

## Q45H/79 Total Chlorine Monitor

On-line Total Chlorine Monitor shall be provided to continuously measure at the \_\_\_\_\_ (Specify Location) \_\_\_\_\_. Each Total Chlorine monitor shall consist of a total chlorine chemistry module and an electronic monitor housed in a NEMA 4X enclosure. The electronic monitor shall be either integrally mounted in the chemistry module enclosure or remotely wall, pipe, or panel mounted.

The total chlorine monitor shall measure total residual chlorine using the EPA recommended method of reaction of the sample with potassium iodide and measurement of the iodine released by the chlorine in solution. The released iodine shall be measured by a polarographic membraned sensor configured to respond to iodine in solution. The membraned type sensor is required to insure zero stability and to eliminate electrode contamination from other components in the sample.

The chemistry module component shall provide the sample conditioning required for chlorine measurement. Peristaltic pumps shall provide sample and reagent metering, with quick-load pump heads to facilitate tube changes. The sample pump shall pull water samples from an inlet chamber at a fixed rate. A 2-headed reagent pump shall deliver buffer and potassium iodide to a mixing tee, where it is mixed with the pumped sample. The treated sample shall flow through a clear acrylic flowcell containing the iodine sensor and then out to the analyzer drain. The sample inlet assembly shall allow high sample flowrates (10-20 GPH) to the analyzer to reduce sample transport time to a minimum.

The sensor for the total chlorine measurement shall be a special membraned iodine sensor which is threaded into the flowcell. The sensor shall have a quick-disconnect plug at the back to facilitate sensor removal when maintenance is necessary, and shall be easily serviced without the use of special tools. The sensor shall generate a current signal linearly proportional to measured iodine concentration, and a sensor cable shall be supplied for connection to the chlorine monitor.

The electronic monitor shall be housed in a NEMA 4X enclosure suitable for wall mounting and contain a large format LCD display with secondary display for other operating parameters. The monitor shall also provide 2 SPDT 5 Amp alarms relays and 2 isolated 4-20 mA analog outputs.

The Total Chlorine Monitor electronic assembly shall be: **(select one version below)**

- A. An AC powered instrument for operation on (specify either 115 VAC or 230 VAC) single-phase line power. The monitor shall include electronics, sensor and pumps within a common NEMA 4X enclosure and provide two isolated 4-20 mA outputs configurable for Total Chlorine and Temperature. Analog outputs shall be both ground isolated and isolated from each other. Monitors shall also contain two alarm SPDT relays.
- B. An AC powered instrument for operation on (specify either 115 VAC or 230 VAC) single-phase line power. **The monitor shall be provided in a separate NEMA 4X enclosure** from the chemistry module containing the sensor and pumps being in its own NEMA 4X enclosure.

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

1. Provide user display of PPM chlorine on the main display. Main display parameter 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 0-200 PPB, 0-2.000 PPM or 0-20.00 PPM.
3. Provides two isolated 4-20 mA outputs, with output spans programmable by the user for any segment of a display range.
4. Provide output hold and output simulate functions to allow for testing or remote receiving devices or to allow maintenance without disturbing control systems.
5. Provides two SPDT 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.
6. 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 Q45H/79 as manufactured by Analytical Technology, Inc. or approved equal.

---