



ECP1 Pressure Gauge

Operation Manual



FinkTek Co., Ltd.

No.16, Tzuchiang St., Tucheng Industrial Park, New Taipei

City 23678 Tel: 886-2-22696789

Fax: 886-2-22686682

Website: <http://www.fine-tek.com>

E-mail: info@fine-tek.com

Contents

1. Reading Labels	1
2. Product Warranty	2
2.1 New Product Warranty	2
2.2 Repair Warranty	2
2.3 Service Network	3
3. Product Inspection	4
3.1 Check Content	4
3.2 Safety Inspection	4
4. Product Features	5
4.1 Product Features	5
4.2 Working Principles	5
4.3 Mechanical Drawing	5
4.4 Product Applications	5
5. Product Specifications	6
5.1 Product Applications	6
5.2 Panel	6
5.3 Appearance and Dimension	7
5.4 Hole Dimension	7
5.5 Ordering Information	8
5.6 Wiring Instructions	9
6. Installation Instructions	10
6.1 Environmental Safety	10
6.2 Install	10
6.3 Installation of Circuits	10
7. Operating Instructions	11
7.1 Button Functions	11
7.2 Description	12
7.3 Information on Commands	13
7.4 Examples	14
8. Transportation And Storage	15
8.1 Transportation requirements	15
9. Maintenance	15
9.1 Daily Care	15
10. Error Message And Troubleshooting	15

1. Reading Labels

Thanks for purchasing FineTek's Product. This operation manual describes the product features, working principles, operation and maintenance methods. It makes the user fully understand how to use the product correctly, so as to prevent dangerous situations such as device damage or operator injury.

- Please read this operation manual completely and carefully before using the product.
- Please contact the company if this operation manual can't satisfy your demands.
- The content of the operation manual is updated based on the version upgrade, which will be uploaded to the website for the user to access.
- Please don't disassemble or repair the product on your own, as this will make you disqualified from availing of the warranty service. Please send the product back to the company for repair and calibration, or just contact the company.
- Explanation of warning signs:



Danger→ It indicates that wrong operation will cause death or major disasters.



Note→ It indicates that wrong operation will cause injury and device damage to some extent.



Electric shock→ It warns of possible electric shock.



Fire→ It warns of possible fire.



Prohibited→ It indicates the prohibited wrong behavior.

2. Product Warranty

2.1 New Product Warranty

- We don't charge for the inspection, part/s and repair for the product of the company that has a defect within 12 months from the delivery date and meets the warranty terms.
- If the product defect is not due to human error during its transportation, user may
- change to a new unit from the company within 7 days from delivery date.
- When the product needs to be sent back to the factory for repair, please send the whole set, and don't disassemble the parts. Moreover, please be sure it is completely packed to avoid damage and causing more loss and defect during the transportation.
- The warranty is not available for causes that fall under the following circumstances, for which the company shall charge for the inspection, part/s and repair according to the actual condition:
 - ◆ The product or its parts are beyond the warranty period.
 - ◆ Fault or damage is caused by not following the instruction and use environment described on the operation manual.
 - ◆ The product damage is caused by a force majeure factor (natural disasters, floods, fire, earthquakes, lightning, typhoon, etc.), human destruction (scratches, dropping, latch broken, tapping, cracks and punching), human error (using improper voltage, high-humidity, water leakage, stain, corrosion, loss, improper storage, etc.) and other abnormal factors.
 - ◆ The damage is caused by the customer or the 3rd party through the installation, addition, expansion, modification and repair of parts not authorized or certified by the company.
 - ◆ The volume label information is wrong or unclear, so the product serial number can't be confirmed.

2.2 Repair Warranty

A **6-month** warranty service is provided for the repaired part of the product, during which the same product can be repaired free of charge in case of the same fault.

2.3 Service Network

Company	Address	Telephon	Fax
Taipei Headquarters (Taiwan)	No.16, Tzuchiang St., Tucheng Industrial Park, New Taipei City 23678	+886 2 2269 6789	+886 2 2268 6682
Taichung Sales office (Taiwan)		+886 4 2465 2820	+886 4 2463 9926
Kaohsiung Sales office (Taiwan)		+886 7 333 6968	+886 7 536 8758
Fine automation Co., Ltd. (China)	No. 451, Duhui Road, Zhuanqiao Township, Minhang District, Shanghai City 201109	+86 021 64907260	+86 021 6490 7276
Aplus FineTek Sensor Inc. (America)	355 S. Lemon Ave, Suite D, Walnut, CA 91789	1 909 598 2488	1 909 598 3188
FineTek Pte Ltd. (Singapore Branch)	37 Kaki Bukit Place, Level 4 Singapore 416215	+65 6452 6340	+65 6734 1878
FineTek GmbH (Germany Branch)	Bei den Kämpen 26 21220 Seevetal-Ramelsloh, Germany	+49 (0) 4185 8083 12	+49 (0) 4185 8083 80
FineTek Co., Ltd. (Indonesia Branch)	PERGUDANGAN TUNAS BITUNG JL. Raya Serang KM. 13,8, Blok C3 No. 12&15, Bitung Cikupa, Tangerang 15710	+62 (21) 2923 1688	+62 (21) 2923 1988

3. Product Inspection

3.1 Check Content

- Sensor x 1
- Fixating buckle x 1; countersunk screw x 2; nut x 2
- Cable x 1
- Operation manual x 1

3.2 Safety Inspection

- Please check whether the external package is deformed or damaged. Please remember to take a picture for evidence for compensation later.
- After unpacking, please check whether the content is deformed or damaged, or has any quality problem. Please remember to take a picture for evidence for compensation later.
- After unpacking, please check whether the content is consistent with the ordering info, and whether the quantity is right.
- Please contact the company within 7 days if any of the above situations occur (attach the picture together with your complaint). Otherwise, we won't compensate for, change or repair the product defect.

4. Product Features

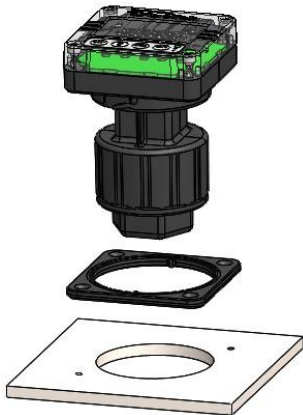
4.1 Product Features

- Dual-color LED and red-text alarm displays
- Analog 4 – 20 mA output that allows continuous detection of pressure values
- Anti-corrosion structural design that is suitable for minimally corrosive solution
- Quick release mount to facilitate calibration and replacement
- Dual NPN/PNP output that makes pressure control quicker and more convenient
- IO-Link compatibility to make system integration easier

4.2 Working Principles

With the piezoresistive pressure sensor, as soon as changes in environmental pressure are detected, the thin film deformation on the pressure sensor changes too, and the piezoresistive material on the thin film experiences deformation accordingly. The resistance changes as such as well. Such resistance change, once read and processed through the Wheatstone bridge and the amplifier circuit, can be used to measure the size of pressure.

4.3 Mechanical Drawing



4.4 Product Applications

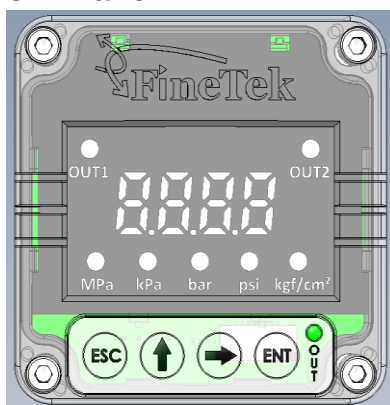
This product is applied to a modularized pressure meter where air, water, and solution with a pH value are used.

5. Product Specifications

5.1 Product Applications

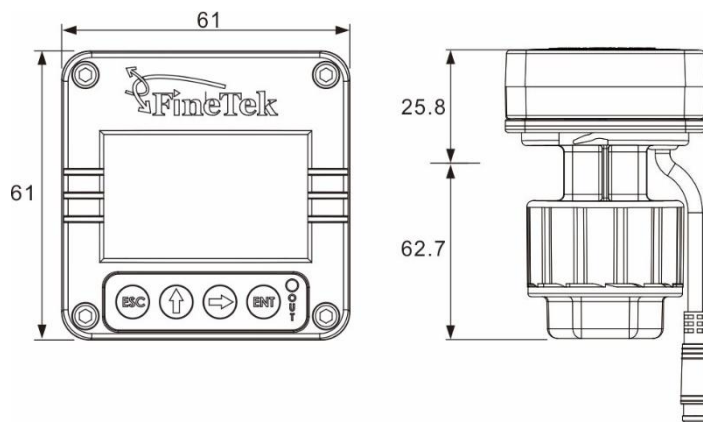
Power supply	DC 12~36V
Power consumption	<50mA (@24V unloaded)
Operating temperature	-10 to 60°C
Working medium	Liquid/Slight corrosive liquid/air
Accuracy	±1.5% F.S.
Temperature coefficient	±0.1%F.S./ °C (25°C as the baseline)
NPN/PNP output current	Maximum pressure tolerance of 30 V/100 mA and breakover residual voltage of < 1.5 V
NPN/PNP protective current	180mA
NPN/PNP short-circuit protection	Yes
Delay time	1.5 ms, 20 ms, 100 ms, 500 ms, 1,000 ms, 2,000 ms, 5,000 ms
Current output	4~20mA Max. Load resistance When the power voltage is 12V: 300Ω When the power voltage is 24V: 500Ω Linearity: ±1%F.S. Accuracy : ±2.5%F.S. (ambient temperature of 25 ± 3°C)
Display unit	MPa, kPa, kgf / cm ² , bar, psi
Display method	Dual-color LED
Display color	Red/Green
Number of digits displayed	4 (7 segments)
Action indicator	It is lit when the output is ON OUT1 and OUT2: Red
Dimensions	61mm*61mm

5.2 Panel

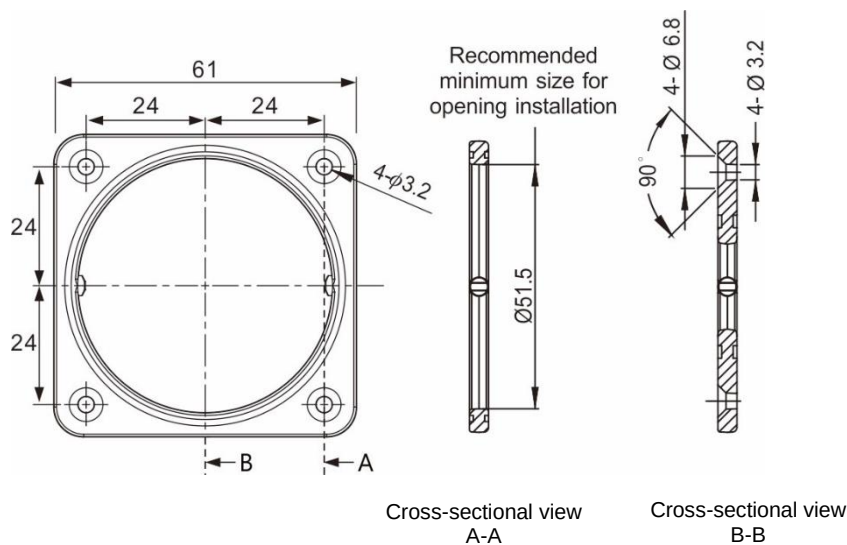


There are 4 push buttons on the panel for adjustment of parameters. There are two output indicators (OUT1/OUT2) and 5 pressure units for selection and shift in display.

5.3 Appearance and Dimension



5.4 Hole Dimension



On the installation disc, it is required to make diagonal holes with a diameter of 3.2 mm according to the cross-sectional view B-B above; use the countersunk screws to hold the disk onto the equipment.

In addition, it is required to make holes with a diameter greater than 51.5 and smaller than 54 mm according to the foregoing drawing to allow buckling and fixation once the display pressure meter is inserted into the installation disc.

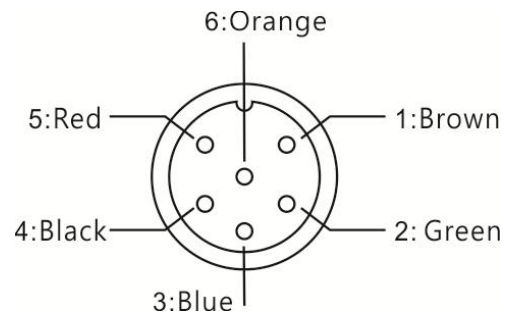
5.5 Ordering Information

	ECP 1	⁰⁵	⁰⁶	0 0	-	⁰⁹	¹⁰	¹¹	¹²	¹³	P A	¹⁶	¹⁷	¹⁸	¹⁹
⁰⁵ ⁰⁶ Medium															
00: Air															
10: Liquid															
⁰⁹ ¹⁰ Housing material															
18: PP															
¹¹ ¹² Diaphragm															
00: No diaphragm (air)															
53: Viton (general liquid)															
21: PTFE (solution with a pH value)															
¹³ Pressure range															
A: 0~5kgf/cm ²															
B: 0~10kgf/cm ²															
C: 0~20kgf/cm ²															
¹⁶ ¹⁷ Connection - size															
A2: 1/4"															
A4: 3/8"															
A5: 1/2"															
¹⁸ ¹⁹ Connection - thread															
04: PF female															

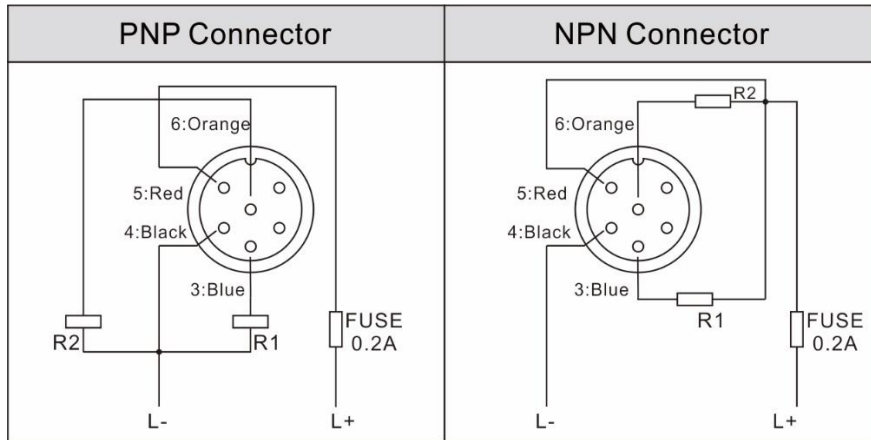
5.6 Wiring Instructions

Quick joint used for the ECP and the cable for connecting the six conductors of the cable

- (1) Brown: 4–20 mA
- (2) Green: Control box cover
- (3) Blue: OUT1
- (4) Black: GND
- (5) Red: 24V
- (6) Orange: OUT2



Information on OUT1/OUT2 connection:

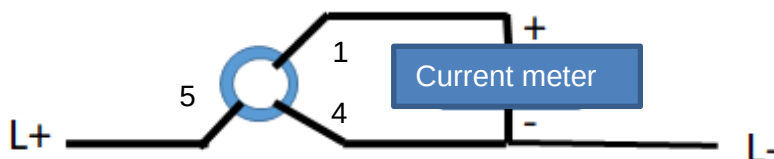


- R1 and R2 mean the loads of OUT1 and OUT2.
- When the system experiences abnormalities, to protect the sensor against

Information on the 4–20 mA connector:

The third pin (brown line) is where the 4–20 mA current is output and is connected to the input terminal of the positive end of the current meter.

The second pin (black line) is 0V and is connected to the input terminal of the negative end of the current meter.

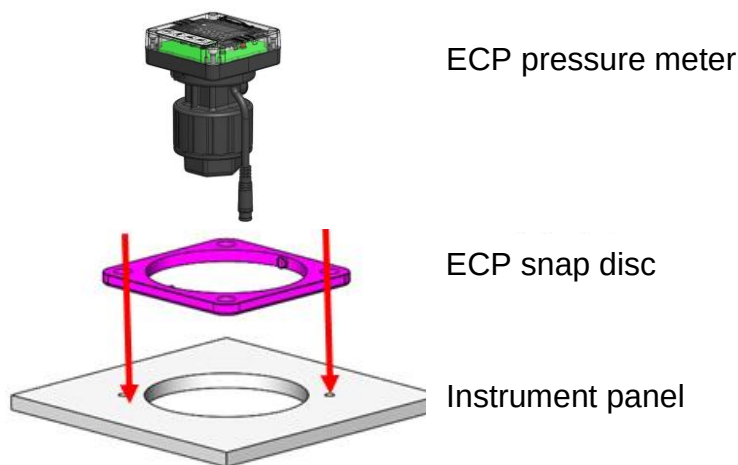


6. Installation Instructions

6.1 Environmental Safety

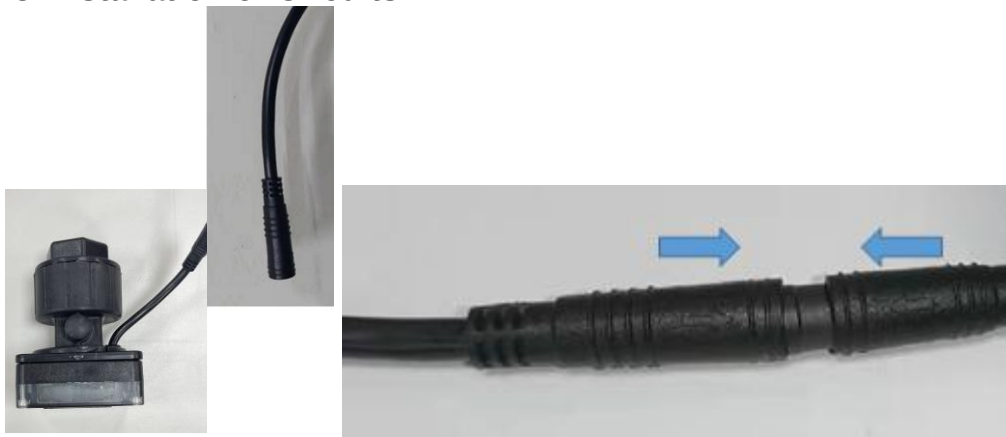
- Storage temperature: -40°C ~85°C (-40°F~185°F)
- Operating temperature: -10°C~60°C (-14°F~140°F)
- Supply power: 12 VDC ~ 36 VDC
- Output load current: Max, 50 mA

6.2 Install



Once holes are made on the instrument panel according to Section 5, use the countersunk screws and nuts (follow the red arrows), and secure the snap disc onto the instrument panel first. Then, tilt the ECP pressure meter by around 30 degrees. Penetrate it through the snap disc and let the fixating buckle of the snap disc enter the slot. Turn the ECP pressure meter clockwise till the pressure meter is in the same orientation as the snap disc and this completes the installation process.

6.3 Installation of Circuits



Once wiring is completed according to Section 5, finish installing the ECP pressure meter. Link and insert the quick joint of the cable in the arrow-indicated direction to complete installation of the circuit.

7. Operating Instructions

7.1 Button Functions

Quick key:

- Press and hold  for 3 seconds to initialize pressure
- Press and hold  for 3 seconds to shift (LOCK/UNLK)
- Press  to quickly shift the unit
- Press  to enter the menu in an unlocked state

General operation:

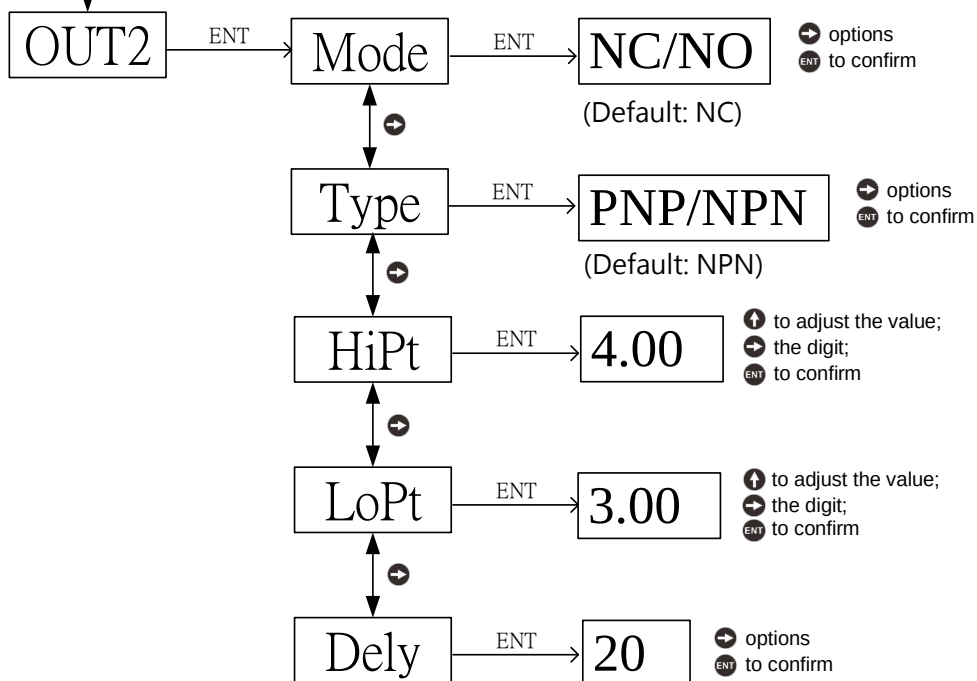
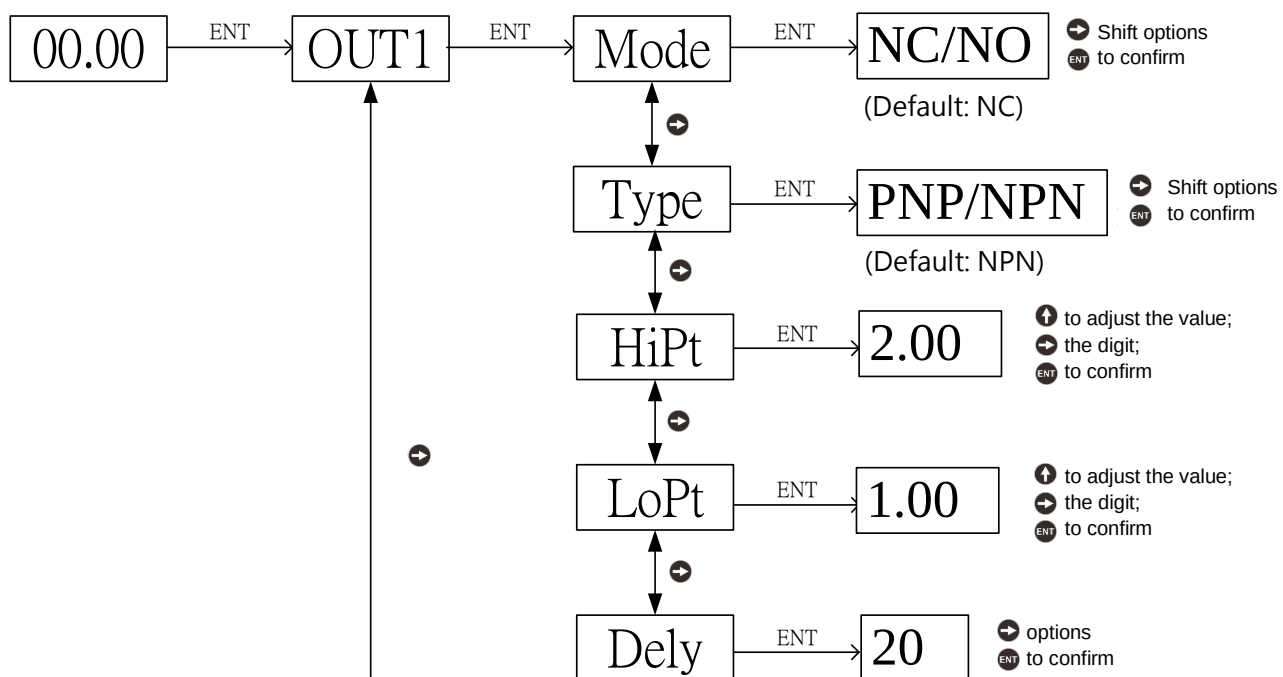
Press  Access the next-level menu/enter for confirmation

Press  Shift on same-level menu; enter the digit to shift

Press  Adjust the value up

Press  Return to the previous-level menu (without storing changes to parameters)

7.2 Description



7.3

7.4 Information on Commands

Level 1 menu:

OUT1 (output settings for the first group)

OUT2 (output settings for the second group)

Level 2 menu: (Level 3 options in red, without entering Mode >NC alternating display)

OUT1 ➔

Mode: OUT1 connection mode options; one can choose normally closed (NC) and normally open (NO) modes

Type: OUT1 connection type options; one can choose NPN and PNP

HiPT: OUT1 connection activation values; it is activated when the measurement is greater than this setting

LoPT: OUT1 connection homing values; it homes when the measurement is smaller than this setting

Dely: Delay time in activation of OUT1.

OUT2 ➔

Mode: OUT2 connection mode options; one can choose normally closed (NC) and normally open (NO) modes

Type: OUT2 connection type options; one can choose NPN and PNP

HiPT: OUT2 connection homing values; it homes when the measurement is greater than this setting

LoPT: OUT2 connection activation values; it is activated when the measurement is greater than this setting

Dely: Delay time in activation of OUT2.

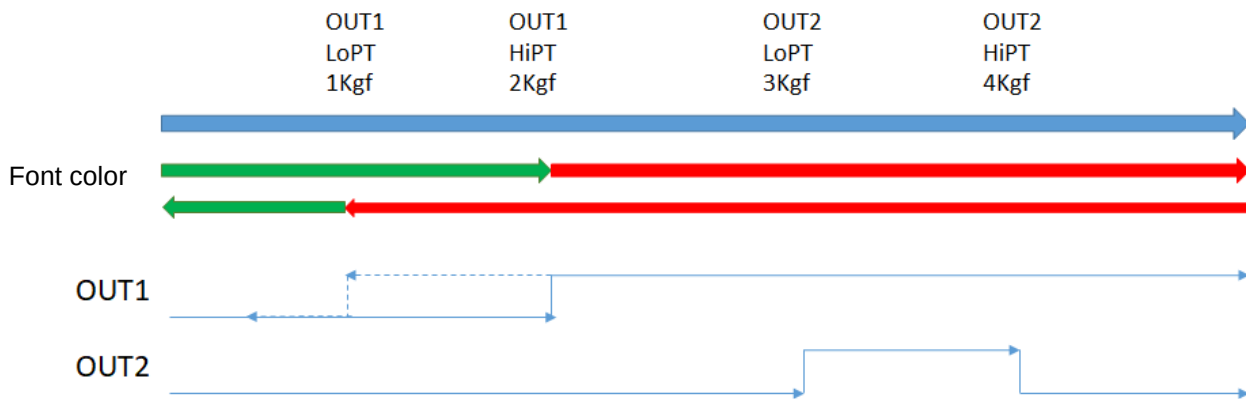
Note: Dely (1.5/20/100/500/1000/2000/5000(ms))

7.5 Examples

The default value of OUT1 LoPt is 1kgf/cm² and that of HiPt is 2 kgf/cm²

Once the measured pressure is greater than HiPt 2 kgf/cm², the On/Off joint OUT1 starts to act and the font color turns red.

Once the measured pressure is below LoPt 1 kgf/cm², the On/Off joint OUT1 starts to initialize and the font color turns green.



Once the measured pressure is greater than OU2 LoPt 3 kgf/cm², the On/Off joint OUT2 starts to act.

Once the measured pressure is greater than OU2 HiPt 4 kgf/cm², the On/Off joint OUT2 starts to home.

The OUT2 joint only acts when the measured pressure is between LoPt and HiPt.

8. Transportation And Storage

8.1 Transportation requirements

To prevent the ECP Pressure Gauge from damage during the transportation, please keep the packaging condition as how it was when it was shipped from the factory before arriving at the installation site. The storage conditions should meet the following:

- Appropriate rainproof and damp-proof treatment must be conducted .
- Vibration must be reduced and collision with other objects must be prevented during its transportation.
- The storage temperature must be in the range of -40 ~ 70°C
- The humidity should be lower than 80%

9. Maintenance

9.1 Daily Care

Periodically check the pressure sensing port to see if it is clogged by foreign matters or damaged; if it is seriously clogged, clean it. If it is damaged, replace the equipment.

When equipment is removed and before it is re-installed, confirm carefully if pressure is released from pressurized pipes to avoid leakage of liquids from the pipes.

The disposal of equipment shall be based on local national regulations in an environmentally friendly way.

In the case of return, please make sure that the product is not contaminated, particularly by hazardous or poisonous substances. For the transport, suitable packaging is required to avoid damaging the equipment.

10. Error Message And Troubleshooting

Abnormality	Possible causes	Solution
No display	No power supply	Check the power line and repair it.
No display	Failure to meet product specification requirements in terms of power	Confirm that power supply is 12–30 Vdc and correct it
No response with On/Off	Abnormal wiring	Check wiring, terminal pin, and correct it
No response with On/Off	Insufficient power supply to drive output	Check power supply (it has to be >12Vdc) and correct it
The switch signal is not stable and works intermittently.	Make sure the wiring of the switch signal and power cable terminals does not become loose or come off.	Confirm the wire pin again to ensure the correction connection of the lines.