High-Precision Corrosion-Resistant

Gear Flow Meter

KaoLu Enterprise Co., Ltd.

Before operation, please carefully read this instruction manual.

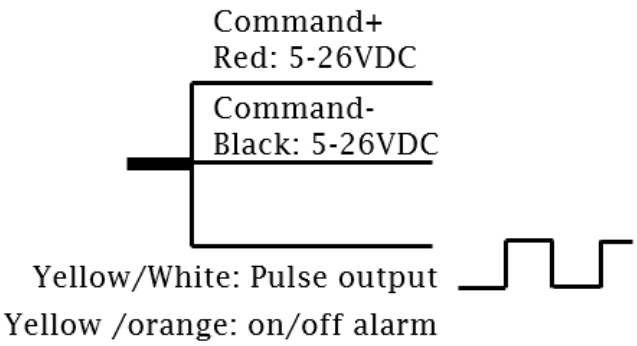
Before installation, read these important instructions three times!

1. Before connecting the flowmeter to the pipeline, be sure to connect the circuit and test the signal for proper alignment.

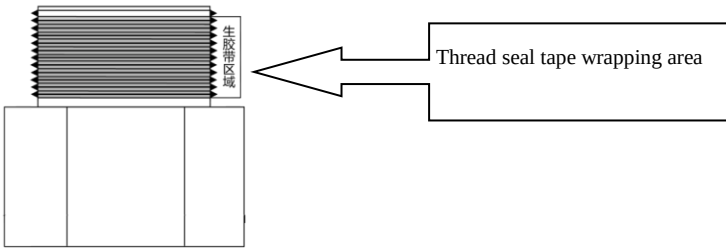
   (You can manually rotate the gears or blow on flowmeter to check the pulse signal.)

2. For circuit wiring, refer to the wiring diagram (Figure 1).
3. Before connecting flowmeter to pipeline, ensure that pipeline is clean. It is best to flush the pipeline first. It is recommended to install a filter with a filter of 200μ or larger on the front of flowmeter.
4. When connecting flowmeter to connector, be sure not to over-thread the seal tape or thread sealant. Otherwise, water may enter the seal tape or flowmeter, causing problems (Figure 2).

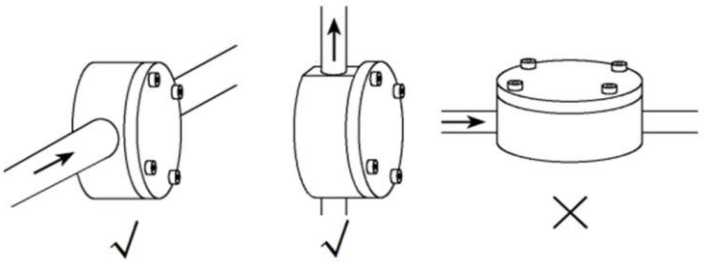
Wiring diagram (Figure 1)



Connector diagram (Figure 2)



Installation diagram (Figure 3)



- Accumulated/Transient Flow Digital Display Instructions -

1. **Supply command**：24V
2. **Output is shown on the label of cable.**
3. **Meaning of button:**

-UP/DOWN：In the measurement state, press up and down to switch between 3 display modes (accumulative, transient, cumulative transient alarm)

-UP/DOWN：In parameter mode, press up and down to increase or decrease the value.

-SET：Press SET to switch setting parameter

-LEFT：Press "left" to move the cursor

-RST：In the display state, press RST to clear the accumulated value.

-RST：In the parameter state, press RST to return to the measurement state.

4. Display interface introduction：

00000.0 mL	First line shows cumulative flow
00000.0 mL/M	Second line shows transient flow.
B-A:00000.0	Third line shows cumulative alarms (also called quantitative alarms/quantity control). The units are the same as first line.
H-A:00000.0	Fourth line shows transient flow alarms. The units are the same as second line.

* The more content the screen displays, the smaller the font size.

Total mL 00000.0	This screen only displays the cumulative amount, the font size is larger
Rate mL/M 00000.0	This screen only displays transient traffic, so the font size is larger.

▲The above three measurement states are displayed on screen and can be switched by pressing up and down.

5. Parameter interface introduction

Filter 000	Filter coefficient, generally set to 2. If the pulsation is large, the filter coefficient can be set higher.
K 00.000	K is flowmeter equivalent coefficient, in units of 0.000 ml/pulse.
Rate alarm Value 00000.0	Transient flow alarm value setting, the unit is same as the transient flow rate. (Upper/lower limit alarm, selected in alarm type) Relay capacity: 5A/250VAC, 5A/30VDC
Batch Volume 00000.0	Quantitative alarm value. The unit is same as cumulative value unit.
K01 000.000	Segment Calibration Coefficient
F01 000	For frequencies below F01, the K01 calibration coefficient is automatically used.
K02 000.000	Segment Calibration Coefficient
F02 000	For frequencies between F02 and F01, the K02 calibration coefficient is automatically used.
K10	Segment Calibration Coefficient

Chose one

000.000	
F10 000	Between F10 and F9 frequencies, use K10 calibration coefficient.
Rate Alarm type H alarm	Transient flow alarm type selection: H alarm for upper limit alarm, L alarm for lower limit alarm.
Total Volume unit mL	Total flow unit selection: mL or L.
Zeroing time 000S	Zero reset time setting.
Rate unit mL/M	Transient flow unit selection: mL/s, mL/m, L/h, L/M.
Total point 1	Total flow display decimal point setting: 1-3 decimal places.
Rate Point 1	Transient flow display decimal point setting: 1-3 decimal places.
4mA 00000.0	4 mA corresponding value setting, generally set to zero.
20mA 00000.0	20 mA corresponding value setting, set the flow upper limit, same unit as transient flow.

485 MODBUS RTU

N-8-1 · N (no parity) · 8 (data bits, 8-bit characters) · 1 (stop bit)

Floating point number! (Least significant byte first, most significant byte last)

Note: After changing the baud rate, you need to stop power to cycle the circuit.

No.	Variable Name	Variable Type	Channel Name	Type of Read/ Write	Register Name	Data Type	Register Address	Channel Acquisition Frequency
0	Instantaneous Flow	SINGLE	Read/Write 4DF0100	Read/Write	[Area 4] Output Register	32bit floating-point number	100	1
1	Cumulative Flow	SINGLE	Read/Write 4DF0200	Read/Write	[Area 4] Output Register	32bit floating-point number	200	1
2	Reset	SINGLE	Write Only 4WUB0300	Read/Write	[Area 4] Output Register	16bit unsigned binary number	300	1

Note: After changing the address to hexadecimal, subtract 1.

Serial communication commands:

Read instantaneous flow: 01 03 00 63 00 02 34 15

Read cumulative flow: 01 03 00 C7 00 02 75 F6

Clear: 01 06 01 2B 00 01 39 FE

- Precautions for use-

★ When starting or stopping, open and close valves slowly to avoid sudden shocks.

★ To prevent false pulses, prevent backflow.

★ Always install a filter in front of the flowmeter.

★ For liquids that easily crystallize, take measures to prevent crystallization in the pipe section where flowmeter is located.

- Troubleshooting Guide -

Fault	Cause	Troubleshooting
Gear not rotating	1. Obstruction caused by foreign matter, such as gears being stuck. 2. Clogged pipe filters. 3. Damaged rotors, deformed gear shafts. 4. Flowmeter connectors tightened excessively, causing cavity deformation. 5. Liquid solidification.	1. Remove the meter, clean the rotor, and install a filter in the piping. 2. Clean the filter. 3. Replace the gears, and install a filter in the piping. 4. Readjust the connections. 5. Prevent the liquid from solidifying. Heat or disassemble the unit for cleaning.
Fault	**Cause**	**Troubleshooting**
Flow rate decreasing (resistance increasing)	1. The filter is partially clogged. 2. The liquid is too viscous.	1. Clean the filter 2. Do not exceed the viscosity specified by the flow meter
Flow rate error is too large	1. The actual flow range is lower or higher than available range. 2. Air is present in liquid. 3. Excessive flow rate causes	1. Do not exceed the limit. 2. Avoid air in pipes. 3. Select the correct option and choose a flow meter with appropriate range.

	excessive wear. 4. The flow meter is installed in the wrong direction. 5. Impurities are blocking the gears.	4. Optimal position for inlet and outlet: up and down. 5. Cleaning is required.
Instrument No pulse signal	1. Circuit failure 2. Gear stuck 3. Circuit connection error or circuit damage 4. Mismatch between host computer and pulse signal	1. Replace the circuit. 2. Clean the gears and cavity. 3. Reconnect the circuit correctly or replace it. 4. Select a compatible host computer.

The product is guaranteed for six months under the warranty and must be used and stored properly according to the instructions in instruction manual. Any damage or malfunction caused by poor manufacturing quality during the warranty period will be covered by our warranty.
Unauthorized disassembly, assembly, or repair will void the warranty.

Our company is not responsible for any direct or indirect losses resulting from failure to operate the product in accordance with the instructions.