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SagaSave WGP-HA8037B-LF

YF-S402B Water Flow Sensor Instruction Manual

Model: WGP-HA8037B-LF | Brand: SagaSave

1. Product Overview

The YF-S402B Water Flow Sensor is a compact and reliable device designed to measure the flow rate of liquids. It incorporates a magnetic Hall effect sensor that outputs an electrical pulse for each revolution of its internal impeller, providing precise flow data. This sensor is suitable for various applications requiring accurate fluid measurement, such as water heaters, coffee machines, and water purification systems.



Figure 1: Top view of the YF-S402B Water Flow Sensor, showing the main body, wiring, and connection points.

Key Features:

- Integrated magnetic Hall effect sensor for pulse output.
- Sensor sealed from water pipe for safety and dryness.
- Constructed from food-grade material, ensuring non-toxicity and long lifespan.
- Lightweight, agile contour, small size, and easy installation.
- Wide application range: water heaters, coffee machines, water purifiers, drinking fountains, beverage machines, smart card equipment, etc.

2. Specifications

Parameter	Value
Model	YF-S402B

Parameter	Value
Pipe Thread	G1/4" (6.3mm)
Rated Voltage	DC 5V
Operating Voltage Range	DC 5V ~ 24V
Water Pressure Resistance	0.35 MPa
Insulation Resistance	> 100 MΩ
Accuracy (0.3 ~ 3 L/min)	± 2%
Flow Pulse Characteristic	F = (38 x Q) ± 2% (Q = L/min)
Output High Level Pulse	> DC 4.7V (Input DC 5V)
Output Low Level Pulse	< 0.5V
Output Pulse Duty Cycle	50% ± 10%
Color	White
Package Dimensions	17 x 14 x 3 cm
Weight	40 grams
Manufacturer Reference	WGP-HA8037B-LF

3. Setup and Installation

The YF-S402B water flow sensor is designed for easy integration into existing water systems. Follow these steps for proper installation:

3.1. Placement

1. Install the sensor at the water inlet of your appliance (e.g., water machine, coffee maker) to detect the influent flow.
2. Ensure the flow direction matches the arrow indicated on the sensor body.
3. The sensor uses a G1/4" tube connection. Ensure your plumbing is compatible or use appropriate adapters.

3.2. Wiring

The sensor comes with a 3-wire connection. Connect them as follows:

- **Red (IN)**: Connect to the positive power supply (Anode).
- **Yellow (OUT)**: This is the signal output line. Connect to your microcontroller or data acquisition system.
- **Black (GND)**: Connect to the negative power supply (Cathode/Ground).



Figure 2: Various views of the YF-S402B sensor, illustrating its compact size and wiring connections.

4. Operating Instructions

The YF-S402B sensor operates by detecting the rotation of an internal impeller caused by water flow. The Hall effect sensor converts this rotation into electrical pulses, which can then be read by a compatible device (e.g., microcontroller, PLC) to calculate the flow rate.

4.1. Flow Rate Calculation

The sensor's output pulse characteristic is given by the formula: **F = (38 x Q) ± 2%**, where:

- **F** is the frequency of the output pulse in Hz.
- **Q** is the flow rate in Liters per minute (L/min).

To determine the flow rate (Q) from the measured frequency (F), you can rearrange the formula: **Q = F / 38**. Ensure your reading device can accurately measure pulse frequency.



Figure 3: Internal view of the sensor, highlighting the impeller mechanism responsible for pulse generation.

5. Maintenance

The YF-S402B water flow sensor is designed for durability and requires minimal maintenance. Adhere to the following guidelines to ensure optimal performance and longevity:

- **Regular Inspection:** Periodically check the sensor and its connections for any signs of leaks, damage, or corrosion.
- **Cleanliness:** While the Hall effect sensor is sealed, ensure the external body and connections remain clean and dry to prevent electrical issues.
- **Avoid Extreme Conditions:** Do not expose the sensor to pressures exceeding 0.35 MPa or temperatures outside its specified operating range.
- **Food-Grade Material:** The sensor is made from food-grade material, making it safe for use in drinking water systems. No special cleaning procedures are typically required for internal components under normal operation.

6. Troubleshooting

If you encounter issues with your YF-S402B water flow sensor, consider the following common problems and solutions:

6.1. No Signal Output

- **Check Power Supply:** Ensure the sensor is receiving the correct voltage (DC 5V to 24V) and that the connections (Red IN, Black GND) are secure.
- **Verify Wiring:** Confirm that the Yellow OUT wire is correctly connected to your reading device and that there are no breaks in the cable.
- **Ensure Flow:** Confirm that water is actually flowing through the sensor and that the flow rate is within the specified range (0.3 to 6 L/min).

6.2. Inaccurate Readings

- **Check Flow Rate:** Ensure the actual flow rate is within the sensor's operational range (0.3 to 6 L/min). Readings outside this range may be inaccurate.
- **Verify Pulse Interpretation:** Double-check your calculation logic (F = 38 x Q) and ensure your reading device is accurately measuring the pulse frequency.
- **Air Bubbles:** Large air bubbles or inconsistent flow can affect accuracy. Ensure a steady, bubble-free flow through the sensor.
- **Sensor Orientation:** While less common for this type, ensure the sensor is installed correctly according to the flow direction arrow.

7. Warranty and Support

Information regarding specific warranty terms for the YF-S402B Water Flow Sensor is not available in this manual. For any warranty claims, technical support, or inquiries about spare parts, please contact your original point of purchase or the manufacturer, SagaSave, directly. Please note that information on spare parts availability is currently unavailable.

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