

For your safety, please read the following before using.

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

A. SPECIFICATIONS

TYPE		PSN-45 (Positive)	PSV-45 (Vacuum)	PSC-45 (Compound)
Rated pressure range		0.000~1.000MPa	0.0~101.3kPa	-100.0~100.0kPa
Setting pressure range		-0.100~1.000MPa	10.0~101.3kPa	-101.0~101.0kPa
Withstand pressure		1.5MPa	300kPa	
Fluid		Filtered air, Non-corrosive / Non-flammable gas		
Set pressure resolution	kPa	—	0.1	
	MPa	0.001	—	
	kgf/cm ²	0.01	0.001	
	bar	0.01	0.001	
	psi	0.1	0.01	
	in-Hg	—	0.1	
Power supply voltage		12 to 24V DC ±10%, Ripple (P-P) 10% or less		
Current consumption		≤ 40mA (With no load)		
Switch output	Output type	2 NPN or 2 PNP open collector		
	Max. load current	125 mA		
	Max. supply voltage	30V DC (at NPN output), 24V DC (at PNP output)		
	Residual voltage	≤ 1.5V		
	Response time	≤ 2.5 ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selections)		
Analog output	Output short circuit protection	Yes		
	Voltage output	Voltage	1~5V (±2.5%)	
		Impedance	About 1kΩ	
	Current output	Current	4~20mA (±2.5%)	
		Impedance	Max.Load Impedance: 250Ω at power supply of 12V 600Ω at power supply of 24V Min.Load Impedance: 50Ω	
Display	Linearity	±1% F.S.		
	LCD display	3½ digit, 7segment (red/ green)		
	Switch ON Indicator	Orange (1 & 2 Indicator) OUT1 OUT2		
	Updates time	About 0.2s		
	Indicator accuracy	±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Repeatability(Switch output)		±0.2% F.S. ±1 digit		
Environment	Enclosure	IP65		
	Operation ambient temp. range	0 ~ 50°C		
	Storage ambient temp. range	-10 ~ 60°C (No condensation or freezing)		
	Ambient humidity range	35 ~ 85% RH (No condensation)		
	Withstand voltage	1000V AC in 1-min (between case and lead wire)		
Port size	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, two hours each direction of X, Y and Z		
	Shock	100m/s ² (10G), 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		R:R1/8", M5; NPT:NPT1/8", #10-32UNF; G:G1/8"(BSPP), M5 RC:Rc1/8", NPTC:NPT1/8", GC:G1/8"(BSPP)		
Lead wire		Oil-resistance cable (0.15mm ²)		
Weight		Approx. 86g (with 2 meter lead wire)		

H. ADVANCE SETTING MODE

Measure mode

Press **SET** button for more than 5 seconds.

Fixed hysteresis value selection

Use the **▲** or **▼** button to adjust fixed hysteresis value.
*Applicable for one point set mode and window comparator mode.
*Hysteresis mode does not have this setting selection.

Display color selection

Use the **▲** or **▼** button to select LCD display color relation OUT 1 or OUT2.

Power-Save Mode

Use the **▲** or **▼** button to turn Power-Save mode on or off (*1)

Copy Function Setting

Use the **▲** or **▼** button to set copy function.
***[on]**: When finishing copy, the slave sensor would be locked automatic. (*2)
*Only for PS□-45-02-□ and PS□-45-04-□ have this setting selection.

Restore factory setting

Use the **▲** or **▼** button to select to restore to default factory settings.

Display fine adjustment mode

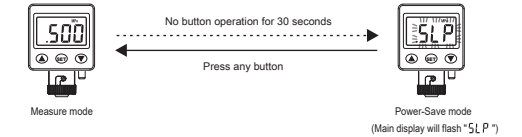
Use the **▲** or **▼** button to select to display fine adjustment mode. (*3)

Measure mode

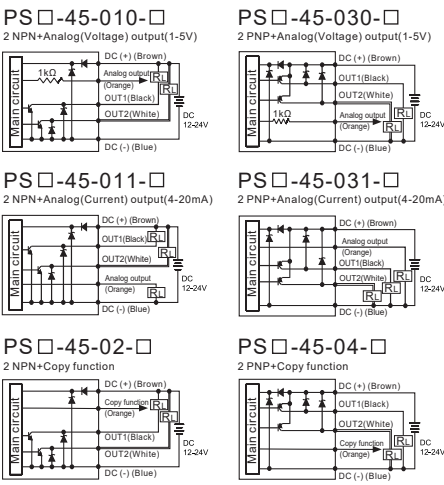
【NOTE :】
*1. When setting is **[on]**, the power-save mode is active. Please refer to the item **[P]** in detailed.
*2. When setting **[on]** or **[on]**, the display copy function mode is active. Please refer to the item **[R]** in detailed.
*3. When setting is **[on]**, the display fine adjustment mode is active. Please refer to the item **[S]** in detailed.

I. POWER-SAVE MODE

- During Power-Save mode, the main display will turned off if no buttons is pressed after 30 seconds.
- During Power-Save mode, the output LCD may not be synchornize with the output. It is normal and will not affect output operation.
- Press any button to turn-on main display temporarily.



B. OUTPUT CIRCUIT WIRING DIAGRAMS



C. ORDERING INFORMATION

Pressure Range

C : Compound (-101.0~101.0kPa)
V : Vacuum (10.0~101.3kPa)
N : Positive (-0.100~1.000MPa)

Output Specifications

010 : 2 NPN + Analog(Voltage) output (1 - 5V)
011 : 2 NPN + Analog(Current) output (4 - 20mA)
02 : 2 NPN + Copy function
030 : 2 PNP + Analog(Voltage) output (1 - 5V)
031 : 2 PNP + Analog(Current) output (4 - 20mA)
04 : 2 PNP + Copy function

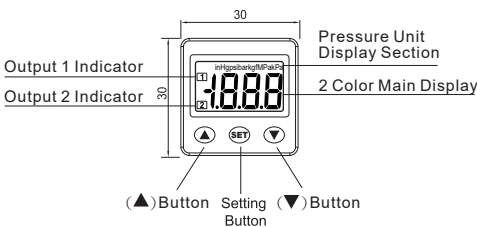
Pressure Port

R : R1/8", M5, with external threads
NPT : NPT1/8", #10-32UNF, with external threads
G : G1/8"(BSPP), M5, with external threads
RC : Rc1/8", with internal threads
NPTC : NPT1/8", with internal threads
GC : G1/8"(BSPP), with internal threads

Optional Parts

BT-10 : Mounting bracket (for Pressure Port R,NPT,G)
BT-11 : Mounting bracket (for Pressure Port R,NPT,G)
BT-1 : Mounting bracket (for Pressure Port RC,NPTC,GC)
BT-17 : Mounting bracket (for Pressure Port RC,NPTC,GC)
PA-E : Panel adapter
PA-F : Panel adapter + Front protective lid

D. PANEL DESCRIPTION



J. PRESSURE SETTING MODE

One point set mode:

Hysteresis mode/ Window comparator mode:

*When out 1, * * displays 1
When out 2, * * displays 2.

K. OUTPUT TYPE

(1) One point set mode:

Normal open mode

Normal close mode

(2) Hysteresis mode:

Normal open mode

Normal close mode

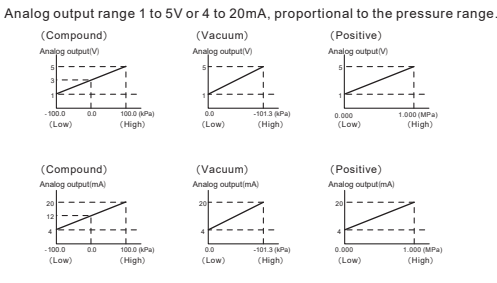
(3) Window comparator mode:

Normal open mode

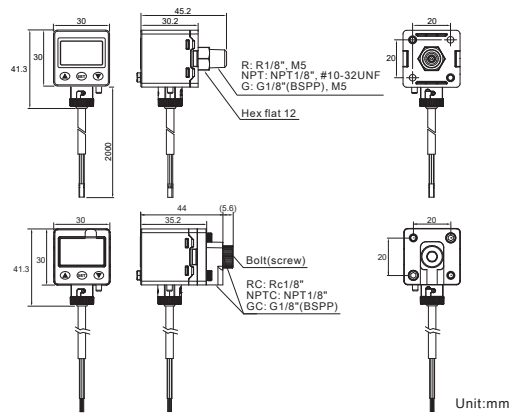
Normal close mode

【NOTE :】
*1. In case hysteresis is set at less than or equal to 2 digits, switch output may chatter if input pressure fluctuates near the set point.
*2. When using window comparator mode, the difference between two set points must be greater than the fixed hysteresis, otherwise will cause the switch output to malfunction.

L. ANALOG OUTPUT DESCRIPTION



E. DIMENSIONS



F. OPTIONAL PARTS DIMENSIONS

① Mounting bracket

BT-10

BT-1

BT-11

BT-17

② Panel Mounting

Front protective lid

Panel adapter

③ Accessory

Dustproof protector

④ Accessory for pressure port RC,NPTC,GC

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.

M. ZERO POINT SETTING

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

N. THE MAX. & MIN. DISPLAY MODE

③ The Max. value display mode:

③ The Min. value display mode:

O. KEY LOCK/UNLOCK MODE

Key lock mode, it displays as picture when pressing any key. After some time, it would be returned to measure mode.

P. Wire Installation Instruction

- Please install the wire as the following step.
- Turn upward the salient point by terminal.(See figure ①)
 - Install to the terminal to the groove by pressure sensor.(See figure ②)
 - Terminal cover install to the products.(See figure ③)
 - Turn the terminal cover to lock.(See figure ④)

【NOTE :】 Recommend not insert-extract over 20 times.

Q. PRESSURE UNIT CONVERSION TABLE

From To	Pa	kPa	MPa	kgf/cm ²	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000010197	0.000145038	0.00001	0.0002953
1 kPa	1000.000	1	0.001000	0.010197	0.145038	0.010000	0.2953
1 MPa	1000000	1000	1	10.197	145.038	10	295.298
1 kgf/cm ²	98066.5	98.0665	0.0980665	1	14.2233	0.980665	29.5298
1 psi	6895	6.895	0.006895	0.07031	1	0.06895	2.036074
1 bar	100000.0	100.000	0.100000	1.01972	14.5038	1	29.5298
1 inHg	3386.388	3.386388	0.003386	0.034530	0.491141	0.033863	1

G. INITIAL SETTING MODE

Measure mode

Press **SET** button for more than 3 seconds.

OUT1 Operating mode setting

OUT1 type setting

OUT2 Operating mode setting

OUT2 type setting

Response time setting

Display color setting

Unit setting

Measure mode

【NOTE :】
*1. This setting mode will not display when output 2 is set to OFF.
*2. Pressure unit is MPa with positive pressure. Pressure unit is kPa with vacuum and compound pressure.
*3. Only applicable for Vacuum/Compound.

R. COPY FUNCTION SETTING

Copy function setting can use the master sensor to copy the pressure value to the slave sensors.

Before copying, please confirm the model of pressure sensor. The function cannot be used in different model.

The copy function only can be one-to-one.

【SETTING STEP】
1. Please set the copy function to **[on]** or **[on]** to be on copy condition by master sensor. Please refer the copy setting of (H) advance setting mode.
2. Turn power off to both sensor.
3. Refer the connection way with the master and slave sensor as follows.

MASTER SENSOR

SLAVE SENSOR

4. Turn on power at same time (*1)

5. Wait 5 sec., when finishing to convey the data, the master sensor display (alternately display) **[CP]** the slave sensor display (alternately display) **[SL]**

6. When convey the data failed, (Master) sensor displays **[Err]** (Slave) sensor displays **[Err]** (*2)

7. Turn off power and remove the wire connection. If no remove the wire connection, the sensor would be broken.

*1 If require to copy another slave sensor, please repeat the step ③ to ⑤.
*2 Only for PS□-45-02-□ and PS□-45-04-□ have this setting selection.

【NOTE】
*1. If turn on power is not synchronization, the data cannot be copied.
*2. When the data conveys failed., please check the wire connection. Then repeat the step ③ to ⑤.

How to cancel the copy mode :
When the master sensor display **[CP]** (display reciprocal), Press **▼** button to leave the copy mode.

S. FINE ADJUSTMENT MODE

Display fine adjustment mode

This function eliminates slight differences in the output values and allows uniformity in the numbers displayed. Displayed values of the pressure sensor can be calibrated to within ±2.5% R.D.

R.D. (Real Detect)

【NOTE :】 1. Setting resolution is ±0.1% R.D. 2. The signal would be changed with analog output after adjusting.

T. ERROR CODE INSTRUCTION

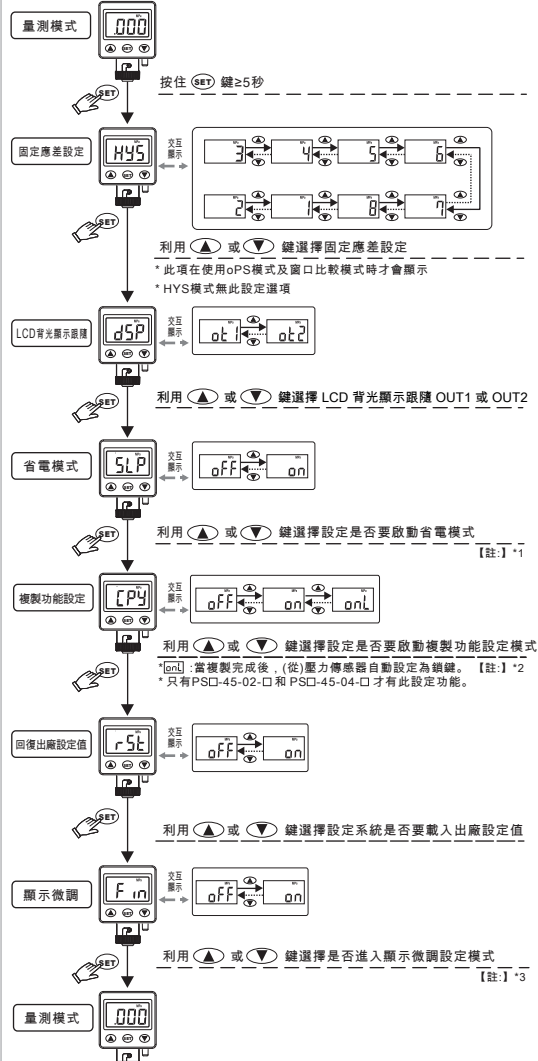
Error Type	Error code	Error Condition	Troubleshooting
Excess load current error	Er1	Output 1 load current is more than 125 mA	Turn power off and check the cause of overload current or lower the current load under 125 mA, then restart.
Residual pressure error	Er3	During zero reset, ambient pressure is over 43% F.S.	Change input pressure to ambient pressure and perform zero reset again.
Applied pressure error	HHH	Supply pressure exceeds the upper limit of pressure setting.	Adjust the pressure within operating pressure range.
	LLL	Supply pressure exceeds the lower limit of pressure setting.	
	Er4	Internal system error	
	Er5	Internal system error	
	Er6	Internal data error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
	Er7	Internal data error	
Copy data error	Er8	Copy data error	Please check the model no. and wire connection. Restart to turn on power if no return to normal condition, please return to factory for inspection.

數位顯示型壓力傳感器 PS-45 系列

- 使用本產品應注意事項：
- 禁止使用於腐蝕性及易燃性的氣體或任何液體。
 - 請在規格表內的額定壓力範圍內使用，若供給之壓力超過最大耐壓會使本產品損壞，導致功能異常。
 - 裝設本產品時，請勿用力撞擊或從高處掉落，即使外觀未受損害也可能因內部零件損壞而導致功能異常。
 - 在連接本產品於電路控制系統時，應先關掉電源，因為錯誤的接線或短路會導致本產品損壞。
 - 本產品請勿使用在有水氣或油霧的環境中。
 - 本系列產品並未作有防爆驗證，請勿使用於空氣中含有爆炸性氣體或粉塵環境中。
 - 不可將連接本產品的導線與電源線或其它高壓電線綑綁在一起，以避免雜訊的干擾，而影響到本產品的功能。

A. 規格表				
型號		PSN-45 (正壓)	PSV-45 (負壓)	PSC-45 (滿成壓)
額定壓力範圍		0.000~1.000MPa	0.0~-101.3kPa	-100.0~100.0kPa
設定壓力範圍		-0.100~1.000MPa	10.0~-101.3kPa	-101.0~101.0kPa
耐壓力		1.5MPa	300kPa	
適用氣體		空氣，非腐蝕性，不可燃性		
壓力單位 設定最小刻度	kPa	—	0.1	
	MPa	0.001	—	
	kgf/cm ²	0.01	0.001	
	bar	0.01	0.001	
	psi	0.1	0.01	
	inHg	—	0.1	
電源電壓		12 to 24V DC ±10%，連續峰值 10% 以下		
消費電流		≤40mA 以下(無負載時)		
開關輸出	輸出型態	2 NPN 或 2 PNP 開集極輸出		
	最大負載電流	125mA		
	最大供應電壓	2 NPN 30V DC, 2 PNP 24V DC		
	內部壓降	1.5V 以下		
	反應時間	≤2.5ms (預防誤動作功能: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms 可選擇)		
類比輸出	輸出短路保護	有		
	電壓型	電壓輸出 1~5V(±2.5%)		
	輸出阻抗	約1kΩ		
	電流輸出	4~20mA (±2.5%)		
	電流型	負載阻抗最大：250Ω 在電壓為12V 600Ω 在電壓為24V 負載阻抗最小：50Ω		
顯示	直線性	±1% F.S.		
	顯示方式	3½位7段顯示(紅/綠)單視窗		
	動作顯示燈	(1/2 顯示) OUT1 OUT2 黃燈		
	更新時間	約0.2秒		
	顯示精度	±2% F.S. ±1 digit (在溫度範圍: 25 ±3°C)		
重複精度		±0.2% F.S. ±1 digit		
	結構保護等級	IP65		
	使用溫度範圍	0 ~ 50°C		
	儲存溫度範圍	-10 ~ 60°C (無水露及不結冰狀況下)		
	環境濕度範圍	35 ~ 85% RH (無水露)		
耐環境	耐電壓	1000V AC 1分鐘 (引線及塑膠外殼間)		
	絕緣阻抗	50MΩ以上 (500V DC)(引線及塑膠外殼間)		
	耐振動	複振幅1.5mm, 每1分鐘10Hz~55Hz~10Hz, X, Y, Z 每個方向各2小時		
	耐衝擊	100m/s ² (10G) X, Y, Z 每個方向各3次		
溫度特性		±2% F.S. 比較參考溫度25°C (0 ~ 50°C溫度範圍內)		
接管口徑		R:R1/8", M5, NPT: NPT1/8", #10-32UNF, G: G1/8"(BSPF), M5 RC: Rc1/8", NPTC: NPT1/8", GC: G1/8"(BSPF)		
電線規格		耐油PVC電線 (0.15mm ²)		
重量		約 86g (包含2公尺的電線)		

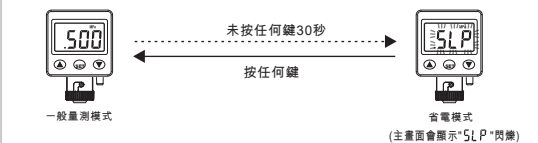
H. 進階設定模式



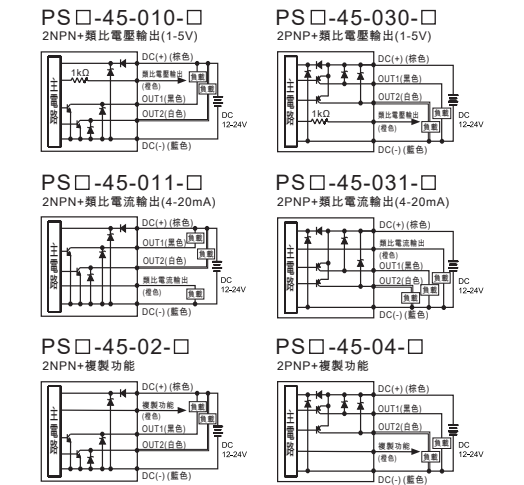
【註】
*1. 當設定為 "on" 時，即啟動省電模式，詳細說明請參考說明書第11項。
*2. 當設定為 "on" 或 "off" 時，即進入顯示複製功能設定模式，詳細說明請參考說明書第12項。
*3. 當設定為 "on" 時，即進入顯示微調的設定模式，詳細說明請參考說明書第13項。

I. 省電模式

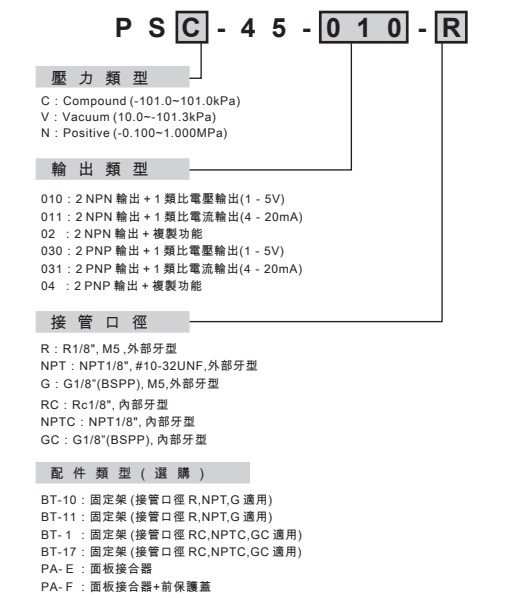
- 當啟動省電模式設定時，壓力傳感器在量測模式下，未按下任何鍵30秒後，壓力傳感器會進入省電模式。
- 當壓力傳感器處於省電模式時，傳感器動作指示燈可能有不同步的現象，但不會影響傳感器的動作。
- 當壓力傳感器處於省電模式時，按下任何鍵，壓力傳感器會自動回到一般量測模式。



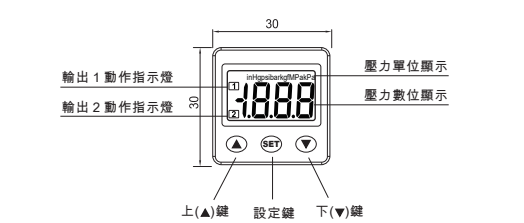
B. 輸出電路接線圖



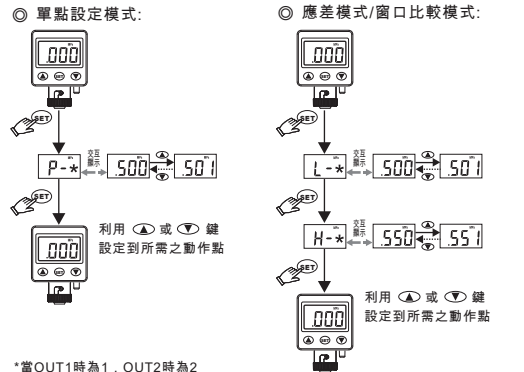
C. 型號規格說明



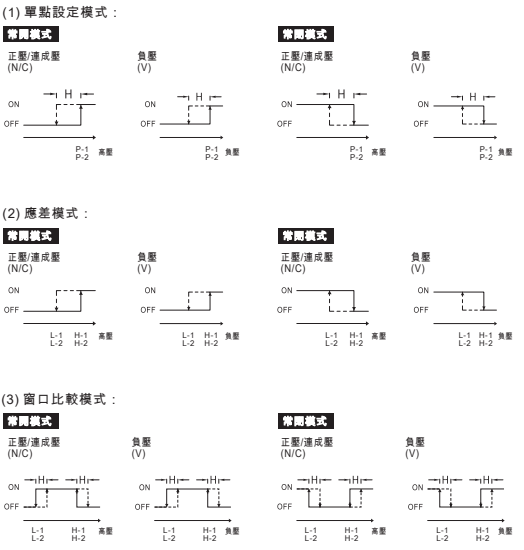
D. 面板說明



J. 壓力設定模式

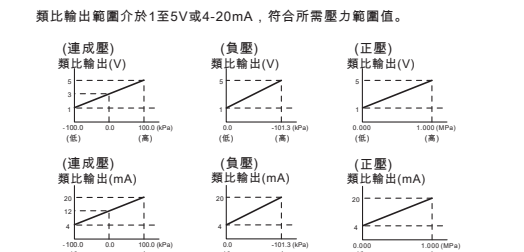


K. 輸出型態

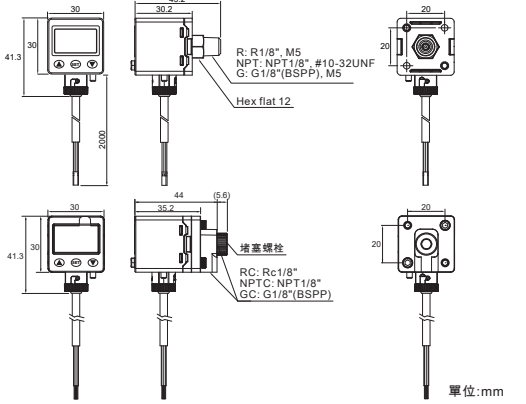


【註】
*1. 當應差模式時，如壓力設定值在二個digits內，若輸入氣壓非常接近壓力設定值，壓力傳感器輸出可能會誤動作。
*2. 當設定於窗口比較模式時，設定2點之差一定要大於固定應差設定值，否則壓力傳感器輸出會無動作。

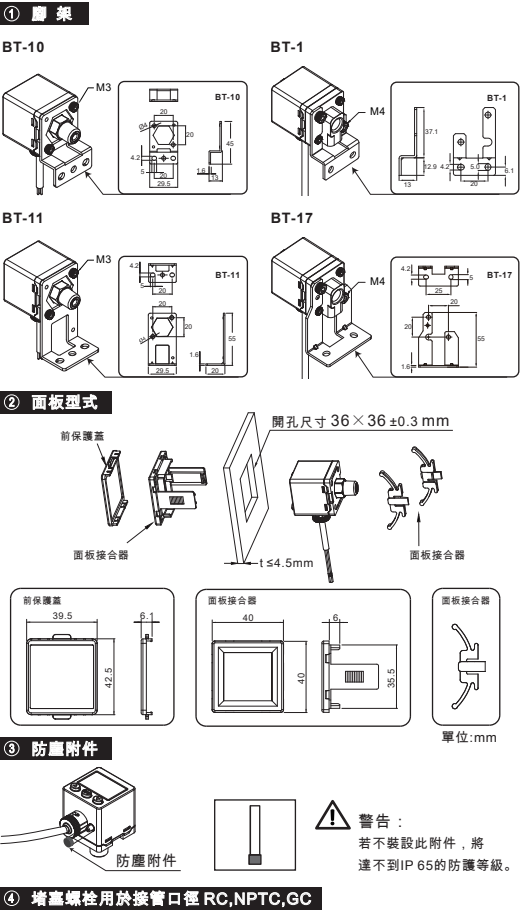
L. 線性類比輸出說明



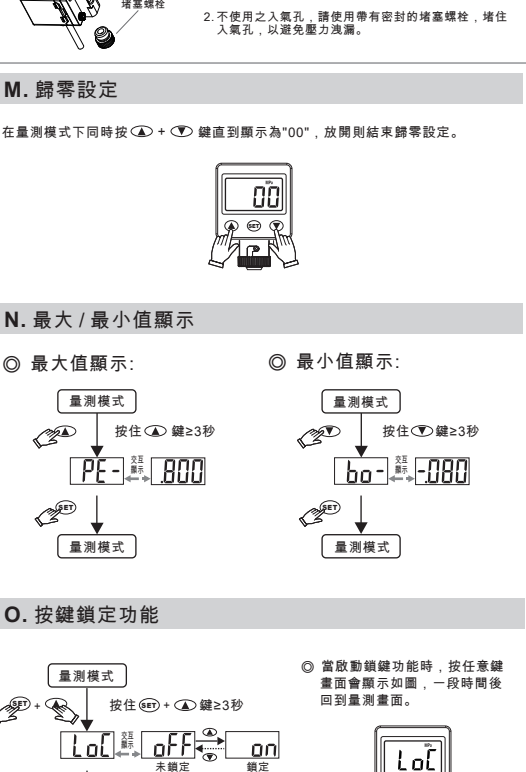
E. 外觀尺寸



F. 配件類型 / 尺寸圖

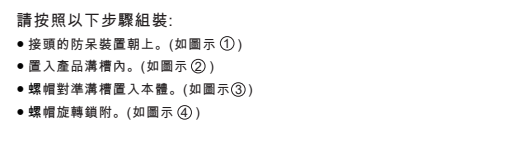


G. 基本設定模式

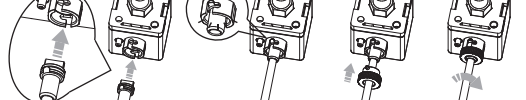


H. 複製功能設定

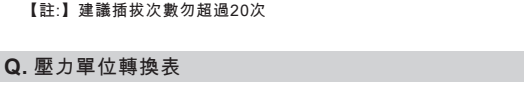
- 複製功能設定可以將(主)壓力傳感器設定值複製到(從)壓力傳感器。
- 使用複製功能前，請確認壓力傳感器的型號，此功能無法使用在不同的型號。
- 使用複製功能時，無法使用多個(從)壓力傳感器，只能一對一。



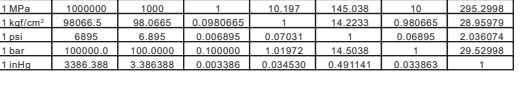
I. 最大 / 最小值顯示



J. 按鍵鎖定功能



K. 線組組裝說明



【註】建議插拔次數勿超過20次

Q. 壓力單位轉換表

From	Pa	kPa	MPa	kgf/cm ²	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000145038	0.000145038	0.00001	0.0002953
1 kPa	1000.000	1	0.001000	0.0145038	0.145038	0.010000	0.2953
1 MPa	1000000	1000	1	10.197	145.038	10	295.298
1 kgf/cm ²	98066.5	98.0665	0.0980665	1	14.2233	0.980665	28.9579
1 psi	6894.76	6.89476	0.00689476	0.07031	1	0.0689476	2.03602
1 bar	100000.0	100.000	0.100000	1.01972	14.5038	1	29.5298
1 inHg	3386.388	3.386388	0.003386388	0.0345330	0.491141	0.0338638	1