

ST 3000 Smart Transmitter / Series 900 Electronic Differential Pressure Transmitter

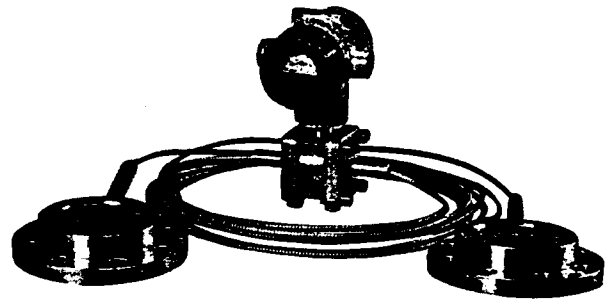
Model STR926 (Remote-Sealed Type for Medium Differential Pressure
with Temperature Compensation for Enclosed Fluid in Capillary Tube)

Measuring Span: 250 to 10160mmH₂O {2.45 to 99.6 kPa}

Introduction

The ST 3000 Differential Pressure Transmitter measures a differential pressure and transmits an analog 4 to 20mA DC output or digital output proportional to the measured variable. The transmitter is a microprocessor-based instrument, whose parameters and settings (range, damping time constant, linear or square-root output, constant current output and others) can be remote-controlled from the instrument room via the SFC (Smart Field Communicator).

The Remote-Sealed Type Differential Pressure Transmitters also are suited for measurement of differential pressures (flow rate, liquid level, etc.) of process fluid with high corrosion, high density, condensation, metal sludge, etc.



Standard Specifications

Item	Specifications
Measuring span (Continuously adjustable)	250 to 10160mmH ₂ O {2.45 to 99.6 kPa}
Setting range	$-10160 \leq \text{URV}^{(*1)} \leq 10160\text{mmH}_2\text{O}$ { $-99.6 \leq \text{URV} \leq 99.6$ kPa } $-10160 \leq \text{LRV}^{(*2)} \leq 10160\text{mmH}_2\text{O}$ { $-99.6 \leq \text{LRV} \leq 99.6$ kPa }
Output	Analog output (4 to 20mA DC) / Digital output
Accuracy^(*3)	Percentage with respect to x that represents the URV or LRV of the calibrated range, or the span – whichever is greatest. Analog mode: $\pm 0.2\%$ When x is 1250mmH ₂ O {12.2 kPa} or greater. $\pm [0.05 + 0.15 \times \frac{1250}{x}] \%$ When x is less than 1250mmH ₂ O {12.2 kPa}. (with damping effected) Digital mode: $\pm 0.2\%$ of span
Supply voltage and load resistance	10.8 to 45V DC (See Figure 1.)
Working pressure rating	Up to flange pressure rating (For vacuum pressures, see Figure 2.)
Operating temperature range	Ambient temperature: Normal operating conditions; -30 to $+75^\circ\text{C}$ Operative limits (for short period); -50 to $+80^\circ\text{C}$ Transportation and storage conditions; -50 to $+85^\circ\text{C}$ Meter body (Process fluid) temperature: Normal operating conditions; -40 to $+110^\circ\text{C}$ Operative limits (for short period); -50 to $+115^\circ\text{C}$
Operating humidity range	Normal operating conditions: 10 to 90% RH
Temperature effect^(*3, *4) (Shift with respect to setting range)	Percentage with respect to x that represents the URV or LRV of the setting range, or the span – whichever is greatest. Zero shift: $\pm [0.25 + 0.5 \times \frac{2500}{x}] \%$ / 55°C change Combined shift (Including zero and span shifts): $\pm 1.6\%$ / 55°C change When x is 2500mmH ₂ O {24.5 kPa} or greater. $\pm [1.0 + 0.6 \times \frac{2500}{x}] \%$ / 55°C change When x is less than 2500mmH ₂ O {24.5 kPa}.

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

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

(*3): Within a range of $\text{URV} \geq 0$ and $\text{LRV} \geq 0$.

(*4): Refer to the temperature effect diagram (Figure 3).

(*5): For the performance of corrosion-resistant type, refer to the specification sheet for corrosion-resistant application.

Item	Specifications				
Static pressure effect ^{*3, *5)} (at 25°C) (Shift with respect to setting range)	Percentage with respect to x that represents the URV or LRV of the setting range, or the span – whichever is greatest. (P: Static pressure value) Zero shift: $\pm [0.03 + 0.10 \times \frac{2500}{x}] \% / 10 \text{kgf/cm}^2$ {981 kPa} change Combined shift (Including zero and span shifts) $\pm 0.17 \% / 10 \text{kgf/cm}^2$ {981 kPa} change When x is 2500mmH ₂ O (24.5 kPa) or greater. $\pm [0.03 + 0.14 \times \frac{2500}{x}] \% / 10 \text{kgf/cm}^2$ {981 kPa} change When x is less than 2500mmH ₂ O (24.5 kPa).				
Stability against supply voltage change	0.005% FS/V				
Dead time	Approx. 0.4sec.				
Damping time constant	Adjustable within a range of 0.6 to 32 sec. by 10 steps. (at 25°C)				
Process connection	Flange (Both HP and LP sides) <table style="border: none; margin-left: 20px;"> <tr> <td style="border: none;">Flush Diaphragm type;</td> <td style="border: none;">JIS 10K, 30K – 80mm (RF) equivalent ANSI 150, 300 – 3" (RF) equivalent JPI 150, 300 – 3" (RF) equivalent</td> </tr> <tr> <td style="border: none;">Extended Diaphragm type;</td> <td style="border: none;">JIS 10K, 30K – 100mm (RF) equivalent ANSI 150, 300 – 4" (RF) equivalent JPI 150, 300 – 4" (RF) equivalent</td> </tr> </table>	Flush Diaphragm type;	JIS 10K, 30K – 80mm (RF) equivalent ANSI 150, 300 – 3" (RF) equivalent JPI 150, 300 – 3" (RF) equivalent	Extended Diaphragm type;	JIS 10K, 30K – 100mm (RF) equivalent ANSI 150, 300 – 4" (RF) equivalent JPI 150, 300 – 4" (RF) equivalent
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Extended Diaphragm type;	JIS 10K, 30K – 100mm (RF) equivalent ANSI 150, 300 – 4" (RF) equivalent JPI 150, 300 – 4" (RF) equivalent				
Electrical conduit connection	½NPT internal thread				
Structure	Water-proof and dust-proof structure JIS C0920 water-tight, JIS F8001 Class 2 water-tight, NEMA 3 and 4X, IEC IP67				
Materials	Center body: SUS316 Meter body cover: SUSF304 Bolts: SNB7 Process connection flange: Carbon steel (SF440A), SUS316, SUS304 Wetted parts: SUS316 (Diaphragm: SUS316L) Capillary tube: SUS316 Armored tube: SUS304 Transmitter case: Aluminium alloy				
Finish	Baked acryl paint, Housing: Light beige (Munsell 4Y 7.2/1.3) Cap: Dark beige (Munsell 10YR 4.7/0.5)				
Installation	Direct mount on process flange. (Transmitter body is mounted on a 2-inch horizontal or vertical pipe.)				
Capillary tube length	2, 3, or 5m (Specific gravity of the fill fluid is 0.935 at 25°C)				
Weight	Approx. 19.8kg (with JIS 10K – 80mm flange and 5m capillary tube.)				

Selectable Standard Specifications

(The items other than the following are identical with those of the Standard Specifications.)

Item	Specifications				
Fill fluid for oxygen and chlorine service <table style="border: none; margin-left: 20px;"> <tr> <td style="border: none;">Wetted parts section for chlorine service: Tantalum including no oil finish of wetted parts section.</td> <td style="border: none;"> </td> </tr> </table>	Wetted parts section for chlorine service: Tantalum including no oil finish of wetted parts section.		Fill-fluid specific gravity: 1.870 (at 25°C) Ambient temperature: Normal operating conditions; –10 to +75°C Operative limits (for short period); –40 to +80°C Transportation and storage conditions; –50 to +85°C Meter body (Process fluid) temperature: Normal operating conditions; –10 to +75°C Operative limits (for short period); –40 to +80°C Note) For use on vacuum pressures, please consult us.		
Wetted parts section for chlorine service: Tantalum including no oil finish of wetted parts section.					
Materials of wetted parts section	<table style="border: none;"> <tr> <td style="border: none;">Tantalum</td> <td style="border: none;">For flush diaphragm only</td> </tr> <tr> <td style="border: none;">Hastelloy C</td> <td style="border: none;">For flush diaphragm only</td> </tr> </table>	Tantalum	For flush diaphragm only	Hastelloy C	For flush diaphragm only
Tantalum	For flush diaphragm only				
Hastelloy C	For flush diaphragm only				

Optional Specifications

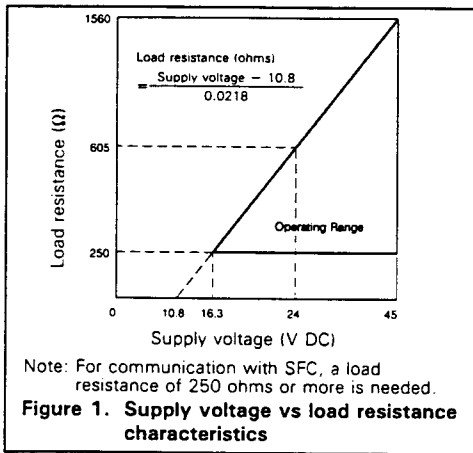
(The items other than the following are identical with those of the Standard Specifications.)

Item	Specifications
With indicating meter (Class 2.5)	Ambient temperature: Normal operating conditions; –30 to +75°C Operative limits (for short period); –40 to +80°C Transportation and storage conditions; –50 to +85°C
Corrosion-resistant finish	Corrosion-resistant paint (Baked acryl paint), fungus-proof finish (Silver paint when bolts and flanges are made of carbon steel.)
Corrosion-proof finish	Corrosion-proof paint (Baked epoxy paint), fungus-proof finish (Silver paint when bolts and flanges are made of carbon steel.)
Corrosion-resistant finish (Silver paint)	Transmitter case is silver-painted in addition to the above corrosion-resistant finish.
No oil finish	Excluding meter body cover is made of carbon steel.
Explosion-proof structure	FM explosion-proof structure: Explosion-proof Class I (Gas, steam), Division 1. Group B, C, D Dust-ignition Class II (Inflammable dust), Division 1. Group E, F, G Suitable Class III (Inflammable fiber), Division 1 FM intrinsic-safety explosion-proof structure Intrinsically safe Class I, II, III, Division 1. Group A, B, C, D, E, F, G Nonincendive (for Class II location) Class I. Division 2, Group A, B, C, D

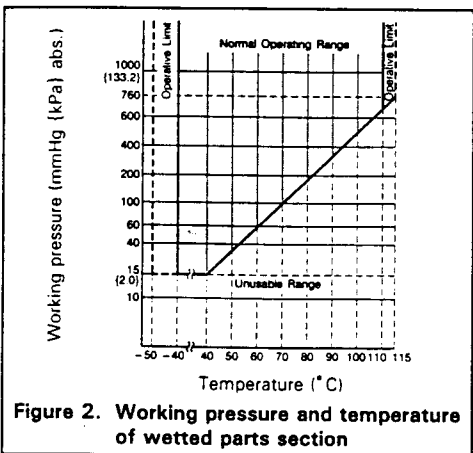
Model Number Table

Basic Model No.	Fill Fluid	Flange							Options I	Options II	Description
		Standard	Type and Rating	Flange Material	Material of Wetted Parts	Finish of Gasket Face	Length of Extended Parts	Capillary Tube Length			
STR 926										Measuring span : 250 to 10160mmH ₂ O (2.45 to 99.6 kPa)	
	-1									Regular type service (Silicon oil)	
	-2									For oxygen service (Fluorine oil)	
	-5									For chlorine service (Fluorine oil)	
		J								JIS flange	
		A								ANSI flange	
		P								JPI flange	
			A							Flush diaphragm type 10K-80mm/150-3" (RF) equivalent	
			B							Flush diaphragm type 30K-80mm/300-3" (RF) equivalent	
			C							Extended diaphragm type 10K-100mm/150-4" (RF) equivalent	
			D							Extended diaphragm type 30K-100mm/300-4" (RF) equivalent	
				1						Carbon steel	
				7						SUS304	
					2					SUS316 (Diaphragm: SUS316L)	
					4					Tantalum (Flush diaphragm only)	
					9					Hastelloy C (Flush diaphragm only)	
						J				Standard	
							00			Flush diaphragm	
							05			L = 50mm (Extended diaphragm)	
							10			L = 100mm (Extended diaphragm)	
							15			L = 150mm (Extended diaphragm)	
								2		ℓ = 2m	
								3		ℓ = 3m	
								5		ℓ = 5m	
								-X		No option	
								-L		With lightning arrester	
								-M		Built-in indicating meter (0 to 100% linear and 0 to 10 √ double scales)	
								-A		Corrosion-resistant finish	
								-B		Corrosion-proof finish	
								-D		Corrosion-resistant finish, silver paint	
								-K		No oil finish	
								-3		FM explosion-proof structure	
								-4		FM intrinsic-safety explosion-proof structure	
								-XX		No options	
								-A4		Burnout feature (Lower limit of value at abnormal condition)	
								-A5		Burnout feature (Upper limit of value at abnormal condition)	
								-D5		Digital output	
								-E1		With 1 elbow (Electric conduit connection or indicating meter)	
								-E2		With 2 elbows (Electric conduit connection and indicating meter)	
								-E5		With external zero / span adjuster	
								-E9		Mounting bracket	

Note:
The items enclosed in the bold-line boxes are for Standard Specifications.



Note: For communication with SFC, a load resistance of 250 ohms or more is needed.



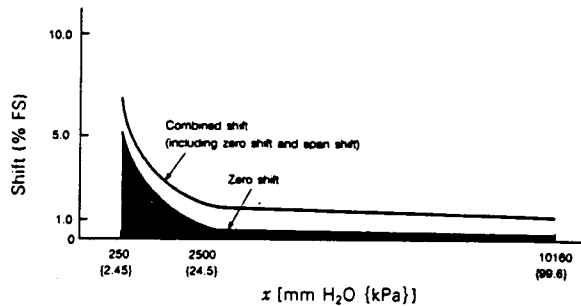


Figure 3. Range and temperature effect (55°C change)

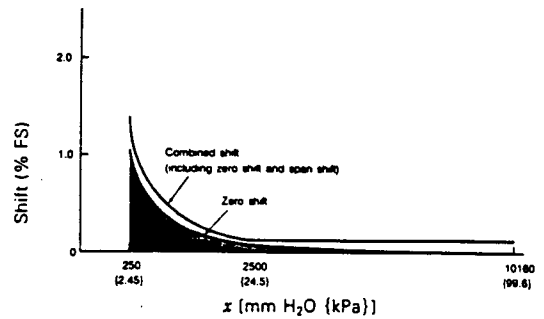
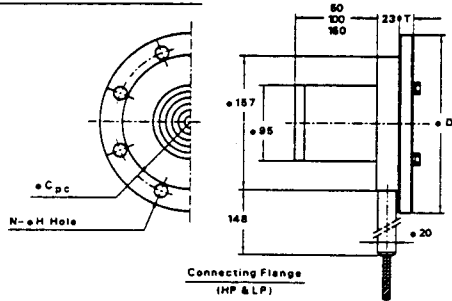
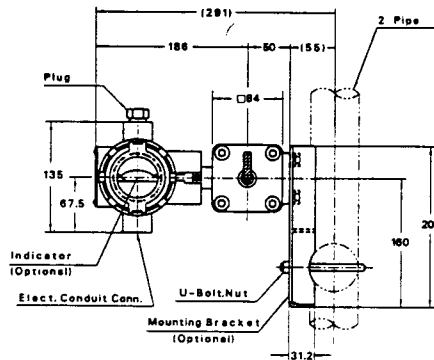
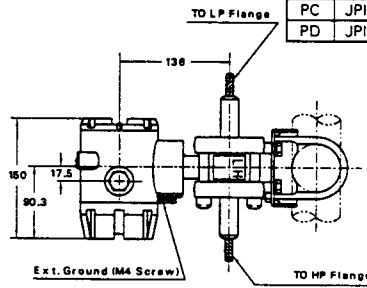
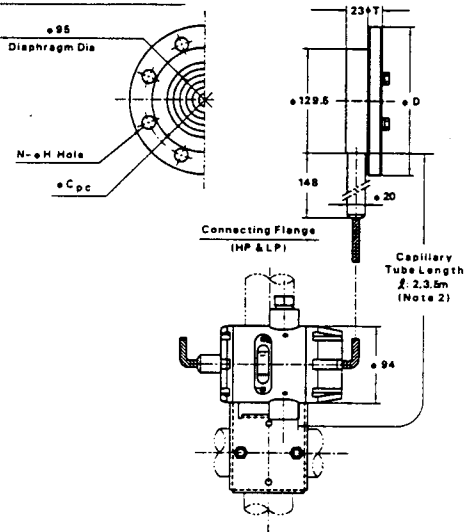


Figure 4. Range and static pressure effect [10 kgf/cm² (981 kPa) change]

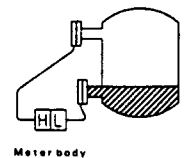
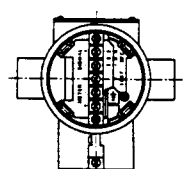
Extended Diaphragm Type



Flush Diaphragm Type



Terminal Connection (M4 Screw)



Flange dimensions (Unit: mm)

Model No.	Flange Rating	φD	T	φC	N	φH
JA	JIS 10K-80mm	185	18	150	8	19
JB	JIS 30K-80mm	210	28	170	8	23
AA	ANSI 150-3"	191	24	152.4	4	20
AB	ANSI 300-3"	210	29	168.3	8	23
PA	JPI 150-3"	191	24	152.4	4	20
PB	JPI 300-3"	210	29	168.3	8	23
JC	JIS 10K-100mm	210	18	175	8	19
JD	JIS 30K-100mm	240	32	195	8	25
AC	ANSI 150-4"	229	24	190.5	8	20
AD	ANSI 300-4"	254	32	200	8	23
PC	JPI 150-4"	229	24	190.5	8	20
PD	JPI 300-4"	254	32	200	8	23

- Note:
- 1) This transmitter can be mounted in various ways by using the holes of the mounting bracket. (The above drawing shows an example of typical mounting.)
 - 2) It is recommended to fix the capillary tube at a midposition in order to prevent mechanical vibration.
 - 3) Select a gasket that will not touch the diaphragm after being fastened.
 - 4) Mount the transmitter vertically.
 - 5) To use an external indicating meter, disconnect the jumper bar from the M terminals and connect in its place the lead-wires of the external indicating meter.
 - 6) For suppression amount > (adjustable span)/2, High (H) and Low (L) pressure sides of process connection become reversal to those indicated. However, for liquid level measurement with liquid-shielded lead pipes, make process connection according to the drawing at right. Do not rotate the meter body by 180° under the conditions other than the above.

Figure 5. Dimension drawing

*ST 3000 is a trademark of Honeywell Inc., USA.

Specifications are subject to change without notice.

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Savemation

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