

Water Quality Monitoring

Q32F0 Fluoride M-Node

OVERVIEW

Compact Low-power Smart Fluoride Sensing

The Q32 series of smart water quality nodes, developed as part of the MetriNet distribution monitoring system, are available for integration into a variety of monitoring systems. Using the Q32F0 fluoride sensor, users can monitor F⁻ (fluoride ion) concentrations in clean potable water applications. System integrators can easily interface Q32 sensors using one of two available outputs, RS485/Modbus RTU, 0...2.5V. For remote and/or low-power fluoride monitoring, the Q32F0 sensor is an ideal solution for ease of installation, ease of maintenance and long-term reliability.

DESCRIPTION

Q32F0 fluoride nodes are compact assemblies incorporating both a fluoride ion selective sensor and electronics. Electronics are encapsulated to protect from moisture, and data is accessed via an M8 5-pin B-coded IP67 connector at the back.

Q32 nodes operate as part of the Q52/MetriNet system and also individually as they are fully programmable using our free PC-based utility program or Q51 handheld calibrator. Selectable power modes allow high power real-time measurement or very low power periodic measurement for battery-powered applications.

Features

- Certified NSF 61 and 372
- Continuous measurement of F⁻ from 0.1...10.00 ppm
- Setup and calibration can be done anywhere with all calibration and configuration data stored internally
- Replaceable ion sensing assembly and refillable reference
- Sleep mode allows cyclic measurement at very low power
- Choice of two flow cell assemblies rated for use to 50 psig (3.45 bar)
- RS485/Modbus digital output with optional 0...2.5V
- Two programmable alarms (useful for digital output only)
- Simplified digital interface to aid in fast UI development
- Diagnostic data and digital flags indicate node status



Figure 1: Optional inlet assembly with mesh filter, pressure reducing valve, shut-off and sample tap



Figure 2: Modular flow cell for installation of multiple parameters in series to minimize water usage

CERTIFICATION



SPECIFICATIONS

Parameter	Q32F0 Fluoride Ion (F ⁻)
Typical Application	Monitoring of potable water distribution systems
Analysis Method	Potentiometric Ion Selective Sensor
Measurement Range	0.10...10.00 ppm
Temperature Range	-5...50° C (23...122° F)
Output Resolution, LDL	0.001 ppm, 0.01 ppm
Accuracy	¹ ±1 mV concentration equivalent (0.1 ppm at 1 ppm, 0.5 ppm at 10 ppm)
Repeatability	¹ ±0.5 mV concentration equivalent
Response Time	90% in 60 seconds at 10° C
Zero Stability	±0.3 ppm/month, stable pH and conductivity
Power	3.5...5V DC, 40 mW Max. (8 mA @ 5V DC full power mode, 1.3 mA @ 5V DC low power mode)
Isolation	Galvanically isolated power and signal to 500V DC minimum
Environmental Rating	NEMA 6 (IP67) Temporary Submergence
Regulatory Approval	CE, NSF 61, 372
Size/Weight	4.5 in. L x 1.5 in. D (114 x 38 mm), 0.25 lb
Sensor Wetted Material	PVC body, Element Holder, Front Cap, PVC Element, Ceramic Plug, Viton O-ring
Flow Cell Wetted Material	Ryton cell, EPDM O-rings
Sample Inlet Pressure	² Stable 1...50 psi (0.07...3.45 bar), 20...30 psi recommended
Sample Temperature	2...45° C, temperature compensated
Sample pH	³ pH 5...9
Suspended Solids	Sample filtered to less than 100 microns
Sample Flow Rate	Fixed 0.2 lpm (3.2 gph) with installed fixed flow regulator ² 0.2...0.5 lpm (3.2...8 gph)
Inlet/Drain Connection	1/4 in. O.D. push connect fitting
Sensor Output	Isolated RS485/Modbus RTU, 19.2 K baud, and 0...2.5V DC analog out
Sensor Cable	M8 B-coded 5-pin connector: White = +5V DC, Blue = Common, Brown 0...2.5V DC, Grey TR (+), Black TR (-)

¹ Nodes are shipped uncalibrated. For optimum accuracy, nodes should be properly prepared and user calibrated on-site with fresh calibration solution as part of normal installation and setup. Frequency of follow up cleaning and recalibration is determined by the operating conditions in the specific application. Accuracy and repeatability specified at a fixed temperature.

² Nodes are specifically designed for use within the modular flow cell assembly (see [Figure 2 on page 1](#)), which operates at a fixed flow rate of 200 mL/min. and requires stable fixed inlet pressure. Some nodes can be sensitive to changes in flow and pressure, so operating in this controlled flow manifold greatly reduces those potential variability issues and maximizes sensor life.

³ Process pH and conductivity must be stable to ±0.2 pH and ±50 uS. Larger changes in process pH and conductivity create an offset in the measurement.

ORDERING INFORMATION

00-1856	Q32F0 Fluoride sensor, RS485/Modbus/0...2.5V
31-0204	12.9 ft. Sensor cable with tinned ends
31-0212	18 in. Sensor cable with tinned ends
00-1865	USB to M8 cable, 5 ft. (for PC to node connection)
00-1798	Mobile calibrator with node and USB cables
05-0166	Optional inlet assembly (see Figure 1 on page 1) with mesh filter, pressure reducing valve, shut-off and sample tap
55-0083	O-ring silicone lube, 150 g tube



Figure 3: Q51 Calibrator for sensor

NOTE: Each sensor is supplied with spare electrolyte, O-ring kit, O-ring silicone pillow packet and 18 inch sensor to bus cable.