INSTRUCTION MANUAL

Electronic Pressure Sensor
PPG-C Series

Read this instruction manual carefully before using this product.
If the using method is mistaken, it may damage the function of the product.
Retain this instruction manual with the product for further consultation whenever necessary.

⚠ CAUTION:

- This product is designed for air and compressed dry air and N 2 ; do not use it with corrosive or combustible fluids.
- Electric shock will be caused if wiring connections (barecharged parts) are touched. Be sure to turn the power off before conducting wiring work.
- Do not touch charged parts with wet hands.

SPECIFICATIONS

		PPG-C-R□-□ (Compound Pressure)	PPG-C-V□-□ (Vacuum Pressure)	PPG-C-P□-□ (Positive Pressure)
Rated pressure range		-100.0 ~ 100.0kPa	0.0 ~ -101.3kPa	0.000 ~ 1.000MPa
Set pressure range		-100.0 ~ 100.0kPa	10.0 ~ -101.3kPa	-0.100 ~ 1.000MPa
Withstand pressure		300 kPa		1.5 MPa
Fluid		Air, Non-corrosive/Non-flammable gases		
Set pressure resolution	kPa	0.1		—
	MPa	—		0.001
	kgf/cm² *	0.001		0.01
	bar *	0.001		0.01
	psi *	0.01		0.1
	inHg *	0.1		—
	mmHg *	1		—
	mmH_2O *	0.1		—
Power supply voltage		12 ~ 24V DC ±10%, Ripple (P-P) ≤ 10%		
Current consumption		≤ 55mA		
Switch output		NPN : open collector 2 outputs Max. load current : 80mA Max. supply voltage : 30V DC Residual voltage : ≤ 1V		PNP : open collector 2 outputs Max. load current : 80mA Max. supply voltage : 24V DC Residual voltage : ≤ 1V
Repeatability		±0.2% F.S. ±1digit		
Hysteresis	Hysteresis mode	Adjustable		
	Window comparator mode	Fixed (3 digits)		
Response time		≤2.5ms (chattering-proof function: 24ms, 192ms and 768ms selectable)		
Output short circuit protection		Yes		
Display		3 ½ digital, 7 segment LED display (Red) (Sampling rate: 5 times/sec.)		
Indicator accuracy		±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Indicator		Green Indicator 1 : OUT1 & Red Indicator 2 : OUT2		
Analog output *(Only type PPG-C-□NA-□, PPG-C-□PA-□)		Output voltage: 1 ~ 5V ±5% F.S. (within rated pressure range) Linearity: ±1% F.S.		Output voltage: 1 ~ 5V ±2.5% F.S. (within rated pressure range) Linearity: ±1% F.S.
Environment	Enclosure	IP65		
	Ambient temp. range	Operation: 0 ~ 50°C, Storage: -20 ~ 60°C (No condensation or freezing)		
	Ambient humidity range	Operation/Storage: 35 ~ 85% RH (No condensation)		
	Withstand voltage	1000V AC in 1-min (between case and lead wire)		
	Insulation resistance	≥ 50MΩ (at 500V DC, between case and lead wire)		
	Vibration	Total amplitude 1.5mm or 10G, 10Hz-55Hz-10Hz scan for 1 minute, 2 hours each direction of X、Y and Z		
	Shock	980m/s²(100G), 3 times each in direction of X、Y and Z		
Temperature characteristic		±2% F.S. of detected pressure (25°C) at temp. (Range of 0~50°C)		
Port size		6B:Rc1/8"; 6N:NPT1/8"; 6G: G1/8"		
Lead wire		Ø4 Oil-resistance cable (PVC) - 26 AWG (0.15 mm²) - 5 cores		
Weight		Approx. 105g (with 2 meter lead wire), Approx. 71g (with M8, 4 Pin male connector)		

* : If ⑤ in the model number is blank, the unit cannot be changed.

ORDERING INFORMATION

① ② ③ ④ ⑤
P P G - C - R N A - 6 B C □

① Pressure Range	
R	Compound pressure (-100 ~ 100kPa)
V	Vacuum pressure (0 ~ -101.3kPa)
P	Positive pressure (-0.100 ~ 1.000MPa)

② Output Specifications	
NA	2 NPN output & 1 Analog output
N	2 NPN output
PA	2 PNP output & 1 Analog output
P	2 PNP output

③ Pressure Port	
6B	Rc1/8
6N	NPT1/8
6G	G1/8

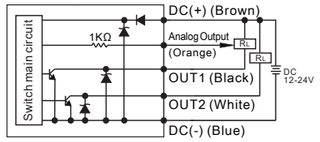
④ Cable Length/Connector	
Blank	With 2 meter cable
C	With M8, 4 Pin male connector

Refer to the instruction manual in your language supplied with this English document for ⑤.

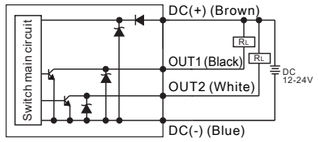
Optional Parts	
PPG-C-C2	With M8, 4Pin female connector
PPG-C-KL	Mounting bracket (BT-1+BT-2)
PPG-C-KHS	Panel adapter (PA-A)
PPG-C-KHSCB	Panel adapter + Front protective lid (PA-A + FPC-1)

OUTPUT CIRCUIT WIRING DIAGRAMS

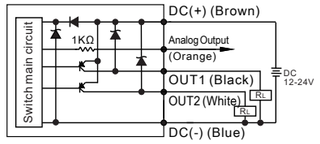
PPG-C-□NA-□
NPN output & Analog output



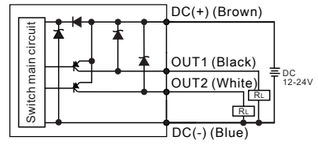
PPG-C-□N-□
NPN output



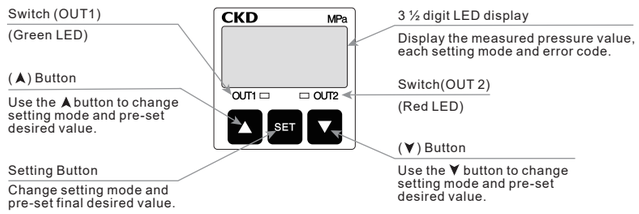
PPG-C-□PA-□
PNP output & Analog output



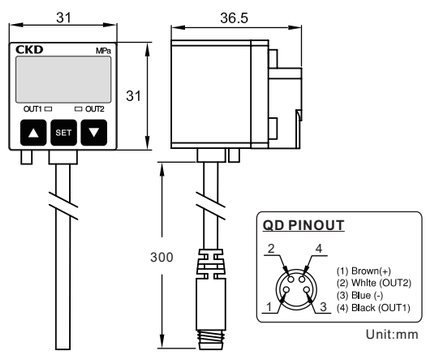
PPG-C-□P-□
PNP output



PANEL DESCRIPTION

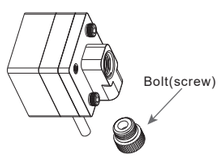


DIMENSIONS



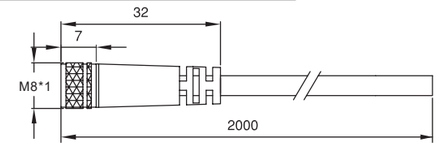
INSTALLATION

1. This product has two inlet pressure ports, select the one most convenient for installation.
2. Please plug the unused inlet port with supplied port plug. Use seal tape to prevent pressure leak.

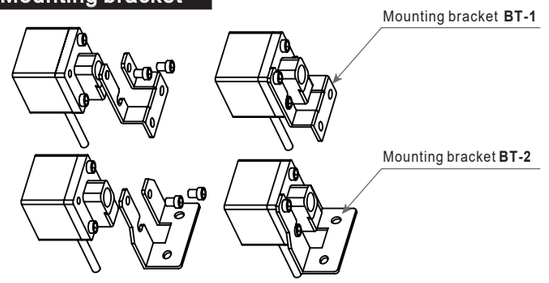


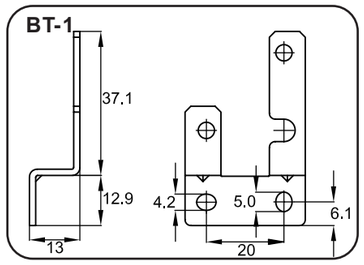
TYPE OF SPARE PARTS / DIMENSION GRAPH

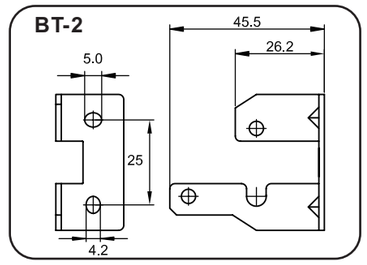
① M8 Female connector



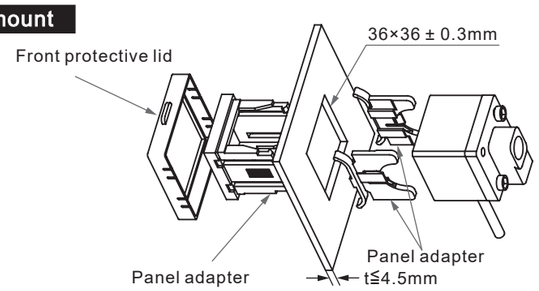
② Mounting bracket

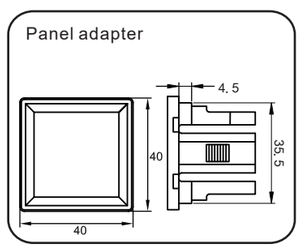


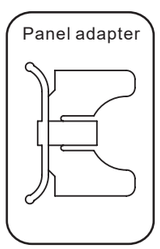


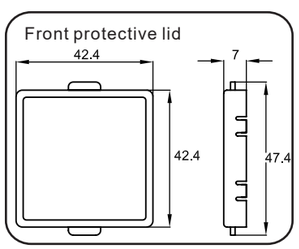


③ Panel mount

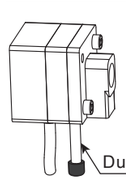


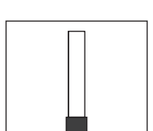






④ Accessory





⚠ Caution:
This device must be installed to maintain IP 65 (Dust and splash proof) enclosure rating.

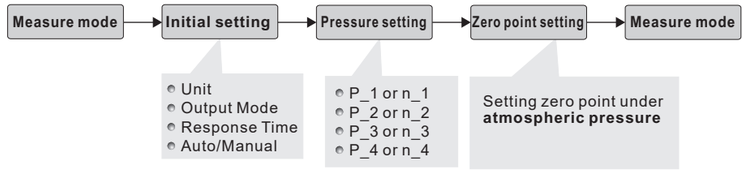
Unit:mm

Concerning the environment test, we only can provide the material of 「RoHS certificate」、「REACH certificate」、and cannot provide the detailed data for parts level.

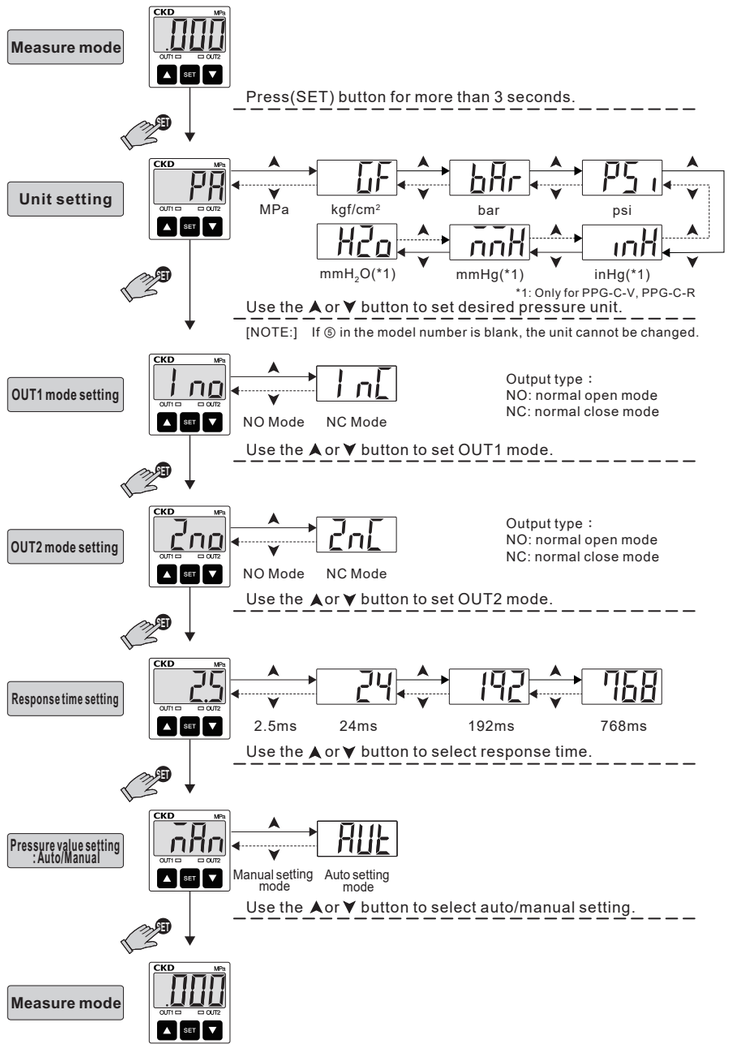
www.ckd.sh.cn
www.ckdtaiwan.com.tw
www.ckdkorea.co.kr
www.ckd.co.jp

ELECTRONIC PRESSURE SENSOR

SETTING STEPS

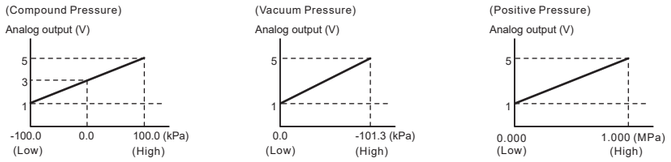


INITIAL SETTING MODE



ANALOG OUTPUT

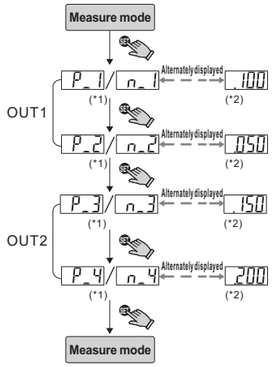
Analog Output range 1 to 5V, proportional to the pressure range.



PRESSURE SETTING MODE

Select auto/manual setting mode during initial set-up

Manual setting mode



【NOTE :】

*1. The LED shows (P_*) at normal open mode and (n_*) at normal close mode.

Pressure setting value is shown normally and will not lead to pressure sensor pause or stop working.

*2. Change pressure value :

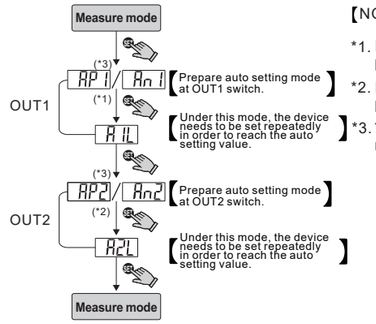
Press ▲ button, each press will increase one digit.

Keep pressing the ▲ button, the pressure value will keep increasing.

Press ▼ button, each press will decrease one digit.

Keep pressing the ▼ button, the pressure value will keep decreasing.

Auto setting mode



【NOTE :】

*1. In case of without need of OUT1 pressure value setting, press▼+▲at the same time to enter (AP2)/(An2).

*2. In case of without need of OUT2 pressure value setting, press▼+▲at the same time to enter measure mode.

3. The LED show「AP」at normal open mode and 「An*」at normal close mode.

【Calculation of Setting value】

A=The max. pressure value under auto setting mode.
B=The min. pressure value under auto setting mode.

$$P1(n1),\ P3(n3) = A - \frac{A-B}{4} \qquad P2(n2),\ P4(n4) = B + \frac{A-B}{4}$$

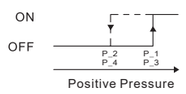
OUTPUT TYPE

Hysteresis Mode : P1(n1)>P2(n2) P3(n3)>P4(n4)

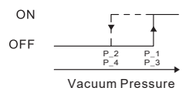
Output hysteresis value can be pre-set.

Normal open mode

Positive/Compound Pressure (PPG-C-P, PPG-C-R)

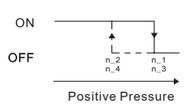


Vacuum Pressure (PPG-C-V)

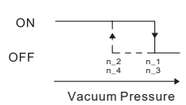


Normal close mode

Positive/Compound Pressure (PPG-C-P, PPG-C-R)



Vacuum Pressure (PPG-C-V)



【NOTE :】

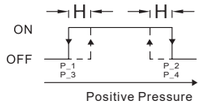
When hysteresis mode setting is within 2 digits, if the input and pre-set pressure is quite near, pressure sensor output might cause chattering.

Window comparator mode : P1(n1)<P2(n2) P3(n3)<P4(n4)

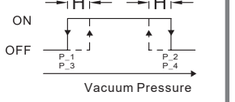
Within pressure setting range, pressure sensor output can be ON or OFF.

Normal open mode

Positive/Compound Pressure (PPG-C-P, PPG-C-R)

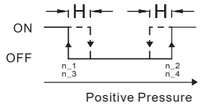


Vacuum Pressure (PPG-C-V)

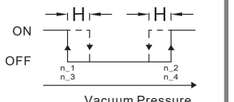


Normal close mode

Positive/Compound Pressure (PPG-C-P, PPG-C-R)



Vacuum Pressure (PPG-C-V)



【NOTE :】

Hysteresis is fixed in 3 digits.
Pressure value level setting: At least 6 digits.

ZERO POINT SETTING / THE MAX. & MIN. DISPLAY MODE

Zero setting:

Press the ▼ + ▲ button at the same time until the "00" is shown.
Release the button to end zero setting.

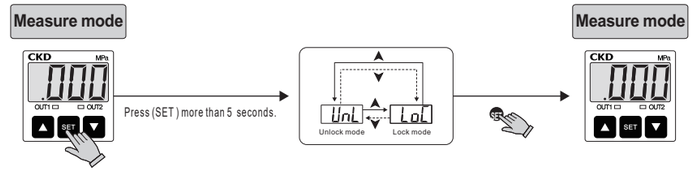
The Max. value display mode:

Press ▲ button 2 seconds to enter the max. value mode, pressure sensor will detect the max. value and keep display.
Press ▲ button 2 seconds to return to measure mode.

The Min. value display mode:

Press ▼ button 2 seconds to enter the min. value mode, pressure sensor will detect the min. value and keep display.
Press ▼ button 2 seconds to return to measure mode.

KEY LOCK / UNLOCK MODE



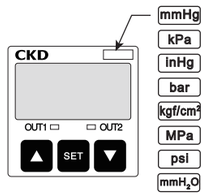
Use▼or▲to select key lock/unlock mode.
Key lock mode can prevent operation mistakes.

ERROR CODE INSTRUCTION

Error Name	Error code	Error instruction	Troubleshooting
Excess load current error	OUT1 Er1	Excess load current of 80 mA	Turn power off and check the cause of overload current or lower the current load under 80 mA, then restart.
	OUT2 Er2		
Residual pressure error	Er3	During zero reset, ambient pressure is over ±3% F.S.	Change input pressure to ambient pressure and perform zero reset again.
Applied pressure error	----	The applied pressure is excess the upper limit of pressure setting.	Adjust the pressure within applied pressure range.
	----	The applied pressure is excess the lower limit of pressure setting.	
System error	Er4	Internal data error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
	Er6	Internal system error	
	Er7	Internal data error	
	Er8	Internal system error	

CHANGE PRESSURE UNIT TAG

When the pressure setting is not kPa or MPa, please remove the pressure unit tag and place the selected tag on the indicated area of the faceplate to assure the pressure unit is not misemployed and that setting error does not occur.



From \ To	Pa	kPa	MPa	kgf/cm²	mmHg	psi	bar	inHg	mmH₂O
1 Pa	1	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002953	0.101968
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953	101.9689
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998	101968.9
1 kgf/cm²	98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979	10000.20
1 mmHg	133.32	0.13332	0.000133	0.0013595	1	0.019336	0.0013332	0.039370	13.5954
1 psi	6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074	703.07
1 bar	100000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998	10196.89
1 inHg	3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1	345.324
1 mmH₂O	9.80665	0.00980	-	0.000099	0.0735578	0.00142	0.000098	0.002895	1

【NOTE :】

- When using a unit mmH_2O, please multiply display value by 100.
- If ⑤ in the model number is blank, the pressure unit tag is not provided because the unit cannot be changed.