Yamatake-Honeywell **Specification**

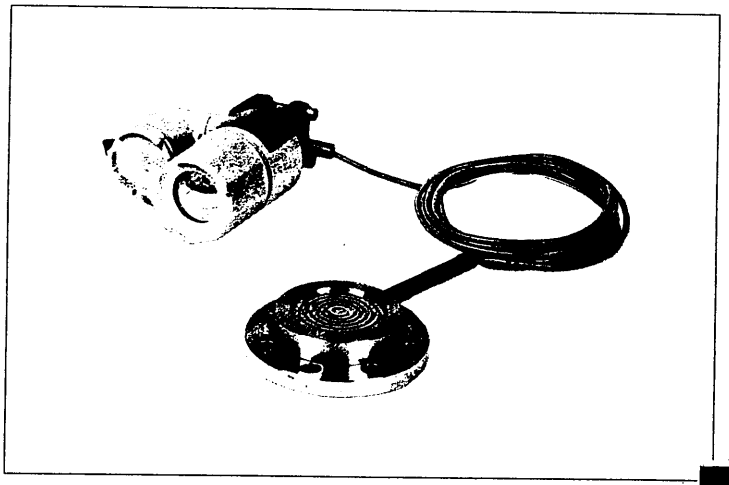
ST 3000 Smart Transmitter
Electronic Pressure Transmitter

Model JTU240 (Remote-Sealed Type for Hi-Temperature and Hi-Temperature-Vacuum Service)
Measuring Span: 0.35 to 35kgf/cm²

Introduction

The ST 3000 Pressure Transmitter measures a process 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).

The Remote-Sealed Pressure Transmitter in high temperature service is applicable to measurement of pressure of process fluid which is even highly corrosive, highly condensible, of high viscosity, or which separates out metallic substances.



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Standard Specifications

Item	Specifications		
Measuring span (Continuously adjustable)	0.35 to 35 kgf/cm² (Recommended measuring span: 0.7 to 35 kgf/cm²)		
Setting range	$-1 \leqq URV^{(*1)} \leqq 35$ kgf/cm², $-1 \leqq LRV^{(*2)} \leqq 35$ kgf/cm²		
Output	Analog output (4 to 20mA DC) / Digital output		
Accuracy(*3)	Percentage with respect to x (kgf/cm²) that represents the URV or LRV of the calibrated range, or the span – whichever is greatest. ±0.2% ..... When x is 3.5 kgf/cm² or greater. $\pm[0.15+(0.05\times\frac{3.5}{x})]\%$ ..... When x is less than 3.5 kgf/cm². (with damping effected)		
Supply voltage and load resistance	10.8 to 45V DC (See Figure 1.)		
Working pressure rating	35 kgf/cm² max. (For vacuum pressures, see Figures 2 and 3.)		
Overpressure limit	52.5 kgf/cm² max.		
Operating temperature range	Ambient temperature: Normal operating conditions; − 5 to + 55°C Operative limits (for short period); −10 to + 60°C Transportation and storage conditions; −20 to + 85°C Meter body (Process fluid) temperature: Normal operating conditions; − 5 to +280°C Operative limits (for short period); −10 to +310°C		
Operating humidity range	Normal operating conditions: 10 to 90% RH		
Temperature effect(*3) (Shift with respect to setting range)	Percentage with respect to x (kgf/cm²) that represents the URV or LRV of the setting range, or the span – whichever is greatest.		
		High temperature	High temperature and vacuum
	Zero shift	$\pm[0.25+(0.25\times\frac{3.5}{x})]\%/55°C$ change	$\pm[0.15+(0.25\times\frac{3.5}{x})]\%/30°C$ change
	Combined shift (Including zero and span shift)	±0.7%/55°C change ... When x is 3.5kgf/cm² or greater. $\pm[0.35+(0.35\times\frac{3.5}{x})]\%/55°C$ change ... When x is less than 3.5kgf/cm².	$\pm[0.35+(0.3\times\frac{3.5}{x})]\%/30°C$ change
Stability against supply voltage change	0.005% FS/V		
Dead time	Approx. 0.4 sec.		

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

Item	Specifications
Damping time constant	Adjustable within a range of 0.2 to 32 sec. by 10 steps. (at 25°C)
Process connection	Flange { Flush diaphragm type: JIS10K, 30K – 80mm (RF) equivalent ANSI150, 300 – 3″ (RF) equivalent JPI150, 300 – 3″ (RF) equivalent Extended diaphragm type: JIS10K, 30K – 100mm (RF) equivalent ANSI150, 300 – 4″ (RF) equivalent JPI150, 300 – 4″ (RF) equivalent Wafer type: 2″ wafer (RF) equivalent }
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 Meter body cover: SUSF304 Bolts: SNB7 Flange: Carbon steel (SF45A), SUS304 Wetted parts: For hi-temp.-service ..... SUS316 (Diaphragm: SUS316L) For hi-temp.-vacuum service ..... SUS316L Capillary tube: SUS316 Armored tube: SUS304 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	Direct mounting on a 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 1.07 at 25°C)
Weight	Approx. 14 kg (with JIS10K – 80mm flange and 5m capillary tube)

Selectable Standard Specifications

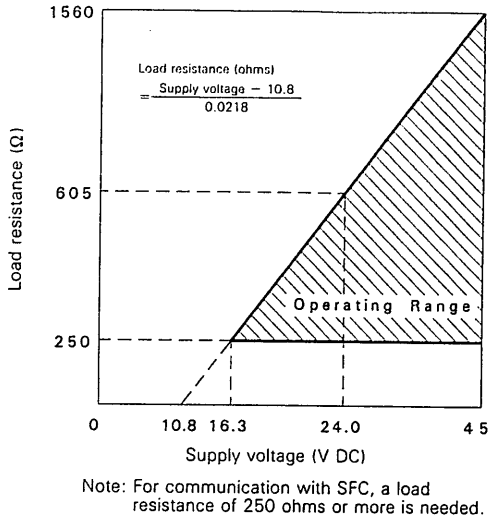
(The items other than the following are identical with those of the Standard Specifications)

Item		Specifications
Materials of wetted parts	Tantalum (Flush diaphragm only)	Meter body (Process fluid) temperature: Normal operating conditions; – 5 to +180°C Operative limits (for short period); – 10 to +200°C
	Hastelloy C (Flush diaphragm only)	Meter body (Process fluid) temperature: Normal operating conditions; – 5 to +280°C Operative limits (for short period); – 10 to +310°C

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; – 5 to +55°C Operative limits (for short period); – 10 to +60°C Transportation and storage conditions; – 20 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.
Flame-proof packing type cable connecting adapter	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: – 5 to +55°C, Meter body (Process fluid) temperature: – 5 to +280°C) JIS C0903 i3aG4 intrinsic-safety explosion-proof structure, using Zener barrier 8907/51 – 24/45 (Approval No. 29911) (Ambient temperature: – 5 to +55°C, Meter body (Process fluid) temperature: – 10 to +280°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



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

Fig.1 Supply voltage vs load resistance characteristics

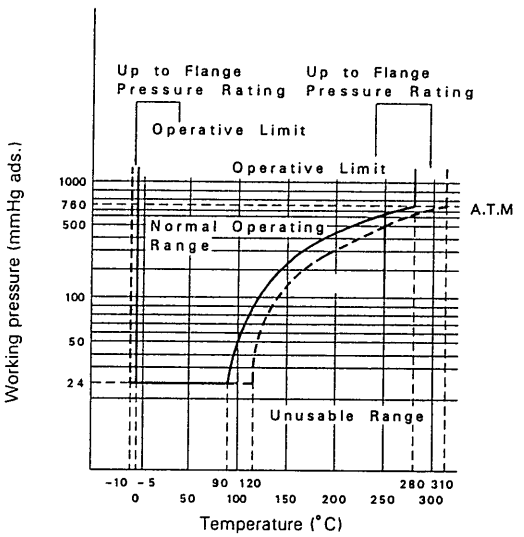


Fig.2 Working pressure and temperature of wetted parts (for Hi-temp.)

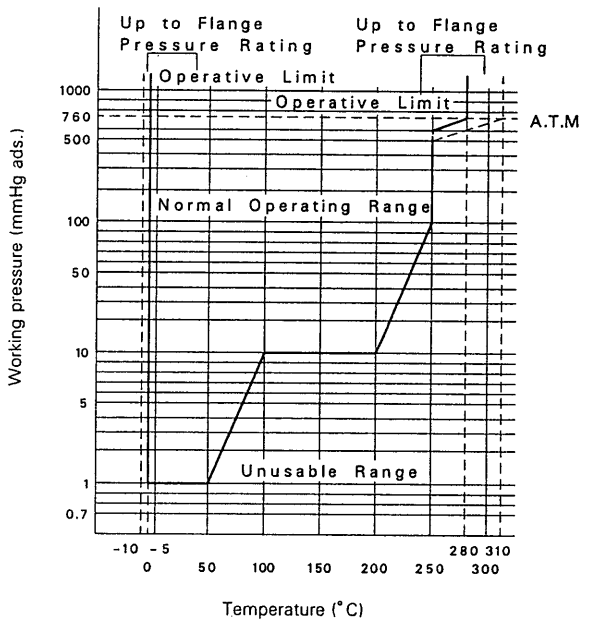


Fig.3 Working pressure and temperature of wetted parts (for Hi-temp. -vacuum)

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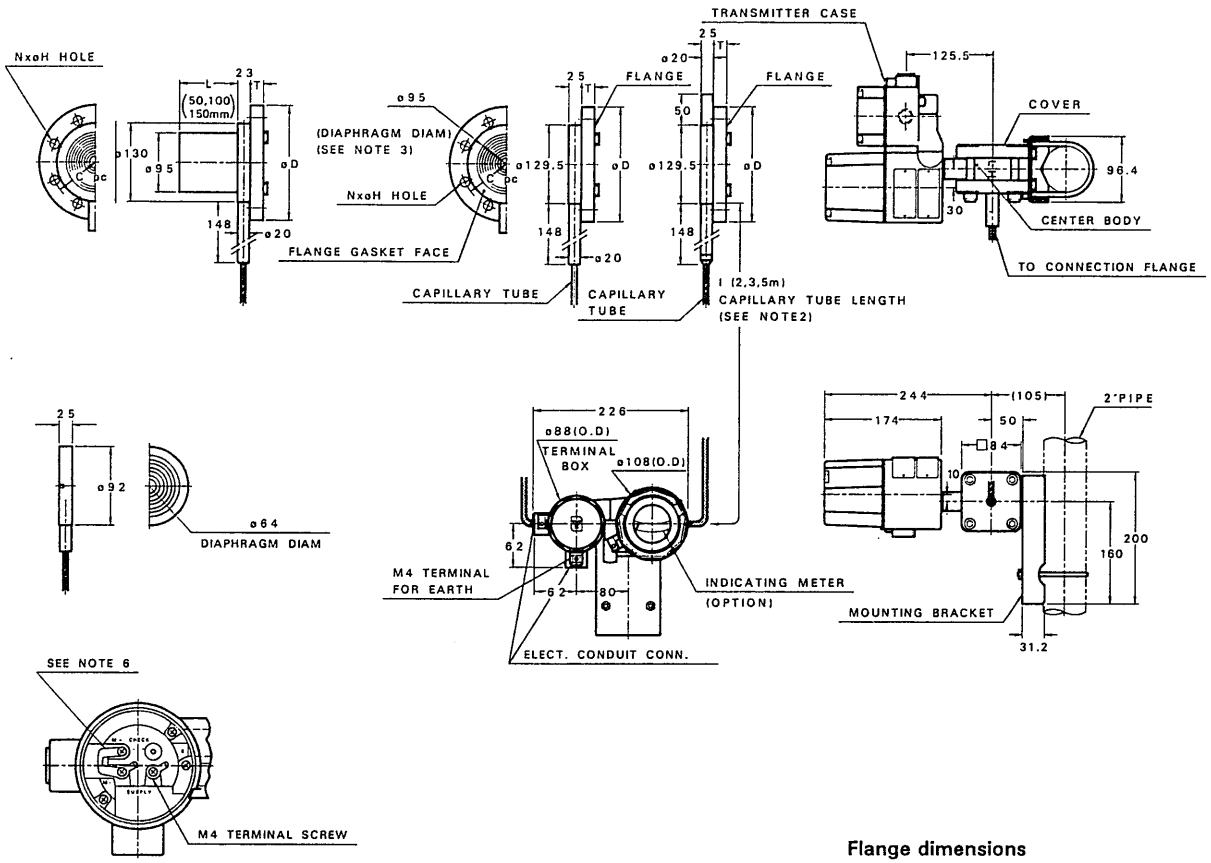
Model Number Table

Basic Model Number	Fill Fluid	Flange: Standard	Flange: Type and Rating	Flange: Flange Material	Flange: Material of Wetted Parts	Flange: Finish of Gasket Face	Flange: Length of Extended Parts	Flange: Capillary Tube Length	Options I	Options II	Description
JTU240											Measuring span: 0.35 to 35kgf/cm²
	−3										For hi-temperature service
	−4										For hi-temperature-vacuum service
		A									ANSI flange
		J									JIS flange
		P									JPI flange
		N									No 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
			W								2″ wafer ANSI1500 equivalent
				1							Carbon steel (SF45A)
				2							SUS316
				7							SUS304
				N							No flange
					2						SUS316 (Diaphragm: SUS316L)
					4						Tantalum (for hi-temp service and flush diaphragm only) (Note 3)
					8						SUS316L
					9						Hastelloy C (for hi-temp service and flush diaphragm only) (Note 3)
						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		Built-in lightning arrester
									−M		Built-in indicating meter (Standard scale)
									−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
									−R		Specification for power plant application
									−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
									−9		Vertical pressure-conduit connection, right-side electrical-conduit connection type (Combination with intrinsic-safety explosion-proof structure is not possible).
										−XX	No options
										−A2	With external zero adjustment
										−A5	Burnout feature (Upper limit of output value at abnormal condition)
										−D1	With DE meter

Notes 1) The items enclosed in the bold-line boxes are for Standard Specifications.
2) Wetted part material must be combined with SUS316L.
3) Combination with enclosed fluid "4" is scheduled to be released shortly.

(Unit: mm)



Terminal connection

Flange dimensions

Flange Rating	D	T	C	H	N
JIS30K – 80mm	185	18	150	19	8
JIS30K – 80mm	210	28	170.3	23	8
ANSI150 – 3"	191	24	152.4	20	4
ANSI300 – 3"	210	29	168.3	23	8
JPI150 – 3"	191	24	152.4	20	4
JPI300 – 3"	210	29	168.3	23	8
JIS10K – 100"	210	18	175	19	8
JIS30K – 100"	240	32	195	25	8
ANSI150 – 4"	229	24	190.5	20	8
ANSI300 – 4"	254	32	200	23	8
JPI150 – 4"	229	24	190.5	20	8
JPI300 – 4"	254	32	200	23	8

Notes: 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) Mount the capillary take-out tubes downside from the horizontal to prevent it from rain water penetration.
6) 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.

Fig. 4 Dimension drawing

*Specifications are subject to change without notice.