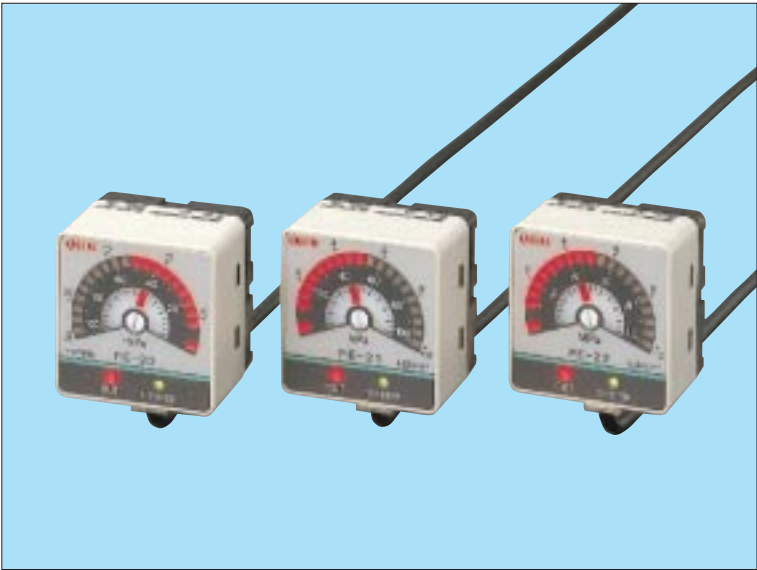


PE SERIES

LED Bar Display

OBSOLÈTE

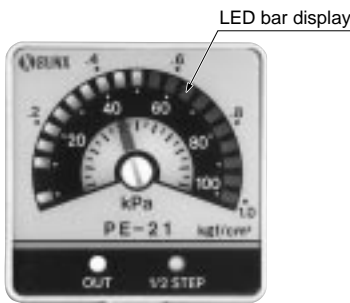


Mechanical Switch is Out of Date
Choose the Contemporary
Pressure Sensor
with LED Bar Display

CE Marked
Conforming to EMC directive

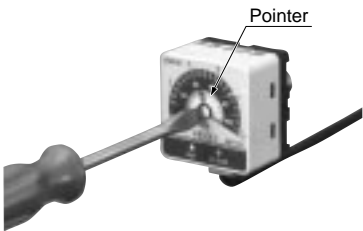
Bright LED Bar Display

Easy to read the pressure level as red bar LEDs indicate it.
(Indication resolution : 2.5% F.S.)



Simple Pressure Level Setting

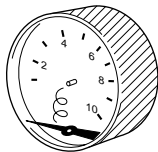
The threshold level is able to adjust simply. Just set the pointer suitable for the displayed pressure level.



As the adjuster is rotated, the pointer turns around. The threshold level is set at the value indicated by the pointer.

Reliable and Durable

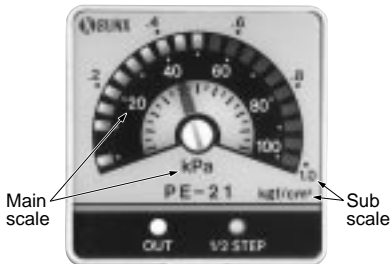
Mechanical switch easily breaks when pressure fluctuates excessively. The diffused semiconductor transducer makes the, **PE** series reliable and durable.



Mechanical switch

Sub-scale

The **PE** series scales pressure in kgf/cm² or in cmHg additionally for those who are used to such unit.



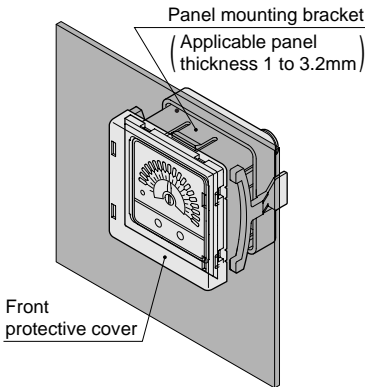
Wide Variation

The **PE** series also provides the North American and European models.

	Pressure unit (Sub-scale)	Output mode	Pressure port
Asian	kgf/cm ² (Positive pressure) cmHg (Negative pressure)	NPN	R1/4 and M5 female thread
North American	psi	NPN	NPT1/4 and 10-32 UNF female thread
European	bar	PNP	G1/8 and M5 female thread

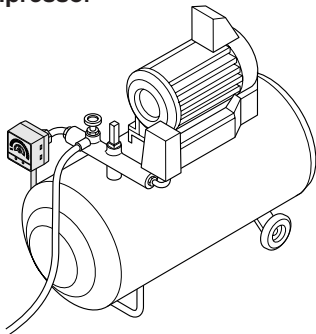
Panel Mounting Bracket

The panel mounting is available with the panel mounting bracket.

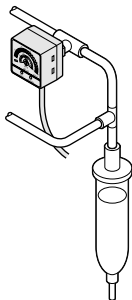


APPLICATIONS

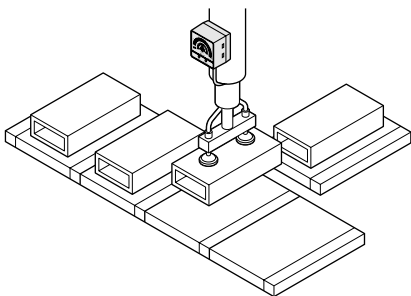
Observing base pressure on compressor



Observing added pressure to dispenser



Confirming suction of workpieces



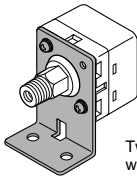
ORDER GUIDE

Type			Appearance	Rated pressure range	Model No.	Pressure port	Output
Negative pressure	— 101kPa type	Asian		0 to — 101kPa {0 to — 76cmHg}	PE-20	R1/4 and M5 female thread	NPN open-collector transistor
		North American		0 to — 101kPa {0 to — 14.6psi}	PE-20N	NPT1/4 and 10-32 UNF female thread	
		European		0 to — 101kPa {0 to — 1.01bar}	PE-20E	G1/8 and M5 female thread	PNP open-collector transistor
Positive pressure	100kPa type	Asian		0 to 100kPa {0 to 1.02kgf/cm²}	PE-21	R1/4 and M5 female thread	NPN open-collector transistor
		North American		0 to 100kPa {0 to 14.5psi}	PE-21N	NPT1/4 and 10-32 UNF female thread	
		European		0 to 100kPa {0 to 1bar}	PE-21E	G1/8 and M5 female thread	PNP open-collector transistor
	1MPa type	Asian		0 to 1MPa {0 to 10.2kgf/cm²}	PE-22	R1/4 and M5 female thread	NPN open-collector transistor
		North American		0 to 1MPa {0 to 145psi}	PE-22N	NPT1/4 and 10-32 UNF female thread	
		European		0 to 1MPa {0 to 10bar}	PE-22E	G1/8 and M5 female thread	PNP open-collector transistor

OPTION

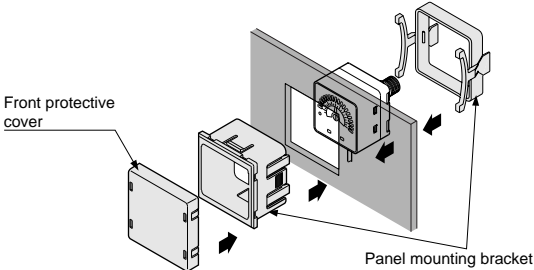
Designation	Model No.	Description
Sensor mounting bracket	MS-PE-1	L-shaped bracket (Two M3×8mm screws with washers are attached.)
Panel mounting bracket	MS-PE-2	For mounting on a panel
Front protective cover	MS-PE-3	For protecting the adjustable front surface

Sensor mounting bracket



Two M3×8mm screws with washers are attached.

Panel mounting bracket and Front protective cover



PE

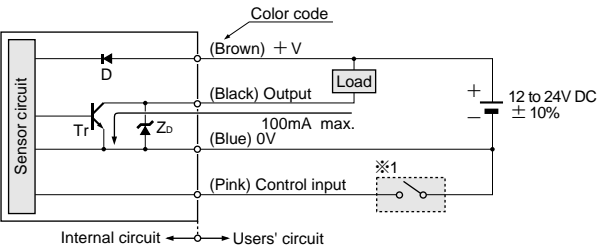
SPECIFICATIONS

Type		Negative pressure			Positive pressure					
		— 101kPa type			100kPa type			1MPa type		
		Asian	North American	European	Asian	North American	European	Asian	North American	European
Item	Model No.	PE-20	PE-20N	PE-20E	PE-21	PE-21N	PE-21E	PE-22	PE-22N	PE-22E
Pressure scale		Gauge pressure								
Rated pressure range		0 to — 101kPa {0 to — 76cmHg}	0 to — 101kPa {0 to — 14.6psi}	0 to — 101kPa {0 to — 1.01bar}	0 to 100kPa {0 to 1.02kgf/cm ² }	0 to 100kPa {0 to 14.5psi}	0 to 100kPa {0 to 1bar}	0 to 1MPa {0 to 10.2kgf/cm ² }	0 to 1MPa {0 to 145psi}	0 to 1MPa {0 to 10bar}
Setting pressure range		— 10 to — 90kPa {— 8 to — 68cmHg}	— 10 to — 90kPa {— 1.45 to — 13.1psi}	— 10 to — 90kPa {— 0.1 to — 0.9bar}	10 to 90kPa {0.1 to 0.92kgf/cm ² }	10 to 90kPa {1.45 to 13.1psi}	10 to 90kPa {0.1 to 0.9bar}	0.1 to 0.9MPa {1.0 to 9.2kgf/cm ² }	0.1 to 0.9MPa {14.5 to 131psi}	0.1 to 0.9MPa {1 to 9bar}
Pressure resistance		490kPa						1.47MPa		
Applicable fluid		Non-corrosive gas								
Hysteresis		Approx. 5%F.S.								
Repeatability		± 1%F.S. or less								
Supply voltage		12 to 24V DC ± 10% Ripple P-P 10% or less								
Current consumption		40mA or less								
Output		<Asian • North American> NPN open-collector transistor • Maximum sink current : 100mA • Applied voltage : 30V DC or less • Residual voltage : 1V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)				<European> PNP open-collector transistor • Maximum source current : 100mA • Applied voltage : 30V DC or less • Residual voltage : 2V or less (at 100mA source current)				
		Utilization category		DC-12 or DC-13						
		Output operation		Selectable either High-ON or High-OFF with the control input wire						
		Short-circuit protection		Incorporated						
Response time		10ms or less								
Pressure display		Indication with red LED bar plus 1/2 step indicator (Green LED)								
	Indication resolution	2.5%F.S. or less								
Operation indicator		Red LED (lights up when the output is activated)								
Power indicator		Red LED (lights up while the power is supplied)								
Environmental resistance	Pollution degree	3 (Industrial environment)								
	Protection	IP40 (IEC)								
	Ambient temperature	0 to + 50°C (No dew condensation), Storage : — 10 to + 60°C								
	Ambient humidity	35 to 85%RH, Storage : 35 to 85%RH								
	EMC	Emission : EN50081-2, Immunity : EN50082-2								
	Voltage withstandability	1,000V AC for one min. between all terminals connected and enclosure								
	Insulation resistivity	20MΩ or more at 500V DC Megger between all terminals connected and enclosure								
	Vibration-proof	10 to 150Hz frequency, 0.75mm amplitude, and X, Y, and Z directions each for two hours (unenergized)								
	Shock-proof	100m/s ² acceleration (approx. 50G), and X, Y, and Z directions each for three times (unenergized)								
Temperature characteristic		± 5%F.S. or less of detection pressure at 25°C in 0 to + 50°C temperature range								
Pressure port		Asian : R1/4 and M5 female thread North American : NPT1/4 and 10 – 32UNF female thread European : G1/8 and M5 female thread								
Material		Front case • Rear case : PBT, Front face : Polycarbonate, Pressure port : Brass (Nickel plated)								
Cable		Cabtyre cable 0.5m long with four 0.18mm ² conductors								
Cable extension		Maximum extension is 100m overall with an equivalent cable with conductors 0.18mm ² or more								
Weight		Approx. 85g								

I/O CIRCUIT AND WIRING DIAGRAMS

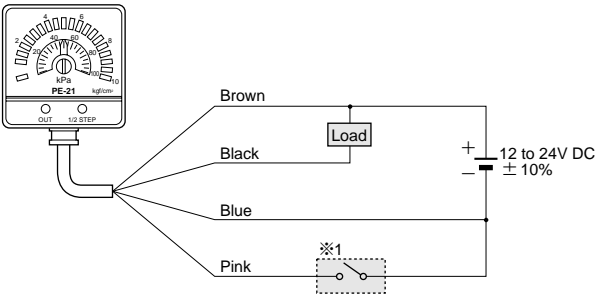
NPN output type

I/O circuit diagram



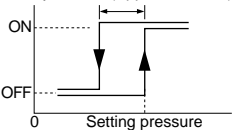
Symbol . . . D : Reverse polarity protection diode
Zd : Surge absorption zener diode
Tr : NPN output transistor

Wiring diagram



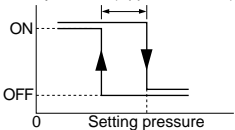
※1 : Logical output operation by control input

① Connect to +V or Open
Hysteresis (Approx. 5%F.S.)



Low vacuum (Negative pressure) → High vacuum (Negative pressure)
Low pressure (Positive pressure) → High pressure (Positive pressure)

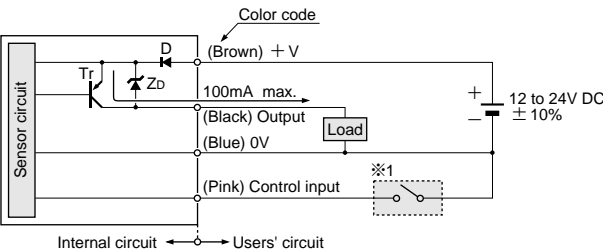
② Connect to 0V
Hysteresis (Approx. 5%F.S.)



Low vacuum (Negative pressure) → High vacuum (Negative pressure)
Low pressure (Positive pressure) → High pressure (Positive pressure)

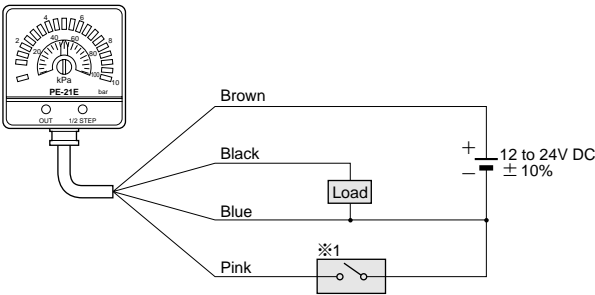
PNP output type

I/O circuit diagram



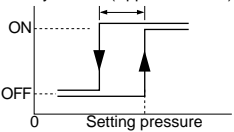
Symbol . . . D : Reverse polarity protection diode
Zd : Surge absorption zener diode
Tr : PNP output transistor

Wiring diagram



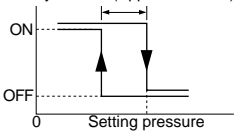
※1 : Logical output operation by control input

① Connect to +V or Open
Hysteresis (Approx. 5%F.S.)



Low vacuum (Negative pressure) → High vacuum (Negative pressure)
Low pressure (Positive pressure) → High pressure (Positive pressure)


② Connect to 0V
Hysteresis (Approx. 5%F.S.)



Low vacuum (Negative pressure) → High vacuum (Negative pressure)
Low pressure (Positive pressure) → High pressure (Positive pressure)

PE

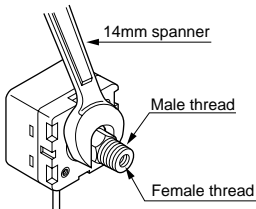
PRECAUTIONS FOR PROPER USE



- This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.
- The **PE** series can accept only non-corrosive gases. Do not use it with liquid or corrosive gas.

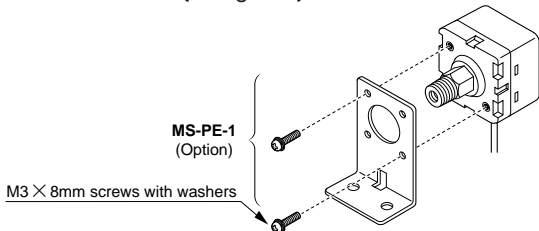
Piping

- To mount a joint on the sensor pressure port, engage a spanner 14mm in size on the hexagonal section of the port and fix the joint securely.
(Do not apply a spanner)
on the enclosure.
- The tightening torque should be 20N·m {204kgf·cm} or less with the male thread (R1/4, NPT1/4) and 2N·m {20.4kgf·cm} or less with the female thread (M5, 10-32 UNF).
- Wind a sealing tape around the outer male thread not to leak the air.
- With G1/8 thread of the **PE-□E**, use a commercial gasket (for G1/8).



Mounting

- With the optional mounting bracket, the tightening torque should be 0.5N·m {5.1kgf·cm} or less.



Error indication

- When the sensor reveals the LED indications as the right figure, the excess current flows through the circuit. In such case, turn power off and check a connected load.
- (*1) : The right figure represents the negative pressure type. The scale of the positive type is reverse to it.

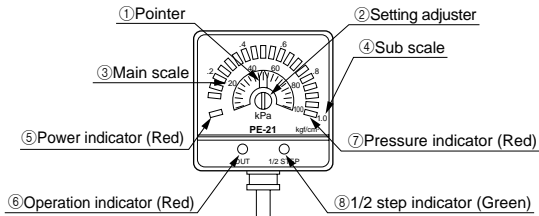


Wiring

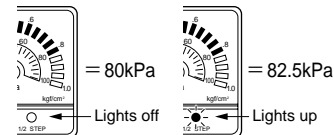
- Do not supply power while wiring.
- Verify that supply voltage ripple is within the rating.
- With a commercial switching regulator, ground the F.G. terminal.
- Where some device generating noise such as a switching regulator or an inverter motor is placed around the sensor, ground the F.G. terminal.
- Do not run the sensor cable along any high-voltage or power cable in parallel or in a same raceway. It may cause a malfunction by induction.

Adjustment

• Designation and function



(*1) : The above figure represents the positive pressure type (100kPa). The scale of the negative pressure type is reverse to it.

	Designation	Function
①	Pointer (*1)	Rotate the adjuster, and the pointer turns around. The indicated value by the pointer represents the threshold level.
②	Setting adjuster	Setting the threshold level Negative pressure type The more counterclockwise, the higher vacuum level is set. Positive pressure type The more clockwise, the higher positive level set.
③	Main scale	"Pa" unit scale PE-20□, PE-21□ : kPa PE-22□ : MPa
④	Sub scale	The scale does not completely coincide with the LED bar display. Use it as an approximate index. Respective unit is; PE-20 : cmHg PE-□N : psi PE-21, PE-22 : kgf/cm ² PE-□E : bar
⑤	Power indicator (Red)	Lights up while the power is supplied.
⑥	Operation indicator (Red)	Lights up when the output is activated.
⑦	Pressure indicator (Red)	Shows the applied pressure level.
⑧	1/2 step indicator (Green)	This indicator reveals half a step. 

(*1) : In case that the pointed position and pressure indication at the setting pointer may shift, use the setting pointer as a guide.

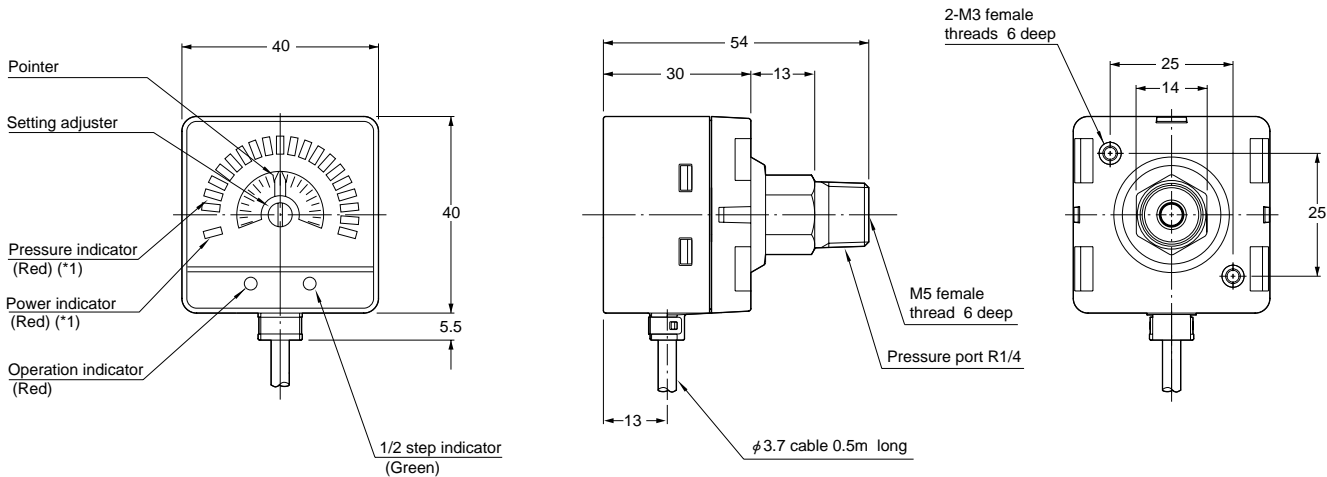
Others

- Do not insert any wire or needle into the pressure port. If the diaphragm inside is damaged, the sensor can not work properly.
- Keep the applied pressure within the given range.
- The transient time duration is 50ms after power-up.

DIMENSIONS (Unit : mm)

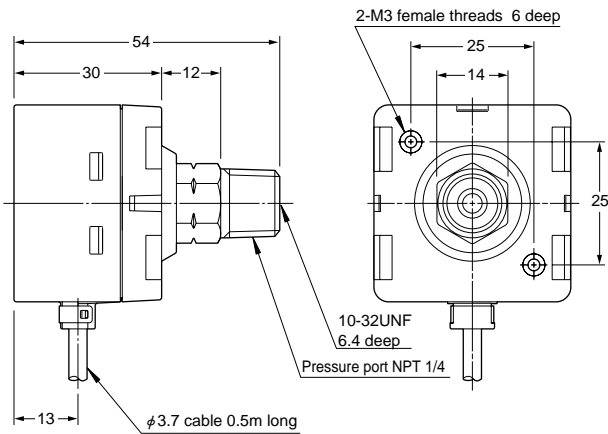
PE-□ Sensor

Asian (PE-□)



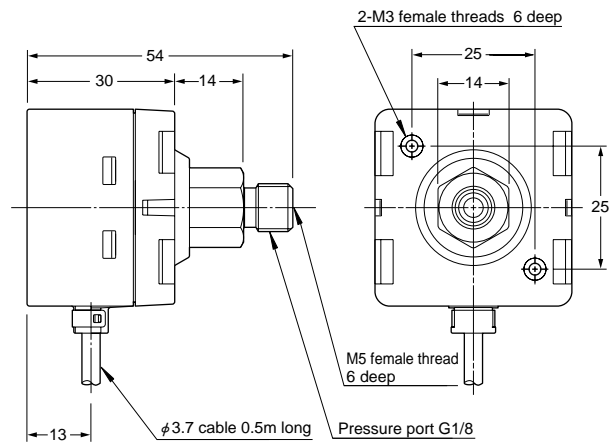
(*1) : The figure illustrates the dimensions of PE-21 (positive pressure).
On the negative pressure, the scale direction is reverse to the positive pressure scale.

North American (PE-□N)



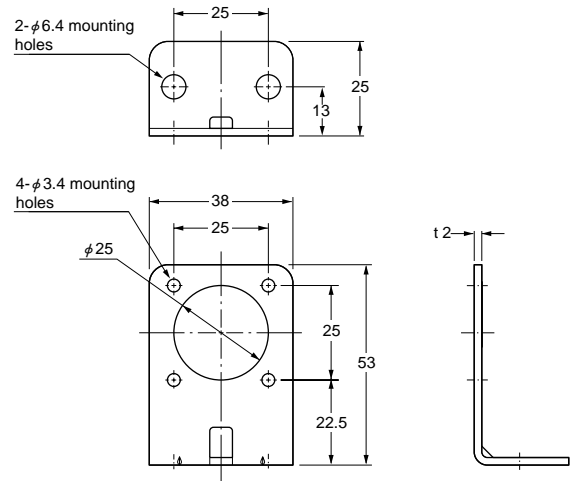
(*1) : The front figure is omitted because of the same dimensions as the Asian type.

European (PE-□E)



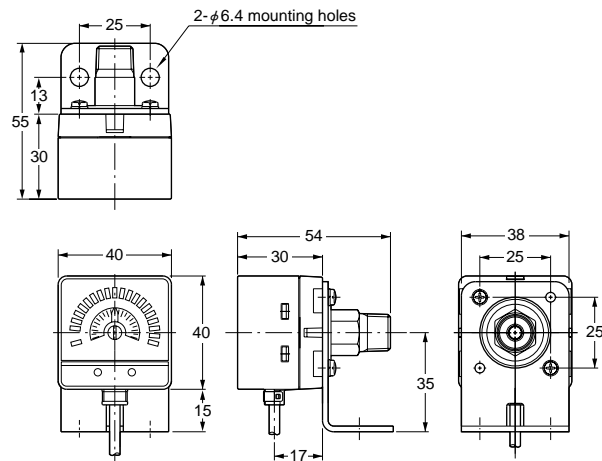
(*1) : The front figure is omitted because of the same dimensions as the Asian type.

MS-PE-1 Sensor mounting bracket



Material : SPCC
Two M3 × 8mm screws with washers are attached.

Assembled dimensions
Mounting drawing with PE-2□



PE

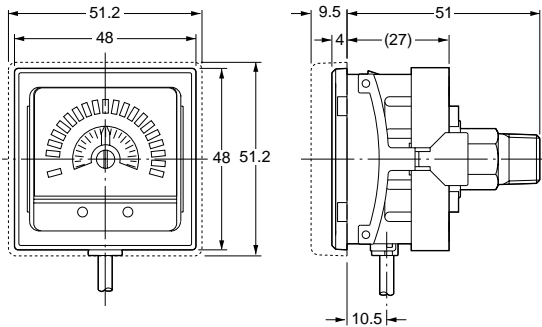
DIMENSIONS (Unit : mm)


MS-PE-2
MS-PE-3

Panel mounting bracket and Front protective cover (Option)

Assembled dimensions

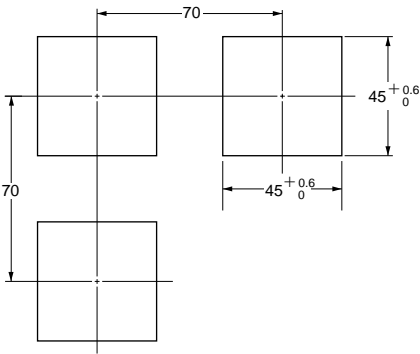
Mounting drawing with PE-2



The front protective cover is illustrated in  area.

Material : Polycarbonate (Front protective cover)
Nylon Polyacetal (Panel mounting bracket)

Panel cut-out dimensions



(*1) : Thickness of the panel should be 1 to 3.2 mm.