FL – 8550 Turbine Flowmeter manual

Warning!

1. Cut off the power supply when connecting the input and output terminals.
2. Read the following instructions carefully and take precautions to prevent any possible personal injury

Contents

1. Installation
2. Product specifications
3. Electrical connection
4. The functions of the menu

1. Installation
   1.1. Installation of the instrument panel
      1. This instrument need a hole of *92 x 92 mm*
      2. Press the back of the instrument with the mounting bracket until the quick-fixed card lock the grooves on the two sides of the instrument
      3. When removing the instrument, it is necessary to fix the instrument temporarily with adhesive tapes or hold the back of the instrument firmly in order to prevent the instrument from falling down. Pull the quick-fixed cards outwardly and draw out the instrument
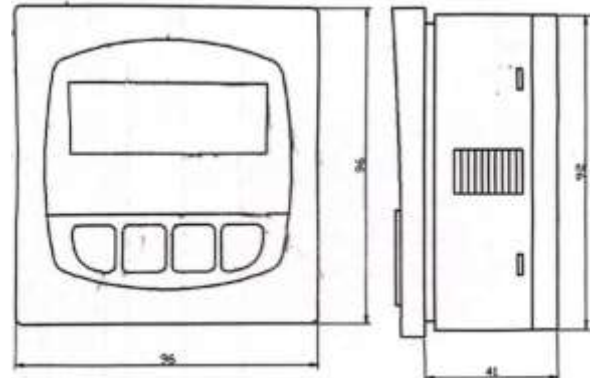
2. Technical Specifications

Overview: FL-8550 turbine flow meter as a speed-type flow measuring instrument. For measuring the filled tube closure, a continuous flow of liquid volume flow. Turbine flowmeter is suitable for measuring low viscosity of the cleaning liquid with high precision, easy to measure, cumulative flow and instantaneous flow.
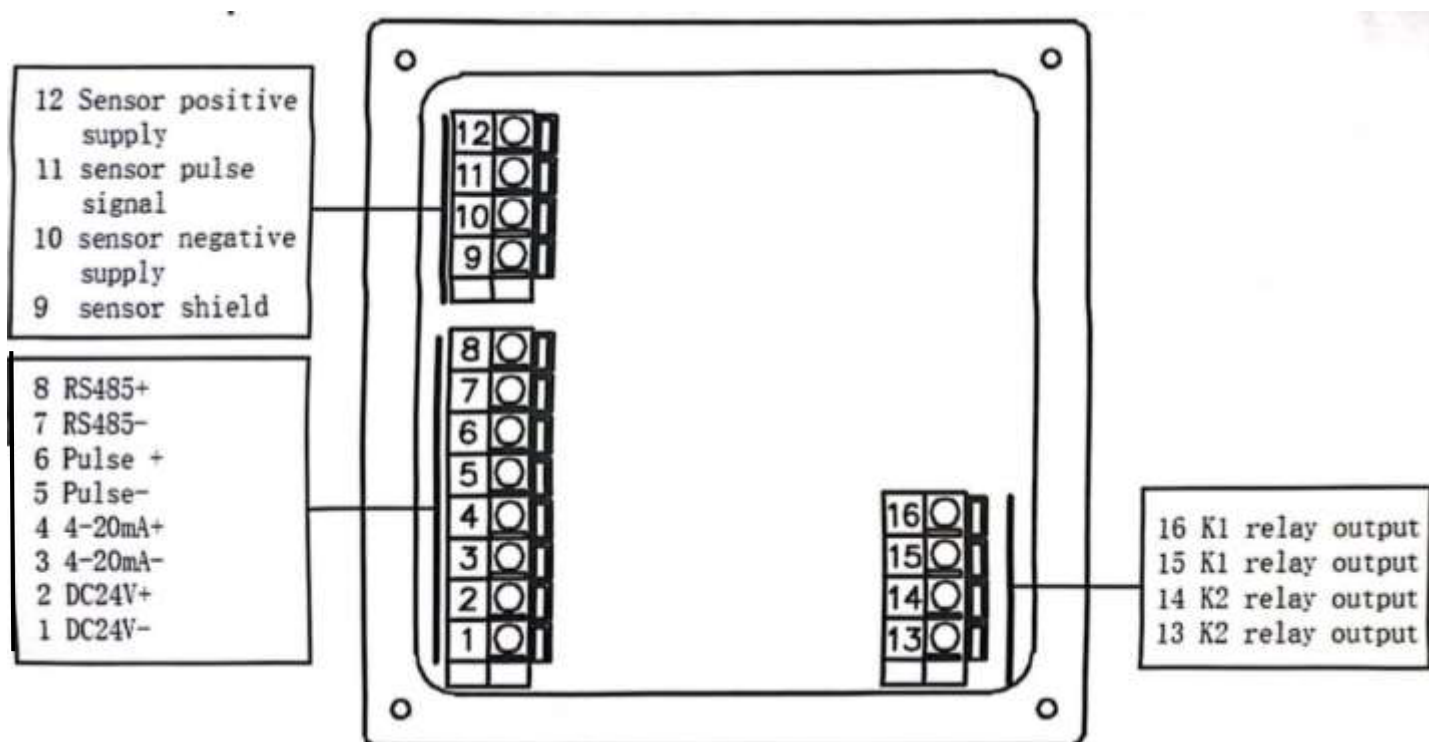
Product model:	FL-8550
Accuracy:	±1%,±1.5% (FS)
Repeatability:	±0.5%
Display method:	Large-screen LCD dot matrix LCD
Working temperature:	-20 – 65°C
Output current:	Isolation 4 – 20 mA
Control Output:	High / low limit programmable output; contact capacity 5A / 250 V AC (resistive load)
Pulse Output:	Passive pulse
Communication output:	RS485
Power supply:	DC 24V
Protection grade:	IP65, front
Environment condition:	Temperature: 0-50°C; humidity: < 85% RH
Overall dimension:	96 x 96 x 45 MM (height x width x depth)
Face opening:	92 x 92 mm
Installation method:	Embedded

Matching LWGY type turbine flow sensor:

Path DN(mm)	Flow range	Working pressure	Medium temperature
10	0.2 – 1.2 m³/h	≤6.3 Mpa	≤ 80 °C
15	0.6 – 6 m³/h		
20	0.8 – 8 m³/h		
25	1 – 10 m³/h		
32	1.5 – 15 m³/h		
40	2 – 20 m³/h		
50	4 – 40 m³/h	≤2.5 Mpa	
65	7 – 70 m³/h		
80	10 – 100 m³/h		
100	20 – 200 m³/h		
125	25 – 250 m³/h		
150	30 – 300 m³/h		
200	80 – 800 m³/h		

3. Electrical connection

3.1. Back cover plate


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12 Sensor positive
   supply
11 sensor pulse
   signal
10 sensor negative
   supply
 9 sensor shield
```

```
8 RS485+
7 RS485-
6 Pulse +
5 Pulse-
4 4-20mA+
3 4-20mA-
2 DC24V+
1 DC24V-
```

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16 K1 relay output
15 K1 relay output
14 K2 relay output
13 K2 relay output
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Wiring Instructions:

The cables for the sensor and the AC cables cannot be laid in the same cable conduit as electronic noise can disturb the signals of the sensor.

To lay the cables in the grounded metallic cable conduit is conductive to prevent electronic noise and mechanical damage.

Seal the entrances of the cables in order to protect the cables from being damaged by humidity

Insert one conductor into each terminal socket. If two conductors need to be inserted in the same terminal socket, it is necessary to connect the two conductors and the terminal outside the terminal socket.

According to the actual situation, select the appropriate range of turbine flow sensor

3.2. DIP switches (factory set, do not change!)

No.	Switch status	Function Description
1	1 2 3 4	Hall switch sensor or pulse signal
2	1 2 3 4	Sensor coil
3	1 2 3 4	LCD backlight on
4	1 2 3 4	LCD backlight off

3.3. Relay output signal

3.3.1. System power supply / current circuit wiring

Application of a single standard function, without current signal output

Connected with PLC/recorder with built-in power supply, independent power supply
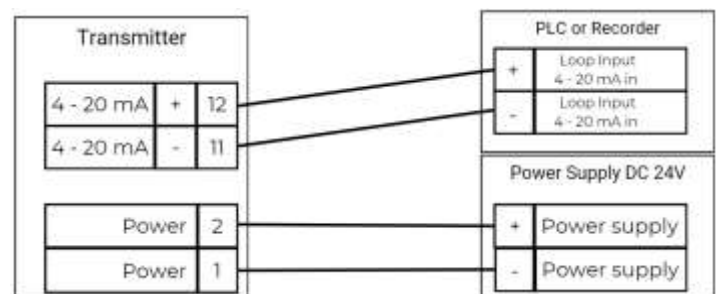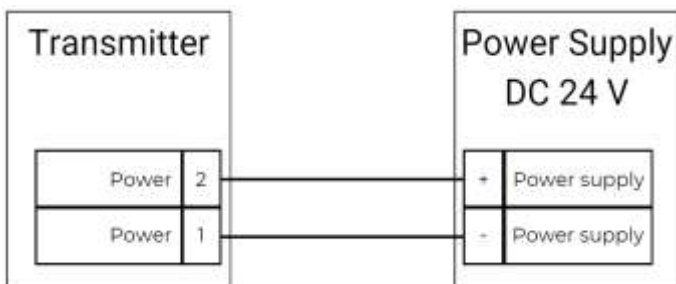
The current output of the flow transmitter has been isolated and the output is active. The current output mode is 20 mA, the flow value corresponding to the 4-20 mA current output is determined by the parameter term "scale flow value" (see the measurement range of the matching turbine flow sensor). The maximum load resistance allowed by the current output is 750.

4 mA calibration

When the instantaneous flow rate of the instrument is not consistent with the instantaneous flow rate of the two instruments, the connection of the two-time table is removed.

The current meter is connected to the two terminal. Key display menu, select the instrument calibration, calibration in 4 mA. If the current 4 mA IS NOT SHOWN IN THE TABLE. To calibrate the current. If 4 mA is not on the table in the current input current meter.

20 mA calibration

When the instantaneous flow meter of instantaneous flow rate and two meter ins inconsistent I the exclusion of the premise parameters set, remove the two times table for connection

The current meter is connected with the two terminals. According to the display instrument menu button, select the instrument calibration, calibration in 20 mA. If the current table shows 20 mA, you do not need to calibrate the current. If 20 mA is not on the table in the current input current meter.

3.3.2. The output pulse frequency
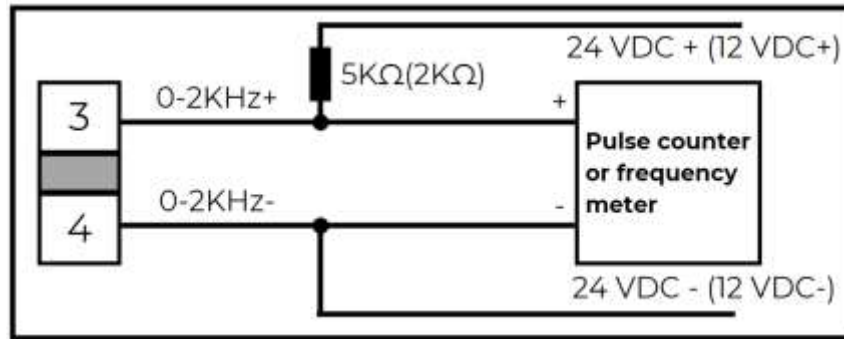
The converter frequency, pulse output is electrically isolated from the output of the passive mode (see above). Converter frequency, pulse output using the transistor output. The maximum pulse output frequency is 5 KHz, pulse output amplitude 24V. Maximum negative, Load current 0.2 A. Since the output terminal and the pulse frequency is shared, you cannot choose between two output. Users can set parameters item "Frequency output" to select the operating mode.

1. Frequency Output
   Pulse equivalent value is set to zero, turn the meter frequency output, the maximum flow rate corresponding to the upper frequency limit of the instrument that is the instrument menu of "scale flow." Se detailed set frequency capping step setup instructions
2. The equivalent output
   Set up the Meter menu "Pulse equivalent L/P" is not zero turn instrument equivalent output. Pulse output equivalent is determined by the parameter entry "Pulse equivalent L/P". See detailed setting step pulse equivalent setup instructions

3.4. meter communication

The converter has RS485, MODBUS ASC, MODBUS RTU communication function (users need to specify when ordering). Can "485 output communication protocol" parameter specified by.

4. Meter Operation

Upon completion of the electrical connection of the instrument and to confirm correct, to energize the meter. After the instrument is powered equipment to perform initialization. Wait 3 seconds after the instrument themselves to measurement mode immediately begin flow measurement and displays the current measured value flow or other diagnostic information.

4.1. Display Interface
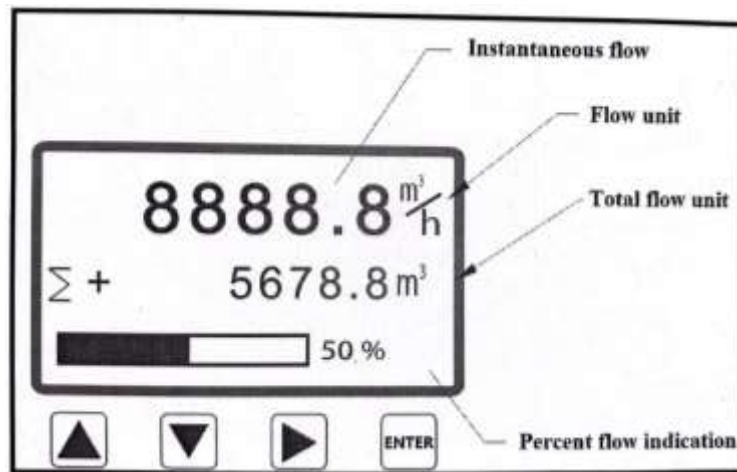
1 The first line shows the instantaneous flow rate, flow display unit can be selected in the "flow unit" function key;

2 The second line shows the cumulative total;

3 The third line shows the percentage of traffic.

4.2. Key Functions

Settings "Up" and data variables "increment" key	Settings "Down" and data variables "diminishing" key	Enter the submenu and canceled Set key	Set parameters confirmation and exit the sub-menu settings key

4.3. Menu Structure and description

Measurement Status	Configuration Menu	Parameter	Secondary Parameter
Key	Key	Key	
	1. Basic	1.1 PV Units	/
		1.2 PV Decimal	
		1.3 Total Units	
		1.4 Total Decimal	
		1.5 Damping (s)	
	2. System	2.1 New Password	Default: 0572
		2.2 Language	ENGLISH/CHINESE
		2.3 Signal	2.3.1 Qmax (m³/h) 2.3.2 Low Cutoff %

		2.4 Pulse Output	2.4.1 Freq (Hz) 2.4.2 Liter/Pulse 2.4.3 PulseWidth(ms) 2.4.4 Pulse Level
		2.5 RS485 Output	2.5.1 RS485 Protocol 2.5.2 Baudrate 2.5.3 Data Bit 2.5.4 Parity 2.5.5 Stop Bit 2.5.6 Dev Address
		2.6 Total Set	2.6.1 Clear Total 2.6.2 FWD Preset (m^3)
		2.7 Load Settings	No/Yes
		2.8 Switch Set	2.8.1 K1 Config 2.8.2 K2 Config 2.8.3 UPPER ALM VAL% 2.8.4 LOWER ALM VAL% 2.8.5 BAT SET (m^3) 2.8.6 BAT REVISE (m^3) 2.8.7 STAY TIME (ms)
	3. Calibration	3.1 4 mA	/
		3.2 20 mA	
	4. Test	4.1 4-20 mA	/
		4.2 Pulse Test	
Measurement Status ←	Configuration Menu ←	Parameter ←	Secondary Parameter
	Press ENTER key	Press ENTER key	Press ENTER key

4.4. Parameter details

| Parameter	Parameter setting range	Explanation	
PV Units	L/s, G/h, G/m, G/s, m3/h, m3/m, m3/s, L/h, L/m	S -- Seconds H – hours	m3 – cubic meters, m – minutes
Total Units	L, G, m3	L -- liters	G -- gallon
PV Decimal	1, 2, 3	Set the number of decimal places to display instantaneous flow	
Total Decimal	1, 2, 3	Setting the cumulative total number of decimal places displayed	
Damping (s)	0.1 – 99.9	Delay time	
Qmax (m^3/h)	0.0001 - 99999999	Units: m3/h	
Low Cutoff %	0.0 – 9.9	This parameter resectable small flow display as a percentage of full scale	
Freq (Hz)	100.0 – 5000.0 Hz	Maximum output frequency effective at the time of the pulse equivalent to zero	
Liter / Pulse	Systems can be greater than the minimum value	A pulse represents how many liters	
PulseWidth (ms)	0.0 – 1000.0 ms	Under normal circunstances, do not set	
Pulse Level	Active L, Active H		
Clear Total	No, Yes	Clear cumulative total	

FWD Preset (m³)		When the instrument is replaced, you can enter the previous cumulative total, continued accumulation
4 mA Trim	3.000 – 5.000	Calibration output signal when no traffic
20 mA Trim	19.000 – 21.000	The output signal of the full-scale calibration
K1 config	NONCE, UPPER ALARM, LOWER, ALARM, BATCH CONTROL	Set K1 switch
K2 config	NONE, UPPER ALARM, LOWER ALARM, BATCH CTRL	Set K2 switch
UPPER ALM VAL%	1-99	For setting the alarm value
LOWER ALM VAL%	1-99	
BAT SET(m³)		For setting quantitative control value
STAY TIME (ms)	1-9999 ms	Relay switch operation holding time

5. Flow sensor installation

Flowmeter in the pipeline to ensure correct installation position to get the right traffic. In order to be fully turbulent, upstream of the flowmeter to allow sufficient length of straight pipe it is very important.
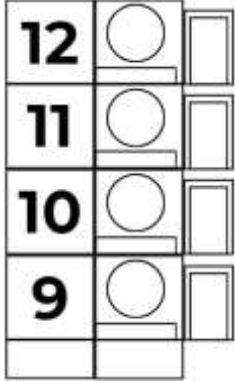Such a stable flow condition can ensure accurate measurement of turbine flow meter.
The following figure illustrates a diagram of the installation of plastic or metal impeller flow meter, the minimum recommended upstream and downstream straight pipe length requirements.
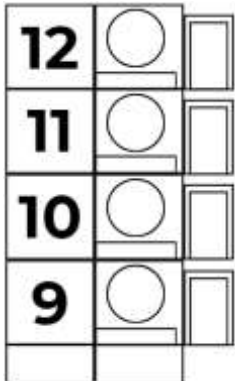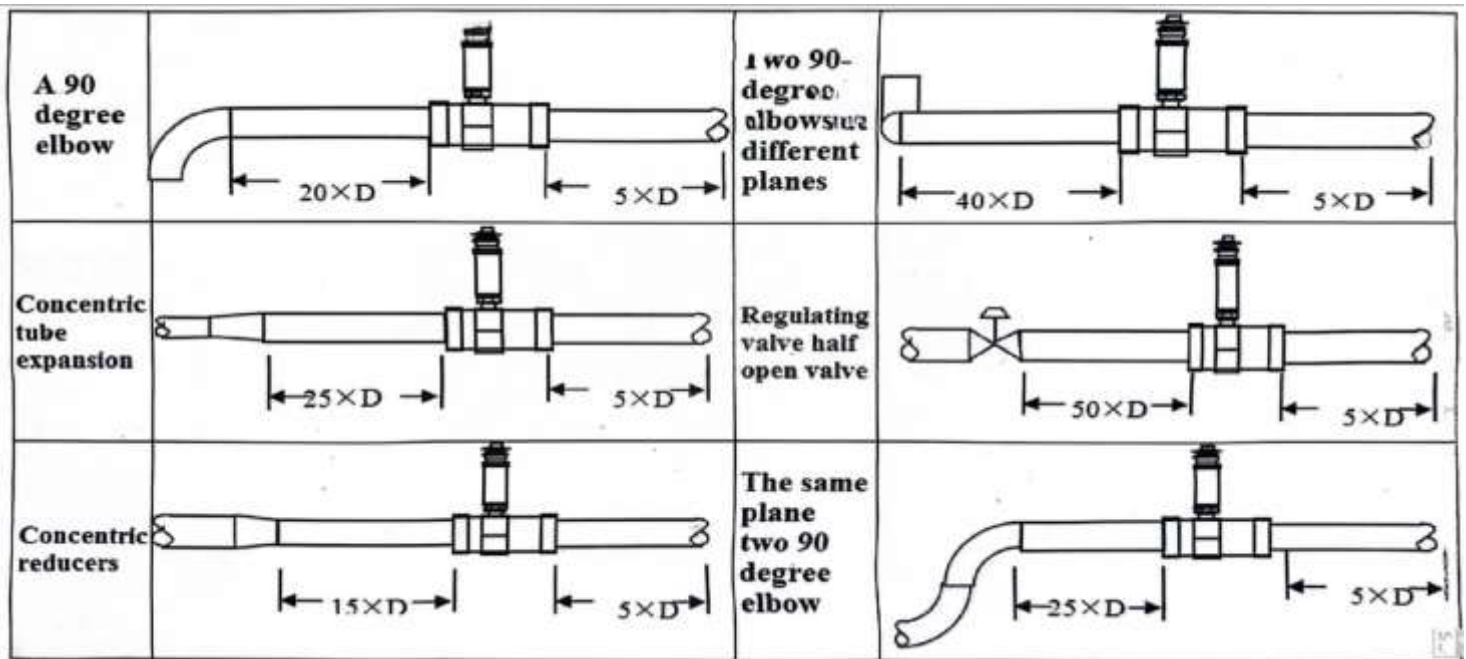
Note: Inmany case, please select the flowmeter upstream as far as possible without disturbing the straight pipe.

LWGY type turbine flow sensor and instrument wiring instructions:

LWGY type turbine flow sensor	Explanation	
Red line	Then display instrument + 5V output (pin 12)	
Yellow line	Then display instrument signal input (pin 11)	
Black line & blue line	Then display instrument ground line (pin 10)	
Black shield	Then display instrument ground shield (pin 9)	

FL-11 type turbine flow sensor and instrument wiring instructions:

FL-11 type turbine flow sensor	Explanation	
Red line	Then display instrument + 5V output (pin 12)	
Blue line	Then display instrument signal input (pin 11)	
Black line	Then display instrument ground line (pin 10)	
X	Then display instrument ground shield (pin 9)	

6. The communication function instrumentation

The converter has RS485, MODBUS ASC, MODBUS RTU communication function (users need to specify when ordering). Can "485 output communication protocol" parameter specified by. Meter Communication Interface specific technical description see special offer "Protocol".

7. Flowmeter electrode matching setting:

1. Enter the menu item [2.3] signal processing menu, and enter the corresponding cut-off minimum flow [2.3.2] and maximum flow [2.3.1] into the meter according to the pipe diameter.

2. Input of sensor K coefficient:

In the normal display state, press and hold the ▲ key to enter the calibration menu, and press the ▼ key to display the password input items.

Enter the password: 0311, enter the calibration menu, modify the K coefficient. After the modification is completed, long press the ▲ key to return to the measurement state.

K factor of the sensor

K-factor (K factor) is the number of pulses per unit volume of fluid. The meter is calibrated and compared with other measuring devices that meet the accuracy requirements before being used. This coefficient is a fixed value, wich is the actual coefficient obtained by the flowmeter manufacturer after calibration for each meter, and has nothing to do with the initial design. The K coefficient of the sensor is also different due to different pipe materials.

FL-11 series flow sensor				LWGY series turbine flow sensor			
model	Flow range	working pressure medium temperature	K - factor	model	Flow range	working pressure medium temperature	K - factor
FL11-DN15	0.6 - 6 m3/h		180400	LWGY-DN15	0.6 - 6 m3/h		
FL11-DN20	0.8 - 8 m3/h		109100	LGWY-DN20	0.8 - 8 m3/h		
FL11-DN25	1 - 10 m3/h		70100	LGWY-DN25	1 - 10 m3/h	≤ 6.3 Mpa ≤ 80°C	
FL11-DN32	1.5 - 15 m3/h		39500	LGWY-DN32	1.5 - 15 m3/h		
FL11-DN40	2 - 20 m3/h		32800	LGWY-DN40	2 - 20 m3/h		
FL11-DN50	4 - 40 m3/h	≤ 1.25 Mpa ≤ 80°C	21000	LGWY-DN50	4 - 40 m3/h		
FL11-DN65	7 - 70 m3/h		14100	LGWY-DN65	7 - 70 m3/h		
FL11-DN80	10 - 100 m3/h		8700	LGWY-DN80	10 - 100 m3/h		
FL11-DN100	20 - 200 m3/h		5100	LGWY-DN100	20 - 200 m3/h	≤ 2.5 Mpa ≤ 80°C	
FL11-DN125	25 - 250 m3/h		3000	LGWY-DN125	25 - 250 m3/h		
FL11-DN150	30 - 300 m3/h		2000	LGWY-DN150	30 - 300 m3/h		
FL11-DN200	80 - 800 m3/h		1100	LGWY-DN200	80 - 800 m3/h		