

ST 3000 Smart Transmitter

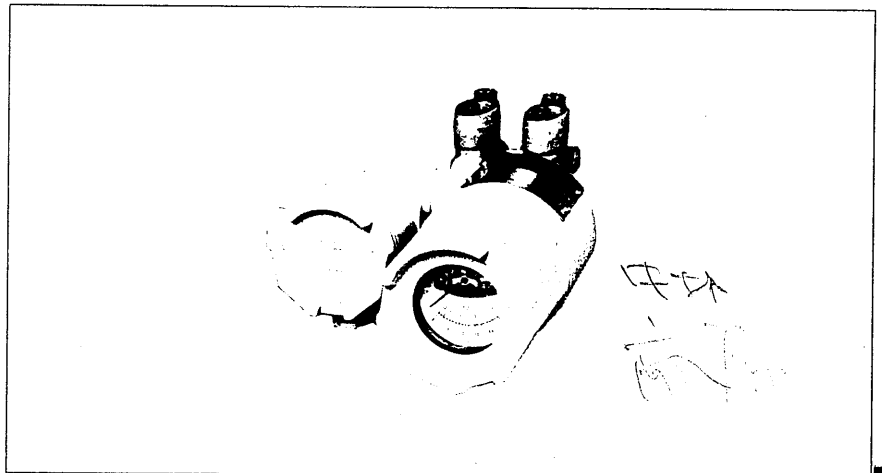
Electronic Differential Pressure Transmitter

Model JTD220 (Standard Type for Low and Medium Differential Pressure)

Measuring Span: 25 to 10000mmH₂O →

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).



Standard Specifications

Item	Specifications
Measuring span (Continuously adjustable)	25 to 10000mmH ₂ O (Recommended measuring span: 250 ^(*6) to 10000mmH ₂ O)
Setting range	-10000 ≤ URV ^(*1) ≤ 10000mmH ₂ O, -10000 ≤ LRV ^(*2) ≤ 10000mmH ₂ O
Output	Analog output (4 to 20mA DC) / Digital output
Accuracy ^(*3)	Percentage with respect to x (mmH ₂ O) that represents the URV or LRV of the calibrated range, or the span – whichever is greatest. Linear output: ±0.1% When x is 1250mmH ₂ O or greater. ±[0.05 + 0.05 × $\frac{1250}{x}$] % When x is less than 1250mmH ₂ O. (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 × $\frac{50}{\text{Square-root output \%}}$ 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/cm ² 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 +125°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 ₂ O) that represents the URV or LRV of the setting range, or the span – whichever is greatest. Zero shift: ±[0.25 + (0.1 × $\frac{1250}{x}$)] % / 55°C change Combined shift (Including zero and span shifts): ±0.5% / 55°C change When x is 1250mmH ₂ O or greater. ±[0.35 + (0.15 × $\frac{1250}{x}$)] % / 55°C change When x is less than 1250mmH ₂ O.

(*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 250mmH₂O, 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 ⁽¹⁾⁽²⁾⁽⁵⁾ (at 25°C) (Shift with respect to setting range)	Percentage with respect to x (mmH ₂ O) that represents the URV or LRV of the setting range, or the span – whichever is greatest (P: Static pressure value) Zero shift: $\pm [0.03 + (0.07 \times \frac{P}{70}) \times \frac{2500}{x}] \%$ Combined shift (Including zero and span shifts) $\pm [0.03 + (0.2 \times \frac{P}{70})] \%$ When x is 2500mmH ₂ O or greater. $\pm [0.03 + (0.2 \times \frac{P}{70}) \times \frac{2500}{x}] \%$ When x is less than 2500mmH ₂ O.
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	Rc 1/2, 1/2 NPT internal thread, Rc 1/4, 1/4 NPT internal thread
Electrical conduit connection	G 1/2 internal thread
Structure	Water-proof and dust-proof structure JIS C0920 water-tight, JIS F8001 Class 3 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 (SF45A), SUSF316 Bolts: SNB7 Nuts: S45C Gasket: Teflon Transmitter case: Aluminium alloy
Finish	Baked acryl paint, light beige (Munsell 4Y 7.2 / 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

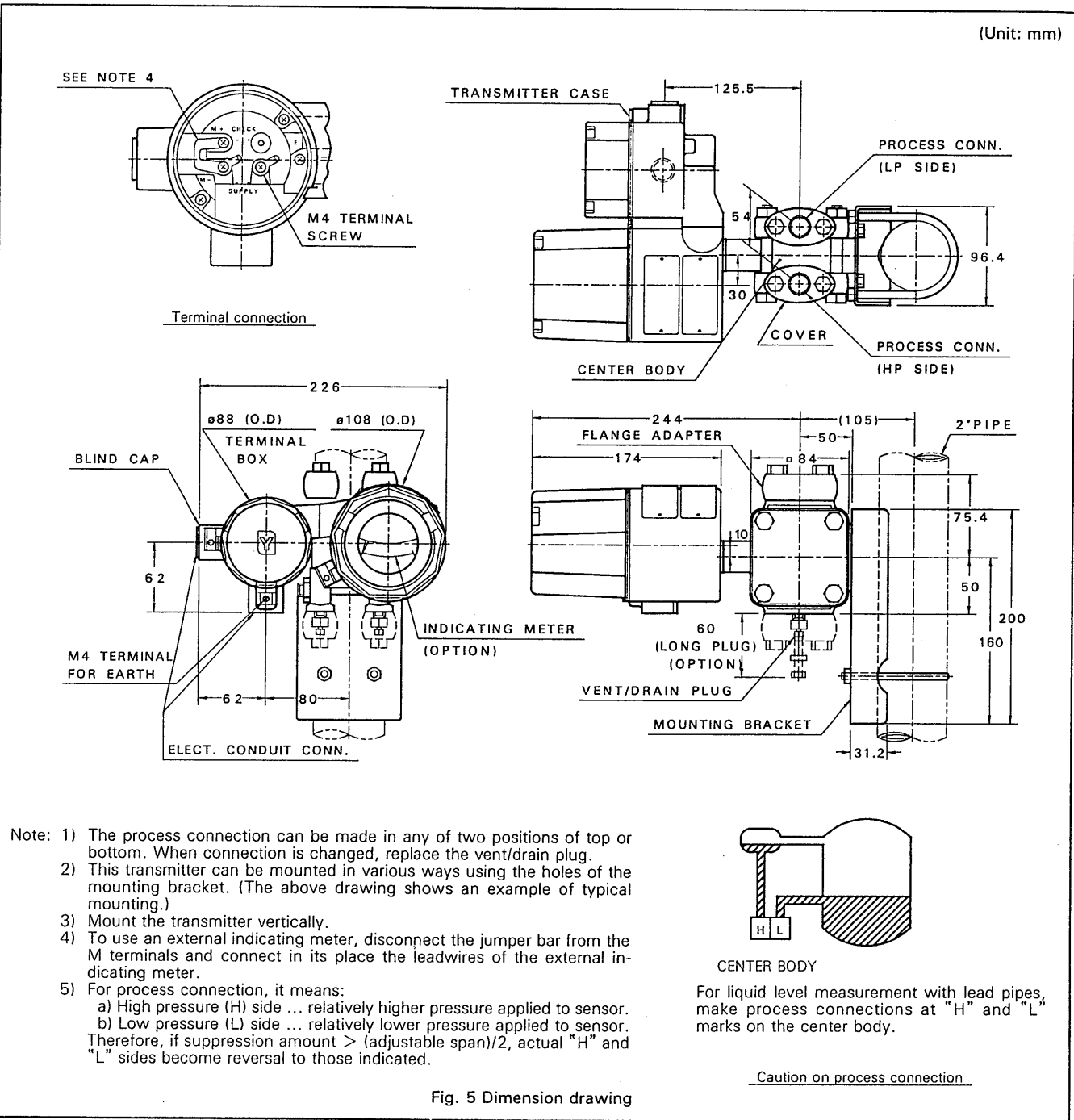
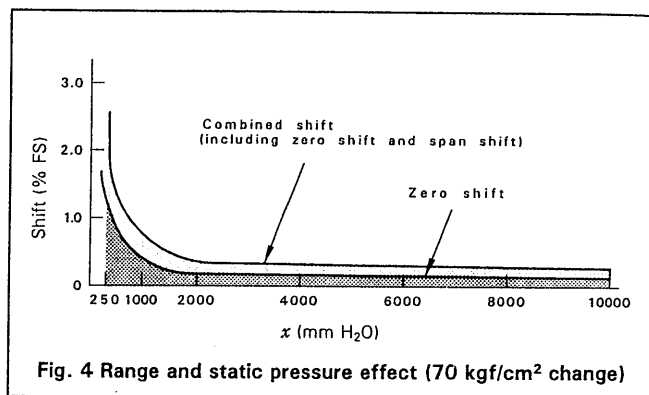
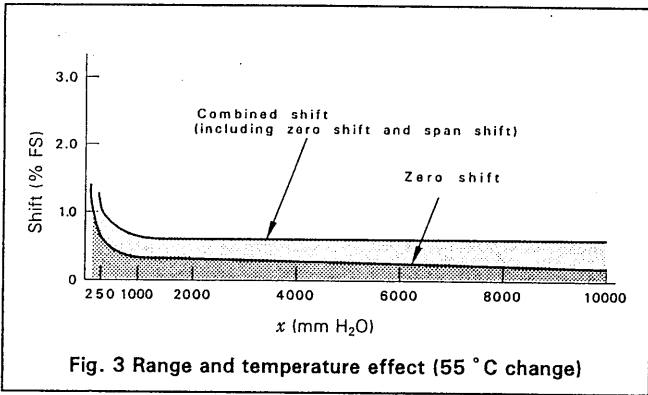
(The items other than the following are identical with those of the Standard Specifications.)

Item	Specifications
Material Meter body cover: PVC	Pressure rating: 15kgf/cm ² 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 Bolts and nuts material: SUS304
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 +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.
Process connection Rear connection	Pressure rating: 100kgf/cm ² max.

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
SUS304 bolts and nuts	Pressure rating: 70kgf/cm ² max.
Steam block	Pressure rating (Steam block): 50kgf/cm ² 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 +70°C, Meter body (Process fluid) temperature: -10 to +100°C) JIS C0903 i3aG4 intrinsic-safety explosionproof 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 explosionproof 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
Adaptor flange for corrosion-resistant application	For matching installation dimension (82mm) of corrosion-resistant pressure conduit with that (54mm) of ordinary pressure conduit.



*Specifications are subject to change without notice.