DIGITEN FL-808

DIGITEN G1 Water Flow Sensor (Model FL-808) Instruction Manual

Model: FL-808 | Brand: DIGITEN

Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the DIGITEN G1 Water Flow Sensor, Model FL-808. This Hall effect flow sensor is designed for accurate measurement of liquid flow within a range of 1 to 60 liters per minute. Please read this manual thoroughly before use to ensure proper function and safety.

Product Overview

The DIGITEN G1 Water Flow Sensor (Model FL-808) is a robust and reliable device for measuring water flow. It features G1 (0.5 inch) threaded connections for easy integration into various systems. The sensor outputs a square wave pulse signal proportional to the flow rate, making it suitable for microcontrollers and other electronic systems.

Key Features:

- **Durable Construction:** Waterproof, heat-resistant, pressure-resistant, and cold-resistant design.
- **Wide Flow Range:** Measures flow from 1 to 60 Liters per minute.
- **Easy Installation:** Simple G1 (0.5 inch) threaded connections.
- **Pulse Output:** Generates a square wave pulse signal for flow rate calculation.
- **RoHS Compliant:** Meets environmental standards.

Safety Information

- Ensure the power supply is disconnected before installation or maintenance.
- Do not exceed the maximum operating pressure of 1.75 MPa.
- Verify correct wiring connections to prevent damage to the sensor or connected equipment.
- Avoid installing the sensor in locations with extreme vibrations or corrosive environments.
- This device is intended for water flow measurement. Do not use with other liquids without verifying compatibility.

Package Contents

- 1 x DIGITEN G1 Water Flow Sensor (Model FL-808)

Technical Specifications

Model	FL-808
Material	Metal (Internal components), Plastic (Housing)
Inlet/Outlet Connection Size	G1 (0.5 inch) Threaded
Flow Rate Range	1 - 60 L/min
Max Operating Pressure	1.75 MPa (17.5 Bar)
Operating Voltage Range	DC 5 - 24 V
Operating Current	Cannot exceed 10 mA (at DC 5V)
Output Signal	Square Wave Pulse
Frequency Formula	F = 4.8 * Q (L/min) ± 2%
Output Pulse per Liter	Approximately 450 pulses/liter
Operating Temperature	≤ 80°C
Operating Humidity	35% - 90% RH
Storage Temperature	-25°C to +80°C
Storage Humidity	25% - 95% RH
Insulation Resistance	> 100 MΩ
Cable Length	15 cm

Product Weight	80 grams

Setup and Installation

1. Mechanical Installation

The flow sensor features G1 (0.5 inch) male threaded connections on both ends. Ensure the flow direction arrow on the sensor body aligns with the intended water flow in your system. Apply appropriate thread sealant (e.g., PTFE tape) to prevent leaks. Tighten connections securely but do not overtighten.

Figure 1: Front view of the DIGITEN G1 Water Flow Sensor, showing the G1 threaded connections and the product label.

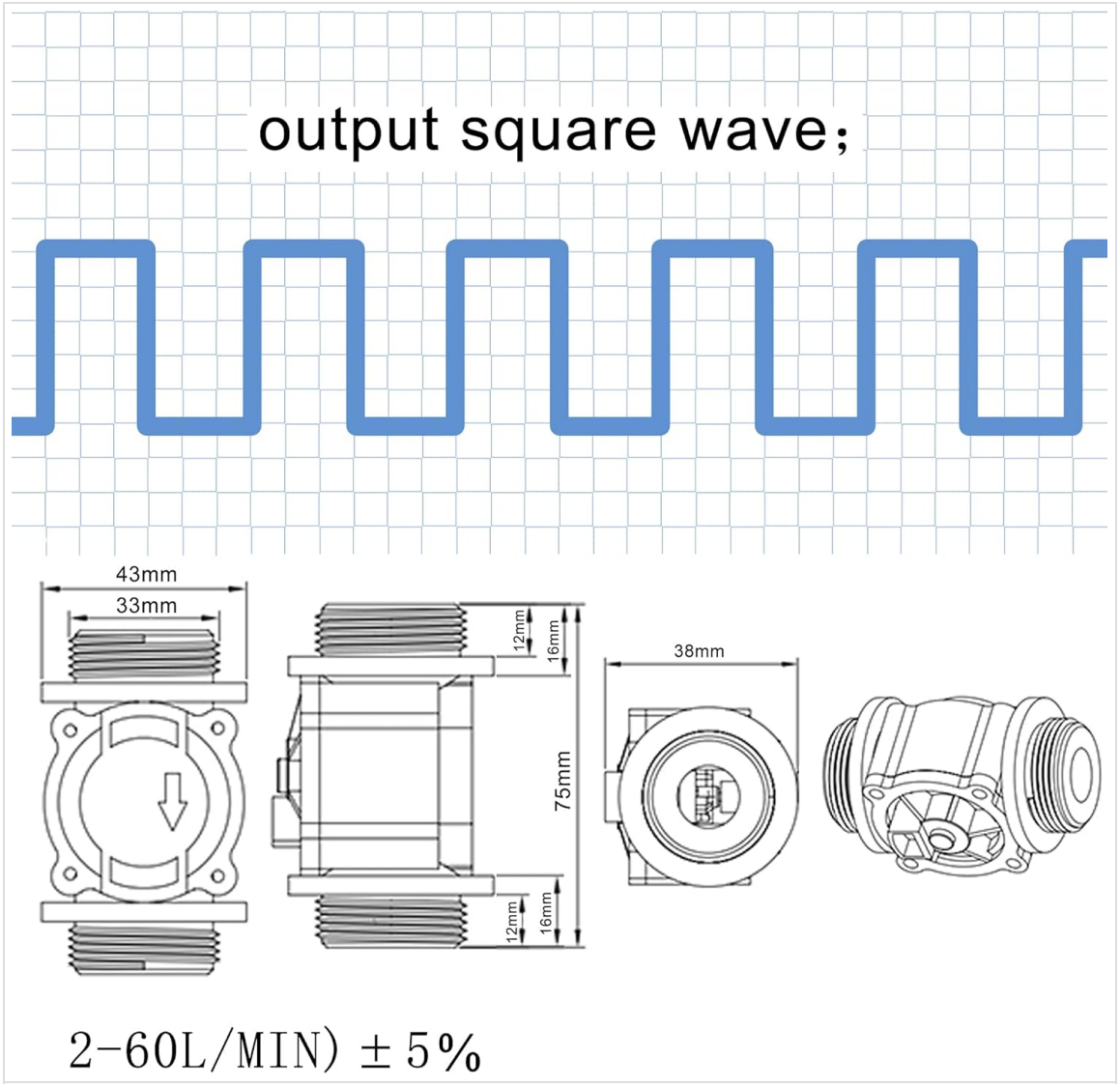

Figure 2: Technical drawing illustrating the dimensions and internal structure of the DIGITEN G1 Water Flow Sensor.

2. Electrical Wiring

The sensor has a 3-wire connection. Connect the wires as follows:

- **Red Wire:** VCC (+) - Connect to DC 5V to 24V power supply.
- **Black Wire:** GND (-) - Connect to ground.
- **Yellow Wire:** Signal Output - Connect to your microcontroller or data acquisition system's input pin.

Ensure the operating voltage is within the specified range of DC 5-24V. The current drawn by the sensor should not exceed 10mA at 5V DC.

Figure 3: Close-up view of the sensor's wiring connections: Red (VCC), Black (GND), and Yellow (Signal).

Figure 4: Detailed view of the 3-pin connector attached to the sensor's cable.

Operating Instructions

Principle of Operation

The DIGITEN G1 Water Flow Sensor uses a Hall effect sensor to detect the rotation of an internal turbine. As water flows through the sensor, it spins a turbine, and a magnet attached to the turbine generates a series of electrical pulses. The frequency of these pulses is directly proportional to the flow rate of the water.

Flow Rate Calculation

The output signal is a square wave. The flow rate (Q in L/min) can be calculated from the measured frequency (F in Hz) using the following formula:

F = 4.8 * Q (L/min)

Therefore, to find the flow rate:

Q (L/min) = F / 4.8

The sensor provides approximately 450 pulses per liter of water. The accuracy is ±2%.

Figure 5: Internal view of the sensor, highlighting the turbine mechanism responsible for pulse generation.

Figure 6: The sensor with its label clearly visible, detailing model number, working range, and wiring information.

Maintenance

- **Regular Inspection:** Periodically check for any signs of leaks at the connections or damage to the sensor body and wiring.
- **Cleaning:** If the sensor's accuracy degrades, it may be due to debris accumulation inside the turbine. Disconnect power and water supply, then carefully remove the sensor for inspection and cleaning. Use a soft brush and clean water to remove any obstructions.
- **Storage:** If storing the sensor for an extended period, ensure it is clean, dry, and kept within the specified storage temperature and humidity ranges (-25°C to +80°C, 25%-95% RH).

Troubleshooting

Problem	Possible Cause	Solution
No signal output	◦ Incorrect wiring (VCC, GND, Signal) ◦ No power supply ◦ Sensor malfunction ◦ No water flow	◦ Check wiring against the diagram. ◦ Verify power supply (DC 5-24V) is connected and active. ◦ Ensure water is flowing through the sensor. ◦ Test with a known good sensor if possible.

Inaccurate flow readings	◦ Debris inside the sensor ◦ Air bubbles in the water line ◦ Incorrect frequency calculation formula ◦ Sensor installed incorrectly (e.g., against flow direction)	◦ Clean the sensor as described in the Maintenance section. ◦ Bleed air from the water system. ◦ Double-check the calculation formula (F = 4.8 * Q). ◦ Verify the flow direction arrow on the sensor.
Leaks at connections	◦ Insufficient thread sealant ◦ Loose connections ◦ Damaged threads	◦ Reapply thread sealant (PTFE tape) and retighten. ◦ Ensure connections are snug. ◦ Inspect threads for damage; replace if necessary.

Warranty and Support

For warranty information or technical support, please contact DIGITEN customer service through the retailer where the product was purchased or visit the official DIGITEN website. Please have your product model number (FL-808) and purchase details ready when contacting support.

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