4E Conductivity Monitoring System

Conductivity Monitors shall be supplied for continuous monitoring of conductivity in __(Specify Application and Location)__ . The conductivity monitoring system shall consist of an electronic monitor housed in a NEMA 4X enclosure suitable for wall, pipe, or panel mounting, a 4-electrode style conductivity sensor, and accessories listed below. The Conductivity Monitoring System shall be ATI Series Q45C4/Q25C4 as described below.

The conductivity sensor shall be a 1" NPT, four-electrode design capable of a measuring range of 0 to 2 Siemens with the same cell. The sensor electrodes shall be constructed of titanium for optimum chemical resistance. O-ring seals shall be composed of Viton.

The sensor shall be constructed of molded PEEK (poly-ether-ether-ketone) components. These components include the body, electrode holder, all rear seal components, and all internal components. The body shall be hex shaped to facilitate quick connection to standard 1" NPT fittings. The sensor shall be encapsulated and mechanically sealed by dual, high performance, o-rings at every solution interface.

The sensor shall include a Pt1000 RTD for high accuracy temperature measurements.

The sensor shall include a highly chemical resistant, cross-linked polyethylene jacketed cable. The sensor cable shall contain two foil shields for optimum electrical performance.

The sensor shall be available in mounting styles that include convertible, insertion, and submersion configurations.

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

A. A loop-powered 2-wire instrument providing an isolated 4-20 mA output proportional to conductivity into a maximum load of 500 ohms.

B. A battery operated data logging monitor capable of operating from an internal battery. The monitor shall provide two 0-2.5 VDC outputs suitable for use by a data logger. The monitor shall operate for up to 4 days continuously on an alkaline battery and up to 10 days on a lithium battery.

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

1. Provide user selectable display of conductivity or process temperature 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. The transmitter shall include functions for displaying concentration values from built-in tables.

2. The transmitter shall allow the 4-20 mA output to be set to any two points within the measuring span of 0-2,000,000 µS, as long as the points are at least 20 µS away from each other. The points may also be reversed. The transmitter shall allow the user to place a delay on the reaction time of the output and display.

3. Provide output hold and output simulate functions to allow for testing or remote receiving devices or to allow maintenance without disturbing control systems.

4. The transmitter shall contain calibration functions for 1-point calibration for conductivity. An air-zero calibration routine shall be provided for calibrating the sensor zero point at initial installation. Calibration stability monitors shall be provided to hold calibration status until stable calibration conditions have occurred. In addition, the transmitter shall allow a sensor cell constant value to be entered directly for calibration without solutions.

5. 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.

6. The transmitter shall provide a function for automatically compensating for sensor fouling. If the sensor fouling reaches a level to which it can no longer be compensated for, the transmitter shall indicate a fouling warning.

The complete Conductivity Monitor shall be an Analytical Technology Inc. Model Q45C4/Q25C4, or approved equivalent.