

COMPACT PRESSURE GAUGE

PG-75



FEATURES

- Compact, lightweight and multi-functional general-purpose pressure gauge.
- It is adopted welding integral structure with SUS304/316L at pressure receiving section.
- A pressure display function is substantial. (3 1/2digit, 7 segment LED, 2-color LED red / green change, Non-display mode)
- Two types of analog output , one is voltage output (1-5V),The other is current output (4-20mA) .
- The gage pressure is (0 ~ positive pressure), compound pressure range (negative pressure ~ positive pressure),to support maximum of 3.5 MPa.
- Comply with IP65, CE Marking and UL certification obtained.

INTERNAL STRUCTURE (9/16-18UNF)

Part name		Material
①	Fitting	SUS304 (Diaphragm SUS316L)
②	Sensor module	
③	Sensor holder	PBT (UL-94-HB)
④	Adapter	
⑤	Housing	
⑥	Panel sheet	Polyester
⑦	Cable	Vinyl chlorid resin (UL2844)

MODEL NUMBER DESIGNATION

PG-75-102R-NV R2 B

Series name

Rated pressure

Switch output interface

Analog output

Pressure port

Fitting (With M5 female screw)

102G : 0 ~ 100kPa 102R : -100 ~ 100kPa

103G : 0 ~ 1.0MPa 103R : -0.1 ~ 1.0MPa

353G : 0 ~ 3.5MPa 353R : -0.1 ~ 3.5MPa

N : N : NPN open collector

P : P : PNP open collector

V : V : Voltage output (1-5 V)

A : A : Current output (4-20mA)

Blank : Stem mount

B : Back mount

R1 : R1/8

R2 : R1/4

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LIST OF MODEL NUMBERS

Pressure port	Fitting	SW output	Analog output	Pressure range (Rated range analog output)					
				(0 ~ 100kPa)	(-100 ~ 100kPa)	(0 ~ 1.0MPa)	(-0.1 ~ 1.0MPa)	(0 ~ 3.5MPa)	(-0.1 ~ 3.5MPa)
Stem	R1/8	NPN	1 ~ 5V	⇒ PG-75-102G-NVR1	⇒ PG-75-102R-NVR1	⇒ PG-75-103G-NVR1	⇒ PG-75-103R-NVR1	⇒ PG-75-353G-NVR1	⇒ PG-75-353R-NVR1
			4 ~ 20mA	⇒ PG-75-102G-NAR1	⇒ PG-75-102R-NAR1	⇒ PG-75-103G-NAR1	⇒ PG-75-103R-NAR1	⇒ PG-75-353G-NAR1	⇒ PG-75-353R-NAR1
		PNP	1 ~ 5V	⇒ PG-75-102G-PVR1	⇒ PG-75-102R-PVR1	⇒ PG-75-103G-PVR1	⇒ PG-75-103R-PVR1	⇒ PG-75-353G-PVR1	⇒ PG-75-353R-PVR1
			4 ~ 20mA	⇒ PG-75-102G-PAR1	⇒ PG-75-102R-PAR1	⇒ PG-75-103G-PAR1	⇒ PG-75-103R-PAR1	⇒ PG-75-353G-PAR1	⇒ PG-75-353R-PAR1
	R1/4	NPN	1 ~ 5V	⇒ PG-75-102G-NVR2	⇒ PG-75-102R-NVR2	⇒ PG-75-103G-NVR2	⇒ PG-75-103R-NVR2	⇒ PG-75-353G-NVR2	⇒ PG-75-353R-NVR2
			4 ~ 20mA	⇒ PG-75-102G-NAR2	⇒ PG-75-102R-NAR2	⇒ PG-75-103G-NAR2	⇒ PG-75-103R-NAR2	⇒ PG-75-353G-NAR2	⇒ PG-75-353R-NAR2
		PNP	1 ~ 5V	⇒ PG-75-102G-PVR2	⇒ PG-75-102R-PVR2	⇒ PG-75-103G-PVR2	⇒ PG-75-103R-PVR2	⇒ PG-75-353G-PVR2	⇒ PG-75-353R-PVR2
			4 ~ 20mA	⇒ PG-75-102G-PAR2	⇒ PG-75-102R-PAR2	⇒ PG-75-103G-PAR2	⇒ PG-75-103R-PAR2	⇒ PG-75-353G-PAR2	⇒ PG-75-353R-PAR2
Back	R1/8	NPN	1 ~ 5V	⇒ PG-75-102G-NVR1B	⇒ PG-75-102R-NVR1B	⇒ PG-75-103G-NVR1B	⇒ PG-75-103R-NVR1B	⇒ PG-75-353G-NVR1B	⇒ PG-75-353R-NVR1B
			4 ~ 20mA	⇒ PG-75-102G-NAR1B	⇒ PG-75-102R-NAR1B	⇒ PG-75-103G-NAR1B	⇒ PG-75-103R-NAR1B	⇒ PG-75-353G-NAR1B	⇒ PG-75-353R-NAR1B
		PNP	1 ~ 5V	⇒ PG-75-102G-PVR1B	⇒ PG-75-102R-PVR1B	⇒ PG-75-103G-PVR1B	⇒ PG-75-103R-PVR1B	⇒ PG-75-353G-PVR1B	⇒ PG-75-353R-PVR1B
			4 ~ 20mA	⇒ PG-75-102G-PAR1B	⇒ PG-75-102R-PAR1B	⇒ PG-75-103G-PAR1B	⇒ PG-75-103R-PAR1B	⇒ PG-75-353G-PAR1B	⇒ PG-75-353R-PAR1B
	R1/4	NPN	1 ~ 5V	⇒ PG-75-102G-NVR2B	⇒ PG-75-102R-NVR2B	⇒ PG-75-103G-NVR2B	⇒ PG-75-103R-NVR2B	⇒ PG-75-353G-NVR2B	⇒ PG-75-353R-NVR2B
			4 ~ 20mA	⇒ PG-75-102G-NAR2B	⇒ PG-75-102R-NAR2B	⇒ PG-75-103G-NAR2B	⇒ PG-75-103R-NAR2B	⇒ PG-75-353G-NAR2B	⇒ PG-75-353R-NAR2B
		PNP	1 ~ 5V	⇒ PG-75-102G-PVR2B	⇒ PG-75-102R-PVR2B	⇒ PG-75-103G-PVR2B	⇒ PG-75-103R-PVR2B	⇒ PG-75-353G-PVR2B	⇒ PG-75-353R-PVR2B
			4 ~ 20mA	⇒ PG-75-102G-PAR2B	⇒ PG-75-102R-PAR2B	⇒ PG-75-103G-PAR2B	⇒ PG-75-103R-PAR2B	⇒ PG-75-353G-PAR2B	⇒ PG-75-353R-PAR2B

The products marked ⇒ are manufactured upon receipt of order basis.

STANDARD SPECIFICATIONS

	Model number		PG-75					
			102G	103G	353G	102R	103R	353R
General specifications	Pressure reference		Gauge			Gauge (Compound)		
	Rated pressure	Pr(L) ~ Pr(H)	0 ~ 100kPa	0 ~ 1.0MPa	0 ~ 3.5MPa	-100 ~ 100kPa	-0.1 ~ 1.0MPa	-0.1 ~ 3.5MPa
	Maximum pressure	Pmax	200kPa	2MPa	5MPa	200kPa	2MPa	5MPa
	Break-down pressure	Pb	300kPa	3MPa	7MPa	300kPa	3MPa	7MPa
	Full-scale	FS	100KPa	1MPa	3.5MPa	200kPa	1.1MPa	3.6MPa
	Pressure Medium		Corrosive gases/Liquids compatible with SUS304 or SUS316					
	Sealed liquid		Silicone oil					
	Operating voltage	Vopr	10.8 ~ 30VDC (Including ripple percentage)					
	Consumption current		50mA maximum (Not included current analog output)					
	Protection grade		IP65 of IEC					
	Operating temp.		-10 ~ 50°C (Storage Temperature : -20 ~ 70°C)					
	Operating humidity		35 ~ 85% RH					
	Insulation resistance		100MΩ minimum at DC500V between bundled leads and pressure port					
	Dielectric strength		One minuts at AC500V between bundled leads and pressure port (1mA maximum leakage)					
	Fitting port types		R1 (R1/8)、R2 (R1/4)					
	Fitting materials		Diaphragm : SUS316L、Fitting : SUS304					
	Net Weight		Approx. 115±15g (incl. 2m cable)					

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STANDARD SPECIFICATIONS

	Model number	PG-75					
		102G	103G	353G	102R	103R	353R
Switch output	Number of outputs	Two outputs (NPN/PNP)					
	Switching capacity	30VDC / 100mA maximum					
	Residual voltage	1.2V maximum (NPN) / 2.2V maximum (PNP), Load current 100mA					
	Hysteresis	0 ~ Approx 0.3Pr(H),(Adjustable)					
	Repeatability	±0.3 % FS / Reference temp. 25°C					
	Accuracy	±2%FS (Integrated accuracy:Including errors of setting, linearity, hysteresis and thermal error.)					
	Response	Approx 5 ms (Digital filter settings : "F0")					
	Protection	Exists / Short circuit protection(Switch Overload current detection :Approx 150mA minimum)					
	State indication	SW monitor LED(2 points) ,Lighted when the switch output is ON.(Pressure display inverted colors)					
	Voltage output						
Analog output	Vo	1 ~ 5V / Pr(L) ~ Pr(H) , F.S. : 4V					
	Accuracy	±2%F.S. (Integrated accuracy) /Measurement load resistance(1MΩmaximum)					
	Resolution	Approx 2.7mV (Approx 0.068% F.S.) (11bitDAC)					
	Output resistance	Approx 1kΩ(Internal impedance)					
	Response	Approx 2ms maximum					
	Current output						
	Io	4 ~ 20mA / Pr(L) ~ Pr(H), F.S. : 16mA					
	Accuracy	±2%F.S. (Integrated accuracy) /Measurement load resistance(250Ωmaximum)					
	Resolution	Approx 0.011mA (Approx 0.068% F.S.) (11bitDAC)					
	Output resistance	Vopr ≤ 18VDC : 50 ~ 300Ω, Vopr > 18VDC : 50 ~ 500Ω					
	Response	Approx 2ms maximum					
Pressure display	Display element	3 1/2 digits, 7 segment LED (Red/Green) Reverse display selectable in tandem with SW1.					
	Display cycle	5 times /sec (moving average)					
	Accuracy	±2% F.S.(Integrated accuracy)					

ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions (At 25 ± 5 °C)	Permissible change
Vibration	10 ~ 500Hz 1.5mm maximum / 98.1m/s ² , three directions, two hours each	Pressure indication, switch operating pressure and analog output (zero and span) : ± 2%F.S. maximum during test
Shock	490m/s ² , three directions, three times each	
Pressure cycling	0~Rated pressure, 10 ⁶ cycles	
Moisture resistance	40 °C, 90~95 %RH, 240 hrs.	

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ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions (At 25 ± 5 °C)	Permissible change
EMC	EMI : EN55011: 2009, A1: 2010 Group 1, class B EMS : EN61326-1 : 2006 Table 2 EN61326-2-3 : 2006 Annex BB	Pressure indication, switch operating pressure and analog output : ± 5 %F.S. maximum during test

MULTIPLIER FACTOR

The multiplier factor is selectable by changing the value of third digit on the display during the operation setting.

Code/Multiplier Factor	Pressure Range / Display specification rated pressure					
	102G	102R	103G	103R	353G	353R
1:×1 (kPa)	0.0 ~ 100.0	-100.0 ~ 100.0	0 ~ 1000	-100 ~ 1000	—	—
2:×0.0102	.000 ~ 1.020	-1.020 ~ 1.020	0.00 ~ 10.20	-1.02 ~ 10.20	0.0 ~ 35.7	-1.0 ~ 35.7
3:×10.2	0 ~ 1020	-1020 ~ 1020	—	—	—	—
4:×7.501	0 ~ 750	-750 ~ 750	—	—	—	—
5:×0.01	.000 ~ 1.000	-1.000 ~ 1.000	0.00 ~ 10.00	-1.00 ~ 10.00	0.0 ~ 35.0	-1.0 ~ 35.0
6:×10	0 ~ 1000	-1000 ~ 1000	—	—	—	—
7:×0.145	0.0 ~ 14.5	-14.5 ~ 14.5	0.0 ~ 145.0	-14.5 ~ 145.0	0 ~ 508	-15 ~ 508
8:×0.001 (MPa)	—	—	.000 ~ 1.000	-.100 ~ 1.000	0.00 ~ 3.50	-0.10 ~ 3.50
9:×0.2953	0.0 ~ 29.5	-29.5 ~ 29.5	0 ~ 295	-30 ~ 295	0 ~ 1033	-30 ~ 1033

- The settings indicated by "-" on the table above are not selectable because of resolution.
- Either "1" (for 102A, 102V, 102G, and 102R) or "8" (for 103G, 103R, 353G and 353R) are set prior to delivery.
- Changes of the multiplier factor apply to display values. Also, note the changes reset switch setting value and hysteresis.

SWITCH OUTPUT MODE

SW output is selectable by changing the value of first digit on the display.

<SW Operation Code>

Output	SW1				SW2			
	Separate		Window comparator		Separate		Window comparator	
Mode	HI	LO	A	B	HI	LO	A	B
Operation								
1	○				○			
2	○					○		
3		○				○		
4		○				○		
5			○				○	
6			○				○	
7				○				○
8				○				○
Pressure setting (Operating point)	Set 1		(Minimum) Set 1 (Maximum) Set 3		Set 2		(Minimum) Set 1 (Maximum) Set 4	

<Switch Operation Mode>

Separate mode	Window comparator mode
(HI operation)	(A operation)
(L operation)	(B operation)
$P1 \leq P2$ or $P1 \geq P2$	
$P1 \leq P3-2H$ and $P2 \leq P4-2H$	
H : Hysteresis, P1 = Set 1, P2 = Set 2 P3 = Set 3, P4 = Set 4	

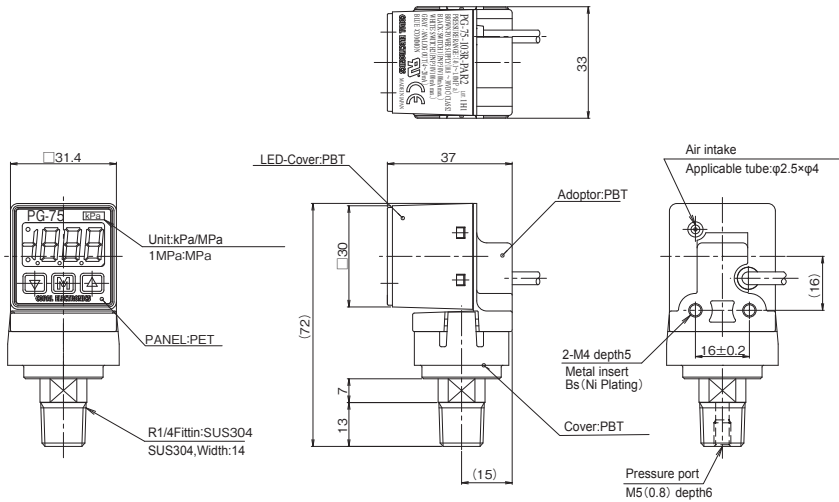
- In the Separate mode, SW 1 corresponds to Setting 1 and SW2 corresponds to Setting 2.
- In the Window Comparator Mode, SW 1 corresponds to the Setting 1 (lower limit) and Setting 3 (upper limit). Also, SW2 corresponds to the setting 2 (lower limit) and setting 4 (upper limit).
- The Hysteresis (H) setting is common to SW 1 and SW 2 operations.
- When SW operation is changed between the Separate Mode and Window Comparator Mode, SW pressure settings that are set separately will be reset.

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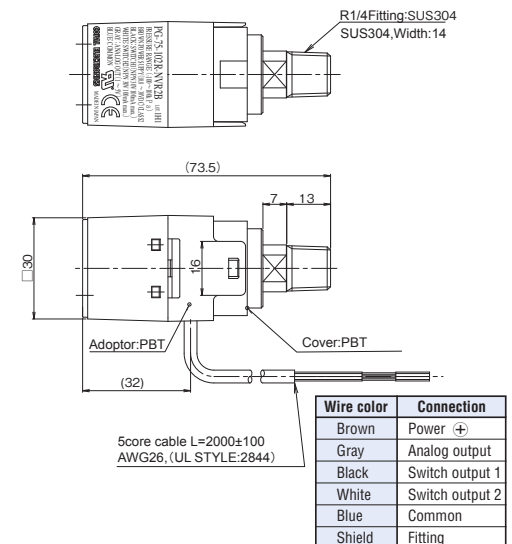
COMPACT PRESSURE GAUGE

EXTERNALS SPECIFICATION (unit:mm)

Vertical installation type

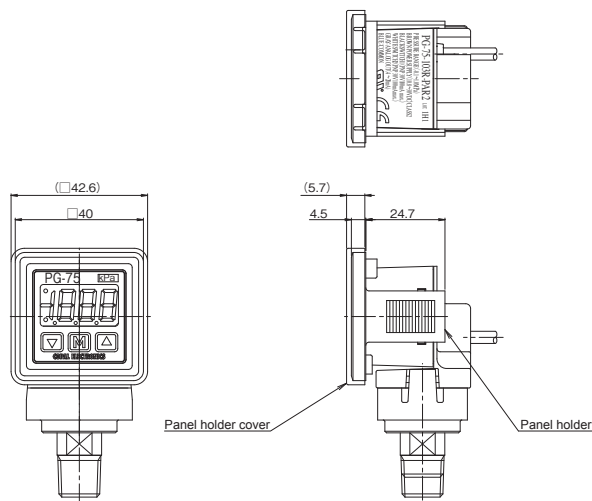


The horizontal installation type

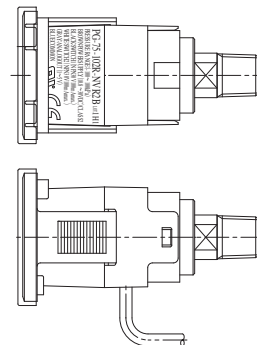


MEANS OF ATTACHMENT (Option)

Vertical installation type



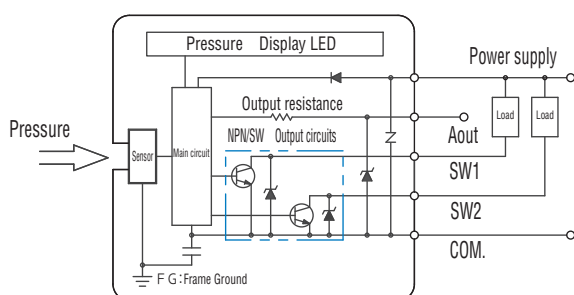
The horizontal installation type



※ Accessories (sold separately) are available for common use with PG-30, PG-35, PG-75 series. (P.173)

INTERNAL ELECTRICAL SCHEMATICS

NV/NA:NPN



PV/PA:PNP

