


Model 1000 Dissolved Oxygen Analyzer Specification

General Description

<p>Manufacturer Contact Information and Service Information</p>	<p>Insite Instrumentation Group 80 Whisperwood Blvd. Suite 107 Slidell, LA 70458 Ph – 985-639-0006 Fax – 985-639-0014 e-mail – rdavis@insiteig.com</p>
<p>Analyzer/Sensor General Description</p> 	<p>The Model 1000 Dissolved Oxygen Analyzer is a digital instrument designed for the continuous monitoring of dissolved oxygen in water and wastewater where parts per million accuracy is required. The instrument is designed to be used with the InsiteIG Model 10 sensor. The unit will display dissolved oxygen content in 0.01 ppm resolution over a range of 0.00 to 3.99 ppm and 0.1 ppm resolution over a range of 4.0 to 20.0 ppm. Temperature is displayed in 0.1 degree Celsius increments over a 0.0 to 50.0 degree Celsius range or 1 degree Fahrenheit increments over a 32 to 122 degree Fahrenheit range.</p> <p>The microprocessor based electronics of the Model 1000 analyzer provide a high degree of flexibility and ease of use. Calibration is not required on a routine basis, nor is calibration required after initial startup and commissioning. Two isolated analog outputs are standard. Three programmable set-point relays and one relay to control self-cleaning are also standard.</p> <p>The sensor to be used with this analyzer is an optical type sensor that measures the fluorescence and quenching reactions of a ruthenium complex that is immobilized in a sol-gel matrix.</p>
<p><i>Analyzer/Transmitter Operational Data</i></p>	
<p>Ambient condition requirements</p>	<p>Temperature – minus 40 degrees C to 55 degrees C Humidity – 0 to 100 percent Altitude – 0 to 10,000 feet</p>
<p>Display</p>	<p>The display is a two-line, backlit LCD with extended temperature range and resistant to UV.</p>
<p>Sensor Check</p>	<p>Automatic self diagnostics</p>
<p>Sensor to Analyzer Distance</p>	<p>2000 feet 610 meters</p>
<p>Power Requirements</p>	<p>115 VAC 60 Hz 230 VAC 50 Hz</p>
<p>Accuracy</p>	<p>1% of reading or 0.02 ppm, whichever is greater</p>

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Sensitivity or Resolution	0.01 ppm
Stability (<i>per 24 hr period</i>)	0.01 ppm
Repeatability	0.01 ppm
Temperature Drift	Not applicable
Zero Output Reading	Not applicable
Consequence of Loss of Sample or Power	User selectable
Measuring ranges	0.0 to 25.0 ppm 0 to 60 degrees C
Temperature compensation	0 to 60 degrees C
Calibration Method	Not required nor recommend during initial startup. Provisions for one or two point calibration provided. Recommended that system calibration be checked once a year.
Memory backup	Yes
<i>Analyzer/Transmitter Outputs</i>	
Analog	0 to 20 or 4 to 20 optically isolated milliamp (user selectable) for DO 0 to 20 or 4 to 20 optically isolated milliamp (user selectable) for Temperature
Digital communication	Modbus RTU RS-232
Relay	There are three independently programmable set point control relays and one jet clean relay. Relay 1 & 2 are Form-C with contacts rated 10/6 amps resistive load at 125/250 VAC and relay 3 & 4 are Form-A with contacts rated 10/6 amps resistive load at 125/250 VAC.
<i>Analyzer/Transmitter Mechanical Data</i>	
Enclosure Rating	NEMA 4X
Mounting Configurations	Horizontal handrail Vertical handrail Wall mount
Net Weight	Shipping weight is approximately 9 lbs.
<i>DO Sensor Data</i>	
Electrode Materials	No electrode

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Electrolyte Materials	No electrolyte
Sensor Drift	Less than 1% per year
Wetted Materials	Epoxy, silicon, and polyurethane
Temperature Range	0 to 60 degrees C
Minimum Flow Rate	No flow required
Maximum Pressure	100 psi
Measuring Range	0.00 to 25.0 ppm
Response Time	90% in less than 60 seconds
Membrane Thickness	No membrane
Principle of Operation	The sensor is an optical type sensor that measures the fluorescence and quenching reactions of a ruthenium complex that is immobilized in a sol-gel matrix.
Sensor Cable	4 conductor, 22 AWG, polyurethane jacket
Temperature Sensor	thermistor
Cleaning System	Not required in most applications. Air or water wash option available.

Sensor/Analyzer Data

Documentation Provided	Operator Manual, Packing list, Mod bus RTU appendix
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Installation and Start-Up Requirements	<p align="center">INSTALLATION and STARTUP</p> <hr/> <ol style="list-style-type: none"> 1. A rear rail mounting kit is available to mount the standard enclosure to 2" handrail (see Drawing IIG01N010). 2. Mount the sensor in the desired location (see drawing IIG02N005 & IIG02N004). 3. Open the enclosure of the Dissolved Oxygen Analyzer. Pass all connection cables through conduit or glands in the bottom of the enclosure (conduit and glands not supplied). The sensor input connections
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	<p>are made to the terminal block labeled TB5 (see drawing IIG01R011). The four wires are color coded and there is a cable shield. Connect the RED wire to the terminal labeled "RED". Connect the GREEN wire to the terminal labeled "GRN". Connect the WHITE wire to the terminal labeled "WHT". Connect the BLACK wire to the terminal labeled "BLK". Connect the cable SHIELD to the terminal labeled "SHLD". Power connections are made to the terminal block labeled TB3. The analog outputs are available on the terminal block labeled TB1 and the relay outputs are available on the terminal block labeled TB6.</p> <ol style="list-style-type: none"> 4. Check switch S4 on the circuit board to be sure that it is set for the type of power being used (115 volts or 230 volts). Turn power "on" by using switch S3. Close and secure the enclosure. 5. After being turned on, the unit will initialize and then jump into the "RUN" mode and begin displaying the Dissolved Oxygen content and the temperature. <p>Note: The Model 10 sensor undergoes a thorough and accurate test and calibration procedure before shipment from the factory. Calibration of the system at startup is not necessary and is not recommended.</p> <p>The first time the unit is powered up with the sensor in the process, 15 minutes are required for the sensor to stabilize. The reading will drift slightly during this period. After approximately 15 minutes the sensor will respond correctly. In the event the sensor is removed from the process for a short period of time, the sensor should be allowed to stabilize for approximately 10 minutes after it is put back in the process.</p>
Recommended Spare Parts	none
Maintenance Requirements	<p align="center"><u>MAINTENANCE</u></p> <p>The analyzer does not require any periodic maintenance. The sensor must be kept free of debris for accurate readings.</p>

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	<p>Model 10 D.O. Sensor: In normal wastewater aeration basins the Model 10 Sensor will not require a jet clean system; however it is important that the aqueous sample to be measured be allowed to come in contact with the measuring surface. The sensor should be visually inspected on a monthly basis to insure that rags and hair have not completely covered the measuring surface. During this time we recommend rinsing the sensor with a water hose.</p> <p>In systems with high bio-slim and scaling, the integrated jet clean system is recommended to be used to prevent the slim and scale from attaching itself to the measuring surface.</p> <p>Fouling conditions at wastewater treatment facilities varies considerably from plant to plant. Experience gained during the first few months of sensor operation will allow the plant operators to determine their own reasonable schedule of sensor inspection. In no case should this inspection interval exceed one year.</p>
Sensor Storage Requirements When Out of Service	none
Level of Skill (<i>required to operate, maintain and calibrate instrument</i>)	Minimal
Special Tools or Other Devices Required for Maintenance and Calibration	none
Warranty	2 year
Manufacturer Service Centers Contact Information	80 Whisperwood Blvd., Suite 107, Slidell, LA 70458 Phone – 985-639-0006
Safety Considerations	none
Annual Cost of Replacement/Calibration Parts (<i>cost for one analyzer in USD</i>)	\$0.00