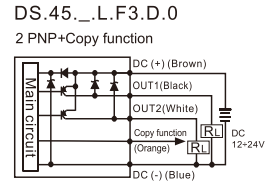
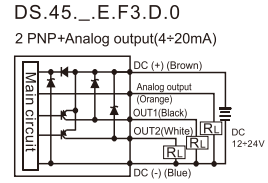


For your safety, please read the following before using.

- Do not use corrosive or flammable gas or liquid with this product.
- Please use within the operating pressure range. Do not apply pressure beyond recommended maximum operation pressure, permanent damage to the pressure switch may occur.
- Do not drop, hit or allow excessive shock. Even if pressure 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 switch should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

SPECIFICATIONS	DS.45.P...F3.D.0 (Positive)	DS.45.V...F3.D.0 (Vacuum)	DS.45.C...F3.D.0 (Compound)
Rated pressure range	0.000+1.000MPa	0.0~-101.3kPa	-100.0+100.0kPa
Settling pressure range	0.000+1.000MPa	0.0~-101.3kPa	-100.0+100.0kPa
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
inHg	—	0.1	—
Power supply voltage	12 to 24VDC (include ripple voltage)		
Current consumption	≤ 40mA (With no load)		
Switch output	PNP: open collector 2 outputs Max. load current: 125mA Max. supply voltage: 24V DC Voltage drop: ≤1.5V		
Repeatability(Switch output)	±0.2% F.S. ±1digit		
Response time	≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selections)		
Output short circuit protection	Yes		
Analog output	Output current: 4+20mA ±2.5%(within rated pressure range) Linearity: ±1% F.S. Max.load impedance: 250Ω at power supply of 12V 600Ω at power supply of 24V Min.load impedance: 50Ω		
7 segment LCD display	3½ digit, LCD display (red/ green); sampling rate: 5 times/sec.		
Indicator accuracy	±2% F.S. ±1 digit		
Indicator	Orange (1 & 2 Indicator) OUT1 OUT2		
Environment	Protection degree	IP65 when correctly assembled	
	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 100ms 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	G1/8"(BSPP), M5		
Lead wire	Oil-resistance cable (0.15mm ²)		
Weight	Approx. 86g (with 2 meter lead wire)		

SIMPLIFIED DIAGRAM



ORDERING CODE

DS.45...F3.D.0

Pressure Range

C : Compound (-100.0 + 100.0 kPa)
 V : Vacuum (0.0 + -101.3 kPa)
 P : Positive (0.000 + 1.000 MPa)

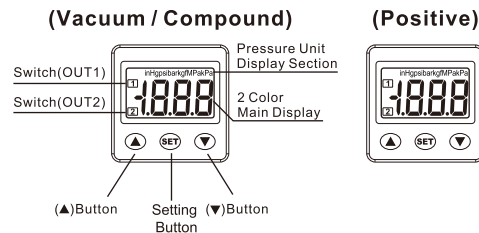
Output Specifications

E : 2 PNP Output + Analog Output(4+20mA)
 L : 2 PNP Output + Copy Function

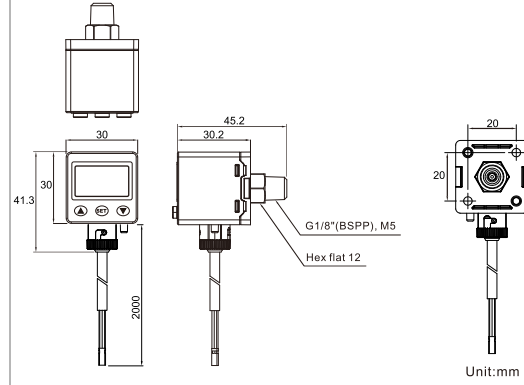
Optional Parts

BT-10 : Mounting bracket
 BT-11 : Mounting bracket
 PA-E : Panel adapter
 PA-F : Panel adapter + Front protective lid

PANEL DESCRIPTION

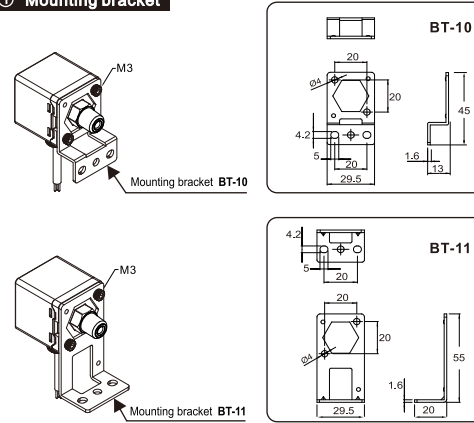


DIMENSIONS

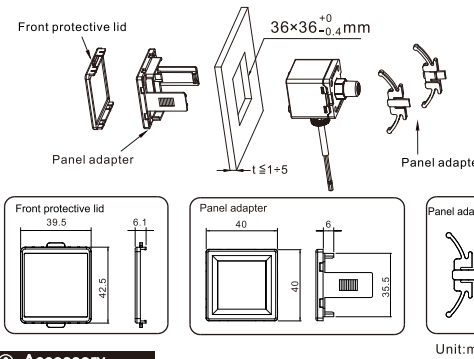


OPTIONAL PARTS DIMENSIONS

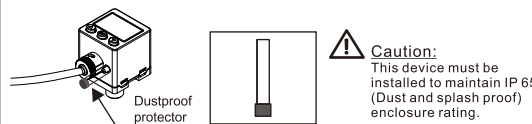
① Mounting bracket



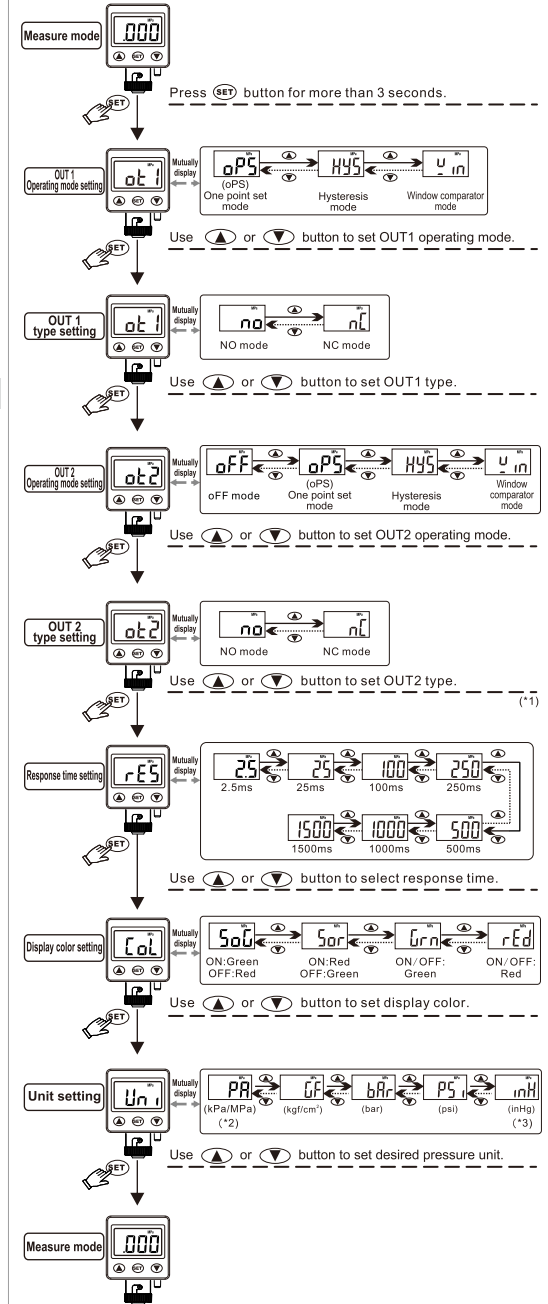
② Panel mounting



③ Accessory



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

ADVANCED SETTING MODE

Measure mode

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

Fixed hysteresis value selection

Mutually display

Use **▲** 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

Mutually display

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

Power-Save Mode

Mutually display

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

Copy Function Setting

Mutually display

Use **▲** or **▼** button to set copy function.
 *onL: When finishing copy, the slave sensor would be locked automatic.
 *Only DS.45...L.F3.D.0 has this setting selection. (*2)

Restore factory setting

Mutually display

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

Display fine adjustment mode

Mutually display

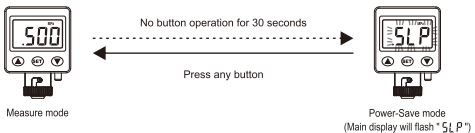
Use **▲** or **▼** button to select to display fine adjustment mode. (*3)

Measure mode

[NOTE :]
 (*1) Please refer to the item "Power-save mode".
 (*2) Please refer to the item "Copy function setting".
 (*3) Please refer to the item "Fine adjustment mode".

POWER-SAVE MODE

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



HOW TO SET PRESSURE THRESHOLD

One point set mode:

Hysteresis mode/ Window comparator mode:

Use the **▲** or **▼** buttons to set the value.

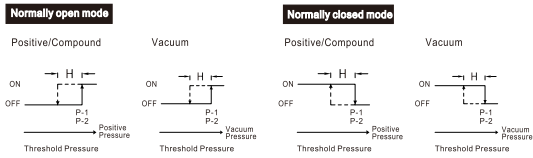
Use the **▲** or **▼** buttons to set the value.

Use the **▲** or **▼** buttons to set the value.

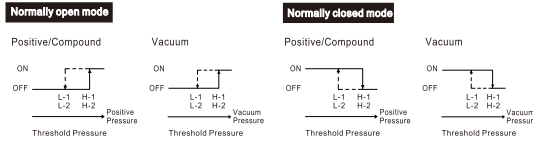
When out 1, "" displays 1
 When out 2, "*" displays 2.

OUTPUT

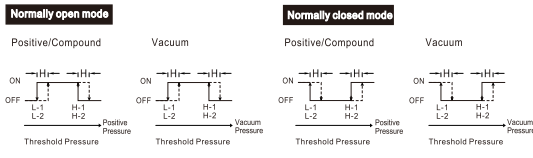
(1) One point set mode:



(2) Hysteresis mode:



(3) Window comparator mode:

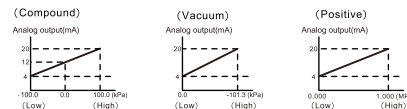


[NOTE :]

- (*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.

ANALOG OUTPUT DESCRIPTION

Analog output range 4 to 20mA, proportional to the pressure range.



ZERO POINT SETTING

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



THE MAX. & MIN. DISPLAY MODE

The Max. value display mode:

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

The Min. value display mode:

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

KEY LOCK/UNLOCK MODE

Key lock mode:

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

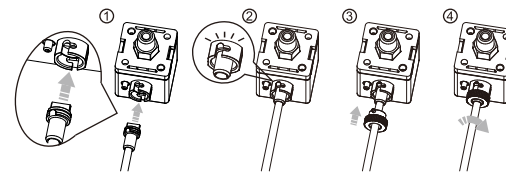
Unlock Lock

Use **▲** or **▼** button to toggle between Lock and Unlock.

CABLE INSTALLATION INSTRUCTION

Please install the cable as the following steps.

- Turn up ward the terminal. (See figure ①)
- Install the terminal inside the pressure switch groove. (See figure ②)
- Connect the terminal cover to the product. (See figure ③)
- Turn the terminal cover to lock. (See figure ④)



[NOTE:] Recommend not insert-extract over 20 times.

PRESSURE UNIT CONVERSION TABLE

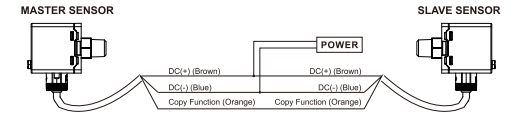
From	To	Pa	kPa	MPa	kgf/cm ²	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000010197	0.000145038	0.00001	0.0002953	
1 kPa	1000.000	1	0.001000	0.010197	0.145038	0.010000	0.2953	
1 MPa	1000000	1000	1	10.197	145.038	10	295.2988	
1 kgf/cm ²	98066.5	98.0665	0.0980665	1	14.2233	0.980665	28.9579	
1 psi	6895	6.895	0.006895	0.07031	1	0.06895	2.036074	
1 bar	100000.0	100.0000	0.100000	1.01972	14.5038	1	29.52988	
1 inHg	3386.388	3.386388	0.003386	0.034530	0.491141	0.033863	1	

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

[SETTING STEPS]

- Please set the copy function to **on** or **onL** to be on copy condition by master sensor. Please refer the copy setting of "Advanced setting mode".
- Turn power off to both sensor.
- Refer the connection way with the master and slave sensor as followings.



- Turn on power at same time. (*1)
- Wait 5 sec., when finishing to convey the data, The master sensor displays (mutually display) **CPY** (display reciprocal). The slave sensor displays (mutually display) **SLV** (display reciprocal).
- When conveying the data fails, (Master) sensor displays **CPY** (display reciprocal). (Slave) sensor displays **Er8** (*2)
- Turn off power and remove the cable connection. If the cable is not removed the sensor would be broken.

*If it is required to copy another slave sensor, please repeat the step ③ to ⑤.
 *Only DS.45...L.F3.D.0 has this setting selection.

[NOTE]

- (*1) If turn on power is not synchronized, the data cannot be copied.
- (*2) When the data conveying fails, please confirm the wire connection. Then repeat the step ③ to ⑤.

How to cancel the copy mode by master sensor:

- When the master sensor displays **CPY** (display reciprocal), Press **▼** button to leave the copy mode.

FINE ADJUSTMENT MODE

Display fine adjustment mode

Mutually display

Current measured value

Use **▲** or **▼** button to change the set value. Press **SET** when finished or make no button operation for more than 3 seconds after changing the set value to exit.

Mutually display

Adjusted value (Percent)

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

ERROR CODE INSTRUCTION

Error Name	Error code	Error instruction	Troubleshooting
Excess load current error	Er1	Output 1 load current is more than 125 mA	Turn power off and check the cause of overloaded current or lower the current load under 125 mA, then restart.
	Er2	Output 2 load current is more than 125 mA	
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	HHH	The applied pressure exceeds the upper limit of pressure setting.	Adjust the pressure within applied pressure range.
	LLL	The applied pressure exceeds the lower limit of pressure setting.	
System error	Er4	Internal system error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
	Er5	Internal system error	
	Er6	Internal data error	
Copy data error	Er7	Internal data error	Please check the model and cable connection. Turn on power to restart. If it doesn't return to normal condition, please return to factory for inspection.
	Er8	Copy data error	