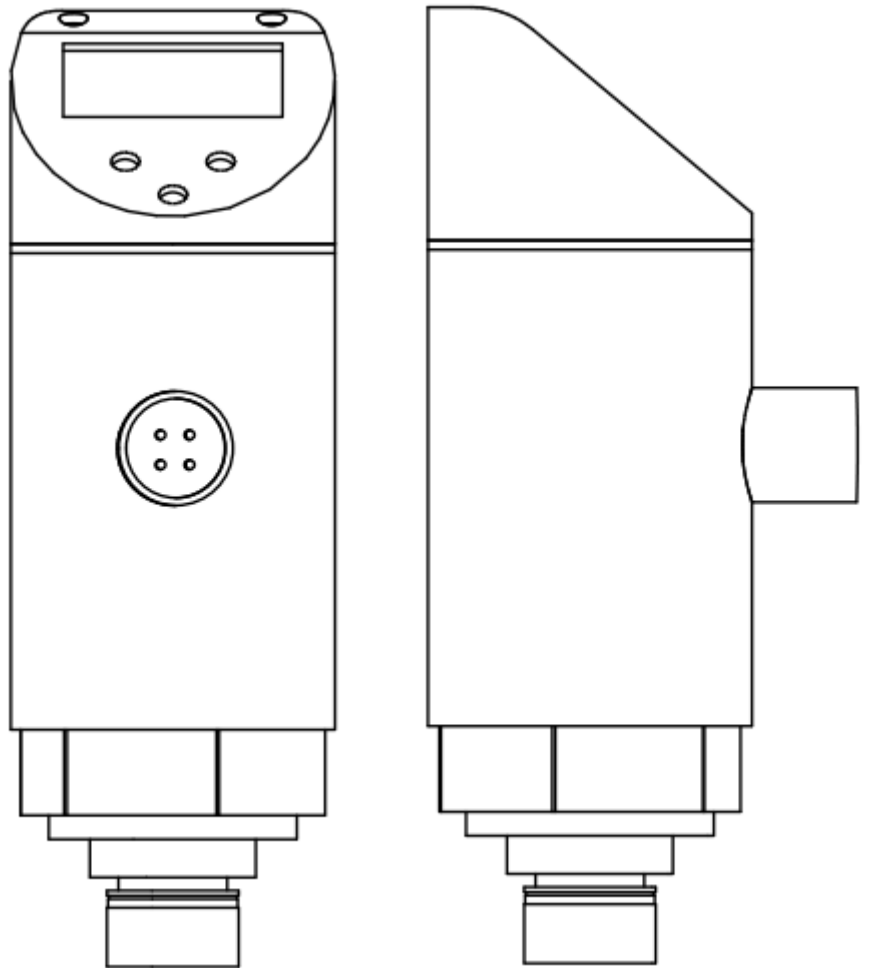


# Intelligent Pressure Switch Operation Instruction

PCM710

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## 1 Instructions for Reading

### 1.1 Used symbols



Important instructions, nonobservance of which may lead to failures or interferences



Supplementary instructions

## 2 Characteristics

The pressure sensor is used to monitor the system pressure of the mechanical equipment and devices, and to provide the corresponding switching signal and 4-20mA output.



Take appropriate measures to avoid static and dynamic overpressure above the specified overload pressure. Do not exceed the indicated burst pressure.

Even if the burst pressure is exceeded only for a short period of time, the equipment may be damaged. Note:

Beware of personal injury danger!

## 3 Functions

- The device will display the current system pressure.
- The device generates an output signal based on the operating mode and parameter setting.
- The device calculates the 4-20mA corresponding current output based on the current pressure value.

### 3.1 Parameter setting and evaluation

OUT1 (Pin 4)	<ul style="list-style-type: none"><li>• Switching signal for the system pressure limit</li></ul>
OUT2 (Pin2)	<ul style="list-style-type: none"><li>• Switching signal for the system pressure limit</li></ul>

### 3.2 Switch function

If  $OUT_x$  is above or below the set switching limit ( $SP_x$ ,  $rP_x$ ), its switching state will be changed. The following switch functions are optional:

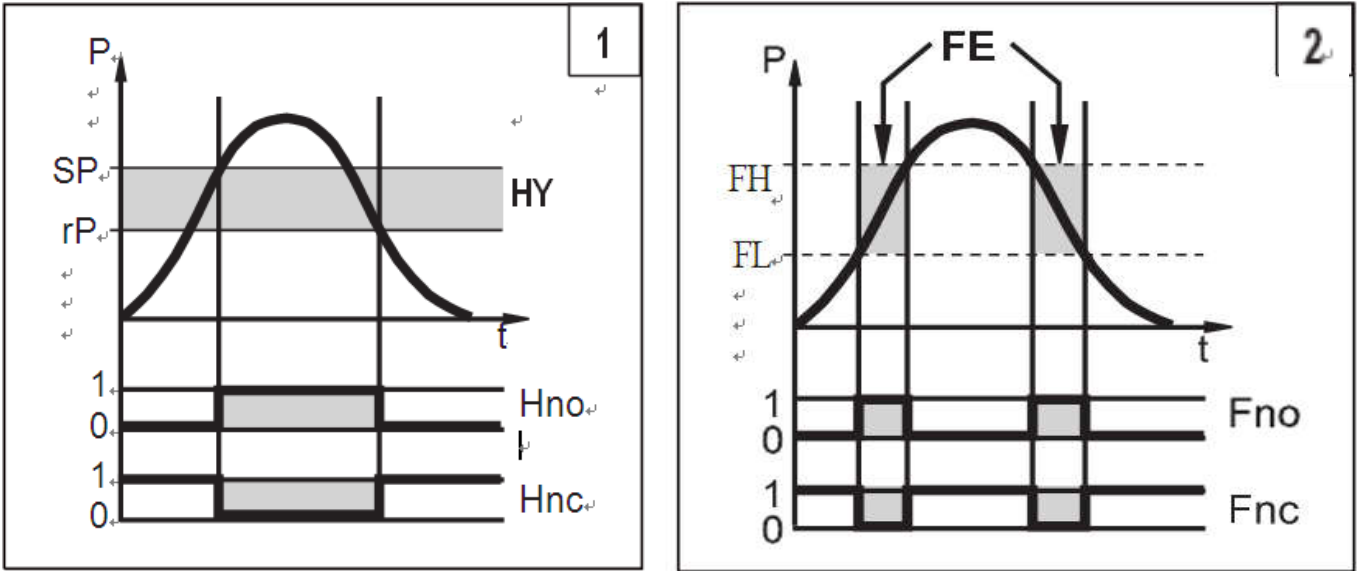
- Hysteresis function/Normally open:  $[OU_x] = [Hno]$  ( $\rightarrow$ Graph 1).
- Hysteresis function/Normally closed:  $[OU_x] = [Hnc]$  ( $\rightarrow$ Graph 1).

First, set the set point ( $SP_x$ ), and then set the reset point ( $rP_x$ ).

- Window function/Normally open:  $[OUx] = [Fno]$  ( $\rightarrow$ Graph2).
- Window function/Normally closed:  $[OUx] = [Fnc]$  ( $\rightarrow$ Graph2).

The width of the window can be set by the difference between  $FHx$  and  $FLx$ .  $FHx$ =Upper limit,  $FLx$ =Lower limit.

► The value units of  $SPx/FHx$  and  $rpx/FLx$  should be consistent with the display unit



$P$ =System pressure;  $HY$ =Hysteresis;  $FE$ =Window

#### 4 Installation

**!** Before installing and dismantling the equipment: Please make ensure that the system is not under any pressure.

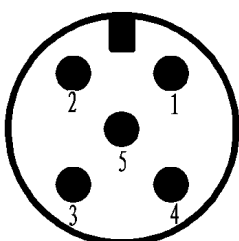
**i** Recommended tightening torque: 25 - 35 N • m

#### 5 Electrical Connection

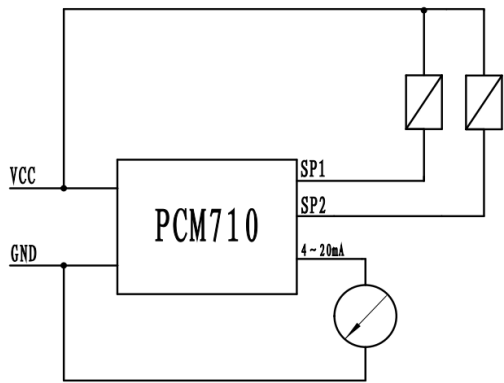
**!** Be sure that the wiring for the product is conducted by the qualified electrician. Be sure to comply with the national and international laws and regulations related to the electrical equipment installation.

► Power cut.

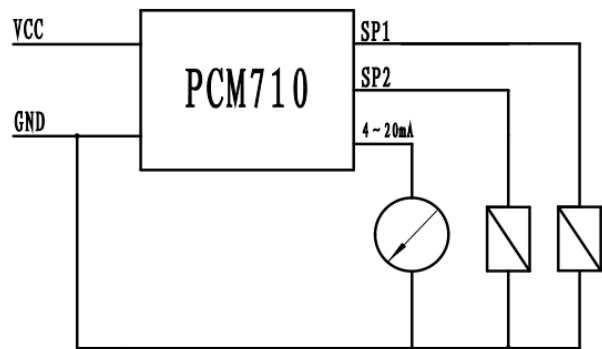
► The wiring for the product is shown as below:



- 1: VCC (Supply +) 2: SP2 (Switch 2)
- 3: GND (Supply -) 4: SP1 (Switch 1)
- 5: 4-20mA



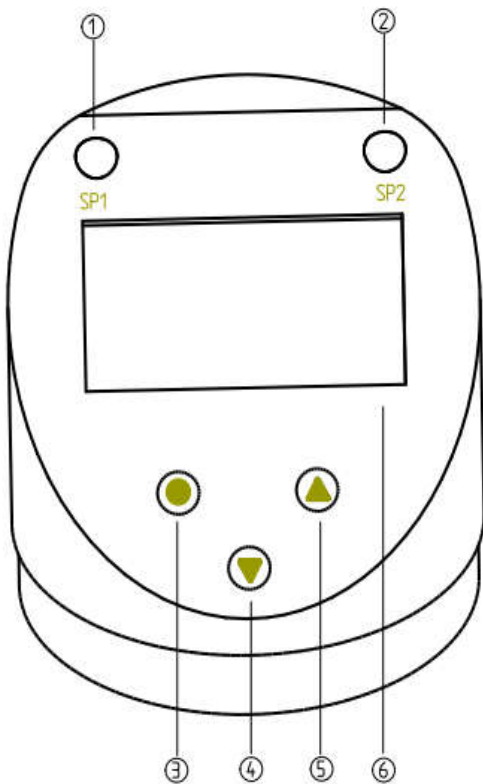
NPN Wiring Diagram



PNP Wiring Diagram

## 6 Operation and Display Unit

### 6.1 Human-machine interaction interface



Therein,  is an indicator light, indicating the action state of Switch 1.

is an indicator light, indicating the action state of Switch 2.


is the confirmation button [•]; under the normal display mode, it can be used to call out the menu interface, while under the menu setting mode, the function is “confirm/exit”.


is the page down button [▼]; under the normal display mode, long-press can trigger the “fast zero


point calibration” function, and the on-site zero point calibration can be carried out with protection. Under the menu setting mode, this is the page down/count reducing button.

is the page up button [▲]; under the normal display mode, it can trigger the “fast unit switching” function to switch the display unit quickly. Under the menu setting mode, this is the page up/count increasing button.

□ is LCD.

 After starting up, the system is under the “normal display mode” by default, and the button [●] can be used to call out the “menu setting” mode. When the system is under the “menu setting mode” and there is no button operation for 20 seconds or more, the system automatically returns to “normal display mode”.

 The buttons [▲] and [▼] provide different functions under different modes; after the “menu setting” mode is adopted, the shortcut function will be screened, the button function becomes count increasing/reducing.

 The fast zero point calibration function provides the on-site zero calibration method; the zero point calibration operation can only get response when the external air pressure value closes to the factory calibration zero point, and under the pressurizing state, this function is invalid.


## 6.2 Normal display mode interface

After system starting up, the LCD will show the following interface:



The interface elements include the current pressure value and the current selected pressure unit;

The current selected pressure unit will be highlighted.


 Under the current interface, the user can switch the units quickly through the button [▲]; under the current interface, the user can enter the menu setting interface through the button [●]

## 6.3 Menu display mode interface

When the menu setting interface is called out, the system will show the following interface:



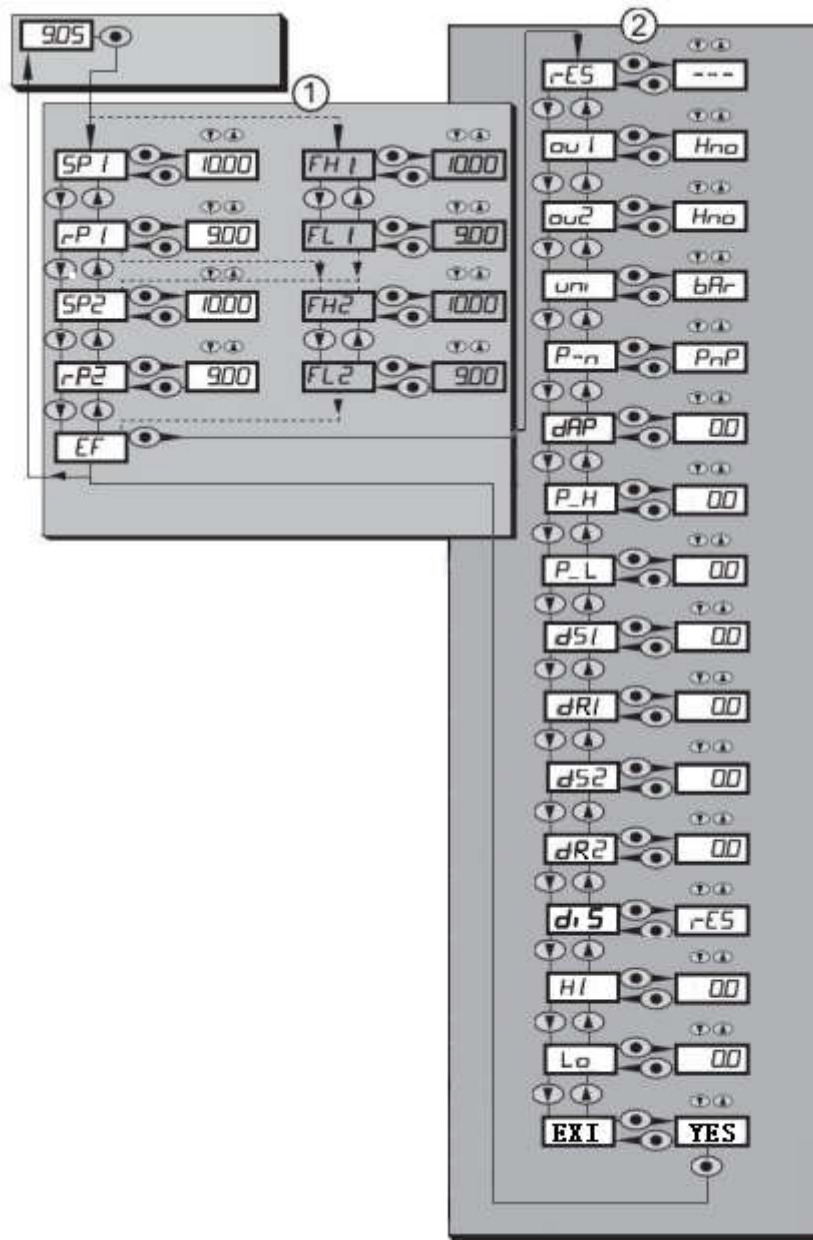
At this time, the tabs can be switched through the button [▲]/[▼], and [●] can be used to enter editing or exit from editing.

 To avoid misoperation, unlocking is needed before the parameter change each time, and unlocking can be realized after long-pressing [▲]/[▼] and 2-3S display screen shows flash animation.

When one tab is selected, the character string will be shown on the right part of the screen. The unselected tab will be shown on the left part of the screen.

## 7 Menu

### 7.1 Menu structure



## 7.2 Menu instruction

### 7.2.1 Level 1 menu instruction

Spx / rPx	The upper limit/lower limit of the system pressure for the starting up of OUs with the hysteresis setting. If OUTx parameter [Hno] or [Hnc] is set in the extended function “EF” menu, Spx/rpx will be displayed.
FHx / FLx	The upper limit/lower limit of the system pressure for the starting up of OUs with the window setting.



	If OUTx parameter [Fno] or [Fnc] is set in the extended function “EF” menu, FHx/FLx will be displayed.
EF	Extended function; opening Level 2 menu

### 7.2.2 Level 2 menu instruction

RES	Restoring factory setting
OU1	Selecting the output mode for Circuit 1 Hno Hysteresis normally open Hnc Hysteresis normally closed Fno Window normally open Fnc Window normally closed
OU2	Selecting the output mode for Circuit 2 Hno Hysteresis normally open Hnc Hysteresis normally closed Fno Window normally open Fnc Window normally closed
UNI	Selecting the display unit from the four optional units Kpa MPa bar PSI
P-N	Selecting the output mode PNP or NPN
DAP	Damping parameter
P_H	Pressure transmitter transfer function 20mA corresponding pressure
P_L	Pressure transmitter transfer function 4mA corresponding pressure
DSx/DRx	Switch action time-delay
DIS	Reverse display screen
HI	Historical maximum value
LO	Historical minimum value
EXI	Exiting from the setting interface

## 8 Parameter Setting

### 8.1 Conventional parameter setting

During the parameter setting, the product is still under the operating mode, and is monitored according to the current parameter right along before the parameter setting is completed.

1	<p>Selecting the parameter</p> <ul style="list-style-type: none"> <li>▶ Pressing [●] to enter the menu</li> <li>▶ Pressing and holding [▲] or [▼], until the desired parameter is displayed.</li> </ul>
2	<p>Setting the parameter value</p> <ul style="list-style-type: none"> <li>▶ Pressing and holding [●] to edit the selected parameter.</li> <li>▶ Pressing and holding [▲] or [▼] for at least 2 seconds.</li> </ul> <p>&gt; After 2 seconds: the setting value will be changed: The value will increase if the button is pressed, and the setting value will be changed continuously if the button is pressed and held.</p> <p>The value increases continuously if [▲] is pressed and held, and the value decreased continuously and progressively if [▼] is pressed and held.</p>
3	<p>Confirming the parameter value</p> <ul style="list-style-type: none"> <li>▶ Pressing [●] lightly.</li> </ul> <p>&gt; The parameter will be displayed again, and the new setting value will be stored.</p>
<p>Setting other parameters</p> <ul style="list-style-type: none"> <li>▶ Pressing and holding [▲] or [▼], until the desired parameter is displayed.</li> </ul>	
<p>Completing the parameter setting</p> <ul style="list-style-type: none"> <li>▶ Pressing [▲] or [▼] several times, until the current measured value is displayed, or for 20 seconds.</li> </ul> <p>&gt; The equipment will return to display the procedure value.</p>	

Level1menu is transformed into Level2menu:

1	<ul style="list-style-type: none"> <li>▶ Pressing [●] to enter the menu.</li> <li>▶ Pressing and holding [▲] or [▼], until [EF] is displayed.</li> </ul>
2	<ul style="list-style-type: none"> <li>▶ Pressing [●].</li> </ul> <p>&gt; The first parameter of the submenu will be displayed (in this case [rES]).</p>



When the parameter is used to set the software, it is necessary to enable [EF] button for Level1menu transforming into Level2menu.

- Timeout:

During the parameter setting, if no button is pressed within 20 seconds, the

## 8.2 Setting the output signal

### 8.2.1 Setting the output function

<p>▶ Selecting [OU1], and setting the switch function:</p> <ul style="list-style-type: none"> <li>- [Hno] =Hysteresis function/Normally open,</li> <li>- [Hnc]=Hysteresis function/Normally closed,</li> <li>- [Fno]=Window function/Normally open,</li> <li>- [Fnc]=Window function/Normally closed.</li> </ul>	<p><b>OU1</b></p>
<p>▶ Selecting [OU2] and setting the function:</p> <ul style="list-style-type: none"> <li>- [Hno] =Hysteresis function/Normally open,</li> <li>- [Hnc]=Hysteresis function/Normally closed,</li> <li>- [Fno]=Window function/Normally open,</li> <li>- [Fnc]=Window function/Normally closed.</li> </ul>	<p><b>OU2</b></p>

### 8.2.2 Defining the switch limit of the hysteresis function

<p>▶ [ou1]/[ou2] must be set as [Hno] or [Hnc].</p> <p>▶ Selecting [SP1]/[SP2], and setting the value that the output function needs to reach.</p>	<p><b>SP1</b> <b>SP2</b></p>
<p>▶ Selecting [rP1]/[rP2], and setting the value that the output function reset needs to reach. rPx should be always less than SPx. The equipment can only use the value which is less than that of SPx.</p>	<p><b>rP1</b> <b>rP2</b></p>

### 8.2.3 Defining the switch limit of the window function

<p>▶ [ou1]/[ou2] must be set as [Fno] or [Fnc].</p> <p>▶ Selecting [FH1]/[FH2], and setting the upper limit.</p>	<p><b>FH1</b> <b>FH2</b></p>
<p>▶ Selecting [FL1]/[FL2], and setting the lower limit.</p> <p>FLx should be always less than FHx. There won't be the condition that FLx is more than FHx.</p>	<p><b>FL1</b> <b>FL2</b></p>

### 8.3 User setting (optional)

#### 8.3.1 Output logic setting for the switch output

<ul style="list-style-type: none"><li>▶ Selecting [P-n], and then short pressing [●]</li><li>▶ Long pressing [▲] or [▼] to unlock</li><li>▶ Setting the P_N option by means of [▲] or [▼]</li></ul>	<b>P_N</b>
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#### 8.3.2 Setting the switching signal damping parameter

<ul style="list-style-type: none"><li>▶ Selecting [DAP] and then short pressing [●].</li><li>▶ Long pressing [▲] or [▼] to unlock</li><li>▶ Setting the DAP value by means of [▲] or [▼]</li></ul> <p>The unit for DAP is ms, whose meaning is the air pressure sampling rate, and by default the fastest value is 15ms; reducing the sampling rate can stabilize the data;</p>	<b>DAP</b>
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#### 8.3.3 Transmitter transfer function setting

<ul style="list-style-type: none"><li>▶ Selecting [P_H]/[P_L].</li><li>▶ Pressing [●] to enter editing.</li></ul> <p><i>[P_H]: Setting the corresponding pressure value for 20mA, and the default is full span point.</i> <i>[P_L]: Setting the corresponding pressure value for 4mA, and the default is zero point</i> <i>Note, the unit for the set value is the display unit for the current pressure</i></p>	<b>P_H</b> <b>P_L</b>
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#### 8.3.4 Switch action time-delay

<ul style="list-style-type: none"><li>▶ Selecting [DSx]/[DRx] and then short pressing [●].</li><li>▶ Long pressing [▲] or [▼] to unlock</li><li>▶ Setting the time-delay parameter value by means of [▲] or [▼]</li></ul> <p><i>[DSx]: Setting the switch action time-delay, for example, under the normally open mode, the switching signal changes from the open circuit into the broken circuit action, and there will be DSx second time-delay before</i></p>	<b>DSx</b> <b>DRx</b>
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#### 8.3.5 Reverse display screen

<p>Selecting [DIS]</p> <ul style="list-style-type: none"><li>▶ Pressing [●].</li><li>▶ Pressing and holding [▲] or [▼], until RES/NOR is displayed; selecting NOR, the display screen is normal, and selecting RES, the display screen is reverse.</li></ul>	<b>DIS</b>
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### 8.3.6 Resetting all the parameters into the factory setting

Selecting[rES]. ▶ Pressing[●]. ▶ Pressing and holding [▲] or [▼], until [- - -] is displayed. This operation will initialize all the parameters that the user can set.	<b>RES</b>
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### 8.3.7 Reading the historical maximum and minimum

▶ Selecting[HI]/[DLO] and then short pressing [●]. ▶ Viewing [HI]: Historical maximum value [LO]: Historical minimum value ▶ Pressing and holding [▲] or [▼], until [----] is displayed, which can emptying the historical parameters.	<b>HI</b> <b>LO</b>
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### 8.3.8 Exiting from the setting interface

Selecting[EXI] ▶ Pressing[●]. ▶ Pressing and holding [▲] or [▼], until YES/NO is displayed; selecting YES to exit from the setting interface, and selecting NO not to exit from the setting interface.	<b>DIS</b>
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## 9 Operation

After being electrified, the product is under the “operation” mode (i.e. the normal operating mode). The equipment will carry out the measurement and evaluation functions according to the setting parameter, and send out the output signal.

### 9.1 Reading the setting parameter

- ▶ Pressing [●].
- ▶ Pressing and holding [▲] or [▼], until the desired parameter is displayed.
- ▶ Pressing [●] lightly.



The system error does not influence the switch function of the system