

## Series Q46H/64 Dissolved Ozone Monitor

On-line Monitors shall be provided to continuously measure dissolved ozone concentrations at the \_\_\_\_\_ (Specify Locations) \_\_\_\_\_. Each Ozone Monitor shall consist of a direct measuring ozone sensor, a clear constant-head flowcell, 25 feet of sensor interconnect cable with quick disconnect plug, and an electronic monitor housed in a NEMA 4X enclosure suitable for wall, pipe, or panel mounting.

The ozone sensor shall be a direct measuring polarographic sensor utilizing a special polymeric membrane to isolate the sensing electrodes from the sample and eliminate the potential for electrode contamination. The membrane shall allow ozone to diffuse into the sensor where it shall react with the sensing electrode, generating a signal that is linearly proportional to ozone concentration. The sensor assembly shall also contain a precision RTD temperature sensor to continuously measure sample temperature to allow temperature compensation of the measured ozone value. The ozone sensor shall be constructed with a quick disconnect receptacle to allow easy sensor servicing or exchange. Ozone sensors shall be supplied complete with at least 10 spare membranes, electrolyte, and a spare parts kit that includes all o-rings and special hardware.

The flowcell assembly supplied with the monitor shall be constructed of clear material allowing the condition of the sensor membrane to be inspected without removal of the sensor. The sensor shall slide easily into the side of the flowcell, with a double o-ring seal to prevent water leakage. Flow to the sensor shall be regulated automatically through a constant-head overflow arrangement. Hose barbs for sample inlet (1/4" I.D. tubing) and drain (1/2" I.D. tubing) shall be supplied as part of the flowcell.

OPTIONAL: The ozone monitor shall be supplied with a pH sensor. The pH sensor shall allow the monitor to measure pH and dissolved ozone simultaneously. The pH sensor shall fit into the inlet chamber of the ozone sensor flowcell. The pH value shall be available for display on the second line of the monitor display, and one analog output shall be assignable as a pH output.

Monitors shall be powered by either 100-240 VAC ( $\pm 10\%$ ) single-phase line power, or 12-24 VDC . Either version of 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 ozone, pH, temperature, or PID control. Analog outputs shall be both ground isolated and isolated from each other.

For alarm purposes, monitors shall contain three SPDT relays. Relay functions shall be programmable for control, alarm, or fail functions, and may be designaed 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 ozone monitor electronic assembly shall provide a variety of functions as follows.

1. Provide user selectable display of PPM ozone, 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 0-200 PPB, 0-2 PPM, 0-20 PPM, 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.
  3. 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.
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4. Provide two isolated 4-20 mA outputs, with output spans programmable by the user for any segment of a display range. When supplied with a pH sensor input, one 4-20 mA output may be assignable to the pH measurement to allow simultaneous output of both dissolved ozone and pH. An optional third analog output is available, providing separate outputs for ozone, pH, and temperature.
5. Provide output hold and output simulate functions to allow for testing or remote receiving devices or to allow maintenance without disturbing control systems.
6. 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.
7. Provide option for digital communications. These options shall include Profibus-DP, Modbus, or Ethernet.
8. 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 ozone monitor shall be supplied with spare parts and accessories for up to 2 years of operation. A minimum of 10 replacement membranes shall be supplied for the sensor.

The complete Dissolved Ozone Monitor shall be Series Q46H/64 as manufactured by Analytical Technology, Inc. or approved equal.

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