

Flow

Thermal Flow Sensor Operation Manual



Version Number: 01082020

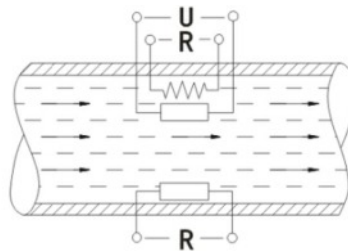
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1.Principle

BL-FRC series electronic thermal flow switch, based on the thermal principle, enclosed in a closed probe contains two resistors, one of which is heated as the sense resistor and the other is not heated as the base quasi-resistance, when the medium flows, the heat on the heating resistor is taken away, and the resistance value is changed.

Two resistance differences are used as a basis for determining the flow rate. The probe is anti-fouling coating and can be effective, it prevents the dirt, rust and other dirt in the pipeline from adhering, has stronger anti-pollution ability and is more stable in work.



2.Application

Primarily suitable for pneumatic and hydraulic systems, it can be used for shut-off monitoring of circulating water, cutting fluids and lubricating oils, as well as idling protection of pumps.

3.Specification

The unique tapered probe design prevents the entanglement of the winding in the media. Full waterproof case body design, unique waterproof adjustment knob, can be adjusted without disassembling the sealing screw, it is more reliable.

Applicable to a wide range of pipe diameters, free to adjust the set point, optional anti-corrosion type, withstand voltage up to 100Bar, the indicator light directly shows the flow, optional relay, analog output or analog, switch output integrated output.

BL-FRC series electronic thermal flow switch can monitor the liquid flow in the pipeline in real time, no moving parts, maintenance-free, easy to install, one model is used for a variety of pipe diameter requirements, provide switching output, and adopt 6 The LED display the fluid flow rate status in real time, enabling the following monitoring functions: media flow, reduced/increased flow rate; media presence/absence; media flow/stationary; monitoring fluid flow rate within the pipe, shut-off monitoring or preventing pump idling. It is widely used in petrochemical, electric power, metallurgy, steel mills, paper making, food processing, water treatment, battery factories and other industries. Gas-liquid dual-purpose, for pneumatic and hydraulic systems, for shut-off monitoring of circulating water, cutting fluids and lubricants, and idling protection of pumps.

4. Technical Data

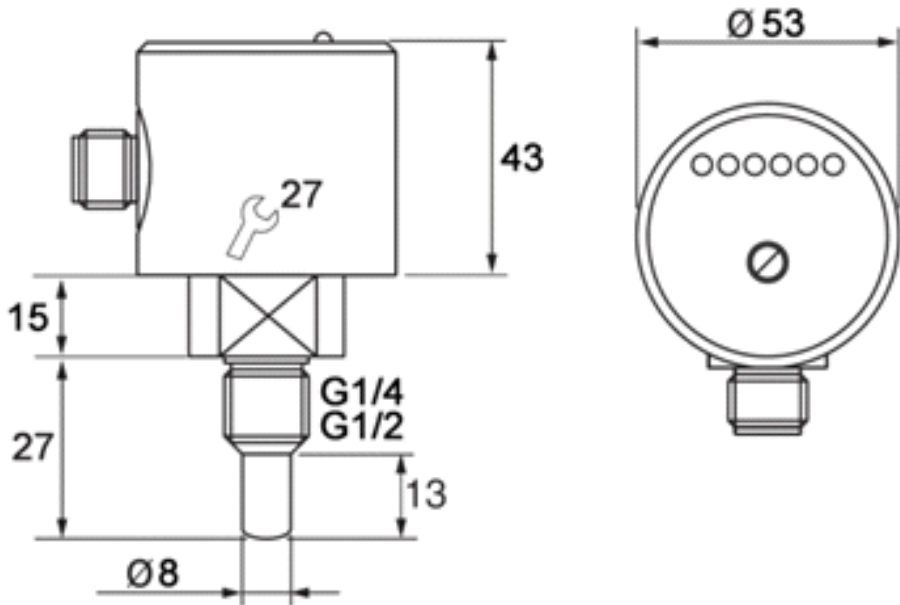
Setup range	1...150cm/s (water)
	3...300cm/s (oil)
	20...2000 (air)
Signal output	NPN
	PNP
	Relay
	Analog (4...20mA)
	Normally open + normally closed (SPDT)
Power supply	24V ± 20% DC
Power	Max. 400mA (PNP or NPN type) up to 1A@48VAC/DC (relay type)
No-load current	Up to 80mA
Flow indication	LED
Setting method	Potentiometer setup
Withstand voltage range	100bar
Medium temperature change	≤4°C/s
Response time	1...13s, typical value 2s
Initialization time	About 8s
Electrical protection	Reverse phase
	Short circuit
	Overload protection
Protection class	Ip67
Medium temperature	-20...+100°C
Ambient temperature	-20...+80°C
Storage temperature	-20...+100°C
Wiring method	M12 connector
Repeatability	±2%
Material of Probe	Stainless steel housing

5. Model Selection

Model Code							Selection
BL-FRC	-□	/□	/□	/□	/□	/□	
Type	A						Insertion type
	B						Display type
	C						Pipe online type
Connection	G1						Interface Thread G1/2"(Insertion type)
	G2						Interface Thread G1/4" (insertion type)
	H1						Male connection□on pipeline□
	H2						Flange connection(on pipeline□
Power		G					24V DC ± 20%
Output			P				PNP output(ON□OFF(SPDT)□
			N				NPN output(ON□OFF(SPDT)□
			C				Relay output(ON + OFF(SPDT))
Material			S4				SS304
			S6				SS316
Connection			C				Connector type
			Z				Along with wire cable
Optional accessories - for connector type							

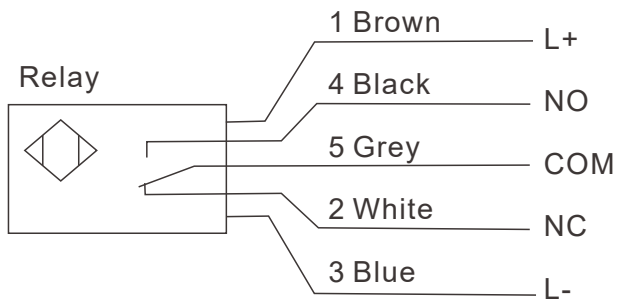
ZI04-	□	/□	/□	□	Selection		
	ZL				M12 four core cable connector		
	SL				Self-wiring M12 with cable connector		
Material		PU			PUR material		
Wire Cable			2		2m		
			5		5m		
			10		10m		
Connector Type				Z	Straight line		
				W	Curved line		
(Note: The relay type requires 5-core output!)							

6.Dimension

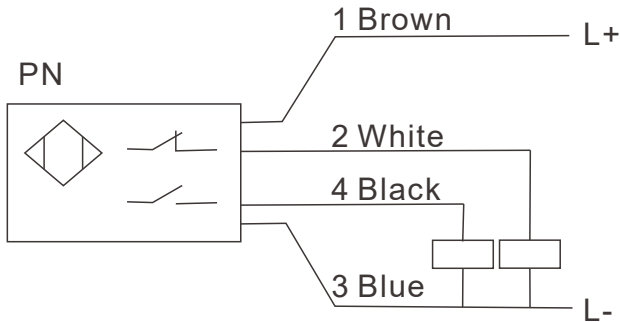


7.Electrical Wiring

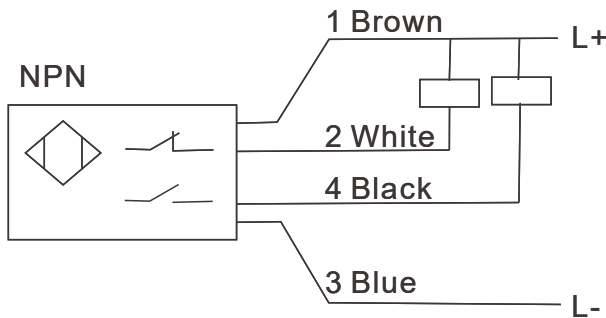
Relay type output wiring



PNP type output wiring



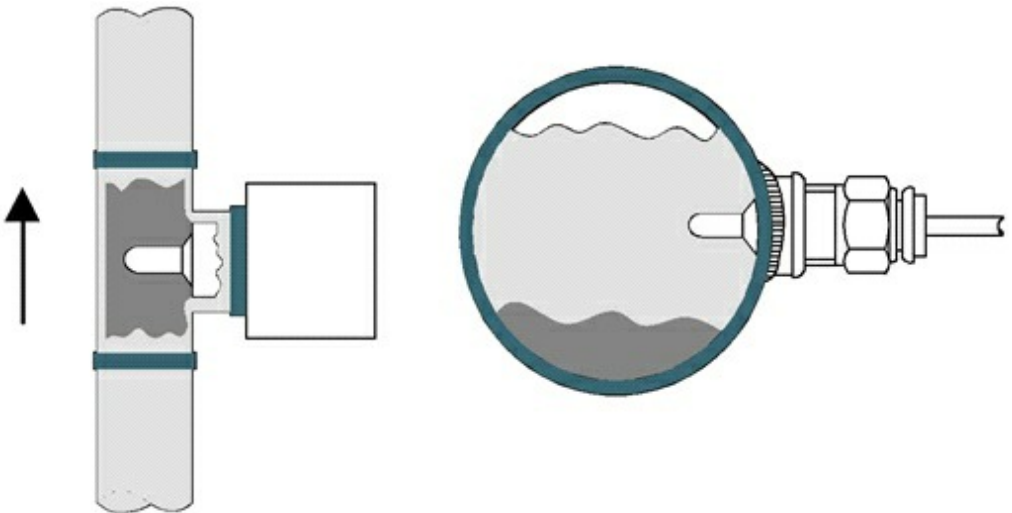
NPN type output wiring



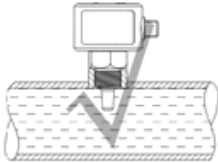
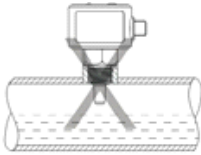
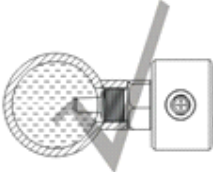
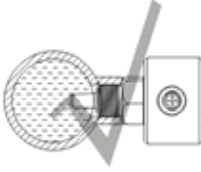
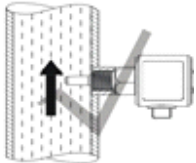
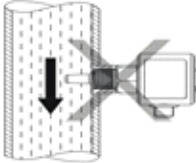
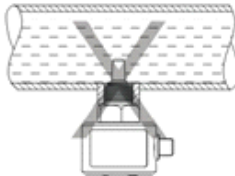
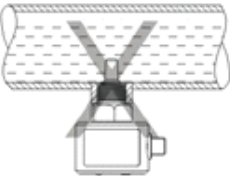
Note: According to the wiring diagram, the wiring is correctly connected. When the probe touches the medium, when the probe touches the medium, the indicator light is observed. If the red light is on, it can be adjusted counterclockwise. Only the timing adjustment can be made. If the green light is on, it can only be adjusted counterclockwise. Cannot adjust clockwise.

- | | | | | | |
|----------------------------------|-----------------------------|-----------------------|-------------------------|----------------------------------|--|
| <input checked="" type="radio"/> | The red LED is ON: | <input type="radio"/> | The yellow LED is ON: | <input type="radio"/> | The yellow and green LED are ON: When the flow velocity is bigger than the set value, the flow velocity is becoming bigger and bigger while the green light is more brighter and brighter. |
| <input type="radio"/> | The flow is cut off or the | <input type="radio"/> | The flow velocity is | <input type="radio"/> | |
| <input type="radio"/> | flow velocity is lower than | <input type="radio"/> | equal to the set value. | <input checked="" type="radio"/> | |
| | the set value. The switch | <input type="radio"/> | | <input checked="" type="radio"/> | |
| | is released or the analog | <input type="radio"/> | | <input type="radio"/> | |
| | is at 4-20mA. | <input type="radio"/> | | <input type="radio"/> | |

8.Cautions for Installation



When installed vertically, the flow should be flows from bottom to top in the pipe section

<p>1. Horizontal Installation This installation method can be used when the medium in the pipeline is full. However, when the liquid in the pipeline is not full, this installation method cannot be used because the probe of the flow switch may not be in contact with the medium and cannot work normally.</p>		
<p>2. Side Installation This installation method can be used when the medium in the pipeline is full or not full.</p>		
<p>3. Vertical Installation When installed in a vertical pipe, it should be installed under the flow pipe section from bottom to top.</p>		
<p>4. Flip Installation This installation method is forbidden. This installation method will cover the head at the bottom of the pipe, causing the flow switch to not work properly. If the sealing is not tight during installation, the leakage water will be soaked for a long time, causing the flow switch to be damaged, and this installation method is not conducive to setting the parameters of the flow switch.</p>		

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