YAMATAKE Specifications

ST3000 Series 900 Smart Transmitter

Remote-sealed type of Differential Pressure Transmitters with FOUNDATION™ fieldbus

Model STE929/STE930

OVERVIEW

The ST3000 Series 900 with FOUNDATION™ fieldbus is an accurate, stable, and reliable pressure / differential pressure transmitter, which fully complies with the 31.25kbps voltage mode FOUNDATION™ fieldbus. Its built-in AI function blocks provide process variables to devices on the Fieldbus and its PID control function block enables process control in the field.

Since the ST3000 Series 900 is FOUNDATION™ registered, it can operate seamlessly with other registered field devices as well as host systems in a wide range of control applications.

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.
- The measuring range of the STD920, for example, is 0.75 to 100 kPa (rangeability = 1:135).

A diverse lineup

- A diverse flange lineup, ranging from small diameter 1.5 in. (40mm) and 2 in. (50mm) to 3 in. (80mm), is available to meet user requirements.
- A wide range of models, including those for general purposes, high-temperature, and high-temperature and high-vacuum service, is available to meet user requirements. In addition, the working temperature range of general purpose models has been expanded to 180°C maximum to allow you greater freedom instrumentation.
- A wide variety of corrosion-resistant materials for wetted parts is also available.

Function to correct the temperature of the fill fluid of the capillary section

Changes in the density of the fill fluid caused by temperature fluctuations are calculated, and the output is corrected accordingly. This function substantially reduces (to 1/5-1/10) the effect of seasonal fluctuations in temperature.

APPLICATION

Petroleum/Petrochemical/Chemical

- For the measurement of liquid levels including corrosive fluids at high temperatures, and high temperatures under vacuum
- For the control of flow rates as used with tapless venturi tubes
- For replacement of displacement type level gauges
- For materialization of instrumentation without connecting tubes

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
- For the measurement of liquid levels in small tanks
- Iron and Steel/Nonferrous metal/Ceramics
- For lines that require stable measurement under strictly controlled (temperature, humidity, etc.) conditions

Iron and steel/Nonferrous metal/Ceramics

For lines that require stable measurement under strictly controlled (temperature, humidity, vibration, 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

Measuring span / Setting range / Working pressure range

	Measuring Span	Setting Range	Working Pressure Range
STE 929	2.5 to100kPa {250 to 10160mmH_2O}	-100 to 100kPa {-10160 to 10160mmH_2O}	Up to flange rating (For negative pressures, see Figure 1, Figure 2 and Figure 9.)
STE 930	35 to 700kPa {0.35 to 7kgf/cm^2}	-100 to 700kPa {-1 to 7kgf/cm^2}	

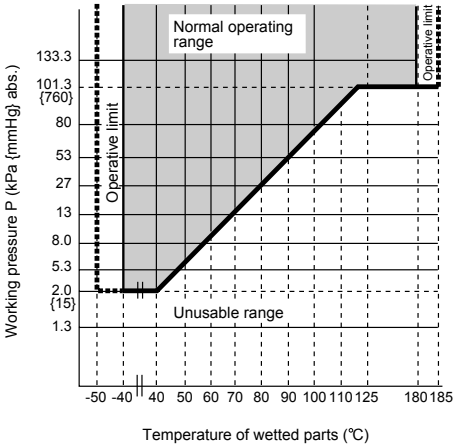


Figure 1 Working Pressure and Temperature of Wetted Parts Section (for General purpose models)

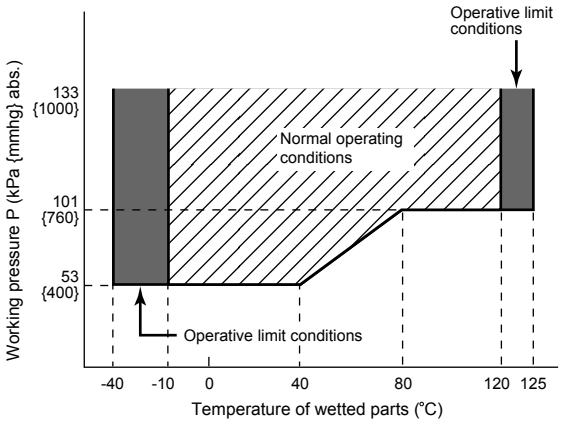
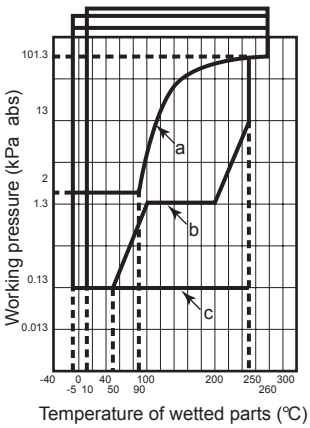


Figure 2 Working pressure and temperature wetted parts section (for Oxygen and chlorine service)



a. For high temperature
b. For high temperature and vacuum
c. For high temperature and high vacuum

Figure 3 Working pressure temperature of wetted parts section (For high temperature / high temperature and vacuum / high temperature and high vacuum)

Supply voltage

9 to 32V DC.

Ambient temperature limits / Temperature ranges of wetted parts

See “Table 1:Ambient temperature limits / Temperature ranges of wetted parts” on page 5.

For Explosionproof models with digital indicators, which have to be used within the following ranges.

Normal operating condition

-20 to 70°C

Operative limit

-30 to 80°C

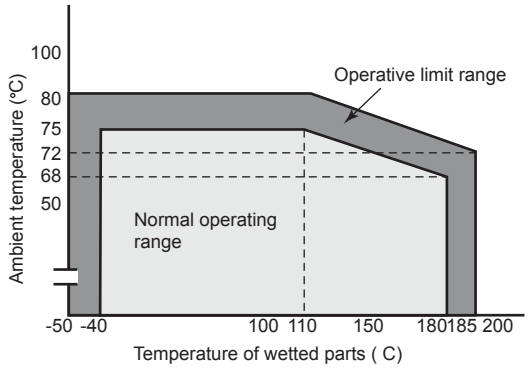


Figure 4 Ambient temperature and temperature of wetted parts section (for general purpose models)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)
Extended diaphragm 3in. (80mm)2in. (50mm)]

Note) When the fill liquid is for general purposes, make sure before using your transmitter that the conditions in both Figure 1, Figure 4 and Figure 5 are met.

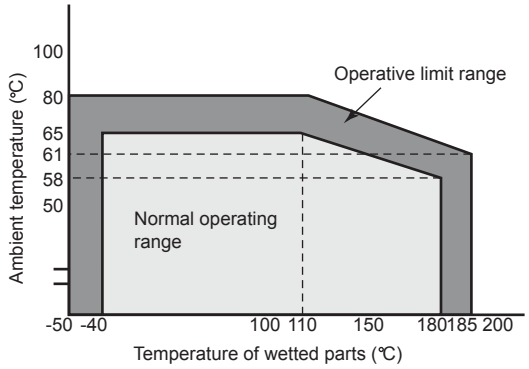


Figure 5 Ambient temperature and temperature of wetted parts section (for general purpose models)

[Flange diameter: Flush diaphragm 3in. (80mm)
Extended diaphragm 4in. (100mm)]

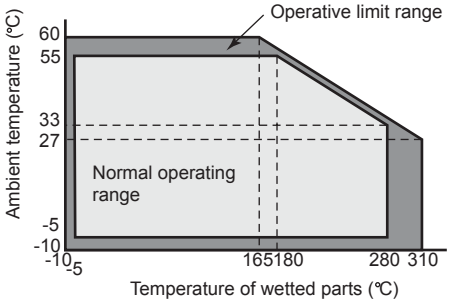


Figure 6 Ambient temperature and temperature of wetted parts section (for high temperature and vacuum 2, 3m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]

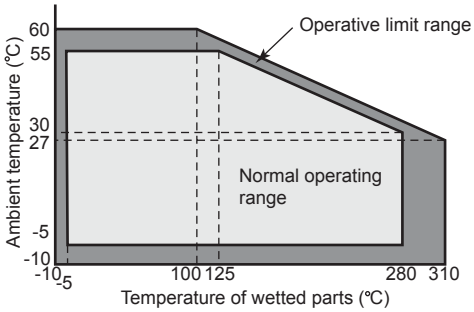


Figure 7 Ambient temperature and temperature of wetted parts section (for high temperature and vacuum 4, 5m)

[Flange diameter: Flush diaphragm 2in. (50mm/1.5in. (40mm)]

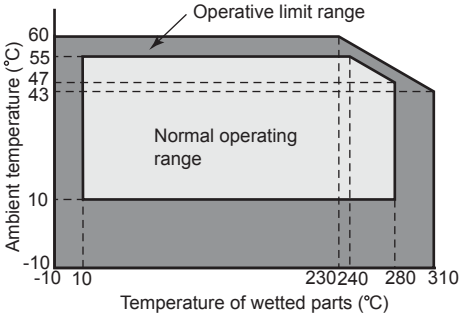


Figure 8 Ambient temperature and temperature of wetted parts section (for high temperature and high vacuum 2, 3m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]

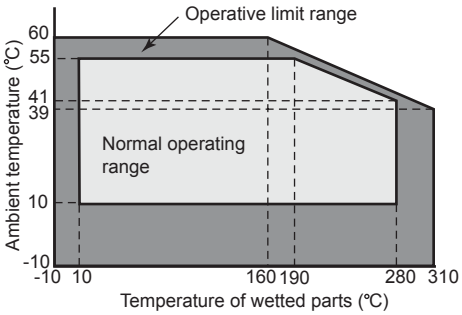


Figure 9 Ambient temperature and temperature of wetted parts section (for high temperature and high vacuum 4, 5m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]

Ambient humidity limits

5 to 100% RH

Stability against supply voltage change

±0.005% FS/V

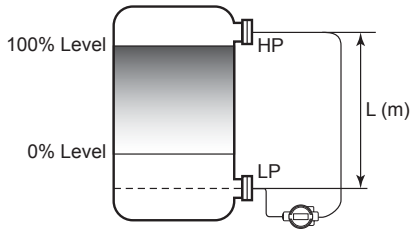
Lightning protection

Peak value of voltage surge: 12kV
Peak value of current surge: 1000A

Correcting temperature of the capillary section fill fluid

Changes in the density of the fill fluid (ρ) caused by temperature fluctuations are calculated, and the output is corrected accordingly. This function substantially reduces the effect of seasonal fluctuations in temperature.

How to set this function
Set the inter-flange height L (m) according to the SFC. If the height L (m) is already known, let us know, so, this function can be set before shipment.
If the high pressure side (HP) of your transmitter is located under the tank, place a minus (-) sign before the height L setting.



Optional specifications

Built-in indicating meter
The digital LCD indicator (optional) indicates engineering units and can be set freely between -19999 and 19999 (4.5 digits).

Bolts and nuts materials (for fastening meter body cover)
Carbon steel (SNB7), SUS304, SUS630

(Pressure rating 7000kPa {70kgf/cm^2} or Flange rating)
Baked acrylic paint.

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.

FEP protective film
Use FEP protective films when corrosive fluids are used or to inhibition migration from metal diaphragms.

Working temperature range
0 to 110°C

Working pressure range
Atmospheric pressure to flange rating
(up to JIS10K, ANSI/JPI150)
(Not usable under negative pressure)

Oil free finish
The transmitter is shipped with oil-free wetted parts.

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
For specific gravity, refer to "Ambient temperature limits / Temperature ranges of wetted parts" on page 2

Center body
SUS316

Transmitter case
Aluminum alloy

Meter body cover
SCS14A (SUS316L for diaphragm only)
Hastelloy C, Tantalum, SUS316L

For Wetted parts
SUS316 (SUS316L for diaphragm only)
Hastelloy C, Tantalum, SUS316L

Frange materials
Carbon steel (SF440A), SUS304, SUS316, SUS316L

Capillary section

Capillary tube length
2, 3, 4, 5, 6, 7, 8, 9 and 10m
2, 3, 4 and 5m when flange diameter is flush diaphragm
2in.(50mm)/1.5in.(40mm) extended diaphragm
3in.(80mm)/2in.(50mm)

Capillary tube material
SUS316

Armored tube material
SUS304

Coating (optional)
Olefin coating to improve corrosion resistance
(Not applicable for high-temperature / Vacuum service type and High-temperature / High-vacuum service type.)

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

Weight
Approx. 19.8kg
(Including JIS10K-80mm flange and capillary 5m long)

INSTALLATION

Electrical connection
1/2NPT internal thread

Grounding
Resistance 100 Ω max

Mounting
Direct mounting on the process side
Using 2 inch pipe mounting brackets: Mount the transmitter on a horizontal or vertical 2 inch pipe

Bracket
Carbon steel

Ubolt and nuts
SUS 304

Process connection

Flanges (both higher and lower pressure sides)

Flush diaphragm

JIS10K, 20K and 30K: 80mm/50mm/40mm (RF) equivalent
ANSI150, and 300 and 600: 3in./2in./1.5in. (RF) equivalents
JPI150, and 300 and 600:3in./2in./1.5in. (RF) equivalents

Extended diaphragm

JIS10K, 20K and 30K: 100mm/80mm/50mm (RF) equivalents
ANSI150 and 300: 4in./3in./2in. (RF) equivalents
JPI 150 and 300: 4in./3in./2in. (RF) equivalents

Mounting Notes

1) If the fluid to be measured contains hydrogen, please consult us.
2) When mounting the transmitter, leave a space of at least 10cm under the lower nozzle of the tank. If no space is available, please consult us.

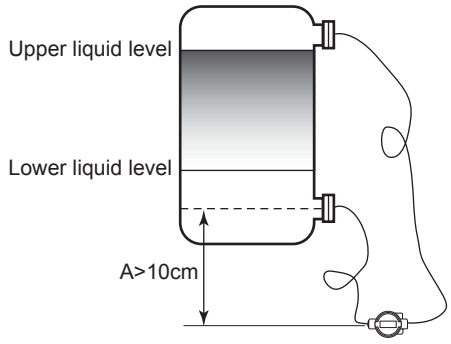


Table 1: Ambient temperature limits / Temperature ranges of wetted parts

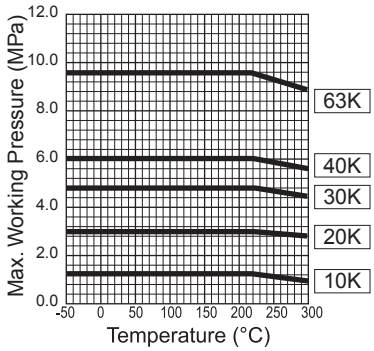
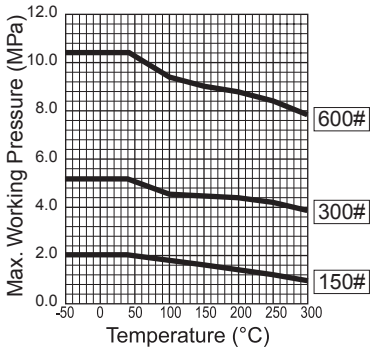
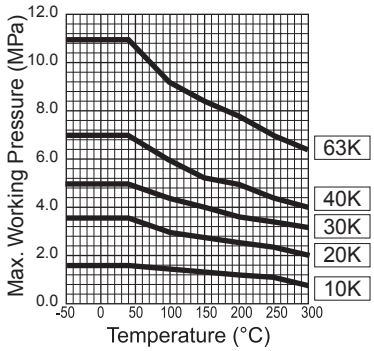
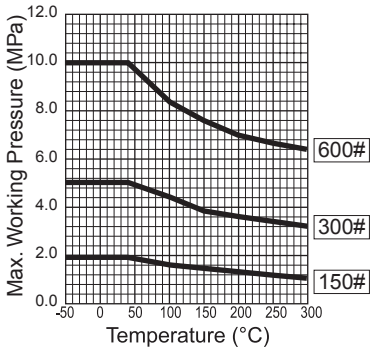
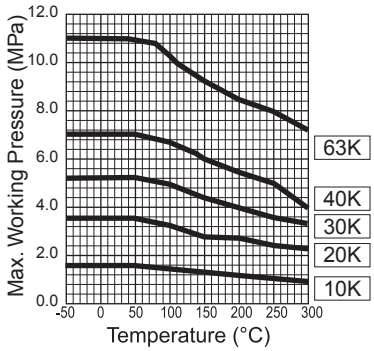
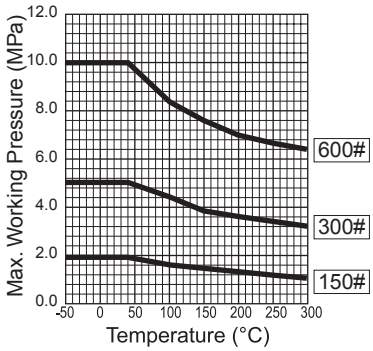
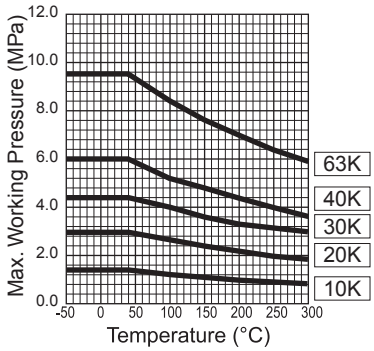
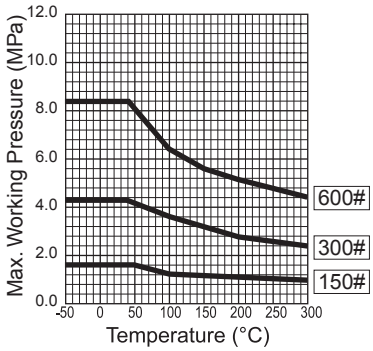
		Temperature range (°C) Note 1), 4)				
		General purpose model	High-temperature model	High-temperature Vacuum models	High-temperature High-vacuum models	Oxygen and Chlorine models
Wetted parts section	Normal operating range	-40 to 180	-5 to 280 Note 5	-5 to 280 Note 5	10 to 280 Note 5	-10 to 120
	Operative limit range	-50 to 185	-10 to 310 Note 6	-10 to 310 Note 6	-10 to 310 Note 6	-40 to 125
Ambient temperature Note 2 Flange size: Flush diaphragm type 3 in. (80mm) Extended diaphragm type 4 in. (100mm)	Normal operating range	-30 to 75	-5 to 55	-5 to 55	10 to 55	-10 to 75
	Operative limit range	-50 to 80	-10 to 60	-10 to 60	-10 to 60	-40 to 80
Ambient temperature Note 2 Flange size: Flush diaphragm type 2 in. (50mm)/1.5 in. (40mm) Extended diaphragm type 3 in. (80mm)/2 in. (50mm)	Normal operating range	-15 to 65	-5 to 45	-5 to 55	10 to 55	-10 to 75
	Operative limit range	-30 to 80	-10 to 55	-10 to 60	-10 to 60	-40 to 80
Specific gravity of fill fluid Note 3		0.935	1.07	1.07	1.09	1.87

Note 1. See the working pressures and temperatures of the wetted parts section in Figure 1, Figure 2, and Figure 3.
Note 2. Ambient temperatures of the transmitter itself
Note 3. Approximate values at the temperature of 25°C
Note 4. Note that if the operating temperature falls below the lower limit of the normal operating range, the response of the transmitter becomes slower.
Note 5. When the wetted parts material is tantalum, the upper limit is 180°C.
Note 6. When the wetted parts material is tantalum, the upper limit is 200°C.

PERFORMANCE SPECIFICATIONS

Max working pressure

Note Max working pressure depends on flange rating, flange materials and operating temperature. Please refer to the following data. Operating range of temperature depends on specification of transmitters.

	JIS	JPI/ANSI
Carbon steel		
SUS304		
SUS316		
SUS316L		

Accuracy

Shown for each item is the percentage ratio for χ (kPa), which is the greatest value of either XD_SCALE_EU_100, XD_SCALE_EU_0, or the span.

STE929 (for regular type and high-temperature service)

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316
Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy	Linear output:	± 0.3%	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.3 \times \frac{12.5}{\chi}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{square-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C	Zero shift:	± 0.75%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(0.75 \times \frac{25}{\chi}\right)$ %	(For $\chi < 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 1.6%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(1.6 \times \frac{25}{\chi}\right)$ %	(For $\chi < 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	± 0.75%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(0.75 \times \frac{25}{\chi}\right)$ %	(For $\chi < 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 1.00%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(1.00 \times \frac{25}{\chi}\right)$ %	(For $\chi < 25kPa$ {2500mmH_2O})

STE930 (for regular type and high-temperature service)

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316
Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy(*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{square-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range)(*3) Change of 55°C	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{210}{\chi}\right)$ %	
	Combined shift:	± 1.6%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(1.0 + 0.6 + \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.75 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(1.00 \times \frac{700}{\chi}\right)$ %	χ : kPa

Note (*1): XD_SCALE_EU_100 denotes the upper limit of the calibration range.
(*2): XD_SCALE_EU_0 denotes the lower limit of the calibration range.
(*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE929 (for regular type and high-temperature service)

Material of Wetted Parts: Diaphragm; Hastelloy C, Tantalum, SUS316L, others; Hastelloy C, Tantalum, SUS316L
Flange Diameter: Flush diaphragm 3 in. (80mm)

Accuracy	Linear output:	± 0.4	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.4 \times \frac{12.5}{\chi}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{aquare-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C (Range from -5 to 55°C)	Zero shift:	± 2.15%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 2.15 \times \frac{25}{\chi}$ %	(For $\chi < 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 3.0%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 3.0 \times \frac{25}{\chi}$ %	(For $\chi < 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	± 6.00%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 6.00 \times \frac{25}{\chi}$ %	(For $\chi < 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 7.00%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(7.00 \times \frac{25}{\chi}\right)$	(For $\chi < 25kPa$ {2500mmH_2O})

STE930 (for regular type and high-temperature service)

Material of Wetted Parts: Diaphragm; Hastelloy C, Tantalum, SUS316L, others; Hastelloy C, Tantalum, SUS316L Flange
Diameter: Flush diaphragm 3 in. (80mm)

Accuracy(*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{2.1}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{aquare-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C(*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.5 \times \frac{210}{\chi}\right)$ %	
	Combined shift: (including zero and span shifts)	± 1.75%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(1.00 + 0.75 \times \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.75 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift: (including zero and span shifts)	$\pm\left(1.00 \times \frac{700}{\chi}\right)$ %	χ : kPa

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE929 (for regular type)

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

Flange diameter: Flush diaphragm 2 in. (50mm)/1.5in. (40mm) Extended diaphragm 3in. (80mm)/2in. (50mm)

Accuracy(*3)	Linear output:	± 0.3%	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.3 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{aquare-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C(*3) (Range from -5 to 55°C)	Zero shift:	± 0.75%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 0.75 \times \frac{25}{x}$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	±1.6%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 1.6 \times \frac{25}{x}$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	± 1.47%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(1.47 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 1.97%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(1.97 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})

STE929 (for high-temperature service)

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

Flange diameter: Flush diaphragm 2 in. (50mm)/1.5in. (40mm) Extended diaphragm 3in. (80mm)/2in. (50mm)

Accuracy(*3)	Linear output:	± 0.3%	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.3 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{aquare-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C(*3) (Range from -5 to 55°C)	Zero shift:	± 0.36%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 0.36 \times \frac{25}{x}$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 2.18%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 2.18 \times \frac{25}{x}$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	± 2.7%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(2.7 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 3.5%	(For $\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(3.5 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE930 (for regular type and high-temperature service)

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

Flange diameter: Flush diaphragm 2 in. (50mm)/1.5in. (40mm) Extended diaphragm 3in. (80mm)/2in. (50mm)

Accuracy(*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{square-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) (*3) Change of 55°C	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{210}{\chi}\right)$ %	
	Combined shift:	± 2.8%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(2.2 + 0.6 + \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range) (*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.47 \times \frac{700}{\chi}\right)$ %	
	Combined shift:	$\pm\left(0.03 + 0.72 \times \frac{1400}{\chi}\right)$%	

STE929 (for regular type and high-temperature service)

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

Flange diameter: Flush diaphragm 2 in. (50mm)/1.5in. (40mm)

Accuracy	Linear output:	± 0.4%	(For$\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.4 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{aquare-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) Change of 55°C (Range from -5 to 55°C)	Zero shift:	± 2.15%	(For$\chi \geq 25kPa$ {2500mmH_2O})
		$\pm 2.15 \times \frac{25}{x}$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift:	± 6.55%	(For$\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm 6.55 \times \frac{25}{x}$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	± 6.00%	(For$\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(6.00 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
	Combined shift: (including zero and span shifts)	± 7.00%	(For$\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(7.00 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE930 (for regular type and high-temperature service)

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L, Others; Hatelloy C, Tantalum, SUS316L
Flange diameter: Flush diaphragm 2 in. (50mm)/1.5in. (40mm)

Accuracy(*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
	Square-root output:	When output is 50 to 100%: same as linear output	
		When output is 7.1 to 50%: linear output x $\frac{50}{square-root \cdot output}$ %	
		When output is less than 7.1%: dropout	
Temperature characteristics (Shift from the set range) (*3) Change of 55°C	Zero shift:	$\pm\left(0.15 + 0.7 \times \frac{210}{\chi}\right)$ %	
	Combined shift:	± 3.0%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(2.0 + 0.8 + \frac{210}{\chi}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range) (*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.47 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(0.03 + 0.72 \times \frac{700}{\chi}\right)$ %	χ : kPa

STE929 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: SUS316/SUS316L
Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy	Linear output:	± 0.3%	(For$\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.05 + 0.25 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 1.35 \times \frac{25}{x}\right)$ %	χ : kPa
	Combined shift:	± 2.5%	(For$\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(1.00 + 1.5 \times \frac{25}{x}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 5.97 \times \frac{25}{\chi}\right)$ %	χ : kPa
	Combined shift: (including zero and span shifts)	$\pm\left(1.2 + 5.8 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
		$\pm\left(0.83 + 6.17 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE930 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: SUS316/SUS316L

Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy (*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Temperature characteristics (Shift from the set range)(*3) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.70 \times \frac{210}{x}\right)$ %	χ : kPa
	Combined shift:	± 1.75%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(1.00 + 0.75 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.72 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(0.08 + 0.92 \times \frac{700}{\chi}\right)$ %	χ : kPa

STE929 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: Hatelloy C, Tantalum

Flange diameter: Flush diaphragm 3 in. (80mm)

Accuracy	Linear output:	± 0.4%	(For$\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.05 + 0.35 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 2.00 \times \frac{25}{x}\right)$ %	χ : kPa
	Combined shift:	± 3.0%	(For$\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(1.00 + 2.00 \times \frac{25}{x}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 5.97 \times \frac{25}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(1.2 + 5.8 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(0.83 + 6.17 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH_2O})

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE930 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: Hastelloy C, Tantalum

Flange diameter: Flush diaphragm 3 in. (80mm)

Accuracy (*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Temperature characteristics (Shift from the set range)(*3) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.70 \times \frac{210}{x}\right)$ %	χ : kPa
	Combined shift:	± 1.75%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(1.00 + 0.75 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.72 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(0.08 + 0.92 \times \frac{700}{\chi}\right)$ %	χ : kPa

STE929 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: SUS316L

Flange diameter: Flush diaphragm 1.5 in. (80mm) / Extended diaphragm 2 in. (50mm)

Accuracy	Linear output:	± 0.3%	(For$\chi \geq 12.5kPa$ {1250mmH$_2$O})
		$\pm\left(0.05 + 0.25 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH$_2$O})
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C)	Zero shift:	± 1.8%	(For $\chi < 12.5kPa$ {1250mmH$_2$O})
		$\pm\left(0.15 + 1.65 \times \frac{25}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH$_2$O})
	Combined shift:	± 6.5%	(For$\chi \geq 25kPa$ {2500mmH$_2$O})
	(including zero and span shifts)	$\pm\left(6.5 \times \frac{25}{x}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH$_2$O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 5.97 \times \frac{25}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(1.2 + 5.8 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH$_2$O})
	(including zero and span shifts)	$\pm\left(0.83 + 6.17 \times \frac{25}{\chi}\right)$ %	(For$\chi \geq 25kPa$ {2500mmH$_2$O})

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE929 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: SUS316 / SUS316L

Flange diameter: Flush diaphragm 2 in. (50mm) / Extended diaphragm 3 in. (80mm)

Accuracy	Linear output:	± 0.3%	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.05 + 0.25 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C)	Zero shift:	± 1.8%	(For $\chi < 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.15 + 1.65 \times \frac{25}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Combined shift:	± 4.0%	(For $\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(1.00 + 3.0 \times \frac{25}{x}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 5.97 \times \frac{25}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(1.2 + 5.8 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(0.83 + 6.17 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})

STE930 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: SUS316 / SUS316L

Flange size: Flush diaphragm 2 in. (50mm) / 1.5 in (40mm)
Extended diaphragm 3 in. (80mm) / 2 in. (50mm).

Accuracy (*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Temperature characteristics (Shift from the set range)(*3) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.70 \times \frac{210}{x}\right)$ %	
	Combined shift:	± 1.87%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(1.2 + 0.67 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.72 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(0.08 + 0.92 \times \frac{700}{\chi}\right)$ %	χ : kPa

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

STE929 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: Hastelloy C, Tantalum

Flange size: Flush diaphragm 2 in. (50mm) / 1.5 in. (40mm)

Accuracy	Linear output:	± 0.4%	(For $\chi \geq 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.05 + 0.35 \times \frac{12.5}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C)	Zero shift:	± 2.15%	(For $\chi < 12.5kPa$ {1250mmH_2O})
		$\pm\left(0.15 + 2.00 \times \frac{25}{x}\right)$ %	(For $\chi < 12.5kPa$ {1250mmH_2O})
	Combined shift:	± 6.55%	(For $\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(1.00 + 5.55 \times \frac{25}{x}\right)$%	(For $\chi \geq 25kPa$ {2500mmH_2O})
Static pressure effect (Shift with respect to setting range) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 5.97 \times \frac{25}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(1.2 + 5.8 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})
	(including zero and span shifts)	$\pm\left(0.83 + 6.17 \times \frac{25}{\chi}\right)$ %	(For $\chi \geq 25kPa$ {2500mmH_2O})

STE930 (for high temperature and vacuum / high-temperature and high vacuum)

Material of wetted parts: Hastelloy C, Tantalum

Flange size: Flush diaphragm 2 in. (50mm) / 1.5 in (40mm).

Accuracy (*3)	Linear output:	± 0.2%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
		$\pm\left(0.05 + 0.15 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Temperature characteristics (Shift from the set range)(*3) Change of 30°C (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.70 \times \frac{210}{x}\right)$ %	
	Combined shift:	± 3.0%	(For $\chi \geq 210kPa$ {2.1kgf/cm^2})
	(including zero and span shifts)	$\pm\left(2.2 + 0.8 \times \frac{210}{x}\right)$ %	(For $\chi < 210kPa$ {2.1kgf/cm^2})
Static pressure effect (Shift with respect to setting range)(*3) Change of 7MPa {70kgf/cm^2}	Zero shift:	$\pm\left(0.03 + 0.72 \times \frac{700}{\chi}\right)$ %	χ : kPa
	Combined shift:	$\pm\left(0.08 + 0.92 \times \frac{700}{\chi}\right)$ %	χ : kPa

Note) (*3): Within a range of XD_SCALE_EU_100 $\geq$ 0 and XD_SCALE_EU_0 $\geq$ 0.

FIELDBUS SPECIFICATIONS

Block supported by the S900

Name of block	Number of block	Description	Max. execution time msec.
Resource block	1	The Resource Block (RB) maintains overall resources of the S900.	-
Transducer block	1	The Transducer Block (XB) interfaces with the sensing element of the S900, converts the measured value into specified engineering unit, and sends it to the AI Function Block.	-
AI Function Block	2	The AI Function Block (AI FB) accepts an analog input signal from the XB, scales it, detects alarm conditions, and provides it in a uniform format on the Fieldbus network.	75
Diagnostics Block	1	The Diagnostics Block (DB) is Yamatake propriatary block which provides the result of self-diagnostics of the S900.	-
PID Function Block	1	The PID Function Block (PID FB) accepts a process variable (PV) from an AI Function Block on he Fieldbus network, calculates the valve position using the PID algorithm, and sends a new valve output signal to the AO Function Block.	125

VCR structure

The S900 has 16 VCRs (Virtual Communication Relationships), of which the first one is dedicated to the SMIB/NMIB as defined by Foundation Fieldbus specifications. The rest of the VCRs are fully configurable. Their default configurations are shown below:

VCR No.	Configuration	VCR No.	Configuration
1	QUB (Server) for NIMIB/SMIB	9	QUU (Source)
2	BNU (Subscriber)	10	QUU (Source)
3	BNU (Subscriber)	11	QUU (Source)
4	BNU (Subscriber)	12	QUB (Server)
5	BNU (Subscriber)	13	QUB (Server)
6	BNU (Publisher)	14	QUB (Server)
7	BNU (Publisher)	15	QUB (Server)
8	QUU (Source)	16	QUB (Server)

Network parameters

The following table lists the key parameter values that affect the interoperability of the Fieldbus devices. The LAS must be configured to satisfy these parameters. If other devices on the same Fieldbus network require a greater number for them, the greater number must be used. This however will degrade network performance.

Symbol	Parameter name	Range of value
V (ST)	Slot Time	4 to 100
V (MID)	Minimum Interframe Gap	10 to (V (MRD) - 1) × V (ST), less than 120 inclusive.
V (MRD)	Maximum Response Delay	V (MRD) × V (ST) shall be greater than 20 and V (MRD) shall be less than 11, inclusive.
T1	SM step timer	96000 (3 seconds)
T2	SM set address sequence timer	1920000 (60 seconds)
T3	SM set address wait timer	480000 (15 seconds)

Note) • An LAS requires parameters other than those listed here for operation. Please refer to the user's manual that is provided with your LAS device.
• The T3 must be set between 15 seconds and 60 seconds.

MODEL SELECTION

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 3in. / 80mm
For regular / high-temperature service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span			
		2.5 to 100kPa (250 to 10,160mmH2O)	STE929	Flush Diaphragm Flange Type: 3in./80mm
		35 to 700kPa (0.35 to 7kgf/cm2)	STE930	

Selection I				Code	Fill Fluid Code			
I	Fill Fluid	Model No.	Fill Fluid		1	2	3	5
		STE929	Regular type service (Silicone oil)	1				
			For oxygen service (Fluorine oil) *2	2				
		Flush Diaphragm 3in. / 80mm	For high-temperature service (Silicone oil) *17	3				
			For chlorine service (Fluorine oil) *2	5				
		STE930	Regular type service (Silicone oil)	1				
			For oxygen service (Fluorine oil) *2	2				
		Flush Diaphragm 3in. / 80mm	For high-temperature service (Silicone oil) *17	3				
			For chlorine service (Fluorine oil) *2	5				
II	Flange Standard	ANSI flange		A	✔	✔	✔	✔
		JIS flange		J	✔	✔	✔	✔
		JPI flange		P	✔	✔	✔	✔
III	Flange Type and Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✔	✔	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔	✔	✔
		SUS304		7	✔	✔	✔	✔
		SUS316		2	✔	✔	✔	✔
		SUS316L		8	✔	✔	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔	✔	
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✔	✔	✔	
		Tantalum (Diaphragm:Tantalum, others: Tantalum) *17		4	✔	✔	✔	✔
		Hastelloy C (Diaphragm:Hastelloy C, others: Hastelloy C)		9	✔	✔	✔	
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔	✔	✔
VII	Length of Extended Parts	Flush Diaphragm 3in. / 80mm		00	✔	✔	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔	✔	✔
		3m		3	✔	✔	✔	✔
		4m		4	✔	✔	✔	✔
		5m		5	✔	✔	✔	✔
		6m		6	✔	✔	✔	✔
		7m		7	✔	✔	✔	✔
		8m		8	✔	✔	✔	✔
		9m		9	✔	✔	✔	✔
		10m		A	✔	✔	✔	✔
	Length of Capillary Tube with Olefin Coating	2m		B	✔	✔	✔	✔
		3m		C	✔	✔	✔	✔
		4m		H	✔	✔	✔	✔
		5m		D	✔	✔	✔	✔
		6m		J	✔	✔	✔	✔
		7m		E	✔	✔	✔	✔
		8m		F	✔	✔	✔	✔
		9m		K	✔	✔	✔	✔
		10m		G	✔	✔	✔	✔

Options I				
	No options	X	✔	✔	✔	✔
	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	✔	✔	✔	✔
	FEP protective Film	T	✔	✔		✔
		-				

Options II						
	No option	XX	✔	✔	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔	✔	✔
	Custom calibration	C7	✔	✔	✔	✔
	One Elbow	E1	✔	✔	✔	✔
	Two Elbows	E2	✔	✔	✔	✔
	Mounting bracket	E9	✔	✔	✔	✔
	0.1mm Thickness Diaphragm *18	F4	✔	✔	✔	✔
	Direct Mounting Kits	R8	✔	✔	–	✔
	SI unit	U1	✔	✔	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔	✔	✔

Note) *2 The output current value ranges from 3.0 to 3.8mA for the lower limit and from 20.8 to 21.8mA for the upper limit.
*17 In case "Tantalum" is used for diaphragm material and in case of "For high-temperature service", normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C
*18 0.1 mm thickness diaphragm option is only available for Material of Wetted parts: "SUS316" and "SUS316L".
*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 4in. / 100mm
For regular / high-temperature service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Extended Diaphragm Flange Type: 4in./100mm
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code 1	2	3
I	Fill Fluid	Flange Type	Fill Fluid				
		STE929 Extended Diaphragm 4in. (100mm)	Regular type service (Silicone oil) *16	1			
			For oxygen service (Fluorine oil) *3 *16	2			
			For high-temperature service (Silicone oil) *19 *20	3			
		STE930 Extended Diaphragm 4 in. (100mm)	Regular type service (Silicone oil) *16	1			
			For oxygen service (Fluorine oil) *3 *16	2			
			For high-temperature service (Silicone oil) *19 *20	3			
II	Flange Standard	ANSI flange		A	✔	✔	✔
		JIS flange		J	✔	✔	✔
		JPI flange		P	✔	✔	✔
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔	✔
		JIS 20K , ANSI/JPI 300 (RF) equivalent *19		B	✔	✔	✔
		JIS 30K *16 *20		C	✔	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔	✔
		SUS304		7	✔	✔	✔
		SUS316		2	✔	✔	✔
		SUS316L *16 *19 *20		8	✔	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔	✔
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *16 *19 *20		8	✔	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔	✔
VII	Length of Extended Parts	L = 50mm (4in. / 100mm) *20		09	✔	✔	✔
		L = 100mm (4in. / 100mm) *20		14	✔	✔	✔
		L = 150mm (4in. / 100mm) *16 *20		19	✔	✔	✔
		L = 200mm (4in. / 100mm) *16 *20		24	✔	✔	✔
		L = 250mm (4in. / 100mm) *16 *19 *20		29	✔	✔	✔
		L = 300mm (4in. / 100mm) *16 *19 *20		34	✔	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔	✔
		3m		3	✔	✔	✔
		4m		4	✔	✔	✔
		5m		5	✔	✔	✔
		6m		6	✔	✔	✔
		7m		7	✔	✔	✔
		8m		8	✔	✔	✔
		9m		9	✔	✔	✔
		10m		A	✔	✔	✔
	Length of Capillary Tube with Olefin Coating	2m		B	✔	✔	✔
		3m		C	✔	✔	✔
		4m		H	✔	✔	✔
		5m		D	✔	✔	✔
		6m		J	✔	✔	✔
		7m		E	✔	✔	✔
		8m		F	✔	✔	✔
		9m		K	✔	✔	✔
		10m		G	✔	✔	✔

Options I	No options	X	✔	✔	✔
	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	✔	✔	✔
	FEP protective Film	T	✔	✔	
		-			
Options II	No option	XX	✔	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔	✔
	Custom calibration	C7	✔	✔	✔
	One Elbow	E1	✔	✔	✔
	Two Elbows	E2	✔	✔	✔
	Mounting bracket	E9	✔	✔	✔
	0.1mm Thickness Diaphragm *15	F4	✔	✔	✔
	Direct Mounting Kits	R8	✔	✔	
	SI unit	U1	✔	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔	✔

Note) *3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" option must be selected.
*15 Only available for Material of Wetted parts: "SUS316" and "SUS316L".
*16 In case "JIS30K" is used for Flange type and rating, "SUS316L" is used for Flange material and for regular service or oxygen service, not available for Length of extended parts: 150/200/250/300mm.
*19 In case fill fluid: For high-temperature service and flange rating: ANSI300 and wetted parts material: SUS316L, Extension length of flange 250mm/300mm are not available.
*20 In case flange rating: JIS30K, Wetted parts material: SUS316L and for high temperature service, Extended diaphragm type is not available.
*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 2in. / 50mm, 1.5in. / 40mm
For regular / high-temperature service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100 kPa (250 to 10,160 mmH_2O)	STE929	Flush Diaphragm Type: 2in./50mm, 1.5in./ 40mm
		35 to 700 kPa (0.35 to 7 kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code			
I	Fill Fluid	Flange Type	Fill Fluid		1	2	3	5
		STE929 Flush Diaphragm 2 in. (50mm) 1.5in. (40mm)	Regular type service (Silicone oil)	1				
			For oxygen service (Fluorine oil) *5	2				
			For high-temperature service (Silicone oil) *17	3				
			For chlorine service (Fluorine oil) *5	5				
		STE930 Flush Diaphragm 2 in. (50mm) 1.5in. (40mm)	Regular type service (Silicone oil)	1				
			For oxygen service (Fluorine oil) *5	2				
			For high-temperature service (Silicone oil) *17	3				
			For chlorine service (Fluorine oil) *5	5				
II	Flange standard	ANSI flange		A	✔	✔	✔	✔
		JIS flange		J	✔	✔	✔	✔
		JPI flange		P	✔	✔	✔	✔
III	Flange Type and Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✔	✔	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔	✔	✔
		SUS304		7	✔	✔	✔	✔
		SUS316		2	✔	✔	✔	✔
		SUS316L		8	✔	✔	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔	✔	
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✔	✔	✔	
		Tantalum (Diaphragm:Tantalum, others: Tantalum) *17 *21		4	✔	✔		✔
		Hastelloy C (Diaphragm :Hastelloy C, others : Hastelloy C)		9	✔	✔	✔	
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔	✔	✔
VII	Length of Extended Parts	Flush Diaphragm 2in. / 50mm		01	✔	✔	✔	✔
		Flush Diaphragm 1.5in. /40mm *21		02	✔	✔	✔	✔
VIII	Length of Capil-lary Tube	2m		2	✔	✔	✔	✔
		3m		3	✔	✔	✔	✔
		4m *22		4	✔	✔	✔	✔
		5m *22		5	✔	✔	✔	✔
	Length of Capil-lary Tube with Olefin Coating	2m		B	✔	✔	✔	✔
		3m		C	✔	✔	✔	✔
		4m *22		H	✔	✔	✔	✔
		5m *22		D	✔	✔	✔	✔

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

*17 In case "Tantalum" is used for diaphragm material and in case of "For high-temperature service", normal operating conditions of meter body (process fluid) temperature is -10 to +180 deg.C

*21 In case: Basic Model is STE929, and Tantalum is used for diaphragm material and Flange size is "Flush Diaphragm 1.5in./ 40mm", 2m or 3m (Code 2, 3, B, or C) for "Length of Capillary Tube" are applicable and Minimum Span will be 10kPa

*22 Specifications for Capillary length 4m and 5m are as follows;

a. Temperature characteristics and Static pressure effect will be 1.5 times of those of High-temperature service.
b. Ambient temperature range for Regular service: -10 to 55 deg. C, Temperature of wetted parts: -30 to 110 deg. C
c. Ambient temperature range for Oxygen service: -10 to 55 deg. C, Temperature of wetted parts: -10 to 110 deg. C
d. In the case, Ambient temperature is 40 deg. C, the highest wetted parts temperature for High-temp service (4 m) will be 280 deg. C.
e. In the case, Ambient temperature is 38 deg. C, the highest wetted parts temperature for High-temp service (5 m) will be 280 deg. C.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 2in. / 50mm, 1.5in. / 40mm
For regular / high-temperature service

Basic Model No.

	Measuring Span	2.5 to 100 kPa (250 to 10,160 mmH_2O)	STE929	Flush Diaphragm Type: 2in./50mm, 1.5in./ 40mm
		35 to 700 kPa (0.35 to 7 kgf/cm^2)	STE930	

			Fill Fluid Code			
			1	2	3	5
		-				
Options I	No options	X	✔	✔	✔	✔
	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	✔	✔	✔	✔
	FEP protective Film	T	✔	✔		✔
		-				
Options II	No option	XX	✔	✔	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔	✔	✔
	Custom calibration	C7	✔	✔	✔	✔
	One Elbow	E1	✔	✔	✔	✔
	Two Elbows	E2	✔	✔	✔	✔
	Mounting bracket	E9	✔	✔	✔	✔
	0.1mm Thickness Diaphragm	F4				
	Direct Mounting Kits	R8	✔	✔		✔
	SI unit	U1	✔	✔	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔	✔	✔

Note) *33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 3in. / 80mm, 2in. / 50mm
For regular / high-temperature service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Extended Diaphragm Type : 3in./80mm, 2in./50mm
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code		
I	Fill Fluid	Flange Type	Fill Fluid		1	2	3
		STE929 Extended Diaphragm 3 in. (80mm) 2 in. (50mm)	Regular type service (Silicone oil)	1			
			For oxygen service (Fluorine oil) *3	2			
			For high-temperature service (Silicone oil)	3			
		STE930 Extended Diaphragm 3 in. (80mm) 2 in. (50mm)	Regular type service (Silicone oil)	1			
			For oxygen service (Fluorine oil) *3	2			
			For high-temperature service (Silicone oil) *31	3			
II	Flange Standard	ANSI flange		A	✔	✔	✔
		JIS flange		J	✔	✔	✔
		JPI flange		P	✔	✔	✔
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent *24 *31		C	✔	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔	✔
		SUS304		7	✔	✔	✔
		SUS316		2	✔	✔	✔
		SUS316L		8	✔	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔	✔
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *31		8	✔	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔	✔
VII	Length of Extended Parts	L = 50mm (3in. /80mm) *24		05	✔	✔	✔
		L = 100mm (3in. /80mm) *24		10	✔	✔	✔
		L = 150mm (3in. /80mm) *24		15	✔	✔	✔
		L = 200mm (3in. /80mm) *24		20	✔	✔	✔
		L = 250mm (3in. /80mm) *24		25	✔	✔	✔
		L = 300mm (3in. /80mm) *24		30	✔	✔	✔
		L = 50mm (2in. / 50mm) *24		06	✔	✔	✔
		L = 100mm (2in. / 50mm) *24		11	✔	✔	✔
		L = 150mm (2in. / 50mm) *24		16	✔	✔	✔
		L = 200mm (2in. / 50mm) *24 *31		21	✔	✔	✔
		L = 250mm (2in. / 50mm) *24 *31		26	✔	✔	✔
		L = 300mm (2in. / 50mm) *24 *31		31	✔	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔	✔
		3m		3	✔	✔	✔
		4m *22		4	✔	✔	✔
		5m *22		5	✔	✔	✔
	Intrinsically safe for NEPSI cannot be selected with -D7.	2m		B	✔	✔	✔
		3m		C	✔	✔	✔
		4m *22		H	✔	✔	✔
		5m *22		D	✔	✔	✔

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

*22 Specifications for Capillary Length 4m and 5m are as follows;

a. Temperature characteristics and Static pressure effect will be 1.5 times of those of High-temperature service.

b. Ambient temperature range for Regular service: -10 to 55 deg C, Temperature of wetted parts: -30 to 110 deg C

c. Ambient temperature range for Oxygen service: -10 to 55 deg C, Temperature of wetted parts: -10 to 110 deg C

d. In the case, Ambient temperature is 40 deg C, the highest wetted parts temperature for High-temp service (4 m) will be 280 deg C.

e. In the case, Ambient temperature is 38 deg C, the highest wetted parts temperature for High-temp service (5 m) will be 280 deg C.

*24 In case of “ANSI/JPI600” is used for 3in. flange type and rating, not available for the extended diaphragm flange type.

*31 In case fill fluid: For high-temperature service, for high-temperature vacuum service or high-temperature high vacuum service and 2in. Flange rating: ANSI/JPI600 and Wetted parts material: SUS316L, Extension length of FLange 200/250/300mm are not available

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 3in. / 80mm, 2in. / 50mm
For regular / high-temperature service

Model No.: STE929 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH2O)	STE929	Extended Diaphragm Flange Type: 3in./ 80mm, 2in./50mm

		Code	Fill Fluid Code		
			1	2	3
		-			
Options I	No options	X	✔	✔	✔
	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	✔	✔	✔
	FEP protective Film	T	✔	✔	–
		-			
Options II	No option	XX	✔	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔	✔
	Custom calibration	C7	✔	✔	✔
	One Elbow	E1	✔	✔	✔
	Two Elbows	E2	✔	✔	✔
	Mounting bracket	E9	✔	✔	✔
	Direct Mounting Kits	R8	✔	✔	
	SI unit	U1	✔	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔	✔

*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush and extended combination flange type
For regular / high-temperature service

Model No. STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Combination Flush & Extended Diaphragm Flange Type
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	Extended Diaphragm:4in./100mm - Flush Diaphragm:3in./80mm

Selection I					Code	Fill Fluid Code					
						STE929			STE930		
					-	1	2	3	1	2	3
I	Fill Fluid	Combination Flush & Extended Diaphragm Flange Type	STE929 Extended Diaphragm:4in./100mm - Flush Diaphragm:3in./80mm	Regular type service (Silicone oil) *16	1						
				For oxygen service (Fluorine oil) *3 *16	2						
				For high-temperature service (Silicone oil) *19 *20	3						
			STE930 Extended Diaphragm:4in./100mm - Flush Diaphragm:3in./80mm	Regular type service (Silicone oil) *16	1						
				For oxygen service (Fluorine oil) *3 *16	2						
				For high-temperature service (Silicone oil) *19 *20	3						
II	Flange Standard	ANSI flange			A	✔	✔	✔	✔	✔	✔
		JIS flange			J	✔	✔	✔	✔	✔	✔
		JPI flange			P	✔	✔	✔	✔	✔	✔
III	Flange Type & Rating	Combination Flush & Extended Diaphragm Flange Type JIS 10K, ANSI/JPI 150 (RF) equivalent			G	✔	✔	✔	✔	✔	✔
		Combination Flush & Extended Diaphragm Flange Type JIS 20K, ANSI/JPI 300 (RF) equivalent:*2 *19			H	✔	✔	✔	✔	✔	✔
		Combination Flush & Extended Diaphragm Flange Type JIS 30K *2 *16 *20			J	✔	✔	✔	✔	✔	✔
IV	Flange Material	Carbon Steel			1	✔	✔	✔	✔	✔	✔
		SUS304			7	✔	✔	✔	✔	✔	✔
		SUS316			2	✔	✔	✔	✔	✔	✔
		SUS316L *2 *3			8	✔	✔	✔	✔	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316) *16 *19 *20			2	✔	✔	✔	✔	✔	✔
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *2 *3			8	✔	✔	✔	✔	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)			J	✔	✔	✔	✔	✔	✔
VII	Length of Extended Parts	L = 50mm (4in. / 100mm) *20			09	✔	✔	✔	✔	✔	✔
		L = 100mm (4in. / 100mm) *20			14	✔	✔	✔	✔	✔	✔
		L = 150mm (4in. / 100mm) *16 *20			19	✔	✔	✔	✔	✔	✔
		L = 200mm (4in. / 100mm) *16 *20			24	✔	✔	✔	✔	✔	✔
		L = 250mm (4in. / 100mm) *16 *19 *20			29	✔	✔	✔	✔	✔	✔
		L = 300mm (4in. / 100mm) *16 *19 *20			34	✔	✔	✔	✔	✔	✔
VIII	Length of Capillary Tube	2m			2	✔	✔	✔	✔	✔	✔
		3m			3	✔	✔	✔	✔	✔	✔
		4m			4	✔	✔	✔	✔	✔	✔
		5m			5	✔	✔	✔	✔	✔	✔
		6m			6	✔	✔	✔	✔	✔	✔
		7m			7	✔	✔	✔	✔	✔	✔
		8m			8	✔	✔	✔	✔	✔	✔
		9m			9	✔	✔	✔	✔	✔	✔
		10m			A	✔	✔	✔	✔	✔	✔
	Length of Capillary Tube with Olefin Coating	2m			B	✔	✔	✔	✔	✔	✔
		3m			C	✔	✔	✔	✔	✔	✔
		4m			H	✔	✔	✔	✔	✔	✔
		5m			D	✔	✔	✔	✔	✔	✔
		6m			J	✔	✔	✔	✔	✔	✔
		7m			E	✔	✔	✔	✔	✔	✔
		8m			F	✔	✔	✔	✔	✔	✔
		9m			K	✔	✔	✔	✔	✔	✔
		10m			G	✔	✔	✔	✔	✔	✔

Note) *2 The output current value ranges from 3.0 to 3.8mA for the lower limit and from 20.8 to 21.8mA for the upper limit.
*3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" must be selected.
*16 In case "JIS.0K" is used for flange type and rating, "SUS316L" is used for flange material and for regular service or oxygen service, not available for length of Extended parts: 150/200/250/300mm.
*19 In case Fill Fluid: For high-temperature service and Flange Rating: ANSI300 and Wetted Parts material: SUS316L, Extension length of Flange 250mm / 300mm are not available.
*20 In case Flange Rating: JIS30K and Wetted Parts material: SUS316L, Extended diaphragm type is not available.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush and extended combination flange type
For regular / high-temperature service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Combination Flush & Extended Diaphragm Flange Type
		35 to 700kPa(0.35 to 7kgf/cm^2)	STE930	Extended Diaphragm:4in./100mm - Flush Diaphragm:3in./80mm

		Code	Fill Fluid Code					
			STE929			STE930		
			1	2	3	1	2	3
		-						
Options I	No options	X	✔	✔	✔	✔	✔	✔
	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	✔	✔	✔	✔	✔	✔
	FEP protective film	T						
		-						
Options II	No option	XX	✔	✔	✔	✔	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔	✔	✔	✔	✔
	Custom calibration	C7	✔	✔	✔	✔	✔	✔
	One Elbow	E1	✔	✔	✔	✔	✔	✔
	Two Elbows	E2	✔	✔	✔	✔	✔	✔
	Mounting bracket	E9	✔	✔	✔	✔	✔	✔
	Direct Mounting Kits	R8	✔	✔		✔	✔	
	SI unit	U1	✔	✔	✔	✔	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔	✔	✔	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔	✔	✔	✔	✔

Note) *33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

Notes of order entry

SH No.	SH8030	Must be specified in Remarks of Order Entry Sheets

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 3in. / 80mm
For high-temperature / vacuum, high-temperature / high vacuum service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Flush Diaphragm Flange Type: 3in./80mm
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code	
I	Fill Fluid	Model No.	Fill Fluid	-	4	7
		STE929 Flush Diaphragm 3in. / 80mm	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
		STE930 Flush Diaphragm 3in. / 80mm	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
II	Flange Standard	ANSI flange		A	✔	✔
		JIS flange		J	✔	✔
		JPI flange		P	✔	✔
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔
		SUS304		7	✔	✔
		SUS316		2	✔	✔
		SUS316L		8	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2		
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✔	✔
		Tantalum (Diaphragm:Tantalum, others: Tantalum) *17		4	✔	✔
		Hastelloy C (Diaphragm:Hastelloy C, others: Hastelloy C)		9	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔
VII	Length of Extended Parts	Flush Diaphragm 3in. / 80mm		00	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔
		3m		3	✔	✔
		4m		4	✔	✔
		5m		5	✔	✔
		6m		6	✔	✔
		7m		7	✔	✔
		8m		8	✔	✔
		9m		9	✔	✔
		10m		A	✔	✔

Options I				
	No options	X	✔	✔
	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	✔	✔
	FEP protective Film	T		
		-		

Options II				
	No option	XX	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔
	Custom calibration	C7	✔	✔
	One Elbow	E1	✔	✔
	Two Elbows	E2	✔	✔
	Mounting bracket	E9	✔	✔
	0.1mm Thickness Diaphragm	F4		
	SI unit	U1	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔

Note) *17 In case "Tantalum" is used for diaphragm material, and in case of "For high-temperature service", normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C

*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 4in. / 100mm
For high-temperature / Vacuum, high-temperature / high-vacuum service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Extended Diaphragm Flange Type: 4in./100mm
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code	
I	Fill Fluid	Flange Type	Fill Fluid		4	7
		STE929 Extended Diaphragm 4in. (100mm)	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
		STE930 Extended Diaphragm 4 in. (100mm)	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
II	Flange Standard	ANSI flange		A	✔	✔
		JIS flange		J	✔	✔
		JPI flange		P	✔	✔
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent *23		B	✔	✔
		JIS 30K, ANSI/JOI 600 (RF) equivalent *20 *24		C	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔
		SUS304		7	✔	✔
		SUS316		2	✔	✔
		SUS316L		8	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *20 *23		8	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔
VII	Length of Extended Parts	L = 50mm (4in. / 100mm) *24		09	✔	✔
		L = 100mm (4in. / 100mm) *24		14	✔	✔
		L = 150mm (4in. / 100mm) *24		19	✔	✔
		L = 200mm (4in. / 100mm) *23 *24		24	✔	✔
		L = 250mm (4in. / 100mm) *23 *24		29	✔	✔
		L = 300mm (4in. / 100mm) *23 *24		34	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔
		3m		3	✔	✔
		4m		4	✔	✔
		5m		5	✔	✔
		6m		6	✔	✔
		7m		7	✔	✔
		8m		8	✔	✔
		9m		9	✔	✔
		10m		A	✔	✔

Options I	No options	X	✔	✔
	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	✔	✔
	FEP protective Film	T	✔	✔
		-		
Options II	No option	XX	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔
	Custom calibration	C7	✔	✔
	One Elbow	E1	✔	✔
	Two Elbows	E2	✔	✔
	Mounting bracket	E9	✔	✔
	0.1mm Thickness Diaphragm *15	F4	✔	✔
	SI unit	U1	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔

Note) *15 Only available for Material of Wetted parts: "SUS316" and "SUS316L"
*20 In case Flange rating: JIS 30K, Wetted parts material: SUS316L and for high temperature service, Extended diaphragm type is not available.
*23 In case "ANSI/JPI 300" is used for flange type and rating, not available for length of extended parts: 200/250/300mm.
*24 In case of "ANSI/JPI 600" is used for flange type and rating, not available for the extended diaphragm flange type.
*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 2in. / 50mm, 1.5in. / 40mm
For high-temperature / Vacuum, high-temperature / high-vacuum service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O)	STE929	Flush Diaphragm Type: 2in./50mm, 1.5in./40mm
		35 to 700kPa (0.35 to 7kgf/cm^2)	STE930	

Selection I				Code	Fill Fluid Code	
I	Fill Fluid	Flange Type	Fill Fluid	-	4	7
		STE929 Flush Diaphragm 2 in. (50mm) / 1.5in. (40mm)	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
		STE930 Flush Diaphragm 2 in. (50mm) / 1.5in. (40mm)	For high-temperature / vacuum service (Silicone oil)	4		
			For high-temperature / high-vacuum service (Silicone oil)	7		
II	Flange standard	ANSI flange		A	✔	✔
		JIS flange		J	✔	✔
		JPI flange		P	✔	✔
III	Flange Type and Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔
		SUS304		7	✔	✔
		SUS316		2	✔	✔
		SUS316L		8	✔	✔
V	Material of Wetted Parts	SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✔	✔
		Tantalum (Diaphragm:Tantalum, others: Tantalum) *17		4	✔	✔
		Hastelloy C (Diaphragm:Hastelloy C, others: Hastelloy C)		9	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔
VII	Length of Extended Parts	Flush Diaphragm 2in. / 50mm		01	✔	✔
		Flush Diaphragm 1.5in. /40mm		02	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔
		3m		3	✔	✔
		4m		4	✔	✔
		5m		5	✔	✔

Options I	No options	X	✔	✔
	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	✔	✔
	FEP protective Film	T	✔	✔
		-		
Options II	No option	XX	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔
	Custom calibration	C7	✔	✔
	One Elbow	E1	✔	✔
	Two Elbows	E2	✔	✔
	Mounting bracket	E9	✔	✔
	0.1mm Thickness Diaphragm	F4		
	SI unit	U1	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔

Note) *17 In case "Tantalum" is used for diaphragm material and in case of "For high-temperature service", normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C

*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

ST3000 series 900 electric difference pressure transmitter
Model STE929 / STE930 (Remote-sealed diaphragm type)
Flush diaphragm 3in. / 80mm, 2in. / 50mm
For high-temperature / Vacuum, high-temperature / high-vacuum service

Model No.: STE9XX - I II III IV V VI VII VIII - Option I - Option II
Basic Model No.

	Measuring Span	2.5 to 100kPa (250 to 10,160mmH_2O) 35 to 700kPa (0.35 to 7kgf/cm^2)	STE929 STE930	Extended Diaphragm Type: 3in./80mm, 2in./50mm

Selection I				Code	Fill Fluid Code	
I	Fill Fluid	Flange Type	Fill Fluid		4	7
		STE929 Extended Diaphragm 3 in. (80mm) / 2 in. (50mm)	For high-temperature service (Silicone oil)	4		
			For high-temperature high-vacuum service (Silicone oil)	7		
		STE930 Extended Diaphragm 3 in. (80mm) / 2 in. (50mm)	For high-temperature service (Silicone oil)	4		
			For high-temperature high-vacuum service (Silicone oil)	7		
II	Flange Standard	ANSI flange		A	✔	✔
		JIS flange		J	✔	✔
		JPI flange		P	✔	✔
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✔	✔
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✔	✔
		JIS 30K, ANSI/JPI 600 (RF) equivalent *24		C	✔	✔
IV	Flange Material	Carbon Steel		1	✔	✔
		SUS304		7	✔	✔
		SUS316		2	✔	✔
		SUS316L		8	✔	✔
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✔	✔
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✔	✔
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✔	✔
VII	Length of Extended Parts	L = 50mm (3in. /80mm) *24		05	✔	✔
		L = 100mm (3in. /80mm) *24		10	✔	✔
		L = 150mm (3in. /80mm) *24		15	✔	✔
		L = 50mm (2in. / 50mm) *24		06	✔	✔
		L = 100mm (2in. / 50mm) *24		11	✔	✔
		L = 150mm (2in. / 50mm) *24		16	✔	✔
VIII	Length of Capillary Tube	2m		2	✔	✔
		3m		3	✔	✔
		4m		4	✔	✔
		5m		5	✔	✔

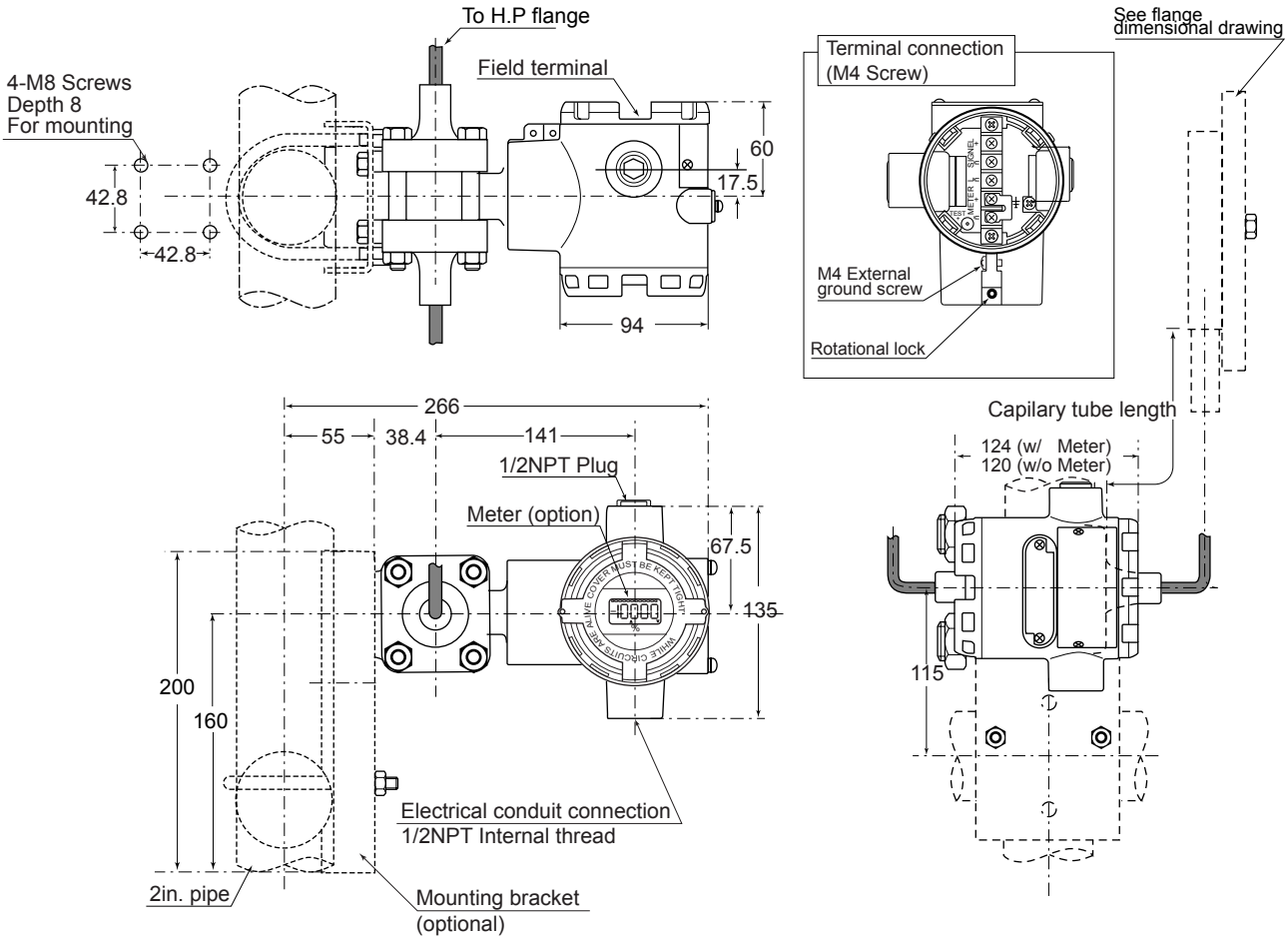
Options I	No options	X	✔	✔
	Built-in indicating smart meter (0 to 100% liner scales)	P	✔	✔
	Built-in indicating smart meter (engineering unit scales)	R	✔	✔
	SUS304 Bolt and nuts material	W	✔	✔
	SUS630 Bolt and nuts material	U	✔	✔
	Corrosion-resistant finish	A	✔	✔
	Corrosion-proof finish	B	✔	✔
	Corrosion-resistant finish, silver paint	D	✔	✔
	Oil Free finish	K	✔	✔
	FEP protective Film	T	✔	✔
		-		
Options II	No option	XX	✔	✔
	Water free finish (with Oil free finish)	A7	✔	✔
	Custom calibration	C7	✔	✔
	One Elbow	E1	✔	✔
	Two Elbows	E2	✔	✔
	Mounting bracket	E9	✔	✔
	SI unit	U1	✔	✔
	FOUNDATION™ fieldbus *33	D6	✔	✔
	Fieldbus communication stack BASIC class *33	L1	✔	✔

Note) *24 In case of "ANSI/JPI 600" is used for flange type and rating, not available for the extended diaphragm flange type.
*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

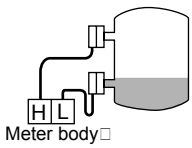
DIMENSIONS

STE929/930 (for regular type and high-temperature service)

Flush diaphragm flange / Extended diaphragm flange

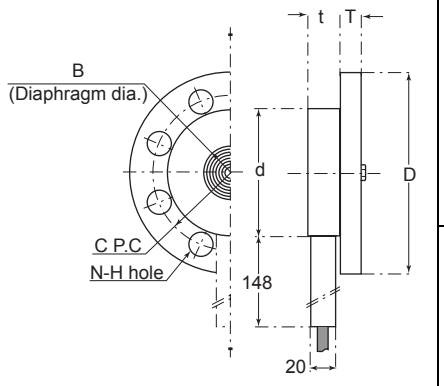


Note) 1. To prevent vibration, you are recommended to fasten the capillary tube mid-length.
2. Select a gasket that will not contact the diaphragm after it is tightened.
3. When the suppression in larger than one half of the measuring span, the higher pressure side and the lower pressure side of the process connection end flange are opposite to those shown in the figure above. When using the transmitter to measure liquid levels, connect at H and L marks on the meter body as shown in the right figure.



STE929/930 Table of flush diaphragm flange dimensions

[Uni:t:mm]

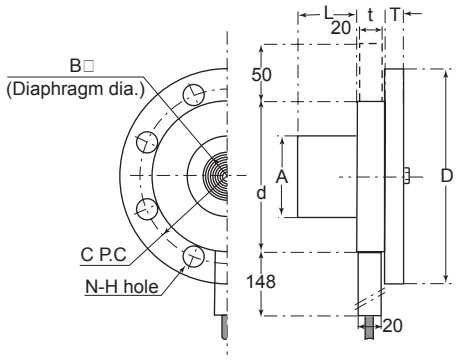


Rating	Flange rating	D	T	C	N	H	d	B	t
1.5 in./ 40mm	JIS 10K-40mm	140	16	105	4	19	81	43	25 (note2)
	JIS 20K-40mm	140	18	105	4	19			
	JIS 30K-40mm	160	22	120	4	23			
	ANSI 150-1.5 in.	127	18	98.6	4	16			
	ANSI 300-1.5 in.	155	21	114.3	4	22			
	ANSI 600-1.5 in.	155	22.5	114.3	4	22			
	JPI 150-1.5 in.	127	18	98.6	4	16			
	JPI 300-1.5 in.	155	21	114.3	4	22			
	JPI 600-1.5 in.	155	22.5	114.3	4	22			
2 in./50mm	JIS 10K-50mm	155	16	120	4	19	99	62 (note1)	
	JIS 20K-50mm	155	18	120	8	19			
	JIS 30K-50mm	165	22	130	8	19			
	ANSI 150-2 in.	152	19.5	120.6	4	19			
	ANSI 300-2 in.	165	22.5	127	8	19			
	ANSI 600-2 in.	165	25.5	127	8	19			
	JPI 150-2 in.	152	19.5	120.6	4	19			
	JPI 300-2 in.	165	22.5	127	8	19			
	JPI 600-2 in.	165	25.5	127	8	19			
3 in./80mm	JIS 10K-80mm	185	18	150	8	19	129.5	95	25
	JIS 20K-80mm	200	22	160	8	23			
	JIS 30K-80mm	210	28	170	8	23			
	ANSI 150-3 in.	190	24	152.4	4	19			
	ANSI 300-3 in.	210	28.5	168.1	8	22			
	ANSI 600-3 in.	210	32	168.1	8	22			
	JPI 150-3 in.	190	24	152.4	4	19			
	JPI 300-3 in.	210	28.5	168.1	8	22			
	JPI 600-3 in.	210	32	168.1	8	22			

Note) 1) Wetted parts material is Hastelloy C and Fill fluid is for reglon, high-temperature, oxygen, or chlorine service: B=43
2) Wetted parts material is Hastelloy C and Fill fluid is for reglon, high-temperature, oxygen, or chlorine service: t=26.7

STE929/930 Table of extended diaphragm flange dimensions

[Unit: mm]



Rating	Flange rating	D	T	C	N	H	d	A	t	B	L
2 in./ 50mm	JIS 10K-50mm	155	16	120	4	19	99	47±1	25	43	50
	JIS 20K-50mm	155	18	120	8	19					100
	JIS 30K-50mm	165	22	130	8	19					150
	ANSI 150-2 in.	152	19.5	120.6	4	19					200
	ANSI 300-2 in.	165	22.5	127	8	19					250
	ANSI 600-2 in.	165	25.5	127	8	19					300
	JPI 150-2 in.	152	19.5	120.6	4	19					
	JPI 300-2 in.	165	22.5	127	8	19					
	JPI 600-2 in.	165	25.5	127	8	19					
3 in./ 80mm	JIS 10K-80mm	185	18	150	8	19	129.5	69±1	25	62	
	JIS 20K-80mm	200	22	160	8	23					
	JIS 30K-80mm	210	28	170	8	23					
	ANSI 150-3 in.	190	24	152.4	4	19					
	ANSI 300-3 in.	210	28.5	168.1	8	22					
	ANSI 600-3 in.	210	32	168.1	8	22					
	JPI 150-3 in.	190	24	152.4	4	19					
	JPI 300-3 in.	210	28.5	168.1	8	22					
	JPI 600-3 in.	210	32	168.1	8	22					
4 in./ 100mm	JIS 10K-100mm	210	18	175	8	19	157	95±1	23	90.4	
	JIS 20K-100mm	225	24	185	8	23					
	JIS 30K-100mm	240	32	195	8	25					
	ANSI 150-4 in.	229	24	190.5	8	19					
	ANSI 300-4 in.	254	32	200.2	8	22					
	JPI 150-4 in.	229	24	190.5	8	19					
	JPI 300-4 in.	254	32	200.2	8	22					

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