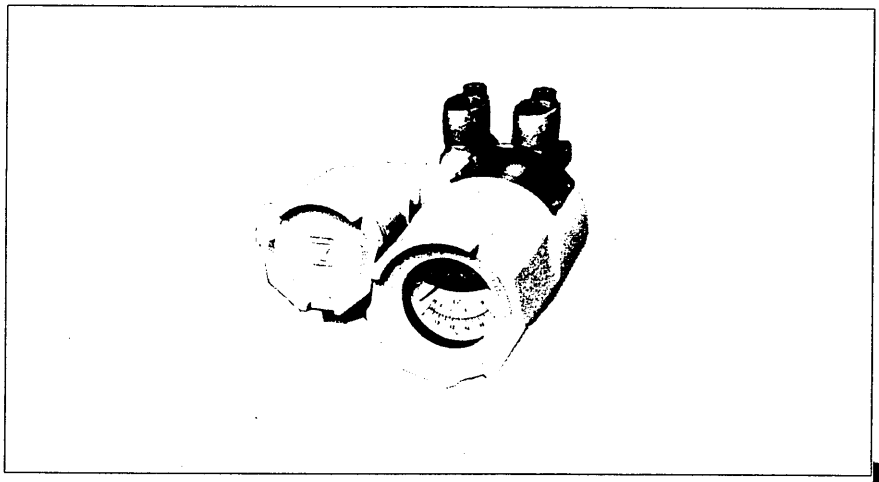
Yamatake-Honeywell **Specification**

ST 3000 Smart Transmitter
Electronic Differential Pressure Transmitter
Model JTD215 (Standard Type for Low Differential Pressure)
Measuring Span: 75 to 1250mmH_2O

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 Communicator).



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Standard Specifications

Item	Specifications
Measuring span (Continuously adjustable)	75 to 1250mmH_2O
Setting range	$-1250 \leqq$ URV(*1) $\leqq 1250$mmH_2O, $-1250 \leqq$ LRV(*2) $\leqq 1250$mmH_2O
Output	Analog output (4 to 20mA DC) / Digital output
Accuracy(*3)	Percentage with respect to x (mmH_2O) that represents the URV or LRV of the calibrated range, or the span—whichever is greatest. Linear output: ±0.1% ..... When x is 500mmH_2O or greater. $\pm[0.05+(0.05\times\frac{500}{x})]$% ..... When x is less than 500mmH_2O. (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	35kgf/cm² max. (For vacuum pressures, see Figure 2.)
Operating temperature range	Ambient temperature: Normal operating conditions; −15 to +65°C Operative limits (for short period); −40 to +70°C Transportation and storage conditions; −40 to +70°C Meter body (Process fluid) temperature: Normal operating conditions; −15 to +65°C Operative limits (for short period); −40 to +70°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 (mmH_2O) that represents the URV or LRV of the setting range, or the span—whichever is greatest. Zero shift: $\pm[0.15+(0.14\times\frac{500}{x})]$%/30°C change Combined shift (Including zero and span shifts): $\pm[0.2+(0.2\times\frac{500}{x})]$%/30°C change

(*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): When to be used at less than 75mmH_2O, consult us.
(*7): 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 (mmH_2O) that represents the URV or LRV of the setting range, or the span − whichever is greatest. (P: Static pressure value) Zero shift: $\pm[0.03+(0.17\times\frac{500}{x})]$%/35kgf/cm² Combined shift (Including zero and span shifts) $\pm(0.5\times\frac{500}{x})$ %/35kgf/cm²
Stability against supply voltage change	0.005% FS/V
Dead time	Approx. 0.4 sec.
Damping time constant	Adjustable within a range of 0.4 to 32 sec. by 10 steps.(at 25°C)
Process connection	Rc½, ½NPT, Rc¼, ¼NPT internal thread
Electrical conduit connection	G½ internal thread
Structure	Water-proof and dust-proof structure JIS C0920 Water-tight, JIS F8001 Class2 water-tight, NEMA3 and 4X, IEC IP67
Materials	Center body: SUS316 Wetted parts of center body: SUS316 (Diaphragm: SUS316L) Meter body cover (Differential pressure chambers): Carbon steel (SF45A), SUSF316 Bolts: SNB7 Nuts: S45C Gasket: Teflon Transmitter case: Aluminium alloy
Finish	Baked acryl paint, light beige (Munsell 4Y7.2 / 1.3)
Burnout feature	Lower limit of output value at abnormal condition.
Installation	Can be installed on a 2-inch horizontal or vertical pipe. (Can be directly mounted on a process pipe.)
Weight	Approx. 7.5kg

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 Meter body cover: Other than carbon steel. Wetted parts section of center body for chlorine Service: Tantalum Including no oil finish of wetted parts	Ambient temperature: Normal operating conditions; −10 to +65°C Operative limits (for short period); −40 to +70°C Transportation and storage conditions; −40 to +70°C Meter body (Process fluid temperature): Normal operating conditions; −10 to +65°C Operative limits (for short period); −40 to +70°C Note) For use on vacuum pressures, please consult us.

Optional Specifications

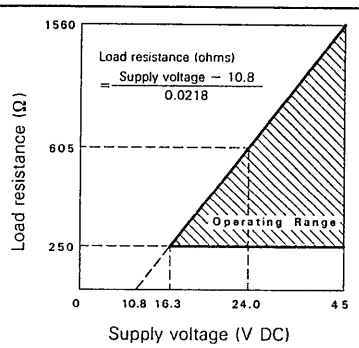
(The items other than the following are identical with those of the Standard Specifications.)

Item	Specifications
Built-in indicating meter (Class 2.5)	Ambient temperature: Normal operating conditions; −10 to +60°C Operative limits (for short period) and Transportation and storage conditions; −40 to +85°C
Steam block	Pressure rating (Steam block): 50kgf / cm² 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 monel 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	JIS C0903 ds2G4 special flame-proof structure (Ambient temperature: −10 to +65°C, Meter body (Process fluid) temperature: −10 to +65°C) JIS C0903 i3aG4 intrinsic-safety explosion-proof structure, using Zener barrier 8907/51-24/45 (Approval No. 29911) (Ambient temperature: −10 to +60°C, Meter body (Process fluid) temperature: −10 to +65°C) FM flame-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 2 location) Class I, Division 2, Group A, B, C, D
No oil finish	Excluding meter body cover made of carbon steel
Adapter flange for corrosion-resistant application	For matching installation dimension (82mm) of corrosion-resistant pressure conduit with that (54mm) of ordinary pressure conduit.

Model Number Table

Basic Model Number	Selection I: Material	Selection I: Fill Fluid	Selection I: Process Connection	Selection II	Options I	Options II	Description		
JTD 215							Measuring span: 75 to 1250 mmH_2O		
							Meter body cover	Vent / drain plugs	Wetted parts of center body
	−A						SF45A	SUS316	SUS316 (Diaphragm: SUS316L)
	−B						SF45A	SUS316	Hastelloy C
	−D						SF45A	SUS316	Tantalum
	−E						SUSF316	SUS316	SUS316 (Diaphragm: SUS316L)
	−F						SUSF316	SUS316	Hastelloy C
	−H						SUSF316	SUS316	Tantalum
	−M						PVC	PVC	Hastelloy C
	−P						PVC	PVC	Tantalum
		1					Regular type (Silicone oil)		
		2					For oxygen (Fluorine oil) service		
		5					For chlorine (Fluorine oil) Service		
			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	When optional item "8", process connection is only for the front
			G				½NPT internal thread	Rear connection	
			D				Rc¼	Rear connection	
			A				¼NPT internal thread	Rear connection	
				−00000			No selection		
					−X		No option		
					−L		Built-in lightning arrester		
					−M		Built-in 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		½ NPT 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		
					−R		Specification for power plant application		
					−J		Long vent / drain plugs		
					−1		JIS special flame-proof structure		
					−2		JIS intrinsic-safety explosion-proof structure		
					−3		FM flame-proof structure		
					−4		FM intrinsic-safety explosion-proof structure		
					−8		Horizontal pressure-conduit connection type (Process connection is only for the front. Combination with indicating meter is not possible. When corrosion-resistant type is required, consult us.)		
					−9		Vertical pressure-conduit connection, right-side electrical-conduit connection type.		
						−XX	No options		
						−A1	Adaptor flange for corrosion-resistant application		
						−A2	With external zero adjustment (Unavailable combination with FM explosion-proof structure)		
						−A5	Burnout feature: (Upper limit of output value at abnormal condition)		
						−D1	With DE meter		

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.

Fig. 1 Supply voltage vs load resistance characteristics

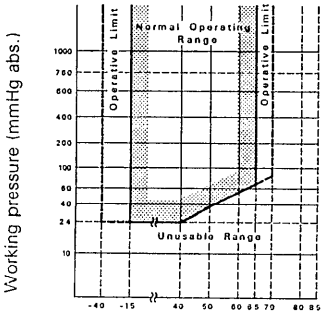


Fig. 2 Working pressure and temperature of watted parts

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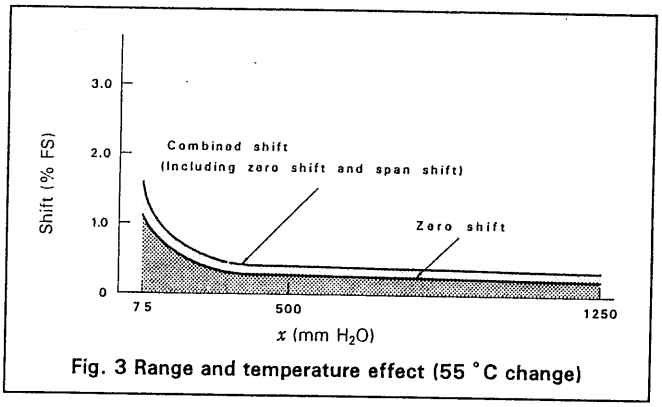


Fig. 3 Range and temperature effect (55 °C change)

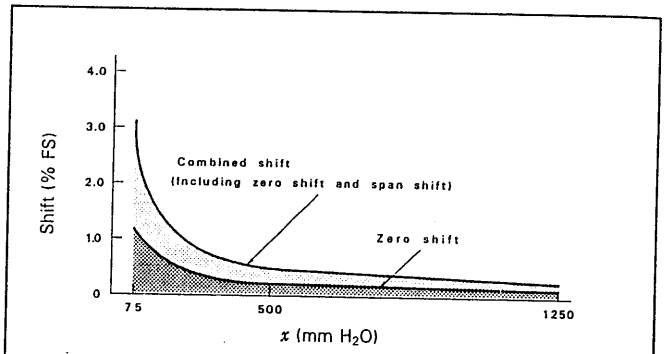
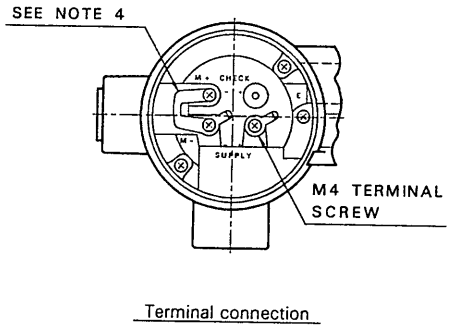
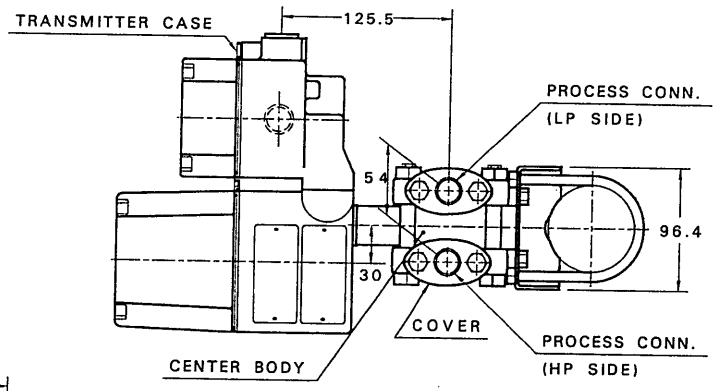


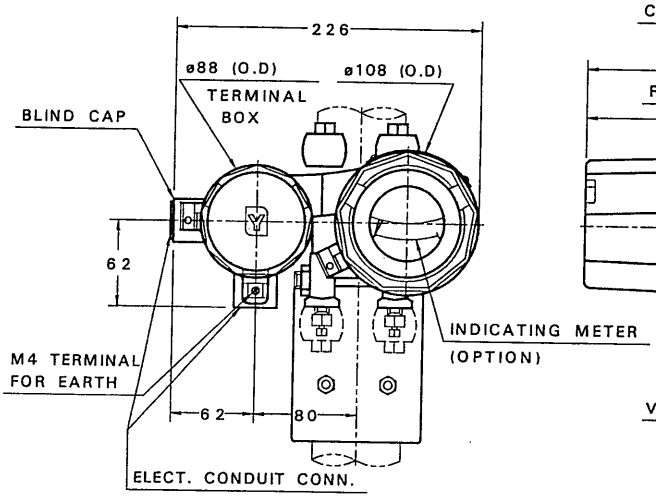
Fig. 4 Range and static pressure effect (35 kgf/cm² change)

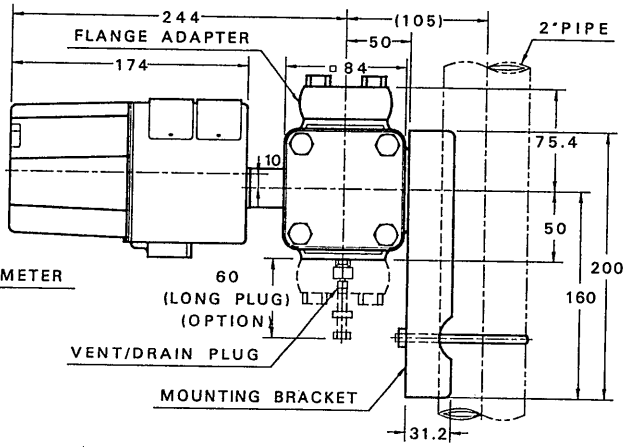
(Unit: mm)



Terminal connection

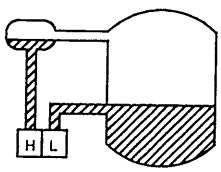






Note: 1) The process connection can be made in any of two positions of top or bottom. When connection is changed, replace the vent/drain plug.
2) This transmitter can be mounted in various ways using the holes of the mounting bracket. (The above drawing shows an example of typical mounting.)
3) Mount the transmitter vertically.
4) To use an external indicating meter, disconnect the jumper bar from the M terminals and connect in its place the leadwires of the external indicating meter.
5) For process connection, it means:
a) High pressure (H) side ... relatively higher pressure applied to sensor.
b) Low pressure (L) side ... relatively lower pressure applied to sensor.
Therefore, if suppression amount > (adjustable span)/2, actual "H" and "L" sides become reversal to those indicated.

Fig. 5 Dimension drawing



CENTER BODY

For liquid level measurement with lead pipes, make process connections at "H" and "L" sides become reversal to those indicated.

Caution on process connection

*Specifications are subject to change without notice.