

An automated BOD analyzer that dramatically increases sample throughput, saves time, reduces labor, eliminates errors and has proven reliability

Thermo Scientific Orion BOD AutoEZ

Automated BOD Analyzer



BOD AutoEZ Benefits

- Reads 36 BOD sample bottles in 15 minutes or less
- Automatically calculates results according to Standard Methods (5210) for the Examination of Water and Wastewater
- Highly accurate, fast and cost-effective BOD analyzer

Automated BOD Measurements

The Thermo Scientific BOD AutoEZ is an automated robotic instrument designed to measure the dissolved oxygen (DO) and biochemical oxygen demand (BOD) of water and wastewater. This patented instrument utilizes a unique four-probe design, facilitating high sample throughput. The BOD AutoEZ™ increases the precision and accuracy of dissolved oxygen measurements, eliminates the calculation and reporting error and reduces the analyst's time by over 50 percent. Typically, the operator can configure the BOD AutoEZ to measure, record and calculate 36 bottles in less than 15 minutes, leaving time to perform other tasks.

Unique Features

- Microsoft® Windows® based software monitors and documents probe calibrations, performance, noise and stability
- User selectable calculation protocols allow customers to express dilutions as percent or volume and calculate seed correction from direct seed addition or seeded dilution water
- Customizable report and export options for interfacing with LIMS

Principles of Operation

BOD determination is a standardized laboratory test used to determine the relative oxygen requirement of wastewater, effluent and polluted waters. The test measures the oxygen demand caused by the biological degradation of organic material (carbonaceous demand) and the oxygen used to oxidize inorganic material such as sulfides and ferrous ions. The BOD test can also measure the oxygen consumed by reduced nitrogen compounds unless inhibited prior to the measurement. After the appropriate dilution and seeding, the initial dissolved oxygen of a sample is measured. The samples are then sealed and incubated at 20 °C for a fixed period of time, typically 5 days. After incubation, the final DO is measured and the BOD results are calculated automatically.



Additional Features

- Patented four probe technology
- Integrated four input DO meter
- Stainless steel interchangeable drip trays
- Automatic temperature compensation (ATC)
- Built-in probe rinse system eliminates sample carryover
- Small footprint saves valuable bench space
- Removable sample trays allow samples to be incubated together and samples are always ready for the next reading
- Minimal maintenance requirements
- Standard serial communication to a laptop or desktop computer
- Graphic user interface maximizes effectiveness and minimizes training time

Reporting Features

- Results are calculated per Standard Methods (5210) for the Examination of Water and Wastewater
- Software screens for supersaturated samples
- Tracks and applies multiple seed correction factors as needed
- Flags noisy or drifting DO measurements
- User defined criteria for flagging outlying dilutions or sliding BOD readings
- Extracts and flags samples that exceed QA guidelines
- Password protection preserves data integrity

The 'Single Sample Entry Form' window includes a 'Set Information' section with fields for Seed Name (DS1), Test Type (B), Set Code (PLT), QA Code (0), Sample Name/Number (Seed Control), and Reference Date (01/31/00). Below this is a table for Sample Volumes (ml) with columns 1 through 6, and a section for adding multiple tests. A note at the bottom states: 'Note: Samples with zero or blank volumes will not be created.'

Sample Entry Form

The 'Manual Controller-Calibrate' window is divided into several sections: 'Positioning' (Flow 1-5), 'Probe Functions' (Calibrate Probes, Rinse), 'DO Readings' (Read DO, Show, Inlet DO Settings, Final DO Settings), and 'Maintenance Operations' (Motion Controller, Probe Access, Probe Status, Rinse Pump). It also displays 'Moving probe adapter: Up', 'Response Received', and 'Successful' status indicators.

Manual Controller-Calibrate Screen

The 'Worksheet Display' window shows a data table with columns for 'BTL #', 'VOL', 'T', 'SET', 'DATE', 'INITIAL', 'PERM', 'DO', 'Probe', 'Date', and 'F'. The table contains multiple rows of data, including sample names like 'Seed Control' and 'Sample-1' through 'Sample-8', with corresponding volume and time values.

Worksheet Display

Wastewater Laboratories

User customization has made the BOD AutoEZ one of the fastest and most accurate BOD readers available. Sample names and dilution information can be saved as a template and used to create future worksheets with a few clicks of the mouse. The operator can easily adjust probe stabilization time, the number of read cycles per sample and probe rinse time. Calculating, summarizing and reporting have been standardized and by utilizing the systems Quality Assurance (QA) designation code, an analyst can screen a worksheet for QA exceedances before discarding any completed bottles.

Commercial Laboratories

Commercial testing laboratories can use the BOD AutoEZ to reduce operating and documentation cost and improve efficiency. The BOD AutoEZ can reduce analysis time by over 50 percent while it increases accuracy and precision by reducing errors associated with manual operation. Studies have shown that BOD AutoEZ pays for itself in less than one year for labs that read 50 or more bottles per day!



Awards

The BOD AutoEZ won two national awards for development. The Water Environment Federation (WEF) chose this system as the winner of the 1997 Innovative Technology Award in the Instrumentation category. In addition, the Association of Metropolitan Sewerage Agencies (AMSA) awarded the BOD AutoEZ with its Research and Technology Award.

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When you need a dependable workhorse for fast and reliable results, the BOD AutoEZ is your best choice for BOD compliance testing.

Hardware Specifications

Dimensions	18" W x 22" H x 32" D (adjustable setting for 28" and 32" benchtop)
Desktop or Laptop	Controlled via RS232 interface
Voltage	85 to 240 V auto-selection, 50 to 60 Hz
Probe	Four self-stirring polarographic dissolved oxygen probes
DO Meter	Four probe amplifiers built in, no need for external meters
Tray	3 BOD trays (holds 12 standard sized 300 mL BOD bottles)
Operating Temperature	0 to 40 °C
Probe Rinse	Rinsing pump built into the system, rinsing each DO probe thoroughly
Drip Tray	Stainless steel drip tray with outlet for easy drainage into a sink or waste container
Expansion Ports	RS232 interface, USB

Software Specifications

Windows® Compatibility	Windows XP, Windows 98 and Windows NT
BOD AutoEZ Software	Complete on CD ROM
Data Export Format	Comma delineated text file
Security	User defined four-digit and a master code to unlock all systems

Ordering Information

Cat. No.	Description
10060020	BOD AutoEZ analyzer, includes sample tray, drip tray, 4 dissolved oxygen probes, software and interface cable
10060040	BOD AutoEZ sample tray
10060080	BOD AutoEZ drip tray
10060003	BOD AutoEZ replacement dissolved oxygen probe

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