

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 rating pressure range. Do not apply pressure beyond recommended maximum withstand 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.
- ⑧ Sensors at end-of-life must be disposed of in accordance with E-Waste regulations of the country/region, NOT disposed of with regular garbage.

A SPECIFICATIONS

MODEL		KP47C (Compound Pressure)	KP47V (Vacuum Pressure)	KP47P (Positive Pressure)
Rated pressure range		-100.0 ~ 100.0 kPa	0.0 ~ -101.3 kPa	-0.100 ~ 1.000 MPa
Set pressure range		-103.0 ~ 103.0 kPa	10.0 ~ -103.0 kPa	-0.103 ~ 1.030 MPa
Withstand pressure		500 kPa		1.5 MPa
Fluid		Filtered air, Non-corrosive / Non-flammable gas		
Set pressure resolution	kPa	0.1		—
	MPa	—		0.001
	kgf/cm ²	0.001		0.01
	bar	0.001		0.01
	psi	0.01		0.1
	inHg	0.1		—
	mmHg	1		—
Power supply voltage		12 ~ 24 V DC $\pm$ 10 %, Ripple (P-P) $\leq$ 10 %		
Current consumption		$\leq$ 30mA (with no load)		
Switch output		NPN : open collector outputs Max. Load Current : 80 mA Max. Supply Voltage : 30 V DC Residual Voltage : $\leq$ 1 V		PNP : open collector outputs Max. Load Current : 80 mA Max. Supply Voltage : 24 V DC Residual Voltage : $\leq$ 1 V
Repeatability		$\pm$ 0.3 % F.S. $\pm$ 1 digit		
Hysteresis	One point set mode	Adjustable (※1)		
	Hysteresis mode			
	Window comparator mode			
Response time		$\leq$ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selectable)		
Output short circuit protection		Yes		
Display		4 digital, 7 segment LCD display (Red/Green/Orange) (Sampling rate : 0.2, 0.5, 1 sec./ time)		
Indicator accuracy		$\pm$ 1% F.S. $\pm$ 1 digit (ambient temperature : 25 $\pm$ 3°C)		
Switch on indicator		Orange Indicator 1 : OUT1 & Orange Indicator 2 : OUT2		
Analog output (Voltage output)		Output voltage : 1 ~ 5V $\pm$ 2.5%F.S. (within rated pressure range) Linearity : $\pm$ 1% F.S. Output impedance : 1 k Ω		Output voltage : 0.6 ~ 5V $\pm$ 2.5%F.S. (within rated pressure range) Linearity : $\pm$ 1% F.S. Output impedance : 1 k Ω
Environment	Enclosure	IP40		
	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	$\geq$ 50 M Ω (at 500V DC, between case and lead wire)		
	Vibration	Total amplitude 1.5 mm or 10 G, 10 Hz ~ 150 Hz ~ 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z		
	Shock	100 m/s ² (10 G), 3 times each in direction of X, Y and Z		
Temperature characteristic		$\pm$ 2% F.S. of detected pressure (25°C) at temp. (Range of 0 ~ 50°C)		
Port size		F1: R1/8", M5 ; F2 : NPT 1/8", #10-32 UNF ; F3 : G1/8"(BSPP), M5 ; M5 : M5 female thread		
Lead wire		Ø4 Oil-resistance cable (PVC) - 26 AWG (0.15 mm ²) - 4 cores		
Weight (with 2 meter lead wire)		Approx. 67g		

※1. Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.

B ORDERING INFORMATION

K P 4 7 C - 0 1 - F 1

Pressure Range

C : Compound (-103.0 ~ 103.0 kPa)
V : Vacuum (10.0 ~ -103.0 kPa)
P : Positive (-0.103 ~ 1.030 MPa)

Pressure Port

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

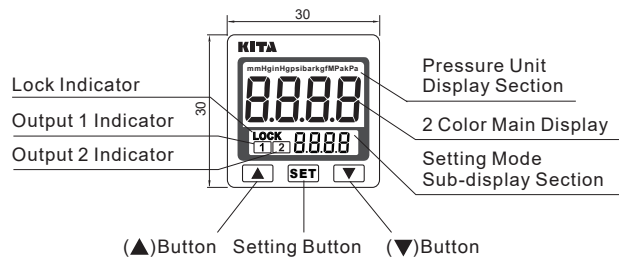
Output Specifications

01 : 1 NPN output + Analog output (1~5V)
02 : 2 NPN output
03 : 1 PNP output + Analog output (1~5V)
04 : 2 PNP output

Optional Parts

BT-22 : Mounting bracket
BT-23 : Mounting bracket
PA-C : Panel adapter
PA-D : Panel adapter +
Front protective lid

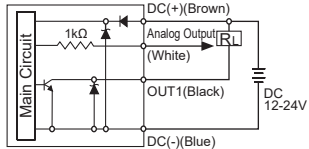
C PANEL DESCRIPTION



D OUTPUT CIRCUIT WIRING DIAGRAMS

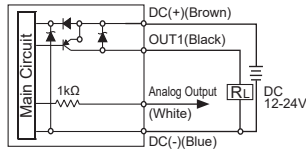
KP47□-01-□

1 NPN+Analog Output(1-5V)
(0.6~5V only positive)



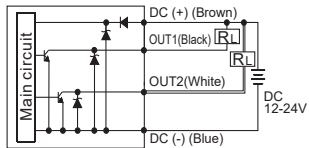
KP47□-03-□

1 PNP+Analog Output(1-5V)
(0.6~5V only positive)



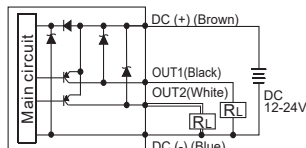
KP47□-02-□

2 NPN Output

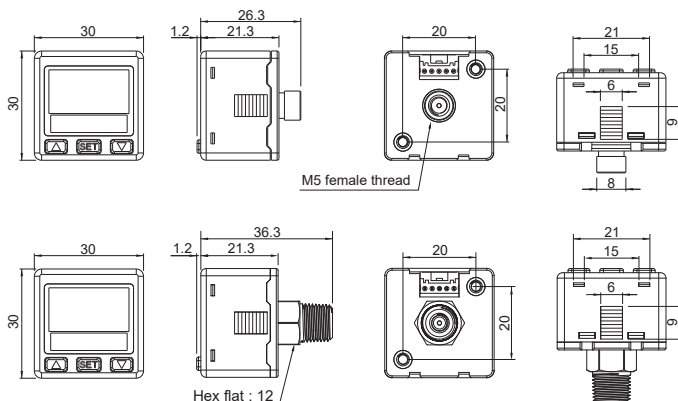


KP47□-04-□

2 PNP Output

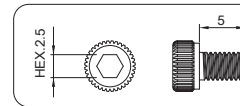
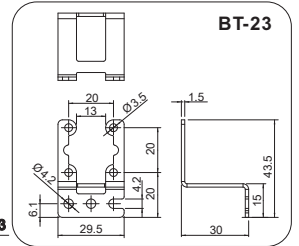
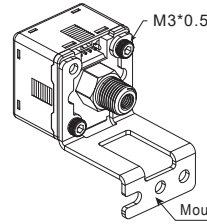
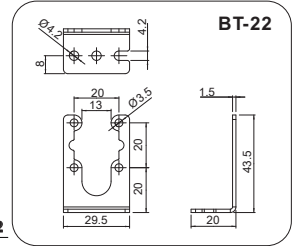
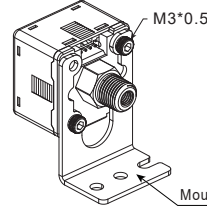


E DIMENSIONS



F OPTIONAL PARTS DIMENSIONS

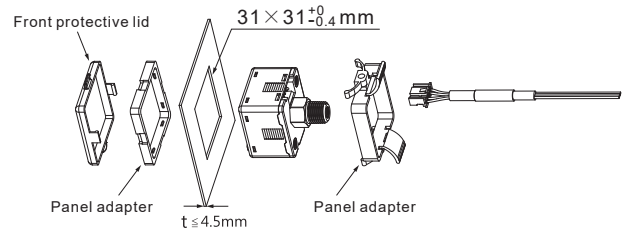
① Mounting bracket



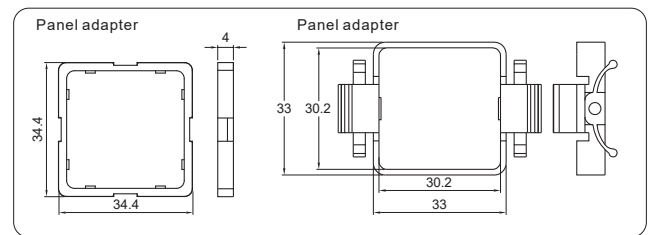
⚠ Caution :

- *1. Screws suitable hexagonal wrench size is 2.5mm.
- *2. Use non-standard screws, the length must be limited to 5mm.

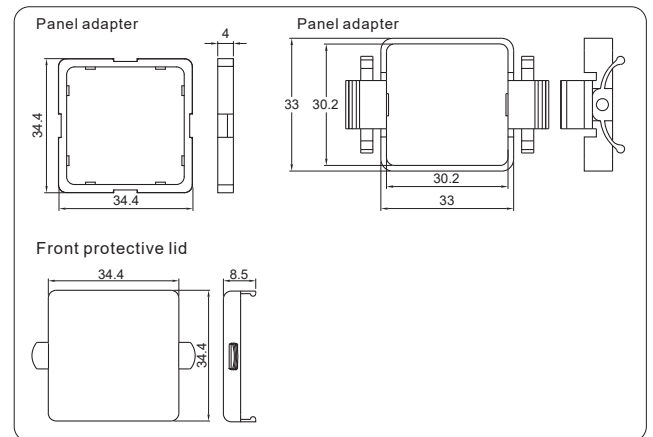
② Panel Mounting



PA-C

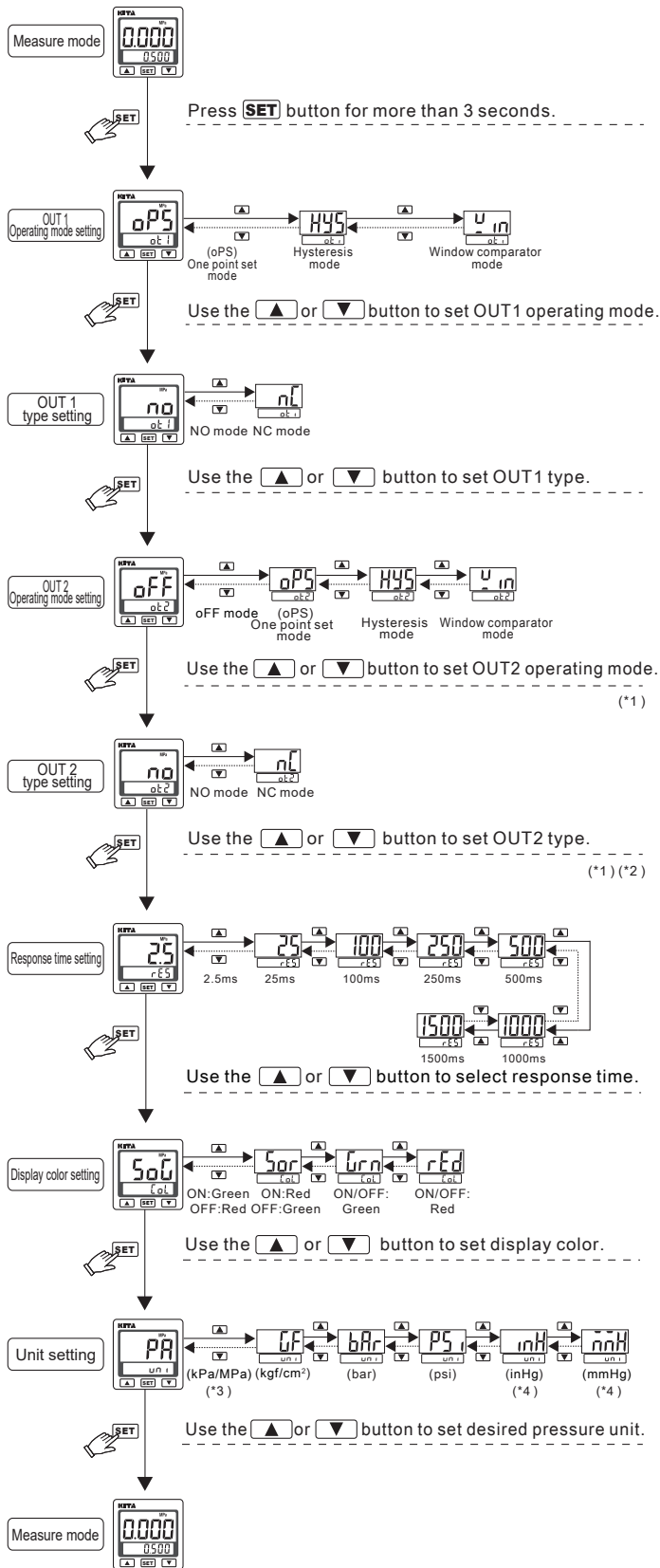


PA-D



Unit:mm

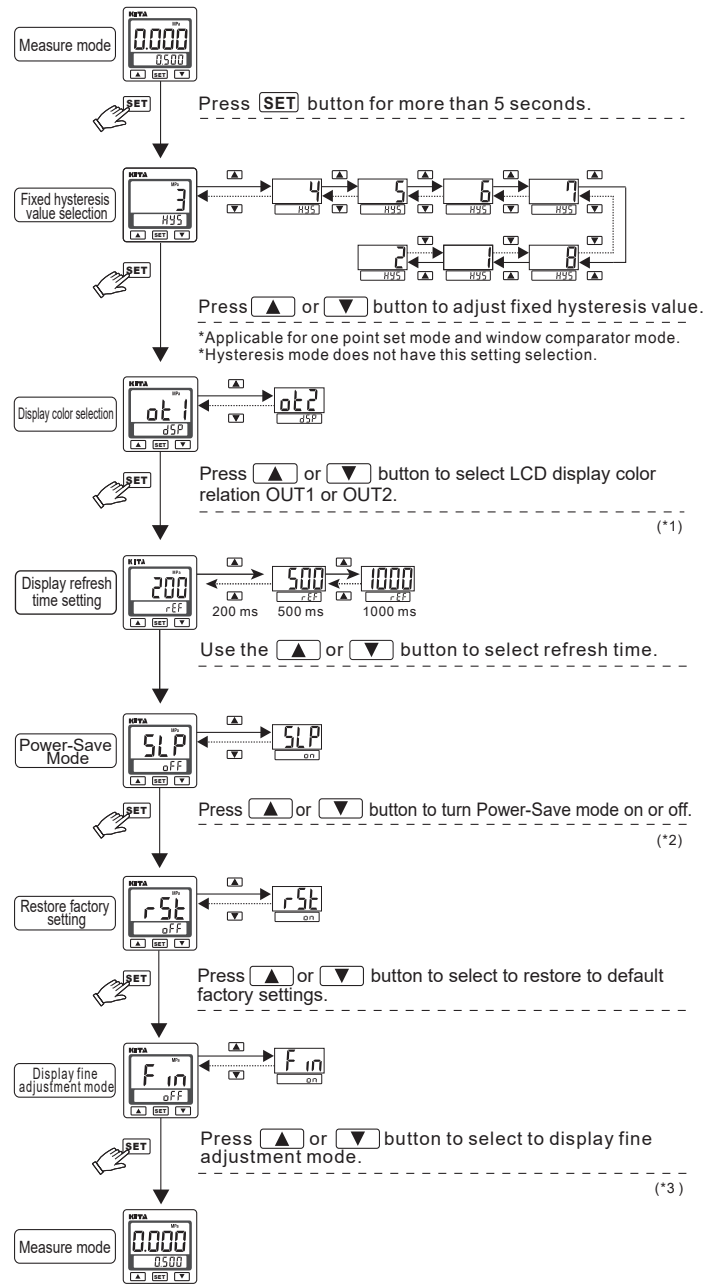
G INITIAL SETTING MODE



【NOTE :】

- *1. This setting mode will not display when output spec. is 1 OUT.
- *2. This setting mode will not display when output 2 is set to oFF.
- *3. Pressure unit is MPa with positive pressure.
Pressure unit is kPa with vacuum and compound pressure.
- *4. Only applicable for Vacuum/Compound.

H ADVANCE SETTING MODE

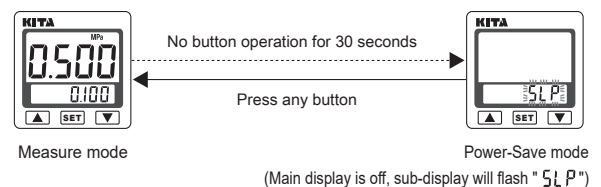


【NOTE :】

- *1. This setting mode will not display OUT2 when output spec. is 1 OUT.
- *2. When setting is "on", the power-save mode is active. Please refer to the item "POWER-SAVE MODE" in detailed.
- *3. When setting is "on", the display fine adjustment mode is active. Please refer to the item "FINE ADJUSTMENT MODE" in detailed.

I POWER-SAVE MODE

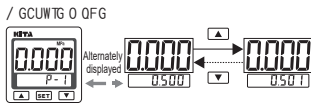
- During Power-Save mode, the main display will turned off if no buttons is pressed after 30 seconds.
- During Power-Save mode, the output LCD may not be synchronize with the output. It is normal and will not affect output operation.
- Press any button to turn-on main display temporarily.



J PRESSURE SETTING MODE (2 OUT)

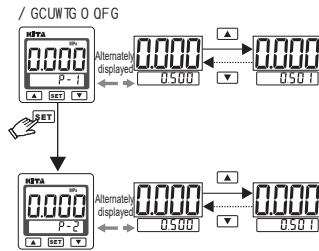
Setting Condition 1 :

OUT 1 mode setting :
" oP5 " (One point set mode)
OUT 2 mode setting :
" oFF " (Not used)



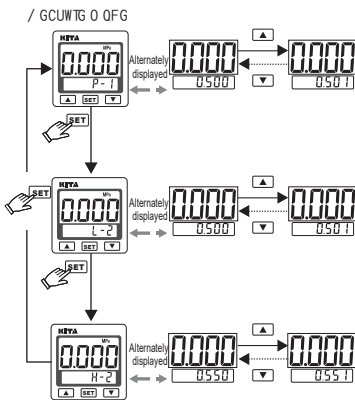
Setting Condition 2 :

OUT 1 mode setting :
" oP5 " (One point set mode)
OUT 2 mode setting :
" oP5 " (One point set mode)



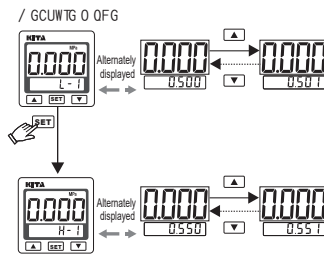
Setting Condition 3 :

OUT 1 mode setting :
" oP5 " (One point set mode)
OUT 2 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)



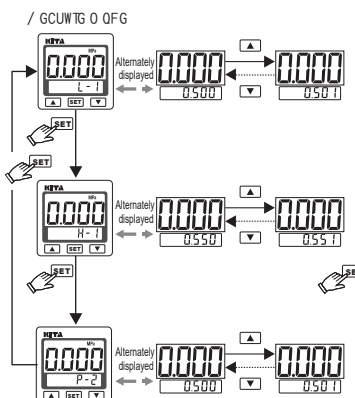
Setting Condition 4 :

OUT 1 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)
OUT 2 mode setting :
" oFF " (Not used)



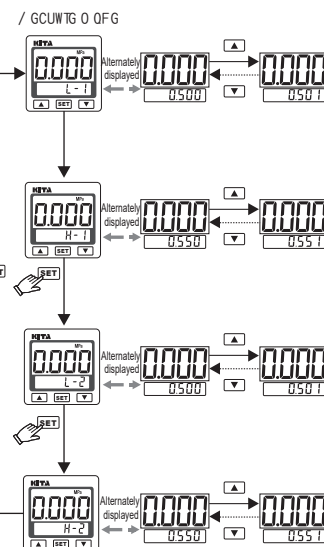
Setting Condition 5 :

OUT 1 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)
OUT 2 mode setting :
" oP5 " (One point set mode)



Setting Condition 6 :

OUT 1 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)
OUT 2 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)

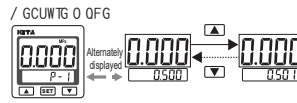


[NOTE:]
Do not disconnect power when the sub-display and setting value is flashing alternately; otherwise the system cannot store the values.

K PRESSURE SETTING MODE (1 OUT)

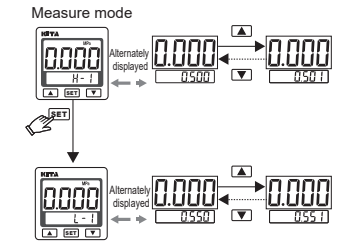
Setting Condition 1 :

OUT 1 mode setting :
" oP5 " (One point set mode)



Setting Condition 2 :

OUT 1 mode setting :
" HYS " (Hysteresis mode)
" u in " (Window comparator mode)



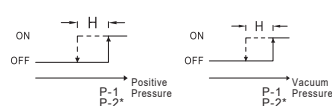
[NOTE:]
Do not disconnect power when the sub-display and setting value is flashing alternately; otherwise the system cannot store the values.

L OUTPUT TYPE

(1) One point set mode:

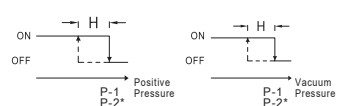
Normal open mode

Positive/Compound (KP47P/KP47C) Vacuum (KP47V)



Normal close mode

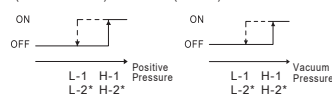
Positive/Compound (KP47P/KP47C) Vacuum (KP47V)



(2) Hysteresis mode:

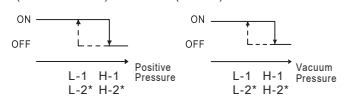
Normal open mode

Positive/Compound (KP47P/KP47C) Vacuum (KP47V)



Normal close mode

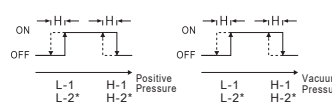
Positive/Compound (KP47P/KP47C) Vacuum (KP47V)



(3) Window comparator mode:

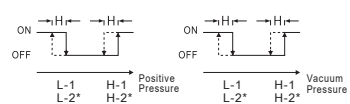
Normal open mode

Positive/Compound (KP47P/KP47C) Vacuum (KP47V)



Normal close mode

Positive/Compound (KP47P/KP47C) Vacuum (KP47V)

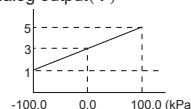


[NOTE:]
*1. Pressure setting value of P-2, L-2 or H-2 won't be shown when output spec. is 1 OUT.
*2. In case hysteresis is set at less than or equal to 2 digits, switch output may chatter if input pressure fluctuates near the set point.
*3. When using window comparator mode, the difference between two set points must be greater than the fixed hysteresis, otherwise will cause the switch output to malfunction.

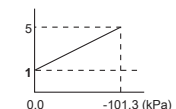
M ANALOG OUTPUT DESCRIPTION

Analog output range 1-5V, proportional to the pressure range.

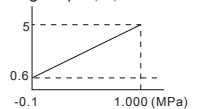
(Compound)
Analog output (V)



(Vacuum)
Analog output (V)

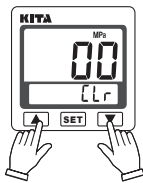


(Positive)
Analog output (V)

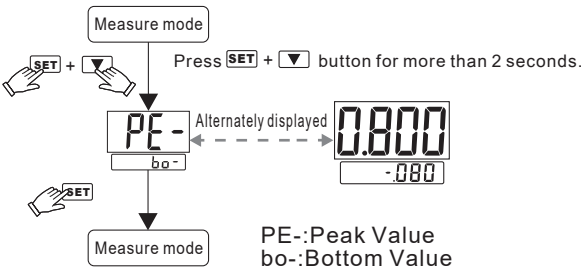


N ZERO POINT SETTING

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

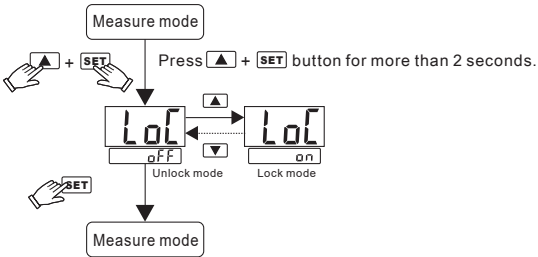


O PEAK/BOTTOM HOLD FUNCTION



PE-:Peak Value
bo-:Bottom Value

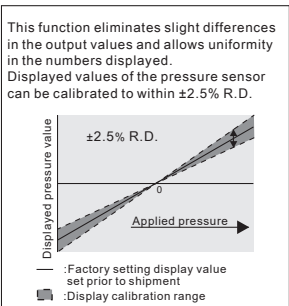
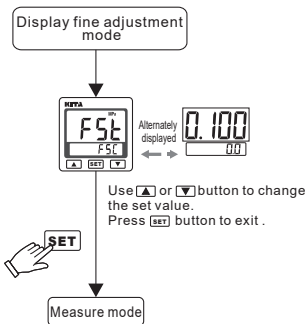
P KEY LOCK/UNLOCK MODE



- Use key lock mode to prevent unauthorized or accidental tampering with the switch setting.
- When lock mode is selected, panel will display "LOCK".



Q FINE ADJUSTMENT MODE



R.D. (Real Detect)
[NOTE :] 1. Setting resolution is $\pm 0.1\%$ R.D.
2. The signal would be changed with analog output after adjusting.

R ERROR CODE INSTRUCTION

Error Type	Error code	Error Condition	Troubleshooting
Excess load current error	out1 E_{r1}	Output 1 load current is more than 80 mA	Turn power off and check the cause of overload current or lower the current load under 80 mA, then restart.
	out2 E_{r2}	Output 2 load current is more than 80 mA	
Residual pressure error	E_{r3}	During zero reset, ambient pressure is over $\pm 3\%$ 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.	
System error	E_{r4}	Internal system error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
	E_{r5}	Internal system error	
	E_{r6}	Internal data error	
	E_{r7}	Internal data error	

S PRESSURE UNIT CONVERSION TABLE

From	To	Pa	kPa	MPa	kgf/cm ²	mmHg	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002953	
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953	
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998	
1 kgf/cm ²	98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979	
1 mmHg	133.32	0.13332	0.001333	0.0013595	1	0.019336	0.0013332	0.039370	
1 psi	6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074	
1 bar	100000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998	
1 inHg	3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1	

T China RoHS

Part Name	Hazardous Substances					
	Pb	Hg	Cd	Cr Vi	PBB	PBDE
Metal Part	X	O	O	O	O	O
Plastic Part	O	O	O	O	O	O
Electronic	X	O	O	O	O	O
Cable & Cabling accessories	O	O	O	O	O	O

This table is made according to SJ/T 11364.
O: Indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.
X: Indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572.