

Series Q46H/79PR Total Chlorine Monitor

On-line residual chlorine monitors shall be provided to continuously measure total residual chlorine at the _____ (Specify Locations) _____. Each Chlorine Monitor shall consist of a total chlorine sensor and an electronic monitor housed in a NEMA 4X enclosure for wall or pipe mounting.

Chlorine monitors shall measure total residual chlorine using a direct measuring membraned amperometric sensor. The sensor shall be a 3-electrode device isolated from the sample by a chlorine permeable composite membrane and shall respond to both free and combined chlorine in the sample, providing a direct measurement of total chlorine without the need for chemical addition. Membranes shall be premounted in a screw-on cap for ease of replacement and two spare membrane caps shall be supplied with the sensor.

Sensor Option 1

The total chlorine sensor shall be a submersible assembly consisting of two parts, a submersion holder containing a temperature element for temperature compensation of the measurement and an electrode assembly that screws on to the end of the holder. The sensor shall be suitable for direct immersion in wastewater effluent, cooling water, or other process water containing residual chlorine. A 1 inch NPT pipe thread on the back of the sensor shall be used for mounting and the sensor shall be mounted on a 1 inch pipe securely fastened to a wall, handrail, or other support.

Sensor Option 2

The total chlorine sensor shall be designed for installation in a flowcell assembly. A quick-disconnect receptacle on the back of the sensor will be supplied to allow easy removal of the sensor for service and a 25 foot mating cable with connector shall be supplied with the sensor. The flowcell shall be a constant-head assembly that maintains constant flow across the sensor regardless of changes in the inlet flow to the flowcell. Sample flow to the flowcell shall be provided by the user at a rate of 8-20 GPH (0.5 – 1.3 LPM).

Monitors shall be powered by 90-260 VAC single-phase line power. The monitor shall provide two isolated 4-20 mA outputs as standard, with an option for a third 4-20 mA output. Outputs shall be configurable for total chlorine, temperature, or PID control. Analog outputs shall be both ground isolated and isolated from each other. The chemistry module shall be powered by either 115 VAC or 230 VAC.

For alarm purposes, monitors shall contain three SPDT relays. Relay functions shall be programmable for control, alarm, or fail functions, and may be designed for either normal or failsafe operation. For monitors supplied with only 2 analog outputs, monitors shall have the option of an additional 3 low-power relays to allow for additional external alarm functions.

The total chlorine monitor electronic assembly shall provide a variety of functions as follows.

1. Provide user selectable display of PPM total chlorine, process temperature, or PID % output on the main display. Main display variable shall be indicated with a minimum character height of 0.75" to allow easy readability up to 20 feet away.
 2. Allow selection of operating ranges of 0-2 PPM, 0-20, or 0-200 PPM. Display ranges shall be configurable by operators, or the monitor may be configured for Auto-Ranging. The auto-ranging function shall automatically switch to the display range that provides the best resolution for any given operating level.
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3. Accept the input from a pH sensor to allow the monitor to continuously measure sample pH in addition to the total chlorine measurement.
4. Provide the ability to use the 4-20 mA output for PID control. Proportional, Integral, and Derivative functions shall be user adjustable, and also provide for output hold when needed.
5. Provide two isolated 4-20 mA outputs, with output spans programmable by the user for any segment of a display range.
6. Provide an option for a third analog output where separate outputs for total chlorine, pH, and temperature are required or when the use of PID control makes a third output desirable.
7. Provide output hold and output simulate functions to allow for testing or remote receiving devices or to allow maintenance without disturbing control systems.
8. Provide three 6 amp SPDT relay outputs in standard unit. Software settings for relay control include setpoint, deadband, phase, delay, and failsafe. Provide an optional 3-relay card, for 0-30 V signals, to bring the total to 6 relays. Relays shall be programmable for either control or alarm function, or relays may be assigned to diagnostic functions for use in indicating trouble conditions at a remote location.
9. Provide option for digital communications. These options shall include Profibus-DP, Modbus-RTU, Modbus TCP/IP, or Ethernet-IP.
10. Diagnostic functions shall be incorporated into the transmitter. The 4-20 mA output shall be capable of being assigned to safely rise to 20 mA, fall to 4 mA, or be left alone, during diagnostic failures. Diagnostic error messages shall be displayed in clear language; no confusing error codes shall be displayed.

The complete Total Chlorine Monitor shall be Series Q46H/79PR as manufactured by Analytical Technology, Inc. or approved equal.
