

Specification for O2X Dissolved Oxygen Sensor w/ Flush



Application

The O2X is used for Continuous on-line measurement of dissolved oxygen in water within the range of 0-15 mg/l for aeration basins and final effluent in municipal or industrial wastewater treatment plants. Assembly to consist of one control box with one or two DO sensors and one or two flushing solenoid valves per attached spec.

Oxygen Electrode

The electrode must be a replaceable Clark type cartridge design with active materials of gold/silver (cathode/anode) that are treated to maximize their life span. Electrode has reliability error <1% and FEP (Teflon) membrane. Electrode should be designed to operate 12-18 months at 3-5 mg/l operation between replacements and should not require recalibration more than once every 6 months. The electrode must be disposable design - rechargeable designs are not acceptable. Temperature sensor must be built into the electrode to minimize instability due to temperature shifts. The electrode body is to be made of PVC with SS membrane retaining ring and equipped with an o-ring seal.

Measuring range; 0-20 mg/l.

Sensor

Sensor housing made with 316SS with 33' cable that plugs into control box and sensor to have built-in self identity logic so control box acknowledges sensors identity and calibration points which are stored in sensor's memory. Electrode plugs into sensor housing. Sensor designed for 32 –122 F operating range. Sensor housing has three (3) SS flushing nozzles which can be used if flushing solenoid valve is added to assembly. Flushing media is 60 psig air or water depending on customer preference.

Signal Processor Control Box

Control box to support two sensors, which can be either/or dissolved oxygen, suspended solids, pH, or open channel flow sensors and generate up to 4 independent and isolated 4-20 mA output signals. Control box to be designed for future upgrade to commonly used fieldbus protocols by installing a protocol board. Microprocessor based control box with self-instructing menu, digital circuitry, and illuminated graphical LCD display. Graphical display shows solids concentrations in ppm, mg/l or % solids and 0-100% of mA output. Graphical display shows calibration points

and current suspended solids concentration. The control box produces two linearized 4-20 mA, max 500 ohms galvanically isolated, output signals (12 bit resolution) proportional to suspended solids concentrations. Light on front panel indicates status of alarm. To avoid fluctuating output signal, the control box should have a dampening feature or integration time, which can be set from 1 to 999 seconds. The enclosure should be watertight molded polycarbonate box, NEMA 4X (IP65). The power supply must be equipped with filter, fuse and varistors for protection against power surges. The control box should have EEPROM memory. Following a power failure the control box should start up and resume measuring without requiring recalibration. Power supply is to be 110/1/60 or 220/1/50. Control box to be equipped with built-in heater on circuit board to maintain proper temperature inside control box down to -20 F outside temperature. Y-splitters are to be supplied for attachment of multiple digital sensors to a common control box.

Programming Module

All programming and settings are performed from the outside of the control box by using a self-instructing menu controlled by three touch pad keys. Calibration of the unit should be done against air. If two oxygen electrodes are connected, then both should be able to be calibrated simultaneously. Incorrect settings must not damage the unit. Special plug-in prompts or manually adjustable potentiometers for programming are not acceptable. Tamperproof programming feature is required to keep settings from being changed, except by authorized personnel. In the event of power loss, an EEPROM memory should save programming during power outages rather than a battery backup.

Self-Diagnostics

The software should be of Multi-task design. It should also contain a watch-dog function connected to the microprocessor. The software should inform the “watch-dog” at least once per second that the device is working properly. If it does not, then the “watch-dog” shall restart the processor in order for the unit to resume measuring.

Sensor Mounting

1. Rod Mounting

The sensor is to be attached to a telescoping fiberglass rod with a PVC sensor holder. The rod is adjustable from 5'-13'. Mounting bracket to be SS spring coil design for mounting to 1.5" handrail, which allows rod to move up and down without damage to rod. PVC rod holder to slip into spring mounting bracket assembly and should have SS retaining clip.

2. Chain Mounting

Sensor supplied with 316 SS chain (length as req'd), PVC sensor adaptor w/ u-bolt SS bracket, SS spring coil mounting bracket and 1 1/4" aluminum L shaped rod to suspend into tank. Mounting bracket designed for attachment to 1.5" handrail, which will allow sensor to move up and down.

3. SS Slide Rail

Sensor supplied with SS slide rail (20" long) and two (2) SS sensor clips. The slide rail is to be attached to wall or mounting plate with SS anchors by contractor.

Control Box Mounting

Control box mounted to 1/8" aluminum mounting plate with rain lip and opaque sun shield, SS hinge and SS u-bolts for mounting to handrail. One or two flushing solenoid valves mounted to plate and prewired at factory to the control box as required.

Option – Flushing of Sensor

Flushing solenoid valves to be mounted to mounting plate and prewired at factory to the control box. Flushing liquid can be 40-50 psig plant water or reuse water that is filtered thru a 10 micron filter to alleviate nozzle plugging.

Compressor

Small compressor (pancake type) should be supplied with meter for flushing. Compressor uses 2 hp, 110/1/60, 15 amps max. load to delivery 60 psig and 6 gallon tank.

Warranty

The manufacturer shall warrant the equipment to be free of defects from workmanship and material for a period of one (1) year after shipment. Warranty for electrodes is six (6) months. Electrodes are shipped one (1) week prior to start-up so that the customer gets fresh electrodes at start-up.

Supplier

Cerlic Controls, AB, Model – BB2/O2X,
Phone 404-256-3097 or Fax 404-256-3094
File: SPECS BB2/DO meter with flush.DOC

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