

General Specifications

Models Y/13A and Y/13A1
Pneumatic Differential Pressure
Transmitter

P10 Series

GS 02C01C02-00E

Models Y/13A and Y/13A1 Pneumatic Differential Pressure Transmitters measure differential pressure in spans from 5 to 210 kPa at static pressure to 10 MPa. The instruments transmit a proportional 20 to 100 kPa signal to remote pneumatic receivers.

■ FEATURES

- **Time-Proven Pneumatic Differential Pressure Transmitter Design**
- **Trouble-Free Construction.**
- **Excellent Performance.**
- **Easy to Calibrate.**
- **Wide Range Capability.**
- **Versatile Applications Capability for Flow, Liquid Level, and Density Measurements.**

■ STANDARD SPECIFICATIONS

Span Limits:

Refer to Table 1.
Span is continuously adjustable within range limits.

Range Limits *:

Refer to Table 1.
*: When lower range-value is other than zero optional kit for elevated-zero or suppressed-zero ranges is installed.

Static Pressure Limits:

Refer to Table 1.

Output Signal:

20 to 100 kPa.

Accuracy (includes linearity, hysteresis and repeatability):

Spans between 5 and less than 130 kPa, 500 and less than 13400 mmH₂O, 50 and less than 1300 mbar, or 20 and less than 525 inH₂O differential pressure (ΔP): ± 0.5 % of span.

Spans between 130 and 210 kPa, 13400 and 21600 mmH₂O, 1300 and 2100 mbar, or 525 and 850 inH₂O differential pressure (ΔP): ± 0.75 % of span.

Repeatability:

0.1 % of span.

Dead Band:

0.05 % of span.

Air Supply Pressure:

140 kPa, 1.4 kgf/cm² or bar, or 20 psi.

Air Consumption:

0.5 m³/h at 0 °C, 101.3 kPa {1.033 kgf/cm²} absolute (0.3 scfm).



Ambient Operating Temperature Range:

-40 to 120 °C (-40 to 250 °F).

Process Temperature Limits:

-40 and 120 °C (-40 and 250 °F) at capsule.

Mounting:

Bracket for nominal 50 mm (2 inches) horizontal or vertical pipe.

Air Connection:

Tapped for JIS R1/4 or 1/4 NPT, whichever specified.

Process Connections:

JIS Rc1/2, Rc1/4, 1/2 NPT, or 1/4 NPT female, whichever specified.

Wetted Parts Material:

Body: Nickel-plated forged carbon steel or forged JIS SUS 316 stainless steel.

Process Connectors: SCS 14 A (equivalent to SUS 316 Stainless Steel casting)

Diaphragm Capsule: SUS 316L stainless steel.

Force Bar: SUS 316 stainless steel.

Force Bar Seal: Cobalt-nickel alloy.

Process Connector Gaskets: Teflon(PTFE) (see Note 1).

Capsule Gaskets: SUS 316L stainless steel coated with Teflon.

Force Bar Seal Gasket: Silicone elastomer.

Connection Hardware:

JIS SCM435 chrome-molybdenum steel cap screws and nuts for body; JIS SCM435 cap screws for process connectors.

Cover:

Cast aluminum, finished with gray polyurethane paint. Gasketed for National Electrical Manufacturers Association (NEMA) (USA) Type 3 weatherproof service.

Approximate Weight:

9.5 kg (21 lb).

Table 1. Span, Range and Static Pressure Limits.


Capsule		–	M-calibration	P-calibration	bar-calibration
M	Span Limits	5 to 51 kPa	0.5 to 5.2 mH ₂ O	20 to 205 inH ₂ O	50 to 510 mbar
	Range Limits	-51 to 51 kPa	-5.2 to 5.2 mH ₂ O	-205 to 205 inH ₂ O	-510 to 510 mbar
	S. P. Limits	10 MPa	100 kgf/cm ²	1500 psi	100 bar
H	Span Limits	50 to 210 kPa	5 to 21.6 mH ₂ O	200 to 850 inH ₂ O	0.5 to 2.1 bar
	Range Limits	-210 to 210 kPa	-21.6 to 21.6 mH ₂ O	-850 to 850 inH ₂ O	-2.1 to 2.1 bar
	S. P. Limits	10 MPa	100 kgf/cm ²	1500 psi	100 bar
Output Signal		20 to 100 kPa	0.2 to 1.0 kgf/cm ²	3 to 15 psi	0.2 to 1.0 bar
Option Code		Standard Specifications	CAL-M	CAL-E	CAL-B

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MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
Y/13A1	Nickel-plated forged carbon steel body.
Y/13A	Forged SUS 316 stainless steel body.
Diaphragm Capsule	-M	Medium range capsule. Span: 5 to 51 kPa.
	-H	High range capsule. Span: 50 to 210 kPa.
Body Material*1	K	Nickel-plated forged carbon steel.
	S	Forged SUS 316 stainless steel.
Process Connections	1	JIS Rc1/4 female.
	2	JIS Rc1/2 female.
	3 *2	ANSI 1/4 NPT female.
	4 *2	ANSI 1/2 NPT female.
	8	Diaphragm sealed transmitters (Refer to GS 06P01D01-00E) .
Options	/ <input type="checkbox"/> / <input type="checkbox"/>	

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- *1:  Users must consider the characteristics of selected wetted parts material and the influence of process fluids. The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the diaphragm itself can be damaged and that material from the broken diaphragm and the fill fluid can contaminate the user's process fluids.
Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150 °C [302 °F] or above). Contact Yokogawa for detailed information of the wetted parts material.
- *2: Air connections, vent and drain plug connections are also tapped for ANSI NPT threads in addition to the process connections

OPTIONS

Air Set:

Fixed combination pressure regulator and filter with 35 mm diameter pressure gauge mounted and piped to transmitter. Also available without gauge.

Supply pressure: 0.2 to 1 MPa, 2 to 10 kgf/cm² or bar, or 30 to 150 psi

Output pressure: 140 kPa, 1.4 kgf/cm² or bar, or 20 psi.

Maximum operating temperature : 80 °C (180 °F).

Air Connection	Gauge Scale	Option Code
JIS Rc 1/4 female	0 to 200 kPa	GAS-FP
	0 to 2 kgf/cm ²	GAS-FM
	0 to 30 psi	GAS-FE
	0 to 2 bar	GAS-FB
	Without gauge	GAS-F
1/4 NPT female	0 to 200 kPa	NAS-FP
	0 to 2 kgf/cm ²	NAS-FM
	0 to 30 psi	NAS-FE
	0 to 2 bar	NAS-FB
	Without gauge	NAS-F

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Kit for Elevated-Zero or Suppressed-Zero Ranges:

Permits adjustments up to range limits of capsule. Upper range-value must not exceed upper range-limit of capsule.

Option code: R-kit for suppressed-zero ranges and L-kit for elevated-zero ranges.

Low Differential Spans:

Refer to Table 2.

Option code: LD.

Cover Color Other Than Standard Finish:

Specify in color block by color code. Refer to GS 22D1F1-E.

Option code: SCF-.

High Process Temperature:

Glass reinforced Teflon gaskets are used in the process connectors and force bar seal. Maximum process temperatures to 190 °C (375 °F).

Option code: DG5.

Table 2. Law Differential Spans

Capsule	Span (kPa)	Accuracy (%)	
		Suffix Code LD	Suffix Code LD+R (L)
M	2.5 to 25	±0.5	±1.0
H	25 to 65	±0.5	
	65 to 105	±0.75	

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Steam Tracing:

Internal Steam Trace: Two hollow studs are substituted for the body bolts. Glass reinforced Teflon gaskets are used in the process connectors and force bar seal. Steam connections JIS R1/8 or 1/8 NPT male. Maximum working pressure 7.7 MPa, 77 kgf/cm² or bar, or 1100 psi. Maximum temperature limit at body 190 °C (375 °F).

Option code: BSTR.

External Steam Trace: Jacketed on both sides of body.

Steam connections JIS Rc1/4 or 1/4 NPT female. Maximum steam pressure 0.3 MPa, 3 kgf/cm² or bar, or 40 pst.

Option code: ESTR.

Stainless Steel Hardware:

JIS SUS 630 cap screws and nuts for the body; JIS SUS 630 cap screws for process connectors.

Option code: SSB.

Integral Flow Orifice:

Process connections Rc1/2 or 1/2 NPT female. Refer to GS 06P01E01-00E.

Oxygen Service Preparation:

Use SUS 316 stainless steel as body material.

Degrease cleansing treatment.

Option code: OSW.

Degrease cleansing treatment and with Daifloil (see Note 2) filled capsule. Process temperature limits -20 and 45 °C (0 and 110 °F) at capsule.

Option code: OSFC

High Damping Capsule:

Only available for medium capsule. Filled with high viscosity fluid (time constant is approximate 1.3 sec—approximate 6 times of standard capsule).

Option code: HVC.

ANSI connection:

For diaphragm sealed transmitter with ANSI process flanges, air, drain and vent plug connections with tapped for ANSI NPT threads:

Option code: NPT

Diaphragm Capsules of Special Materials:

Only available for medium capsule with SUS 316 stainless steel body.

Teflon (PTFE) (see Note 1) capsule gaskets and glass reinforced Teflon force bar seal gasket used. Accuracy, repeatability, and dead-band are slightly inferior to those of standard transmitter.

(1) Diaphragm of Hastelloy C (see Note 3), backup plate of SUS 316L stainless steel, and force bar of SUS 316 stainless steel:

Option code: D-CSC.

(2) Diaphragm, backup plate, force bar, vent plug, and drain plug of monel (see Note 4):

Option code: D-MMM3.

Calibration Units:

M-calibration (Unit. . . kgf/cm²)

Option code: CAL-M

P-calibration (Unit. . . psi)

Option code: CAL-E

bar-calibration (Unit. . . bar)

Option code: CAL-B

Notes:

1. Teflon (PTFE): Trademark of E.I. DuPont de Nemours & Company (USA) for polytetrafluoroethylene.
2. Daifloil: Trademark of Daikin Kogyo Company (Japan) for chlorotrifluoroethylene.
3. Hastelloy C: Trademark of Union Carbide Corporation (USA) for nickel-molybdenum alloy.
4. Monel: Trademark of International Nickel Company (Canada) for nickel-copper alloy.

ORDERING INSTRUCTIONS

Specify the following when ordering:

1. Model and suffix codes.
2. Option codes.
3. Process and air connections (Rc or NPT).
4. Output signal unit (kPa, kgf/cm², bar or psi).
5. Calibrated range.
6. Tag number and application.

RELATED INSTRUMENTS

Three-valve manifold: Refer to GS 22B01C01-00E.

Integral flow orifice: Refer to GS 06P01E01-00E.

Diaphragm seal: Refer to GS 06P01D01-00E.

DIMENSIONS

