

Water Quality Monitoring

Q32H0, Q32H1, Q32H2 Chlorine M-Nodes

OVERVIEW

Compact Low-power Smart Chlorine 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 Q32H chlorine sensor, water suppliers can verify that an adequate residual is maintained throughout the system. 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 chlorine monitoring, the Q32H sensor is an ideal solution for ease of installation, ease of maintenance and long-term reliability.

DESCRIPTION

Q32H chlorine nodes are compact assemblies incorporating both measuring cells 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 chlorine from 0.00...5.00 ppm
- Setup and calibration can be done anywhere with all calibration and configuration data stored internally
- Reagentless measurement with easily replaceable membrane and electrolyte
- Internal energy storage allows cyclic measurement at very low power without loss of sensor bias
- 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	Q32H0 Free Chlorine (FCl ₂); Q32H1 Total Chlorine (TCl ₂); Q32H2 Combined Chlorine (CCl ₂)
Typical Application	Monitoring chlorine residuals in distribution water system
Analysis Method	Amperometric membrane sensor
Measurement Range	0.00...5.00 ppm (all variations)
Temperature Range	-5...50° C (23...122° F)
Output Resolution, LDL	0.001 ppm, 0.01 ppm
Accuracy	¹ ±1% of range or ±0.05 ppm
Repeatability	¹ ±0.5% of range or ±0.02 ppm
Response Time	90% in 60 seconds at 10° C
Zero Stability	±0.003 ppm noncumulative
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, TFE membrane, PVC membrane ring, EPDM O-rings, 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...8.5 (free chlorine measurement requires stable pH ±0.2 pH)
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 recalibrating 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 When measuring free chlorine with a free chlorine or total chlorine node, the pH must be stable to ±0.2 pH. Greater changes in process pH cause fluctuations in the free chlorine measurement.

ORDERING INFORMATION

00-1847	Q32H0 Free chlorine sensor, RS485/Modbus/0...2.5V
00-1855	Q32H1 Total chlorine sensor, RS485/Modbus/0...2.5V
00-1854	Q32H2 Combined chlorine 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

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



Figure 3: Q51 Calibrator for sensor

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