

# ST3000 Series 900 Smart Transmitter

## Pressure Transmitters

### Model STG940 / STG960 / STG981

#### **OVERVIEW**

The ST3000 Smart Transmitter is a microprocessor-based smart transmitter that features high performance and excellent stability. Capable of measuring pressure of gas, liquid, and vapor and liquid levels, it transmits analog signals of 4 to 20 mA DC and digital signals according to the measured pressure.

It can also execute two-way communications between the SFC (Smart Field Communicator) or HART<sup>®</sup> 275 communicator, and, via DE protocol, with the TDCS3000 or 3000<sup>X</sup> and a database, thus facilitating self-diagnosis, range resetting, and automatic zero adjustment.



#### **FEATURES**

##### **Excellent stability and high performance**

- Long-term stability is proven in 500,000 installations worldwide.
- Unique characterization and composite semiconductor sensors realize excellent temperature and static pressure characteristics.

##### **Wide measuring range (range ability)**

- A wide measuring range is available from a single model. This feature is highly effective in taking measurements over a wide range and reducing the need inventory units.
- STG940: 35 to 3500 kPa (range ability: 1 to 100)

##### **A diverse lineup**

- A wide range of models is available to meet user needs for low, standard, and high pressures.
- A wide variety of corrosion-resistant materials for wetted parts is also available.

##### **Remote communication**

- Either analog output (4 to 20 mA DC), or digital output (DE protocol) is possible.
- Two-way communication using digital output facilitates self-diagnosis, range resetting, automatic zero adjustment, and other operations.
- HART<sup>®</sup> protocol communication is available. (Option)

HART<sup>®</sup> is a registered trademark of the HART Communication Foundation.

**APPLICATION****Petroleum / Petrochemical / Chemical**

For measuring pressures and liquid levels in pipes and tanks.

**Electric power / City gas / Other utilities**

For measurement applications that require high degrees of stability and accuracy.

**Pulp and paper**

For lines that need transmitters resistant to chemical liquids, corrosive fluids and the like.

**Iron and steel / Nonferrous metal / Ceramics**

For lines that require stable measurement under strictly controlled (temperature, humidity, etc.) conditions.

**Machinery / Shipbuilding**

For lines that require stable measurement under strictly controlled (temperature, humidity, etc.) conditions.

**FUNCTIONAL SPECIFICATIONS****Type of protection**

JIS C0920 watertight: NEMA3 and 4X

JIS F8001 class 2 watertight: IEC IP67

**FM Explosionproof approval**

**Explosionproof** for Class I (Gas, steam), Division 1, Group A, B, C, D

**Dust-ignition** for Class II (Inflammable dust), Division 1, Group E, F, G

**Suitable** for Class III (inflammable fiber), Division 1

**Nonincendive** for Class I, Division 2, Group A, B, C, D

**FM Intrinsically safe approval**

**Intrinsically safe** for Class I, II, III, Division 1, Group A, B, C, D, E, F, G

**ATEX Flameproof approval**

Certificate number: INERIS99ATEX0010 X

$\text{Ex}$  II 2 GD EExd IIC T6 at  $-20 \leq T_{amb} \leq +60^{\circ}\text{C}$

**ATEX Intrinsic safety**

Certificate number: KEMA03ATEX1225 X

$\text{Ex}$  II 1 G EEx ia IIC T4 at  $-20 \leq T_{amb} \leq +60^{\circ}\text{C}$

Electrical data:  $U_i = 30\text{V}$

$I_i = 100\text{mA}$

$P_i = 1\text{W}$

$C_i = 3\text{nF}$

$L_i = 0.5\text{mH}$

**SPECIAL CONDITIONS FOR SAFE USE (X)**

Because the enclosure of the Smart Pressure Transmitter is made of aluminium, if it is mounted in an area where the use of category 1 G apparatus is required, it must be installed such that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

**NEPSI Flameproof approval**

Ex d IIC T6, with NEPSI Dust ignition DIP A20 T6 Approval No. GYJ 06204

**NEPSI Intrinsically safe approval**

NEPSI Intrinsically safe approval

Ex ia IIC T4 at  $-20 \leq T_{amb} \leq +60^{\circ}\text{C}$

The barriers should be NEPSI recognized types and comply with the following conditions as follows.

Safety Parameters :  $U_i=28\text{V}$ ,  $I_i=93\text{mA}$ ,  $P_i=0.651\text{W}$ ,

$L_i=0$ ,  $C_i=0.0\mu\text{F}$

Approval No. GYJ 06176

**CSA Explosion-proof Approval**

**CSA Explosion-proof** for Class I, (Division 1), Groups A, B, C and D

**CSA Flameproof** for Class I, Zone 1, Ex d IIC T6 at ambient temp. =  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

**CSA Dust-ignitionproof** for Class II and III, (Division 1), Groups E, F and G

**EMC Conformity**

89/336/EEC, 92/31/EEC, 93/68/EEC Electromagnetic Compatibility (EMC) Directive

**PED Conformity (97/23/EC)**

Comply with Module H (with “H1” option), or SEP (Sound Engineering Practice) for models of which maximum working pressure is 200 bar or lower.

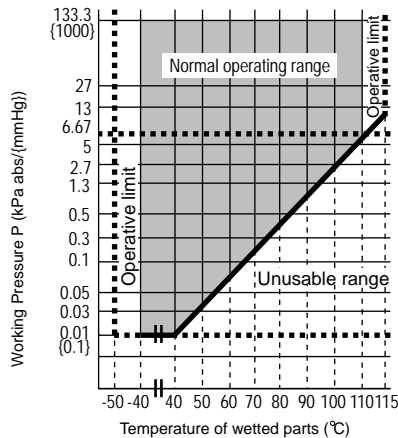
**Lowest temperature for Module H**

Bolt/nut material SNB7: -10°C  
 SUS630: -6°C

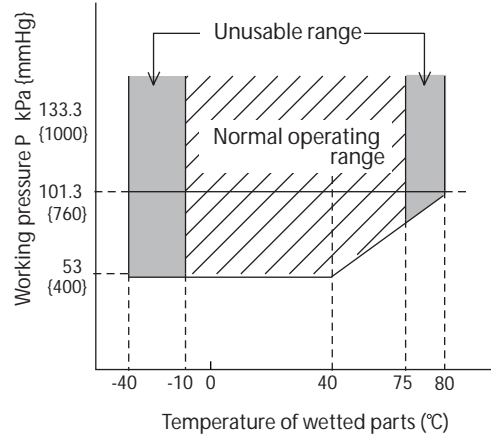
**Measuring span / Setting range / Working pressure range**

Model	Measuring span	Setting range	Working [ressure range	Overload resistant value
STG 940	35 to 3500 kPa {0.35 to 35 kgf/cm <sup>2</sup> }	-100 to 3500 kPa {-1 to 35 kgf/cm <sup>2</sup> }	2.0 kPa abs. to 3500 kPa {15 mmHg abs to 35 kgf/cm <sup>2</sup> } (Note 1) See Figure 1.	5250 kPa {52.5 kgf/cm <sup>2</sup> }
STG 960	0.7 to 14 MPa {7 to 140 kgf/cm <sup>2</sup> }	-0.1 to 14 MPa {-1 to 140 kgf/cm <sup>2</sup> }	2.0 kPa abs. to 14 MPa {15 mmHg abs to 140 kgf/cm <sup>2</sup> } (Note 2) See Figure 1.	21 MPa {210 kgf/cm <sup>2</sup> }
STG 981	0.7 to 42 MPa {7 to 420 kgf/cm <sup>2</sup> }	-0.1 to 42 MPa {-1 to 420 kgf/cm <sup>2</sup> }	2.0 kPa abs. to 42 MPa {15mmHgabs to 420 kgf/cm <sup>2</sup> } (Note 3) See Figure 1.	63 MPa {630 kgf/cm <sup>2</sup> }

- Note)1) With PVC wetted parts, the maximum working pressure is 1.5 MPa {15 kgf/cm<sup>2</sup>}.  
 2) With SUS304 bolts and nuts, the maximum working pressure is 7 MPa {70 kgf/cm<sup>2</sup>}.  
 3) With SUS304 bolts and nuts, the maximum working pressure is 23 MPa {230 kgf/cm<sup>2</sup>}.



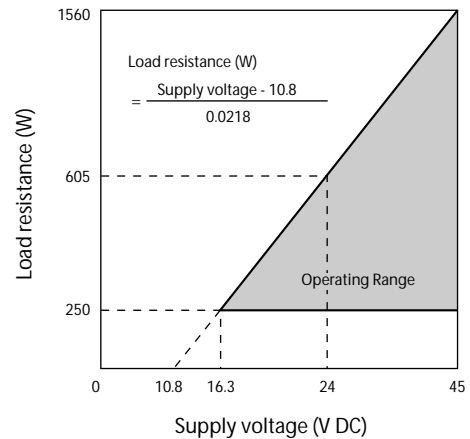
**Figure 1 Working pressure and temperature of wetted parts section (for general purpose models)**



**Figure 2 Working pressure and temperature of wetted parts section (for oxygen and chlorine service)**

**Supply voltage and load resistance**

10.8 to 45V DC. A load resistance of 250 Ω or more is necessary between loops. See Figure 3.



**Figure 3 Supply voltage vs. load resistance characteristics**

- Note) For communication with SFC, a load resistance of 250 Ω or more is necessary.  
 For ATEX Intrinsic safety model, minimum voltage of 18.0V is required.

**Output**

Analog output (4 to 20 mA DC) with DE protocol  
 Analog output (4 to 20 mA DC) with HART protocol  
 Digital output (DE protocol)

**Ambient temperature limits**

**Normal operating range**

-40 to 85°C for general purpose models  
 -10 to 75°C for oxygen and chlorine models  
 -20 to 70°C for models with digital indicators

**Operative limits**

-50 to 93°C for general purpose models  
 -40 to 80°C for oxygen and chlorine models  
 -30 to 80°C for models with digital indicators

**Transportation and storage conditions**

-50 to 85°C

**Temperature ranges of wetted parts****Normal operating range**

-40 to 110°C for general purpose models  
 -10 to 75°C for oxygen and chlorine models

**Operative limits**

-50 to 115°C for general purpose models  
 -40 to 80°C for oxygen and chlorine models

**Ambient humidity limits**

5 to 100% RH

**Stability against supply voltage change**

± 0.005% FS/V

**Dead time**

Approximately 0.4 sec.

**Damping time**

Selectable from 0 to 32 sec. in ten stages

**OPTIONAL SPECIFICATIONS****Lightning protection**

Peak value of voltage surge: 200 kV  
 Peak value of current surge: 2000A

**Built-in indicating meter**

The digital LCD indicator (optional) indicates engineering units and can be set freely between -19999 and 19999 (4.5 digits). For meter calibration, specify the following items when placing your order

- Meter calibration range
  - Meter calibration unit
  - Linear / Square-root for meter indication
- Various kinds of data can be set using the SFC smart communicator (Ver. 7.1 or later) or HART<sup>®</sup> 275 communicator.

**Bolts and nuts materials (for fastening meter body cover)**

Carbon steel (SNB7), SUS304, SUS630

**Corrosion-resistant finish****Corrosion-resistant finish**

Corrosion-resistant paint (baked acrylic paint), fungus-proof finish

**Corrosion-proof finish**

Corrosion-proof paint (baked epoxy paint), fungus-proof finish

**Corrosion-resistant finish (silver paint)**

Transmitter case is coated with silver paint in addition to the above corrosion-resistant finish.

**Oil free finish**

The transmitter is shipped with oil-free wetted parts.

**Long vent/drain plugs**

A longer (58 mm) drain than the standard (24 mm) can be used for maintenance, process, and safety reasons.

**External zero/span adjustment function**

The transmitter can be easily zero/span adjusted in the field.

**Burnout feature**

Choice of three states at abnormal condition  
 Burnout of output values: None, upper limit, lower limit

**Elbow**

This is an adaptor for changing the electrical conduit connection port from the horizontal to the vertical direction, if required by wiring conditions in the field. One or two elbows may be used as needed.

**Conformance to SI units**

We deliver transmitters set to any SI units as specified.

**PHYSICAL SPECIFICATIONS****Materials****Fill fluid**

Silicone oil for general purpose and high-temperature vacuum models  
 Fluorine oil for oxygen and chlorine models

**Center body**

SUS316

**Transmitter case**

Aluminum alloy

**Meter body cover**

SCS14A (equivalent to SUS316) or SUSF316, PVC

**For Wetted parts****Adapter flange (option)**

SCS14A (equivalent to SUS316), PVC

**Center body**

SUS316 (diaphragm SUS316L)  
 Hastelloy C, Tantalum, SUS316L

**Vents and plugs**

SUS316, PVC

**Gaskets**

FEP, SFVC2A for STG981

**Finish**

Baked acrylic paint  
 Housing light beige (Munsell 4Y7.2/1.3)  
 Cap dark beige (Munsell 10YR4.7/0.5)

**Weight**

Approx. 4.4 kg

**INSTALLATION****Electrical connection**

1/2NPT internal thread

**Grounding**

Resistance 100 Ω max.

**Mounting**

Can be installed on a 2-inch horizontal or vertical pipe (can be directly mounted on a process pipe)

**Process connection**

Rc1/2, 1/2NPT internal thread and Rc1/4, 1/4NPT internal thread

**PERFORMANCE SPECIFICATIONS****Accuracy**

Shown for each item are the percentage ratio for  $\chi$  (kPa), which is the greatest value of either the upper range value (URV)<sup>\*1</sup>, the lower range value (LRV)<sup>\*2</sup> or the span.

**Model STG940**

(Material of wetted parts: Diaphragm; SUS316L, Others; SUS316)

Accuracy (*3)	$\pm 0.075\%$ $\pm 0.1\%$ $\pm\left(0.025 + 0.075 \times \frac{140}{\chi}\right)\%$	(For $\chi \geq 1750$ kPa {17.5 kgf/cm <sup>2</sup> }) (1750 kPa {17.5 kgf/cm <sup>2</sup> } > $\chi \geq 140$ kPa {1.4 kgf/cm <sup>2</sup> }) (For $\chi < 140$ kPa {1.4 kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C (*3)	Zero shift: $\pm\left(0.25 + 0.3 \times \frac{350}{\chi}\right)\%$ Combined shift: (including zero and span shifts) $\pm 0.8\%$ $\pm\left(0.35 + 0.45 \times \frac{350}{\chi}\right)\%$	(For $\chi \geq 350$ kPa {3.5 kgf/cm <sup>2</sup> }) (For $\chi < 350$ kPa {3.5 kgf/cm <sup>2</sup> })

**Model STG960**

(Material of wetted parts: Diaphragm; SUS316L, Others; SUS316)

Accuracy (*3)	$\pm 0.15\%$ $\pm\left(0.05 + 0.1 \times \frac{2.1}{\chi}\right)\%$	(For $\chi \geq 2.1$ MPa {21 kgf/cm <sup>2</sup> }) (For $\chi < 2.1$ MPa {21 kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C (*3)	Zero shift: $\pm\left(0.25 + 0.3 \times \frac{3.5}{\chi}\right)\%$ Combined shift: (including zero and span shifts) $\pm 0.8\%$ $\pm\left(0.35 + 0.45 \times \frac{3.5}{\chi}\right)\%$	(For $\chi \geq 3.5$ MPa {35 kgf/cm <sup>2</sup> }) (For $\chi < 3.5$ MPa {35 kgf/cm <sup>2</sup> })

**Model STG981**

(Material of wetted parts: Diaphragm; SUS316L, Others; SUS316)

Accuracy (*3)	$\pm 0.15\%$ $\pm\left(0.05 + 0.1 \times \frac{7}{\chi}\right)\%$	(For $\chi \geq 7$ MPa {70 kgf/cm <sup>2</sup> }) (For $\chi < 7$ MPa {70 kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C (*3)	Zero shift: $\pm\left(0.25 + 0.3 \times \frac{7}{\chi}\right)\%$ Combined shift: (including zero and span shifts) $\pm 0.8\%$ $\pm\left(0.35 + 0.45 \times \frac{7}{\chi}\right)\%$	(For $\chi \geq 7$ MPa {70 kgf/cm <sup>2</sup> }) (For $\chi < 7$ MPa {70 kgf/cm <sup>2</sup> })

Note) \*1) URV denotes the process value for 100% (20 mA DC) output.

\*2) LRV denotes the process value for 0% (4 mA DC) output.

\*3) Within a range of URV  $\geq 0$  and LRV  $\geq 0$

**Model STG940**

(Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 140 \text{ kPa} \{1.4 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.05 + 0.15 \times \frac{140}{\chi}\right) \%$	(For $\chi < 140 \text{ kPa} \{1.4 \text{ kgf/cm}^2\}$ )
Temperature characteristics (Shift from the set range) Change of 30°C (*3)(Range from -5 to 55°C)	Zero shift:	$\pm \left(0.15 + 0.45 \times \frac{350}{\chi}\right) \%$	
	Combined shift: (including zero and span shifts)	$\pm 0.85\%$	(For $\chi \geq 350 \text{ kPa} \{3.5 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.35 + 0.5 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350 \text{ kPa} \{3.5 \text{ kgf/cm}^2\}$ )

**Model STG960**

(Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 2.1 \text{ MPa} \{21 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.05 + 0.15 \times \frac{2.1}{\chi}\right) \%$	(For $\chi < 2.1 \text{ MPa} \{21 \text{ kgf/cm}^2\}$ )
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm \left(0.15 + 0.45 \times \frac{3.5}{\chi}\right) \%$	
	Combined shift: (including zero and span shifts)	$\pm 0.85\%$	(For $\chi \geq 350 \text{ kPa} \{3.5 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.35 + 0.5 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 350 \text{ kPa} \{3.5 \text{ kgf/cm}^2\}$ )

**Model STG981**

(Material of wetted parts: Diaphragm; Hastelloy C)

Accuracy (*3)		$\pm 0.15\%$	(For $\chi \geq 7 \text{ MPa} \{70 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.05 + 0.1 \times \frac{7}{\chi}\right) \%$	(For $\chi < 7 \text{ MPa} \{70 \text{ kgf/cm}^2\}$ )
Temperature characteristics (Shift from the set range) Change of 55°C (*3)	Zero shift:	$\pm \left(0.15 + 0.45 \times \frac{7}{\chi}\right) \%$	
	Combined shift: (including zero and span shifts)	$\pm 0.85\%$	(For $\chi \geq 3.5 \text{ MPa} \{35 \text{ kgf/cm}^2\}$ )
		$\pm \left(0.35 + 0.5 \times \frac{7}{\chi}\right) \%$	(For $\chi < 3.5 \text{ MPa} \{35 \text{ kgf/cm}^2\}$ )

Note) \*3) Within a range of URV  $\geq 0$  and LRV  $\geq 0$

**MODEL SELECTION**

**ST3000 series 900 electric pressure transmitter**

**Model STG940 (Low gage pressure)**

Model No.: STG940 - **I II III** - 00000 - Option I - Option II

Basic  
Mode  
I No.

Measuring span	35 to 3500 kPa(0.35 to 35 kgf/cm <sup>2</sup> )	STG940
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Selection I						Code	Material Code					
I	Material	Meter body cover	Adapter flange	Vent / drain Plugs	Wetted parts of center body		E	F	H	U	M	P
		SCS14A*1	SCS14A*1	SUS316	Diaphragm:SUS316L Others: SUS316	E						
		SCS14A*1	SCS14A*1	SUS316	Diaphragm: Hastelloy C Others: Hastelloy C	F						
		SCS14A*1	SCS14A*1	SUS316	Diaphragm: Tantalum Others: Tantalum	H						
		SCS14A*1	SCS14A*1	SUS316	Diaphragm:SUS316L Others: SUS316L	U						
		PVC	PVC	PVC	Diaphragm: Hastelloy C Others: Hastelloy C *8	M						
		PVC	PVC	PVC	Diaphragm: Tantalum Others: Tantalum *8	P						
II	Fill fluid	Regular type (Silicone oil)				1	✓	✓	✓	✓	✓	✓
		For oxygen service (Fluorine oil) *3				2	✓	✓	✓	✓	✓	✓
		For chlorine service (Fluorine oil) *3				5			✓			✓
III	Process connection	Front Connection	Rc1/2 with adapter flange			L	✓	✓				
			1/2NPT internal thread with adapter flange			G	✓	✓				
			Rc1/4 with adapter flange			D	✓	✓				
			1/4NPT internal thread with adapter flange			A	✓	✓				
			1/4NPT internal thread on head			B	✓	✓				
	Top or Bottom Connection		Rc1/2 with adapter flange *7			Q			✓	✓	✓	✓
			1/2NPT internal thread with adapter flange *7			R			✓	✓	✓	✓
			Rc1/4 with adapter flange *7			S			✓	✓		
			1/4NPT internal thread with adapter flange *7			T			✓	✓		
			1/4NPT internal thread on head *7			U			✓	✓		

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Model No.: STG940 - I II III - 00000 - **Option I - Option II**

		Code	Material Code					
			E	F	H	U	M	P
Options I	No options	X	✓	✓	✓	✓	✓	✓
	Lightning arrester	L	✓	✓	✓	✓	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓	✓	✓	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓	✓	✓	✓	✓
	SUS304 Bolt and nuts material	W	✓	✓	✓	✓	✓	✓
	SUS630 Bolt and nuts material	U	✓	✓	✓	✓		
	Corrosion-resistant finish	A	✓	✓	✓	✓	✓	✓
	Corrosion-proof finish	B	✓	✓	✓	✓	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓	✓	✓	✓	✓
	Oil free finish	K	✓	✓	✓	✓	✓	✓
	Long vent/drain plugs	J	✓	✓	✓	✓		
	FM Explosionproof	3	✓	✓	✓	✓	✓	✓
	FM Intrinsically safe	4	✓	✓	✓	✓	✓	✓
	Combination of FM Explosionproof and Intrinsically safe	5	✓	✓	✓	✓	✓	✓
	ATEX Flameproof	6	✓	✓	✓	✓	✓	✓
	ATEX Intrinsic safety	7	✓	✓	✓	✓	✓	✓
	CSA Explosion-proof	8	✓	✓	✓	✓	✓	✓
	-							
Options II	No option	XX	✓	✓	✓	✓	✓	✓
	Burn-out feature (Lower limit of value at abnormal condition) *2	A4	✓	✓	✓	✓	✓	✓
	Burn-out feature (Upper limit of value at abnormal condition) *2	A5	✓	✓	✓	✓	✓	✓
	Water free finish (with oil free finish)	A7	✓	✓	✓	✓	✓	✓
	NEPSI Flameproof	C1	✓	✓	✓	✓	✓	✓
	NEPSI Intrinsically safe	C2	✓	✓	✓	✓	✓	✓
	Custom calibration	C7	✓	✓	✓	✓	✓	✓
	Digital output *38	D5	✓	✓	✓	✓	✓	✓
	HART communication *5 *38	D7	✓	✓	✓	✓	✓	✓
	One elbow	E1	✓	✓	✓	✓	✓	✓
	Two elbows	E2	✓	✓	✓	✓	✓	✓
	External zero/span adjustment	E5	✓	✓	✓	✓	✓	✓
	Mounting bracket	E9	✓	✓	✓	✓	✓	✓
	Side vent/drain top	F1	✓	✓				
	Side vent/drain bottom	F2	✓	✓				
	Material certificate	H2	✓	✓	✓	✓	✓	✓
	SI unit	U1	✓	✓	✓	✓	✓	✓

Note) \*1 SCS14A (Equivalent SUS316) or SUSF316

\*2 The output current value ranges from 3.0 to 3.8 mA for the lower limit and from 20.8 to 21.8 mA for the upper limit.

\*3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" must be selected.

\*5 Intrinsically safe for NEPSI cannot be selected with -D7.

\*7 Applicable for wetted parts of center body material; Tantalum, SUS316L

\*8 SUS304 bolts and nuts material (-W) must be selected when PVC meterbody cover is selected (-M or -P). The max. working pressure is 1.5 MPa

\*38 Either one of "digital output - code D5" or "HART communication - code D7" can be selected at a time.

**ST3000 series 900 electric pressure transmitter****Model STG960 (Medium gage pressure)**

Model No.: STG960 - I II III - 00000 - Option I - Option II

Basic model No.

	Measuring span	0.7 to 14 MPa (7 to 140 kgf/cm <sup>2</sup> )	STG960
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Selection I						Code	Material code			
I	Material	Meter body cover	Adapter flange	Vent / drain plugs	Wetted parts of center body		E	F	H	U
		SCS14A*1	SCS14A*1	SUS316	Diaphragm:SUS316L Others: SUS316	E				
		SCS14A*1	SCS14A*1	SUS316	Diaphragm: Hastelloy C Others: Hastelloy C	F				
		SCS14A*1	SCS14A*1	SUS316	Diaphragm: Tantalum Others: Tantalum	H				
		SCS14A*1	SCS14A*1	SUS316	Diaphragm:SUS316L Others: SUS316L	U				
II	Fill Fluid	Regular type (Silicone oil)				1	✓	✓	✓	✓
		For oxygen service (Fluorine oil) *3				2	✓	✓	✓	✓
		For chlorine service (Fluorine oil) *3				5			✓	✓
III	Process connection	Front Connection	Rc1/2 with adapter flange			L	✓	✓		
			1/2NPT internal thread with adapter flange			G	✓	✓		
			Rc1/4 with adapter flange			D	✓	✓		
			1/4NPT internal thread with adapter flange			A	✓	✓		
			1/4NPT internal thread on head			B	✓	✓		
		Top or Bottom Connection	Rc1/2 with adapter flange *7			Q			✓	✓
			1/2NPT internal thread with adapter flange *7			R			✓	✓
			Rc1/4 with adapter flange *7			S			✓	✓
			1/4NPT internal thread with adapter flange *7			T			✓	✓
			1/4NPT internal thread on head *7			U			✓	✓

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Model No.: STG960 - I II III - 00000 - Option I - Option II

		Code	Material Code			
			E	F	H	U
Options I	No options	X	✓	✓	✓	✓
	Lightning arrester	L	✓	✓	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓	✓	✓
	SUS304 Bolt and nuts material *11	W	✓	✓	✓	✓
	SUS630 Bolt and nuts material	U	✓	✓	✓	✓
	Corrosion-resistant finish	A	✓	✓	✓	✓
	Corrosion-proof finish	B	✓	✓	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓	✓	✓
	Oil free finish	K	✓	✓	✓	✓
	Long vent/drain plugs	J	✓	✓	✓	✓
	FM Explosionproof	3	✓	✓	✓	✓
	FM Intrinsically safe	4	✓	✓	✓	✓
	Combination of FM Explosionproof and Intrinsically safe	5	✓	✓	✓	✓
	ATEX Flameproof	6	✓	✓	✓	✓
	ATEX Intrinsic safety	7	✓	✓	✓	✓
	CSA Explosion-proof	8	✓	✓	✓	✓
	-					
Options II	No option	XX	✓	✓	✓	✓
	Burn-out feature (Lower limit of value at abnormal condition) *2	A4	✓	✓	✓	✓
	Burn-out feature (Upper limit of value at abnormal condition) *2	A5	✓	✓	✓	✓
	Water free finish (with oil free finish)	A7	✓	✓	✓	✓
	NEPSI Flameproof	C1	✓	✓	✓	✓
	NEPSI Intrinsically safe	C2	✓	✓	✓	✓
	Custom calibration	C7	✓	✓	✓	✓
	Digital output *38	D5	✓	✓	✓	✓
	HART communication *5 *38	D7	✓	✓	✓	✓
	One elbow	E1	✓	✓	✓	✓
	Two elbows	E2	✓	✓	✓	✓
	External zero/span adjustment	E5	✓	✓	✓	✓
	Mounting bracket	E9	✓	✓	✓	✓
	Side vent/drain top	F1	✓	✓		
	Side vent/drain bottom	F2	✓	✓		
	Material certificate	H2	✓	✓	✓	✓
	SI unit	U1	✓	✓	✓	✓

- Note) \*1 SCS14A (Equivalent SUS316) or SUSF316  
 \*2 The output current value ranges from 3.0 to 3.8 mA for the lower limit and from 20.8 to 21.8 mA for the upper limit.  
 \*3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" must be selected  
 \*5 Intrinsically safe for NEPSI cannot be selected with -D7.  
 \*7 Applicable for wetted parts of center body material; Tantalum, SUS316L  
 \*11 When SUS304 bolt / nut is selected, max. working pressure rating is 7 MPa (70 kgf/cm<sup>2</sup>).  
 \*38 Either one of "digital output - code D5" or "HART communication - code D7" can be selected at a time.

## ST3000 series 900 electric pressure transmitter Model STG981 (High gage pressure)

Model No.: STG981 - I II III - 00000 - Option I - Option II

Basic model No.

Measuring Span	0.7 to 42 MPa (7 to 420 kgf/cm <sup>2</sup> )	STG981
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Selection I			Code	Material code		
I	Material	Meter body cover		Vent/drain plugs	Wetted Parts of center body	E
		SCS14A*1	SUS316	Diaphragm: SUS316L Others: SUS316	E	
		SCS14A*1	SUS316	Diaphragm: Hastelloy C Others: Hastelloy C	F	
II	Fill fluid	Regular type (Silicone oil)		1	✓	✓
		For oxygen service (Fluorine oil) *3		2	✓	✓
III	Process connection	Top or bottom connection	Rc1/4	S	✓	✓
			1/4NPT internal thread	T	✓	✓

Options I				
	No options	X	✓	✓
	Lightning arrester	L	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓
	SUS304 bolt and nuts material *12	W	✓	✓
	SUS630 bolt and nuts material	U	✓	✓
	Corrosion-resistant finish	A	✓	✓
	Corrosion-proof finish	B	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓
	Oil free finish	K	✓	✓
	Long vent/drain plugs	J	✓	✓
	FM Explosionproof	3	✓	✓
	FM Intrinsically safe	4	✓	✓
	Combination of FM Explosionproof and Intrinsically safe	5	✓	✓
	ATEX Flameproof	6	✓	✓
	ATEX Intrinsic safety	7	✓	✓
	CSA Explosion-proof	8	✓	✓
	-	-		

Options II				
	No option	XX	✓	✓
	Burn-out feature (Lower limit of value at abnormal condition) *2	A4	✓	✓
	Burn-out feature (Upper limit of value at abnormal condition) *2	A5	✓	✓
	Water free finish (with oil free finish)	A7	✓	✓
	NEPSI Flameproof	C1	✓	✓
	NEPSI Intrinsically safe	C2	✓	✓
	Custom calibration	C7	✓	✓
	Digital output *38	D5	✓	✓
	HART communication *5 *38	D7	✓	✓
	One elbow	E1	✓	✓
	Two elbows	E2	✓	✓
	External zero/span adjustment	E5	✓	✓
	Mounting bracket	E9	✓	✓
	PED (97/23/EC) conformity *34	H1	✓	✓
	Material certificate	H2	✓	✓
	Max. working pressure 20 MPa	H3	✓	✓
	SI unit	U1	✓	✓

Note) \*1 SCS14A (Equivalent SUS316) or SUSF316

\*2 The output current value ranges from 3.0 to 3.8 mA for the lower limit and from 20.8 to 21.8 mA for the upper limit.

\*3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" must be selected.

\*5 Intrinsically safe for NEPSI cannot be selected with -D7.

\*12 When SUS304 bolt/nut is selected, max. working pressure rating is 23 MPa (230 kgf/cm<sup>2</sup>).

\*34 "PED conformity" is not applicable for the combination with FM, CSA or NEPSI approvals.

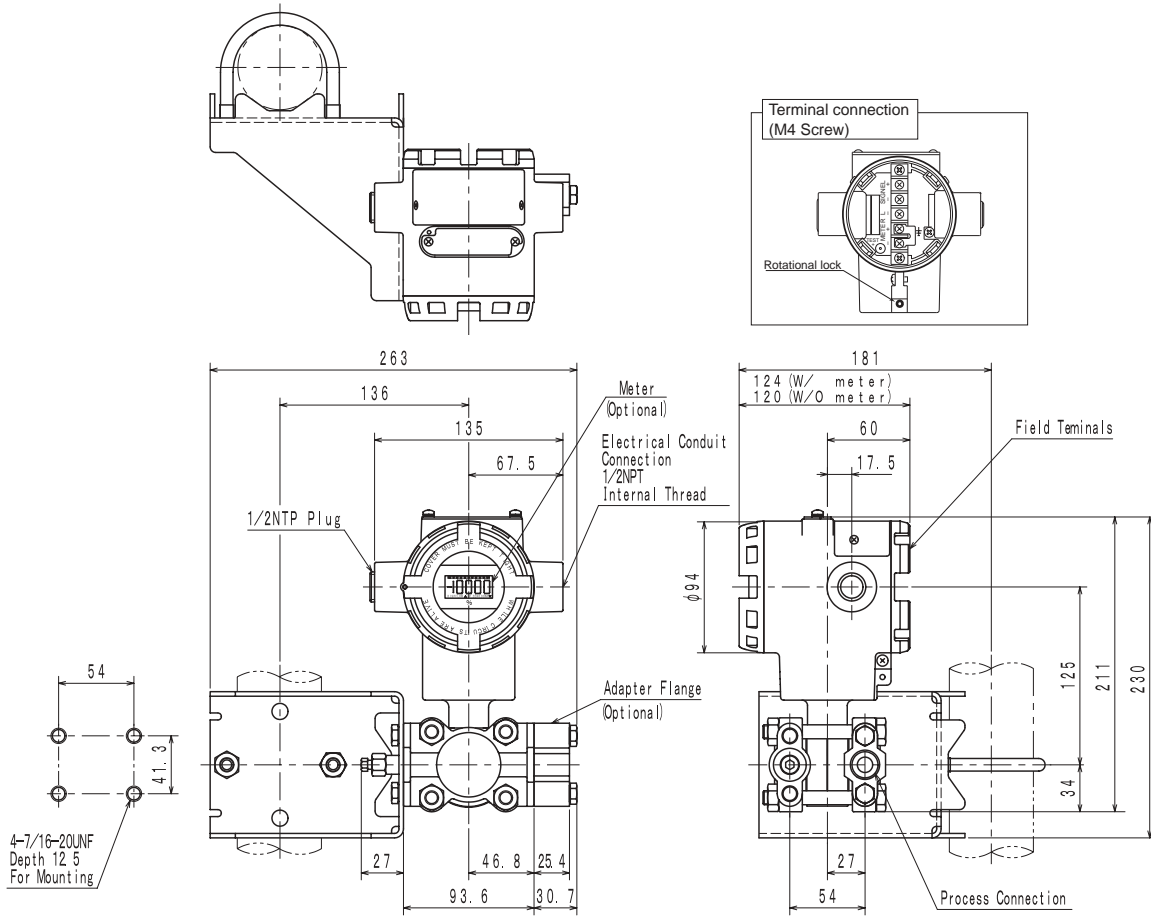
\*38 Either one of "digital output - code D5" or "HART communication - code D7" can be selected at a time.

**DIMENSIONS**

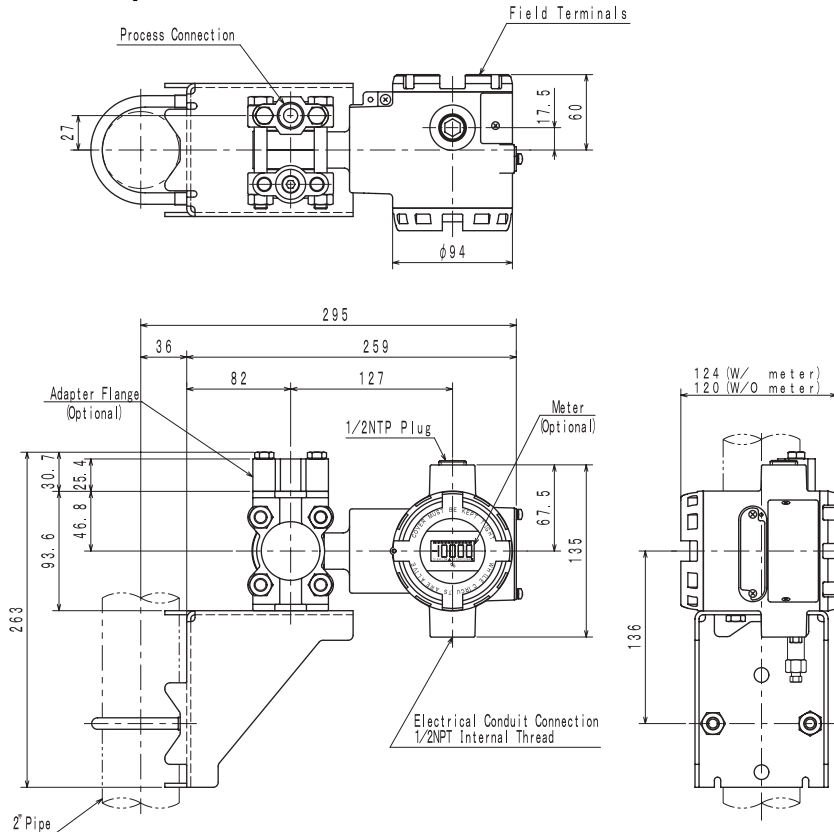
**Model STG940 / STG960**

[Unit: mm]

**Process connection: Front side**



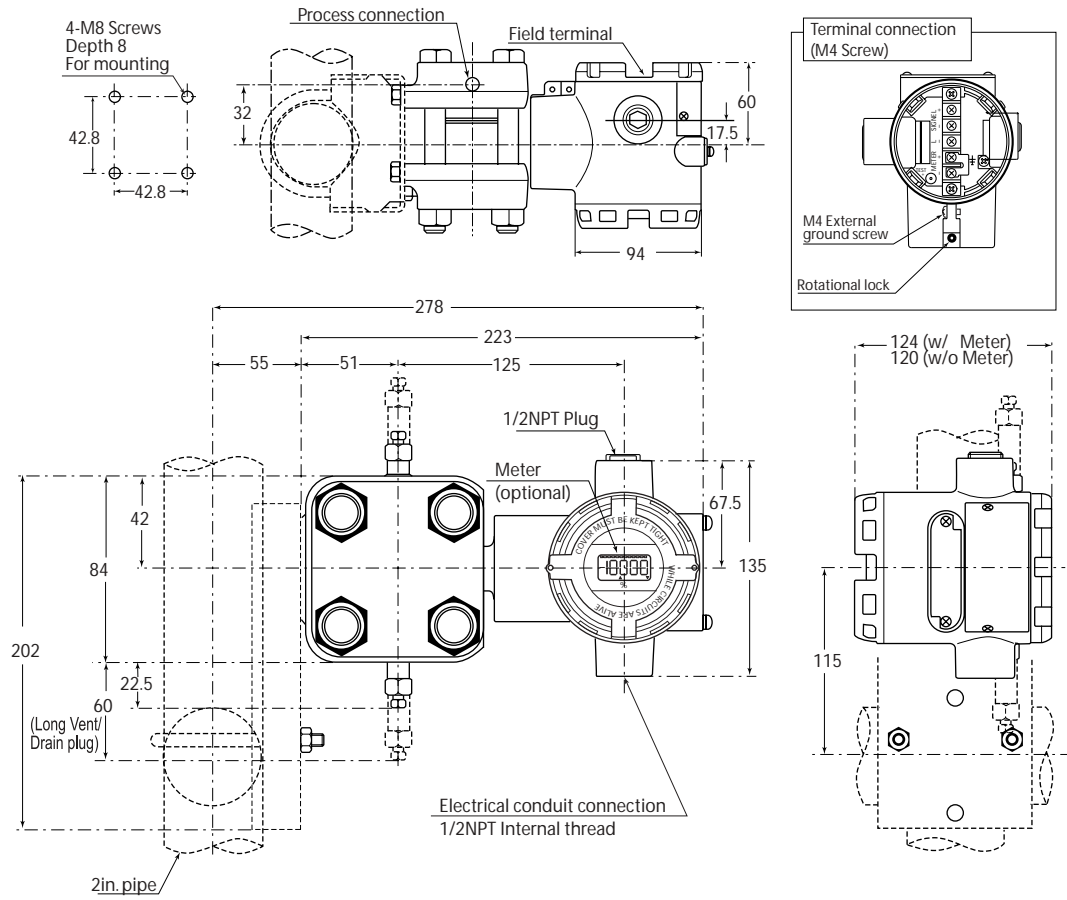
**Process connection: Top or bottom side**



Model STG981

[Unit: mm]

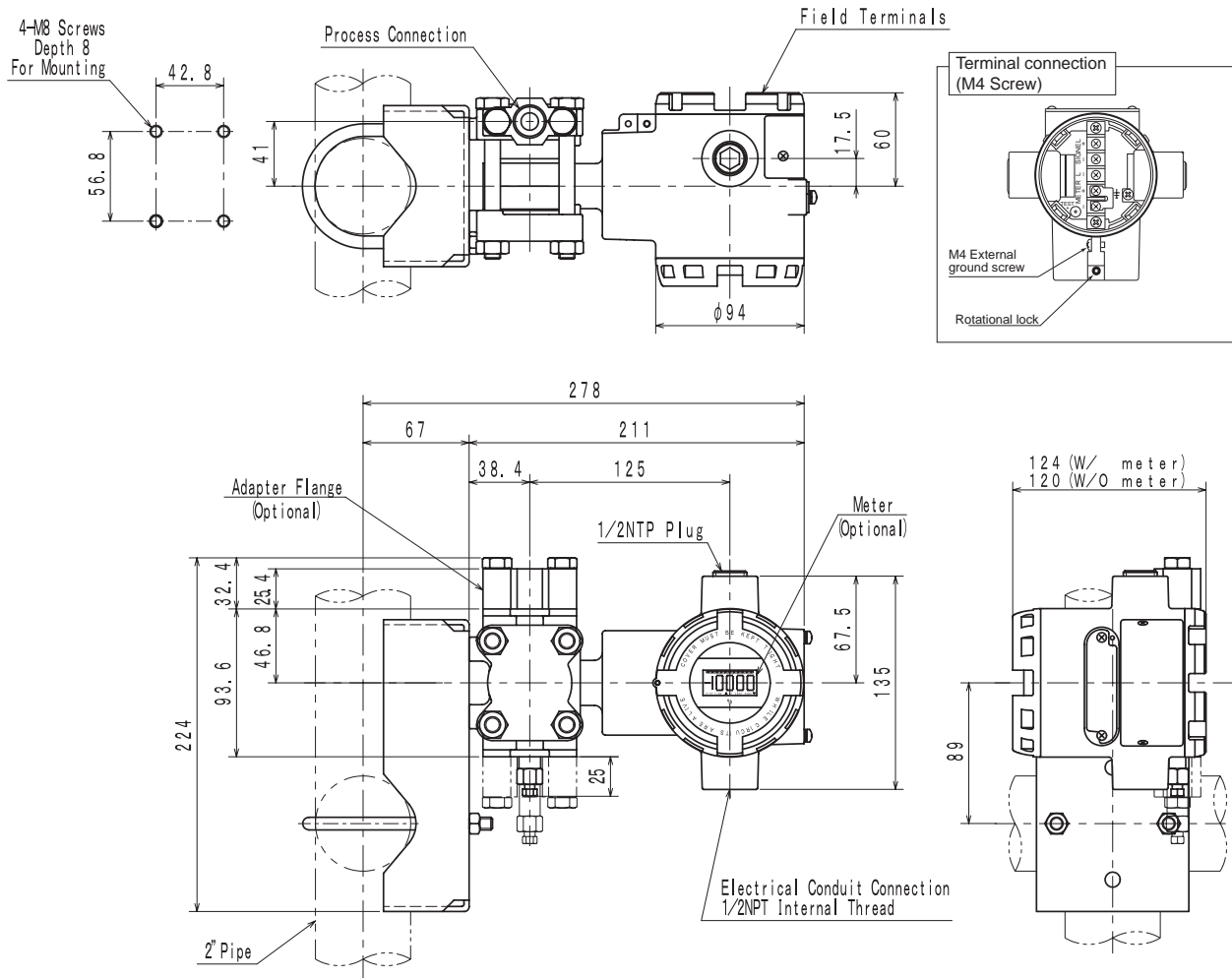
Process connection: Top or bottom side



Model STG940 / STG960 (Wetted parts materials: Tantalum, SUS316L)

[Unit: mm]

Process connection: Top or bottom side



Note

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