

**For your safety, please read the following before using.**

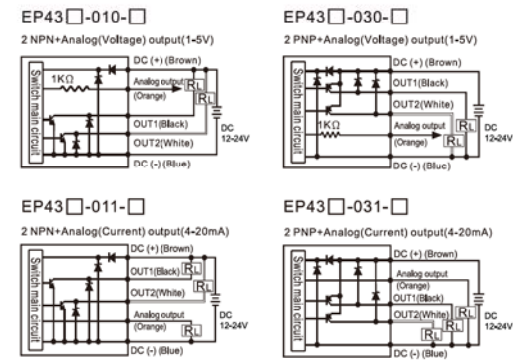
- Do not use corrosive or flammable gas or liquid with this product.
- Please use within the rating pressure range. Do not apply pressure beyond recommended maximum withstand pressure, permanent damage to the pressure sensor may occur.
- Do not drop, hit or allow excessive shock. Even if switch body 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.

**A. SPECIFICATIONS**

TYPE	EP43P-□-□ (Positive)	EP43V-□-□ (Vacuum)	EP43C-□-□ (Compound)
Rated pressure range	0.0~1,000MPa	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	Air, Non-corrosive / Non-flammable gas		
	kPa	—	0.1
	MPa	0.001	—
	kgf/cm <sup>2</sup>	0.01	0.001
	bar	0.01	0.001
	psi	0.1	0.01
	inHg	—	0.1
	mmHg	—	1
Power supply voltage	12 to 24V DC ±10%, Ripple (P-P) 10% or less		
Current consumption	≤ 40mA (With no load)		
Switch output	NPN: open collector 2 outputs Max. load current: 125mA Max. supply voltage: 30V DC Residual voltage: ≤ 1.5V	PNP: open collector 2 outputs Max. load current: 125mA Max. supply voltage: 24V DC Residual voltage: ≤ 1.5V	
Repeatability(Switch output)	±0.2% F.S. ±1 digit		
One point set mode	Adjustable (*1)		
Hysteresis Hysteresis mode	Adjustable (*1)		
Window comparator mode	Adjustable (*1)		
Response time	≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selections)		
Output short circuit protection	Yes		
7 segment LCD display	Two color(Red/Green) main & unit display, Orange sub-display (Sampling rate: 5 times/1sec.)		
Indicator accuracy	±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Switch ON Indicator	Orange (1 & 2 Indicator) OUT1 OUT2		
Analog output (Voltage Output) *2	Output Voltage: 1 to 5V ±2.5% F.S. (within rated pressure range) Linearity: ±1% F.S. Output impedance: about 1kΩ		
Analog output (Current Output) *3	Output Current: 4 to 20mA ±2.5% F.S. (within rated pressure range) Linearity: ±1% F.S. Max. Load Impedance: 300Ω at power supply of 12V, 600Ω at power supply of 24V Min. Load Impedance: 90Ω		
Ends	IP 40		
Ambient temp. Range	Operation: 0 ~ 50°C, Storage: -10 ~ 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, two hours each direction of X, Y and Z		
Shock	100m/s <sup>2</sup> (10G), 3 times each in direction of X, Y and Z		
Temperature characteristic	±2.5% F.S. of detected pressure (25°C) at temp. Range of 0~50°C		
Port size	F1: R1/8", M5; F2: NPT1/8", #10-32UNF; F3: G1/8"(BSPP), M5		
Lead wire	Oil-resistance cable(0.15mm <sup>2</sup> )		
Weight	Approx. 80g (with 2 meter lead wire)		

\*1. Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.  
\*2. If analog voltage output is selected, the analog current output cannot be selected at the same time.  
\*3. If analog current output is selected, the analog voltage output cannot be selected at the same time.

**B. OUTPUT CIRCUIT WIRING DIAGRAMS**



**C. ORDERING INFORMATION**

**EP43C-010-F1**

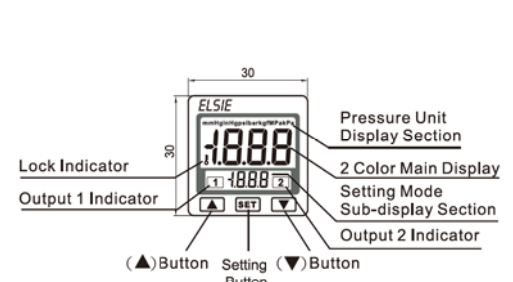
**Pressure Range**  
C : Compound (-101.0~101.0kPa)  
V : Vacuum (10.0~101.3kPa)  
P : Positive (-0.100~1,000MPa)

**Output Specifications**  
010 : 2 NPN+Analog(Voltage) output (1 - 5V)  
011 : 2 NPN+Analog(Current) output (4 - 20mA)  
030 : 2 PNP+Analog(Voltage) output (1 - 5V)  
031 : 2 PNP+Analog(Current) output (4 - 20mA)

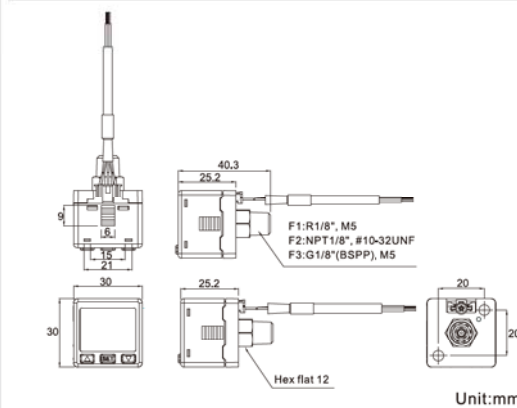
**Pressure Port**  
F1 : R1/8", M5  
F2 : NPT1/8", #10-32UNF  
F3 : G1/8"(BSPP), M5

**Optional Parts**  
BT-12 : Mounting bracket  
BT-13 : Mounting bracket  
PA-C : Panel adapter  
PA-D : Panel adapter + Front protective lid

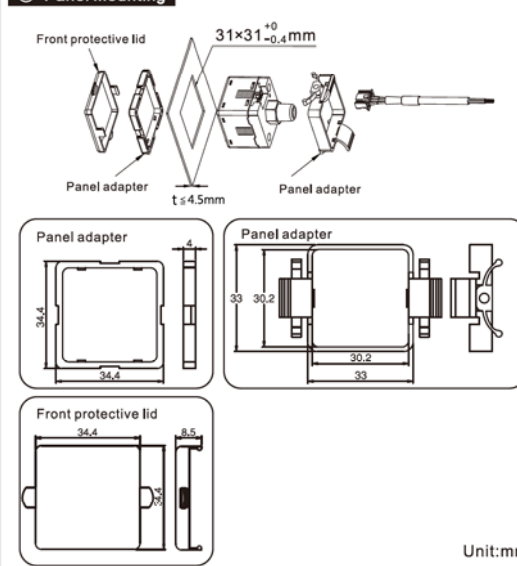
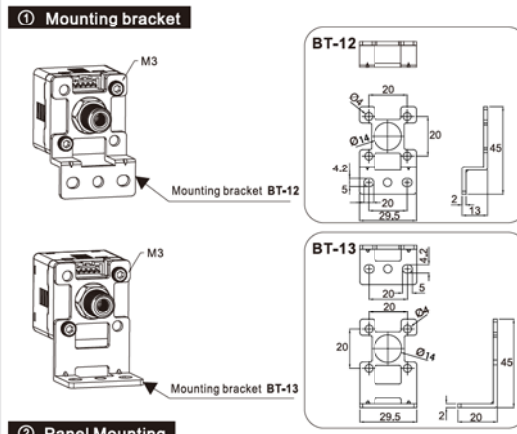
**D. PANEL DESCRIPTION**



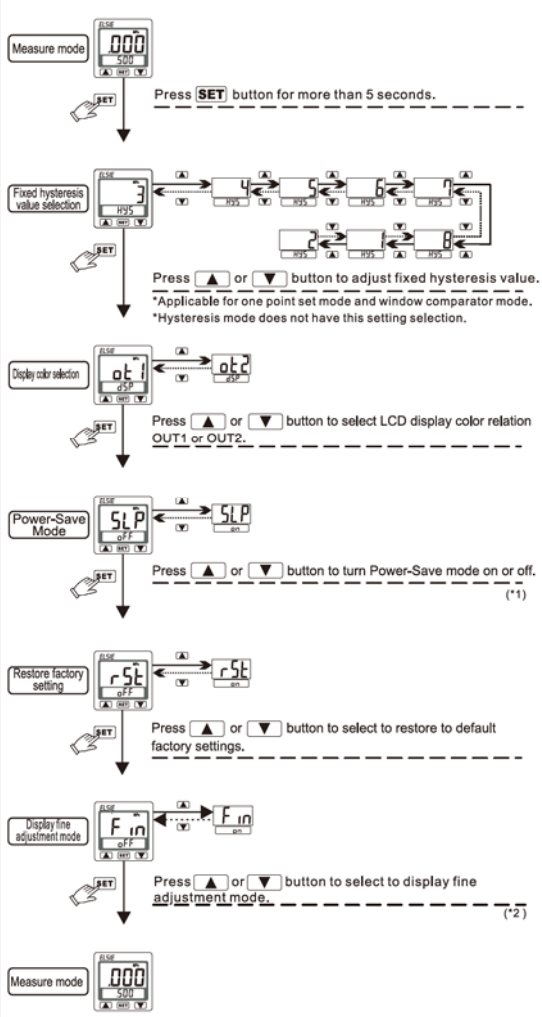
**E. DIMENSIONS**



**F. OPTIONAL PARTS DIMENSIONS**

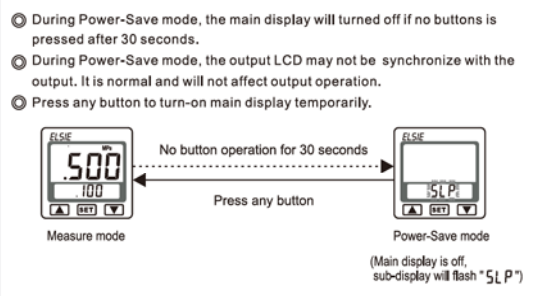


**H. ADVANCE SETTING MODE**

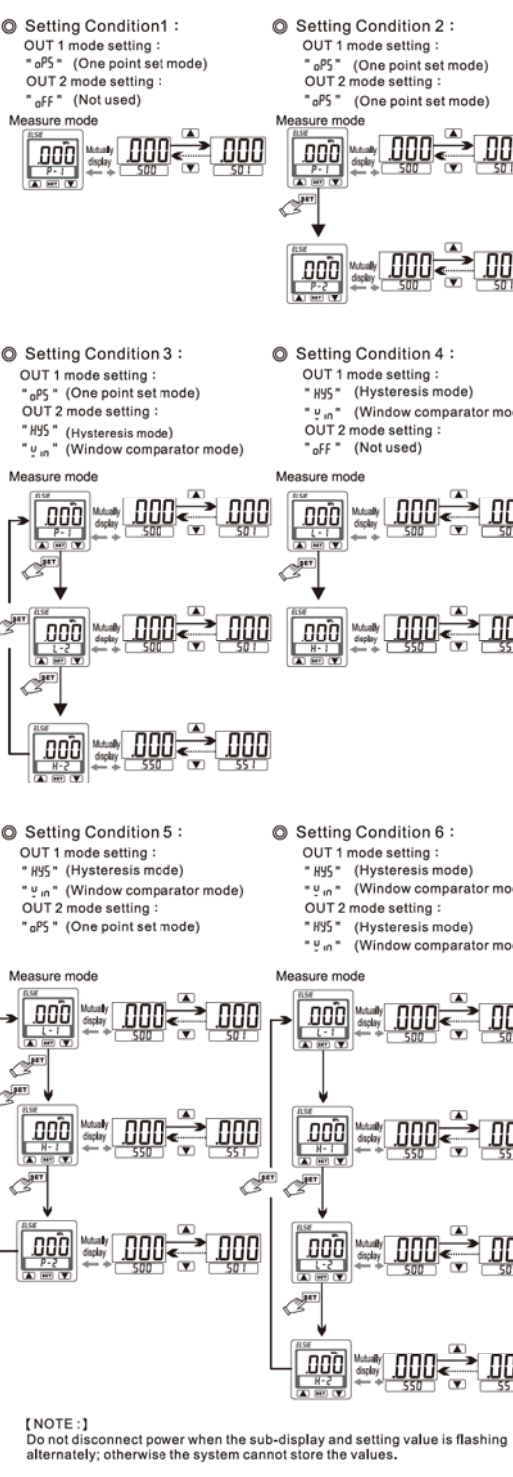


[NOTE :]  
\*1. When setting is "00", the power-save mode would be started. Please refer the item "I" in detailed.  
\*2. When setting is "00", the display fine adjustment mode would be started. Please refer the item "P" in detailed.

**I. POWER-SAVE MODE**

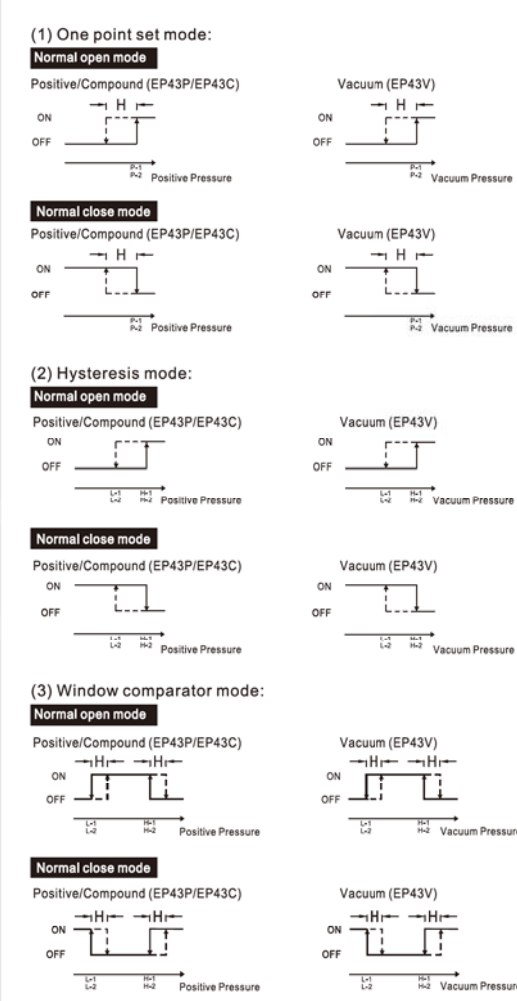


**J. PRESSURE SETTING MODE**



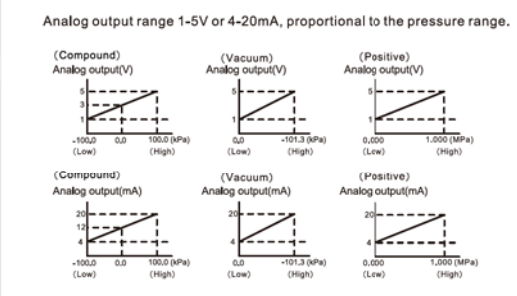
[NOTE :]  
Do not disconnect power when the sub-display and setting value is flashing alternately; otherwise the system cannot store the values.

**K. OUTPUT TYPE**

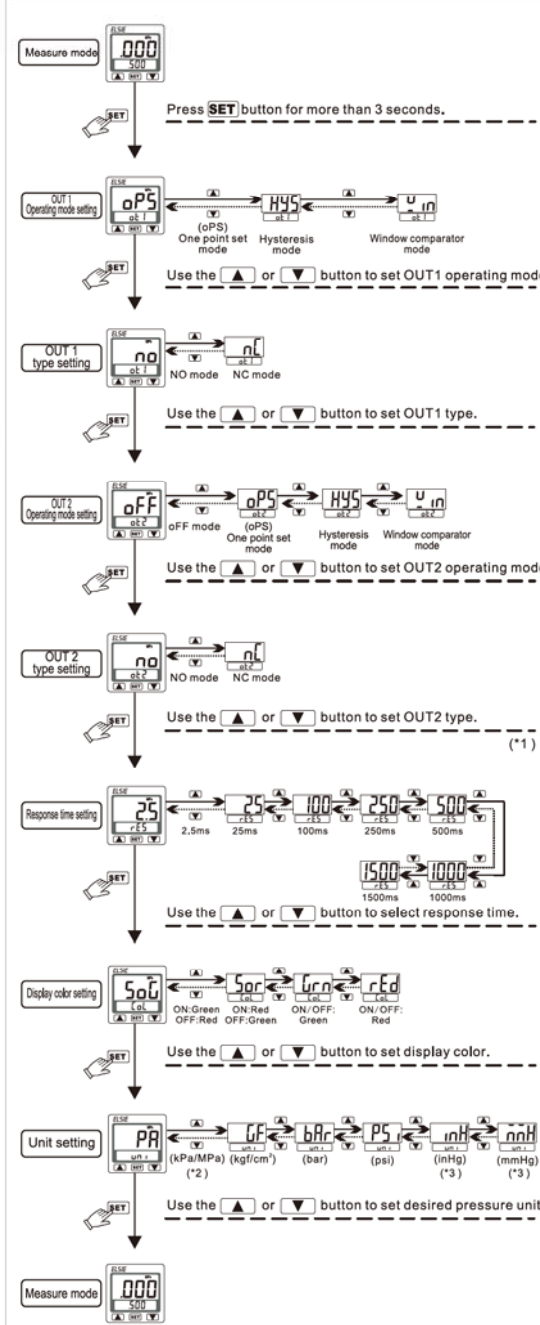


[NOTE :]  
\*1. In case hysteresis is set at less than or equal to 2 digits, switch output may chatter if input pressure fluctuates near the set point.  
\*2. When using window comparator mode, the difference between two set points must be greater than the fixed hysteresis, otherwise will cause the switch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

**L. ANALOG OUTPUT DESCRIPTION**

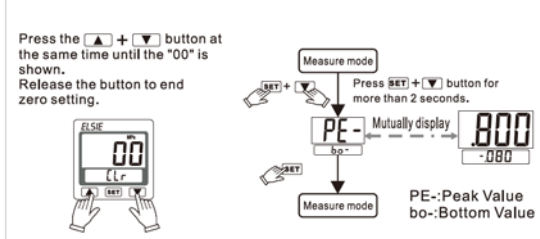


**G. INITIAL SETTING MODE**

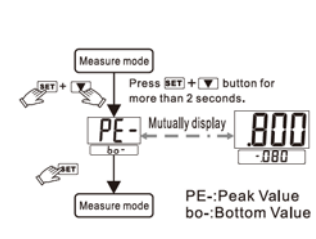


[NOTE :]  
\*1. This setting mode will not display when output 2 is set to OFF.  
\*2. Pressure unit is MPa by positive & pressure unit is kPa by vacuum and compound  
\*3. Only applicable for Vacuum/Compound.

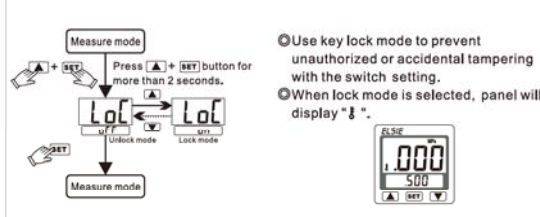
**M. ZERO POINT SETTING**



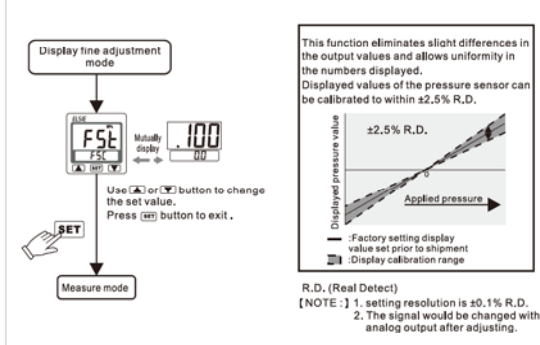
**N. PEAK/BOTTOM HOLD FUNCTION**



**O. KEY LOCK/UNLOCK MODE**



**P. FINE ADJUSTMENT MODE**



**Q. ERROR CODE INSTRUCTION**

Error Type	Error Code	Error Condition	Troubleshooting
Excess load current error	Er-1	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	Er-2	Output 2 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.
Applied pressure error	HHH	Supply pressure is exceeds the upper limit of pressure setting.	Adjust the pressure within operating pressure range.
	LLL	Supply pressure is exceeds the lower limit of pressure setting.	Adjust the pressure within operating pressure range.
System error	Er-3	Internal system error	Turn power off, and then restart.
	Er-4	Internal system error	Turn power off, and then restart.
	Er-5	Internal system error	Turn power off, and then restart.
	Er-6	Internal data error	If error condition remains, please return to factory for inspection.
	Er-7	Internal data error	If error condition remains, please return to factory for inspection.

**R. PRESSURE UNIT CONVERSION TABLE**

Pa	kPa	MPa	kgf/cm <sup>2</sup>	mmHg	psi	bar	inHg
1 Pa	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002953
1 kPa	1000.000	1.000000	0.101972	7.500616	0.145038	0.010000	0.2953
1 MPa	1000000.000	1000.000000	101.9716	7500.616	145.038	10.000000	295.3
1 kgf/cm <sup>2</sup>	98.0665	0.0980665	1	735.559	14.2233	0.0980665	28.9579
1 mmHg	133.32	0.13332	0.0013332	1	0.0193333	0.0013332	0.039270
1 psi	6895	0.006895	0.0703071	51.7152	1	0.06895	2.036074
1 bar	100000.0	0.100000	1.01972	750.062	14.5038	1	29.52998
1 inHg	3386.389	0.3386389	0.0345329	25.40000	0.491141	0.0338639	1

# 數位顯示型壓力傳感器 EP43 系列

- ### 使用本產品應注意事項：
- 1. 禁止用於高壓及易脆性的氣體或液體。
  - 2. 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額定壓力會使本產品損壞，導致功能異常。
  - 3. 裝設本產品時，請勿用力推擊或從高處掉落，即使外觀未受損壞也可能因內部零件損壞而導致功能異常。
  - 4. 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。
  - 5. 本產品請勿用在有水氣或油霧的環境中。
  - 6. 本系列產品並未有防爆炸驗證，請勿用於空氣中含有爆炸性氣體或粉塵環境中。
  - 7. 不可將本產品的導線與電源線或其它高壓電線纏繞在一起，以避免雜訊的干擾，而影響到本產品的功能。

## A. 規格表

型號	EP43P-□-□ (正壓)	EP43V-□-□ (負壓)	EP43C-□-□ (遠成壓)
額定壓力範圍	0.0~1.000MPa	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	kPa	—	0.1
MPa	0.001	—	—
kgf/cm <sup>2</sup>	0.01	—	0.001
bar	0.01	—	0.001
psi	0.1	—	0.01
inHg	—	—	0.1
mmHg	—	—	1
電源電壓	12 to 24V DC ±10%, 漣波峰峰值 10% 以下		
消費電流	≤40mA 以下(無負載時)		
傳感器輸出	2 NPN 開集極輸出 最大負載電流: 125mA 最大供應電壓: 30V DC 內部壓降: 1.5V 以下	2 PNP 開集極輸出 最大負載電流: 125mA 最大供應電壓: 24V DC 內部壓降: 1.5V 以下	
重複精度	±0.2% F.S. ±1 digit 以下		
oPS 模式	可調 *1		
應差	應差模式		
窗口比較模式	窗口比較模式		
反應時間	≤2.5ms (預防誤動作功能: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms 可選擇)		
輸出短路保護	有		
顯示	3色(紅/綠/藍)顯示(取樣率: 5次/秒)		
顯示精度	±2% F.S. ±1 digit(在適溫溫度: 25±3°C)		
動作指示燈	橙色(1&2指示燈) OUT1 OUT2		
線性類比輸出 (電壓輸出)*2	輸出電壓: 1~5V ±2.5% F.S.(額定壓力範圍下) 直線性: ±1% F.S. 輸出阻抗約1kΩ		
線性類比輸出 (電流輸出)*3	輸出電流: 4~20mA ±2.5% F.S.(額定壓力範圍下) 直線性: ±1% F.S. 負載阻抗最大: 300Ω 在電壓為12V, 600Ω 在電壓為24V 負載阻抗最小: 50Ω		
防護等級	IP 40		
適溫溫度	動作: 0~50°C, 保存: -10~60°C (無水露及不結冰狀況下)		
耐濕度	動作及保存: 35~85% RH (無水露)		
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	振幅1.5mm, 每1分鐘10Hz~55Hz~10Hz, X, Y, Z 每方向各2小時		
耐衝擊	100ms <sup>2</sup> (10G) X, Y, Z 每方向各3次		
溫度特性	±2.5% F.S. 比較參考溫度25°C (0~50°C溫度範圍內)		
接管口徑	F1: R1/8", M5; F2: NPT1/8", #10-32UNF; F3: G1/8"(BSPP), M5		
電線規格	耐油PVC電線(0.15mm <sup>2</sup> )		
重量	約 80g (包含2公尺的電線)		

\*1. 單點設定模式及窗口比較模式可調整1-8digits的應差。  
\*2. 選擇電壓輸出時就無電流輸出，二種輸出型態僅可選擇其一。  
\*3. 選擇電流輸出時就無電壓輸出，二種輸出型態僅可選擇其一。

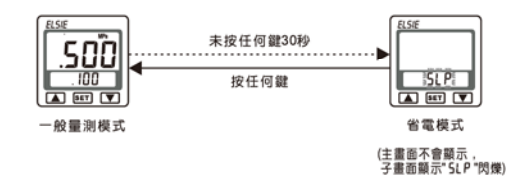
## H. 進階設定模式

進階設定模式操作圖示，展示了如何通過按鍵操作進入並調整各種設定，包括：1. 單點設定模式 (按SET鍵≥3秒)；2. 固定應差設定 (利用上下箭鍵選擇)；3. LCD背光顯示開關 (選擇OUT1或OUT2)；4. 省電模式 (選擇是否啟動)；5. 廠設值設定 (選擇是否載入)；6. 顯示微調 (選擇是否進入)。

【註】  
\*1. 當設定為“on”時，即啟動省電模式，詳細說明請參閱說明書第11項。  
\*2. 當設定為“on”時，即進入顯示微調的設定模式，詳細說明請參閱說明書第21項。

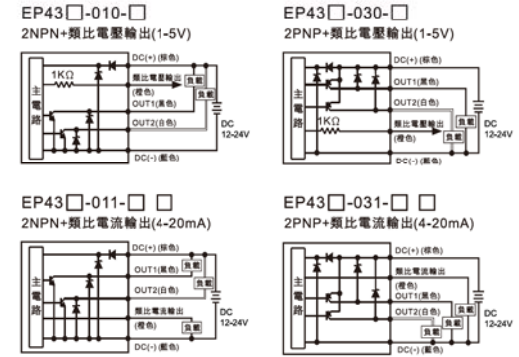
## I. 省電模式

- 1. 當啟動省電模式設定時，壓力傳感器在測量模式下，未按任何鍵30秒後，壓力傳感器會進入省電模式。
- 2. 當壓力傳感器處於省電模式時，傳感器動作指示燈可能會有不同步的現象，但不會影響傳感器的動作。
- 3. 當壓力傳感器處於省電模式時，按任何鍵，壓力傳感器會自動回到一般測量模式。



(主畫面不會顯示，子畫面顯示“SLP”閃爍)

## B. 輸出電路接線圖



## C. 型號規格說明

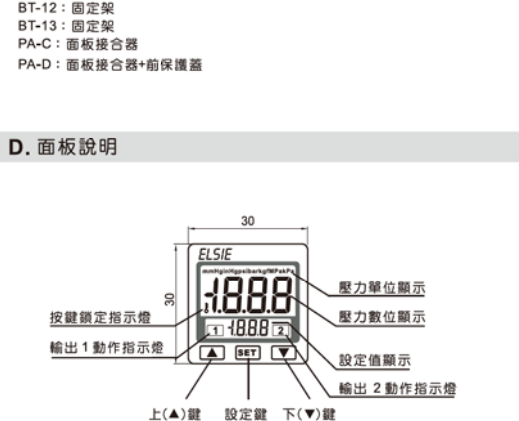
### EP43C-010-F1

**壓力類型**  
C: 遠成壓 (-101.0~101.0kPa)  
V: 負壓 (10.0~101.3kPa)  
P: 正壓 (-0.100~1.000MPa)

**輸出類型**  
010: 2 NPN 輸出 + 1 類比電壓輸出 (1-5V)  
011: 2 NPN 輸出 + 1 類比電流輸出 (4-20mA)  
030: 2 PNP 輸出 + 1 類比電壓輸出 (1-5V)  
031: 2 PNP 輸出 + 1 類比電流輸出 (4-20mA)

**接管口徑**  
F1: R1/8", M5  
F2: NPT1/8", #10-32UNF  
F3: G1/8"(BSPP), M5

## D. 面板說明

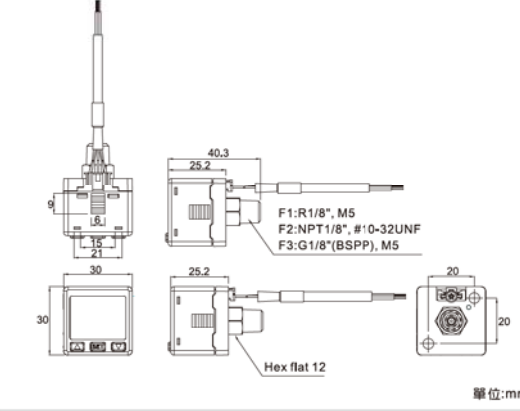


## J. 壓力設定模式

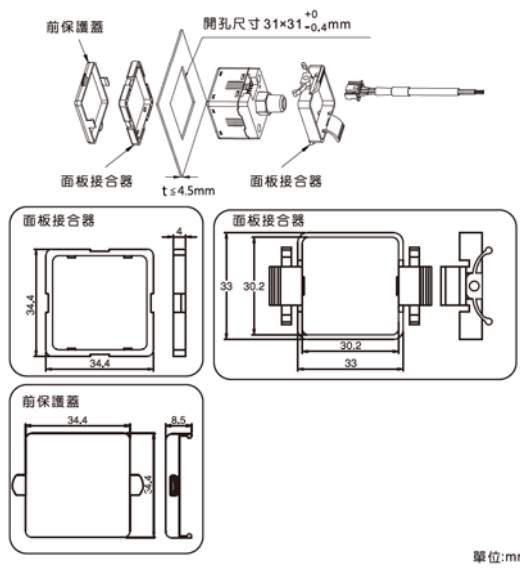
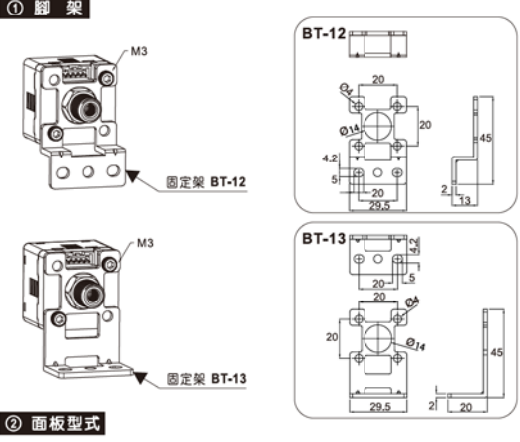
壓力設定模式操作圖示，展示了如何通過按鍵操作設定壓力值，包括：1. 設定條件1 (輸出1: oP5, 輸出2: oFF)；2. 設定條件2 (輸出1: oP5, 輸出2: oP5)；3. 設定條件3 (輸出1: oP5, 輸出2: oP5)；4. 設定條件4 (輸出1: HYS, 輸出2: oFF)；5. 設定條件5 (輸出1: HYS, 輸出2: oP5)；6. 設定條件6 (輸出1: HYS, 輸出2: oP5)。

【註】  
當子畫面處於顯示設定項及設定數值互閃時，請勿關閉電源，否則系統將不會儲存使用者設定之數值。

## E. 外觀尺寸



## F. 配件類型/尺寸圖

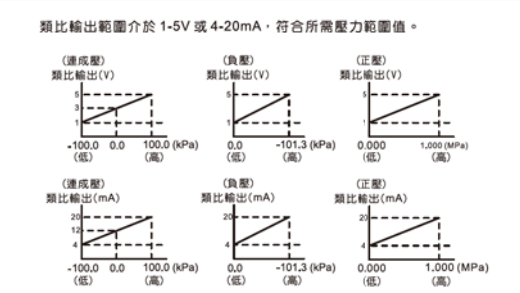


## K. 輸出型態

輸出型態圖示，展示了各種輸出模式的邏輯圖，包括：1. 常閉模式 (正壓/遠成壓, 負壓)；2. 常開模式 (正壓/遠成壓, 負壓)；3. 窗口比較模式 (常閉, 常開)。

【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



## G. 基本設定模式

基本設定模式操作圖示，展示了如何通過按鍵操作進行基本設定，包括：1. 測量模式；2. OUT1操作模式 (選擇HYS, Uin)；3. OUT1型態設定 (選擇NO, N/C)；4. OUT2操作模式 (選擇oFF, oPS, HYS, Uin)；5. OUT2型態設定 (選擇NO, N/C)；6. 反應時間設定 (選擇2.5ms, 25ms, 100ms, 250ms, 500ms, 1500ms)；7. 背光控制設定 (選擇ON/Off, Green, Red)；8. 單位設定 (選擇MPa, kgf/cm<sup>2</sup>, bar, psi, inHg, mmHg)。

【註】  
\*1. 當OUT2操作模式為oFF時，就不會有此設定項。  
\*2. 正壓單位為MPa，負壓及遠成壓為kPa。  
\*3. 此單位僅適用於負壓及遠成壓。

## M. 歸零設定

歸零設定圖示，展示了如何通過按鍵操作進行歸零設定。

## N. 最大/最小值顯示

最大/最小值顯示圖示，展示了如何通過按鍵操作顯示最大和最小值。

## O. 按鍵鎖定功能

按鍵鎖定功能圖示，展示了如何通過按鍵操作鎖定顯示屏。

## P. 顯示微調功能

顯示微調功能圖示，展示了如何通過按鍵操作進行顯示微調。

## Q. 錯誤訊息說明

錯誤名稱	錯誤說明	解決
過電流錯誤	輸出1負載電流超過125mA	關閉電源，檢查負載電流過大的原因或將負載電流降至125mA以內再重新運作
殘留壓力錯誤	輸出2負載電流超過125mA	零值設定範圍超過±3% F.S.，改變周圍壓力之後，再重新作歸零
使用壓力錯誤	使用的壓力超過壓力設定值的下限	供給壓力請調整在使用壓力範圍內

## R. 壓力單位轉換表

單位	Tp	Pg	kPa	MPa	kgf/cm <sup>2</sup>	mmHg	psi	bar	inHg
1 Pa	1	0.001	0.00001	0.00001	0.10197	0.00750062	0.000145038	0.00001	0.000295281
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.295281	1
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998	1000
1 kgf/cm <sup>2</sup>	98.0665	0.0980665	0.00980665	0.0980665	735.559	14.7253	0.980665	0.980665	29.52998
1 mmHg	133.322	0.133322	0.00133322	0.0133322	10.1325	1	0.0133322	0.0133322	1
1 psi	6894.76	6.89476	0.0689476	0.689476	51.7147	1	0.0689476	0.0689476	2.03602
1 bar	100000.0	100.000	0.100000	1.01972	750.062	14.5038	1	29.52998	1000
1 mmHg	3386.388	3.386388	0.0338639	0.338639	25.4000	0.491147	0.0338639	1	1