High Precision Digital Pressure

P20/25 CE

For your safety, please read the following before using.

① Do not use corrosive or flammable gas or liquid with this product.
② Please use within the operating pressure range. Do not apply pressure beyond recommended maximum pressure, permanent damage to the pressure sensor may occur.
③ Do not drop, hit or allow excessive shock. Even if switch body appears undamaged, internal components may be broken and can cause malfunction.
④ Turn power off before connecting wiring. Wrong wiring or short circuit will damage and/or cause malfunction.
⑤ Do not use in environment containing steam or oil vapor.
⑥ This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.
⑦ Wiring for pressure sensor should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

SPECIFICATIONS

		P20C-□-□ (Compound) / P25C-□-□ (Compound)	P20V-□-□ (Vacuum) / P25V-□-□ (Vacuum)	P20P-□-□ (Positive) / P25P-□-□ (Positive)
Rated pressure range		-100.0 ~ 100.0kPa	0.0 ~ -101.3kPa	0.000 ~ 1.000MPa
Setting 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		—
	mmH₂O	0.1		—
Power supply voltage		12 to 24V DC ±10%, Ripple (P-P) 10% or less		
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(Switch output)		≦±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 selections)		
Output short circuit protection		Yes		
7 segment LED display		3 ½ digit LED display (Sampling rate: 5 times/1sec.)		
Indicator accuracy		≦±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Indicator		OUT1=Green, OUT2=Red		
Analog output *(Only type P20□-01-□ , P20□-03-□) *(Only type P25□-01-□ , P25□-03-□)		Output voltage: 1 to 5V ≦±5% F.S. (within rated pressure range) Linearity: ≦±1% F.S.		Output voltage: 1 to 5V ≦±2.5% F.S. (within rated pressure range) Linearity: ≦±1% F.S.
Environment	Enclosure	P20: IP 40 P25: IP 65		
	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	50Mohm min. (at 500V DC, between case and lead wire)		
	Vibration	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two 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		F1:1/8"PT; F2:1/8"NPT; F3: G1/8"		
Lead wire		Oil-resistance cable(0.15mm²)		
Weight		Approx. 105g(with 2-meter lead wire), Approx. 71g(with M8, 4-pin male connector)		

ORDERING INFORMATION

P 2 0 C – 0 1 – F 1 – □

Model
20 : P20 Series(IP 40)
25 : P25 Series(IP 65)

Pressure Range
C : Compound (-100.0~100.0kPa)
V : Vacuum (0.0~-101.3kPa)
P : Positive (-0.100~1.000MPa)

Output Specifications
01 : 2 NPN output & 1 Analog output
02 : 2 NPN output
03 : 2 PNP output & 1 Analog output
04 : 2 PNP output

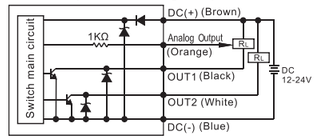
Pressure Port
F1 : 1/8" PT
F2 : 1/8" NPT
F3 : G1/8"

Cable Length/Connector
Blank : With 2 meter cable
QD : With M8, 4 Pin male connector
*(Only type P20/25□-02-□, P20/25□-04-□)

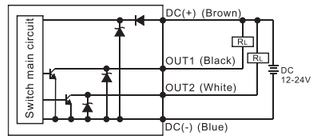
Optional Parts
M84R-W0085-2M : With M8, 4-Pin female connector
BT-1 : Mounting bracket
BT-2 : Mounting bracket
PA-A : Panel adapter
PA-B : Panel adapter + Front protective lid

OUTPUT CIRCUIT WIRING DIAGRAMS

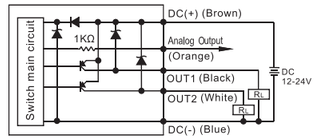
P20/25□- 01-□-□
NPN output & Analog output



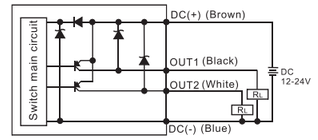
P20/25□- 02-□-□
NPN output



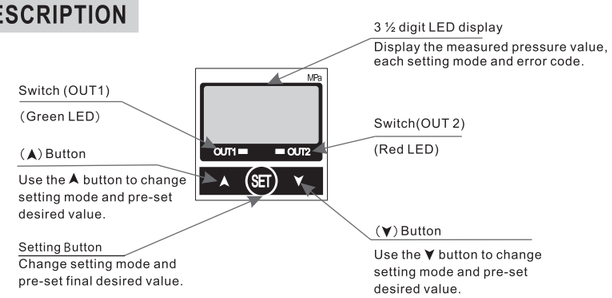
P20/25□- 03-□-□
PNP output & Analog output



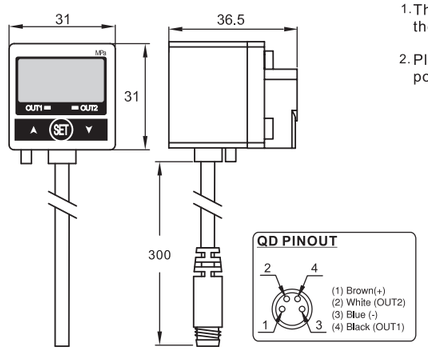
P20/25□- 04-□-□
PNP output



PANEL DESCRIPTION

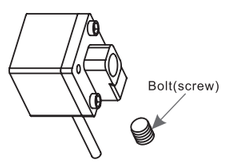


DIMENSIONS



INSTALLATION

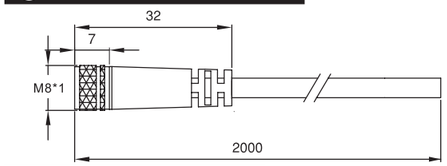
1. This product has two inlet pressure ports, select the one most convenient for installation.
2. Please plug the unused inlet port with supplied port plug. Use seal tape to prevent pressure leak.



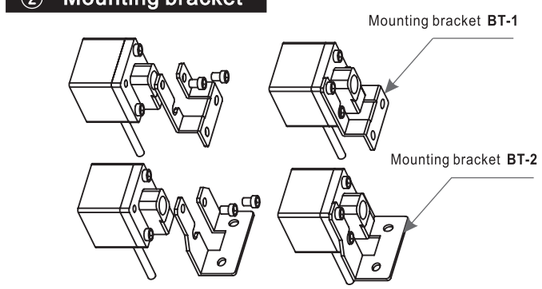
Unit:mm

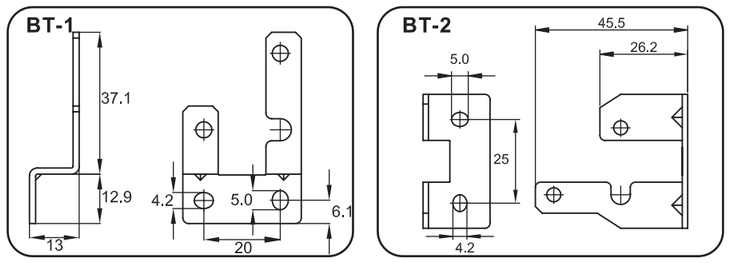
TYPE OF SPARE PARTS / DIMENSION GRAPH

① M8 Female connector

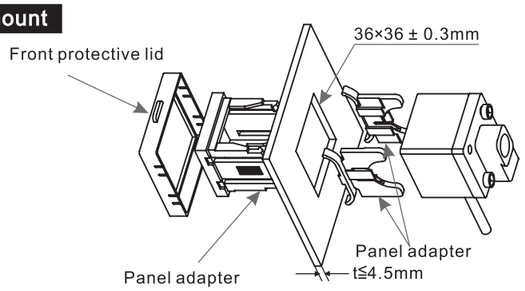


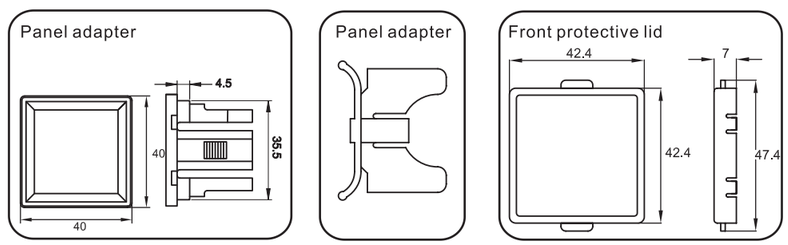
② Mounting bracket



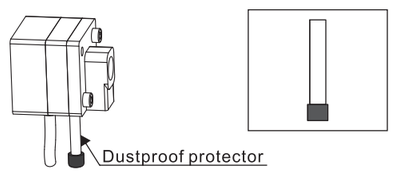


③ Panel mount





④ P25 Accessory



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

Unit:mm

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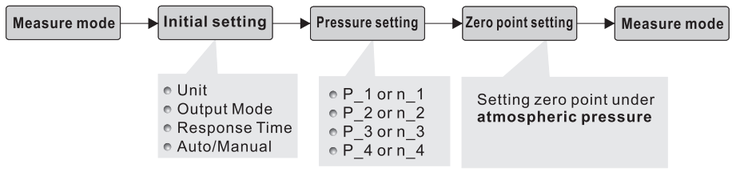
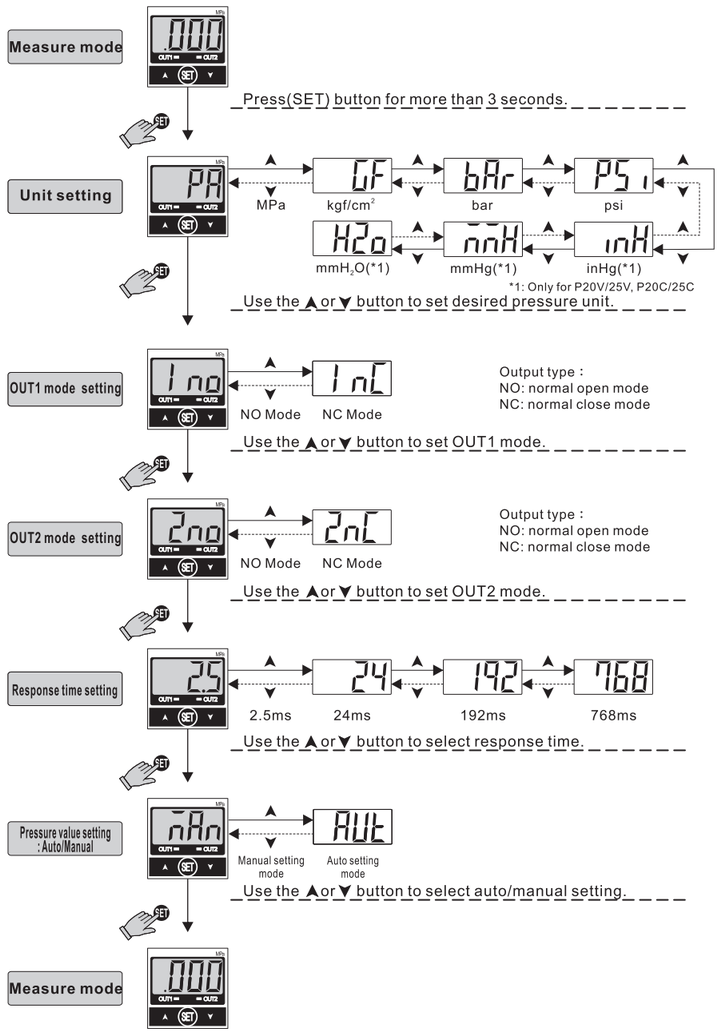
SETTING STEPS

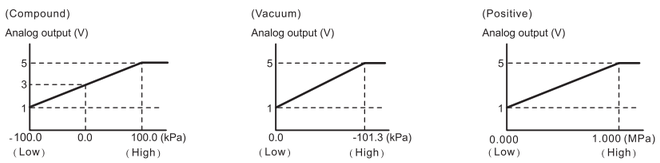


INITIAL SETTING MODE



ANALOG OUTPUT

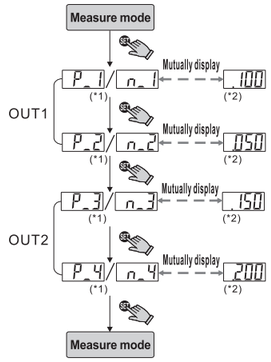
Analog Output range 1 to 5V, proportional to the pressure range.



PRESSURE SETTING MODE

Select auto/manual setting mode during initial set-up

Manual setting mode

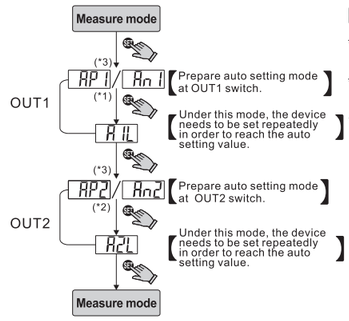


【NOTE :】

*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.

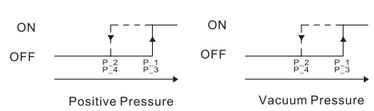
$$P1(n1) \\ P3(n3) = A - \frac{A-B}{4}$$

$$P2(n2) \\ P4(n4) = B + \frac{A-B}{4}$$

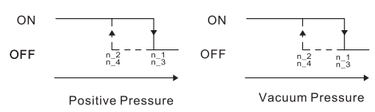
OUTPUT TYPE

Hysteresis Mode : P1(n1)>P2(n2) P3(n3)>P4(n4)
Output hysteresis value can be pre-set.

Normal open mode



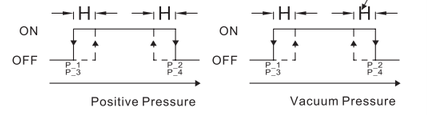
Normal close mode



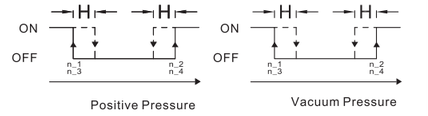
【NOTE :】
When hysteresis mode setting is within 2 digits, if the input and pre-set pressure is quite near, pressure sensor output might cause chattering.

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



Normal close mode



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

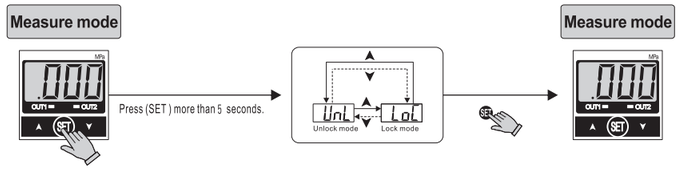
ZERO POINT SETTING / THE MAX. & MIN. DISPLAY MODE

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



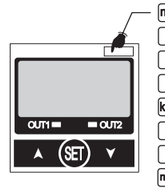
Use▼or▲to select key lock/unlock mode.
Key lock mode can prevent operation mistakes.

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	
		Er1	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.



mmHg
kPa
inHg
bar
kgf/cm²
MPa
psi
mmH₂O

To / From	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 mmH₂O, please multiply display value by 100.