ASCORP

ASP-100
series

DIGITAL PRESSURE GAUGE

[User Manual]

The manual applies to the following products:

- ASP-100G Precision digital pressure gauge
- ASP-100N IoT pressure gauge
- ASP-100R Digital pressure controller
- ASP-100T Transmitting pressure gauge
- ASP-100C Communication pressure gauge
- ASP-100D Digital differential pressure gauge

Firstly, thanks for purchasing the ASP-100 series digital pressure gauge from our company.

Attentions below points during usage:

ASP-100 series digital pressure gauge's precautions for use

- Working pressure cannot exceed the loading pressure on the data plate of ASP-100, or it may damage the gauge.
- Using the user calibration function with care. Incorrect calibration will cause measurement data to be disordered.
- Checking if the pressure medium is the same as the medium on the data plate of ASP-100.
- Using the ASP-100 only in the operating environment described in the manual.
- Charge the device with the ways of the manual.
- When the battery lower than demand, ASP-100 will shut down automatically. Please change the battery or connect to the specific power adapter.
- Please check the ASP-100 periodically according to relevant regulations.

Content

No.1 Brief introductions

The digital pressure gauge converts the pressure into an electrical signal through a high-precision pressure sensor, and then calibrates the signal through a higher-accuracy-class pressure standard device to convert the electrical signal into an accurate pressure value. Compared with the traditional pointer pressure gauge, the digital pressure gauge has no mechanical stress and transmission components such as bourdon tube and gear movement during the measurement process. Therefore, the digital pressure gauge has very good anti-aging and shock-resistant characteristics. Moreover it also has higher measurement accuracy, more intuitive visual value and more convenient industrial automation control. It is the ideal product for industrial enterprises and research institutes to replace traditional pointer pressure gauges.

The ASP-100 series digital pressure gauges produced by us adopt advanced pressure measurement technology and superior measurement circuit. After strict aging, selecting and temperature compensation etc. production processes, the measurement accuracy and long-term stability of digital pressure gauges have been greatly improved. Large LCD screen display and large font readings are very convenient. The ultra-low power design reduces times of battery changing and will be convenient for the user. It is the ideal product for precision pressure measurement, pressure

control, pressure monitoring, pressure gauge verification, etc.

No.2 Product specifications

Pressure Unit: mmH_2O, mmHg, inH_2O, inHg, kgf/cm^2, psi, kPa, MPa, Pa, hPa, mbar, bar many units can switch. HD-100 will automatically switch the units according to different measuring range.

Working ambient: Temperature: (-20～70）℃; Relative humidity:＜95%RH; Atmospheric pressure:（86～106）kPa; Temperature for Storage:（-30～80）℃.

Display: Full view LCD screen, white backlight, 5 digits display. HD-101 is high-resolution LCD Chinese display.

Power supply: ASP-100G, ASP-100N, ASP-100A, ASP-100S, ASP-100D and ASP-101 models are powered by the ER18505 battery or external power adapter (external power adapter is optional). The **ASP-100R and ASP-100C** models are powered by the power adapter or external power supply (external power supply supports 5V, 12V, 24V). The **ASP-100T** is powered by a 24V loop.

Wireless parameters: The working frequency band depends on the operators network; the transmission power (23~-40)dBm; the receiving sensitivity-115dBm; **(ASP-100N only)**

Contact specifications: 5A 250VAC or 5A 30VDC. **(ASP-100R only)**

Output current: (4~20) mA. **(ASP-100T only)**

Communication interface: RS485, The baud rate 9600bps.

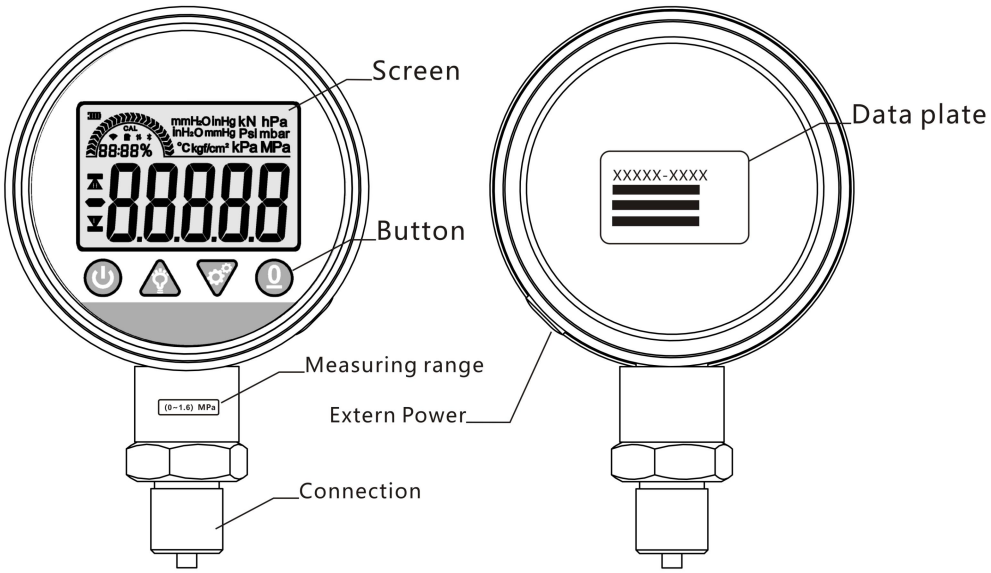
(ASP-100C only)

Dimensions: headφ100mm × 50mm, length 160mm

Thread: M20 × 1.5 male thread for default, other thread size for optional

Weight: about 0.5kg

No.3 Product structure drawing



No.4 Button functions

Power button: Long press for 3 seconds, the ASP-100 power can be turned on/off.

Backlight button: Press this button to turn on/off the screen backlight

Setting button: Short press to switch pressure unit display. Long press to enter setting menus.

O-setting: Clearing the pressure value.

Data input method:

Press **setting button**, move the cursor position.

Press **backlight button**, number plus 1

Press **O-setting**, confirm data input.

Press **power button**, exit data input.

Menu operation method:

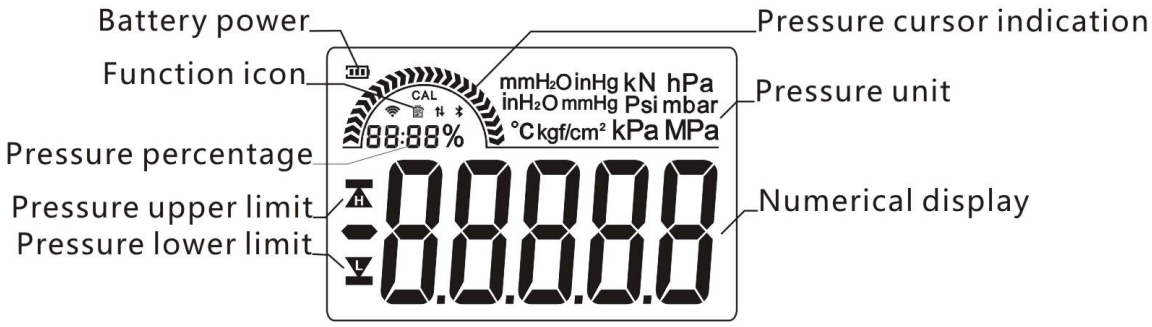
Long press **setting button**, the screen prompts to enter the menu password **(password is 201)**, enter the menu after correct input.

Press **backlight button** or **setting button**, switch menu option.

Press **O-setting**, run menu option.

Press **power button,** return to previous menu or exit the menu.

No.5 Monitor instruction



No.6 Operation instructions

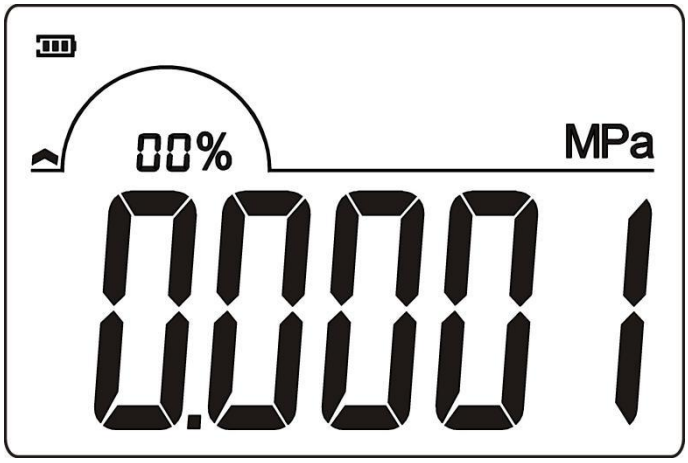
1. On/off

In the off mode, long-press power button for 3 seconds to turn on, when turn on, the screen displays the pressure range and then enters the

measurement mode. In the measurement mode, long press for 3 seconds will turn off.

2. Pressure measuring

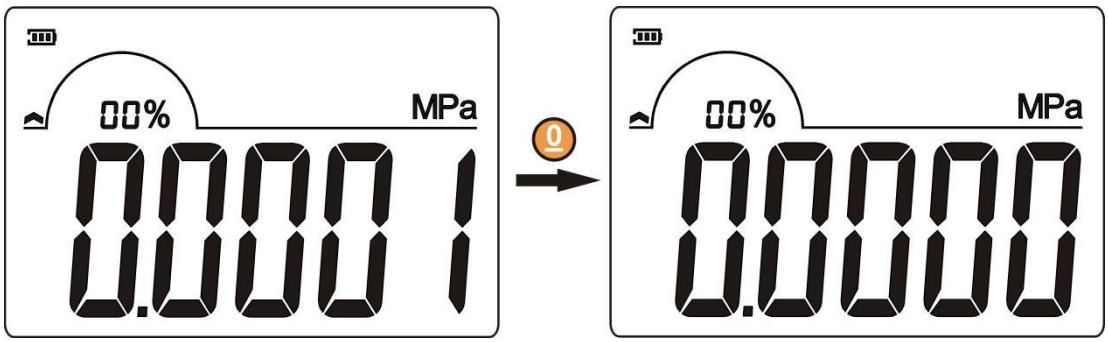
After power-on, ASP-100 will automatically enter the pressure measuring mode, screen shows the pressure value, pressure unit, pressure percentage, pressure cursor indication, battery power and other function icons. The pressure unit will remain at what set by the users. When the pressure measurement exceeds 120% FS (120% of the full scale, the screen displays -OH- to indicate over-pressure. Please relieve pressure in time to avoid damage to the pressure sensor.



3. Pressure zero-clearing

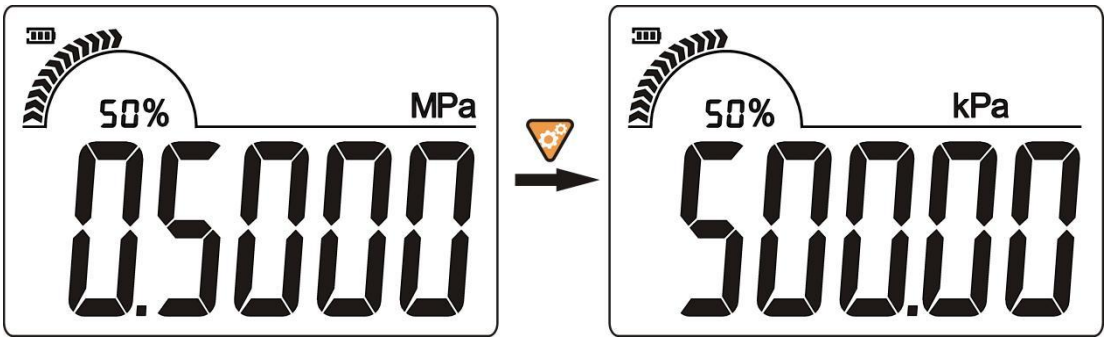
Before the clearing is operated, the pressure port of ASP-100 must be connected to the atmosphere and the pressure port must be vertically downward. Press O-setting can clear the pressure measurement value, long press O-setting can cancel clearing.

Clearing process as below photo:



4. Pressure unit switch

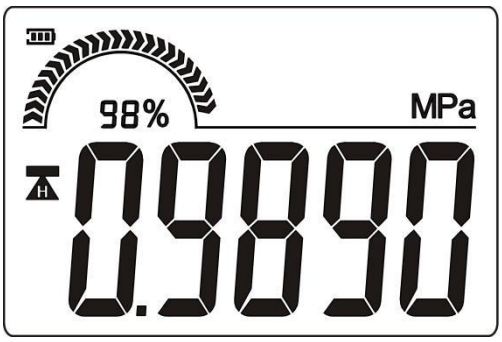
Press setting button, can switch screen display pressure unit, to ensure the pressure value is displayed correctly that not all pressure values can be switched. ASP-100 can automatically configure the switchable pressure units based on pressure measurements value. Pressure unit switch as below photo:

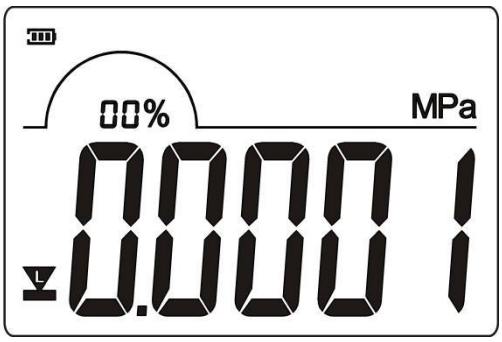


5. Display peak record

In the measurement mode, press power button, ASP-100 switches to display the maximum pressure value, the minimum pressure value, and the current pressure value. The screen displays H icon when the maximum pressure value is displayed and L icon when the

minimum pressure value is displayed. When the maximum or minimum pressure value is displayed, press  O-setting to restart the recording of the maximum and minimum pressure values recorded before. The peak record as below photo:





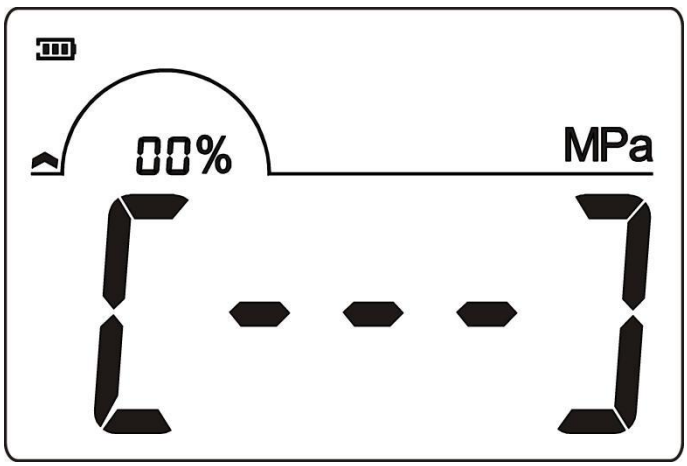
6. LCD backlight

In the pressure measurement mode, press  backlight button can open/close the screen back-light. After a certain period of time, Back-light will automatically shut down to reduce power consumption. if you need it normally on, you can set it in the user menu. Detail info, please see the menu introduction!

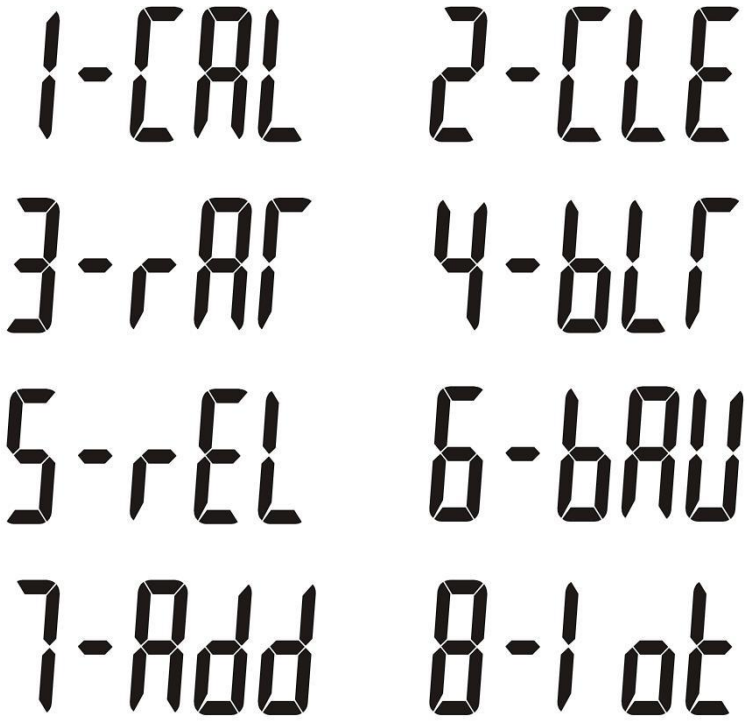
No.7 Menu introduction

In the pressure measurement mode, press  setting button can enter into setting menu. To prevent misoperation, the screen will first prompt for inputting the menu password, **the password is 201**. If the password is wrong, it will automatically return to the measurement mode.

Password input interface show as below:



7. Menu option



1-CAL User calibration option, execute this item, ASP-100 will enter into calibrate process.

2-CLE User calibration switch, execute this item, can select whether to use user calibration data to correct pressure measurements.

3-rAt Sampling period option, execute this item, can select pressure measurement sampling period, the faster the sampling speed, the higher the power consumption.

4-bLt Backlight normally on option, execute this item, can select whether the LCD backlight will automatically turn off after it is turned on.

5-rEL Electric contact function option, execute this item, can set electric contact up and low limit and relay protection time. ASP-100R Only）

6-bAU Communication rate option, execute this item, can set gauge communication rate, default is 9600bps.（ASP-100C Only）

7-Add Communication address option, execute this item, can set gauge communication address, default is 2. （ASP-100C Only）

8-Iot IoT option, execute this item, can set period of reporting data to the server of the gauge, default is 60 minutes.ASP-100N Only

8. User calibration option

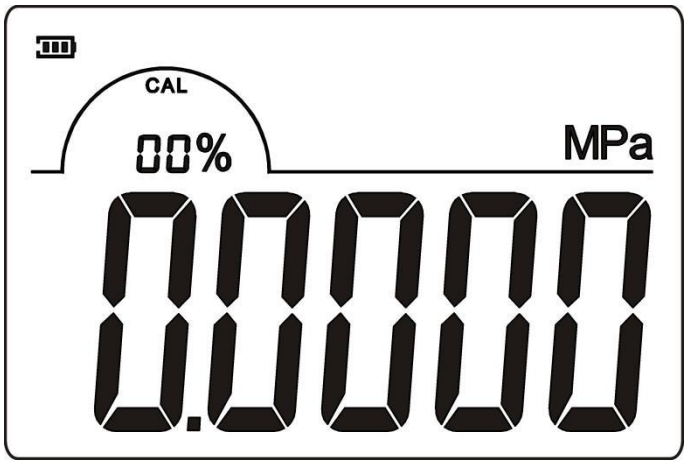
The user calibration function is used to correct the error of the ASP-100 pressure measurement value. Incorrect operation will increase the measurement error of the instrument and even the measurement data is disordered. The user must carefully read the operating procedures before the operation, and at the same time ensure that the instrument is in the environmental conditions of the pressure value transfer and the pressure standard device with sufficient accuracy class. If an incorrect calibration is performed, user can recalibrate the ASP-100 or use the C-CLE menu to select not to use user calibration data to correct pressure measurements.

For ASP-100 with single range (eg. (0~1.6) MPa range), the calibration point is 2 points. The default is the lower measurement limit and the upper measurement limit. For ASP-100 with compound range (eg (-100~100) kPa range), the calibration point is 3 points. The default is lower measurement limit, zero point and upper measurement limit. The calibration point value can be adjusted by the user, but the first point value must be less than the second point, the second point value is less than the third point, and all calibration point values must be within the meter measurement range. The default calibration sequence is to first calibrate the lower limit, then calibrate the zero point, and finally calibrate the upper limit. When finished, return to the menu. The

calibration data option is automatically set to enabled.

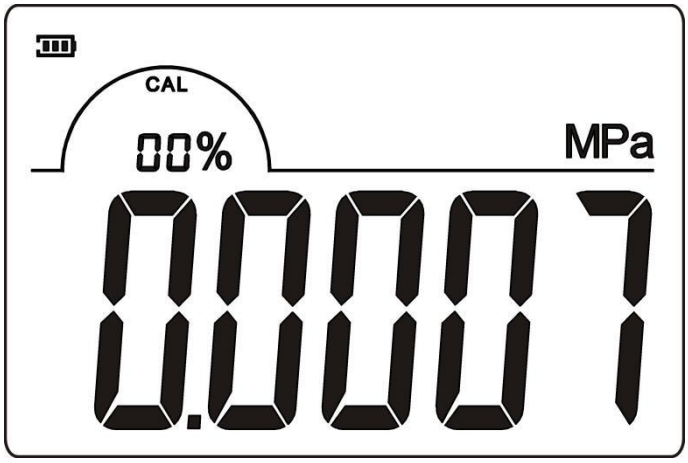
Calibration process (taking single-scale (0~1.6) MPa as an example):

After select 1-CAL menu, press O-setting enter into menu. The screen first displays the lower limit of the measurement and the CAL icon. The first digit flashes and the user can modify the nominal value of the calibration point according to the data input method. As below photo:

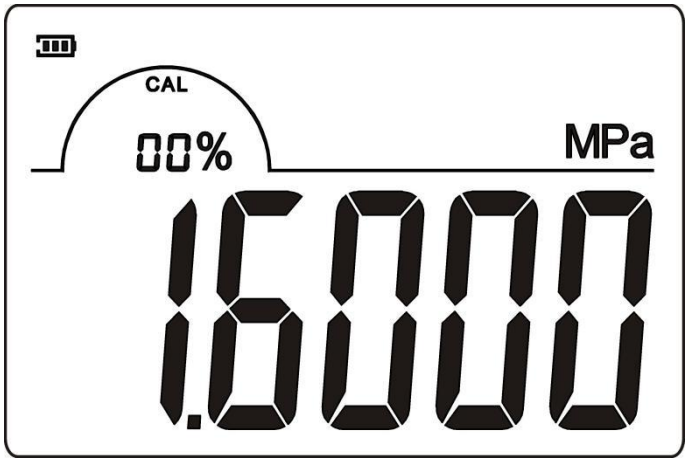


Modify the calibration point nominal value and then press O-setting to confirm (Please note the range of input data, the wrong input screen will display -Err-), at the time screen displays the measured pressure value. **The user must adjust the standard pressure source to a pressure value that is consistent with the nominal value of the calibration point.** After the pressure is stable, press O-setting to

complete the lower limit calibration and save the calibration data. As below photo:

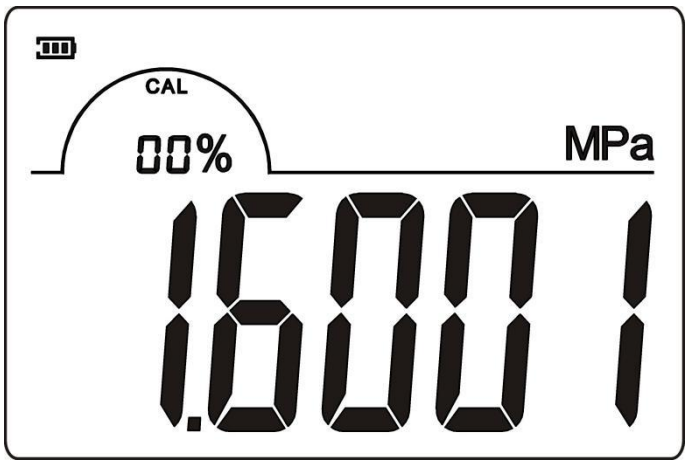


After the lower limit calibration is completed, enter into the upper limit calibration interface and the screen displays the upper limit nominal value and CAL icon. The first digit flashes and the user can modify the nominal value of the calibration point according to the data input method. As below photo:



Modify the calibration point nominal value and then press O-setting to confirm (Please note the range of input data, the wrong input screen will display -Err-), at the time screen displays the

measured pressure value. **The user must adjust the standard pressure source to a pressure value that is consistent with the nominal value of the calibration point.** After the pressure is stable, press O-setting to complete the upper limit calibration and save the calibration data. As below photo:



ASP-100 Compound range is 3 calibration points. Except lower and upper measurement limit, a zero point calibration is added. The operation method is exactly the same as the 2-point calibration.

9. User calibration switch

After performing the user calibration option, the user calibration data will correct the ASP-100 pressure measurement. An incorrect calibration process can result in inaccurate measurement results. The user can use the user calibration switch to select whether to use the user calibration data to correct the pressure measurement.

After select 2-CLE menu, press O-setting enter into menu.

Screen shows  or  ,  indicates that user calibration data is enabled,  indicates that user calibration data is not enabled. Users can switch that through  backlight button or  setting button. After selecting it, press  O-setting to confirm.

10. Sampling period option

ASP-100 can set the pressure sampling period by the user. The faster the sampling time, the higher the power consumption, and the user can set according to the usage. After select  menu, press  O-setting enter into menu. The screen displays the current sampling period. The sampling period have following option:

1-A (10 times per second) 1-5 (5 times per second)

1-2 (2 times per second) 1-1 (1 time per second)

2-1 (2 seconds 1 time) 3-1 (3 seconds 1 time)

4-1 (4 seconds 1 time) 5-1(5 seconds 1 time)

6-1 (6 seconds 1 time) 7-1 (7 seconds 1 time)

8-1 (8 seconds 1 time) 9-1 (9 seconds 1 time)

A-1 (10 seconds 1 time)

Users can switch that through  backlight button or  setting

button. After selecting it, press  O-setting to confirm.

11. Backlight normally on option

After select  menu, press  O-setting enter into menu.

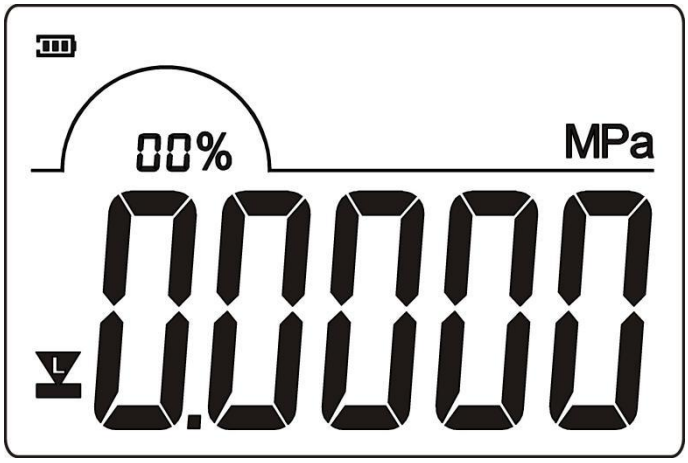
Screen shows  or  ,  indicates open backlight normally on,  indicates close backlight normally on, the backlight will automatically turn off after a period of time to save power. Users can switch that through  backlight button or  setting button. After selecting it, press  O-setting to confirm.

12. Electric contact function option（ASP-100R Only）

The ASP-100R digital pressure controller has two electrical contact relays, an upper limit electrical contact and a lower limit electrical contact. When the measured pressure value is lower than the lower limit electric contact pressure value, the lower limit electric contact relay is closed, and the lower limit electric contact relay is disconnected when the pressure value is higher than or equal to the lower limit electric contact point. When the measured pressure value is higher than the upper limit electric contact pressure value, the upper limit electric contact relay is closed, and when the pressure value is lower than or equal to the upper limit electric

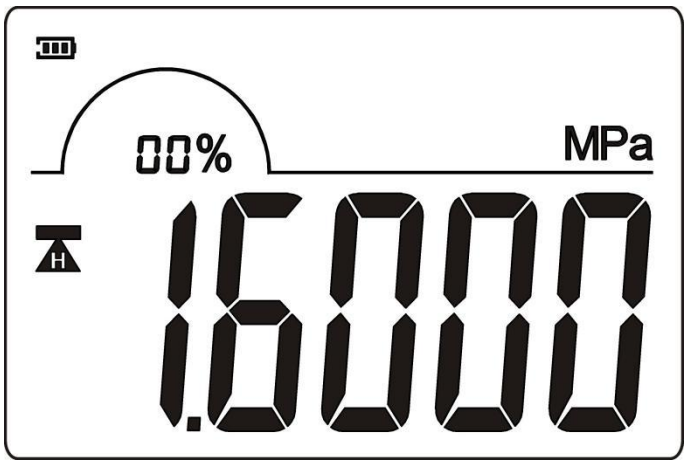
contact pressure value, the upper limit electric contact relay is disconnected. Please read the manual carefully when using it, pay attention to the correct wiring method, and the load power should not exceed the rated power of the contact (250VAC 5A or 30VDC 5A), so as to avoid equipment damage or other malfunction caused by wrong operation.

After select S-rEL menu, press O O-setting enter into menu. The electrical contact function can be set. Firstly set the lower limit electrical contact pressure value, the screen displays the lower limit electrical contact pressure value and L icon, the cursor flashes in the first position, the user can modify the lower limit electrical contact pressure value according to the data input method. Show as below photo:



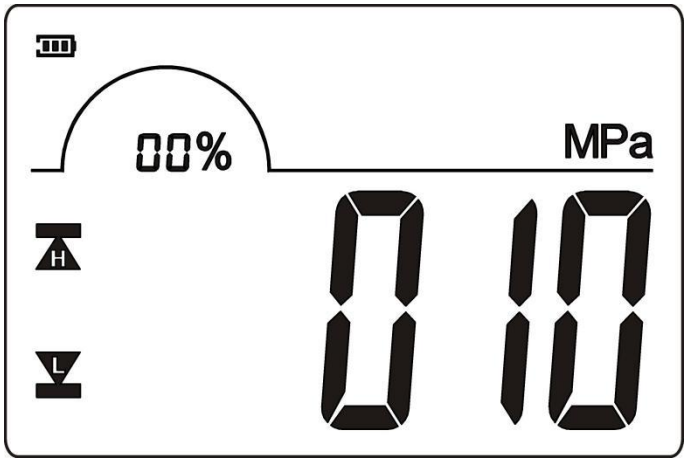
The lower limit electrical contact pressure value setting range is the pressure measurement range of the meter, if the input exceeds the range, screen will display -Err- . After modifying the lower limit electrical

contact pressure value, press O-setting to confirm. Secondly enter the upper limit electric contact pressure value setting. The screen displays the upper limit electrical contact pressure value and H icon, the cursor flashes in the first digit, the user can modify the upper limit electrical contact pressure value according to the data input method. Show as below photo:



The upper limit electrical contact pressure value setting range is the pressure measurement range of the meter, if the input exceeds the range, screen will display -Err- . After modifying the upper limit electrical contact pressure value, press O-setting to confirm. Thirdly enter the relay protection time setting. **The relay protection time means that when the measured pressure value is fluttered near the lower or upper limit of electric contact pressure value, the relay will frequently switch and may damage the load device. Therefore, a protection time is set for the relay, that is, the minimum time interval**

between the two actions of the relay, which ensures that the load device will not be damaged due to frequent switching. The screen displays the relay setting time (in seconds) and  icons. The cursor flashes in the first digit, the user can modify the relay protection time according to the data input method. Show as below photo:



The setting range of the relay protection time is (0~600) seconds, factory default is 10 seconds, input exceeds the range that screen will display  . Users can set it according to the actual situation. After modifying the relay protection time, press  O-setting to confirm. Finally enter relay switch setting. Screen shows  or  ,  indicates that the relay works,  indicates that the relay is not working. Users can switch that through  backlight button or  setting button. After selecting it, press  O-setting to confirm.

13. Communication rate option（ASP-100C Only）

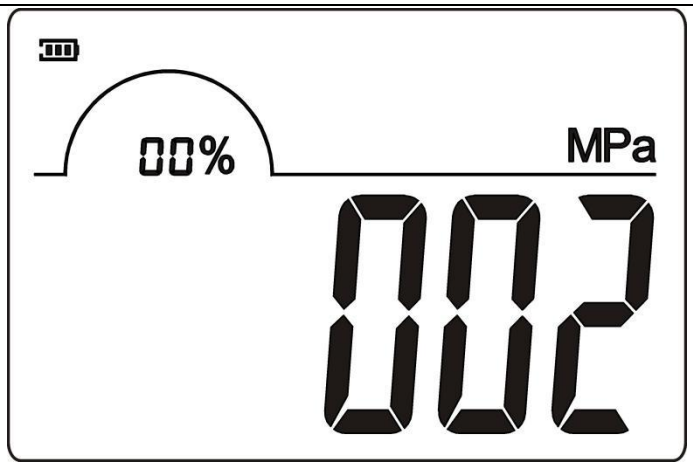
ASP-100C communication digital pressure gauge supports user setting communication rate, which is 2400bps, 4800bps, 9600bps, and the factory default is 9600bps. Users can set according to their usage.

After select  menu, press  O-setting enter into menu. The screen displays the current communication rate. Users can switch that through  backlight button or  setting button. After selecting it, press  O-setting to confirm.

14. Communication address option（ASP-100C Only）

ASP-100C communication digital pressure gauge supports the user to set the communication address. The factory default value is 2, ASP-100C only responds to data requests with the same address as itself, and incorrect settings may cause communication errors.

After select  menu, press  O-setting enter into menu. The screen displays the current communication address. The cursor flashes in the first digit. Show as below photo:

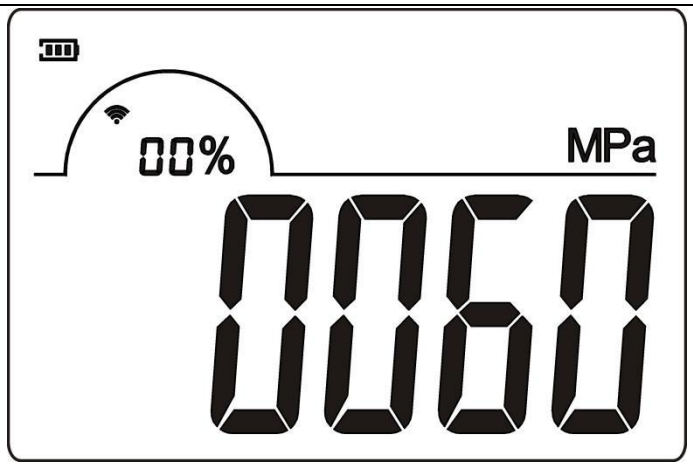


The setting range of the communication address is (0~247), factory default is 2, input exceeds the range that screen will display -Err- . Users can set it according to the actual situation. After modifying the communication address, press O-setting to confirm.

15. IoT option（ASP-100N Only）

ASP-100N intelligent digital pressure gauge can periodically report the measured pressure value to the pressure cloud platform. The user can adjust the reporting period, the factory defaults to report every 60 minutes. When set to 0, the IoT function is closed and the data is not reported. The shorter the reporting period, the higher the power consumption. Please set it according to the actual usage.

After select 8-Iot menu, press O-setting enter into menu. The screen displays the current reporting period (in minutes) and the cursor flashes in the first digit. As shown below.



The setting range of the reporting period is (0~9999) minutes, and the factory default value is 60 minutes. The screen will display -Err- when the input exceeds the range. Users can adjust according to the actual situation. After modifying the reporting period, press O-setting to confirm.

The reporting period can also be set via the pressure cloud platform. However, if the reporting period is changed to 0 (not reported) through the cloud platform, you need to re-set the reporting period through the ASP-100N 8-1ot menu when needing to report again .

No.8 Power supply

ASP-100 supports three power supply modes: battery power supply, power adapter power supply and external power supply. Please supply power to the ASP-100 according to the power supply method you purchased. Please read the following carefully before operation. The

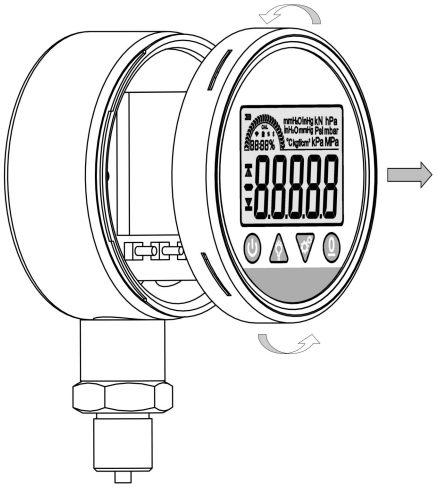
wrong power supply may cause equipment damage.

16. Battery power supply

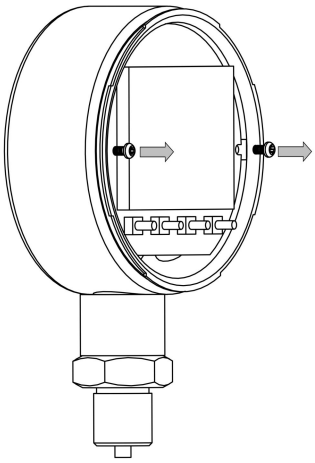
ASP-100 adopts ER18505 lithium battery. When the power is insufficient, the user can replace it by himself. Pay attention to the positive and negative polarity of the battery during installation.**The battery is a disposable lithium battery. Do not attempt to charge the battery. Charging may cause the battery to catch fire and explode. Please recycle the battery in the correct way.**

Battery specifications: ER18505

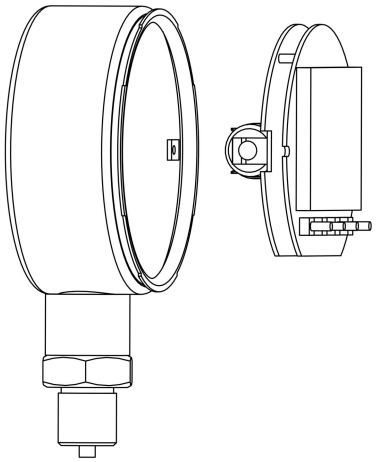
Installation method: see the photo below



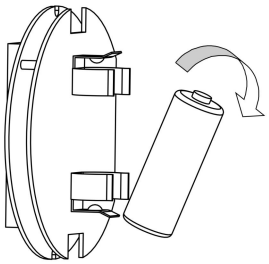
(1) Turn the dial counterclockwise to open the case



(2) Unscrew the two screws on the circuit board



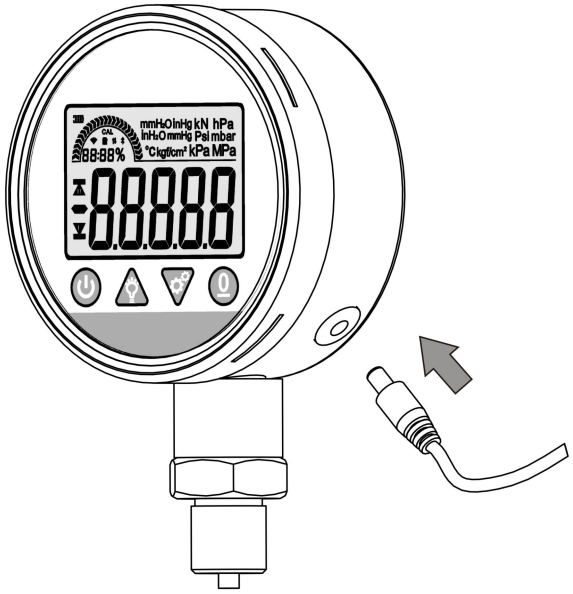
(3) Carefully take out the circuit board



(4) Replace the battery, pay attention to the battery polarity

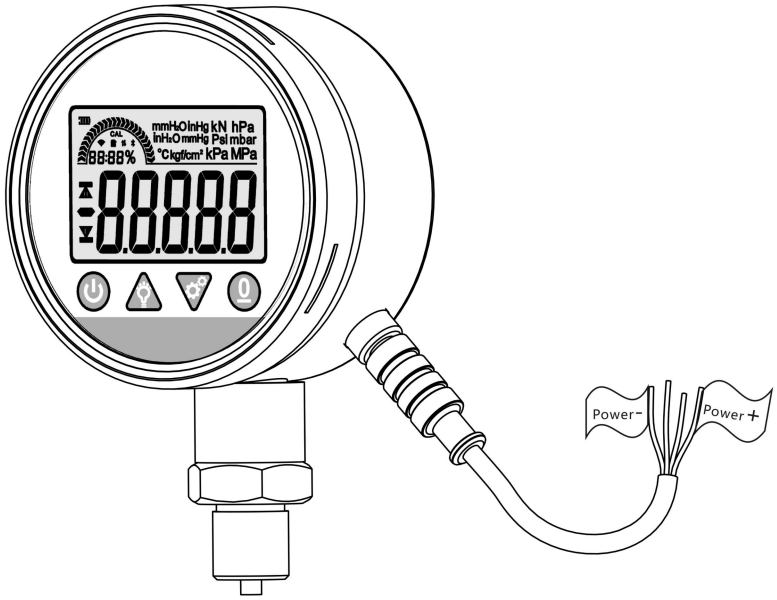
17. Power adapter power supply (optional

When the user selects the power adapter for power supply, please use the power adapter supplied with the ASP-100. The operation is as shown below:



18. External power supply

When the user selects the external power supply, please connect according to the line marker on the lead, shown as below:



No.9 Warranty card

Product Warranty Terms: The ASP-100 series digital pressure gauges can have the free warranty for the whole gauge within one year from the date of sale. For products which do not meet the free warranty service, our company provides paid technical service and repair service for life.

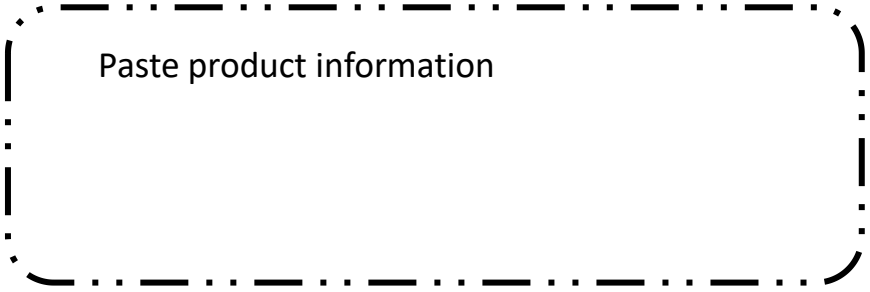
The following conditions are not covered by the free warranty

1)Damage by human factors or used in an abnormal working environment and malfunction or damage caused by failure to follow the instructions.

2)Unauthorized dis-assembly, repair, modification of products, etc.

3)Damage caused by other force majeure (such as natural disasters).

4)Not belonging to our company's products (such as counterfeit products).



Repair date	Repair record	Repair staff