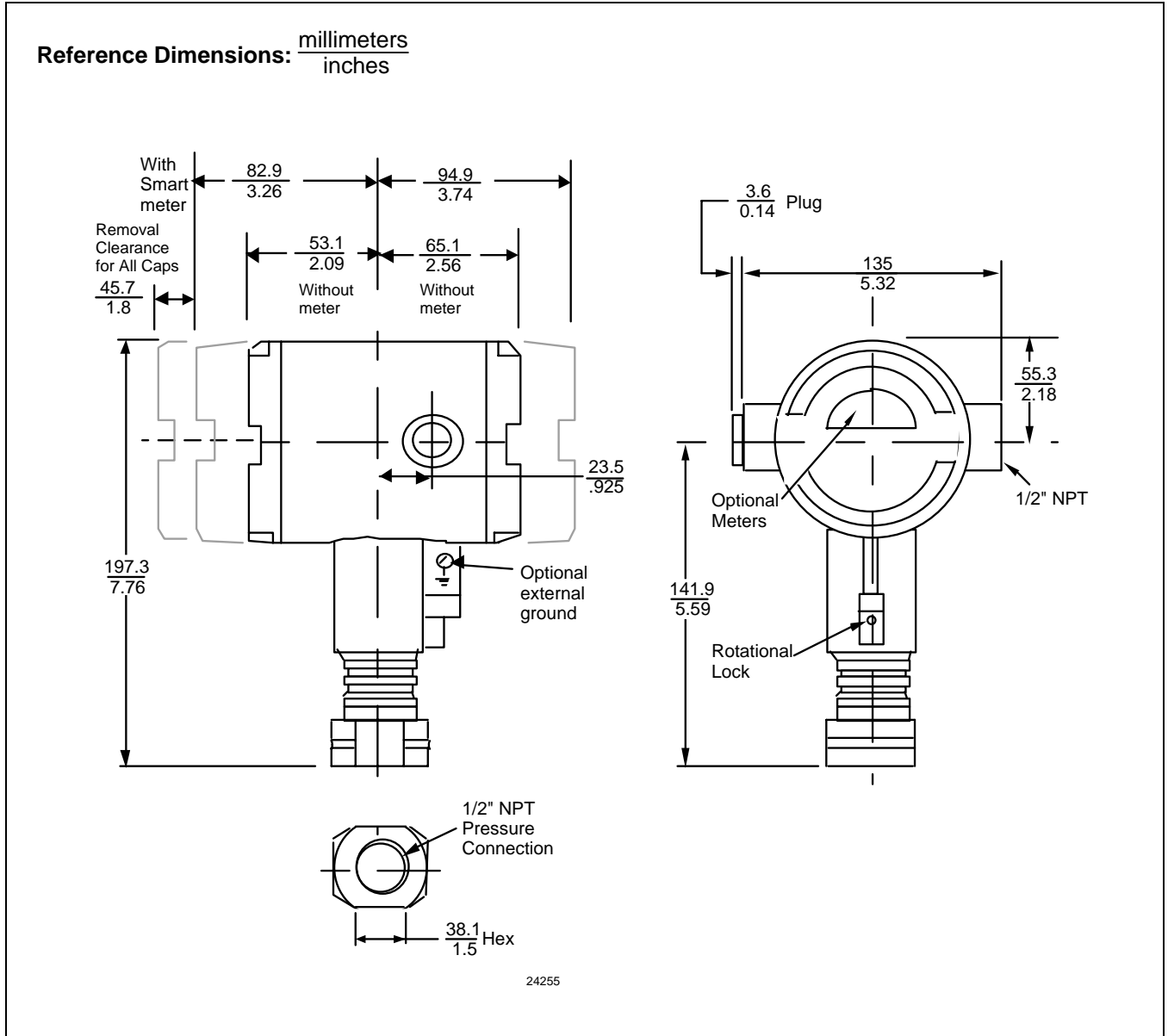


Figure 6 —Typical model STG90L mounting dimensions for reference.

Options

Mounting Bracket

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

Indicating Meter

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

Lightning Protection

A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.

HART Protocol Compatibility (Option HC)

An optional electronics module is available for the Series 900 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.)

Configuration of the HART Option transmitter is accomplished using a Universal HART Communicator. For full functionality the communicator must contain the Honeywell Device Description (DD). Contact your nearest Honeywell office or distributor for further information regarding this option.

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.

Transmitter Configuration (Option TC)

The factory can configure the transmitter linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

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.

*Specifications are subject to change without notice.
(Note that specifications may differ slightly for transmitters manufactured before October 30, 1995.)*

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:

Honeywell
Industrial Automation & Control
16404 North Black Canyon Hwy.
Phoenix, AZ 85053
1-800-288-7491

In Canada:

The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario M2H 3N7
1-800-461-0013

In Latin America:

Honeywell Inc.
480 Sawgrass Corporate Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In Europe and Africa:

Honeywell S. A.
Avenue du Bourget 1
1140 Brussels, Belgium
[32-2] 728-2111

In Eastern Europe:

Honeywell Praha,
s.r.o. Budejovicka 1
140 21 Prague 4,
Czech Republic

In the Middle East:

Honeywell Middle East Ltd.
Khalifa Street,
Sheikh Faisal Building
Abu Dhabi, U. A. E.

In Asia:

Honeywell Asia Pacific Inc.
Honeywell Building,
17 Changi Business Park Central 1
Singapore 486073
Republic of Singapore

In the Pacific:

Honeywell Pty Ltd.
5 Thomas Holt Drive
North Ryde NSW Australia 2113
(61 2) 9353 7000

In Japan:

Honeywell K.K.
14-6 Shibaura 1-chrome
Minato-ku, Tokyo, Japan 105-0023

Or, visit Honeywell on the World Wide Web at: <http://www.honeywell.com>

Model Selection Guide – STD904

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

List Price equals the sum of all selections made.

KEY NUMBER	Availability
Span 0-16" to 0-400" H ₂ O/0-62 to 0-1000 mbar Body Rating: 3000 psi (210 bar)	STD904 ↓

TABLE I - METER BODY

	Wetted Process Heads	Vent/Drain Valves and Plugs	Barrier Diaphragms		
Material of Const.	316 St. St.	316 St. St.	316 LSS	E _ _	♦
Fill Fluid	Silicone			_ 1 _	♦
Process Head	1/4" NPT			_ _ A	♦
Configuration	1/2" NPT with Adapter (on 1/4" NPT Head)			_ _ H	t

TABLE II

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

TABLE III - OPTIONS

	Selection	
None	00	♦
HAK I Protocol Compatible Electronics	HC	e
Analog Meter (0-100 Even 0-10 Square Root)	ME	♦
Smart Meter	SM	♦
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 (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	S2	c
Mounting Bracket - Carbon Steel	MB	♦
Mounting Bracket - ST. ST.	SB	♦
Flat Mounting Bracket - Carbon Steel	FB	♦
1/2" NPT to M20 316SS Conduit Adapter (BASEEFA EEx d IIC)	A1	n
1/2" NPT to 3/4" NPT 316 SS Conduit Adapter	A2	u
Calibration Test Report and Certificate of Conformance (F3399)	F1	♦
Certificate of Conformance (F3391)	F3	♦
Certificate of Origin (F0195)	F5	♦
NACE Certificate (F0198)	F7	♦
Additional Warranty - 1 year	W1	♦
Additional Warranty - 2 years	W2	♦
Additional Warranty - 3 years	W3	♦
Additional Warranty - 4 years	W4	♦

Model Selection Guide – STD904, continued

Availability

TABLE III - OPTIONS (continued)

Approval Body			Selection	Availability
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		
Zone 2 (Europe)	Self-Declared per 94/9/EC (ATEX4)	Ex II 3 GD T ⁽¹⁾ X (1) T4 at Tamb. 93°C, T5 at Tamb. 80°C, T6 at Tamb. 65°C	3N	♦
SA (Australia)	Intrinsically Safe	Ex ia IIC T4	4G	♦
	Non-Incendive	Ex n IIC T6 (T4 with SM option)		
LCIE CENELEC	Flame Proof	EEx d IIC T6	3A	f
	Intrinsically Safe	EEx ia IIC T5 ⁽¹⁾ (1) HC Option T4 @ 93°C, T5 @ 63°C		
	Flame Proof	EEx d IIC T6	3D	♦

TABLE IV

Factory Identification	XXXX	♦
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RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
a	Approval Body pending			
b	Select only one option from this group			
c	I	--H		
e			III	4G
f			I	STD930-C ___, G ___, L __-
n			III	1C, 2J
s			III	ME
t	III	Select from Table III S2		
u	III	1C, 2J		

Note: See ST-83 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.

