SMARTCHEM 170

DIRECT READ DISCRETE ANALYZER FOR MAXIMUM PRODUCTIVITY IN WET CHEMISTRY ANALYSIS
The Smartchem 170 combines the latest technology in discrete analysis with an innovative, unique design that guarantees accurate and reproducible results.

The Smartchem 170 is the first discrete analyzer to utilize the Cuvette Quality Assurance System, performing an integrated QC check of each cuvette prior to use. In addition to automated analysis the Smartchem 170 offers automated system Quality Control.

The Smartchem 170 is also the first discrete analyzer to utilize a patented, dedicated sample prep module for the determination of NOx by Cadmium reduction. Designed for multi-tasking and high throughput rates, the NOx module also provides automated cadmium regeneration.

**INTERACTIVE GRAPHICAL “DASHBOARD” PROVIDES A USER-FRIENDLY INTERFACE:**

1. SELECT METHOD(S) AND TYPE IN SAMPLE IDS
2. FOLLOW THE DASHBOARD AND PLACE THE SAMPLES, REAGENTS, AND STOCK STANDARD IN THE AUTOSAMPLER
3. START ANALYSIS WITH A SIMPLE CLICK, ALL ANALYTICAL PROCEDURES FROM WORKING STANDARD DILUTION TO SAMPLE ANALYSIS, CUvette WASHING AND SYSTEM QC, ARE FULLY AUTOMATED AND DO NOT NEED ANY OPERATOR ACTION

**DIRECT READ : MORE SIMPLICITY & SECURITY**

The Smartchem 170 utilizes direct read photometry utilizing a true discrete, direct read measurement system and reusable, high purity synthetic optical cuvette system eliminating compromised sample measurement.

**SMARTWASH : ELIMINATE CARRYOVER DURING SAMPLING**

- Level sensor makes probe washing easy, with a standard 2mm immersion depth
- Probe cleaned after every liquid contact - prevents cross contamination and carryover
- Potential contaminants go the way they need to flow – out of the sample probe
- Three stage process: clean the inside of the probe, clean the washing well, then clean the outside of the probe

**SAMPLE LOADING**

- 5 universal, separate racks for continuous loading of samples, calibrators and controls
- Up to 170 tests/hour

**FILTER WHEEL**

- 9 optical filters, plus 1 dark filter, ranging from 340nm to 880 nm
- Others filters optionally available
CUVETTE QUALITY ASSURANCE SYSTEM: ELIMINATE CARRYOVER DURING ANALYSIS

- Automated cleaning eliminates carryover in the cuvette
- Optical integrity of each cuvette quantitatively verified before each use
- Provides an infinite number of reaction vessels for analysis
- Economical: long lasting cuvettes
- Environmentally friendly: Minimize hazardous waste and solid wastes
- No operator intervention required!

COMPUTER CONTROLLED MICRO PIPETTOR

- Accurate and precise dispensing of all liquids
- Automatic probe washing between each sampling cycle
- Microliter reagent and sample consumption
- Liquid level sensor provides warnings for low reagent and sample levels

NITRATE/NITRITE MODULE

- Automated cadmium coil regeneration for Nitrate & Nitrite analysis, complies with US EPA Method # 353.2 and SM 4500-NO3-F
- Patented design

PHOTOMETER

- High resolution, dual beam digital detector
- Expanded absorbance range to 2.500 ABS
- 5 detection modes: endpoint, fixed time, differential, bichromatic, and kinetic

USER FRIENDLY SMARTSTART SOFTWARE

The Smartchem 170 operating software runs under Windows XP or Windows Vista. Its bright graphical user interface simplifies routine work and offers the operator a concise guide through the operating functions.

MONITOR SCREEN

- Real-time presentation of sample and reagent status
- Dynamic monitoring of test execution
- Analyzer temperature control, START, STOP, and PAUSE functions
### Surface, ground, drinking, waste and sea water

- Acidity
- Alkalinity*
- Aluminum
- Ammonia*
- Chemical Oxygen Demand (COD)*
- Chloride*
- Chlorine
- Chromium*
- Cyanide*
- Fluoride*
- Hardness*
- Iron
- Manganese
- Nitrate*
- Nitrite*
- Phenol*
- Phosphate*
- Phosphorous*
- Silicate*
- Sulfate*
- Total Kjeldahl Nitrogen*
- Total Kjeldahl
- Urea

* According to EPA, ISO approved Methods

### Wine

- Acetic acid
- Ammonia
- Ascorbic Acid
- Cupper
- Ethanol (TVA)
- Free SO2
- Fructose
- Gluconic acid
- Glucose
- Iron
- Malic acid
- OD 420, OD 520, OD 620
- PANOPA
- pH
- Sorbic Acid
- Sucrose
- Tartric acid
- Total acidity
- Total SO2

### Soils & Plants

- Ammonia
- Boron
- Calcium
- Chloride
- Lysine
- Magnesium
- Nitrate
- Nitrite
- Phosphate
- Total Nitrogen
- Total Phosphorous
- Urea

### Feeds & Fertilizers

- Ammonia
- Calcium
- Chloride
- Phosphate
- Protein
- Total Nitrogen
- Total Phosphorous
- Urea

### METHODOLOGY PROGRAMMING

- All parameters are completely user programmable
- Up to 999 methods can be memorized
- All settings are user programmable
- User defined instrument factors
- User selectable pre-dilution and re-dilution ratio
- User selectable samples re-run option
- Tests calculation models are user selectable: Factor, Standard, Linear Fit, Point to Point, Quadratic, Cubic, Quartic, Cubic Inv, Sp-line, Log-Logic, Exponential, Log-Log Cubic

### GRAPH SCREEN

- Display of test reaction curves
- Display of test calibration curves

### DIAGNOSTIC SOFTWARE

- Each instrument part can be singularly tested
- Remote diagnostic capability

### MORE FEATURES

- Multilanguage files (user programmable)
- Bi-directional communication compliant with UMS standard
- Traceability and lot management

### AUTOMATIC DETECTION OF:

- End point limit
- Substrate depletion
- Fixed time and kinetic reaction linearity

### MAIN PARAMETERS
We have created Selection, a full range of enzymatic and colorimetric reagents dedicated to discrete analyzers Smartchem. Developed, tested and validated by our application laboratory, they will guarantee a perfect stability and reproducibility of your analyses. Very easy to use, they are supplied liquid, in specific bottles directly positionable on Smartchem, and automatically detected by the bar code reader (in option). Thus, this ready solution greatly simplifies the preparation of your analysis, facilitates the use and storage of reagents. It also secures your analyses with reagents adapted to your application and your instrument.

### REAGENTS FOR ENVIRONMENTAL ANALYSIS

<table>
<thead>
<tr>
<th>Selection AGUA</th>
<th>Selection OENO</th>
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</thead>
<tbody>
<tr>
<td>Alkalinity</td>
<td>Acetic, Citric, Gluconic, Lactic, Malic and Tartric Acid</td>
</tr>
<tr>
<td>Ammonia</td>
<td>Alpha Amino Nitrogen</td>
</tr>
<tr>
<td>Chromium VI</td>
<td>Ammonia</td>
</tr>
<tr>
<td>Chlorides</td>
<td>Anthocyanin</td>
</tr>
<tr>
<td>Cyanides</td>
<td>Arginine</td>
</tr>
<tr>
<td>Nitrate</td>
<td>Copper</td>
</tr>
<tr>
<td>Nitrite</td>
<td>Fuctrose</td>
</tr>
<tr>
<td>Phosphates</td>
<td>Free SO2</td>
</tr>
<tr>
<td>Silicate</td>
<td>Glucose</td>
</tr>
<tr>
<td>Sulfates</td>
<td>Glycerol</td>
</tr>
<tr>
<td>Phenol index</td>
<td>Iron</td>
</tr>
<tr>
<td>Total Kjeldahl Nitrogen</td>
<td>Polyphenols</td>
</tr>
<tr>
<td>Total Phosphorous</td>
<td>Total Acidity</td>
</tr>
<tr>
<td></td>
<td>Total SO2</td>
</tr>
<tr>
<td></td>
<td>Urea</td>
</tr>
</tbody>
</table>

Other parameters on demand.
Kits supplied in liquid format in vials adapted to your Smartchem.
1 to 3 reagents necessary according the parameter.
**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>Fully automated, direct read, bench top, Discrete analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSAY TYPE</td>
<td>End Point, Kinetic, Differential, Bi chromatic assays</td>
</tr>
<tr>
<td>ON-BOARD REAGENTS</td>
<td>2 racks provided to contain up to 16 reagents as follow:</td>
</tr>
<tr>
<td></td>
<td>- 1 rack for 10 reagent position</td>
</tr>
<tr>
<td></td>
<td>- 1 rack for 6 reagent positions and 10 stock standards</td>
</tr>
<tr>
<td></td>
<td>- 2 dedicated positions for diluents and other (spike solutions, QC samples...)</td>
</tr>
<tr>
<td>SAMPLES LOADING</td>
<td>5 racks for continuous loading of samples (126 positions)</td>
</tr>
<tr>
<td>URGENT SAMPLE ANALYSIS</td>
<td>Allowed at any time</td>
</tr>
<tr>
<td>THROUGHPUT</td>
<td>Up to 170 tests/hour</td>
</tr>
<tr>
<td>READING SYSTEM</td>
<td>Direct photometry</td>
</tr>
<tr>
<td>MINIMUM REACTION VOLUME</td>
<td>300 μl</td>
</tr>
</tbody>
</table>

**OPTICS SYSTEM**

<table>
<thead>
<tr>
<th>Photometer</th>
<th>Multi-wavelength optics, double beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>9 narrow band interferential filters</td>
</tr>
<tr>
<td>Source</td>
<td>Halogen lamp 6V/10W</td>
</tr>
<tr>
<td>Optical Path</td>
<td>10 mm</td>
</tr>
<tr>
<td>Linear range</td>
<td>0.001 - 2.500 Abs</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.0001 Abs</td>
</tr>
</tbody>
</table>

**SAMPLING SYSTEM**

- One mechanic arm provides all sampling operation with:
  - Capacitive liquid level sensing
  - Reagent pre-warming at 37°C
  - Automatic probe washing
  - Sample Volume range: 3.0 - 300 μl (1 μl incr.)
  - Reagent Volume: 3.0 - 300 μl (1 μl incr)
  - Sample pre-dilution
  - Sample rerun with or without dilution

**DILUTOR**

- Automatic dilution in pre and post-dilution

**REACTION PLATE**

- Circular 60 semi-disposable cuvettes tray:
  - Automatic cuvette washing
  - Continuous monitoring of cuvette quality
  - Incubation temperature: 37°C

**DIMENSIONS**

- 42 x 65 x 100 cm (H x W x L)
- 65 Kg

**OPTIONAL ACCESSORIES**

- Bar code reader
- Nitrate module
- Peltier chiller for reagent module
- Digestion system: Easy digest
- Distillation system: Easy Dist
- Ready to use reagents

**COMPLEMENTARY PRODUCTS**

- [Order Online](http://webshop.amsalliance.com)