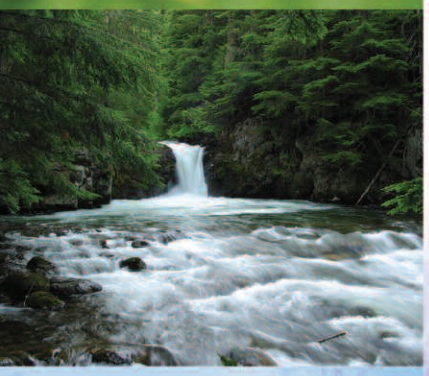


SEAL Analytical

MiniLab

SERIES

ROBOTIC HANDLING SYSTEMS FOR LABORATORY AUTOMATION

ROBOTIC HANDLING SYSTEMS

IDEAL FOR

Soil analysis
Water analysis
BOD
COD
pH
Conductivity
Turbidity
Alkalinity
ISE
Color

HOW DOES THE MINILAB WORK?

The MiniLab series serves as a base model for a range of parameters including: BOD, COD, pH, Conductivity (EC), turbidity, alkalinity and more. With its compact benchtop design, the MiniLab employs robotic arms to precisely and automatically perform sample preparation steps in routine analysis with options for the dispensing of dilution water, seed and ATU, stirring, weighing, cap removal etc. Larger models can have up to three arms to handle different stages of your chosen parameter's procedure.

The intuitive and versatile software allows analysts to easily set-up a run based on preset templates. The MiniLab was designed for reliable "walk-away" operation. Integration with your lab's LIMS ensures simple import and export of sample IDs, procedures and preferences.

SEAL Analytical would welcome the opportunity to design a custom solution based on your laboratory's needs.

THE SEAL ADVANTAGE

SEAL Analytical

Already a world leader in nutrient analysis and sample digestion, following the acquisition of ROHASYS Automation in 2017, SEAL now launches a new range of robotic handling systems.

Precision engineering and robust construction sets a new benchmark in laboratory robotic innovation with trouble-free operation and accuracy, backed by SEAL Analytical's world-class technical support and expertise.

FOR LABORATORIES OF ALL SIZES

The SEAL MiniLab series analyzers is unique as it offers a robotic platform for every size laboratory and workload.

Advantages of SEAL's Advanced Automation

- Precision robotics for perfect alignment
- Robust construction and reliable operation
- Easy to use and flexible to suit every lab and application
- Multiple robotic arms for larger, faster runs
- Automated sample pre-treatment and analysis in a single unit
- In-house software development for a close feedback loop
- Easy maintenance

Advantages of Robotic Handling

- Free staff from tedious, time consuming manual tasks
- Improved repeatability and reproducibility
- Safer work environment
- 24/7 continuous operation and analysis
- Reduce lab process cycle times
- Minimize unplanned downtime

SAMPLE PREPARATION

Sample preparation and pretreatment is one of the most time consuming steps in laboratories. A great deal of manual labor and potential for error happens during this first step. Many samples will need to be handled multiple times to complete all the pretreatment needed. The MiniLab can automate these steps, eliminating the manual labor and provide reliable and consistent results. The Minilab, when required, will split the sample and perform the various preparation and pretreatment needs.

PRETREATMENT OPTIONS AVAILABLE

- **Capping/decapping of bottles and vials**
- **Testing pH**
- **Adjusting pH (if needed)**
- **Sample splitting**
- **Sample spiking**
- **Automatic dilutions**
- **Filtering sample**
- **Sample heating/digestion**
- **Pipetting volatiles for GC**

BIOCHEMICAL OXYGEN DEMAND BOD

Often a tedious and repetitive process, Biochemical (also known as Biological) Oxygen Demand (BOD) automation is a necessity in modern environmental labs. SEAL Analytical offers cost-effective, regulation-compliant, custom solutions for labs with various throughputs and automation requirements.

The MiniLab Robotics BOD Series ranges from compact models with 12 bottle capacity to larger custom models handling thousands of bottles per day. The robotic arms can be customized to handle multiple steps in the BOD procedure. With a sturdy frame, encoded motors, and intelligent programming, the MiniLab Robot will maintain alignment and accurately carryout the specified automation solution.

The SEAL BOD software is fully customizable. This ensures your laboratory needs and regional regulations can be met.

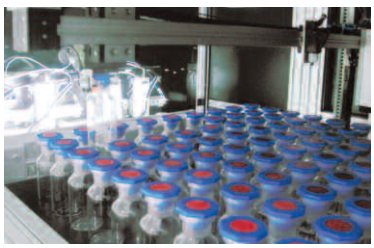
Suitable for EPA 405.1, ISO 5815-1, Standard Methods 5210 B, DIN 38 409-H51 etc.

AUTOMATION OPTIONS INCLUDE

- **Sample pipetting, pre-dilutions, barcode reading**
- **Bottle capping/de-capping**
- **pH measurement & adjusting pH**
- **Addition of dilution water**
- **Addition of the nitrification inhibitor (ATU) and/or seed**
- **Sample aeration**
- **Sample homogenization**
- **Measurement of dissolved oxygen**
- **Optical probes for fast stabilization**

BOD AUTOMATION

This BOD robot enclosure is a real example of full laboratory automation. It fully preps the samples including filtration, pH adjustment, dilution. BOD analysis is then done, adding ATU, stirring and reading. The system transports trays to and from the temperature controlled incubation chamber. It also features automatic storage, washing and drying of 1440 BOD bottles.



MULTI-PARAMETER

The Multi-parameter MiniLab can be configured to prepare and automate a range of analytical parameters – all in one system.

Ideal for water and soil applications, systems range from a simple single parameter unit, such as pH, to a multi probe unit designed to measure many parameters. These can include sample preparation features such as sample splitting and filtration. The MiniLab is compatible with many current meters, probe types and titration systems.

The MiniLab is true automation – designed to meet your laboratory needs.

AUTOMATION OPTIONS INCLUDE

- **Capping/decapping**
- **Sample splitting**
- **In line filtration**
- **Measurement of pH, conductivity, alkalinity, hardness, turbidity, color, etc.**
- **Auto dilution and stirring**
- **Heating and Weighing**

Automating one or more of the following parameters:

Alkalinity
pH
Conductivity
Turbidity
Color
Hardness
BOD
COD

CHEMICAL OXYGEN DEMAND COD

Automation of COD analysis is necessary to streamline the labor-intensive process and also to protect analysts from handling hazardous reagents. The MiniLab COD system automates both titration and sealed tube methods.

The MiniLab can handle both high and low range limits and perform one or more concurrent titrations. Various brands of titrators are supported with a built-in rinsing system to prevent contamination.

Suitable for: COD – ISO 6060 ST-COD – ISO 15705/EPA 410.4

AUTOMATION OPTIONS

- **Barcode scanning of the sample bottle**
- **Sample homogenization**
- **Automatic pre-dilutions**
- **Automatic dosing of sample in the COD tubes**
- **Addition of sulfuric acid and potassium dichromate**

AUTOMATION OF SOIL ANALYSIS

Analyzing soil quality is important for maximizing crop yield in agricultural applications and for assessment of interferences in natural terrestrial ecosystems. The MiniLab offers consistent automation solutions for various steps in soil sample pretreatment and analysis.

pH in Soil

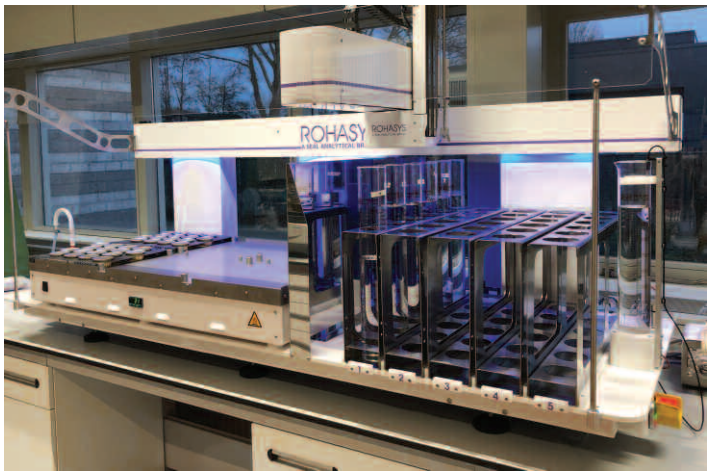
For pH measurement, the MiniLab will dispense requested volumes of extractant into the vial, stir and leave for a designated time. The system will automatically calibrate from your provided set of standards and then test the samples along with quality checks as set-up in the software.

As with all MiniLab systems, additional parameters can be added and system size can vary depending on your laboratories' needs.

AUTOMATION INCLUDES

- **pH probe calibration**
- **Addition of extraction solution**
- **Stirring**
- **pH measurement**

Particle size distribution / Clay fraction



AUTOMATION INCLUDES

- **Addition of sodium pyrophosphate**
- **Fill to volume water addition**
- **Sample homogenization**
- **Sample pipetting**
- **Sample drying**
- **Calculation**

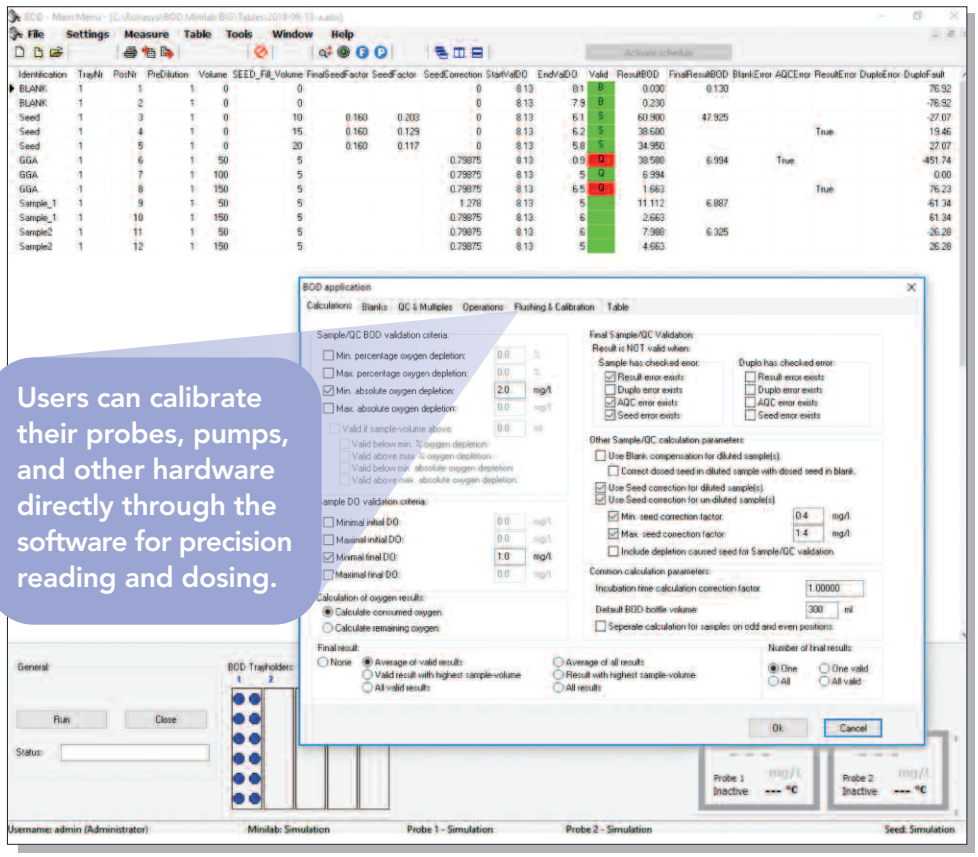
Suitable for ISO procedure ISO 11277

The SEAL MiniLab is perfectly suited to performing the clay fraction procedure. The system adds the sodium pyrophosphate to the sample and adds distilled water to bring the suspension to volume. The sample is then homogenized. After the settling period, an aliquot of the suspension is taken at the appropriate depth and dispensed into an evaporation dish. The clay fraction is calculated after evaporation (drying) of the sample trays.

SOFTWARE

The MiniLab Robotics Software is fully customizable to fit any lab's needs. The software features a variety of different Quick Start options based on the selected application. All of these can be edited and saved as templates for consistent, streamlined operation. Results are displayed in real-time, and user-defined quality control ensures that results for each method are validated. During a run, an analyst can set up future run tables, processing and exporting data, or building templates for additional methods to efficiently maximize operators' time based on your lab's specific needs.

- **Import Sample IDs from a file or barcode**
- **Programmable QCs**
- **Simplified LIMS synchronization**
- **Complete audit trail to confirm traceability**
- **Sample table customization, including templates**
- **Customized reporting and export options**
- **User access levels and log-ins for additional security**



Users can calibrate their probes, pumps, and other hardware directly through the software for precision reading and dosing.

Colorimetric Nutrient Analyzers

DISCRETE ANALYZERS

AQ270

AQ300

AQ400

SEGMENTED FLOW ANALYZERS

AA100

AA500

QuAAtro39

50 Years' Experience in Environmental Analysis Built into Every Analyzer

50 years' experience in designing, developing and manufacturing automated wet chemistry analyzers specifically for very low detection levels in environmental applications has helped SEAL to apply the most useful, easy to use features into the SEAL range of Discrete and Segmented Flow analyzers. The SEAL analyzers are widely acknowledged as the best for environmental analysis, giving you everything you need to achieve equal or superior results to the manual and approved laboratory methods the SEAL analyzer replaces.

Digestion Systems

FOR METALS AND TKN, TP DIGESTION

BD50

SmartBlock II

DEENA 3

SEAL Analyzers are monitoring environmental samples in every corner of the globe. They are manufacturered in the USA, Germany and the Netherlands. Engineering and chemistry support is provided from SEAL global facilities in USA, Germany, England, the Netherlands and China along with a worldwide network of specialist distributors.

COMPREHENSIVE SUPPORT

We offer comprehensive applications, technical service and software support.

INCLUDING

- A choice of preventative maintenance and service contracts to meet your specific requirements
- In-house and online training
- Guaranteed availability of genuine consumables and spare parts
- Adaptation of methods to specific requirements such as matrix, range or detection limit
- Continuous in-house development of software to incorporate new customer requested features

Robotic Handling Systems

SEAL Robotic MiniLab systems for automating sample pretreatment in the laboratory — improving your sample handling efficiency. Typical applications include BOD, pH, COD, Alkalinity, and conductivity measurements with options such as decapping/capping, sample splitting, and filtration. Call us about your laboratory needs and we will design a robot to suit you.

SEAL MiniLab

SEAL Analytical

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