

Instruction Manual

一、 Features :

1. LCD dot matrix Chinese characters display, intuitive and convenient, simple and clear operation;
2. With temperature / pressure sensor interface. The temperature can be matched with Pt100, Pt1000, digital temperature, pressure can be connected to gauge pressure, absolute pressure sensor, digital pressure;
3. Diversified output signals, can choose two-wire 4-20mA output, three-wire pulse output, equivalent output and 485 communication, GPRS communication according to customer requirements;
4. Excellent nonlinear correction function, greatly improving the linearity of the instrument;
5. With software spectrum analysis function, it improves the anti-interference and anti-seismic capability of the instrument;
6. Ultra-low power consumption, the power supply of the corrector and the GPRS power supply are powered by a separate battery. The full performance of a dry battery can maintain the corrector for at least 3 years; the full performance of the GPRS battery can communicate 5,000 times;
7. The working mode can be switched automatically, battery powered, external power supply;
8. Self-test function, has a wealth of self-test information; convenient for user maintenance and debugging.
9. With independent password setting, parameters, total amount clearing and calibration can set different levels of passwords for user management;
10. Display unit can be selected, can be customized;

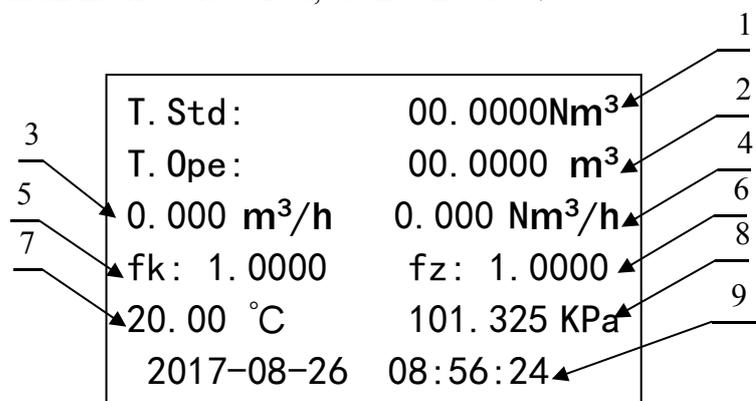
二、 Operate:

The instrument performs parameter setting by pressing the button. Generally, some parameters are manually set by the button when using. The instrument has four buttons, from left to right, the MENU, » (shift), "(plus)," (minus) four keys, the button description is as follows:

Symbol	name	function
MENU	Set key	1. Enter the parameter setting; 2. Switch to display each parameter item; 3. Confirm and save the new parameter value after modifying and setting the parameters.
» (Shift)	Move key	Make the cursor toggle between parameter positions
≡(Plus)	Plus key	Switch the parameter bit of the cursor from 0 to 9 cycles or options
≡(Minus)	Less key	Switch the parameter of the cursor to a bit from 0 to 9 or switch the option

2.1 start

When the meter is powered on, it will perform self-test. If the self-test is abnormal, the self-test error interface will be displayed (the self-test interface description refers to the self-test menu), and it will jump to the main interface after about 1~2 seconds. Otherwise it will jump directly to the main interface. After the main interface is started, as shown below:



Main interface

Display definition:

Label 1: T.Std standard cumulative flow, unit Nm³;

Label 2: cumulative flow of S. Std conditions, in m³;

Label 3: instantaneous flow rate of the working condition, the unit is m³/h. When the pulse acquisition mode is low frequency, it is displayed as ----;

Label 4: The instantaneous flow rate of the standard condition, the unit is Nm³/h. When the pulse acquisition mode is low frequency, it is displayed as ----;

Label 5: fk gas standard state conversion coefficient K, calculated by temperature pressure;

Label 6: fz natural gas compression factor, calculated by temperature, pressure, gas configuration;

Label 7: temperature display, unit °C, °F;

Label 8: pressure display, unit MPa, kPa, Psi, bar;

Label 9: current time display;

2.2 Main menu

1. Self-test information
2. Communi cation setup
3. Input Setup
4. Output Setup
5. Total reset
6. Calibration
7. Display unit
8. Password
9. Data and time

1. 自检
2. 通讯设置
3. 输入设置
4. 输出设置
5. 总量清零
6. 校准
7. 显示单位
8. 密码
9. 时间

In the main interface, press the MENU button to enter the menu interface. You can enter the corresponding menu item by $\hat{=}$ (Plus), \cong (Minus) and press the MENU button to enter. For the operation of each menu item, please refer to the following sections for a brief description:

1. Self-test (instrument component self-test)
2. Communication settings (RS485 communication, GPRS communication settings)
3. Input settings (flow, temperature, pressure signal input)
4. Output settings (current, pulse, alarm output settings)
5. The total amount is cleared (the instrument cumulative flow is cleared)
6. Calibration (temperature, pressure, current output calibration)
7. Display unit
8. Password
9. Time

2.2.1 Self-test information

Self-test			
Clock	✓	Memory	✓
Power	✓	AD sample	✓
Parameter	✓	Freq input	✓

自检			
时钟	✓	存储器	✓
电源	✓	AD 转换	✓
参数	✓	传感器	✓

If the meter is running incorrectly, you can check the specific meter running error by entering this option. The check is normal and the fork is wrong. Another self-test is performed when the meter starts, and this screen will be displayed if there is an error. When the instrument is running, you can also enter this option to query the running status of the instrument.

2.2.2 Communication setup

In the main interface, press the MENU button to enter the menu interface. You can enter the communication menu item by pressing \cong (minus) and then press the MENU button to enter. Menu is as follows:

Com1 parameter Device ID:001 Baud rate:9600 Parity: NONE

RS485 communication setting, Device ID is the communication address of the instrument, valid range: 0~255. The Baud rate is 1200, 2400, 4800, and 9600, and the Parity mode check is none, even and odd. After setting, press MENU to save to the next item.
--

Trans. Mode: GPRS Gap time:0001 (min) First Time: 00: 00
--

GPRS communication settings, Gap time is the communication interval of the instrument, valid range: 0 ~ 9999min. First Time: First upload time. After setting, press MENU to save and return to the main interface.

2.2.3 Input Setup

2.2.3.1 Flow signals input

In the main interface, press the MENU button to enter the menu interface. You can use the \sphericalangle (minus) to select the input setting menu item, enter the password and press the MENU button to enter. Menu is as follows:

1.Flow signals
2.Temperature signals
3.Pressure signals

Flow signals:Flow signal input
Temperature signals: temperature signal input
Pressure signals: pressure signal input

Under the input setting menu, press \sphericalangle (minus) to select the signal setting menu, then press the MENU button to enter. The flow menu is as follows:

Medium select:
Natural gas

In the media setting menu, there are Natural gas, Coal gas, Nitrogen, Oxygen, Air, and select by pressing \sphericalangle (minus), then press MENU to save. Go to the next item.

FM type: Roots flowmete.
FM diameter: 15 mm
Sign mode: High freq
FM coe: 000000.0000

FM type flowmeter type selection, including Roots flowmete, Turbine flowme., Membrane flowm, Vortex flowmet; diameter setting of FM diameter flowmeter, range DN15-1000 mm; Sign mode frequency input selection, High freq, low freq for Select, when selecting high frequency, FM coe is the meter coefficient, when selecting low frequency, Equi coe is the flow equivalent coefficient. After setting, press MENU to save to the next item.

Fac. correct: SGERG-88

The compression factor calculation standard is selected. When the medium is natural gas, this interface needs to be set, and other media will not enter this interface. Compression factor calculation standards are available in SGERG-88, Fixed, and AGA NX-19. After setting, press MENU to save to the next item.

Fac. correct: **SGERG-88**
Rel. Density: 0.0000
H2 content: 00.00 %
CO2 content: 00.00 %
Hot content: 00.000MJ/m3

When selecting the SGERG-88 calculation standard, press the MENU key to save the interface to the next item, the relative density of Rel. Density, and the data of the natural gas test report below. After setting, press MENU to save and return to the main interface.

Fac. correct: **AGA NX-19**
Rel. Density: 0.0000
N2 content: 00.00 %
CO2 content: 00.00 %

When selecting the AGA NX-19 calculation standard, press the MENU key to save the interface to the next item, the relative density of Rel. Density, and the data of the natural gas test report below. After setting, press MENU to save and return to the main interface.

Fac. correct: **Fixed**
Fixed Zg/Zn: 0.0000

When the Fixed calculation is selected, Fz is a fixed value correction. After setting, press MENU to save and return to the main interface.

2.2.3.2 Temperature signals input

Under the input setup menu, press \approx (minus) to select the temperature setting menu, then press the MENU button to enter. Temperature menu is as follows:

Temperature sensor:
PT100
Temperature Constant:
+0000.00 °C

Temperature sensor type selection, PT100, PT1000, Ds18b20, Setup for selection, temperature setting value, when the sensor is set or damaged, the pressure is compensated by this value. After setting, press MENU to save and return to the main interface.

2.2.3.3 Pressure signals

Under the input setup menu, press \approx (minus) to select the pressure setting menu, then press MENU to enter. Pressure menu is as follows:

Pressure input:
Sensor GP
Pressure Constant:
+00000.000 kPa
Pressure gain: 0

Pressure sensor type selection, with Sensor GP, Sensor AP, Setup GP, Setup AP, Digital GP, Digital AP for selection, pressure setting value, when the sensor is set or damaged, the pressure is compensated by this value. Pressure gain, this option participates in the calculation when the pressure is Sensor GP, Sensor AP. After setting, press MENU to save and return to the main interface.

2.2.4 Output Setup

In the main interface, press the MENU button to enter the menu interface. You can select the password menu by pressing \approx (minus) and press MENU to enter. Menu is as follows:

1.Current output
2.Freque. output
3.Alarm output1
4.Alarm output2

1.Current output : Current output
2.Freque. Output: Pulse output
3.Alarm output1: Alarm 1 setting
4.Alarm output2: Alarm 2 setting

2.2.5 Total reset

In the main interface, press the MENU button to enter the menu interface. You can use the \approx (minus) to select the clear menu item, enter the password and press the MENU button to enter. Menu is as follows:

Standard Total:
00000000.0000 Nm³
Operation Total:
00000000.0000 m³

The flow accumulation value is cleared, and the clear interface is displayed. The current cumulative flow value is displayed. The accumulated value can be set as required. Press the \gg (Shift) key to shift, \approx (plus), \approx (minus)keys change the value. After the setting is completed, press the MENU button to save and retreat. The main interface displays the accumulated value of the settings.

2.2.6 Calibration

2.2.6.1 Current output calibr.

In the main interface, press the MENU button to enter the menu interface. You can select the calibration menu by pressing \approx (minus), enter the password and press MENU to enter. Menu is as follows:

1.Current output calibr.
2.Temperature calibrati.
3.Pressure calibration.

1.Current output calibr.Current output calibration
2.Temperature calibrati.: Temperature calibration
3.Pressure calibration. : Pressure calibration

2.2.6.2 Temperature calibrati.

Under the calibration menu, press \approx (minus) to select the temperature calibration menu, then press the MENU button to enter. The temperature calibration menu is as follows:

Calibration temp.: low
Std.T: +0000.0 °C
Mea.T: +0000.0

Calibration is required for temperature input type pt100, pt1000, first input a low temperature point, Std.T: the input standard temperature value, Mea.T: the temperature AD value measured by the meter at this standard temperature value. After setting, press MENU to save and enter the next interface.

Calibration temp.: High
Std.T: +0000.0 °C
Mea.T: +0000.0

The temperature input type is pt100, pt1000, calibration is required, then a high temperature point is entered, Std.T: is the input standard temperature value, Mea.T: the temperature AD value measured by the meter at this standard temperature value. After setting, press MENU to save and enter the next interface.

Temp. Zero: +00.000
Temp. Coe.: 0.0000

After the above two inputs are correct, the meter calculates the temperature coefficient and zero point at this time, Temp. Zero: temperature zero, Temp. Coe.: temperature coefficient. After setting, press MENU to save and return to the main interface.

2.2.6.3 Pressure calibration.

Under the calibration menu, press \approx (minus) to select the pressure calibration menu, then press MENU to enter. Pressure calibration menu is as follows:

Cal. Press.: low
Std. Press: 00000.000 kPa
Press AD: 00000

When the pressure input type is Sensor GP, Sensor AP, calibration is required. First, input a pressure point, Std.Press: the input standard pressure value, and Press AD: the pressure AD value measured by the instrument under this standard pressure value. After setting, press MENU to save and enter the next interface.

Cal. Press.: High
Std. Press: 00000.000 kPa
Press: 00000

The pressure input type is Sensor GP, Sensor AP needs to be calibrated, then input a high pressure point, Std.Press: is the input pressure value, Press AD: the pressure AD value measured by the instrument under this standard pressure value. After setting, press MENU to save and enter the next interface.

Press Zero: +0000.000 kpa
Press Coe.: 0000.000
Press Correction: NO

After the above two inputs are correct, the meter calculates the pressure coefficient and zero point at this time, Press Zero: pressure zero, Press Coe.: pressure coefficient. Press Correction: Pressure correction is turned on or off. When it is off, it does not enter the correction interface. When it is opened, it enters the correction interface.
After setting, press MENU to save and enter the next interface.

2.2.7 Display unit

In the main interface, press the MENU button to enter the menu interface. You can select the display unit menu by pressing \approx and press MENU to enter. Menu is as follows:

Temp unit: °C
Press unit: kPa

Temperature and pressure unit selection, temperature unit has °C, °F, pressure unit has kPa, MPa, Psi, bar.

2.2.8 Password

In the main interface, press the MENU button to enter the menu interface. You can select the password menu by pressing \approx (minus) and press MENU to enter. Menu is as follows:

- 1. Input channel password
- 2. Total reset password
- 3. Calib. Chann. password

- 1. Input channel password: input password
- 2. Total reset password: reset password
- 3. Calib. Chann. Password: calibration password

This option can be used to modify the input, clear, and calibrated passwords separately (clear, calibration, and input password change operations are the same, only the change of the input password is introduced here), enter the modify password selection interface, select the item to be modified, and enter the old password, then enter the password to be modified in the new password field, press MENU to confirm the key. If the old password is entered correctly, the prompt is successfully modified. After the prompt is successfully modified, it will automatically jump to the main interface 1. Otherwise, the modification fails and jumps. To the main interface 1.

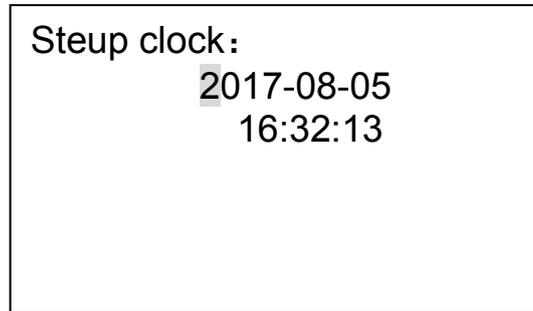
- 1. Input channel password
- 2. Total reset password
- 3. Calib. Chann. password

Password modification selection interface : Select the password setting of the corresponding menu by using the shift key.

Input channel password :
Old pwd: 0*****
New pwd: *****

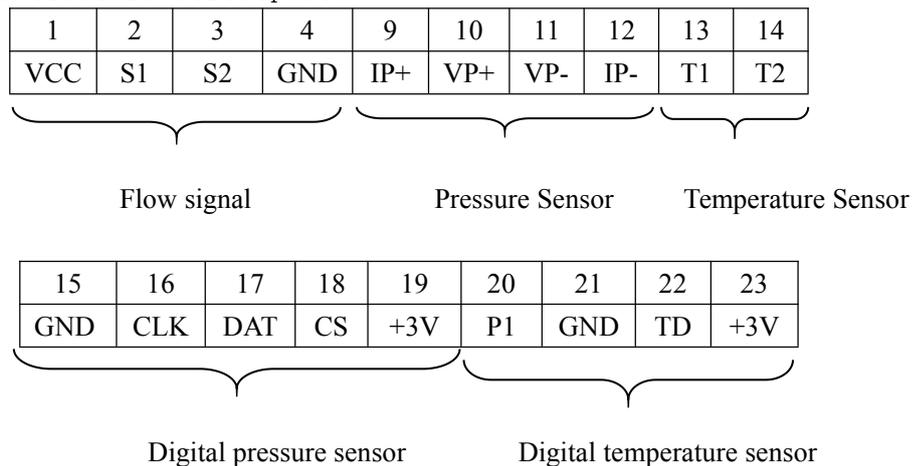
2.2.9 Date and time

In the main interface, press the MENU button to enter the menu interface. You can select the time menu by pressing \approx (minus) and press MENU to enter. Menu is as follows:



三、Wiring:

3.1 Sensor terminal description



The instrument accepts the processed signal and can supply power to the signal processing board.

The wiring method is as follows:

VCC: Power supply 3V

S1: Frequency input

GND: GND

Pressure Sensor:

IP+: Pressure sensor power supply+;

VP+: Pressure sensor signal+;

VP-: Pressure sensor signal-;

IP-: Pressure sensor power supply-;

Temperature Sensor (Pt100 or Pt1000) :

T1: Pt100 (1)

T2: Pt100 (2)

Digital pressure sensor:

GND:Digital pressure sensor power supply-
 CLK: }
 DAT: } SPI Bus interface
 CS: }
 +3V:Digital pressure sensor power supply+

Digital temperature sensor:

P1:
 GND:Digital temperature sensor power supply-
 TD:Temperature digital signal
 +3V:Digital temperature sensor power supply+

3.2 External terminal description

1.wiring terminal description

1	2	3	4	5	6	7	8	9	10	11	12
A	B	I-	I+	V+	V-	PLS	EQU	IC	BC	BL	GND

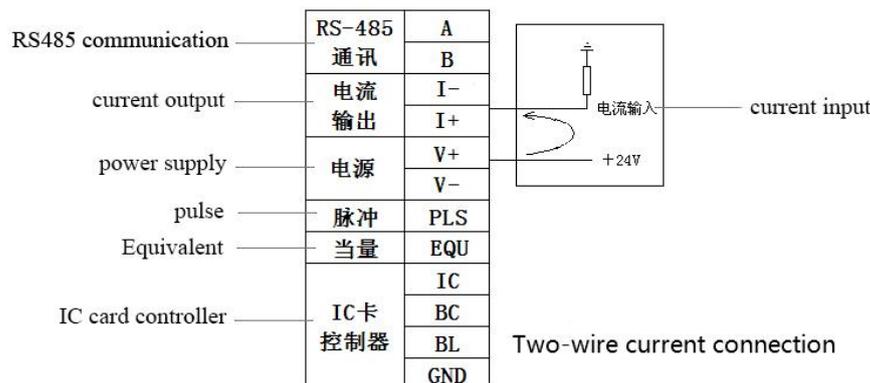
A: RS-485communication A
 B: RS-485communication B
 I-: Current output-
 I+: Current output+
 V+: Power supply DC24V+
 V-: Power supply 0V
 PLS: Pulse output
 EQU: Equivalent output
 IC:Equivalent output (IC card controller equivalent input)
 BC: (IC card controller)
 BL: (IC card controller)
 GND: GrouND (IC card controller)

IC card controller connection:

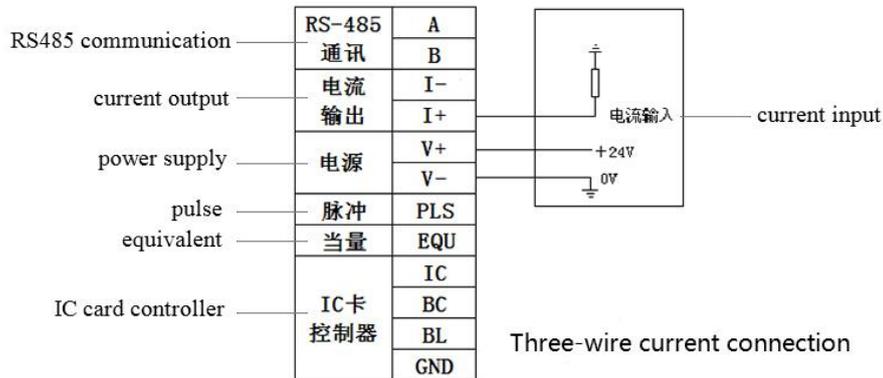
IC:Equivalent output+
 GND:output-

2.Output wiring instructions

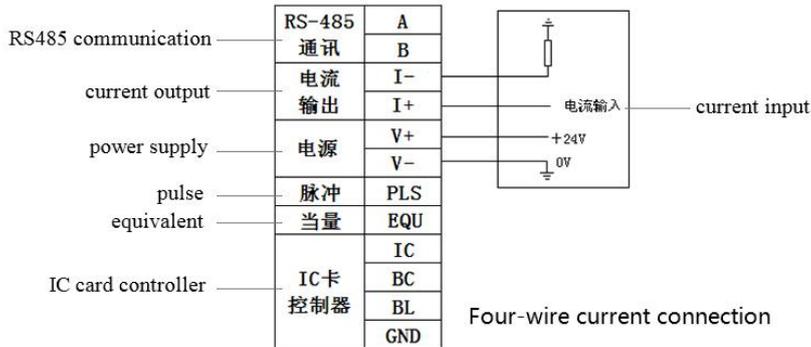
a. Two-wire current connection:



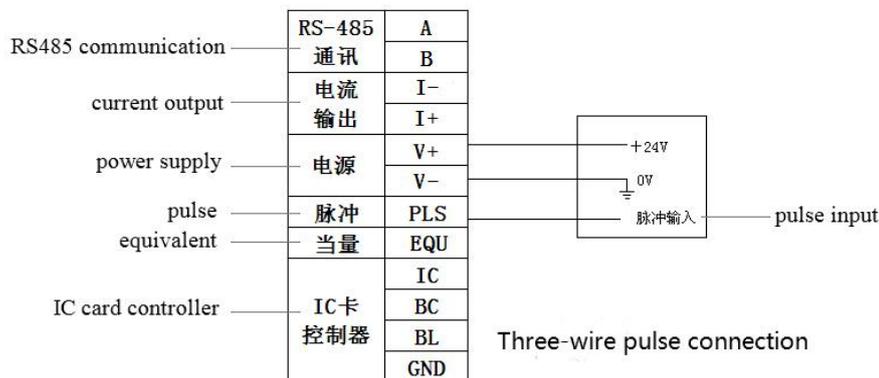
b. Three-wire current connection:



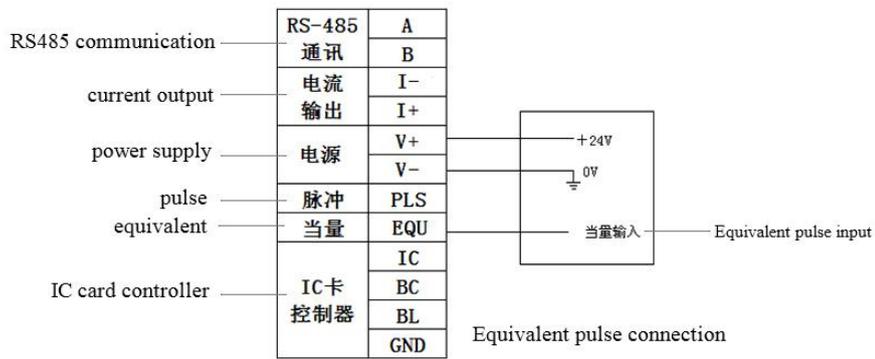
c. Four-wire current output:



c. Three-wire pulse connection:



e. Three-wire equivalent connection:



f. RS485 communication connection:

