



TEK-BAR 3800E

Utilities/Non-Explosion Proof Multivariable Transmitter

Instruction Manual

Document Number: IM-3800E



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1 Safety Instructions

1.1 Intended Use

Tek-Bar 3800E is a Utilities/Non-Explosion Proof Multivariable Transmitter used for pressure, flow, level and density measurement of steam and liquids.

The manufacturer is not liable for damage caused by improper or non-designated use.

1.2 Manufacturer Safety Instructions

1.2.1 Disclaimer

The manufacturer will not be accountable for any damage by using its product, including, but not limited to direct, indirect or incidental and consequential damages. Any product purchased from the manufacturer is warranted in accordance with the relevant product documentation and our Terms and Conditions of Sale.

The manufacturer has the right to modify the content of this document, including disclaimer, at any time for any reason without prior notice and will not be answerable in any way for the possible consequence of such changes.

1.2.2 Product Liability and Warranty

The operator shall bear authority for the suitability of the device for the specific application. The manufacturer accepts no liability for the consequences of misuse by the operator. Wrong installation or operation of the devices (systems) will cause the warranty to be void. The respective "Standard Terms and Conditions", which forms the basis for the sales contract shall also apply.

1.2.3 Information Concerning the Documentation

To prevent any injury to the operator and damage to the device it is essential to read the information in this document and read the applicable national standard, and safety instruction.

These operating instructions contain all the information that is required in various stages, like product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.

1.3 Safety Precautions

You must read these instructions carefully prior to installing and commissioning the device.

These instructions are an important part of the product and must be kept for future reference. Only by observing these instructions, optimum protection of both personnel and the environment, as well as safe and fault-free operation of the device can be ensured.

For additional information that are not discussed in this manual, contact the manufacturer.

1.3.1 Warnings and Symbols Used

The following safety symbol marks are used in this operating instruction manual and instrument.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



NOTE

Indicates that operating the hardware or software in this manner may damage it or lead to system failure.

1.4 Packaging, Transportation and Storage

1.4.1 Packaging

The original package consists of

1. Tek-Bar 3800E Utilities/Non-Explosion Proof Multivariable Transmitter
2. Accessories (optional)
3. Documentation



1



2



1.4.2 Transportation

- After calibration, the instrument is packed in a carton (GB / T 13384-2008) to protect against destructions.
- When the transmitter is delivered, visually check them to make sure that no damage occurred during shipment.
- To avoid any damages, unpack the flow meter only at the installation site.
- Avoid impact shocks, rain and water during transportation.
- Do not throw or drop the device.
- Use original packaging for transport and ensure that the packaging does not get crushed or damaged by sharp objects or other boxes.
- The flow tube is shipped with end covers to protect it from mechanical damage and normal unrestrained distortion. End covers should not be removed until just before installation.
- Keep shipping plugs in conduit connections until conduits are connected and sealed.

1.4.3 Storage

It is unnecessary to store equipment with some special treatments. The storage period is not limited, but the shelf life is consistent with the company's deadline.

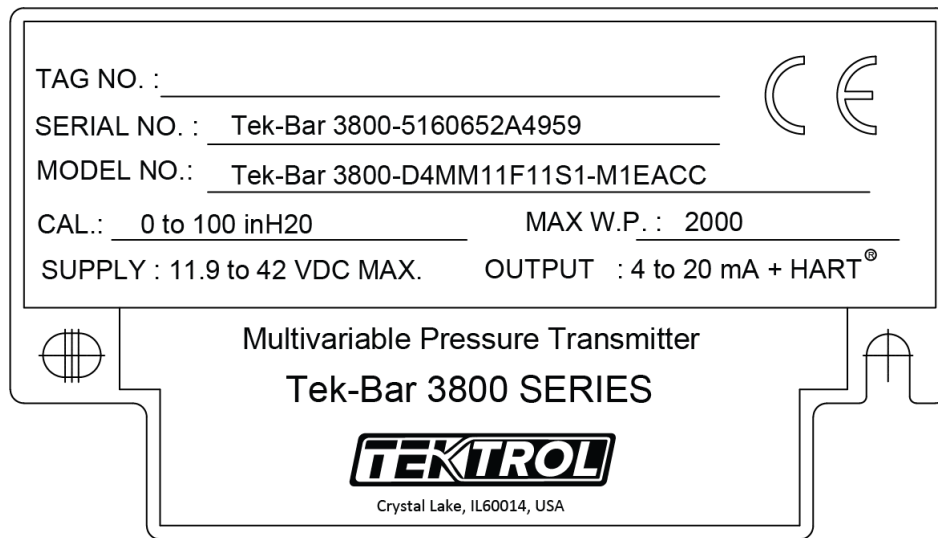
1.4.4 Nameplate

Product nameplate identification includes serial number, specification model, range, accuracy level, input voltage, output, factory date and other related information.



NOTE

Always asking for the instrument serial number when querying.



2 Product Description

2.1 Introduction

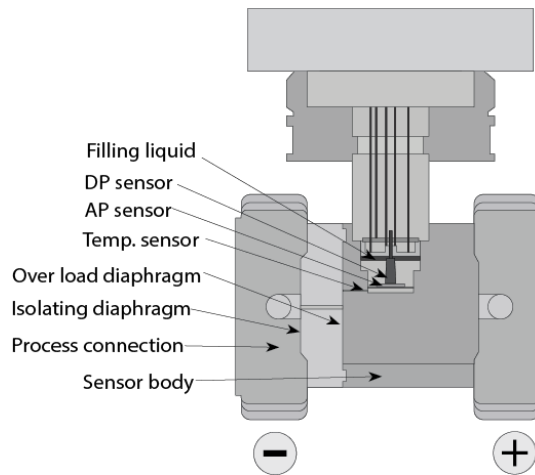
Tek-Bar 3800E Utilities/Non-Explosion Proof Multivariable Transmitter is based on the electronic components through the microprocessor, use the high-precision silicon sensor technology, a new intelligent high-precision transmitter, to achieve communication with field devices.

They are widely used in Petroleum, Chemical, Power, Metallurgy, Water, Brewing and other industrial fields, and have won the praise of users for a long time because of excellent quality and high quality after-sales service.

Intelligent multi-parameter transmitter, a new transmitter which integrates differential pressure transmitter, temperature acquisition, pressure collection and flow, can locally show the working pressure, temperature, instantaneous, cumulative flow. And it can compensate the gas, steam for automatic temperature and pressure, to achieve show the standard flow and mass flow function on scene. It can use the dry battery to work and can be used directly with the differential pressure flow meter.

2.2 Measuring Principle

Tek-Bar 3800E Utilities/Non-Explosion Proof Multivariable Transmitter consists of two functional units: - Main Unit and Auxiliary Unit.



The main unit is composed of sensors and process connections. The completely sealed dual-chamber sensor module comprises of an overload diaphragm, absolute pressure sensor, differential pressure sensor and temperature sensor.

The differential pressure sensor senses the pressure across a primary flow element such as an orifice plate, flow nozzle, venturi etc. The absolute pressure sensor acts as a reference value to compensate for static pressure, hence is only exposed to the higher-pressure side. The temperature is measured by a standard 100 Ω RTD. The temperature sensor also acts as a temperature compensated reference value to compensate for the temperature drift. The auxiliary unit includes a terminal block, power supply and HART communicator.

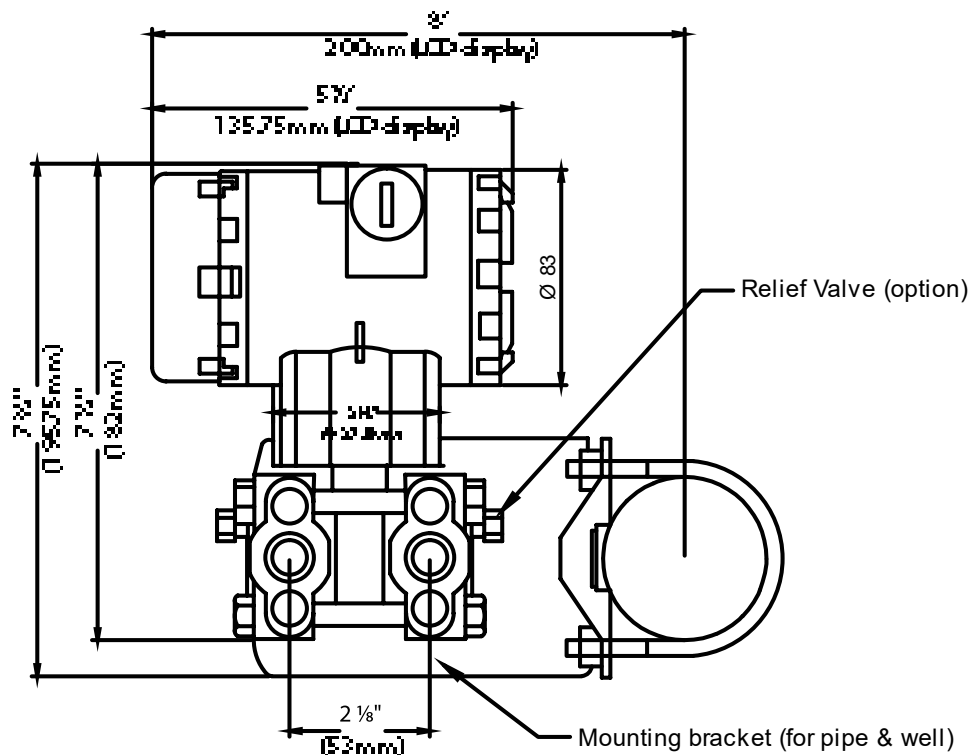
The advanced software of the transmitter allows further complex calculations such as mass flow, density, and level measurement of the process fluid. These calculations are compensated against drifts in discharge co-efficient, viscosity, thermal expansion factor, and gas expansion factor. Located at the top of the metal body, away from the process fluid, the sensor module is mechanically and thermally isolated.

2.3 Specifications

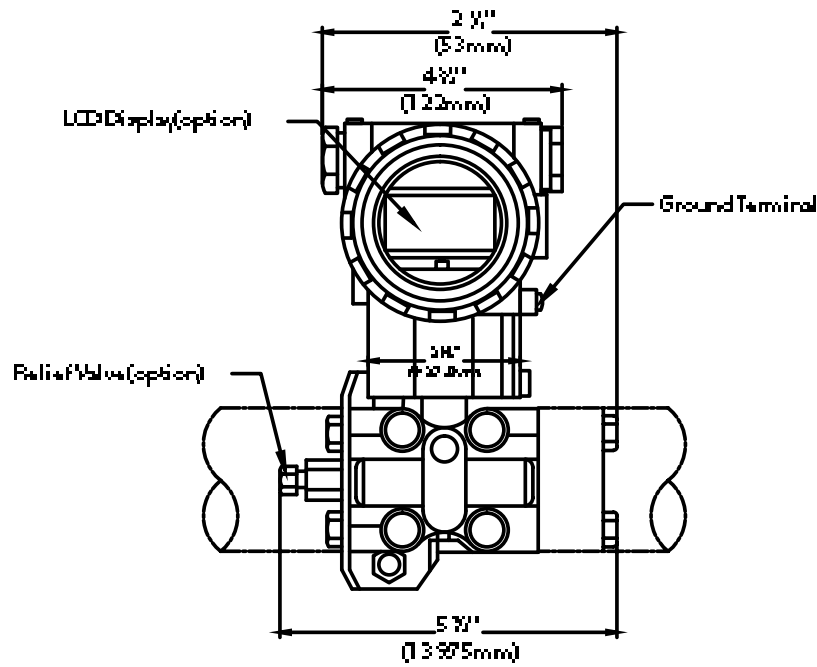
Physical Specification	
Sensor Body	316 SS
Isolating Diaphragm	316 SS or Hastelloy C
Cover Flange	316 SS
Nuts and Bolts	304 SS
Process Connector	316 SS
Fill Fluid	Silicone Oil or Fluorinated Oil
Process Connector Gasket	Fluoroelastomer (FKM) or Polytetrafluoroethylene (PTFE)
Amplifier Housing	Aluminum with epoxy resin coat
Housing Gasket	NBR
Name Plate and Tag	304 SS

Protection	IP67
Weight	7.27 lb (3.3 Kg)
Process Connections	¼" Female NPT, Relief valve
Electrical Connections	½" NPT conduit connections
Electrical Specification	
Power Supply (Vs)	24 VDC
Load Resistance (RL)	$R_L \leq (U_s - 12 \text{ V}) / I_{\text{max}} \text{ k}\Omega$
Maximum Current (Imax)	23 mA
Output	2-wire 4-20 mA, Modbus RS 485 or Pulse
Performance Specification	
Reference Accuracy	± 0.075% FS
Long Term Stability	±0.1% FS for 3 years
Over Pressure	±0.1% FS for 10 MPa
Measuring Temperature	-58 °F to 1202 °F (-50 °C to 650 °C)
Ambient Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Storage Temperature	-40 °F to 185 °F (-40 °C to 85 °C) -58 °F to 185 °F (-50 °C to 85 °C)
Maximum Working Pressure	0.25 Mpa, 2 Mpa, 10 Mpa, 40 Mpa
Response Time	0.1-1.6 sec.

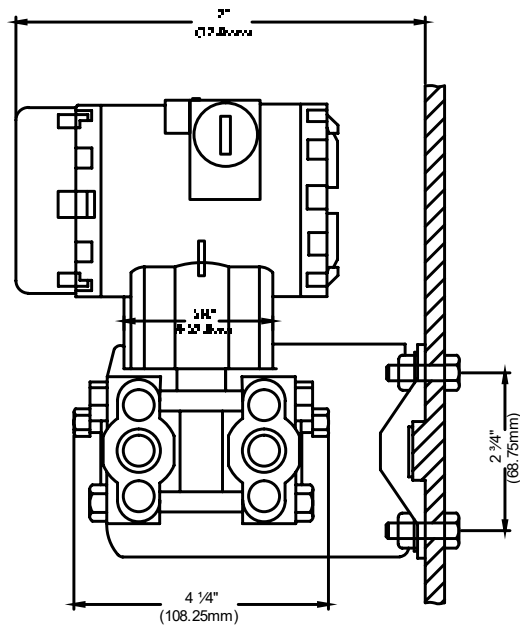
2.4 Dimensional Drawing Horizontal Impulse Piping Type (Side Face)



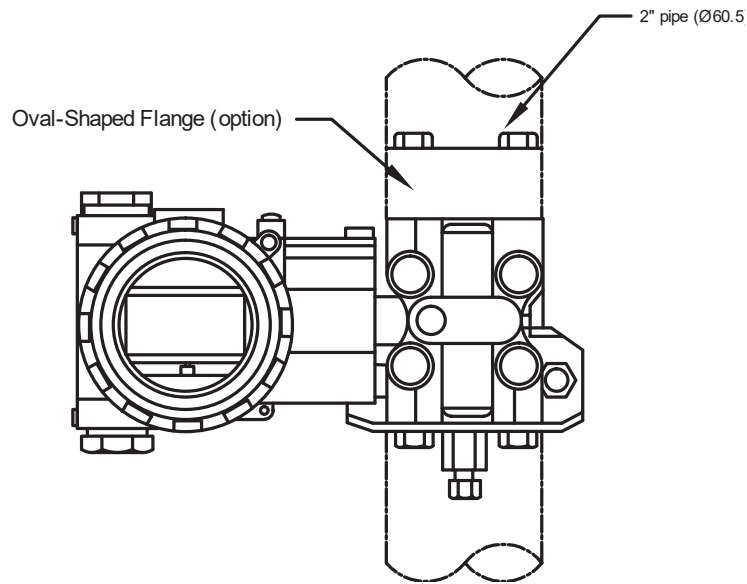
Horizontal Impulse Piping Type (Front Side)



Horizontal Impulse Wall Mounting Type



Vertical Impulse Piping Type



2.5 Model Chart

Example	Tek-Bar 3800E	A	C	3	A	B	F	1	BF	Tek-Bar 3800E-A-C-3-A-B-F-1-BF
Series	Tek-Bar 3800E									Utilities/Non-Explosion Proof Multivariable Transmitter
Accuracy		A								± 0.075% FS
Differential Pressure Range			B C D E							0 to 24" w.c. (0 to 6 kPa) 0 to 160" w.c. (0 to 40 kPa) 0 to 1000" w.c. (0 to 250 kPa) 0 to 290 psid (0 to 2 MPa)
Static Pressure Range				1 2 3 4						0 to 36 psi (0 to 0.25 MPa) 0 to 290 psi (0 to 2 MPa) 0 to 1450 psi (0 to 10 MPa) 0 to 5800 psi (0 to 40 MPa)
Diaphragm and Fill Fluid					A B C D					316 Stainless Steel, Silicone Oil 316 Stainless Steel, Fluorinated Oil Hastelloy C, Silicone Oil Hastelloy C, Fluorinated Oil
Process Connection						B				¼" Female NPT, Relief Valve
Process Gasket							F P			Fluoroelastomer (FKM) PTFE
LCD Display								1 N		LCD Display No LCD Display
Options									BF O FC TAG CC	304SS Mounting Bracket ½" NPT Oval Flange Process Connection Adaptors Factory Configuration Custom Nameplate NIST Calibration, 5 Points

3 Key Features

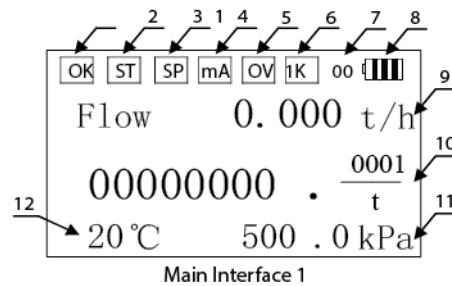
- LCD dot matrix characters display, intuitive and convenient, simple and clear operation
- With non-contact magnetic data set, without opening, all convenience;
- Being equipped with a variety of differential pressure flow sensor (such as orifice, V-cone, Auba, elbow and other differential pressure sensor)
- With temperature interface interchangeability. Being equipped with Pt100;
- Measuring a wide range of media such as the steam, liquid, general gas;
Greatly improving the instrument linear with excellent non-linear correction function;
- Range ratio 1: 100 (special requirements can be 1: 200);
- With full-function HART protocol, remote parameter settings and debugging; (optional);
- Converter can output frequency pulse, 4 - 20mA analog signal, and has RS485 interface, which can be directly connected with the computer, and the transmission distance can reach 1.2km; (optional);
- Language can be selected including English and Chinese;
- Parameter settings is convenient, and can be permanently preserved and have reached to save for three years;
- Ultra low power, built-in battery, full performance can be maintained for at least 3 years (internal power supply optional);
- Work mode can be automatically switched, battery-powered, two-wire system;
- With self-test function, a wealth of self-test information, it achieved user-friendly maintenance and debugging;
- With independent password settings, anti-theft function is reliable. Parameters, the total clear and calibration can be set to different levels of password, user-friendly management;
- Display units can be selected and customized.

4 Operating Instructions

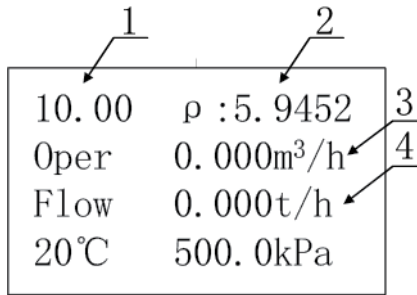
Transmitter usually uses the button to manually set some parameters in the installation through the key to set it. The instrument has three keys, **【S】** , **【M】** and **【Z】** from left to right in order. Usually **【S】** is the shift key, **【M】** is the enter and next key, **【Z】** is the revise and return key. If the key function is different, please refer to the LCD screen interface below the key function description. When the instrument is running, you can manually switch to the main interface 2 through the Z key. The main interface 2 displays the operating conditions and the flow rate, as well as the differential pressure and density values. When the natural gas is measured, the compression factor is displayed.

4.1 DIN43650

When the instrument is powered on, a self-test will be performed. If the self-test is abnormal, the self-test error interface will be displayed (refer to the self-test menu). After about 1 - 2 seconds, it will jump to the main interface. Otherwise it will jump directly to the main interface. The main interface starts as shown below:



- Main Interface 1
- Label 1: The instrument running status displays in real time. If normal it displays "OK", and if fault shows "ERR".
 - Label 2: Set the temperature flag. If the instrument is running abnormally or manually set the temperature to setup, "ST" is displayed. If the sensor is normal and it will be displayed as empty (the instrument limits the normal temperature of the sensor: -50 °C -480 °C) -58°F -832°F.
 - Label 3: Set the pressure. If the instrument is running abnormally or manually set the pressure to setup, "SP" is displayed. If the sensor and pressure is normal, it will be displayed as empty (the instrument limits the normal pressure of the sensor to absolute pressure: 50KPa-20000KPa).
 - Label 4: Meter current output overflow flag, if current output overflow it shows "mA", if normal it shows empty.
 - Label 5: Meter operating parameter overflow. If the instrument operating parameter overflow it shows "OV", if normal it will be showed as empty (overflow including that negative parameters cannot be negative, zero cannot be zero, and the data beyond the scope of the show).
 - Label 6: In order to show and read easily, when the total flow is more than 10000000 the total data display is multiplied by 1000, which is the real cumulative value.
 - Label 7: When HART communicates, the instrument polling displays;
 - Label 8: Running mode can display. if the battery mode shows the current battery power; two-wire current display number "II"; three-line display "IIII"; internal supply battery can be used.
 - Label 9: Flow value display with a maximum of 9999999.
 - Label 10: The total flow displays. Maximum value of the display is 8, if more than 8 it will show 99999999.
 - Label 11: Current sensor acquisition pressure displays. If the instrument is set to be manual, it displays pressure, otherwise displays the sensor acquisition temperature.
 - Label 12: Current acquisition temperature displays. If the instrument is set to be manual, it displays setting temperature, otherwise displays sensor acquisition temperature.



Main Interface 2

- Label 1: The current working differential value is displayed with a maximum value of 9999.
- Label 2: Media density / compression factor display (when the medium is natural gas show super-compression factor, the other shows the media density).
- Label 3: Flow display with unit conditions, the maximum value is 9999999.
- Label 4: Flow display with unit standard, with a maximum of 9999999.

4.2 Main Menu

--Main menu-- 1. Display unit 2. Self-test 3. Total reset	--Main menu-- 4. Setup 5. Calibration 6. Password
--	--

In all main interface (main interface 1, main interface 2), press M key to enter the main menu interface. You can select the corresponding menu item by pressing the S shift key and press M to enter. Each menu item can be described in the following sections, as follows:

Display unit: Changes in instantaneous, operating conditions, temperature and pressure display units.

Self-test: Checking the instrument running status.

Total reset: Clearing the accumulated traffic.

Setup: Setting instrument run parameters.

Calibration: Setting the flow parameters, as well as the temperature channel, pressure channel, current output, flow coefficient and differential pressure transmitter zero calibration settings.

Password: Modifying the settings, clear and calibrate passwords.

4.3 Display Unit

Flow unit:	t/h
O.F unit:	m ³ /h
T unit	°C
P unit	kPa

Flow unit: Instantaneous or standard unit selection.

O.F unit: Condition Flow Unit Selection.

T unit: Temperature unit selection, can display °C or °F;

P unit: Pressure unit selection, can display KPa or MPa

Display unit option can be changed when the instrument is running to display the unit, enter the display unit interface, if selected, for the liquid mass t / h, t / min, kg / h and kg / min four options, if the liquid volume of m³ / h, m³ / min, L / h and L / min four options; operating conditions flow m³ / h, m³ / min, L / h and L / min four options, select the appropriate units, press Key, the main interface will display the display unit for numerical display.

4.4 Self-test

Self-test	
Clock ✓	Memory ✓
Power ✓	AD con ✓
Param ✓	Amplf ✓

If the instrument running is wrong, you can enter the option, query the specific instrument running error, check for the normal, fork for the wrong. The other instrument to start the implementation of self-test, if there is an error it will display this interface. In the instrument running, you can also enter the option to query the instrument running state

4.5 Total Reset

Total flow reset
00000000.0000
Reset Next Reset

Total flow reset. To prevent illegal emptying of traffic accumulation or misuse, enter the clear option to enter the password. In the password check interface, enter the correct password by changing the shift key, press the M key to enter the total reset interface, display the current total flow value. In the total reset interface, in order to prevent misuse, use both hands and press the S and Z keys to clear the operation, clear the success of the screen display 00000000.0000, press M for the key to the run time reset interface;

Run time reset:
004176.0 min
Reset Exit Reset

Run time reset. The run time is minute. Record the start-up time of the meter reaches to 8 digits (the reset operation is the same as the total flow reset).

4.6 Setup

Setting options is to set some of the parameters required for instrument work, in order to prevent human error. It is necessary to check the password to enter this option. Enter the correct password (321456), it enters the setup interface.

Language: English Reset Exit Reset
--

Setup interface 1: language selection by interface setup to set the language, including English and Chinese optional.

Medium type: Liquid volume Shift Next Rev

Setup interface 2: Media type selection, modify the instrument through this measurement medium, instrument measurement medium selection is different, need to set the parameters are different, so the interface is also different. If the instrument selects the liquid volume and the liquid mass, refer to the interface 2, if the selection of natural gas is the reference interface 4, the other reference interface 7. The following media is available.

1. Steam T cmp
2. Steam P cmp
3. Super heat
4. Steam auto
5. Gas volume
6. Gas mass
7. Liquid mass
8. Liquid volume
9. Natural gas

Medium denisty: 1000.0000 Shift Next Rev	Std denisty: 0001.0000 Shift Next Rev
--	---

Setup interface 3: Medium density (20 °C), set the measured medium at 20 °C density, note the unit when setting, this parameter is mainly used for liquid mass and liquid volume.

Std density, Set the measured medium at 20 °C, one atmospheric pressure (101.325kpa) density, note the unit when setting, this parameter is mainly used for gas volume and gas mass.

```
Expansion coe:  
0.000000  
Shift Next Rev
```

Setup interface 4: Expansion coe, the density of the measurement of the liquid parameters.

```
Fz Compensation:  
NO  
Shift Next Rev
```

Setup interface 5: Parameters used in natural gas measurement, set whether to use the Fz Compensation.

```
Relative density  
0.664  
Shift Next Rev
```

Setup interface 6: set the relative density, natural gas measurement parameters used. Natural gas relative to the density of air (std density), dimensionless. This parameter is provided by the Gas Analysis Report.

```
MolarComposition  
N2: 00.07  
CO2: 01.65  
Shift Next Rev
```

Setup interface 7: Set the Mole composition of N₂ and CO₂. The Mole composition of N₂ and CO₂ in natural gas. This parameter is provided by the Gas Analysis Report.

```
Flow cut-off:
      0000.0000
Shift  Next  Rev
```

Setup interface 8: flow cut-off, flow cut-off for anti-interference, when the interference signal flow value is less than this set value, the instrument automatically set the flow to zero, this setting can better inhibit the low frequency interference.

```
Flow full scale:
      000000.00
Shift  Next  Rev
```

Setup interface 9: Flow full scale, set the maximum scale of the instrument, corresponding to the current output 20mA value.

```
Damping time:0
Shift  Next  Rev
```

Setup interface 10: Damping time, input range 0-9. When the field flow shows the fluctuation is too large to affect the reading, increase the filter time and stabilize the reading.

Polling: 00	Device ID:001
Write Protect:N	Baud rate:9600
Shift Next Rev	Parity: NONE
	Shift Next Rev

Setup interface 11: HART and RS485 communication are relative settings, when the instrument for HART communication, to set the polling and write protect mode. Polling range of 0-15, 0 is the master-slave communication mode, when the polling is set to zero, the current fixed output 4mA; when the instrument for RS485 communication, need to set the device ID, baud rate and parity.

T input: Sensor
T setup: +020.0
Ref T: +020.0
Shift Next Rev

Setup interface 12: T input and T setup. The valid range for T input is -999.9-999.9. Set the temperature unit: °C. If the T input is set to: setup, the instrument in accordance with the set temperature compensation. Ref T: the data is calculated when the gas is measured. Temperature parameter set up. T input has two options, the sensor and setup. T input is set when the instantaneous flow calculation does not call the sensor to collect the temperature. The temperature input for the sensor, the instantaneous flow calculation call the sensor to collect the temperature data, when the temperature sensor to collect the data is abnormal, the instrument calls the set temperature for flow operation. The standard temperature is the temperature parameter of the gas standard volume and the gas mass conversion.

P input: Sensor	P input: 4_20mA
P set: +00800.0	P set: +00800.0
Atmo P: 101.325	Atmo P: 101.325
Shift Next Rev	Shift Next Rev

Setup interface 13: P input: Pressure input methods are three options, setup, sensor and 4-20mA. If the P input is set to setup, the instrument is in accordance with the set pressure compensation, set the pressure value for the instrument operating parameters of the absolute value, unit: KPa; sensor: Instrument through the pressure sensor to collect pressure signal; Atmo P: Local atmospheric pressure, set the local average atmospheric pressure, used for flow calculation parameters, unit: kPa.

Trans scale (KPa)
4mA: +000000.000
20mA: +001600.000
Shift Next Rev

Setup interface 14: When the P input is set to 4-20mA, it is necessary to set the upper and lower limits of the trans scale. Change the P input to 4-20mA, press the M key to switch to the trans scale input interface. Only the pressure selection is 4-20mA to set the trans scale.

```
Pluse out:Plus
Freq:0000-5000Hz
F. S: 0005000.000
Shift Next Rev
```

Setup interface 15: Pulse-out has two options: Pulse and Equip; set the Freq and F.S when selecting the pulse, the maximum pulse is 5000; set the Coe when selecting the equivalent, the equivalent output maximum pulse is 1000.

```
I output: Flow

Shift Exit Rev
```

Setup interface 16: I output has two options: Flow and DP.

4.7 Calibration

Calibration options set the parameters required for meter flow calculation, the parameters are engineer-level parameters, change the parameters affect the flow measurement accuracy, non-professional staff do not move. In order to prevent human error, enter this option need to set the password (the initial password is 000000), enter the correct password, to enter the calibration parameter settings.

```
Temp channel
Pressure channel
Current output
Flow coefficient
```

4.7.1 Calibration channel

In this interface, use the Shift key to select the channel you want to set.

```
T Zero: +0.00
T coe : 1.000
Sensor: Pt100
Shift Exit Rev
```

4.7.2 Temp channel

Correct the temperature at which the sensor is collected by entering the correction parameters and the sensor type. If the temperature is set, this is not necessary. T zero: the temperature at which the sensor is collected plus this value is the temperature of the flow calculation. T coe, the parameter is used to correct the multiple of the temperature, set to 1 if no correction is made. Type is temperature sensor type: Pt100 and pt1000.

```
Pressure sensor
4_20mA input
Pressure zero
Shift Next Rev
```

4.7.3 Pressure channel

Pressure input with two-wire pressure transmitter and pressure sensor (four-wire bridge).

```
P Zero: +0000.0
P coe : 001.000
P gain: 7/7 GP
Shift Next Rev
```

4.7.4 Pressure sensor

Correct the pressure at which the sensor is collected by entering the correction parameters. If the pressure is set, this is not necessary.

P zero: the pressure at which the sensor is collected plus this value is the pressure of the pressure calculation.

P coe: the parameter is used to correct the multiple of the pressure, set to 1 if no correction is made.

P gain: The magnification of the acquisition signal when the pressure sensor signal is collected. Gauge pressure / absolute pressure is the sensor type, absolute pressure indicates that the instrument is connected to an absolute pressure sensor, and the gauge pressure means that the meter is connected to the gauge pressure sensor.

4_20mA Input cal	4_20mA Input cal
SV: 4mA	SV: 20mA
PV: 00.0000	PV: 00.0000
Shift Next Rev	Shift Next Rev

4.7.5 4_20mA Input cal

When calibrating, the input current is prompted by the totalizer. Zero calibration input current value of 4mA, the measured value will show close to 4mA value, and then press the M key to enter the full scale calibration, the input current value of 20mA, the measured value will show close to 20mA value, press the M key instrumentation calibration successful Return to the interface.

```
Pressure zero:
      +0000.00
Shift  Exit  Rev
```

4.7.6 Pressure zero

When the pipe pressure is measured, the pressure error caused by the pressure pipe can be eliminated by this item.

```
I cal. :    4mA
Measure: 04.0000

Shift  Next  Rev
```

4.7.7 Current Output

Calculating the zero and the coefficient of the current calibration is achieved by outputting the measured current value. When the 4mA output is 4mA, the standard instrument will input the measured current value and then move the cursor to 4Ma. Pressing the **[Z]** key (Rev) to select the output 20mA instrument outputs 20mA, at same time the measured value input current value. Pressing the **[M]** key (Next) in the next interface can see the current zero and current coefficient, when the input 4mA range 3.5-4.5, 20mA in the 18-22mA between the re-calculation of the new zero and the coefficient. If it is over the level, keep the original zero and the coefficient. The correction is based on the original zero and the coefficient on the basis of correction.

```
I Zero:  +0.0000
I coe :   4.0000

Shift  Exit  Rev
```

After the current output calibration is completed, press the M key to view I coe and I zero. Adjust the output zero and full scale by entering the correction parameters.

Note: modifying this parameter will turn off the current output. Do not set it if the system associated with the instrument is running with the current output.

4.7.8 Flow coefficient

Setup interface 1: This option allows you to modify the type of flow sensor. Different flow sensor types need to set the different parameters, so the interface is also different. There are several differential pressure flow sensors to choose:

1. Orifice DP
2. V cone DP
3. Annubar DP
4. Elbow DP
5. K coe
6. DP Scale

Pipe diameter: 0100.000 mm Shift Next Rev

Setup interface 2: Pipe diameter, flow sensor pipe diameter;

Hole diameter: 0080.000 mm Shift Next Rev	Cone diameter: 0080.000 mm Shift Next Rev
---	---

Setup interface 3: Hole diameter, hole diameter of the orifice (set orifice flow meter);

Cone diameter, the maximum cross-sectional diameter of the V-cone under the operating conditions (set the V-cone flow meter);

Flow coe:Seqr: 0 Dp: +0100.0000 Coe: 0.80000 Shift Next Rev
--

Setup interface 4: Since the flow coe C is not sure a constant, it is divided into 10 segments for segmentation calculation, thereby improving the measurement accuracy. This coefficient applies to orifice and V-cone flow meters.

```
BD ratio:  
    0001.200  
Shift Next Rev
```

Setup interface 5: BD ratio, bend pipe flow sensor bending ratio, this coefficient is only used for elbow flow meter;

```
Flow coe:Seqpe:0  
Dp: +0100.0000  
Coe: 0.80000  
Shift Next Rev
```

Setup interface 6: Since the flow coe K is not sure a constant, K is divided into 10 segments for segmentation calculation, thereby improving the measurement accuracy. This coefficient applies to the Annubar, K coe and elbow flow meter;

```
Isentr Index(k) :  
    1.0000  
Shift Next Rev
```

Setup interface 7: Isentr index, used to calculate the velocity expansion coefficient, dimensionless.

```
Scale flow:  
    001000.000  
Shift Next Rev
```

Setup interface 8: Scale flow, flow sensor design maximum differential pressure corresponding to the flow, this parameter is only used for DP scale;

```
Design density:  
0001.0000  
Shift Next Rev
```

Setup interface 9: Design density, design flow sensor used when the density of the media, this parameter is only used for DP scale;

```
DP URV:  
+000000.000  
Shift Next Rev
```

Setup interface 14: DP URV, differential transmitter differential pressure range upper limit;

```
DP LRV:  
+000000.0000  
Shift Next Rev
```

Setup interface 15: DP LRV, multi-parameter transmitter differential pressure range lower limit;

```
DP zero:  
0.000  
Enter Next Enter
```

Setup interface 16: DP zero, when the sensor input is zero, due to some changes in the measured value caused by changes in the lower limit value is not zero, the need for DP zero offset; adjustment, first determine the sensor input is zero, Then press the S and Z keys at the same time, the offset is complete;

```
DP zero offset:  
+000.000  
Shift Next Rev
```

Setup interface 17: DP zero offset: When the transmitter is installed, the level pressure generated by the pressure pipe can be eliminated by the deviation of the position.

4.8 Password

With this option, you can change the total reset, setup, and calibration password (total reset, setup, and calibration password modification operation is consistent, here only describing the changes to set the password). Entering the change password selection interface, select the item to be modified. Enter the old password, and then enter the password in the new password to change the password by pressing the M key. If the old password is correct, the modifying is successful. The next prompt to modify certainly can automatically jump to the main interface, or show changes failed jump at the same time to the main interface.

```

Setup pwd
Total reset pwd
Calibration pwd
Shift Enter Exit
    
```

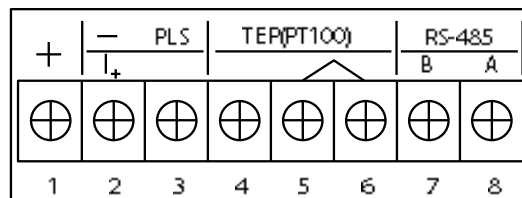
Setup pwd: select the password setting of the corresponding module by the shift key.

```

Setup pwd
Old pwd: 0*****
New pwd: *****
Shift Enter Rev
    
```

Setting up pwd: Entering the appropriate password, if correct, suggesting that the password is modified successfully. Otherwise jump to the main interface.

5 Wiring Connection



- 1) Power supply:
 - 1: power supply 24V +
 - 2: power supply 24V-
- 2) Current output:
 - 1: Power supply 24V+
 - 2: Current output I+ (with HART communication)
- 3) Pulse:
 - 2: Pulse negative
 - 3: Pulse positive

- 4) Temperature:
- | | | | |
|-----------|----------------|-----------|-------------------|
| 4: PT100A | 5 and 6 short; | PT100B; | two-wire system |
| 4: PT100A | 5: PT100B, | 6: PT100B | three-wire system |
- 5) 485 communication:
- | | |
|------------|------------|
| 7: RS485 B | 8: RS485 A |
|------------|------------|

Note:

- 1) Internal power supply battery can be used, and the service life is 2 or 3 years;
- 2) When using current output or HART communication, you need to connect the external power supply 24V, which can be automatically switched. No setup.

6 Appendix

Product Warranty Description:

- 1) Product warranty period of 18 months;
- 2) The warranty period for the repaired, repaired and replaced parts during the warranty period is delayed by one year from the date of shipment. If the extension of a year after the original warranty period has not yet reached 18 months, then it is the original warranty period of 18 months. Part of the repaired part of the warranty period remains the same;
- 3) out of the product warranty period, repair or replacement parts warranty period extended for one year except the other part of the warranty period;
- 4) The warranty period for the product accessories purchased from a third party is based on the warranty period determined by the third party.
- 5) (Such as the terminal and the three valve group warranty period is one year.)




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