
### Principle characteristics

PS480 series digital pressure relay High precision diffused silicon measuring core, full electronic structure, accurate real-time pressure measurement, and has high accuracy, good long-term stability. Simple operation, easy installation, flexible product use. The product shell is made of 304 stainless steel material, good structural stability, good shock resistance, and can measure water pressure, air pressure, oil pressure, hydraulic pressure and other non-corrosive media of stainless steel. Suitable for equipment supporting, pressure protection, constant pressure control and other pressure monitoring and protection conditions.

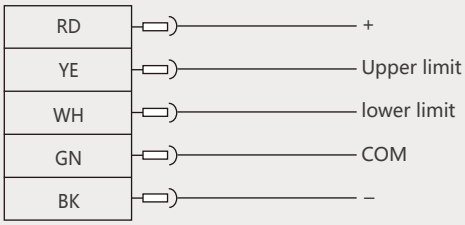
- Highlighted LED real-time pressure display
- Super resistance to overpressure design, prevent the instrument from overpressure damage
- International pressure unit conversion

### Technical parameter

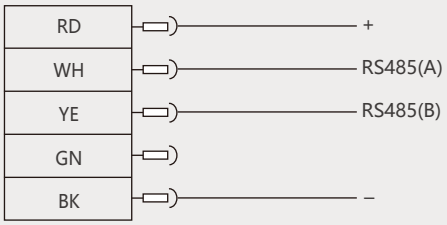
| | |
|---|---|
| ◇ Measuring range: -100kPa ~ 0... 0 ~ 5kPa... 100MPa | ◇ Sampling frequency: 10ms |
| ◇ Accuracy level: 0.5 (default), 0.25 | ◇ Operating temperature: -20 ~ 70℃ |
| ◇ Power supply voltage: 24VDC | ◇ Long-term stability: ±0.2%FS/ year |
| ◇ Pressure type: gauge pressure (default), absolute pressure, negative pressure | ◇ Material: 304 stainless steel shell and joint, 316L stainless steel isolation diaphragm |
| ◇ Display mode: 4-digit LED display | |
| ◇ Display range: -1999 ~ 9999 | |

### Wiring diagram

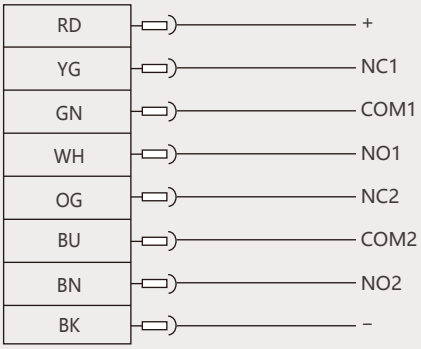
**Relay connection**




**RS485**

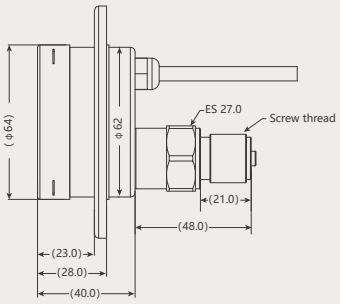


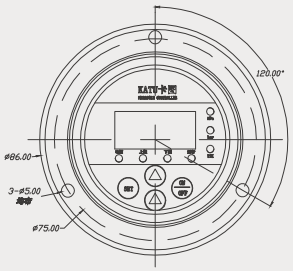

**Double relay connection**

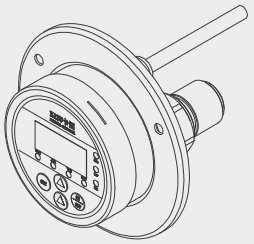


## Dimension drawing（mm）

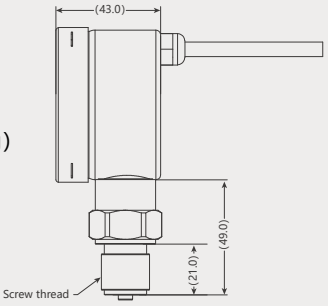
Diameter 60 (axial mounting)

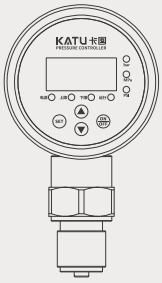


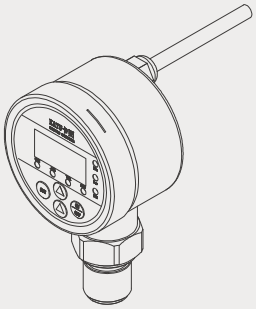



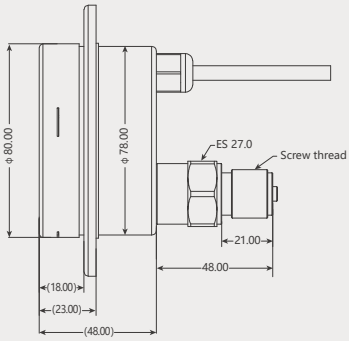
Diameter 60（Radial mounting）

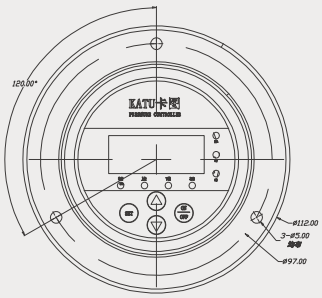


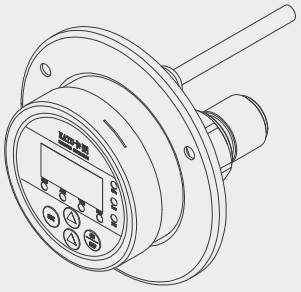





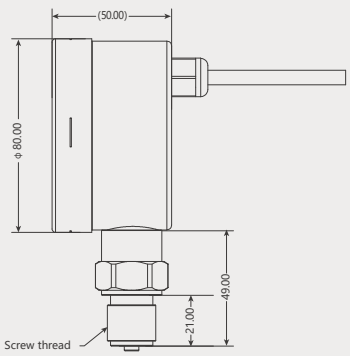
Diameter 80 (axial mounting)

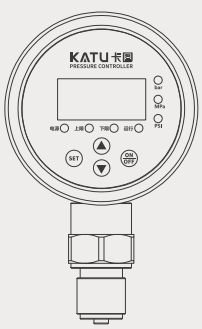


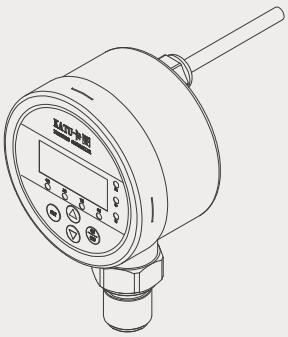



Diameter 80（Radial mounting）





## Range code

| Standard range | Gauge pressure code | Absolute pressure code |
|---|---|---|
| 0...50mbar | B005 | A005 |
| 0...100mbar | B01 | A01 |
| 0...350mbar | B035 | A035 |
| 0...600mbar | B06 | A06 |
| 0...1bar | B1 | A1 |
| 0...2bar | B2 | A2 |
| 0...6bar | B6 | A6 |
| 0...10bar | B10 | A10 |
| 0...25bar | B25 | A25 |

| Standard range | Gauge pressure code |
|---|---|
| 0...60bar | B60 |
| 0...100bar | B100 |
| 0...160bat | B160 |
| 0...250bar | B250 |
| 0...400bar | B400 |
| 0...600bar | B600 |
| 0...1000bar | B1000 |

| Standard range | Range code |
|---|---|
| -10...10KPa | F10 |
| -50...50KPa | F50 |
| -100...100KPa | F100 |
| -100...0KPa | F110 |
| -100...500KPa | F150 |
| -100...900KPa | F190 |

## Selection list

| PS480- | 6 | R | D | B | M20 | M | - | Instructions |
|---|---|---|---|---|---|---|---|---|
| PS480- | | | | | | | | PS480 Digital Pressure Relay |
| | 6 | | | | | | | Dial diameter 60mm |
| | 8 | | | | | | | Dial diameter 80mm |
| | | R | | | | | | Radial type |
| | | A | | | | | | Axial type |
| | | | D | | | | | Output mode: Single relay (5 cores) |
| | | | S | | | | | Output mode: Dual relay (8 cores) |
| | | | R | | | | | Output mode: RS485 communication (4-cores)<br>(Only 60 watch heads are available for selection) |
| | | | | - | | | | See range table |
| | | | | | M20 | | | Process connection: M20*1.5 thread<br>(installation thread default) |
| | | | | | G14 | | | Process connection: G1/4 thread |
| | | | | | G12 | | | Process connection: G1/2 thread |
| | | | | | R14 | | | Process connection: R1/4 thread |
| | | | | | R38 | | | Process connection: R3/8 thread |
| | | | | | N14 | | | Process connection: NPT1/4 thread |
| | | | | | N12 | | | Process connection: NPT1/2 thread |
| | | | | | M14 | | | Process connection: M14*1.5 thread |
| | | | | | | M | | Male thread |
| | | | | | | K | | Internal thread |
| | | | | | | | - | Measurement accuracy: 0.5% (factory default) |
| | | | | | | | 02 | Measurement accuracy: 0.25% |

# Ceramic pressure relay PS480A

KATU卡图


**Principle characteristics**

The PS480A series digital ceramic pressure relay features a high-precision measurement core, an all-electronic structure, capable of accurately and in real time measuring pressure. It also boasts high precision and excellent long-term stability. The operation is simple, installation is convenient and the product is flexible to use. The product shell is made of 304 stainless steel, featuring excellent structural stability and shock resistance. It can measure water pressure, air pressure, oil pressure, hydraulic pressure and other media that do not corrode stainless steel. It is applicable to various pressure monitoring and protection working conditions such as equipment matching, pressure protection, and constant pressure control.

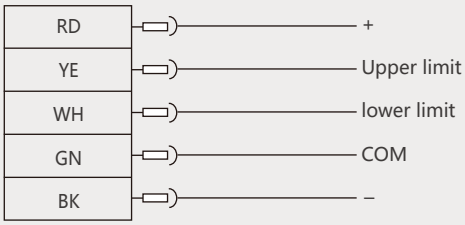
- High-brightness LED real- time pressure display
- Super strong overvoltage resistance design to prevent the instrument from being damaged due to overvoltage
- Conversion of internationally recognized pressure units

## Technical parameter

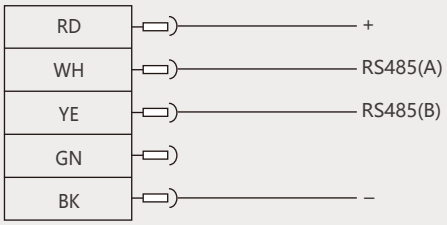
| | |
|---|---|
| ◇ Measuring range: See the range table | ◇ Sampling frequency: 10ms |
| ◇ Accuracy level: 0.5 | ◇ Operating temperature: -20 ~ 70℃ |
| ◇ Power supply voltage: 24VDC | ◇ Long-term stability: ±0.2%FS/ year |
| ◇ Pressure type: gauge pressure (default), absolute pressure, negative pressure | ◇ Material: 304 stainless steel shell and joint, 316L stainless steel isolation diaphragm |
| ◇ Display mode: 4-digit LED display | |
| ◇ Display range: -1999 ~ 9999 | |

## Wiring diagram

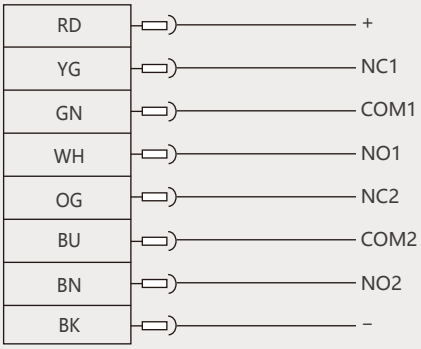
**Relay connection**




**RS485**

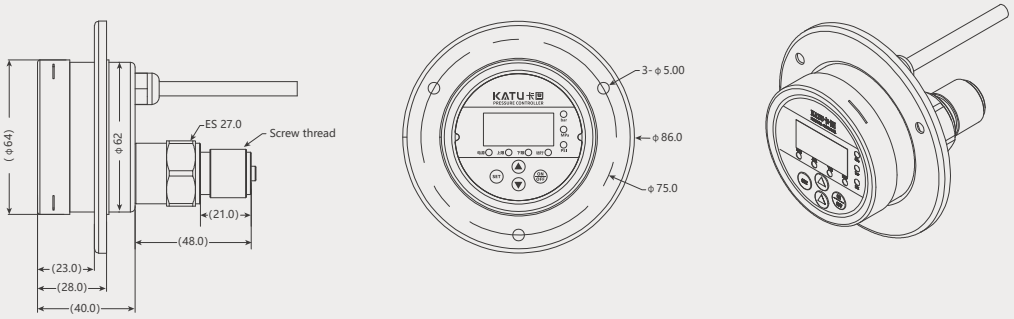



**Double relay connection**

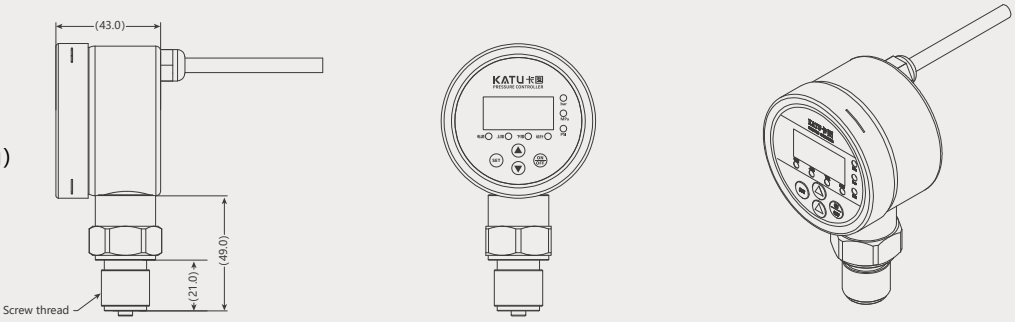


## Dimension drawing（mm）

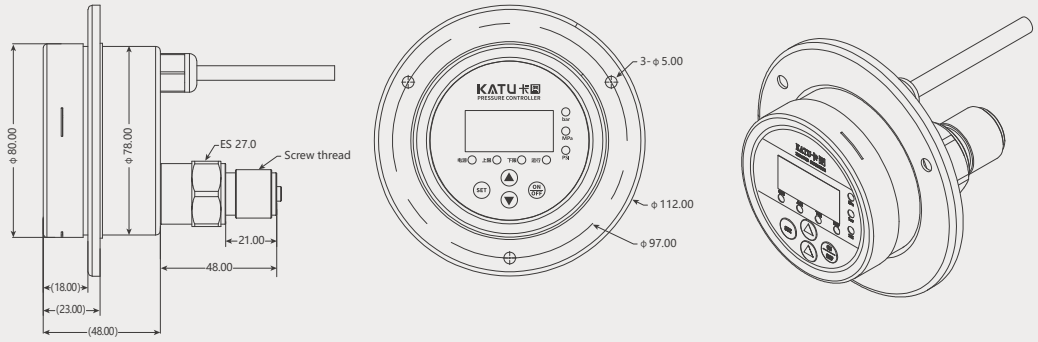
Diameter 60 (axial mounting)



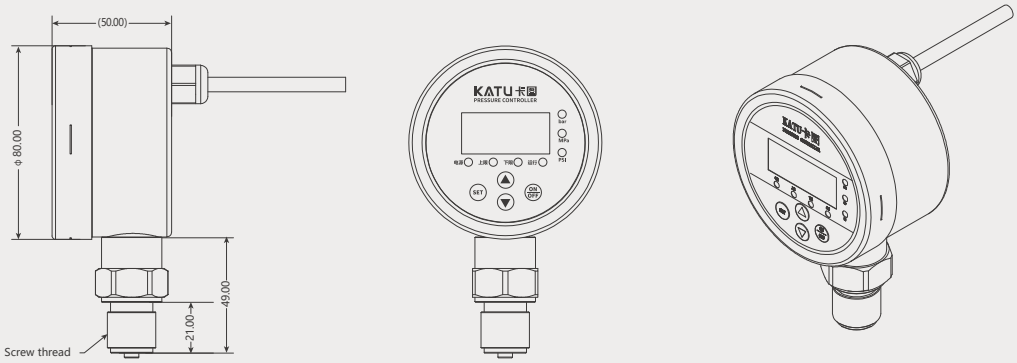

Diameter 60（Radial mounting）




Diameter 80 (axial mounting)




Diameter 80（Radial mounting）



## Range code

| Standard range | Gauge pressure code | Absolute pressure code |
|---|---|---|
| 0...50mbar | B005 | A005 |
| 0...100mbar | B01 | A01 |
| 0...350mbar | B035 | A035 |
| 0...600mbar | B06 | A06 |
| 0...1bar | B1 | A1 |
| 0...2bar | B2 | A2 |
| 0...6bar | B6 | A6 |
| 0...10bar | B10 | A10 |
| 0...25bar | B25 | A25 |

| Standard range | Gauge pressure code |
|---|---|
| 0...60bar | B60 |
| 0...100bar | B100 |
| 0...160bat | B160 |
| 0...200bar | B200 |

## Selection list

| PS480A- | 6 | R | D | B | M20 | M | Elaborate |
|---|---|---|---|---|---|---|---|
| PS480A- | | | | | | | PS480A ceramic type pressure relay |
| | 6 | | | | | | The dial diameter is 60mm |
| | 8 | | | | | | The dial diameter is 80mm |
| | | R | | | | | Radial type |
| | | A | | | | | Axial type |
| | | | D | | | | Output mode: Single relay (5-core wire) |
| | | | S | | | | Output mode: Dual relays (8-core wire) |
| | | | R | | | | Output mode: RS485 communication (4-core wire) (Only 60 meter heads are optional) |
| | | | | - | | | See the range table |
| | | | | | M20 | | Process connection: M20*1.5 thread (default installation thread) |
| | | | | | G14 | | Process connection: G1/4 thread |
| | | | | | G12 | | Process connection: G1/2 thread |
| | | | | | R14 | | Process connection: R1/4 thread |
| | | | | | R38 | | Process connection: R3/8 thread |
| | | | | | N14 | | Process connection: NPT1/4 thread |
| | | | | | N12 | | Process connection: NPT1/2 thread |
| | | | | | M14 | | Process connection: M14*1.5 thread |
| | | | | | | M | External thread |
| | | | | | | K | Internal thread |


### Principle characteristics

The PS480B series digital strain gauge pressure relay features a high-precision measurement core, an all-electronic structure that can accurately measure pressure in real time. It also has the characteristics of high precision and good long-term stability. The operation is simple, installation is convenient and the product is flexible to use. The product shell is made of 304 stainless steel, featuring excellent structural stability and shock resistance. It can measure water pressure, air pressure, oil pressure, hydraulic pressure and other media that do not corrode stainless steel. It is applicable to various pressure monitoring and protection working conditions such as equipment matching, pressure protection, and constant pressure control.

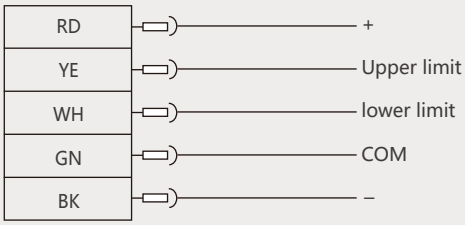
- Highlighted LED real-time pressure display
- Super resistance to overpressure design, prevent the instrument from overpressure damage
- International pressure unit conversion

### Technical parameter

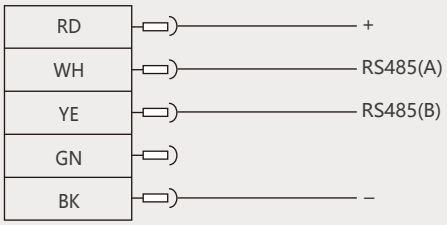
| | |
|---|---|
| ◇ Measuring range: See the selection table | ◇ Sampling frequency: 10ms |
| ◇ Accuracy level: 0.5% | ◇ Operating temperature: -20 ~ 70℃ |
| ◇ Power supply voltage: 24VDC | ◇ Long-term stability: ±0.2%FS/ year |
| ◇ Pressure type: gauge pressure (default), absolute pressure, negative pressure | ◇ Material: 304 stainless steel shell and joint, 316L stainless steel isolation diaphragm |
| ◇ Display mode: 4-digit LED display | |
| ◇ Display range: -1999 ~ 9999 | |

### Wiring diagram

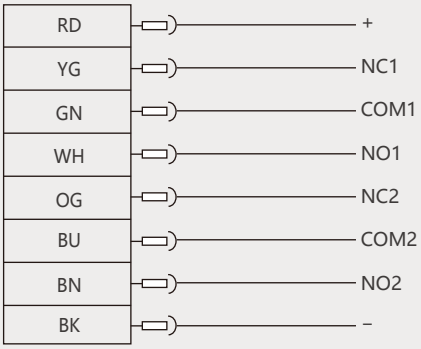
**Relay connection**




**RS485**

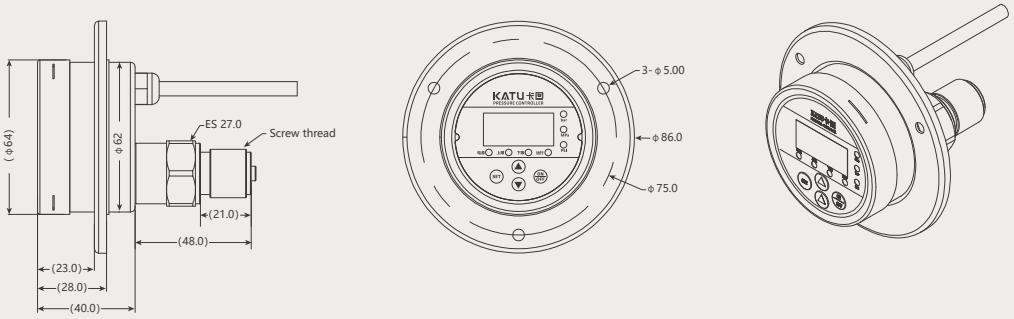



**Double relay connection**

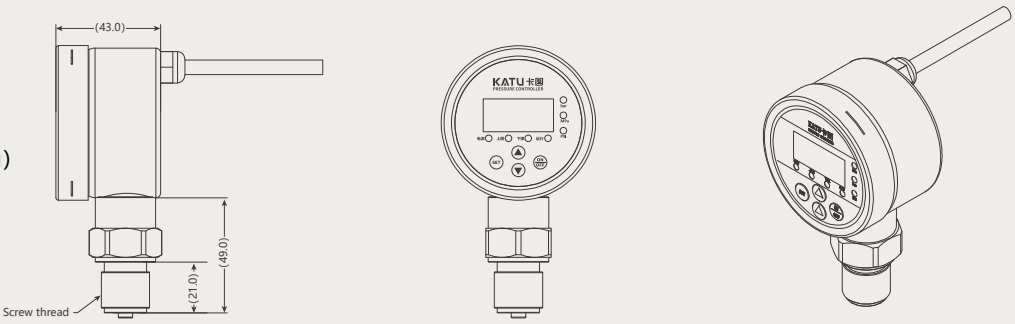


## Dimension drawing (mm)

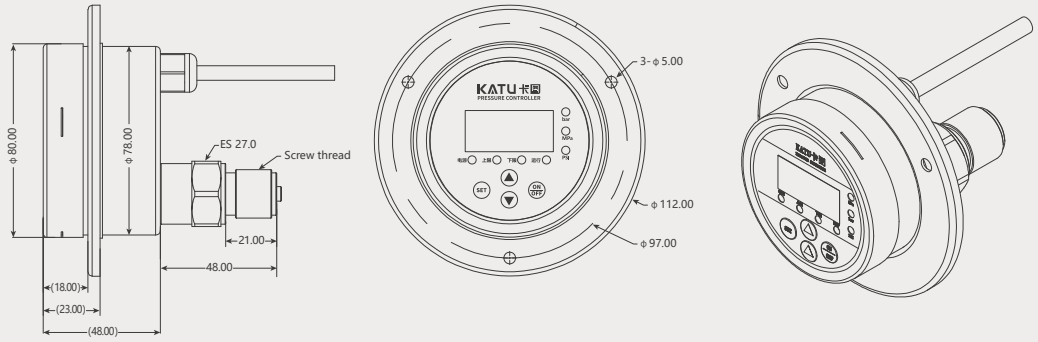
Diameter 60 (axial mounting)



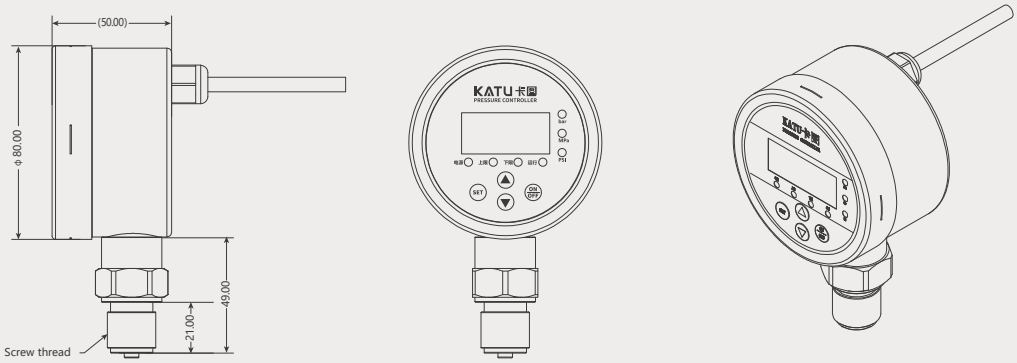

Diameter 60 (Radial mounting)




Diameter 80 (axial mounting)




Diameter 80 (Radial mounting)



## Range code

| Pressure range | bar | 100 | 160 | 250 | 400 | 600 | 1000 | 1500 | 2000 |
|---|---|---|---|---|---|---|---|---|---|
| | psi | 1500 | 2300 | 3600 | 6000 | 9000 | 14500 | 21800 | 29000 |
| Max overload pressure | | ×2 | | ×1.5 | | ×1.3 | ×1.2 | | |
| Min damage pressure | | ×3 | | ×2 | | ×1.6 | ×1.5 | | |

## Selection list

| PS480B- | 6 | R | D | B100 | M20 | M | Elaborate |
|---|---|---|---|---|---|---|---|
| PS480B- | | | | | | | PS480B strain pressure relay |
| | 6 | | | | | | The dial diameter is 60mm |
| | 8 | | | | | | The dial diameter is 80mm |
| | | R | | | | | Radial type |
| | | A | | | | | Axial type |
| | | | D | | | | Output mode: Single relay (5-core wire) |
| | | | S | | | | Output mode: Dual relays (8-core wire) |
| | | | R | | | | Output mode: RS485 communication (4-core wire) (Only 60 meter heads are optional) |
| | | | | B100 | | | Measurement range: 0... 100bar |
| | | | | B160 | | | Measurement range: 0... 160bar |
| | | | | B250 | | | Measurement range: 0... 250bar |
| | | | | B400 | | | Measurement range: 0... 400bar |
| | | | | B600 | | | Measurement range: 0... 600bar |
| | | | | B1000 | | | Measurement range: 0... 1000bar |
| | | | | B1500 | | | Measurement range: 0... 1500bar |
| | | | | B2000 | | | Measurement range: 0... 2000bar |
| | | | | | M20 | | Process connection: M20*1.5 thread (default installation thread) |
| | | | | | G14 | | Process connection: G1/4 thread |
| | | | | | G12 | | Process connection: G1/2 thread |
| | | | | | R14 | | Process connection: R1/4 thread |
| | | | | | R38 | | Process connection: R3/8 thread |
| | | | | | N14 | | Process connection: NPT1/4 thread |
| | | | | | N12 | | Process connection: NPT1/2 thread |
| | | | | | M14 | | Process connection: M14*1.5 thread |
| | | | | | | M | External thread |
| | | | | | | K | Internal thread |

Sensor and controller

■ Flow ■ pressure ■ temperature ■ level ■ position

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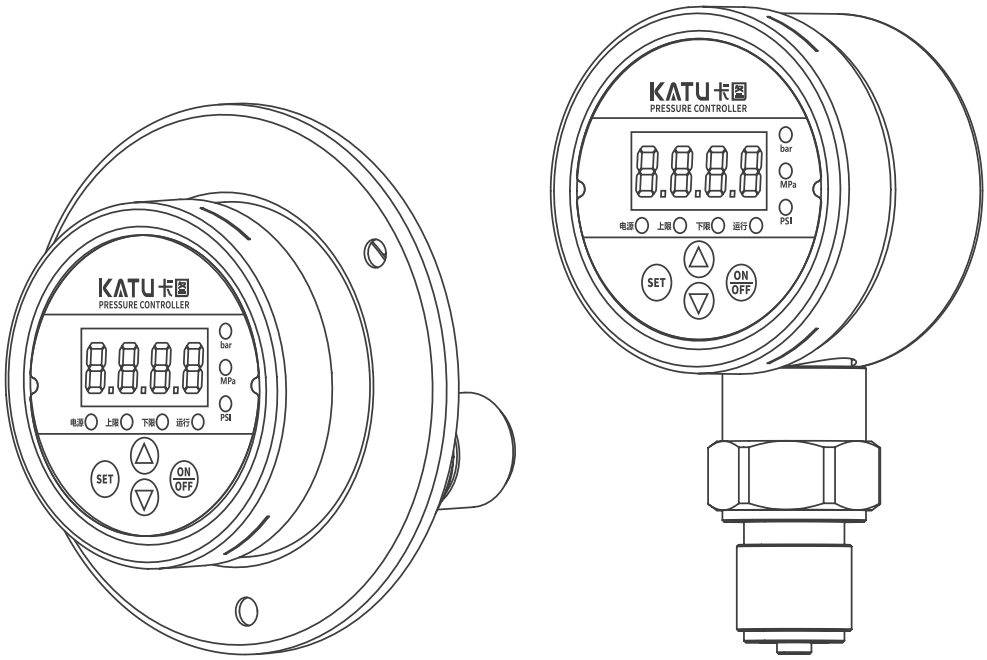
# Operation instruction

# Digital pressure controller

# PS480-60 series



## Purpose of product application

The 500 Series sensor (switch) has two switch outputs and one analog output.

**danger**

The sensor (switch) can only be used in the specified application range.
The temperature range must be within the permissible range. Do not exceed the rated pressure and power load value.
Assembly, commissioning and operation must be carried out in accordance with applicable national and local safety instructions.
The switch is designed to be used as a safety device for pressurizing the system in accordance with "Pressure Equipment Directive 97/23 / EC(PED)".

## Standard

The standards applied during development, manufacturing and configuration are listed in the CE Compliance and manufacturer declarations.

## Quality assurance

Our scope of delivery and service is subject to legal warranties and warranty periods.

**Warranty clause**

We guarantee that the functions and materials of the dual pressure switch meet the statutory requirements under normal operation and maintenance conditions.

**Security of loss**

Such as:

- Incorrect use,
- Incorrect installation
- Incorrect operation or operation in violation of the provisions of this operation manual.

No liability shall be assumed for any damage resulting therefrom or consequential.

## Safety instruction

Safety instructions are intended to protect users from dangerous situations and /or prevent material damage.
In the operating instructions, the severity of the potential risk can be indicated by the following signal words:

**danger**

An imminent danger to the user. Failure to comply may result in fatal injury.

**warning**

An identifiable hazard.

Failure to comply may result in fatal injury and damage to equipment or plant parts.

**caution**

It means a danger.

Non-compliance may result in minor injury and material damage to the sensor (switch) and/or plant.

**important**

Information that is important to the user.

**Deal with**

Sensors (switches) must be handled correctly in accordance with national or local regulations for electrical/electronic equipment.

Sensors (switches) cannot be disposed of with household waste!

## Principle characteristics

PS480 series digital pressure relay/controller High precision diffused silicon measuring core, full electronic structure, accurate real-time pressure measurement, and has high accuracy, good long-term stability. Simple operation, easy installation, flexible product use. The product shell is made of 304 stainless steel material, good structural stability, good shock resistance, and can measure water pressure, air pressure, oil pressure, hydraulic pressure and other non-corrosive media of stainless steel. Suitable for equipment supporting, pressure protection, constant pressure control and other pressure monitoring and protection conditions.

- Highlighted LED real-time pressure display
- Super resistance to overpressure design, prevent the instrument from overpressure damage
- International pressure unit conversion

## Technical parameter

◇ Measuring range: Please refer to the product label for details

◇ Accuracy level: 0.5 (default), 0.25

◇ Power supply voltage: 24VDC/220VAC optional

Pressure type: gauge pressure (default), absolute pressure, negative pressure

◇ Display mode: 4-digit LED display

◇ Display range: -1999 ~ 9999

◇ Sampling frequency: 10ms

◇ Operating temperature: -20 ~ 70℃

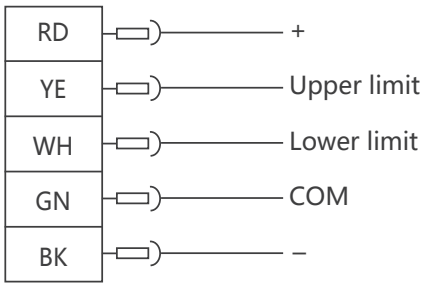
◇ Long-term stability: ±0.2%FS/ year

◇ Material: 304 stainless steel shell and joint;

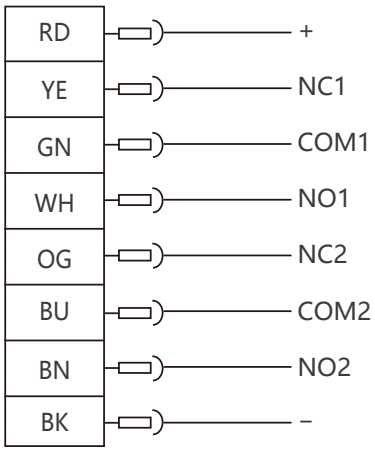
316L stainless steel diaphragm

## Connection mode

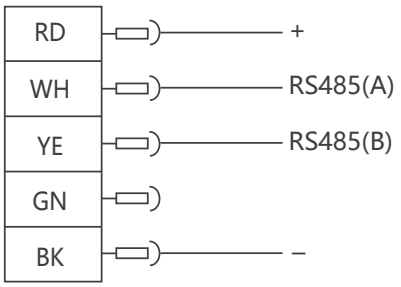
Single relay



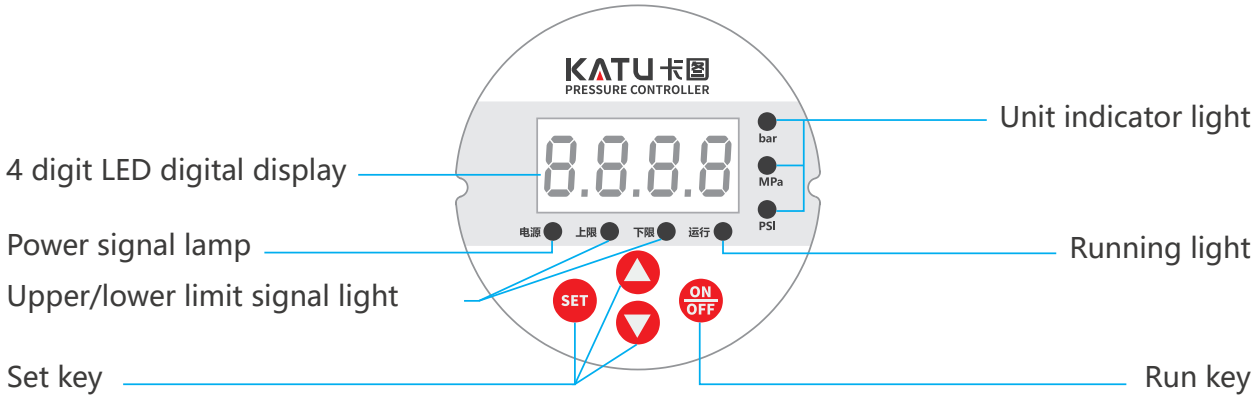

Double relay




RS485



## Panel description

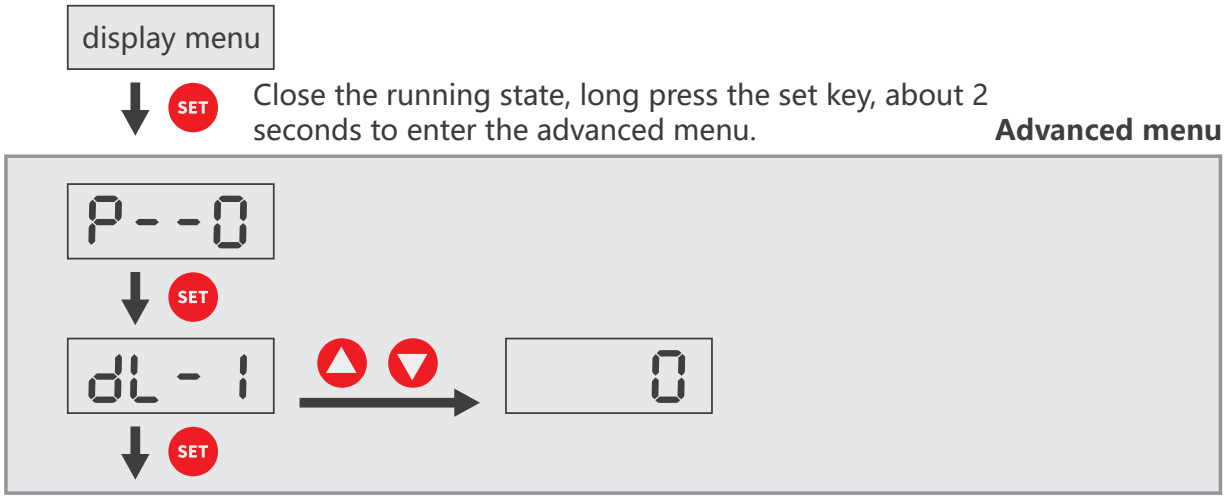


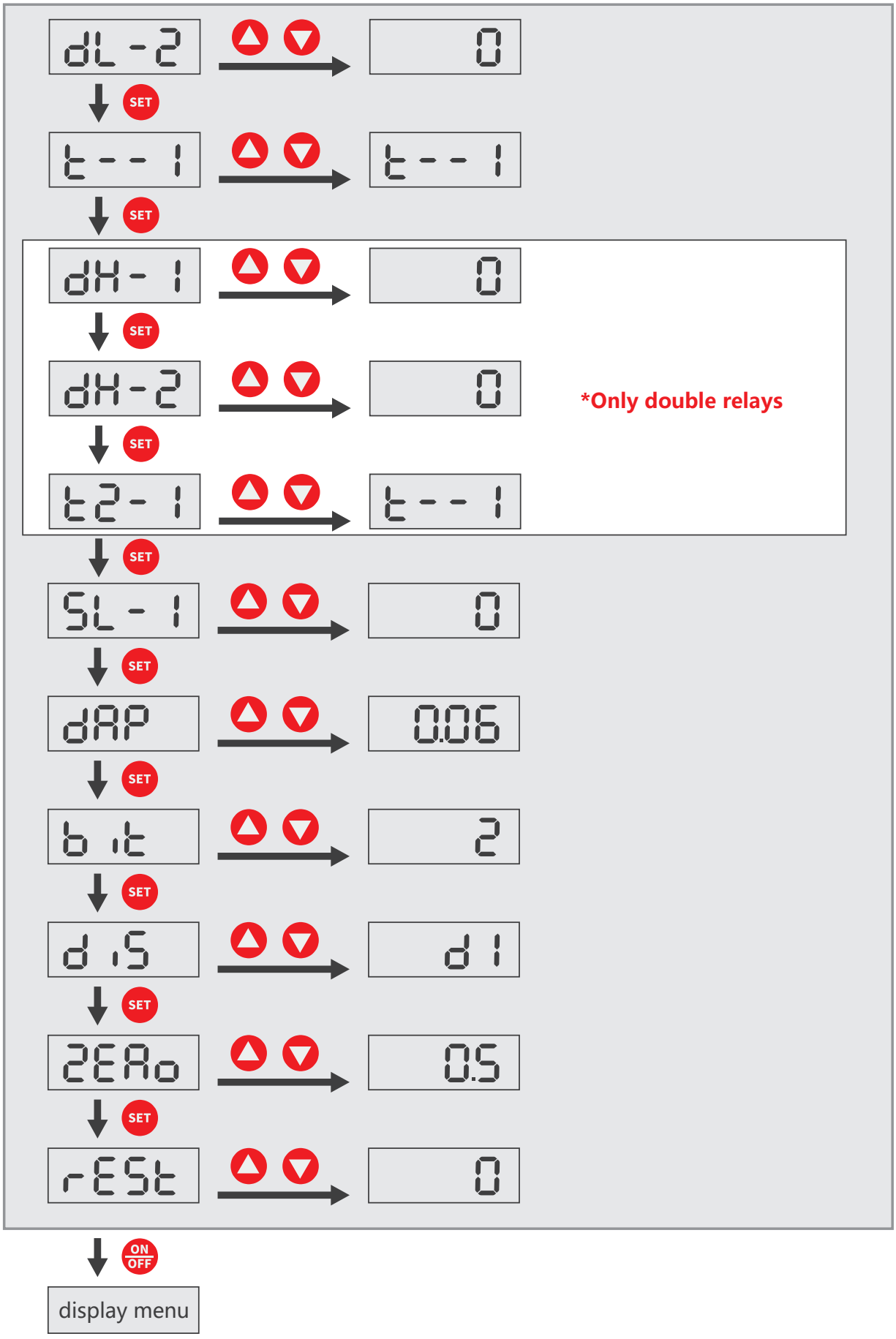

| | |
|---|---|
| Running light | When the operation signal light is ON, it indicates the measurement status. Click the ON/OFF key to turn it off or on. |
| Unit switching | When the operation is off, press and hold ▲ for about 1 second to switch. |
| Pressure clearing | When the operation is off, press and hold ▼ for about 2 seconds to reset the pressure to zero (* Operate under zero pressure). |
| Relay<br>Set the lower limit<br>/upper limit | **Lower limit setting**<br>When the operation is off, press the SET key briefly. The screen will flash and the lower limit signal light will come on. You can SET the lower limit value through ▲ or ▼. After setting is completed, press the SET key briefly. The setting of the lower limit is subject to the upper limit. |
| | **Upper limit setting:**<br>When the operation is off, briefly press the SET key. The screen will flash until the upper limit signal light is on. You can SET the upper limit value through ▲ or ▼. After setting is completed, briefly press the SET key. |
| | **Lower limit 2 setting:** (* Only dual relays)<br>When the operation is off, press the SET key briefly. The screen will flash and the lower limit signal light will come on. You can SET the lower limit value through ▲ or ▼. After setting is completed, press the SET key briefly. The setting of the lower limit is subject to the upper limit. |
| | **Upper limit 2 setting:** (* Only dual relays)<br>When the operation is off, briefly press the SET key. The screen will flash until the upper limit signal light is on. You can SET the upper limit value through ▲ or ▼. After setting is completed, briefly press the SET key. |
| RS485<br>Set the ID<br>/ baud rate | **ID setting:**<br>When the operation is off, press the SET key briefly. The screen will flash and the lower limit signal light will come on. You can SET the ID value through ▲ or ▼. After setting is completed, press the SET key briefly. |
| | **Baud rate setting:**<br>When the operation is off, briefly press the SET key. The screen will flash until the upper limit signal light is on. You can SET the baud rate through ▲ or ▼. After setting is completed, briefly press the SET key. |
| Advanced Menu | When the running state is off, press and hold the SET key for about 2 seconds to enter the advanced menu. |

## Debugging/Operation (relay)

| Advanced Menu | | |
|---|---|---|
| P--1 | To disable the running key password lock :0 is the disabled lock. Change it to a non-0 value to enable the lock. The password is the modified value (/ If you forget the password, press ↓ to change the value. 9999 is the universal password). | |
| dL-1 | Lower limit delay (After being turned on, the relay delays for dL-1 time before closing) (Default: 0 seconds) | |
| | Press the ▲ or ▼ key briefly to enter and display the previously set delay time, which can be set from 0 to 999 seconds | |
| dL-2 | Upper limit delay (After being turned on, the relay delays for dL-2 time before disconnecting) (Default: 0 seconds) | |
| | Press the ▲ or ▼ key briefly to enter and display the previously set delay time, which can be set from 0 to 999 seconds | |
| t--1 | Reverse control (when activated, the relay's low voltage is open and high voltage is closed) Default off (default t--1)<br>t--1: Start at low voltage and stop at high voltage;<br>t--0: Start with high voltage and stop with low voltage;<br>FNO: window is always open;<br>HNC: window is always closed. | |
| | Press the ▲ or ▼ keys briefly to switch | |
| dH-1 | Lower limit delay (After being turned on, the relay delays for dH-1 time before closing) (Default: 0 seconds) | Only double relays Channel |
| | Press the ▲ or ▼ key briefly to enter and display the previously set delay time, which can be set from 0 to 999 seconds | |
| dH-2 | Upper limit delay (After being turned on, the relay delays dH-2 time before disconnecting) (Default: 0 seconds) | |
| | Press the ▲ or ▼ key briefly to enter and display the previously set delay time, which can be set from 0 to 999 seconds | |
| t2-1 | Reverse control (when activated, the relay's low voltage is open and high voltage is closed) Default off (default t--1)<br>t--1: Start at low voltage and stop at high voltage;<br>t--0: Start with high voltage and stop with low voltage;<br>FNO: window is always open;<br>HNC: window is always closed. | |
| | Press the ▲ or ▼ keys briefly to switch | |

| | |
|---|---|
| sL-1 | Intelligent pressure detection (default 0 indicates off)<br>E--1: When the pressure exceeds the preset time but has not yet reached the upper limit, the relay disconnects and displays E--1.<br>LLLL: If the pressure exceeds the preset time and has not yet reached the under-voltage protection value, the relay will disconnect and display LLLL.<br>HHHH: The current pressure exceeds the product's range. (This code may also be displayed if the sensor is damaged. |
| | Press the ▲ or ▼ key briefly to enter, and the previous Settings will be displayed. It takes 0 to 999 seconds to set |
| dap | Signal damping (The smaller the number, the faster the response) (Default 0.06) |
| | Press the ▲ or ▼ key briefly to enter, and the previously set delay time will be displayed. The setting range is 0.01-2.00 |
| bit | The number of decimal points (the number after the decimal point can be selected from 0 to 2 (Note: Actual number is subject to selection)) |
| | Press the ▲ or ▼ key briefly to enter, and then modify it through ▲ or ▼ |
| dis | Display screen refresh rate (d1:100ms; d2:500ms d3:1000ms (default d1) |
| | Press the ▲ or ▼ key briefly to enter, and then modify it through ▲ or ▼ |
| zero | Zero cut-off value (reset to zero when the value is less than the set value) (Default 0.5 (range 0.5%)) |
| | Press the ▲ or ▼ key briefly to enter, and then cut through the zero position of ▲ or ▼ |
| rest | Restore factory Settings (Automatically restore factory Settings after entering the password 0123) |
| | Press the ▲ or ▼ key briefly to enter, and then use ▲ or ▼ to modify the value to 0123 |




dL-2
0
SET
t--1
t--1
SET
dH-1
0
SET
dH-2
0
*Only double relays
SET
t2-1
t--1
SET
SL-1
0
SET
dAP
0.06
SET
bit
2
SET
dis
d1
SET
2EAo
0.5
SET
rESt
0
ON OFF
display menu

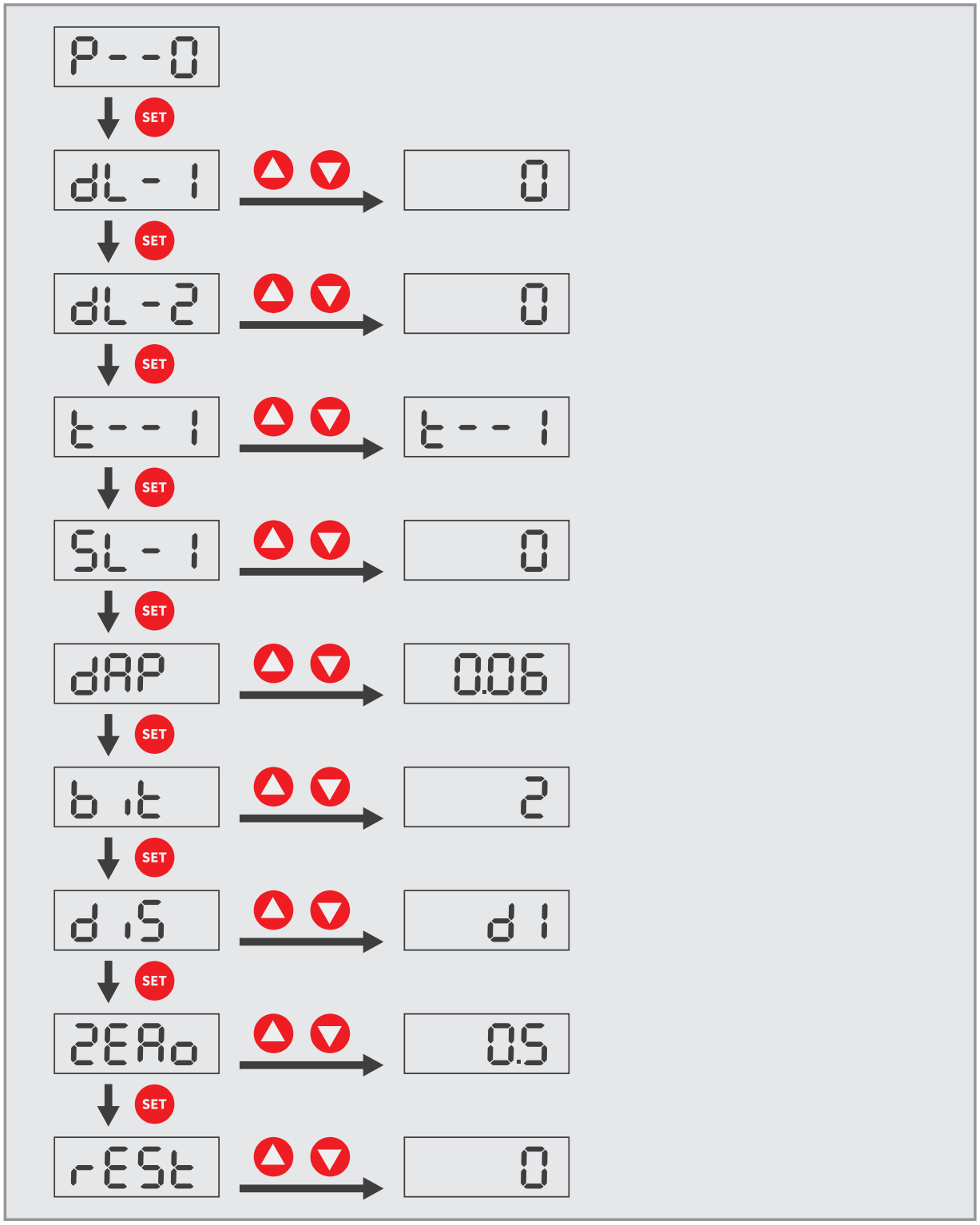
## *Debugging/Operation (RS485)*

| Advanced Menu | |
|---|---|
| P--1 | To disable the running key password lock :0 is the disabled lock. Change it to a non-0 value to enable the lock. The password is the modified value (/ If you forget the password, press ↓ to change the value. 9999 is the universal password). |
| sL-1 | Intelligent pressure detection (default 0 indicates off)<br>E--1: When the pressure exceeds the preset time but has not yet reached the upper limit, the relay disconnects and displays E--1.<br>LLLL: If the pressure exceeds the preset time and has not yet reached the under-voltage protection value, the relay will disconnect and display LLLL.<br>HHHH: The current pressure exceeds the product's range. (This code may also be displayed if the sensor is damaged. |
| | Press the ▲ or ▼ key briefly to enter, and the previous Settings will be displayed. It takes 0 to 999 seconds to set |
| dap | Signal damping (The smaller the number, the faster the response) (Default 0.06) |
| | Press the ▲ or ▼ key briefly to enter, and the previously set delay time will be displayed. The setting range is 0.01-2.00 |
| bit | The number of decimal points (the number after the decimal point can be selected from 0 to 2 (Note: Actual number is subject to selection)) |
| | Press the ▲ or ▼ key briefly to enter, and then modify it through ▲ or ▼ |
| dis | Display screen refresh rate (d1:100ms; d2:500ms d3:1000ms (default d1) |
| | Press the ▲ or ▼ key briefly to enter, and then modify it through ▲ or ▼ |
| zero | Zero cut-off value (reset to zero when the value is less than the set value) (Default 0.5 (range 0.5%)) |
| | Press the ▲ or ▼ key briefly to enter, and then cut through the zero position of ▲ or ▼ |
| rest | Restore factory Settings (Automatically restore factory Settings after entering the password 0123) |
| | Press the ▲ or ▼ key briefly to enter, and then use ▲ or ▼ to modify the value to 0123 |

display menu

SET Close the running state, long press the set key, about 2 seconds to enter the advanced menu.

**Advanced menu**




ON OFF

display menu

## Maintenance/cleaning

Sensors (switches) do not require maintenance.

**warning**

Periodically check whether the switch is working properly.

If the switch does not work properly, stop the operation immediately.

**caution**

Use of improper cleaning agent may damage the switch.
The following cleaning agents can be used to clean polycarbonate: mild soap or detergent Isopropyl alcohol
Immediately after cleaning, rinse with water. Do not leave cleaner on the surface of the product. Do not clean products in high heat or direct sunlight.
The following cleaning agents are known to affect the integrity of polycarbonate components and should not be used: ZEP Fast 505, Pinesol, Formula 409
Halogenated solvents (benzene, gasoline, acetone or carbon tetrachloride)
Strong alkalinity
Methyl ethyl ketone
Abrasive substance

## disassemble

**danger**

Only remove the switch in case of power failure (electrical, hydraulic/pneumatic).

Switch disconnection from pressure and power supply must be performed by trained or directed personnel in accordance with the most advanced standards.

**warning**

Be aware that the surface of the shell may become very hot if the operating temperature is higher!

Sensor and controller

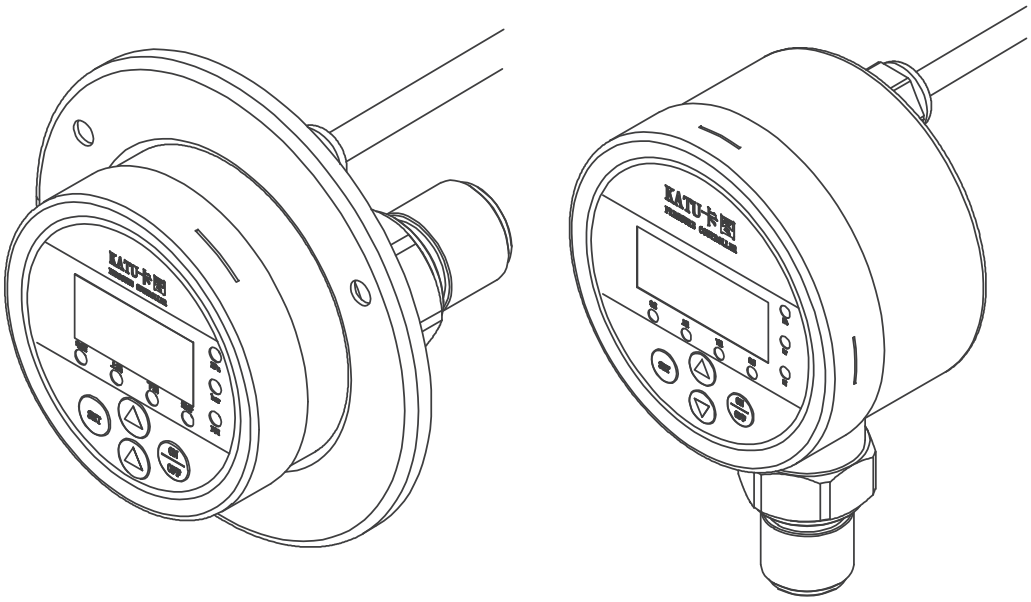
■ Flow ■ pressure ■ temperature ■ level ■ position

KATU 卡图

# Operation instruction

# Digital pressure controller

# PS480-80 series



## Purpose of product application

The 500 Series sensor (switch) has two switch outputs and one analog output.

**danger**

The sensor (switch) can only be used in the specified application range.
The temperature range must be within the permissible range. Do not exceed the rated pressure and power load value.
Assembly, commissioning and operation must be carried out in accordance with applicable national and local safety instructions.
The switch is designed to be used as a safety device for pressurizing the system in accordance with "Pressure Equipment Directive 97/23 / EC(PED)".

## Standard

The standards applied during development, manufacturing and configuration are listed in the CE Compliance and manufacturer declarations.

## Quality assurance

Our scope of delivery and service is subject to legal warranties and warranty periods.

**Warranty clause**

We guarantee that the functions and materials of the dual pressure switch meet the statutory requirements under normal operation and maintenance conditions.

**Security of loss**

Such as:

- Incorrect use,
- Incorrect installation
- Incorrect operation or operation in violation of the provisions of this operation manual.

No liability shall be assumed for any damage resulting therefrom or consequential.

## Safety instruction

Safety instructions are intended to protect users from dangerous situations and /or prevent material damage.
In the operating instructions, the severity of the potential risk can be indicated by the following signal words:

|  | **danger** |
|---|---|
| An imminent danger to the user. Failure to comply may result in fatal injury. | |

|  | **warning** |
|---|---|
| An identifiable hazard.<br>Failure to comply may result in fatal injury and damage to equipment or plant parts. | |

|  | **caution** |
|---|---|
| It means a danger.<br>Non-compliance may result in minor injury and material damage to the sensor (switch) and/or plant. | |

| ★ | **important** |
|---|---|
| Information that is important to the user. | |

**Deal with**

Sensors (switches) must be handled correctly in accordance with national or local regulations for electrical/electronic equipment.

Sensors (switches) cannot be disposed of with household waste!

## Principle characteristics

PS480 series digital pressure relay/controller High precision diffused silicon measuring core, full electronic structure, accurate real-time pressure measurement, and has high accuracy, good long-term stability. Simple operation, easy installation, flexible product use. The product shell is made of 304 stainless steel material, good structural stability, good shock resistance, and can measure water pressure, air pressure, oil pressure, hydraulic pressure and other non-corrosive media of stainless steel. Suitable for equipment supporting, pressure protection, constant pressure control and other pressure monitoring and protection conditions.

- Highlighted LED real-time pressure display
- Super resistance to overpressure design, prevent the instrument from overpressure damage
- International pressure unit conversion

## Technical parameter

◇ Measuring range: Please refer to the product label for details

◇ Accuracy level: 0.5 (default), 0.25

◇ Power supply voltage: 24VDC/220VAC optional

Pressure type: gauge pressure (default), absolute pressure, negative pressure

◇ Display mode: 4-digit LED display

◇ Display range: -1999 ~ 9999

◇ Sampling frequency: 10ms

◇ Operating temperature: -20 ~ 70℃

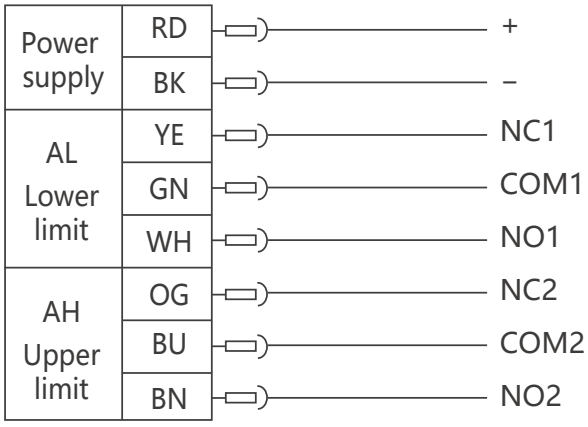
◇ Long-term stability: ±0.2%FS/ year

◇ Material: 304 stainless steel shell and joint;

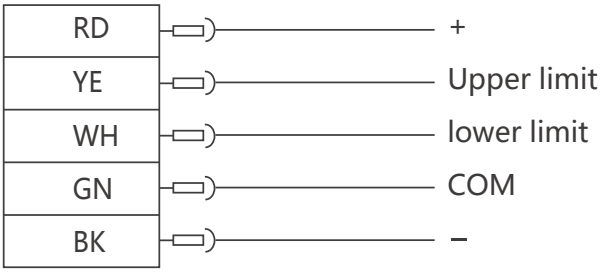
316L stainless steel diaphragm

## Connection mode

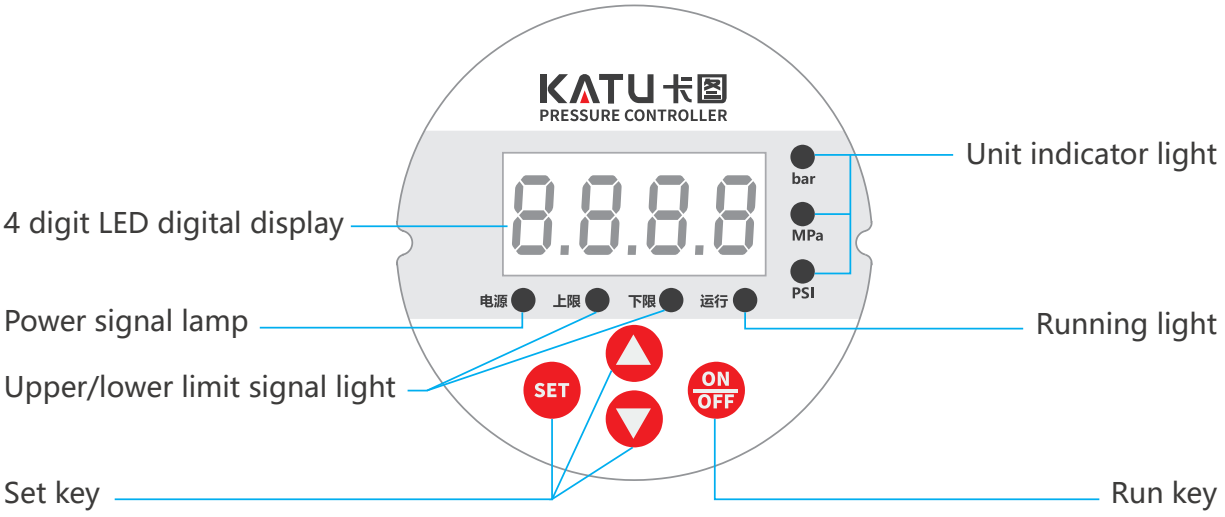
**Double relay connection**




**Controller connection**



## Panel description

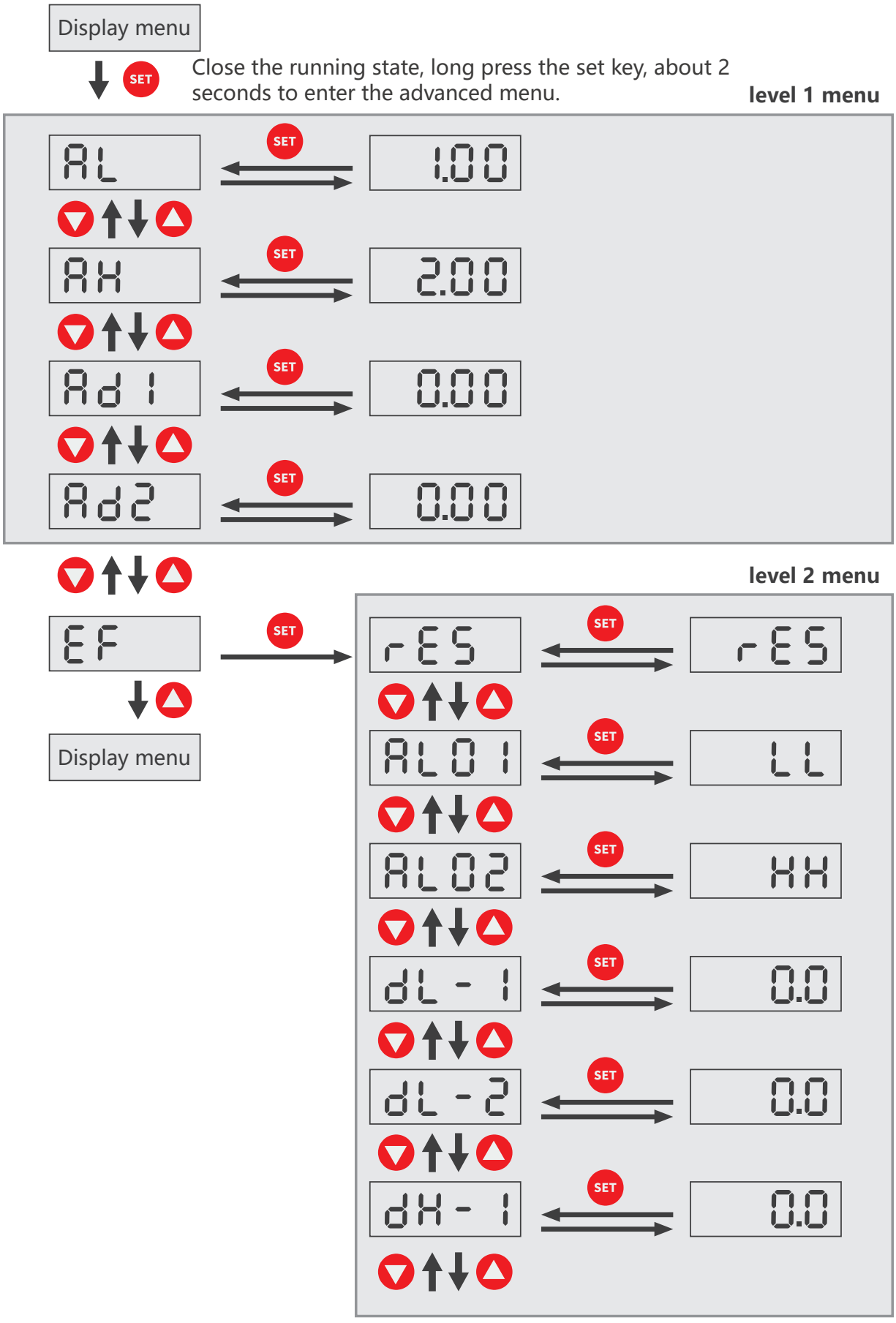


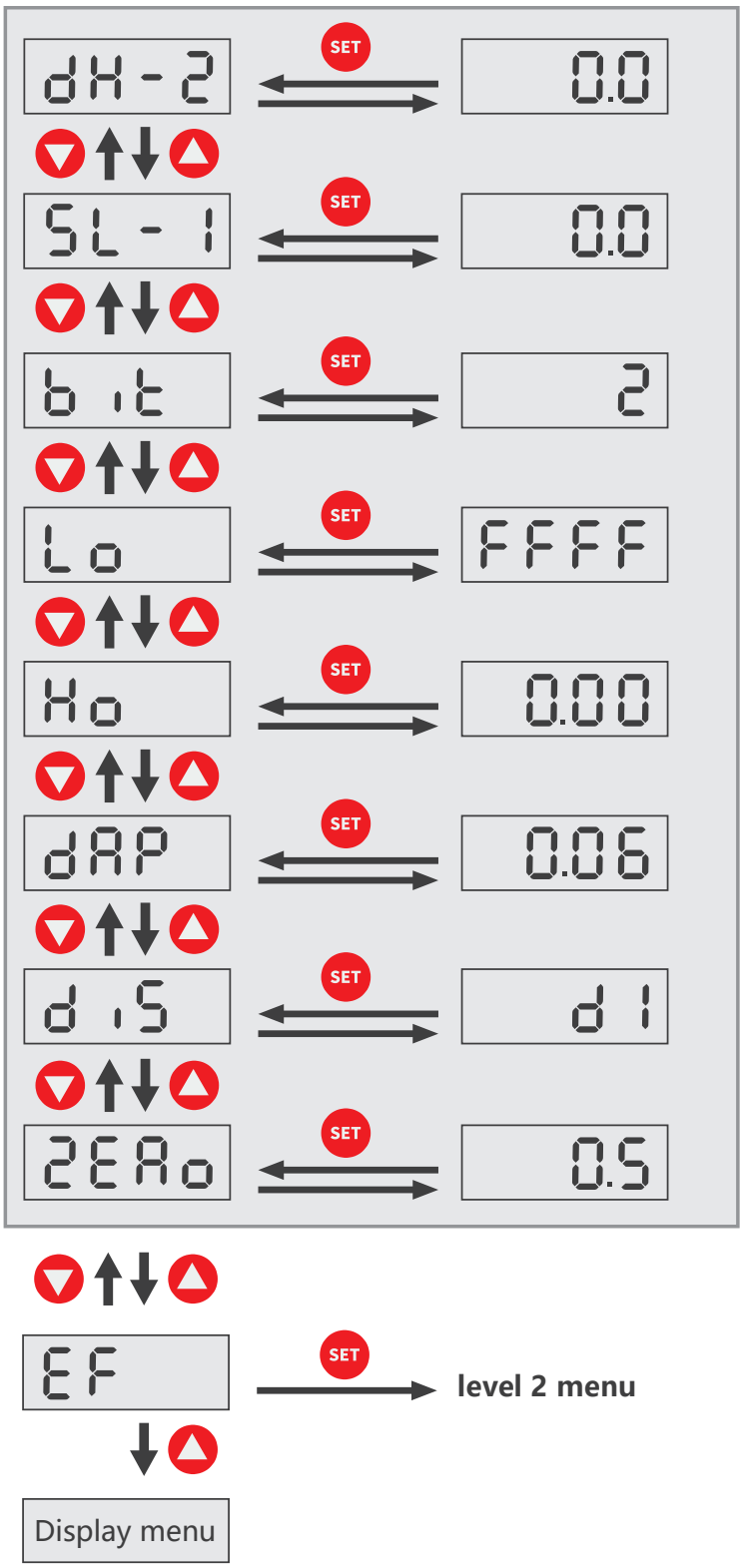

| | |
|---|---|
| **Running light** | When the running signal light is on, it is the measurement state. press the Run button to turn off or start the running. |
| **Unit switching** | In the off running state, hold down the up key for about 1 second to switch. |
| **Pressure clearing** | In the off running state, long press the key for about 2 seconds to clear the pressure (note: operation in the zero pressure state). |

## Debugging/operation

| Level 1 menu | |
|---|---|
| AL | Low closure set value(AL: The first group of relays) |
| | The output status is low pass high break, corresponding to the lower limit indicator |
| AH | High closure set value(AH: The second group of relays) |
| | The output status is high pass low break, corresponding to the upper limit indicator |
| Ad1 | AL return difference |
| | Lower alarm return difference |
| Ad2 | AH return difference |
| | High lift upper alarm return difference |
| EF | Expand functionality/Open the Level 2 menu |

| Level 2 menu | |
|---|---|
| rEs | factory data reset |
| | After entering, press ↑ or ↓ to appear ----,<br>that is successful (use with caution) |
| AL01 | Menu 1 AL mode |
| | Fno: Window is normally open;<br>Fnc: Window is normally close;<br>HH: Normally open;<br>LL: Normally close (Factory default) |
| AH02 | Menu one AH mode |
| | Fno: Window is normally open;<br>Fnc: Window is normally close;<br>HH: Normally open;(Factory default)<br>LL: Normally close |
| dL-1 | AL action delay |
| dL-2 | AH action delay |
| dH-1 | AL reset delay |
| dH-2 | AH reset delay |
| SL-1 | Intelligent Pressure Detection (Reference unit: seconds) |
| bit | Decimal place |
| Lo | Historical minimum pressure |
| | Zero before use |
| Ho | Maximum historical pressure |
| | Zero before use |
| dap | Signal damping |
| | Default 0.06 |
| dis | Display update speed |
| | [d1] : A new display is displayed every 100m seconds<br>[d2] : A new display is displayed every 500m seconds<br>[d3] : A new display is displayed every 1000 Mbit/s |
| ZERO | Zero excision value |
| | (% of full scale) Defaults to 0.5 |


Display menu
SET
Close the running state, long press the set key, about 2 seconds to enter the advanced menu.
level 1 menu
AL
1.00
AH
2.00
Ad1
0.00
Ad2
0.00
level 2 menu
EF
Display menu
rES
rES
AL01
LL
AL02
HH
dL-1
0.0
dL-2
0.0
dH-1
0.0


dH-2
0.0
SL-1
0.0
bit
2
Lo
FFFF
Ho
0.00
dAP
0.06
d.S
d1
2EAo
0.5
SET
EF
level 2 menu
Display menu

## *example*

**AL and Ad1 Settings (when AL is the default LL mode) :**

AL set 1.0bar,Ad1 set 0.2bar;

1. When the current pressure <=AL (1.0bar), the normally open line of relay 1 is closed (NO1 is closed);
2. The current pressure starts to rise, AL(1.0bar)< current pressure <=AL+Ad1 (1.2bar), relay 1 remains closed (NO1 is closed);
3. The current pressure continues to rise, the current pressure is >AL+Ad1 (1.2bar), and the normally open line of relay 1 is disconnected (NO1 is disconnected);
4. The current pressure starts to drop, AL(1.0bar)< current pressure <=AL+Ad1 (1.2bar), relay 1 remains disconnected (NO1 is disconnected);
5. When the current pressure continues to decrease and the current pressure <=AL (1.0bar), repeat step 1;

**That is: low pass high break**

**AH and Ad2 Settings (when AH is the default HH mode) :**

AH set 5.0bar,Ad2 set 0.2bar;

1. When the current pressure is >=AH (5.0bar), the normally open line of relay 2 is closed (NO2 is closed);
2. The current pressure begins to drop, AH-AD2 (4.8bar)<= Current pressure <AH (5.0bar), relay 2 remains closed (NO2 is closed);
3. The current pressure continues to drop, the current pressure <AH-Ad2(4.8bar), the normally open line of relay 2 is disconnected (NO2 is disconnected);
4. The current pressure starts to rise, AH-AD2 (4.8bar)<= Current pressure <AH (5.0bar), relay 2 remains disconnected (NO1 is disconnected);
5. When the current pressure continues to rise and the current pressure is >=AL (1.0bar), repeat step 1;

Namely: high pass low break

## Maintenance/cleaning

Sensors (switches) do not require maintenance.

**warning**

Periodically check whether the switch is working properly.

If the switch does not work properly, stop the operation immediately.

**caution**

Use of improper cleaning agent may damage the switch.
The following cleaning agents can be used to clean polycarbonate: mild soap or detergent Isopropyl alcohol
Immediately after cleaning, rinse with water. Do not leave cleaner on the surface of the product. Do not clean products in high heat or direct sunlight.
The following cleaning agents are known to affect the integrity of polycarbonate components and should not be used: ZEP Fast 505, Pinesol, Formula 409
Halogenated solvents (benzene, gasoline, acetone or carbon tetrachloride)
Strong alkalinity
Methyl ethyl ketone
Abrasive substance

## disassemble

**danger**

Only remove the switch in case of power failure (electrical, hydraulic/pneumatic).

Switch disconnection from pressure and power supply must be performed by trained or directed personnel in accordance with the most advanced standards.

**warning**

Be aware that the surface of the shell may become very hot if the operating temperature is higher!

# PS480 -RS485 Communication Protocol (MODBUS-RTU)

## 1.RTU data format description

### 1.1 Communication mode

The instrument adopts MODBUS RTU format. The protocol is used for data communication in master-slave query mode.

### 1.2 data format

The format of each bytein RTU mode is:
The encoding system is: 8-bit binary
Bits per byte: 1 start bit, 8 data bits (least significant bit sent first), 1 stop bit
Five baud rates are available: 2400, 4800, 9600, 19200, 115200

| start | address | Function code | date | CRC check | end |
|---|---|---|---|---|---|
| ≥3.5 character | 8 bit | 8 bit | n*8 bit | 16 bit | ≥3.5 character |

note:

(1) in RTU mode,an idle interval of at least 3.5 characters separates the packet frames.
(2) The entire messsage frame must be sent in a continuous stream of characters.
(3) The idle interval between two characters should not exceed 1.5 character time.

### 1.3 address

In the protocol,the address of the instrument is "0-255",and the "0" address is used for broadcasting,and the other addresses are reserved.

## 2. Command description

### 2.1 This instrument uses two instructions in the MOBUS protocol:

| | |
|---|---|
| Command 03 | Read a single hold register |
| Command 06 | Write a single hold register |

### 2.2 data format

The data format in the protocol is:floating-point number。Modbus sends the most significant word first。The protocol date encoding sequence is 3412,decoding sequence is 1234。

32 single-precision floating-point number the single format is IEEE754,equivalent to 4 bytes and the sequence is 3-4-1-2。After decoding into the 1-2-3-4 sequence, the 31st, 30th, 29th, ″, and 0 bits from the highest to the lowest are respectively.

The 31 bits are the sign bits(S),where 1 means the number is negative and 0 is positive;30-23 bits,a total of 8 bits is the level code;22-0 digits,a total of 23 digits is mantissa.

### The format of command 03 is as follows: (read register command)

note:

MODBUS request

| | | |
|---|---|---|
| Instrument address | 1 BYTE | 01-255 |
| Function code | 1 BYTE | 0x03 |
| Start address | 2 BYTE | 0-FFFF |
| Read quantity | 2 BYTE | 1-12 |
| CRC low-order | 1 BYTE | |
| CRC high-order | 1 BYTE | |

MODBUS response

| | | |
|---|---|---|
| Instrument address | 1 BYTE | 01-255 |
| Function code | 1 BYTE | 0x03 |
| Byte count | 1 BYTE | |
| Input state | N*2 BYTE | |
| CRC low-order | 1 BYTE | |
| CRC high-order | 1 BYTE | |

**Command 06 format is as follows (write register command):**

Clears the value of total accumulated traffic

MODBUS request

| | | | |
|---|---|---|---|
| Instrument address | 1 BYTE | 01-255 | |
| Function code | 06 | 0x06 | |
| Byte count | 1 BYTE | | |

MODBUS response

| | | | |
|---|---|---|---|
| Instrument address | 1 BYTE | 01-255 | |
| Function code | 06 | 0x06 | |
| Byte count | 1 BYTE | | |

## Description of communication:

Configuration instructions (power off and then power on after changing the address or baud rate)

| sequence | Explain | value |
|---|---|---|
| Address (id) | Address(default is 1,can be modified) | example: 0001 |
| baud | 9600 (revisbility) | 2400-115200 |

Baud=0 r485_baud= 2400
Baud=1 r485_baud=4800
Baud=2 r485_baud=9600
Baud=3 r485_baud=19200
Baud=4 r485_baud=115200

## Data item definition (485 scan speed should not be less than 200ms)

| sequence | Instructions |
|---|---|
| 40001 | Plus or minus (0 is positive, 1 is negative) |
| 40002 | Display the pressure value |
| 40003 | Number of decimal points in pressure value |

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