

Electronic pressure sensor with digital display

# PPG-D Series



## Features

- Pressure range: Compound pressure (-100.0 to 100.0 kPa)  
Vacuum pressure (0.0 to -101.3 kPa)  
Positive pressure (0.000 to 1.000 MPa)
- 2-color display
- Copy function
- Switch output 2 points, analog output 1 point (1 to 5 V or 4 to 20 mA)
- Hysteresis setting possible
- Pressure display accuracy:  $\pm 2\%F.S.\pm 1$  digit
- Pressure unit can be switched \*1: kPa, MPa, kgf/cm<sup>2</sup>, bar, psi, inHg
- Degree of protection: IP65

### 2-color display (Green/red)

The display color can be set to green or red, allowing the pressure state to be confirmed at a glance.



|     | 500   | 500   | 000   | red |
|-----|-------|-------|-------|-----|
| ON  | Green | Red   | Green | Red |
| OFF | Red   | Green | Green | Red |

### Dust-proof/waterproof performance

Degree of protection: IP65



### Easy installation

**Wiring** The cables are connectors, making pressure switch mounting possible after electric wiring.



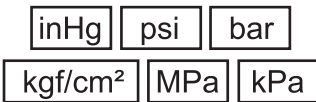
**Piping** Select from male and female threads.



\*2: Environment inspection is only available for "RoHS certificate" and "REACH certificate". Parts level detailed data is not supported.

### International compliance \*1

The pressure unit can be changed.



\*1: Supported when the model No. ends in "2".



### Copy function

Ideal for reducing work processes and preventing misoperation.

Setting master device



Setting copy device



## Specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

| Item                        |                                             |           | PPG-D-P-□-□<br>(Positive pressure)                                                                                                        | PPG-D-V-□-□<br>(Vacuum pressure)                      | PPG-D-R-□-□<br>(Compound pressure)                      |
|-----------------------------|---------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|
| Rated pressure              |                                             |           | 0.000 (≈0 psi, 0 bar) to 1.000 MPa (≈145 psi, 10 bar)                                                                                     | 0.0 (≈0 psi, 0 bar) to -101.3 kPa (≈-15 psi, -1 bar)  | -100.0 (≈-14 psi, -1 bar) to 100.0 kPa (≈14 psi, 1 bar) |
| Set pressure                |                                             |           | -0.100 (≈-14 psi, -1 bar) to 1.000 MPa (≈145 psi, 10 bar)                                                                                 | 10.0 (≈2 psi, 1 bar) to -101.3 kPa (≈-15 psi, -1 bar) | -101.0 (≈-14 psi, -1 bar) to 101.0 kPa (≈14 psi, 1 bar) |
| Proof pressure              |                                             |           | 1.5 MPa (≈217 psi, 15 bar)                                                                                                                | 300 kPa (≈43 psi, 3 bar)                              |                                                         |
| Applicable fluids           |                                             |           | Clean air, non-corrosive/non-combustible gas                                                                                              |                                                       |                                                         |
| Display unit                | kPa                                         |           | —                                                                                                                                         | 0.1                                                   |                                                         |
|                             | MPa                                         |           | 0.001                                                                                                                                     | —                                                     |                                                         |
|                             | kgf/cm²                                     |           | 0.01                                                                                                                                      | 0.001                                                 |                                                         |
|                             | bar                                         |           | 0.01                                                                                                                                      | 0.001                                                 |                                                         |
|                             | psi                                         |           | 0.1                                                                                                                                       | 0.01                                                  |                                                         |
|                             | inHg                                        |           | —                                                                                                                                         | 0.1                                                   |                                                         |
| Power supply voltage        |                                             |           | 12 to 24 VDC ±10%, ripple (P-P) 10% or less or Class 2                                                                                    |                                                       |                                                         |
| Current consumption         |                                             |           | 40 mA or less (no load)                                                                                                                   |                                                       |                                                         |
| Switch output               | Output                                      |           | NPN or PNP transistor, open collector 2 points                                                                                            |                                                       |                                                         |
|                             | Max. load current                           |           | 125 mA                                                                                                                                    |                                                       |                                                         |
|                             | Max. power supply voltage                   |           | NPN output: 30 VDC, PNP output: 24 VDC                                                                                                    |                                                       |                                                         |
|                             | Internal voltage drop                       |           | 1.5 V or less                                                                                                                             |                                                       |                                                         |
|                             | Response time                               |           | 2.5 ms or less<br>(Chattering prevention function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms, and 1500 ms are selectable)                    |                                                       |                                                         |
|                             | Switch output load short-circuit protection |           | Yes                                                                                                                                       |                                                       |                                                         |
| Analog output<br>*2, *3     | Voltage output                              | Voltage   | 1 to 5 V (±2.5%)                                                                                                                          |                                                       |                                                         |
|                             |                                             | Impedance | Approx. 1 kΩ                                                                                                                              |                                                       |                                                         |
|                             | Current output                              | Current   | 4 to 20 mA (±2.5%)                                                                                                                        |                                                       |                                                         |
|                             |                                             | Impedance | Max. load impedance: 250 Ω (12 VDC)<br>600 Ω (24 VDC)<br>Min. load impedance: 50 Ω                                                        |                                                       |                                                         |
|                             | Linearity                                   |           | ±1% F.S.                                                                                                                                  |                                                       |                                                         |
| Display                     | LCD display                                 |           | 3½-digit, 7 segment (Red/Green)                                                                                                           |                                                       |                                                         |
|                             | Switch ON indicator lamp                    |           | Orange (1, 2 indicator lamps) OUT1 OUT2                                                                                                   |                                                       |                                                         |
|                             | Update time                                 |           | Approx. 0.2 seconds                                                                                                                       |                                                       |                                                         |
|                             | Display accuracy                            |           | ±2% F.S. ±1 digit (Reference temperature: 25 ±3°C)                                                                                        |                                                       |                                                         |
|                             | Repeatability (switch output)               |           | ±0.2% F.S. ±1 digit                                                                                                                       |                                                       |                                                         |
| Environment conditions      | Degree of protection                        |           | IP65                                                                                                                                      |                                                       |                                                         |
|                             | Operating ambient temperature               |           | 0 (32°F) to 50°C (122°F)                                                                                                                  |                                                       |                                                         |
|                             | Storage ambient temperature                 |           | -10 (14°F) to 60 °C (140°F) (no condensation or freezing)                                                                                 |                                                       |                                                         |
|                             | Ambient humidity                            |           | 35 to 85% RH (no condensation)                                                                                                            |                                                       |                                                         |
|                             | Withstand voltage                           |           | 1000 VAC, 1 minute (between the case and lead wire)                                                                                       |                                                       |                                                         |
|                             | Insulation resistance                       |           | 50 MΩ (500 VDC, between the case and lead wire)                                                                                           |                                                       |                                                         |
|                             | Vibration resistance                        |           | Compound amplitude 1.5 mm, 10 G, 10 Hz - 55 Hz - 10 Hz per minute, 2 hours each in X, Y, Z directions                                     |                                                       |                                                         |
|                             | Shock resistance                            |           | 100 m/s² (10 G), 3 times each in X, Y, Z directions                                                                                       |                                                       |                                                         |
| Temperature characteristics |                                             |           | ±2% F.S. (25°C (77°F) Reference) temperature range 0 (32°F) to 50 °C (122°F)                                                              |                                                       |                                                         |
| Port size                   |                                             |           | 6BM: R1/8", M5 6NM: NPT1/8", #10-32UNF 6GM: G1/8", M5<br>6B: Rc1/8 (female thread), 6N: NPT 1/8 (female thread), 6G: G1/8 (female thread) |                                                       |                                                         |
| Lead wire                   |                                             |           | Oil resistant cable ø4, 5-conductor (0.15mm2, insulator outer diameter ø0.95 mm) 2 m                                                      |                                                       |                                                         |
| Weight                      |                                             |           | Male thread: approx. 86 g (including lead wire 2 m)/Female thread: approx. 115 g (including lead wire 2 m)                                |                                                       |                                                         |

\*1: The hysteresis value of one-point set mode and window comparator mode can be adjusted to between 1 and 8 digits.

\*2: Analog current output cannot be selected together with analog voltage output.

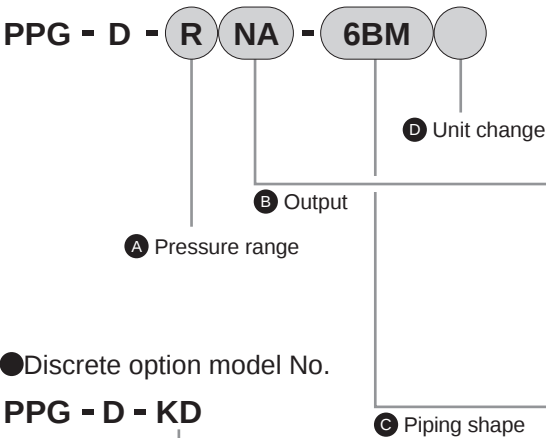
\*3: Analog voltage output cannot be selected together with analog current output.

F.R.L.  
F.R.  
F (Filtr)  
R (Reg)  
L (Lub)  
Drain  
Separ  
Mech  
Press SW  
Res press  
exh valve  
SlowStart  
Anti-bac/Bac-  
remove Filtr  
Film  
Resist FR  
Oil-ProhR  
Med  
Press FR  
No Cu/  
PTFE FRL  
Outdrs FRL  
Adapter  
Joiner  
Press  
Gauge  
CompFRL  
LgFRL  
PrecsR  
VacF/R  
Clean FR  
ElecPneuR  
AirBoost  
Speed Ctrl  
Silncr  
CheckV/  
other  
Fit/Tube  
Nozzle  
Air Unit  
PrecsCompn  
Electro  
Press SW  
ContactSW  
AirSens  
PresSW  
Cool  
Air Flo  
Sens/Ctrl  
WaterRISens  
TotAirSys  
(Total Air)  
TotAirSys  
(Gamma)  
Gas  
generator  
RefrDry  
DesicDry  
HiPolymDry  
MainFiltr  
Dischrg  
etc  
Ending

PPG-D Series

F.R.L.  
F.R.  
F (Filtr)  
R (Reg)  
L (Lub)  
Drain  
Separ  
Mech  
Press SW  
Res press  
exh valve  
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PTFE FRL  
Outdrs FRL  
Adapter  
Joiner  
Press  
Gauge  
CompFRL  
LgFRL  
PrecsR  
VacF/R  
Clean FR  
ElecPneuR  
AirBoost  
Speed Ctrl  
Silncr  
CheckV/  
other  
Fit/Tube  
Nozzle  
Air Unit  
PrecsCompn  
Electro  
Press SW  
ContactSW  
AirSens  
PresSW  
Cool  
Air Flo  
Sens/Ctrl  
WaterRtSens  
TotAirSys  
(Total Air)  
TotAirSys  
(Gamma)  
Gas  
generator  
RefrDry  
DesicDry  
HiPolymDry  
MainFiltr  
Dischrg  
etc  
Ending

How to order



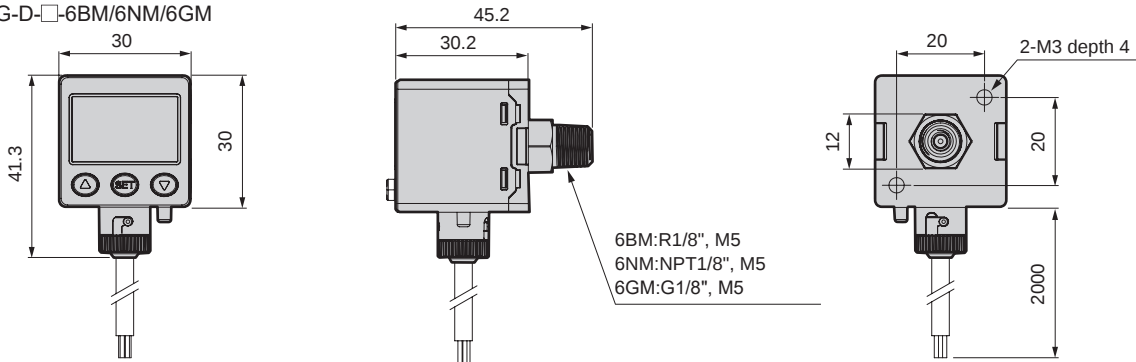
| Code  | Applicable C Piping shape | Item                                                                     |
|-------|---------------------------|--------------------------------------------------------------------------|
| KD    | 6BM/6NM/6GM               | Parallel mounting bracket (for male thread) (mounting screws included)   |
| KL    |                           | L-shaped mounting bracket (for male thread) (mounting screws included)   |
| KDA   | 6B/6N/6G                  | Parallel mounting bracket (for female thread) (mounting screws included) |
| KLA   |                           | L-shaped mounting bracket (for female thread) (mounting screws included) |
| KHS   | 6BM/6NM/6GM               | Panel adapter                                                            |
| KHSCB | 6B/6N/6G                  | Panel adapter + Front protective cover                                   |

| Code             | Item                                                                            |
|------------------|---------------------------------------------------------------------------------|
| A Pressure range |                                                                                 |
| R                | Compound pressure (-100 to 100 kPa)                                             |
| V                | Vacuum pressure (0 to -101.3 kPa)                                               |
| P                | Positive pressure (0.000 to 1.000 MPa)                                          |
| B Output         |                                                                                 |
| NV               | NPN transistor open collector 2 points + analog (voltage) output (1 to 5 V)     |
| NA               | NPN transistor open collector 2 points + analog (current) output (4 to 20 mA)   |
| NC               | NPN transistor open collector 2 points + copy function                          |
| PV               | PNP transistor open collector 2 points + analog (voltage) output (1 to 5 V)     |
| PA               | PNP transistor open collector 2 points + analog (current) output (4 to 20 mA)   |
| PC               | PNP transistor, open collector 2 points + copy function                         |
| C Piping shape   |                                                                                 |
| 6BM              | R1/8" (male thread), M5                                                         |
| 6NM              | NPT1/8", #10-32UNF                                                              |
| 6GM              | G1/8" (male thread), M5                                                         |
| 6B               | Rc1/8 (female thread)                                                           |
| 6N               | NPT 1/8 (female thread)                                                         |
| 6G               | G1/8 (female thread)                                                            |
| D Unit change    |                                                                                 |
| Blank            | SI unit fixed (kPa/MPa) Instruction manual: Japanese, English                   |
| 2                | With unit switching function Instruction manual: Traditional Chinese, English*1 |

\*1: In compliance with the new Measurement Act, it cannot be used in Japan.

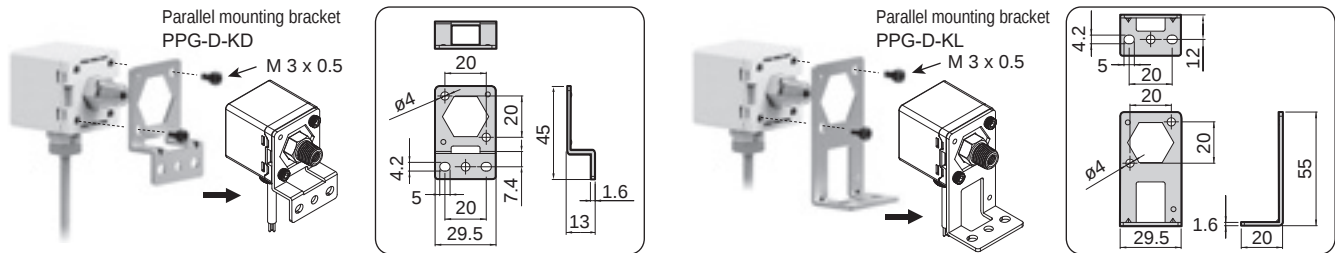
Dimensions (piping shape male thread)

Body PPG-D-□-6BM/6NM/6GM



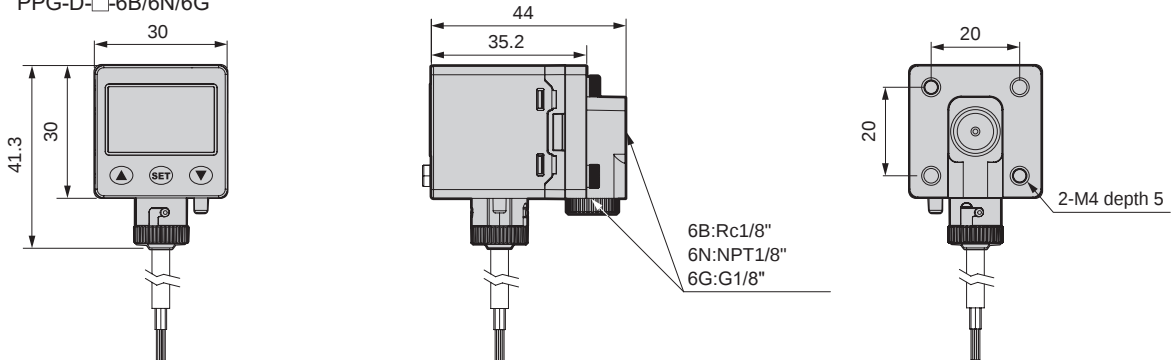
Parallel mounting bracket (mounting screws included)

L-shaped mounting bracket (mounting screws included)

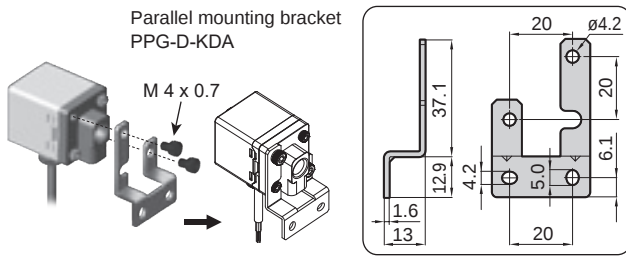


Dimensions (piping shape female thread)

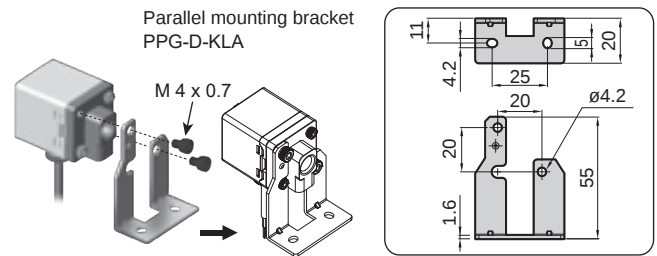
Body PPG-D-□-6B/6N/6G



### ●Parallel mounting bracket (mounting screws included)

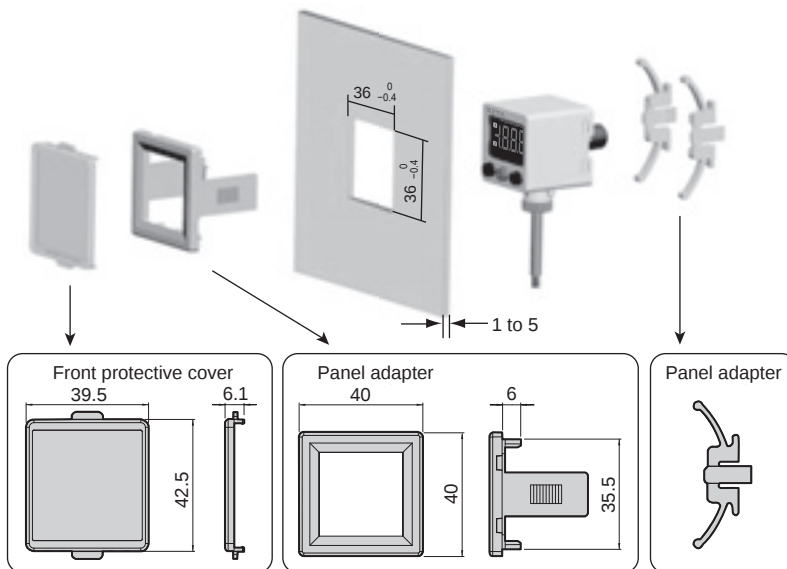


### ●L-shaped mounting bracket (mounting screws included)

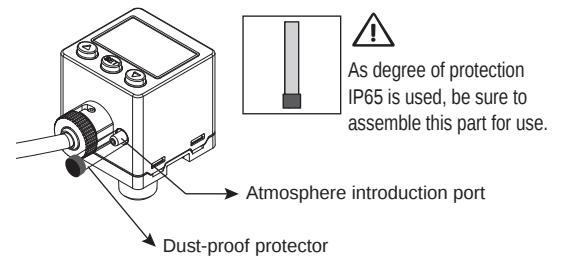


## Common option Dimensions

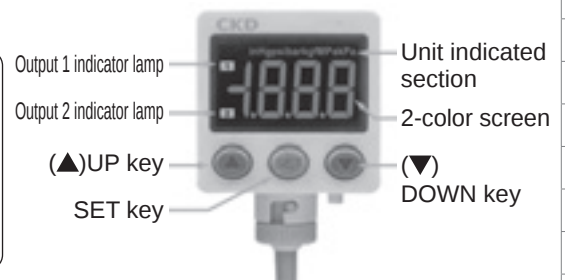
### ●Panel adapter + Front protective cover PPG-D-KHS, PPG-D-KHSCB



### ●Protector (IP65)

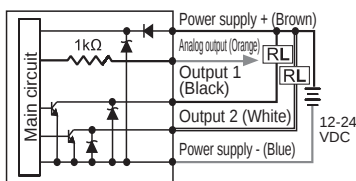


## Display description

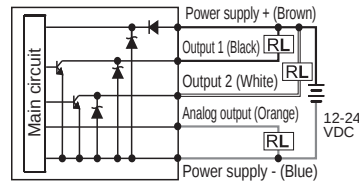


## Internal circuit / connection method

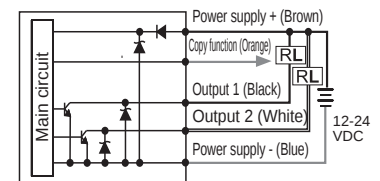
### ●PPG-D-□NV 2NPN + Analog output (1 to 5 V)



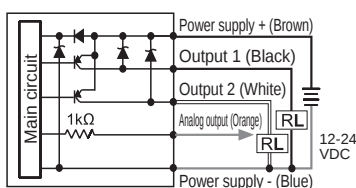
### ●PPG-D-□NA 2NPN + Analog output (4 to 20 mA)



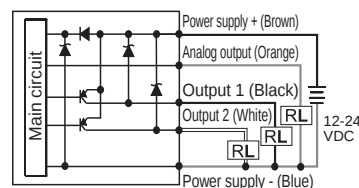
### ●PPG-D-□NC 2NPN + Copy function



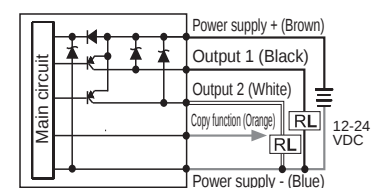
### ●PPG-D-□PV 2PNP + Analog output (1 to 5 V)



### ●PPG-D-□PA 2PNP + Analog output (4 to 20 mA)



### ●PPG-D-□PC 2PNP + copy function



|                            |
|----------------------------|
| F.R.L.                     |
| F.R.                       |
| F (Filtr)                  |
| R (Reg)                    |
| L (Lub)                    |
| Drain Separ                |
| Mech Press SW              |
| Res press exh valve        |
| SlowStart                  |
| Anti-bac/Bac-remove Filtr  |
| Film Resist FR             |
| Oil-ProhR                  |
| Med Press FR               |
| No Cu/ PTFE FRL            |
| Outdrrs FRL                |
| Adapter Joiner Press Gauge |
| CompFRL                    |
| LgFRL                      |
| PrecsR                     |
| VacF/R                     |
| Clean FR                   |
| ElecPneuR                  |
| AirBoost                   |
| Speed Ctrl                 |
| Silncr                     |
| CheckV/ other              |
| Fit/Tube                   |
| Nozzle                     |
| Air Unit                   |
| PrecsCompn                 |
| Electro Press SW           |
| ContactSW                  |
| AirSens                    |
| PresSW Cool                |
| Air Flo Sens/Ctrl          |
| WaterRiSens                |
| TotAirSys (Total Air)      |
| TotAirSys (Gamma)          |
| Gas generator              |
| RefrDry                    |
| DesicDry                   |
| HiPolymDry                 |
| MainFiltr                  |
| Dischrg etc                |
| Ending                     |