SM39PWB Cellular Network Type Wireless Pressure Transmitter Introductions

1.Characteristics

- Oilfield oil pipeline pressure, formation pressure of frequently shut Wells, pressure monitoring and upper and lower limit alarm.
- Explosion-proof design：flameproof aluminum shell, intrinsically safe circuit board system.
- Protection grade：IP68, sealed waterproof design.
- Set with parameters such as alarm enable, limit values, delay, dead zone, maximum range, minimum range, number of decimal places, upload frequency, acquisition frequency, and change alarm.
- LED indication：Reset indication, configuration mode indication, network access indication, data acquisition indication.
- Four-and-a-half-digit LCD display：pressure data, battery capacity chart, limit alarms, etc.
- Adjustable installation direction：adjusted by connecting to the on-site pipeline valve through a union or adapter.

2.Performance index

1) Working environment temperature: -40 to 70℃.
2) Environmental humidity: 0-95%RH, no condensation.
3) Protection grade：IP68.
4) Explosion-proof mark: Ex ib II C T4 Gb, Qualification Certificate：CE18.2230X.
5) Power supply: ER34615 lithium thionyl chloride battery(enforce standards: SJ52278/1), two primary cells are connected in parallel. Capacity: 3.6V 38Ah. Battery connector SM-2P（receptacle: Pin 1 positive, pin 2 negative) is connected to the instrument. Power supply voltage range: 3.0V～3.6VDC.
6) Battery continuous working time：≥1 year（pressure collection frequency: 1times/min. Communication frequency: 1 times/h）.
7) Battery replacement method：open the back cover and quickly replace it through the standard SM-2P interface.
8) Long-term stability：drift, ±0.1%FS/ year.
9) Measurement performance： range: 0～2.5MPa、0～6.0MPa、0～25MPa、0～40MPa、0～60MPa, accuracy: 0.5%F.S (It can be customized according to actual needs), comply with the relevant technical standards of GB/T 28474.1 and GB/T 28474.2.
10) Pressure sensor：piezoresistive core, pressure overload capacity 150%FS.
11) Process connection interface：M20X1.5 or 1/2'' NPT (It can be customized according

to actual needs).

12) Communication method：4G（Compatible with 3G/2G）.

13) Communication protocol：follow the *"Cellular Network Temperature and Pressure Transmitter Communication Protocol"* to achieve the access of the DMZ server in the oilfield.

14) Online debugging and setting functions：under the condition of online installation without uninstallation, the instrument can be debugged and set through the instrument panel or the configured serial port and computer. 设置数据内容包括：

- Remote communication working parameters：Server IP address and port number.
- Measure working parameters：alarm enable, limit values, delay, dead zone, maximum range, minimum range, number of decimal places, upload frequency, acquisition frequency, and change alarm.
- After the instrument is powered off, set data retention.

15) Online upgrade：It is capable of being installed without uninstallation, and can be operated by a computer through the configured serial port.

16) LCD display：LCD display area：L × W =45×35mm，base color：green. The displayed content includes real-time measurement values, temperature units, instrument ranges, battery power, voltage, and signal strength.The decimal point of the real-time measurement value can be set，2 decimal places are reserved by default.

17) Instrument housing：aluminum alloy material，the sealing ring (gasket) of the case is made of silicone rubber，apply Vaseline to the front and back cover threads，the dial diameter is 60mm and the appearance color code is RAL5007.

18) Outline size：L × W × H =150×130×235mm（MAX）（The probe length is not included）

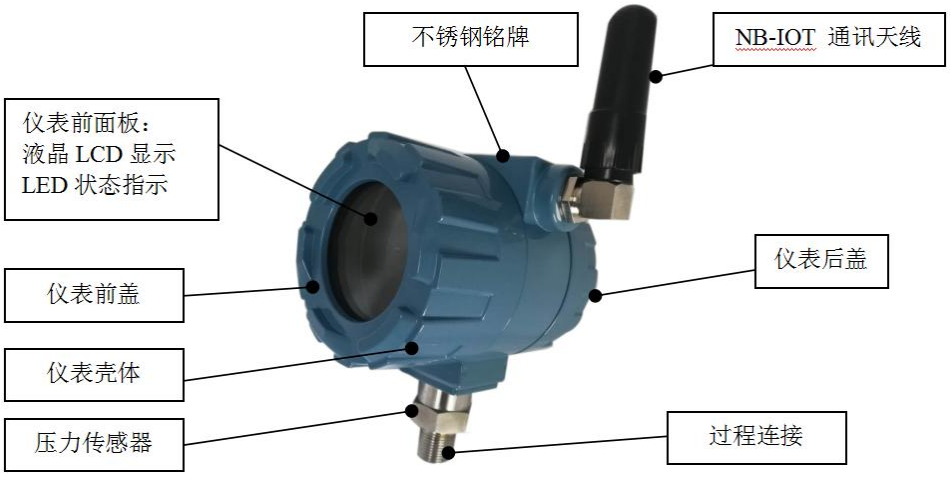
19) Sampling interval： 1～60min.

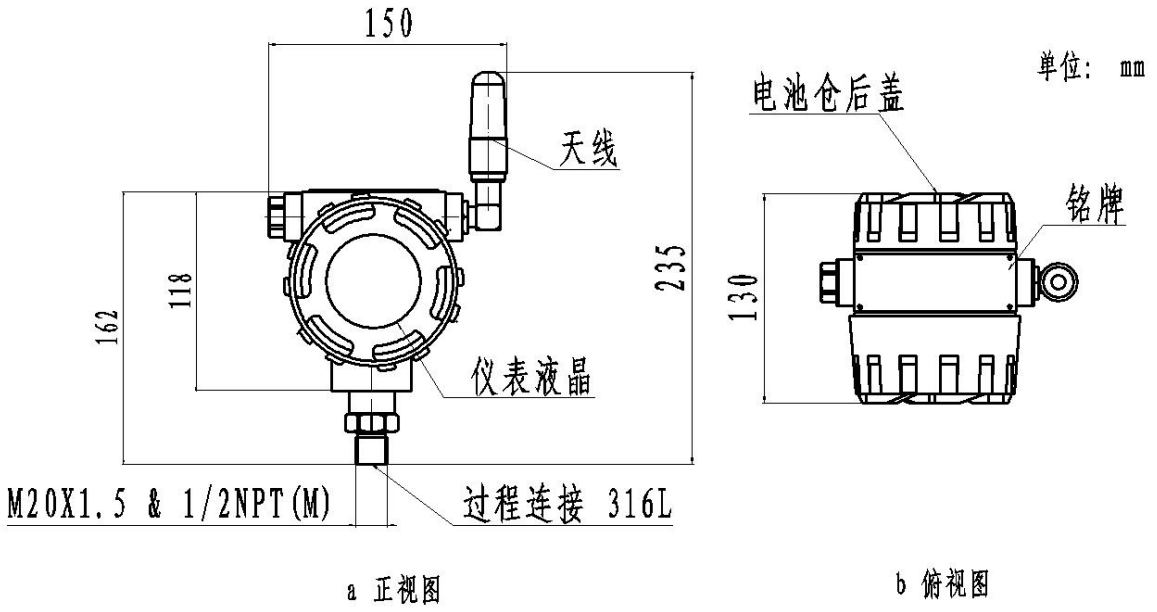
20) Sending interval：5～1440min.

3.Explosion-proof certification parameters

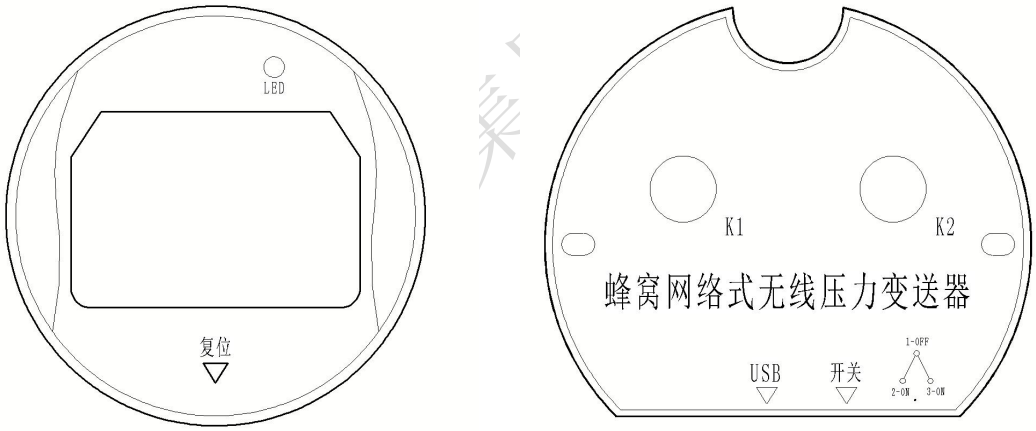
- Explosion-proof certificate number：CE18.2230X
- Explosion-proof mark：Ex ib ⅡC T4 Gb

4. Appearance, structure and function





SM39PWB External structure diagram



SM39PWB Front panel and rear panel function diagrams

Front panel LED: There are two colors, red and green. Red represents the temperature collection status and the sleep-to-wake-up status, while green LED represents the chain-building status for the NB-IOT network.

Front panel reset: through a magnet, directly below the front cover of the shell, with the magnet pointing upwards towards the reset arrow, stabilize for 3 to 5 seconds, then remove the magnet. The red LED light will flash three times, and the LCD display 8888 will also flash simultaneously three times, indicating that the instrument has successfully reset. The main purpose of reset is to enter the instrument to modify internal parameters, or refresh the current pressure value, and refresh again to establish a network connection.

Open the back cover of the instrument. Inside the back cover, there is a battery, buttons,a

switch and a USB debugging port, the functions are introduced as follows:

Rear panel K1: Due to the long reporting cycle of the instrument, during the debugging process, the K1 key can be pressed, and the instrument will actively establish a network connection and report the current set of temperature data. K1 is mainly used to debug whether the network is working properly.

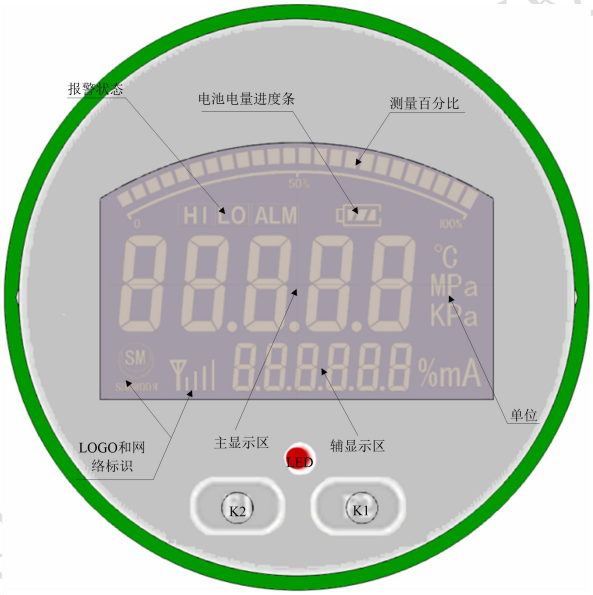
Rear panel K2: Due to the long reporting cycle of the instrument, some application sites need to implement real-time numbering for observing the current temperature. During the debugging process, the K2 button can be pressed, and the instrument will actively and continuously collect the current pressure for 300 seconds, with the LCD screen synchronously refreshing in real time. This function only collects data on-site and does not upload it. K2 is mainly used for on-site temperature debugging.

Rear panel switch: The switch is divided into three positions: upper, middle and lower. The middle position is in the off state, while the upper and lower positions are in the open state.

Rear panel USB: USB + debug software, it is convenient to input IP address, network number and other debugging parameters. For details, please refer to the debugging software manual.

Replacement of the rear panel battery: first, turn off the power switch. Then, unscrew the two M3 knetting screws on the left and right by hand. Next, pull out the upper cover of the K1-K2 circuit board vertically. Disconnect the black plug of the battery SM, replace it with a new battery, and reinsert the SM plug. Then, gently insert the K1-K2 circuit board vertically towards the pins. Finally, manually screw on the two M3 knetting screws. When operating the entire process of turning on the switch, please note that the K1-K2 circuit boards can be gently unplugged and plugged in. Finally, please tighten the back cover.

The physical photo is as shown in the following picture:



Alarm status	Display when an alarm is generated (The limit alarms are not displayed simultaneously), only the alarm conditions of the physical quantities displayed in the main display area are shown.
Battery power	Display the battery voltage according to the battery power.
Measure percentage	The percentage of the measured value within the range.
LOGO and web identifiers	The LOGO is always displayed, and the network identifier is shown according to the actual network status.
Main display area	It is used to display the value of the current physical quantity, such as pressure or temperature, with unit symbols.
Auxiliary display area	It is used to display auxiliary information, such as the unit logo, the online identification of NB-IOT signals, battery voltage, etc.
Units	According to the type requirements of the instrument, the three

	physical dimensions of Mpa, Kpa and ℃ can be set.

5.On-site installation and usage instructions

5.1.All transmitters have undergone digital calibration, and there is complete consistency and interchangeability among different transmitters.

5.2.During transportation, all the transmitter batteries are in the disconnected state. When installing the temperature transmitter on site, the back cover of the meter head needs to be unscrewed, the battery switch turned on, and the protective sleeve should be tightened to prevent water leakage.

5.3.For the installation of honeycomb network wireless pressure transmitters in pipelines and frequently stopped Wells, first close the valve (needle valve or gate valve) on the pipeline where the pressure transmitter is to be installed. There are two installation methods: （1）.Screw the pressure transmitter directly into the upper port of the needle valve. （2）Screw the union or adapter into the upper port of the needle valve, and then screw the transmitter into the upper port of the union or adapter. This installation method increases the union or adapter to adjust the direction.After installation is complete, open the needle valve to confirm there is no leakage, and the installation is qualified.

5.4.After the installation of this cellular network wireless temperature transmitter is completed, the network parameters can be set through the buttons or the debugging fixture.

5.5.When the transmitter is not in use for a long time, the pressure transmitter can be set to sleep mode through the debugging fixture, (During the process of the transmitter leaving the factory and being stored in the warehouse, it is uniformly set to sleep mode or off state. On-site, parameters need to be adjusted and activated before it can be used normally). The online list of the debugging software interface is as shown in the following figure：


井队 全部 状态: 全部 在线 离线 查询

显示 10 条 从当前数据中检索:

序号	井名	井队	设备地址	采集时间	信号强度	电池电压(V)	温度(℃)	压力(Mpa)	仪表类型	在线状态	温度状态	压力状态	电池状态	操作
4	test1	站1	SM0309999999	2019-07-23 08:03	27	3.46	-23.17	1.07	温压一体	在线				
1			SM0108888882	2019-07-23 08:00	27	4	0	0	无线压力	在线				

6. Precautions

6.1. The battery model used in this product is ER34615M-3.6V38Ah. The use of other types of batteries is prohibited.

6.2. The antenna housing of the product is made of plastic and poses a potential risk of static electricity! Avoid friction during use! Please wipe with a damp cloth when cleaning!