



CFM Instrument Co., Ltd

PLASTIC LIQUID TURBINE FLOW METER



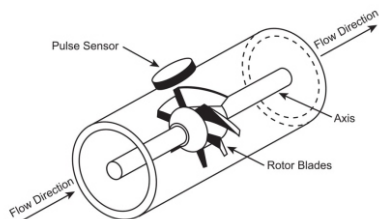
PLASTIC LIQUID TURBINE FLOW METER CATALOG



Brief Introduction

The plastic liquid turbine flowmeter is a precision flow measurement instrument that can be used to measure the flow rate and total volume of liquid when matched with the corresponding flow totalizing instrument.

Liquid turbine flow meters are widely used in measurement and control systems in petroleum, chemical industry, metallurgy, scientific research, and other fields. Liquid turbine flowmeters equipped with sanitary connections can be used in the pharmaceutical industry.



Products Gallery



Features

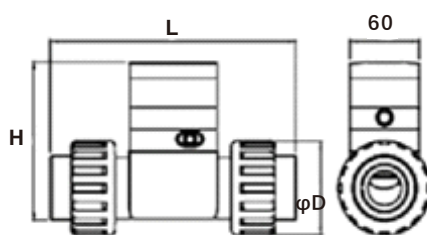
- Measurement Accuracy: $\pm 1.0\%$ F.S.
- Flow coefficient K value can be set.
- The instantaneous flow unit is selectable (LPM and m³/h).
- Accumulated flow unit correspondence (L and m³).
- Instantaneous flow upper and lower limit alarm output 24V.
- 4~20mA output can be equipped with a flow totalizer.
- Optional RS485 communication function based on Modbus RTU protocol.

Measurement Medium	Water or chemical fluid
Accuracy	±1.0% of F.S.@25°C
Max Velocity	10m/s
Minimum Velocity	0.3m/s
Working Pressure	5Kg/cm2
Turndown	10:1
Response Time	Real-time
Material	Main pipe: PP Impeller: PVDF
Working Temperature	< 80°C
Working Environment	-20°C ~ +80°C, 35% ~ 85%RH
Protect Level	IP65
Output	4-20mA; RS485; upper and lower limit alarm

Diameter & Flow Range

Diameter	DN15	DN20	DN25	DN40	DN50
Flow Range (LPM)	0 ~ 10 (30)	0 ~ 70	0 ~ 110	0 ~ 240	0 ~ 360
Note	1. Transmission range: 4-20mA. 2. 485 communication protocol: Modbus RTU protocol.				

Dimensions



Diameter	H	L	φD
DN15	95	140	40
DN20	97	150	53
DN25	102	160	60
DN40	120	185	83
DN50	133	197	110

Display and Keys



① Indicate the current status. MEAS: Measurement mode. SET: Parameter setting mode. CAL: Factory calibration mode.

It needs to verify the password when entering non-measurement mode.

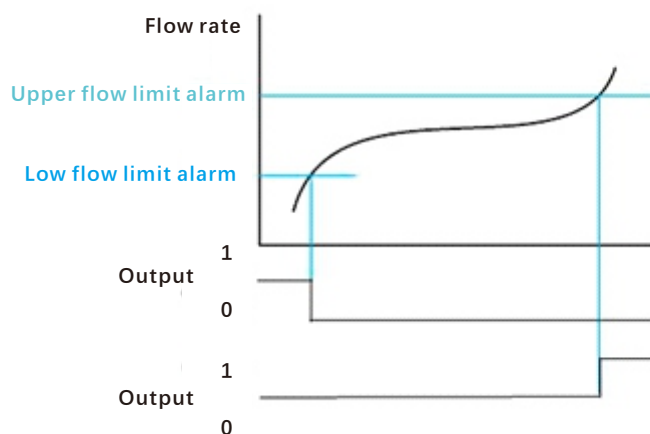
② In measurement mode, the instantaneous flow rate is displayed here. In other modes, the currently setting item is displayed here.

③ In measurement mode, the accumulated flow rate is displayed here. In other modes, the currently set item value is displayed here.

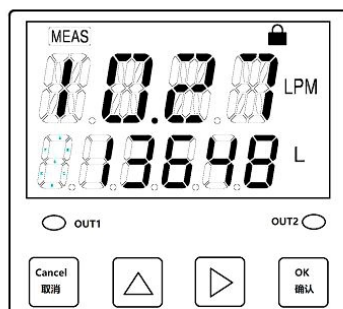
④ Unit display.

⑤ Relay output indicator light (the relay output signal is in open-drain output mode). When the light is on, the corresponding relay outputs a high level; when the light goes off, it means that the corresponding relay outputs a low level. OUT1 is used for the instantaneous flow low limit alarm, and OUT2 is used for the instantaneous flow upper limit alarm.

⑥ Button. See below for specific functions.



Measurement Mode



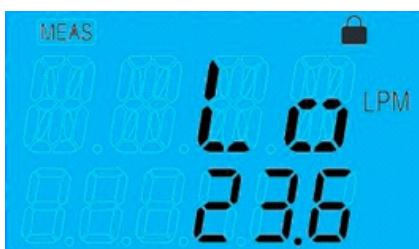
After the flowmeter is powered on, it will automatically enter the measurement mode as shown in Figure 5.2.1. The above part shows the instantaneous flow rate and the below part shows the accumulated flow rate. The accumulated flow rate will be automatically cleared when it reaches 999999. It can also be cleared manually by pressing and holding the 'ESC' button for 5 seconds. Short press the 'Up' or 'Right' key to switch to view the instrument transmission settings, including 4-20mA (models with this function), RS485 address (models with this function), and alarm output settings, as shown in Figures 5.2.2, 5.2.3, and 5.2.4.



5.2.2



5.2.3



5.2.4

In this mode, press and hold the 'Up' + 'OK' keys for 5 seconds to enter the setting menu mode. When encrypting, you need to enter the correct password as shown in Figure 5.2.5. When there is no key operation for 5 minutes after unlocking, the flowmeter will automatically lock and the password must be re-entered for the next setting.

In this mode, press and hold the 'ESC' + 'OK' keys for 5 seconds to enter the factory calibration menu mode. When encrypting, you need to enter the correct password. Users are not recommended to enter this mode.



5.2.5

Err is displayed under the wrong password and still stays on this interface. Press 'ESC' to return to the measurement interface.

Note: The system default password is 1000.

Parameter Setting Mode

In the parameter setting mode, as shown in Figure 5.3.1, press the 'up' and 'right' keys to switch items, and press 'OK' to enter this entry, and press 'ESC' to return to measurement mode. The menu includes UNIT (unit), KFAC (coefficient), OUT1, OUT2, 4.0mA, 20mA, A485 (485 address), B485 (485 baud rate), P485 (485 parity method), CODE (change password), FILT (filter level to prevent rapid fluctuation of values)



5.2.6

Unit

In this state, the instantaneous flow and accumulated flow units will flash. LPM corresponds to L, m^3/h corresponds to m^3 and must be set in conjunction. Press the 'Up' and 'Right' keys to select, and press 'OK' to save the settings. At this time, the above 4-digit number will display 'SAVE' and then stay in this mode, indicating that the setting value has been saved (all setting modes are similar to this method). Press the 'Cancel' key to return to setup menu mode. As shown in Figure 5.3.2.



5.3.2

KFAC (coefficient)

In this state, set the K coefficient, and the cursor in the setting part will flash. The 'up' key changes the value, and the 'right' key moves the cursor. Other operations are similar. The K value set has a maximum value. When the value is unreasonable, 'Err' is displayed; otherwise, 'SAVE' is displayed. As shown in Figure 5.3.3.



5.3.3

OUT1 alarm

In this state, set the instantaneous flow low limit alarm value. Operation is similar to KFAC. Note that after the setting is completed, the flowmeter will check whether the set low alarm value and upper limit alarm value are reasonable. If the low limit is higher than the upper limit, please set the upper limit alarm to a reasonable value first, and then set the low limit alarm value. As shown in Figure 5.3.4



5.3.4

OUT2 alarm

Similar as OUT1

4mA instantaneous flow rate

In this state, when setting instantaneous flow current output, the instantaneous flow value corresponding to 4mA is used. Similar to the alarm output setting, when the set 4mA value is larger than the 20mA value, 'Err' will be displayed. Please set the 20mA value appropriately first, and then set the 4mA value. As shown in Figure 5.3.5.



5.3.5

20mA instantaneous flow rate

Similar to the 4mA instantaneous flow rate setting.

A485 Address

RS485 adopts ModBus protocol and needs to set the device address (1-255). You must also set the baud rate (2400, 4800, 9600, 115200). Finally, set the parity method (odd, even, no parity). As shown in Figure 5.3.6, 5.3.7, 5.3.8.



5.3.6

B485 baud rate

5.3.7

P485 parity mode

The parity method is odd, even. No parity



5.3.8

CODE (change password)

Password changing interface, 4-digit password. The password cannot be 8086. As shown in Figure 5.3.9.



5.3.9

FILT filter level

An internal filtering algorithm is used, level 0~9. The higher the level, the smoother the data, but the response speed becomes slower. If the instantaneous flow fluctuation is not large, it can be set low or set to 0; if the instantaneous flow fluctuation is large and changes rapidly, it can be set larger. As shown in Figure 5.3.10.



5.3.10

Factory calibration mode

The factory calibration mode is used to manually calibrate the 4-20mA accuracy and view the sensor output frequency. Press the 'Up' and 'Right' keys to switch items, press 'OK' to enter the menu, and press 'ESC' to return to measurement mode. The menu includes FRQ (sensor output frequency), mA-L (4mA correction), mA-M (12mA correction), and mA-H (20mA correction). As shown in Figure 5.4.1



5.4.1

FRQ sensor output frequency

Check the sensor frequency in this mode. Based on this frequency and the instantaneous flow value of the external calibration device, the K coefficient can be calculated. The interface displays the sensor frequency (unit Hz) in real-time. Press the 'ESC' key to return to the factory calibration menu interface. As shown in Figure 5.4.2.



5.4.2

mA-L 4mA correction

This interface is used to correct 4-20mA output. After entering the interface, use the mA range of the multimeter to connect the 4-20mA output end. After inputting the current value displayed by the multimeter into the instrument, press 'OK'. As shown in Figure 5.4.3.

FILT filter level



5.4.3

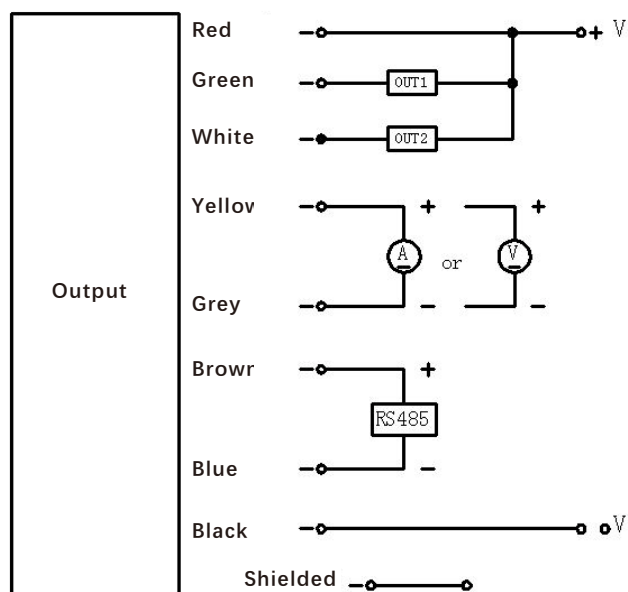
mA-M 12 mA correction

Similar as 5.4.2

mA-M 24 mA correction

Similar as 5.4.2

Wires Terminal Description



Power: 24V DC:

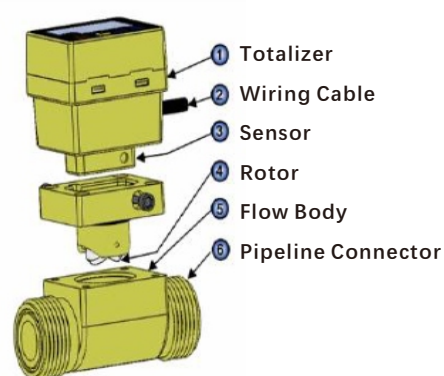
Red + Black -

4-20mA:

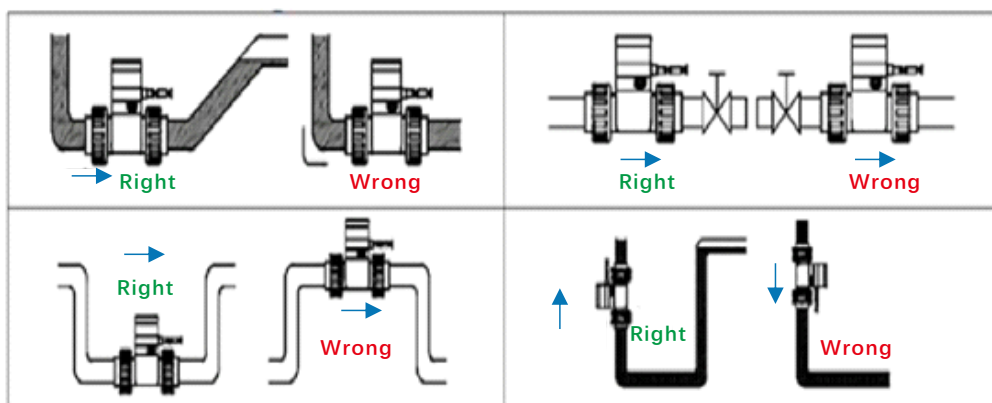
Yellow + Grey -

Upper & low flow limit Alarm: Green (Low) White (upper)

OUT1 OUT2

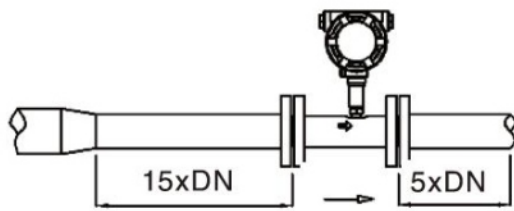


Installation

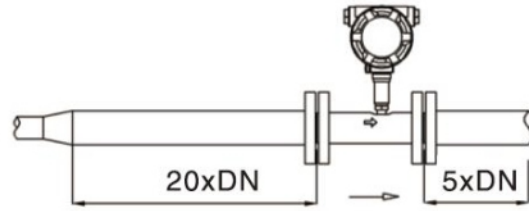


Installation Precautions

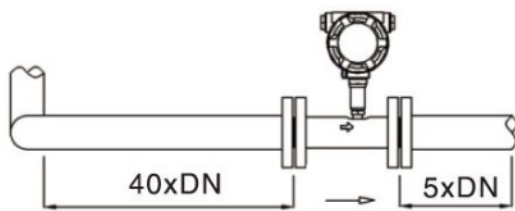
- 1) Please ensure that the measuring pipe is full of water level, otherwise it will cause measurement errors.
- 2) Can be installed horizontally or vertically.
- 3) When installing the flow sensor, please keep an appropriate length of straight pipe before and after the flow sensor to prevent eddy currents.
(The upstream distance must exceed 10 times DN; the downstream distance must exceed 3 times DN)
- 4) Please install an appropriate filter in front of the flow sensor to prevent foreign matter from damaging the rotor.
- 5) Do not flush the pipeline after the flow sensor is installed, otherwise the ceramic shaft may be damaged.



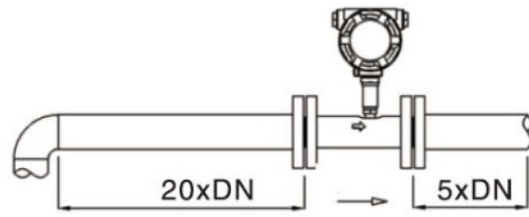
**Concentric Contraction
Fully Open Valve**



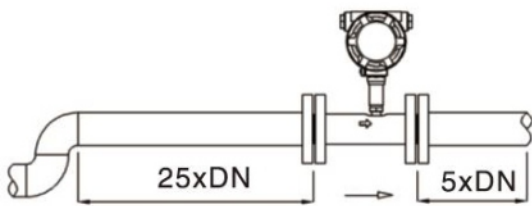
Concentric Expansion Valve



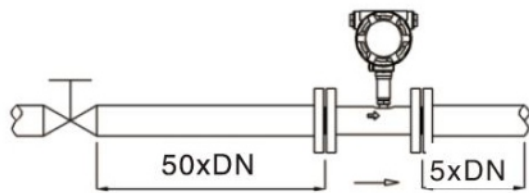
**Two 90 Degree Bents
on Different Levels**



One 90 Degree Bent



**Two 90 Degree Bents
on One Level**



**Half Opening Valve
of Regulating Valve**