

PRESSURE GAUGES

PG-35



FEATURES

- **Both absolute pressure type and compound pressure type are available**

Compound pressure type measures negative and positive gauge pressure.

- **Compact and lightweight general-purpose pressure gauges**

Innovative general-purpose gauges of compact design (30mm sq.) and drip-proof structure (IP65).

- **Clear indication by LED**

Easy-to-see LED assures clear readings on the panel and even in a dark place.

- **Various modes and units can be selected according to applications**

Eight different pressure units
 Three analog output modes
 Eight switch output modes

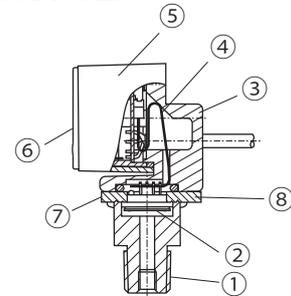
- **Meet EMC standards**

EN 55011 (EMI)
 EN 61326-1 (EMS)

- **Low consumption by nondisplay mode**

- **Set data protection by panel lock function**

INTERNAL STRUCTURE (R 1/4)



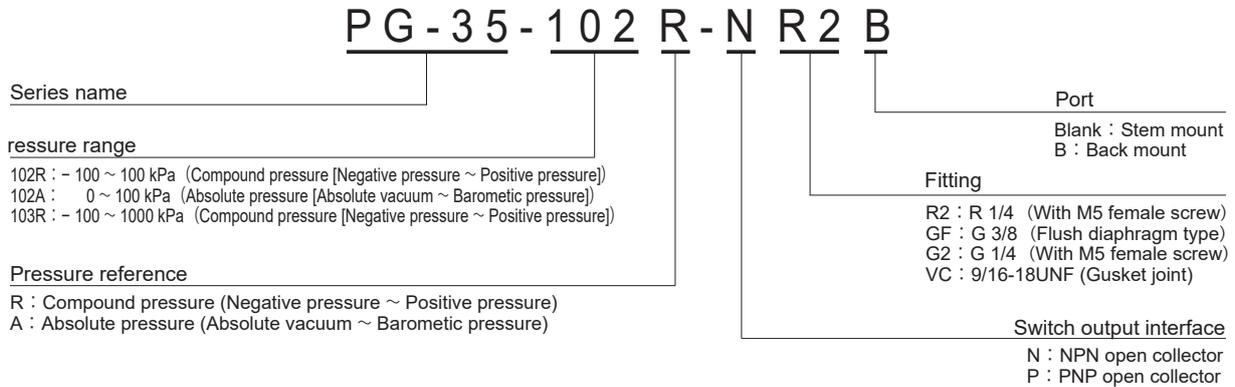
Part name		Material
①	Fitting	SUS316L
②	Sensor module	SUS316L
③	Adaptor	Aluminum
④	FPC	Polymide
⑤	Case	PBT(Polybutyleneterphthalate)
⑥	Panel sheet	Polyester
⑦	"O" ring	NBR
⑧	Sensor holder	SUS316L

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PRESSURE GAUGES

MODEL NUMBER DESIGNATION

High corrosion resistance type



LIST OF MODEL NUMBERS

Pressure medium	Fitting	Port	Switch output interface	Pressure reference Rated pressure range	Gauge		Absolute
					-100 ~ 100 kPa	-100 ~ 1000 kPa	0 ~ 100 kPa abs
Corrosive gases/ liquids compatible with SUS 316L	R 1/4	Stem mount	NPN		PG-35-102R-NR2	PG-35-103R-NR2	PG-35-102A-NR2
		Back mount		⊕ PG-35-102R-NR2B	⊕ PG-35-103R-NR2B	⊕ PG-35-102A-NR2B	
		Stem mount	PNP		PG-35-102R-PR2	PG-35-103R-PR2	PG-35-102A-PR2
		Back mount		⊕ PG-35-102R-PR2B	⊕ PG-35-103R-PR2B	⊕ PG-35-102A-PR2B	
	G 3/8	Stem mount	NPN		PG-35-102R-NGF	PG-35-103R-NGF	PG-35-102A-NGF
			PNP		PG-35-102R-PGF	PG-35-103R-PGF	PG-35-102A-PGF
	9/16-	Stem mount	NPN		PG-35-102R-NVC	PG-35-103R-NVC	PG-35-102A-NVC
		Back mount		⊕ PG-35-102R-NVCB	⊕ PG-35-103R-NVCB	⊕ PG-35-102A-NVCB	
	18UNF	Stem mount	PNP		PG-35-102R-PVC	PG-35-103R-PVC	PG-35-102A-PVC
		Back mount		⊕ PG-35-102R-PVCB	⊕ PG-35-103R-PVCB	⊕ PG-35-102A-PVCB	
	G 1/4	Stem mount	NPN		PG-35-102R-NG2	PG-35-103R-NG2	PG-35-102A-NG2
			PNP		PG-35-102R-PG2	PG-35-103R-PG2	PG-35-102A-PG2

※ Verify the above model numbers when placing orders.
 The products marked ⊕ are manufactured upon receipt of order basis.

ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions	Permissible change
Vibration	10 ~ 500 Hz, 98.1 m/s ² or 1.5 mm P-P, 3 directions for 2 hours each	[± 2 %F.S. maximum after test ※ 1 Amount of analog output fluctuation is permitted by adding conversion error of 20 mV.]
Shock	490 m/s ² , 3 directions for 3 times each	
Pressure cycling	0 ~ Rated pressure, 10 ⁶ cycles	
Moisture resistance	40 °C, 90 ~ 95 %RH, 240 hrs.	

※ 1 Change in the pressure indication, switch operating points and analog output.

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STANDARD SPECIFICATIONS

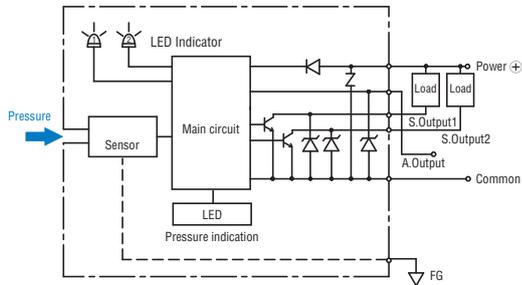
● Unless otherwise specified, the specs are defined at an ambient temperature of 25±5 °C and excitation voltage of 12 VDC.

Item		Model number	PG-35		
			102R	103R	102A
General specifications	Pressure reference		Gauge		Absolute
	Pressure medium		Corrosive gases/liquids compatible with SUS 316L		
	Rated pressure range	kPa	- 100 ~ 100	- 100 ~ 1000	0 ~ 100 (abs)
	Maximum pressure	kPa	200	2000	200 (abs)
	Break-down pressure	kPa	300	3000	300 (abs)
	Operating temp. range	°C	- 10 ~ 50		
	Compensated temp. range	°C	0 ~ 50		
	Operating humidity	%RH	35 ~ 85		
	Protection grade		In accordance with IEC IP65		
	Pressure Port		R 1/4, G 3/8, G 1/4, 9/16-18UNF		
	Type of mounting		Stem mount, Back mount		
	Material of pressure port attachment		SUS 316L		
	Net weight	g	Approx. 150 (Including 2 m cable)		
	Thermal error		± 3 %F.S. (0 ~ 50 °C)		
	Insulation resistance		100 MΩ minimum (DC500 V)		
	Dielectric strength		500 VAC 1 minute (Leakage current 1 mA maximum)		
	Input voltage		10.8 ~ 30 VDC (Including ripple percentage)		
Consumption current		50 mA maximum			
Display	Display element		Full 3-digit LED		
	Rated display range	kPa	- 99.9 ~ 99.9	- 100 ~ 999	0.0 ~ 99.9
	Multiplier settings		Max. 11 settings		
	Negative pressure display		Red LED is ON.		—
	Display accuracy		± 1 %F.S.		
Switch output	Output status		NPN/PNP		
	Output mode		2-point output (Transistor, Open collector output)		
	Output mode		Separate mode / window comparator mode		
	Switching capacity		30 VDC 100 mA Short-circuit protection		
	Residual voltage		1.2 V maximum (NPN), 2.2 V maximum (PNP) (At load current of 100 mA)		
	State indication		Output 1 (Green LED), Output 2 (Red LED) Lighted when output is ON.		
	Switch hysteresis		0 ~ 300 counts Adjustable		
	Repeatability		± 0.2 %F.S. ± 1 count (± 0.3 %F.S. maximum)		
Response		Approx. 5, 25, 250, 2500 ms Adjustable			
Analog output	Output mode		3 modes		
	Output voltage		1 ~ 5 V (G/V mode ZERO : 1 ± 0.2 V, SPAN : 4 ± 0.2 V) 103 R (R mode) ZERO : 1.36 ± 0.2 V R mode ZERO : 3 ± 0.2 V, SPAN : 2 ± 0.2 V) SPAN : 3.64 ± 0.2 V		
	V zero : Pin=0, V span : Pin=0 ~ Pin (H)				
	Impedance		10 kΩ		
	Resolution		1/204(Approx. 20mV / Approx. 0.5%F.S.)		
Response		Approx. 5, 25, 250, 2500 ms Adjustable			
Accessories			"O" rings are supplied (G 3/8 : P18, G 1/4 : P15)		

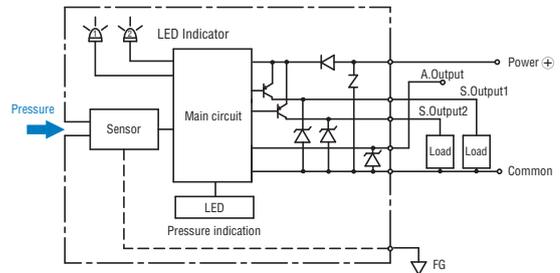
PG-35 PRESSURE GAUGES

INTERNAL ELECTRICAL SCHEMATICS

NPN



PNP



SELECTION OF DISPLAY MULTIPLIER

The last digit/letter represents the selection code : Blinking red LED indicates negative pressure.

Display multiplier	Pressure range(-Pr ~ +Pr)		
	102R	103R	102A
1 × 1	- 99.9 ~ 99.9	- 100 ~ 999	0.0 ~ 99.9 (abs)
2 × 0.0102		- 1.02 ~ 9.99	
3 × 10.2	- 999 ~ 999		0 ~ 999 (abs)
4 × 7.501	- 750 ~ 750		0 ~ 750 (abs)
5 × 102			
6 × 0.01		- 1.00 ~ 9.99	
7 × 10	- 999 ~ 999		0 ~ 999 (abs)
8 × 0.145	- 14.5 ~ 14.5	- 14 ~ 145	0.0 ~ 14.5 (abs)
9 × 0.000145			
A × 0.001		- 0.10 ~ 1.00	
b × 0.2953	- 29.5 ~ 29.5	- 29 ~ 295	0.0 ~ 29.5 (abs)

Diagonal column: Display multiplier cannot be selected due to resolution and number of digits. (Selection code is not indicated either.) Selection code is set at "1" prior to shipment.

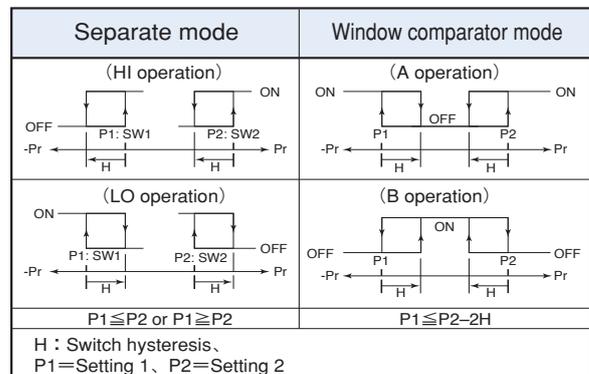
ANALOG OUTPUT MODE

Display	Pressure range	Pressure range		
		-Pr	0	Pr
1	R mode	1 V ←	1 V	→ 5 V
2	G mode		1 V	→ 5 V
3	V mode	5 V ←	1 V	

When shipped from our factory :
 102R : V mode is set at "3" and 102A,
 103R : G mode is set at "2". In case of
 102R and 103R, R/G/V mode can be set at "1",
 "2" or "3" (However, the accuracy at
 V mode of 103R can't be guaranteed).
 102A : Only G mode can be set.

SWITCH OUTPUT MODE

Output	SW1				SW2			
	Separate		Window comparator		Separate		Window comparator	
Mode	HI	LO	A	B	HI	LO	A	B
S-1	○				○			
S-2	○				○			
S-3		○				○		
S-4		○				○		
C-5			○				○	
C-6			○				○	
C-7				○				○
C-8				○				○
Pressure setting (Operating point)	Setting 1		(Lower limit) : Setting 1 (Upper limit) : Setting 2		Setting 2		(Lower limit) : Setting 1 (Upper limit) : Setting 2	



Note 1. In the Separate Mode, setting 1 corresponds to SW1, and Setting 2 corresponds to SW2.

Note 2. In the Window Comparator Mode, the minimum value for SW1 and SW2 corresponds to Setting 1 and the maximum value corresponds to Setting 2.

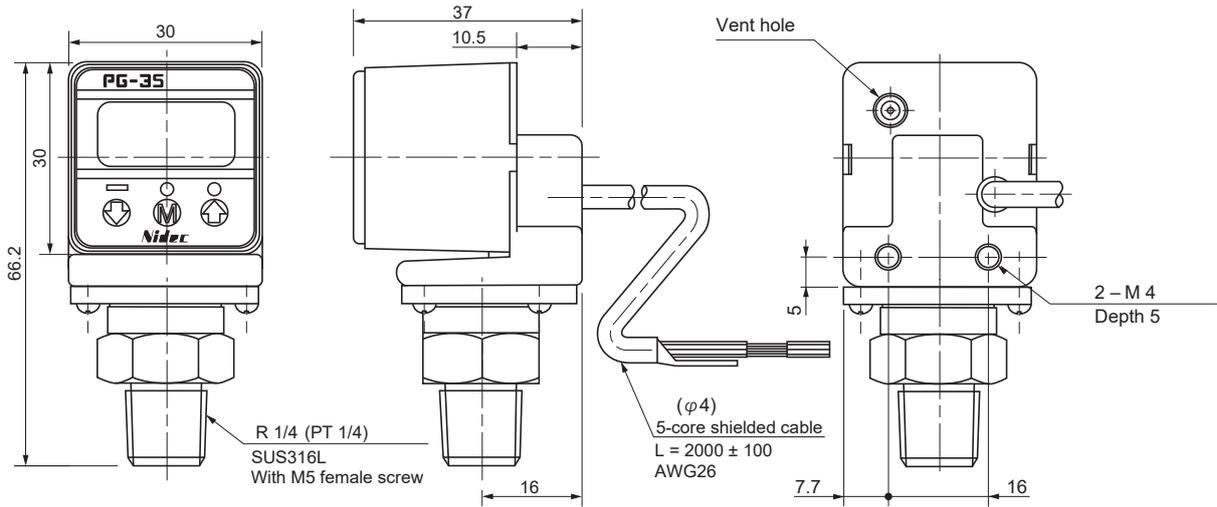
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OUTLINE DIMENSIONS

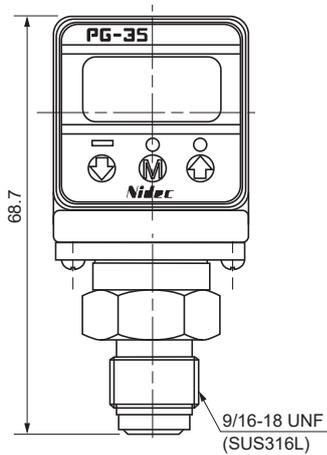
PG-35

Unless otherwise specified tolerance : ± 0.5 (Unit: mm)

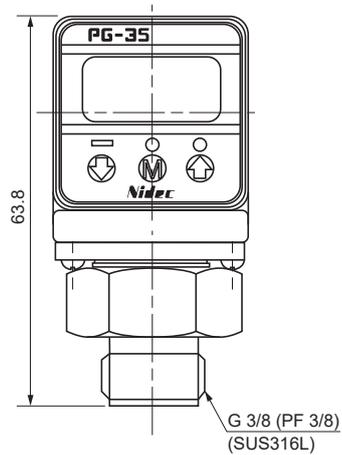
Configurations of joint R2 type



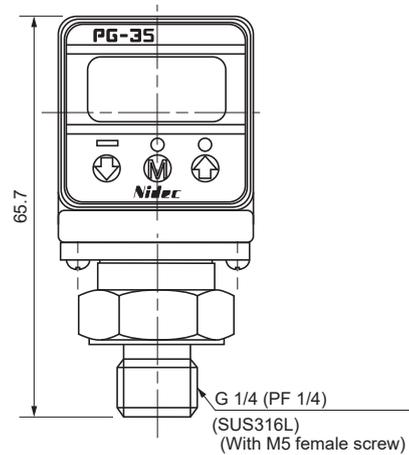
Configurations of joint VC type



Configurations of joint GF type



Configurations of joint G2 type



 Extra care should be taken with the diaphragm part.
Do not touch the diaphragm directly to avoid damaging the diaphragm.

Wire color	Connection
Brown	Power ⊕
Gray	Analog output
Black	Switch output 1
White	Switch output 2
Blue	Common
Shield	Fitting

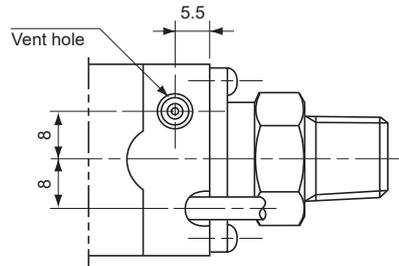
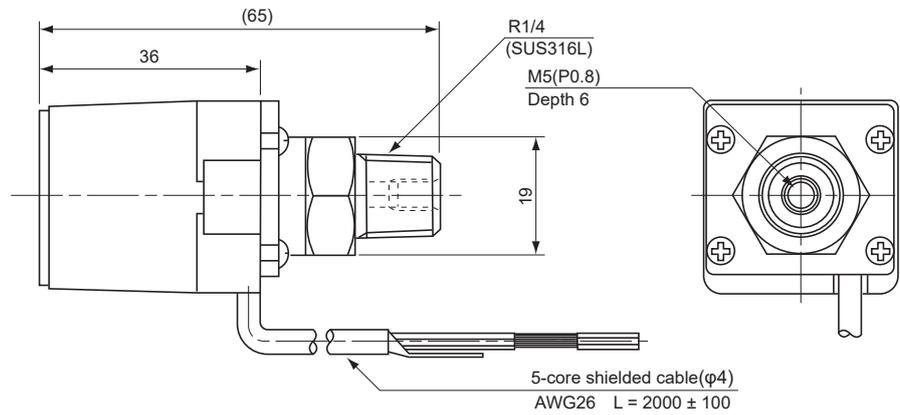
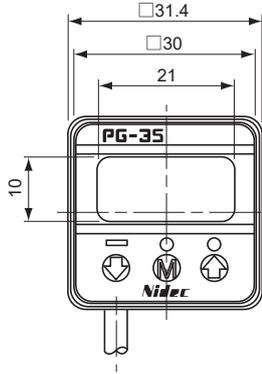
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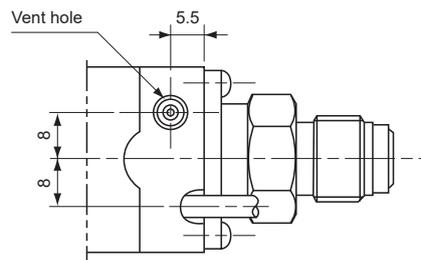
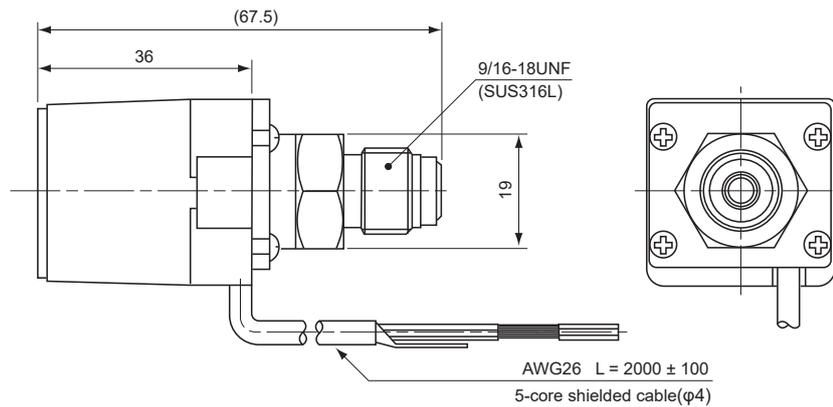
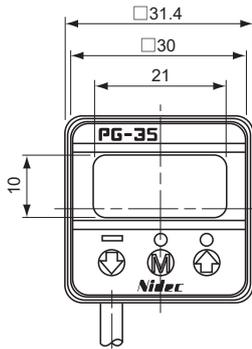
OUTLINE DIMENSIONS

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PG-35-B (R2)



PG-35-B (VC)



PG-35 PRESSURE GAUGES

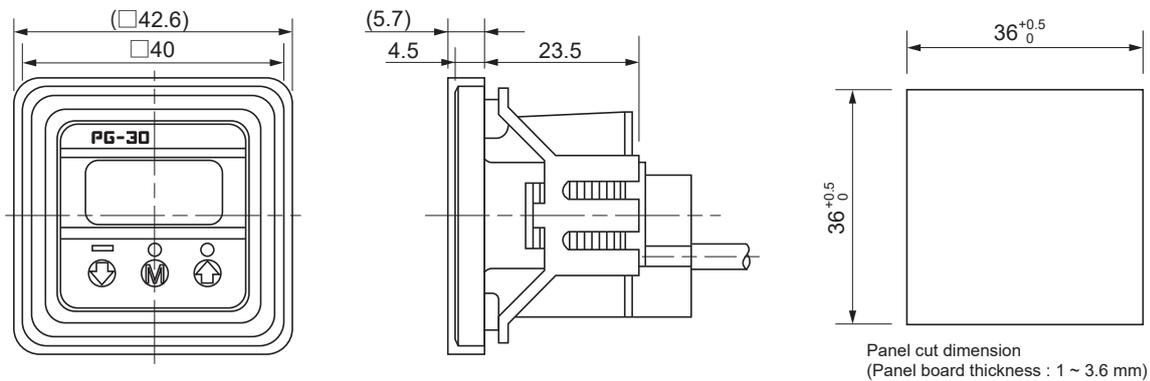
ACCESSORIES (Sold separately)

Name	Series name	Contents	Applicable model
Panel holder set	ACPG-003	Panel holder cover Panel holder Panel stopper (2pcs.)	PG-30 · PG-35 · PG-75 PG-35H · PG-35L · PS30
Holder cover set (For protecting gauge operating panel)	ACPG-004	Panel holder cover Panel holder	PG-30 · PG-35 · PG-75 PG-35H · PG-35L · PS30
Holder stopper set	ACPG-007	Panel holder Panel stopper (2pcs.)	PG-30 · PG-35 · PG-75 PG-35H · PG-35L · PS30

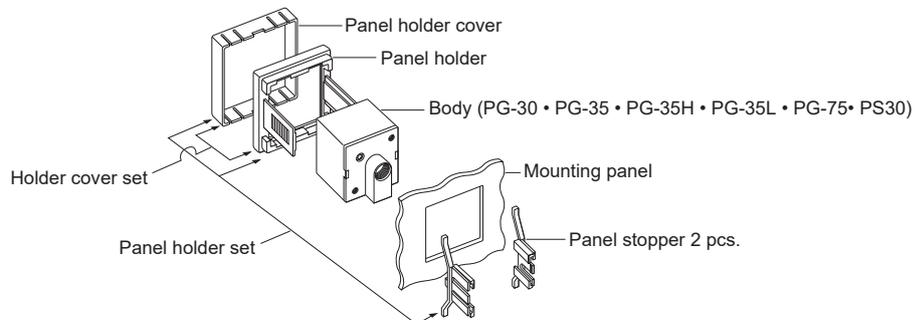
HOW TO MOUNT OPTIONAL ACCESSORIES (Sold separately)

(Unit: mm)

PG-30 · PG-35 · PG-35H · PG-35L · PG-75 · PS30 Panel cut holder set & holder cover set



Panel holder cover set



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PRESSURE GAUGES

■ Installation

● Tube at atmospheric pressure intake

If there is any possibility that the sensor may become wet with oil or water, which may enter the case through the air intake, connect a silicon tube, or similar, to the intake and position the end of the tube in a suitably safe place. Be sure not to bend the tube or block the end of the tube.



Example of a tube with external diameter of ϕ 4 and internal diameter of ϕ 2.5

● Piping

Use a wrench (13mm) on the aluminum die-casting. Do not hold the plastic case when tightening. Apply sealing tape at the male screw area to protect against air leaks. If mounting with an angled bracket, the maximum torque of the M3 screws should be less than 0.3N · m.

When using the accessories sealing or fitting screw, bind up the seal tape around the sealing screw one and a half or two turns, and screw it in the pressure port by hand without damaging the screw thread. After then, tighten the screw sufficiently with wrench. (Recommended torque: Plastic screw 3.0 N · m, Metal screw 10.0 N · m)

■ Customization

We also offer customized solutions. Please contact your local sales office for details.

Model number	Shape and other customization
PG-35-102R-NR2-011	Bracket (mounting plate) supplied
PG-35-102R-NR2-105	Default mode (X 1 <multiplier factor>, V mode <analog output>, separate mode <switch output>), Pressure setting (P1:30kPa / P2 :50kPa, 10ms<hysteresis>, 0 (digital filter))
PG-35-102R-NR2B-128	Panel holder set (ACPG-003) separately packed and supplied
PG-35-102R-PR2-021	Tube for vent hole supplied. Measures against coolant intrusion (application of epoxy around a cable bush, and protection cover for panel sheet)
PG-35-103R-NS2	Fitting : 1/4 Swagelok tubing