

SMARTCHEM 140

DIRECT READ DISCRETE ANALYZER
FOR SIMPLE AND
AUTOMATED CHEMISTRIES



SMARTCHEM 140

FULLY AUTOMATED, DIRECT READ, DISCRETE ANALYZER TO MAXIMIZE PRODUCTIVITY FOR ROUTINE AND SPECIAL CHEMISTRIES, UP TO **140 TESTS/HOUR**



Based on widely used Smartchem 200 technology, the Smartchem 140 was designed for smaller laboratories in pursuit of efficiency and data quality.

The Smartchem 140 combines the latest technology in discrete analysis with an innovative, unique design that guarantees accurate and reproducible results.

The Smartchem 140 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 140 offers automated system Quality Control.

The Smartchem 140 is also the first discrete analyzer to utilize a patented, dedicated sample prep module for the determination of NO_x by Cadmium reduction. Designed for multi-tasking and high throughput rates, the NO_x 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
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
- 3.

THE ADVANTAGES OF DIRECT READ DISCRETE ANALYSIS

- Each reaction takes place in its own optical cuvette
- True sample blanking performed directly in each cuvette
- No flow cells
- No baseline stabilization
- No manual manifold changeover
- No excessive reagent consumption
- Automatic reagent blanking to evaluate reagent quality
- Pre and Post dilution of samples and calibration standards
- Automatic spike preparation
- Automatic method changeover
- Analyze samples in "batch" mode or "random" mode

DIRECT READ : MORE SIMPLICITY & SECURITY

The Smartchem 140 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

- 4 universal, separate racks for continuous loading of samples, calibrators and controls
- Up to 140 tests/hour

FILTER WHEEL

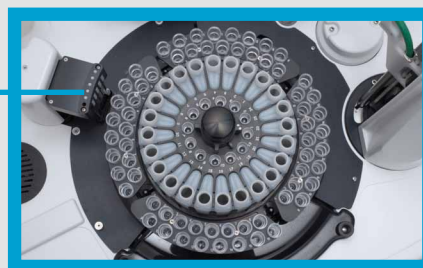
- 12 optical filters (9 on board), plus 1 dark filter, ranging from 340nm to 880 nm
- Others filters optionally available

Washing station Smartwash

Micro pipettor-dilutor



Cadmium module for Nitrate analysis



Long-life cuvettes with integrated Cuvette Quality Assurance System

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

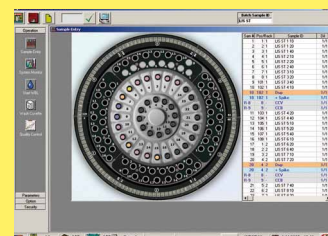
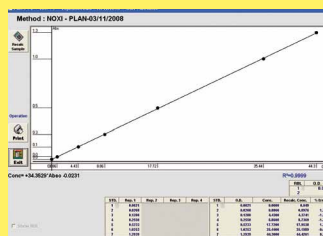
NITRATE/NITRITE MODULE

- 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 140 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

MAIN PARAMETERS

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
- Copper
- Ethanol (TVA)
- Free SO₂
- Fructose
- Gluconic acid
- Glucose
- Iron
- Malic acid
- OD 420, OD 520, OD 620
- PANOPA
- pH
- Sorbic Acid
- Sucrose
- Tartaric 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

AUTOMATIC DETECTION OF:

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

GRAPH SCREEN

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

DIAGNOSTIC SOFTWARE

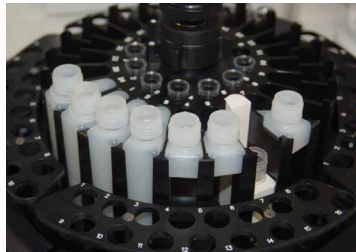
- Each instrument part can be singularly tested
- Remote diagnostic capability

MORE FEATURES

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

READY TO USE REAGENTS

- Developed specifically for the SMARTCHEM and EASYCHEM analyzers
- A full range of reagents for Environmental and Wine analysis
- Complete range adapted to all parameters
- Save time
- Save money
- Simple
- Ready to use



We have created Selection, a full range of enzymatic and colorimetric reagents dedicated to discrete analyzers Smartchem and Easychem. 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 Easychem, 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 yours analyzes with reagents adapted to your application and your instrument.

REAGENTS FOR ENVIRONMENTAL ANALYSIS	REAGENTS FOR WINE ANALYSIS
<p>Alkalinity Ammonia Chromium VI Chlorides Cyanides Nitrate Nitrite Phosphates Silicate Sulfates Phenol index Total Kjeldahl Nitrogen Total Phosphorous</p>	<p>Acetic, Citric, Gluconic, Lactic, Malic and Tartric Acid Alpha Amino Nitrogen Ammonia Anthocyanin Arginine Copper Fructose Free SO2 Glucose Glycerol Iron Polyphenols Total Acidity Total SO2 Urea</p>

Other parameters on demand.

*Kits supplied in liquid format in vials adapted to your Smartchem or Easychem.
1 to 3 reagents necessary according the parameter.*

THE AMS SYSTEMA DISCRETE ANALYZERS RANGE



Smartchem 140
Up to 140 tests/hour



Smartchem 170
Up to 170 tests/hour



Smartchem 200
Up to 200 tests/hour




Easychem 300
Up to 300 tests/hour

TECHNICAL SPECIFICATIONS

Hyxo Oy

P.O. Box 16 (Palokorvenkatu 2)
 FI-04261 Kerava, Finland
 Tel. +358 10 417 4500
 Fax +358 10 417 4501
 hyxo@hyxo.fi • www.hyxo.com

DESCRIPTION	Fully automated, direct read, bench top, Discrete analyzer	
ASSAY TYPE	End Point, Kinetic, Differential, Bi chromatic assays	
ON-BOARD REAGENTS	<ul style="list-style-type: none"> - 24 multi-use positions (reagents, diluents, spike solutions and QC samples) - 10 positions for stock calibration standards 	
SAMPLES LOADING	4 racks for continuous loading of samples (64 positions)	
URGENT SAMPLE ANALYSIS	Allowed at any time	
THROUGHPUT	Up to 140 tests/hour	
READING SYSTEM	Direct photometry	
MINIMUM REACTION VOLUME	300 µl	
OPTICS SYSTEM	Photometer	multi - wavelength optics, double beam
	Wavelength	12 narrow band interferential filters (9 on board)
	Source	halogen lamp 6V/10W
	Optical Path	6 mm
	Linear range	0.001 - 2.500 Abs
	Resolution	0.0001 Abs
SAMPLING SYSTEM	One mechanic arm provides all sampling operation with : <ul style="list-style-type: none"> - Capacitive liquid level sensing - Reagent pre-warming at 37°C - Automatic probe washing - Sample Volume range : 3.0 - 300 µl (1µl incr.) - Reagent Volume : 3.0 - 300 µl (1µl incr.) - Sample pre-dilution 	
DILUTOR	Automatic dilution in pre and post-dilution	
REACTION PLATE	Circular 120 semi-disposable cuvettes tray: <ul style="list-style-type: none"> - Automatic cuvette washing - Continuous monitoring of cuvette quality - Incubation temperature: 37°C 	
DIMENSIONS	76 x 56 x 59 cm (H x W x L)	
WEIGHT	43 Kg	
OPTIONAL ACCESSORIES	<ul style="list-style-type: none"> - Bar code reader - Nitrate module 	<ul style="list-style-type: none"> - Peltier chiller for reagent module
COMPLEMENTARY PRODUCTS	Digestion system: Easy digest Distillation system: Easy Dist Ready to use reagents	
		

© June 2012, AMS SYSTEMA Group. Non contractual pictures. Specifications may be changed without prior notice. All rights reserved.



www.ams-systema.com

Systema S.p.A.
 Via Paduni, 2A
 03012 Anagni
 ITALY

Tel. : (+39) 0775 776 058
 Fax. : (+39) 0775 772 204

AMS France
 10 avenue Charles de Gaulle
 95740 Frepillon
 FRANCE

Tel. : (+33) 134 18 71 10
 Fax : (+33) 139 60 72 39