

SINTEK

PDIP2 COMPACT DIGITAL PRESSURE SWITCH

— MANUAL

■ I: NOTICE

- After receiving the product, please check whether the packaging and appearance are intact, and check whether the product model and specifications match the product you purchased.
 - Install and wire the product correctly and reliably according to the process connection, electrical connection and installation method provided by the product.
 - During use, please pay attention to the technical specifications and usage conditions of the product, such as allowed medium and temperature, overload pressure, power supply voltage, etc.
 - The pressure switch is a precision device. Users should not disassemble it by themselves when using it, and do not touch the diaphragm with hard objects to avoid damage to the product.
 - During the installation process, pay attention to protecting the product, and do not install or disassemble it forcefully, otherwise it will easily damage the product, especially the installation thread.
 - Please use a suitable wrench when installing or disassembling. Do not forcibly twist the housing by hand to tighten or disassemble, otherwise the damage caused will not be covered by the warranty.
 - After installation and power-on test, it usually takes several minutes for the product to have stable output and normal operation. This is a normal phenomenon.
 - If abnormal phenomena occur during power-on testing after installation, please contact our company's after-sales technicians unless you have the product adjustment equipment and skills.
 - It may be affected by installation stress during the installation process. After the installation is completed, if the reading is not at zero, please clear it before use.
- (!) Product damage caused by non-professional operation that does not follow operating specifications is not covered by the warranty.

■ II: WARNING

- When the ambient temperature is above 60°C, please use a forced fan or cooler for cooling.
- The installation, debugging and maintenance of this product should be carried out by qualified engineering and technical personnel.
- Please ground the product shell reliably to help resist electromagnetic interference and ensure electrical safety.
- If the fault or abnormality of this product may cause a major accident in the system, please set up an appropriate external protection circuit to prevent accidents.
- The company is not responsible for any direct or indirect losses other than the product itself.
- The company reserves the right to change product instructions without notice.

■ III: DESCRIPTION

This is a digital pressure switch with an OLED screen suitable for hydraulic environments. The product is designed with a 304 stainless steel case and a plastic case head. The protection capability can reach IP65 level. This product can be used in harsh environments.

It adopts a universal threaded joint design. It is designed for high load conditions in hydraulic environments and is equipped with an ED sealing method to achieve good long-term stability.

It is equipped with a double-section rotating structure that can adjust the screen orientation to ensure that customers can obtain good viewing angles in different installation positions.

This pressure switch is equipped with multiple function buttons. Users can quickly set hysteresis value, upper and lower limit settings, hysteresis mode/window mode and other functions. Equipped with a standard 5-core M12 aviation plug line (1 meter), users can directly replace the old mechanical pressure switch.

Note: Only the G1/4 external thread version supports ED sealing form

■ IV: SPECIFICATION

Measuring range: 0~0.1..1.0..60MPa
 Accuracy : ±0.5%FS
 Overload pressure: ≤10MPa 200%;>10MPa 150%
 Destroying pressure: ≤10MPa 300%;>10MPa200%
 Screen display mode :OLED
 Screen Resolution:128*64
 Supply voltage:12~28V
 Output signal Output 1: NPN or PNP (switchable)
 Output 2: NPN or PNP (switchable)
 Other outputs: 4~20mA
 Load current:≤100mA
 Operating temperature:(-20~65)°C
 Electrical connections:M12 plug
 Electrical protection:Anti-reverse connection protection, anti-electromagnetic interference
 Threaded port:M20x1.5, G1/4, NPT1/4 or customized thread
 Interface material:304 stainless steel
 Diaphragm material:316L stainless steel
 Accessories: Standard 5-core M12 aviation cable (1 meter)
 Response time:10ms

■ V: DIMENSION

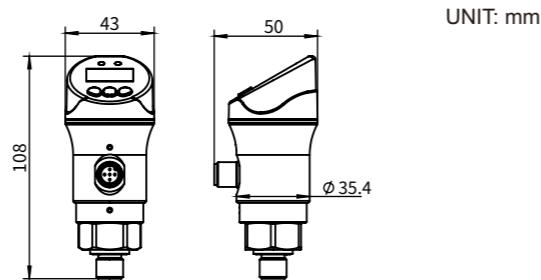


Figure 1 Front view and side view

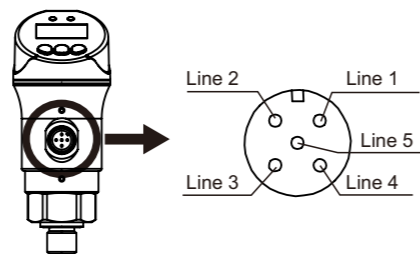


Figure 2 Wiring definition diagram

■ VI: DIAL FUNCTION

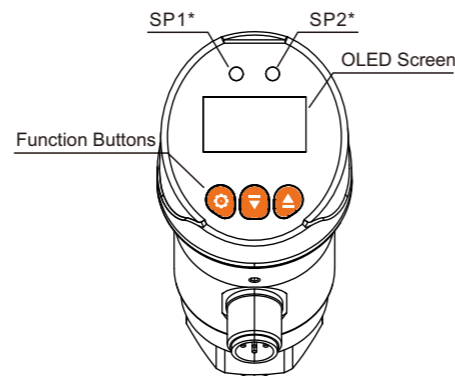


Figure 3: Dial Style Diagram

Buttons	Functions	Special Instructions
	Set Button	Short pressing this button on the main interface will enter the setting of output upper and lower limits. In the secondary menu, it serves as a function switch button and a parameter save button.
	Decrease Button	In the secondary menu, it serves as a digital modification function, short pressing will decrease the number.
	Increase Button	In the secondary menu, it also serves as a digital modification function, short pressing will increase the number.

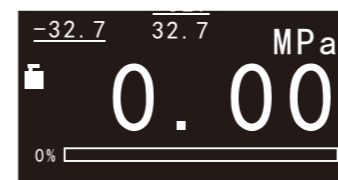
Note*: By default, SP1/SP2 means output 1 alarm light and output 2 alarm light respectively.

Green indicates that the pressure value is normal.

Red indicates that the pressure exceeds/below the upper and lower alarm limits.

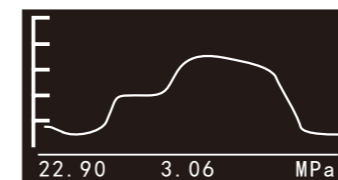
■ VII: PRODUCT FUNCTION

7.1 OLED screen main interface (Figure 4)



Interface	Function	Special Instructions
0.00	Real time value	The difference in units will cause the specific size of the real-time value to change.
MPa	Unit	Units can be switched.
0%...100%	Progress bar	Use a progress bar to display the percentage of range of the pressure measurement value.
	Unlock mode	None.
	Lock mode	The main interface is locked and other functions cannot be entered by short pressing the button.
32.7	Historical maximum	The historical maximum pressure value will be recorded after start up.
-32.7	Historical minimum	The historical minimum pressure value after startup will be recorded.

7.2 Line chart interface (Figure 5)



Interface	Function	Special Instructions
curve	Real-time numerical display	Changes in units. Different, will lead to the specific size of the real-time value.
kPa	Unit	Units can be switched.
f	Scale	From low to high, it is 0~100%.
22.90	Historical maximum	The historical maximum pressure value will be recorded after startup.
3.06	Historical minimum	The historical minimum pressure value after startup will be recorded.

7.3 Introduction to basic functions

Name	Introduce
Lock interface	Features: The main interface is locked and other functions cannot be entered by short pressing the button.Prevent accidental touch. How to enter: In the main interface, long press and button at the same time for 5 seconds.Display the icon and enter the mode. In lock mode, long press the button and button for 5 seconds to cancel.
High and low value settings (ou1L) (ou1H)	Features: Set switch 1 alarm value/set switch 1 reset value in hysteresis mode Set the upper/lower limit value of the system pressure when output 1 is turned on in window mode. How to enter: When the secondary menu is displayed (ou1L/ou1H), short press to enter.The corresponding data size can be set. Long press to shift, short press to increase/decrease the value, short press to save.

Name	Introduce
High and low value settings (ou2L) (ou2H)	Features: Set switch 2 alarm value / set switch 2 reset value in hysteresis mode Set the upper/lower limit value of system pressure when output 2 is turned on in window mode. How to enter: When the secondary menu is displayed (ou2L/ou2H), short press to enter . The corresponding data size can be set. Long press to shift, short press to increase/decrease the value, short press to save.
Submenu model	Features: Enter related action delay, unit switching, filter coefficient, pressure Extreme value, zero point calibration and other functions. How to enter: Long Press for 3 seconds, "LOC" is displayed, and the user needs to enter the password at this time. Short press to enter password input mode. Short press or to enter Password (default customer password is 1111). Long press to shift, short press to increase/decrease the value, short press to save. If the password is correct, the secondary menu will be displayed. If the password is wrong, return to the main interface.

Name	Introduce
line chart Sampling frequency (RATE)	Features: The larger the sampling frequency, the slower the line chart value updates. The smaller the sampling frequency, the faster the line chart value is updated. How to enter: When the secondary menu (RATE) is displayed, short press to enter. The parameter configuration range is 0.1~10. Long press to shift, short press to increase/decrease the value, short press to save.
Filter coefficient debugging (FILT)	Features: The larger the filter coefficient, the longer the displayed pressure value is stable. The smaller the filter coefficient, the faster the displayed pressure data will stabilize. How to enter: When the secondary menu is displayed (FILT), short press to enter. The parameter configuration range is . Long press to shift, short press to increase/decrease the value, short press to save.
Switch 1 or 2 Output mode switching (ou1/ou2)	Features: OUT output pressure value switching signal: hysteresis function or window function, Normally open or normally closed. Switching signal for pressure value: hysteresis function [H .] or window function [F .] Normally open [.no] or normally closed [.nc]. How to enter: When the secondary menu is displayed (ou1/2), short press to enter. After entering parameter configuration, short press or to switch in sequence [Hno] or [Hnc] or [Fno] or [Fnc] Short press to save.
Action delay (dr1) (dr2)	Features: Adjust the action delay parameters of OUT1/OUT2. How to enter: When the secondary menu is displayed (dr1/2), short press to enter. Set a value between 0 and 50 seconds. Long press to shift, short press to increase/decrease the value, short press to save.
Unit switching (uni)	Features: Standard unit of measurement for system pressure. How to enter: When the secondary menu displays (uni), short press to enter. Can be set to [bAr] / [mbar] / [MPa] / [kPa] / [PSI] / [kgf]. Short press or to switch in sequence, short press to save.
Switch output logic (P-n)	Features: Switching output logic switches pnp/npn. How to enter: When the secondary menu is displayed (P-n), short press to enter. PNP or NPN can be set. Short press or to switch in sequence, short press to save.
Zero point calibration (coF)	Features: Adjust the output value of the digital signal source to the zero error point. How to enter: When the secondary menu is displayed (coF), short press to enter. Shielding value = range*X, the range of X setting is 0.000~0.010. Long press to shift, short press to increase/decrease the value, short press to save.
Customer password (SetupPW)	Features: Set the password for the secondary menu. How to enter: When the secondary menu (SetupPW) is displayed, short press to enter. The password range that can be set is 0000~9999. Long press to shift, short press to increase/decrease the value, short press to save. Note: The default customer password is 1111.
Restore factory mode (rES)	Features: The product setting parameters are restored to the default parameters (see Appendix 1 for the default parameters).

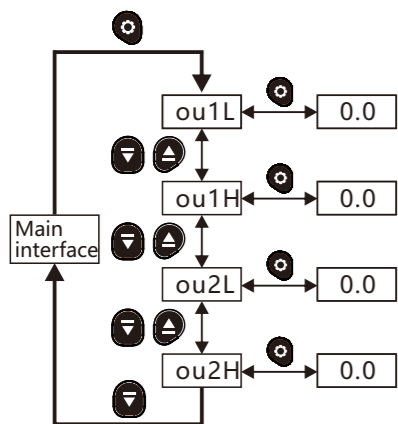
Restore factory mode (rES)	How to enter: When the secondary menu is displayed (rES), short press \odot to enter. At this time, short press \triangle and the screen will display "WARN" to remind you whether to execute reset. The user needs to long press \triangle for 3 seconds again to confirm execution. OK. The screen displays "ing" and finally returns to the main interface. At this time, all parameters of the product are restored to default parameters.
Line chart mode	Features: Used to record numerical fluctuations in the short term. See 7.4 for details. How to enter: In the main interface, short press \triangle to enter.
Clear function	Features: Used for zero error clearing. How to enter: In the main interface, long press ∇ for 3seconds to perform the reset function. During the clearing operation, "C-L" will be displayed on the screen. Note: 1. When the displayed pressure value is less than 20% FS, the clearing is successful and the displayed value is cleared to zero. 2. When the displayed pressure value is $\geq 20\%$ FS, the reset fails and the displayed value remains unchanged.

7.4 Default parameter table (Appendix 1 table)

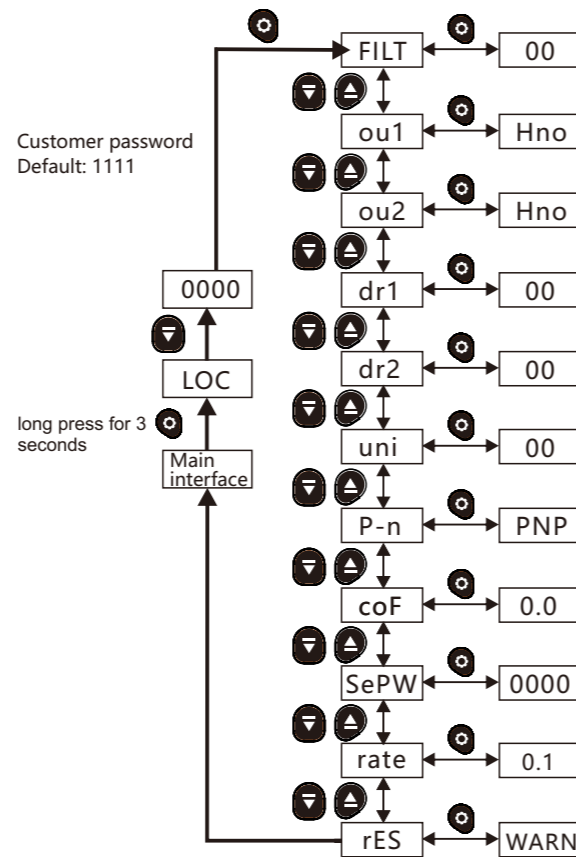
Name	Factory setting parameters	User-set parameters
ou1L	050.0 *	
ou1H	100.0 *	
ou1	HNO	
ou2	HNO	
UNIT	kPa *	
P-n	NPN	
rate	010	
ou2L	150.0 *	
ou2H	200.0 *	
dr1	00	
dr2	00	
coF	05	
SePW	1111	

Note: Parameters marked with * are affected by the actual selection range. The default parameters are subject to the actual product.

7.5 High and low value setting flow chart (Figure 6)

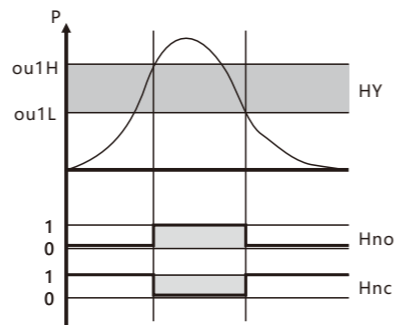


7.6 Secondary menu setting flow chart (Figure 7)



VIII: SWITCH FUNCTION

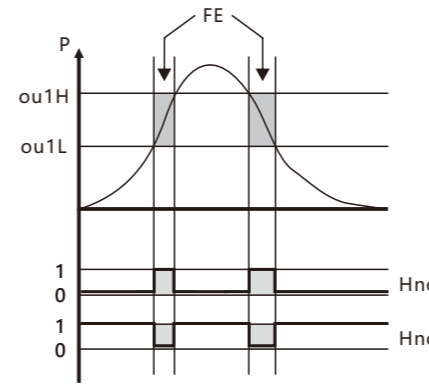
If the switch is above or below the set switching limit (ouxH ,ouxL), it will change its switching state. The following switching functions are selectable:
 ※ Hysteresis function normally open: output x=[Hno] (refer to Figure 6)
 ※ Hysteresis function normally closed: output x=[Hnc] (refer to Figure 6)
 First set the switching point: (ouxH), then set the reset point: (ouxL).
 If ouxH changes again, the hysteresis will also change.



Taking output 1 as an example, the switching limits are ou1H and ou1L. In the figure, P = system pressure; HY = hysteresis.

Figure 6 Hysteresis function diagram

If the switch is above or below the set switching limit (ouxH ,ouxL), it will change its switching state. The following switching functions are selectable:
 ※ The window function is always open: =[Fno] (refer to Figure 7)
 ※ Window function normally closed: =[Fnc] (refer to Figure 7)
 The width of the window can be set by the difference between ouxH and ouxL.
 ouxH = upper limit value, ouxL = lower limit value.



Taking output 1 as an example, the switching limits are ou1H and ou1L. In the figure, P = system pressure; FE = window.

Figure 7 Window function diagram

X: INSTALL

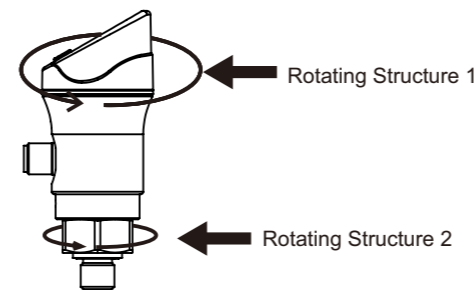


Figure 10: Schematic Diagram of Rotating Functionality

- 1.Supports dual-stage rotation structure, both supporting 330° rotation angle
2. The pressure gauge must be tightened with a wrench when installing. The dial direction can be rotated only after installation is completed.
3. Before installing the equipment, please confirm whether the installation space can accommodate the rotation angle of the product.
4. During installation, please fully tighten the screws to ensure air tightness.
5. The recommended torque range for the wrench is (25~35) Nm.
6. After the equipment is installed, you can adjust the direction of the M12 connector and dial. (Note! While adjusting the orientation, the direction of rotation should be consistent with the installation direction of the screw thread to prevent the screw thread from loosening when adjusting the orientation.)
5. The dial rotation has a certain rotation range. When the rotation reaches the maximum amplitude, do not continue to rotate to avoid equipment failure.

XI: WIRING

Line	Function Cable	Color
1	Power supply+	Brown
2	OUT2	White
3	Powered by-	Blue
4	OUT1	Black
5	4~20mA	Ash

2 way switch(PNP/NPN)+4~20mA

BROWN	Power supply+
BLACK	OUT1
WHITE	OUT2
GRAY	4~20mA
BLUE	Powered by-

XII: PROBLEMS&SOLUTIONS

NO.	PROBLEM	REASON	SOLUTION
1	No display on the screen	Insufficient supply voltage	Check the power supply
2	Buttons don't respond	Key travel is blocked	1. Check whether the keys are damaged 2.Return to factory for repair
3	Pressure does not change	1. The pressure hole is blocked 2. Caused by pressure clearing 3. The sensor is damaged	1. Check pressure hole 2. Without pressure, zero clearing 3. Back to Factory
4	Display E--H	1. Pressure exceeds range 2. The sensor is damaged	1.Be careful not to overpressure 2.Return to factory for repair
5	Value jumps too slowly	Adjust filter constants	See 9.1
6	Value jumps too fast	Adjust filter constants	See 9.1
7	Frequent shocks of pressure	1. Easily damage the sensor 2. Easily cause leakage	Add buffer tube
8	There is high temperature at the scene	1. Easily damage the pressure gauge 2.Cause pressure deviation	Add heat pipe/heat dissipation piece

XIII: AFTER-SALES SERVICE

After-sales service and warranty terms

1. The product warranty period is 12 months from the date of delivery. Our company's products can be used normally within 7 days from the date of sale.

If something goes wrong during use, consumers can choose refunds, exchanges, maintenance and other services. consumer purchases Our company's products are covered by free warranty if any non-human damage occurs within one year. not satisfied with For consumers who receive free replacement or free warranty services, our company will still provide technical services.

The time of purchase shall be based on the date of invoice or receipt issued by the dealer.

2. The products are mainly divided into shells, control components and pressure-sensing components.

1) If the casing is worn out due to normal wear and tear, we will not be responsible for the warranty and will not replace the casing.

2) The warranty is not covered if the circuit board is damaged due to incorrect wiring or excessive load on the control components.

3) The warranty does not cover damage to the pressure-sensitive components caused by over-pressure use or touching the diaphragm with hard objects.

3. Those who have any of the following circumstances cannot enjoy the "Three Guarantees" service:

- 1) Any damage caused by human factors and use in abnormal working environment, failure to follow instructions
- Malfunctions and damage caused by use of the manual or use in an environment that does not follow the instructions in the manual;
- 2) Users dismantle, repair, and modify products without the consent of the company;
- 3) Damage caused by poor transportation after purchasing our products;
- 4) Damage caused by other force majeure (such as floods, lightning strikes, earthquakes, abnormal voltage);
- 5) Normal use, wear, tear, discoloration, etc.;
- 6) Products that do not belong to our company (such as fakes);
- 7) Unable to present valid shopping voucher, no warranty card, etc.;

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