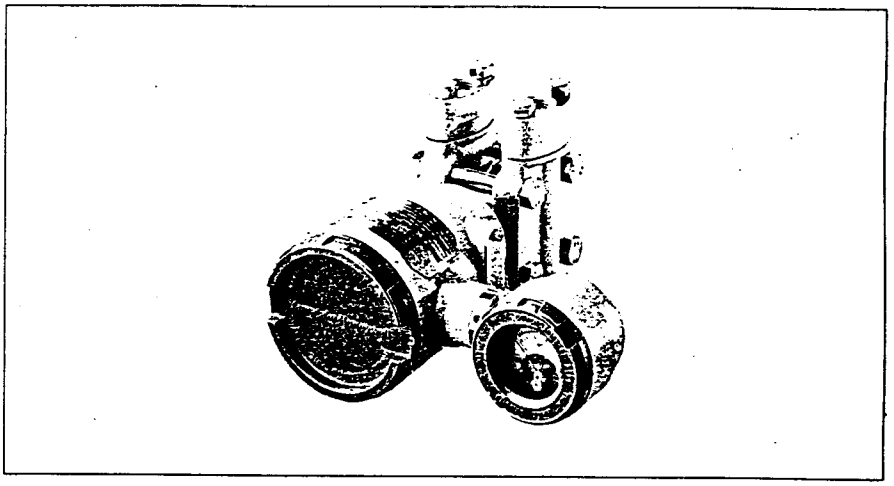
Yamatake-Honeywell **Specification**

ST 3000 Ace Smart Transmitter
Electronic Differential Pressure Transmitter
Model JTD920 (Standard Type for Medium Differential Pressure)
Measuring Span: 250 to 10160mmH_2O (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 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).



Standard Specifications

Item	Specifications
Measuring span (Continuously adjustable)	250 to 10160mmH_2O (2.45 to 99.6 kPa)
Setting range	$-10160 \leqq$ URV(*1) $\leqq 10160$mmH_2O ($-99.6 \leqq$ URV $\leqq 99.6$ kPa) $-10160 \leqq$ LRV(*2) $\leqq 10160$mmH_2O ($-99.6 \leqq$ LRV $\leqq 99.6$ kPa)
Output	Analog output (4 to 20mA DC)
Accuracy(*3)	Percentage with respect to x that represents the URV or LRV of the calibrated range, or the span – whichever is greatest. Linear output: $\pm 0.2\%$ ..... When x is 1250mmH_2O (12.3 kPa) or greater. $\pm(0.2 \times \frac{1250}{x})\%$ ..... When x is less than 1250mmH_2O (12.3 kPa) . (with damping effected) Square-root output: When output is 50 to 100% ..... Same as that of linear output. When output is 7.1 to 50% ..... Value of linear output $\times \frac{50}{\text{Square-root output \%}}$ When output is less than 7.1% ..... Dropout
Supply voltage and load resistance	10.8 to 45V DC (See Figure 1)
Working pressure rating	140kgf/cm² (13.7 MPa) max. (For vacuum pressures, see Figure 2)
Operating temperature range	Ambient temperature: Normal operating conditions; -40 to $+85$°C Operative limits (for short period); -50 to $+93$°C Transportation and storage conditions; -50 to $+85$°C Meter body (Process fluid) temperature: Normal operating conditions; -40 to $+110$°C Operative limits (for short period); -50 to $+115$°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: $\pm 0.55\%/55$°C change ..... When x is 2000mmH_2O (19.6 kPa) or greater. $\pm(0.55 \times \frac{2000}{x})\%/55$°C change ..... When x is less than 2000mmH_2O (19.6 kPa). Combined shift (Including zero and span shifts): $\pm 0.75\%/55$°C change ..... When x is 2000mmH_2O (19.6 kPa) or greater. $\pm(0.75 \times \frac{2000}{x})\%/55$°C change ..... When x is less than 2000mmH_2O (19.6 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 URV ≧ 0 and LRV ≧ 0.
(*4): Refer to the temperature effect diagram (Figure 3).
(*5): Refer to the static pressure effect diagram (Figure 4).
(*6): For the performance and external dimensions 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. Zero shift: ±0.18%/70kgf/cm² (6.86 MPa) change ..... When x is 2000mmH_2O (19.6 kPa) or greater. $\pm(0.18 \times \frac{2000}{x})$%/70kgf/cm² (6.86 MPa) change ..... When x is less than 2000mmH_2O (19.6 kPa). Combined shift (Including zero and span shifts) ±0.33%/70kgf/cm² (6.86 MPa) change ..... When x is 2000mmH_2O (19.6 kPa) or greater. $\pm(0.33 \times \frac{2000}{x})$%/70kgf/cm² (6.86 MPa) change ..... When x is less than 2000mmH_2O (19.6 kPa).
Stability against supply voltage change	0.005% FS/V
Dead time	Approx. 0.4sec.
Damping time constant	Adjustable within a range of 0.4 to 32 sec. by 10 steps. (at 25°C)
Process connection	Rc½, ½NPT internal thread, Rc¼, ¼NPT internal thread
Electrical conduit connection	G½ 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 Wetted parts of center body: SUS316 (Diaphragm: SUS316L) Meter body cover (Differential pressure chambers): Carbon steel (SF440A), SUSF316 Bolts: SNB7 Nuts: S45C Gasket: Teflon 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	Can be installed on a 2-inch horizontal or vertical pipe. (Can be directly mounted on a process pipe.)
Weight	Approx. 4.4kg

Selectable Standard Specifications

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

Item	Specifications
Meter body cover material: PVC	Pressure rating: 15kgf/cm² (1470 kPa) max. Temperature range: Normal operating conditions; 0 to 55°C [Both ambient and meter body (Process fluid) Temperature] Transportation and storage conditions; −10 to +60°C Bolt and nuts material: SUS304
Fill fluid for oxygen service [Fill fluid: Fluorine oil Meter body cover: Other than carbon steel Including no oil finish of wetted parts section.]	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.
Rear process connection	Pressure rating:100kgf/cm² (9810 kPa) max.

Optional Specifications

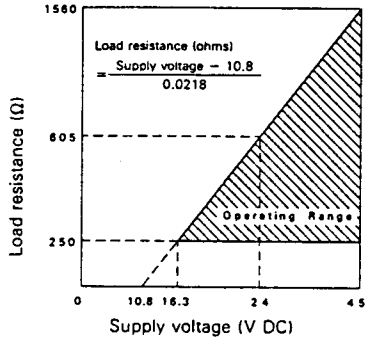
(The items other than the following are identical with those of the Standard Specifications.)

Item	Specifications
With indicating meter (Class 2.5)	Ambient temperature: Normal operating conditions; −40 to +85°C Operative limits (for short period) and transportation and storage conditions; −40 to +93°C
SUS304 bolts and nuts material	Pressure rating: 70kgf/cm² (6.86 MPa) max.
With steam block	Pressure rating (Steam block): 50kgf/cm² (4.90 MPa) max. Operable temperature (Steam block): 250°C max. (110°C max. for meter body) (Not available when meter body cover is made of PVC or when rear connection is specified.)
Corrosion-resistant finish	Corrosion-resistant paint (Baked acryl paint), fungus-proof finish (Silver paint when meter body cover, adaptor flanges, bolts, nuts, and manifold valves are made of carbon steel.)
Corrosion-proof finish	Corrosion-proof paint (Baked epoxy paint), fungus-proof finish (Silver paint when meter body cover, adaptor flanges, bolts, nuts, and manifold valves are made of carbon steel.)
Corrosion-resistant finish (Silver paint)	Transmitter case is silver-painted in addition to the above corrosion-resistant finish.
Flame-proof packing type cable connecting adaptor	For electrical connection by the leading-in method of flame-proof packing type for special flame-proof structure.
Explosion-proof structure (Scheduled to be released shortly.)	JIS C0903 Exds II CT4 special flame-proof structure (Ambient temperature: −20 to +60°C, Meter body (Process fluid) temperature: −20 to +110°C) JIS C0903 i3aG4 intrinsic-safety explosion-proof structure, using Zener barrier 8907/51−24/45 (Ambient temperature: −10 to +60°C, Meter body (Process fluid) temperature: −10 to +100°C)
No oil finish	Excluding meter body cover is made of carbon steel.

Model Number Table

Basic Model No.	Selection I: Material	Selection I: Fill Fluid	Selection I: Process Connection	Selection II	Options I	Options II	Description		
JTD 920							Measuring span : 250 to 10160 mmH_2O (2.45 to 99.6 kPa)		
							Meter body cover	Vent / drain plugs (For top/bottom connection)	Wetted parts of center body section
	−A						Carbon steel	SUS316	SUS316 (Diaphragm:SUS316L)
	−B						Carbon steel	SUS316	Hastelloy C
	−D						Carbon steel	SUS316	Tantalum
	−E						SUSF316	SUS316	SUS316 (Diaphragm:SUS316L)
	−F						SUSF316	SUS316	Hastelloy C
	−H						SUSF316	SUS316	Tantalum
	−M(Note 2)						PVC	PVC	Hastelloy C
	−P(Note 2)						PVC	PVC	Tantalum
		1					Regular type (Silicone oil)		
		2					For oxygen service (Fluorine oil)		
			Q				Rc½	Top or bottom connection	
			R				½NPT internal thread	Top or bottom connection	
			S				Rc¼	Top or bottom connection	
			T				¼NPT internal thread	Top or bottom connection	
			L				Rc½	Rear connection	
			G				½NPT internal thread	Rear connection	
			D				Rc¼	Rear connection	
			A				¼NPT internal thread	Rear connection	
				−00000			No selection		
					−X		No option		
					−M		With indicating meter (0 to 100% linear and 0 to 10 $\sqrt{\ }$ double scales)		
					−W		SUS304 bolts and nuts material		
					−F		With steam block		
					−A		Corrosion-resistant finish		
					−B		Corrosion-proof finish		
					−D		Corrosion-resistant finish, silver paint		
					−N		½NPT internal-thread electrical conduit connection		
					−K		No oil finish		
					−P		One cable adaptor with flame-proof packing		
					−Q		Two cable adaptors with flame-proof packing		
					−J		Long vent / drain plugs		
					−1		JIS special flame-proof structure (Note 3)		
					−2		JIS intrinsic-safety explosion-proof structure (Note 3)		
						−XX	No options		
						−A2	With external zero adjustment		
						−A4	Burnout feature (Down limit of output at abnormal condition)		
						−A5	Burnout feature (Upper limit of output at abnormal condition)		
						−E1	With 1 elbow (Electric conduit connection or indicating meter)		
						−E2	With 2 elbows (Electric conduit connection and indicating meter)		
						−E4	Indicating meter mounting (Reversal)		

Note:
1) The items enclosed in the bold-line boxes are for Standard Specifications.
2) Process connection is only model Q or R.
3) Scheduled to be released shortly.



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

Figure 1. Supply voltage vs load resistance characteristics

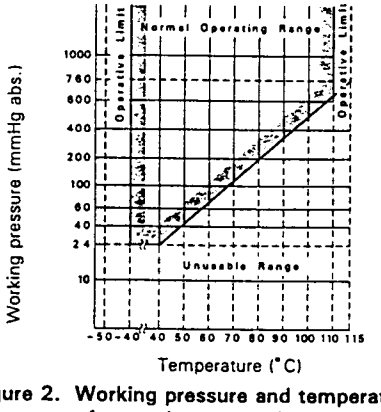


Figure 2. Working pressure and temperature of wetted parts section

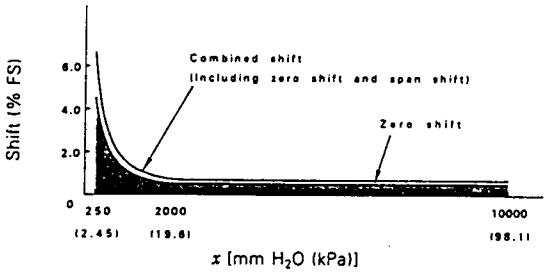


Figure 3. Range and temperature effect (55 °C change)

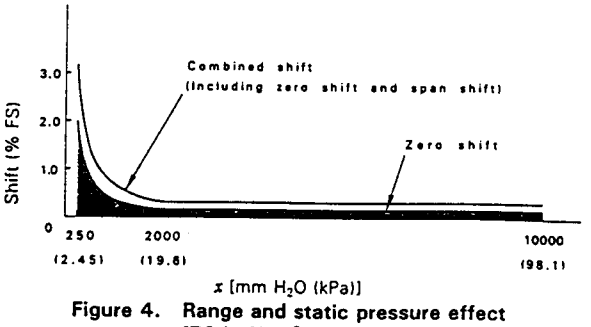
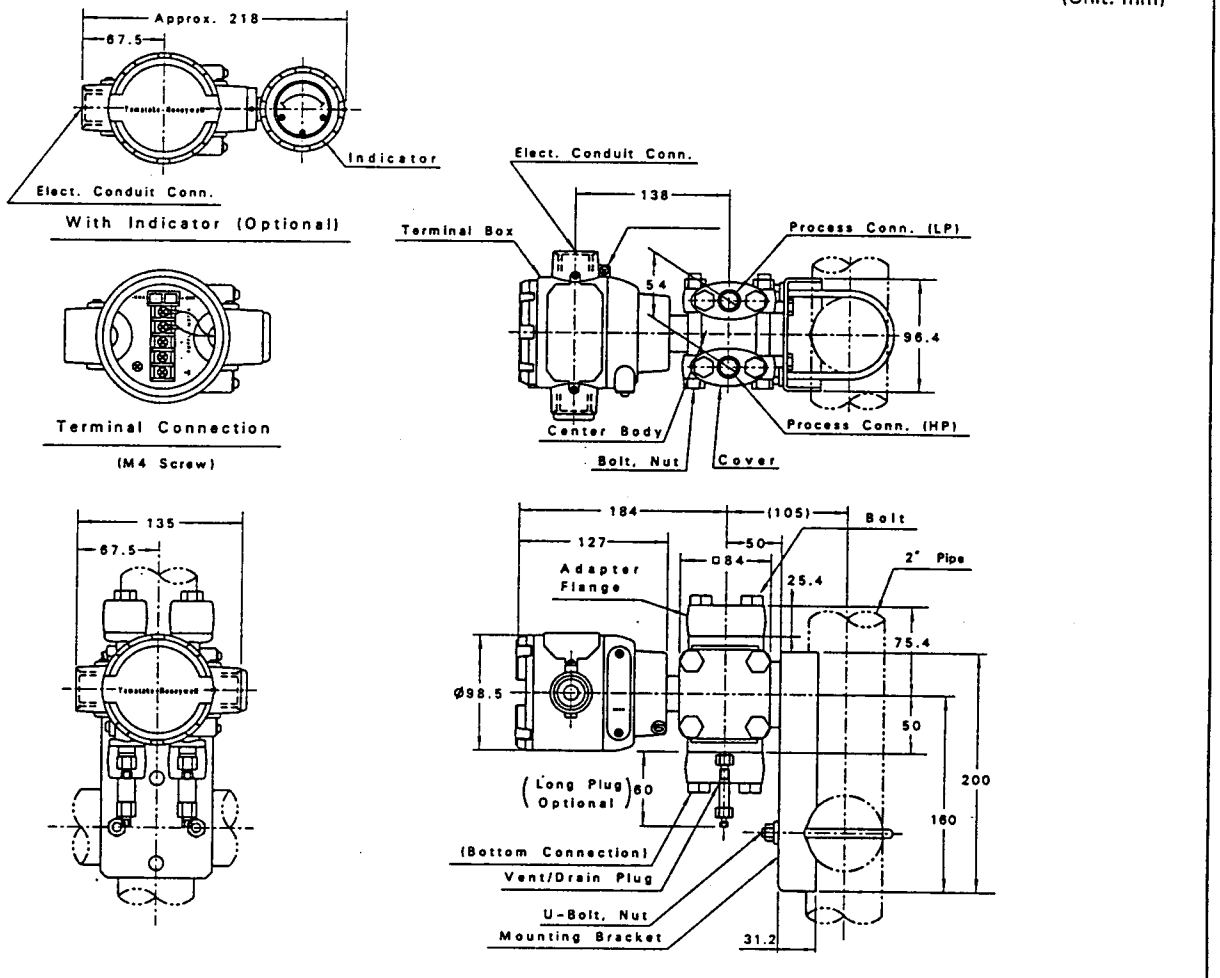


Figure 4. Range and static pressure effect [70 kgf/cm² (6.86 MPa) change]

(Unit: mm)



Note: 1) The process connection can be made in any of two positions of top or bottom.
When connection is changed, replace the vent/drain plug.
2) This transmitter can be mounted in various ways using the holes of the mounting bracket.
(The above drawing shows an example of typical mounting.)
3) For suppression amount > (adjustable span)/2, high (H) 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.

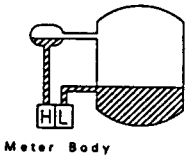


Figure 5. Dimension drawing

Specifications are subject to change without notice.

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