

ZNC-DF1

Digital Flow Switch



PRODUCT HIGHLIGHTS

- Simultaneous flow-velocity and medium-temperature monitoring in one compact instrument.
- 1.47" LCD with dual LED indicators for clear local status indication.
- Configurable PNP/NPN switching and 4–20 mA analog output combinations.
- 9–36 VDC power supply, IP65 protection and pressure rating up to 100 bar.
- Thermal sensing principle with no mechanical moving parts and very low pressure loss.

Overview

The ZNC-DF1 Digital Flow Switch is a thermal flow-monitoring instrument designed to detect flow velocity and medium temperature while providing local LCD indication and configurable switching / analog outputs. Its single-probe construction has no mechanical moving parts, helping reduce pressure loss, wear and maintenance requirements.

Key Specifications

Parameter	Value	Parameter	Value
Measurement Principle	Thermal / heat-transfer principle (PTC thermistor)	Supply Voltage	9–36 VDC
Flow Velocity Range	0.00–2.00 m/s (water)	Operating Current	≤ 100 mA
Temperature Range	0.0–100.0 °C	Cable / Connector	M12 connector / direct cable
Flow Accuracy	≤ ±2.5% F.S.	Circuit Protection	Reverse polarity, overvoltage, short circuit
Temperature Accuracy	≤ ±1.0% F.S.	Display	1.47" LCD
Temperature Gradient	≤ 4 °C/s	Setting Method	Push buttons
Startup Time	≤ 15 s	Pressure Rating	100 bar
Process Connection	G1/2 thread, male or female	Protection Rating	IP65
Medium Temperature	0–100 °C	Ambient Temperature	–20–80 °C
Housing / Wetted Material	SS304 / SS304	Panel / Button Material	PC / silicone rubber

Selection Guide - Model Code

Model code structure: ZNC-DF1 - G12E D 2A M - 15mm

Category	Code	Description
Product Model	ZNC-DF1	Digital flow switch
Process Connection	G12E	G12 = G1/2 thread; E = male thread
Process Connection	G12I	G12 = G1/2 thread; I = female thread
Power Supply	D	Nominal 24 VDC (operating range 9–36 VDC)
Signal Output	2A	2 analog outputs + 1 switch output
Signal Output	2S	2 switch outputs + 1 analog output
Cable / Connector	M	M12 connector
Cable / Connector	D	Direct cable

Probe Length	15mm	Probe length; other lengths subject to configuration
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Output Configuration

Configuration	Pin / Function Summary
2A + 1S	Flow switch: PNP/NPN; Temperature: 4–20 mA; Flow: 4–20 mA
2S + 1A	Flow switch: PNP/NPN; Temperature switch: PNP/NPN; Flow: 4–20 mA
Contact Logic	Normally Open (NO) / Normally Closed (NC), configurable
Contact Rating	60 V, 1 A
Switch Delay	≤ 99 s, configurable

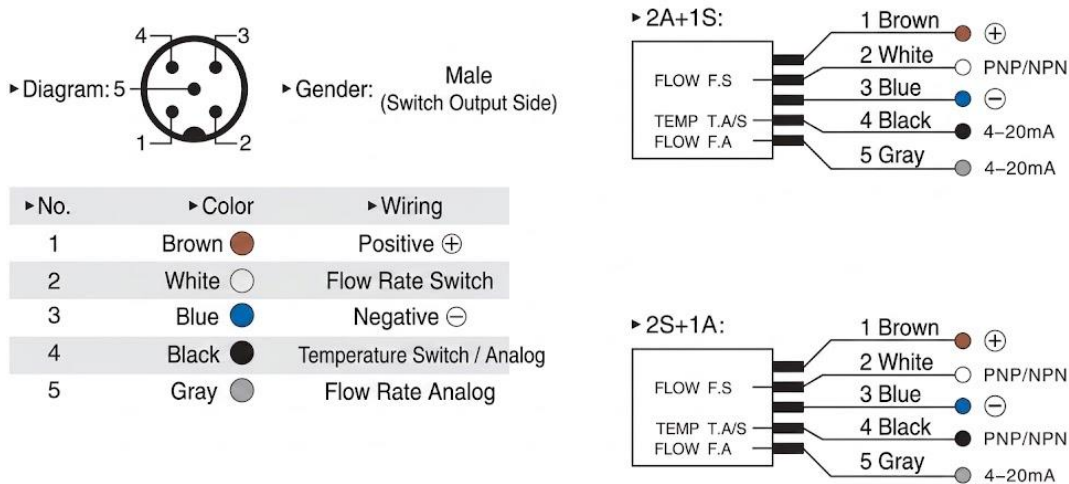
Operating Principle

1	The sensor uses the heat-transfer principle. Two PTC thermistors are arranged in the probe to detect the medium temperature.
2	Based on the detected medium temperature, heating resistors around the sensing element are continuously heated until a constant temperature difference relative to the medium is established.
3	When the medium is stationary, heat transfer is low and less heat is carried away, so the temperature difference between the heated element and the medium is at its maximum.
4	When the medium flows, heat transfer increases and more heat is carried away. The higher the flow velocity, the smaller the temperature difference.
5	The temperature difference is converted into a voltage difference. After amplification and filtering, the processed signal is sent to the LCD and signal outputs.
6	The SS304 single-probe construction provides a compact overall structure.

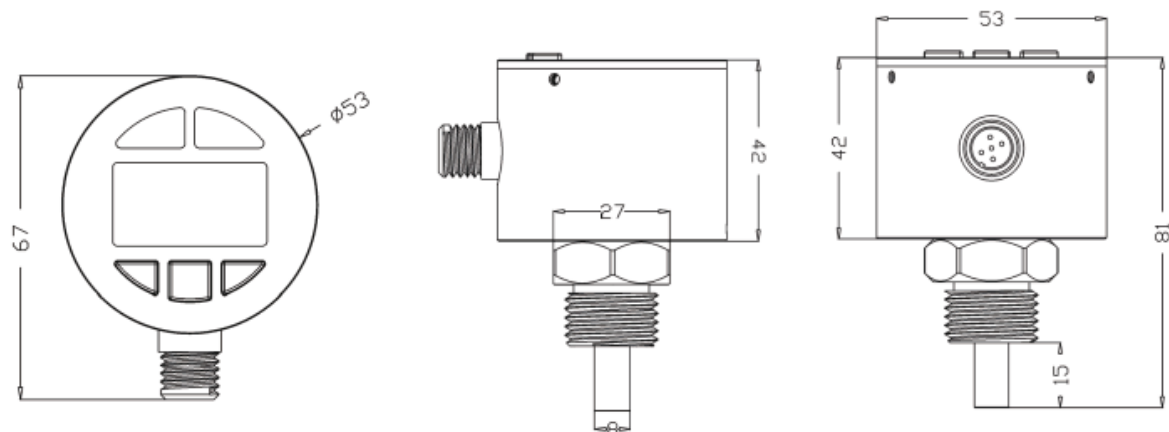
Features

• Suitable for applications requiring clear local flow-status indication.	• Very low flow loss and pressure drop; detects low flow velocity down to 0.01 m/s.
• Monitors both flow velocity and medium temperature; the LCD and dual LEDs provide real-time indication with corresponding outputs.	• Push-button configuration allows set values to be adjusted on site.
• Suitable for liquids and gases such as water, oil and air/gas, including water systems, hydraulic systems and ventilation ducts.	• Multiple process-connection options are available for installation flexibility.
• No mechanical moving parts, helping avoid wear and jamming while reducing maintenance cost.	

Wiring Instructions



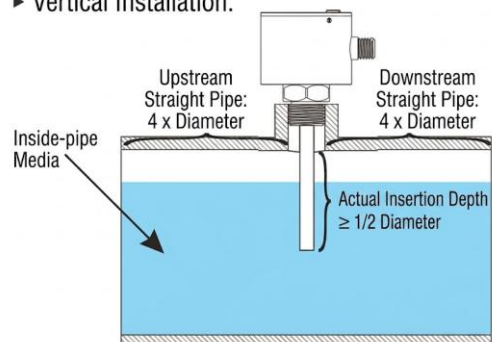
External Dimensions



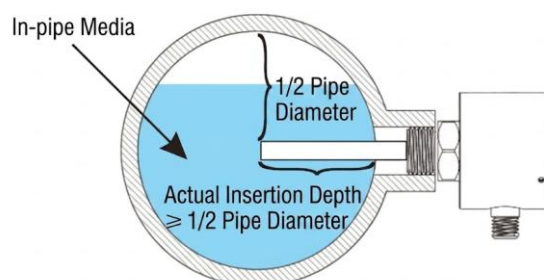
Dimensions shown in millimetres. Example drawing corresponds to the 15 mm probe-length configuration.

Installation Recommendations

► Vertical Installation:



► Side Installation:



- Pipe I.D. refers to the internal diameter of the pipe.
- The installation example is based on DN100 pipe: I.D. 100 mm, O.D. 114 mm.
- The example product uses a net probe length of 50 mm.
- For the illustrated installation, the actual insertion depth should reach at least 1/2 of the pipe internal diameter.
- For vertical installation, provide straight pipe sections upstream and downstream as shown in the installation sketch.