

## Specification for PHX and REX pH/Redox Meter with Flush



### **Application**

Used for continuous on-line measurement of pH or Redox for mounting in open channels, basins or tanks, with optional flushing system. Measuring ranges of 0–14 for pH or -2000...+2000 mV for Redox potential for municipal and industrial wastewater treatment plants.

### **Electrode**

The principle of measurement based on the measurement of pH and Redox is in millivolts (mV). pH electrodes should be non-refillable gel type made of glass containing measuring and reference electrodes, which in combination provide a voltage linear to the pH. Electrodes have male type BNC connector for attachment to amplifier. Refillable electrodes are not acceptable.

### **Amplifier**

The electrode should deliver a voltage, which is proportional to the pH or Redox value. An amplifier is supplied to convert the pH & redox signals to RS485 output signals to a control box. Amplifier supplied with 33' (10 m) cable and M12 connector for attachment to the control box. Cable can be lengthened with extension cables up to 165' (50m). Amplifier has female BNC connector for attachment to pH or Redox electrodes. Amplifier should be mounted in 39" long SS housing with optional flushing system. Flushing media should be 40-60 psig air or water depending on customer's preference.

### **Signal Processor Control Box**

Control box to support two sensors, which can be dissolved oxygen, suspended solids, pH, ORP, or open channel flow sensors and can generate up to 4 independent and isolated 4-20 mA output signals. Control box designed for future upgrade to commonly used field bus protocols by installing a protocol board. Microprocessor based control box with self-instructing menu, digital circuitry, and illuminated graphical LCD display. Graphical display should show PH or Redox. Alternate screen to show the date when the PH sensor was last calibrated (Redox does not require calibration). The control box produces two linearized 4-20 mA, max 500 ohms galvanically isolated, output signals (12 bit resolution) proportional to pH or ORP. Control box has field adjustable contrast from front keyboard panel. Indicator light on front panel to indicate 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 moulded 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, so that 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 equipped with built-in heater on circuit board to maintain proper temperature inside control box down to -20 F outside temperature. Y-splitters 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 transmitter by using a self-instructing menu controlled by three touch pad keys. Special plug-in proms 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.

The transmitter features “smart” and manual calibration. “Smart” calibration means that the unit automatically recognizes the pH value of three different buffer solutions. Buffer solutions for “smart” calibration should be pH values of 4, 7 or 10. When pH calibration is complete, then condition of electrode is to be presented on display as a slope expressed in %. When performing a manual calibration, pH values of buffer solutions should be entered manually.

ORP control box shall offer a one point mV calibration option. ORP shall be calibrated to 200 mV, 400 mV or 600 mV buffer solutions depending on which is closest to actual operating conditions.

Flushing program to include independent cleaning function settings for each channel with three (3) programmed functions: 1) intervals from 10 minutes to 99,999 minutes, 2) length of cleaning between 1-99,999 seconds and 3) recovery after cleaning from 1 to 99,999 seconds. Output signal should be frozen during cleaning and recovery cycles at initial value so connected equipment will not receive a false pH or Redox readings.

### **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. SS Slide Rail** - Sensor to be 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. The amplifier and electrode are to be installed in 1” Ø 316SS rod housing by 39” long for insertion in SS clips.
- 2. PVC Clip attachment to O2X & ITX sensors** - Electrode to be immersion design with 30’ cable for attachment to amplifier. Electrode to be flush design and supplied with PVC clip for attachment to side of Stainless Steel DO or Suspended solids sensor. Amplifier to be mounted to the side of control box mounting plate.
- 3. Chain w/ SS Weight** - Sensor to be supplied with 1 ¼” Ø aluminum rod L shaped, PVC rod

holder with SS spring coil mounting bracket for 1 ½” handrail attachment, 316 SS chain (length as req’d), SS Sensor weight (8#) and PVC snap clips for attachment of submersible electrodes.

**Control Box Mounting**

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

**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 :(6) months.

**Supplier**

Cerlic Controls, AB, Model – PHX/REX/BB2  
Phone 404-256-3097 or Fax 404-256-3094