



# ACARPS

## YF-B5-S Stainless Steel Flow Sensor Technical Documentation

### Product features:

1. This product is light and convenient in appearance, small in size and easy to install.
2. The inside of the impeller is inlaid with stainless steel beads, which is always wear-resistant.
3. Hall components are imported from Germany and packaged with potting glue to prevent water and never age.
4. All raw materials are in line with ROHS testing standards



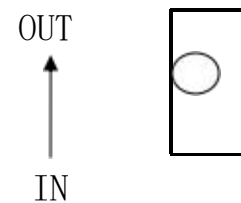
## I. Product introduction:

The water flow sensor is mainly composed of plastic valve body, water flow rotor assembly and Hall sensor. It is installed in the water heater inlet end, used to detect the inlet flow rate, when the water through the water flow rotor assembly, the magnetic rotor rotates and the speed changes with the flow rate, and the Hall sensor outputs the corresponding pulse signal and feeds it back to the controller, which judges the water flow rate and controls it.

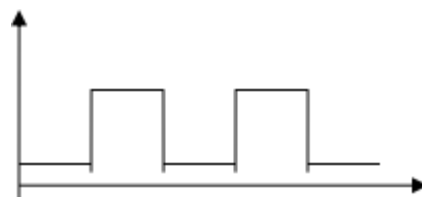
## II. Precautions for use

- ❖ Violent impact and chemical erosion are strictly prohibited.
- ❖ Throwing or bumping is strictly prohibited.
- ❖ It can be mounted horizontally or vertically.
- ❖ The medium temperature should not exceed 1200 °C

Installation direction diagram

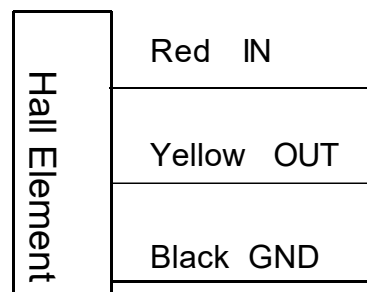


## III. Output waveform:



Duty Cy=40%~60%

## IV. Lead out cable mode:



## V .technical specification

Range of application		Suitable for fully automatic gas water heaters
<b>Basic parameter</b>	1.Minimum rated operating voltage	DC 3.5V-24V
	2.The maximum working current	15mA (DC 5V)
	3.Working voltage range	DC3.5~24 V
	4. Load capacity	≤10 mA (DC 5V)
	5.The use of temperature range	≤80°C
	6.Use humidity range	35%~90%RH(Frost-free state)
	7.Allow pressure	The water pressure is below 1.75Mpa.
	8.Storage temperature	-25~+80°C
	9.Storage humidity	25%~95%RH
<b>Technical requirements</b>	1.Output pulse high level	>DC 4.5 V (Input voltage: DC 5 V)
	2.Output pulse low level	<DC 0.5 V (Input voltage: DC 5 V)
	3.Accuracy (flow -- pulse output)	1~30L/min: 3%
	4.Output pulse duty cycle	50±10%
	5.Output rise time	0.04μS
	6.Output drop time	0.18μS
	7.Flow-pulse characteristics	Level test pulse frequency (Hz)= [15*Q-3]±5%(level test) (Q is flow L/min)
	8.Impact resistance	The product is well packed, from 50cm height X, Y, Z direction free fall to the concrete surface without abnormality, accuracy change within 5%.
	9.Insulation resistance	(DC 500V)
	10.Heat resistance	Placed in 80±3°C environment for 48h, return to normal temperature 1-2h without abnormality, and the parts have no cracks, slack, expansion, deformation and other phenomena, and the accuracy changes within 10%.
	11.Cold endurance	Placed in -20±3°C environment for 48h, return to normal temperature 1-2h without abnormality, and the parts have no cracks, slack, expansion, deformation and other phenomena, and the accuracy changes within 10%.
	12.Moisture-proof	After being placed at 40±2°C and relative humidity 90%-95%RH for 72h, the insulation resistance should be above 1MΩ.
	13.Pull strength	The tension of 10N is applied on the leading line for 1 minute, without loosening or breaking, and the performance does not change.
	14.Durability	At normal temperature, 0.1MPa water pressure is passed through the water inlet to turn on 1S and turn off 0.5S as a cycle. There is no abnormality in the test for 300,000 times.

Parameter constant of the flowmeter \* Flow rate (L/min) \* time (second) The data obtained is the number of pulses

897 pulses a liter of water

## VI.Ex-factory inspection:

Item	Measuring tool	Technical requirements			
<b>Appearance</b>	Visual inspection	The surface of the valve body and accessories is smooth, no deformation, deburring, no obvious marks, and the color is consistent; No stains; Whether the accessories are firm and correct; Whether the trademark, QC label and production date are correctly affixed.			
<b>Performance</b>	1.Regulated power supply 2.Oscilloscope 3.Requency meter 4. Megohm meter 5. Thermometer 6. Hygrometer 7.Test bench	1. Pulse frequency (Hz)=[15*Q-3] ±5% (Q-- flow L/min) 2. Putput pulse high level: >DC 4.5V (input voltage DC 5V) 3. Output pulse low level: <DC 0.5V (input voltage DC 5V) 4. Output pulse duty cycle: 50±10% 5. The working voltage range :3.5 ~ 24V 6. Allowable pressure: 1.75 Mpa below 7. Absolute edge electrical resistance: more than 100 MΩ			
<b>Size</b>	Vernier caliper	Whether the installation dimensions of the lead wire and valve body conform to the drawing dimensions			
<b>Quantity</b>					
Date of establishment		Establishment		Date of change	
Formulate reason		Approve		Reason for change	

## VII.Process flow card

Process number	Process name	Requirement	Department in charge		
(1)	Components (accessories)	Performance parameters characteristics, dimensions, appearance, etc.	Quality Inspection Department		
(2)	Valve body leakage detection	Under the water pressure of 1.75Mpa, no leakage was observed for 1 minute.	Assembly shop		
(3)	Install water flow rotor assembly	1. Detect the size of parts 2. Detect the magnetic field strength 3. Bonding firmly 4. After assembly, rotation is flexible	Assembly shop		
(4)	Retaining ring	1. Detect the size of parts 2. Confirm that the rotor rotates flexibly 3. Ensure non-axial rotation 4. Press in place 5. Test size L	Assembly shop		
(5)	Assembled hall sensor	1. Detect the size of parts 2. Test performance 3. The torque is 1-2N.m 4. Firmly installed	Assembly shop		
(6)	Assembled	1. The component lead and appearance meet the requirements 2. The installation position is correct	Quality inspection department Assembly shop		
(7)	Assembly test and inspection	1. Check basic parameters and appearance 2. The test process is strictly prohibited short circuit, too high and too low voltage to avoid component damage and error	Assembly shop		
(8)	Install steady flow assembly	Fully assembled, in place and secured	Assembly shop		
(9)	Packaging	Trademark and label, product appearance, quantity inspection	Assembly shop		
(10)	Finished products are stored	Product quantity check and verification	Finished product warehouse		
(11)	Ex-factory sampling inspection	Basic parameters, lead lines, Installation size, appearance	Quality inspection department		
Date of establishment		Establishment		Date of change	
Formulate reason		Approve		Reason for change	

VIII.Flow -- Pulse characteristics refer to Table F=15\*Q-3

Flow	Pulse	Error	Minimum value	Maximum value	Flow	Pulse	Error	Minimum value	Maximum value
2	27	±3%	26.2	27.8	6.1	90.5	±5%	86.0	95.0
2.1	28.5	±3%	27.6	29.4	6.2	92	±5%	87.4	96.6
2.2	30	±3%	29.1	30.9	6.3	93.5	±5%	88.8	98.2
2.3	31.5	±3%	30.6	32.4	6.4	95	±5%	90.3	99.8
2.4	33	±3%	32.0	34.0	6.5	96.5	±5%	91.7	101.3
2.5	34.5	±3%	33.5	35.5	6.6	98	±5%	93.1	102.9
2.6	36	±3%	34.9	37.1	6.7	99.5	±5%	94.5	104.5
2.7	37.5	±3%	36.4	38.6	6.8	101	±5%	96.0	106.1
2.8	39	±3%	37.8	40.2	6.9	102.5	±5%	97.4	107.6
2.9	40.5	±3%	39.3	41.7	7	104	±5%	98.8	109.2
3	42	±3%	40.7	43.3	7.1	105.5	±5%	100.2	110.8
3.1	43.5	±3%	42.2	44.8	7.2	107	±5%	101.7	112.4
3.2	45	±3%	43.7	46.4	7.3	108.5	±5%	103.1	113.9
3.3	46.5	±3%	45.1	47.9	7.4	110	±5%	104.5	115.5
3.4	48	±3%	46.6	49.4	7.5	111.5	±5%	105.9	117.1
3.5	49.5	±3%	48.0	51.0	7.6	113	±5%	107.4	118.7
3.6	51	±3%	49.5	52.5	7.7	114.5	±5%	108.8	120.2
3.7	52.5	±3%	50.9	54.1	7.8	116	±5%	110.2	121.8
3.8	54	±3%	52.4	55.6	7.9	117.5	±5%	111.6	123.4
3.9	55.5	±3%	53.8	57.2	8	119	±5%	113.1	125.0
4	57	±3%	55.3	58.7	8.1	120.5	±5%	114.5	126.5
4.1	58.5	±3%	56.7	60.3	8.2	122	±5%	115.9	128.1
4.2	60	±3%	58.2	61.8	8.3	123.5	±5%	117.3	129.7
4.3	61.5	±3%	59.7	63.3	8.4	125	±5%	118.8	131.3
4.4	63	±3%	61.1	64.9	8.5	126.5	±5%	120.2	132.8
4.5	64.5	±3%	62.6	66.4	8.6	128	±5%	121.6	134.4
4.6	66	±3%	64.0	68.0	8.7	129.5	±5%	123.0	136.0
4.7	67.5	±3%	65.5	69.5	8.8	131	±5%	124.5	137.6
4.8	69	±3%	66.9	71.1	8.9	132.5	±5%	125.9	139.1
4.9	70.5	±3%	68.4	72.6	9	134	±5%	127.3	140.7
5	72	±3%	69.8	74.2	9.1	135.5	±5%	128.7	142.3
5.1	73.5	±3%	71.3	75.7	9.2	137	±5%	130.2	143.9
5.2	75	±3%	72.8	77.3	9.3	138.5	±5%	131.6	145.4
5.3	76.5	±3%	74.2	78.8	9.4	140	±5%	133.0	147.0
5.4	78	±3%	75.7	80.3	9.5	141.5	±5%	134.4	148.6
5.5	79.5	±3%	77.1	81.9	9.6	143	±5%	135.9	150.2
5.6	81	±3%	78.6	83.4	9.7	144.5	±5%	137.3	151.7
5.7	82.5	±3%	80.0	85.0	9.8	146	±5%	138.7	153.3
5.8	84	±3%	81.5	86.5	9.9	147.5	±5%	140.1	154.9
5.9	85.5	±3%	82.9	88.1	10	149	±5%	141.6	156.5