

FIAnalyzer-1000

The new **FIAnalyzer-1000** offers complete automation of flow injection analysis; including FIAsoft control software, UV/VIS or VIS/NIR spectrometer, flow cell, light source, fiber optics, tubing and connectors. The low cost of the FIAnalyzer-1000 makes this system appealing to academic teaching and research laboratories. The robust design and adaptability make it the best choice for agricultural and environmental laboratories performing routine assays. Up to four systems can be interconnected to run four different assays simultaneously.

Compare the FIAnalyzer-1000 to other commercially available systems.

- 1) No need to purchase separate expensive manifolds for each type of method.
- 2) Wavelength selections are made through software, no additional filters or lamps are required when switching between methods.
- 3) Monitoring multiple wavelengths (up to six) substantially extends the system's dynamic range.
- 4) Further extend range by simultaneous use of a short and long path flow cell (optional configuration).
- 5) Reference wavelengths are utilized for compensation of colored matrices and index of refraction affects.
- 6) Adjust sample loop size via software using timed injections. No need to physically change a sample loop when switching assays.
- 7) Multiple channel systems can be separated and run as multiple single channel systems when desired.
- 8) Automatic correction for response drift (for example, caused by degradation of the cadmium column during the course of a run).
- 9) Available with 120, 180, 270, and 360 sample capacity autosamplers.

Example Applications

Nitrate: Using a cadmium column, this method performs FIA assays for soil testing, drinking, ground, surface, low level seawater, domestic and industrial wastewaters.

Phosphate: A low phosphate measurement method based on USEPA protocols for water testing. A similar method is also available for agricultural soil (**Bray, Mehlich, Olsen**) testing.

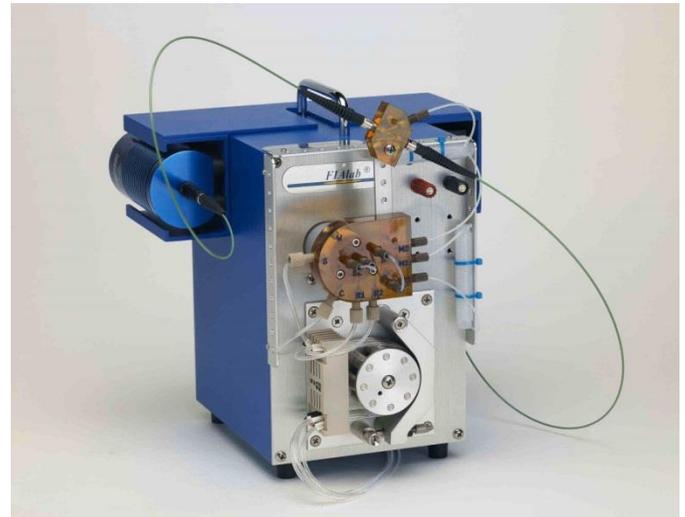
Ammonia: An FIA assay for low ammonia concentrations using the well-established salicylate method. Ideal for agricultural and environmental testing.

Chloride: A continuous flow FIA assay for chloride measurements in the low PPM or high PPB concentration ranges.

Sulfate: The sample is automatically precipitated with acidified barium chloride, and measured at 500 nm. Concentrations of 2.0 to 500 ppm can be assayed.

Seawater Nutrient: Ultra low level Nitrate and Ammonia measurements in seawater and other media using a 50 cm long path flow cell.

In-line Digestion: In-line UV digestion for total nitrogen and total phosphorous measurements. Batch digestion is also available



FIAnalyzer-1000 single channel FIA system

Typical FIAnalyzer-1000 System

- FIAnalyzer-1000
- Integrated FIA LOV Manifold (as shown)
- USB4000 UV/VIS Spectrometer
- HL2000-LL Visible Tungsten Lamp

Optional Components

- Autosampler (120 to 520 sample capacities)
- Long Path 50 cm Flow Cell for Low Level Assays
- Heater (for Ammonia and Phosphate Assays)
- DH2000 Deuterium UV Lamp
- PMT-FL Fluorometer
- BD50 Batch Digestor for TKN and TP Assays
- IL-UV In-Line Digestor for TN and TP Assays
- Flame Photometer for Potassium Assay
- Fast FIA Manifold for Increase Throughput

Increase Throughput: Use a dual probe autosampler to measure two sample vials at once.

Flow cell

SMA-Z Flow cell - 2.5 to 100 mm optical length
- 10mm for most standard assays

LP Long Path Flow cell - 50 cm optical path
- ideal for low nutrient ocean water assays

SMFC Sandwich Membrane Flow cell
- for dialysis and gas diffusion based assays



Sample Prep

Batch or IL-UV In-line Digestion Systems
- for TKN, TN, TP, total cyanide digestions

Light Sources and optics

HL2000-LL Light Source
- for visible colorimetric assays

DH-2000 Deuterium Tungsten Halogen Lamp
- for UV and visible colorimetric assays:
215-2000 nm

Various LED Lamps
- available in Visible, UV, and IR



Autosamplers

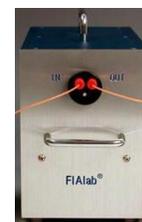
Cetac or Aim Autosamplers/Fraction Collectors
- a wide range of models and sizes are available



Detectors

Spectrometers
- Ocean Optics for colorimetric and fluorometric assays

PMT-FL Fluorometer
- for low level fluorometric assays



Method Performance

Agricultural and Environmental Assays

Agricultural and Environmental Assays are routinely performed with the FIAlyzer-1000 system, including nitrate, nitrite, ammonia, phosphate, and chloride (and many others). The following table lists a few methods, typical concentration ranges, and sample throughputs. Additional methods for lower and higher concentration ranges, as well as for other analytes are available, please inquire. Some of the following methods can be performed with brackish/seawater samples. Multiple channel systems are available to process up to four of these methods simultaneously.

Analyte	Throughput	Typical Ranges	Flow cell	Notes
Nitrate (Mid to High)	180 samples/hour	0.02 to 200 mg (N)/L	1 cm flow cell	Cadmium
Nitrite (Mid to High)	220 samples/hour	0.005 to 100 mg (N)/L	1 cm flow cell	
Nitrate (Low)	60 samples/hour	0.002 to 10 mg (N)/L	10 cm flow cell	Cadmium
Nitrite (Low)	80 samples/hour	0.0005 to 5 mg (N)/L	10 cm flow cell	
Nitrate (Ultra Low)	45 samples/hour	0.0004 to 1 mg (N)/L	50 cm flow cell	Cadmium
Nitrite (Ultra Low)	55 samples/hour	0.0001 to 0.5 mg (N)/L	50 cm flow cell	
Ammonia (Mid to High)	120 samples/hour	0.5 to 200 mg (N)/L	1 cm flow cell	Salicylate Method
Ammonia (Low)	80 samples/hour	0.01 to 10 mg (N)/L	10 cm flow cell	Salicylate Method
Ammonia (Ultra Low)	40 samples/hour	0.002 to 2 mg (N)/L	50 cm flow cell	Salicylate Method
Ammonia (Mid to High)	40 samples/hour	0.05 to 30 mg (N)/L	1 cm flow cell	Dialysis Cell
Ammonia (Low)	30 samples/hour	0.005 to 3 mg (N)/L	10 cm flow cell	Dialysis Cell
Ammonia (Ultra Low)	45 samples/hour	0.001 to 0.5 mg (N)/L	Fluorometric	OPA Method
TKN (Mid)	120 samples/hour	1.0 to 300 mg (N)/L	10 cm flow cell	Batch Digestion
Total Nitrogen	30 samples/hour	0.1 to 5 mg (N)/L	1 cm flow cell	In-line UV Digestion
Total Nitrogen	30 samples/hour	0.01 to 0.1 mg (N)/L	10 cm flow cell	In-line UV Digestion
Phosphate (Mid to High)	120 samples/hour	0.1 to 25 mg (P)/L	1 cm flow cell	Ortho/Bray/Olsen
Phosphate (Low)	60 samples/hour	0.01 to 2.5 mg (P)/L	10 cm flow cell	Ortho/Bray/Olsen
Phosphate (Ultra Low)	45 samples/hour	0.002 to 0.5 mg (P)/L	50 cm flow cell	Ortho
Fast Phosphate (Mid to High)	360 samples/hour	0.1 to 25 mg (P)/L	1 cm flow cell	Fast FIA Manifold
Fast Phosphate (Low)	240 samples/hour	0.01 to 2.5 mg (P)/L	10 cm flow cell	Fast FIA Manifold
Total Phosphorus (mid)	80 samples/hour	0.1 to 25 mg (P)/L	1 cm flow cell	
Total Phosphorus (low)	80 samples/hour	0.01 to 2.5 mg (P)/L	10 cm flow cell	
Chloride (Mid)	120 samples/hour	1 to 50 mg Cl-/L	1 cm flow cell	
Chloride (Low)	60 samples/hour	0.1 to 5 mg Cl-/L	10 cm flow cell	
Silica (Mid to High)	60 samples/hour	0.5 to 300 mg /L	1 cm flow cell	
Silica (Low)	60 samples/hour	0.05 to 30 mg /L	10 cm flow cell	
Silica (Ultra Low)	40 samples/hour	0.02 to 6 mg /L	50 cm flow cell	
Sulfate (Mid-high)	120 samples/hour	100 to 500 mg SO4/L	1 cm flow cell	
Sulfate (Low)	60 samples/hour	2 to 200 mg SO4/L	10 cm flow cell	
Iron (Mid)	140 samples/hour	0.025 to 100 mg/L	1 cm flow cell	
Iron (Low)	70 samples/hour	0.0025 to 10 mg/L	10 cm flow cell	
Iron (Ultra Low)	45 samples/hour	0.0005 to 0.2 mg/L	50 cm flow cell	

FIAsoft is a completely new software for FIAnalyzers written in C#. It is a powerful and user-friendly software package based on state-of-the-art programming technology. FIAsoft offers the following unique features:

Improved User Interface

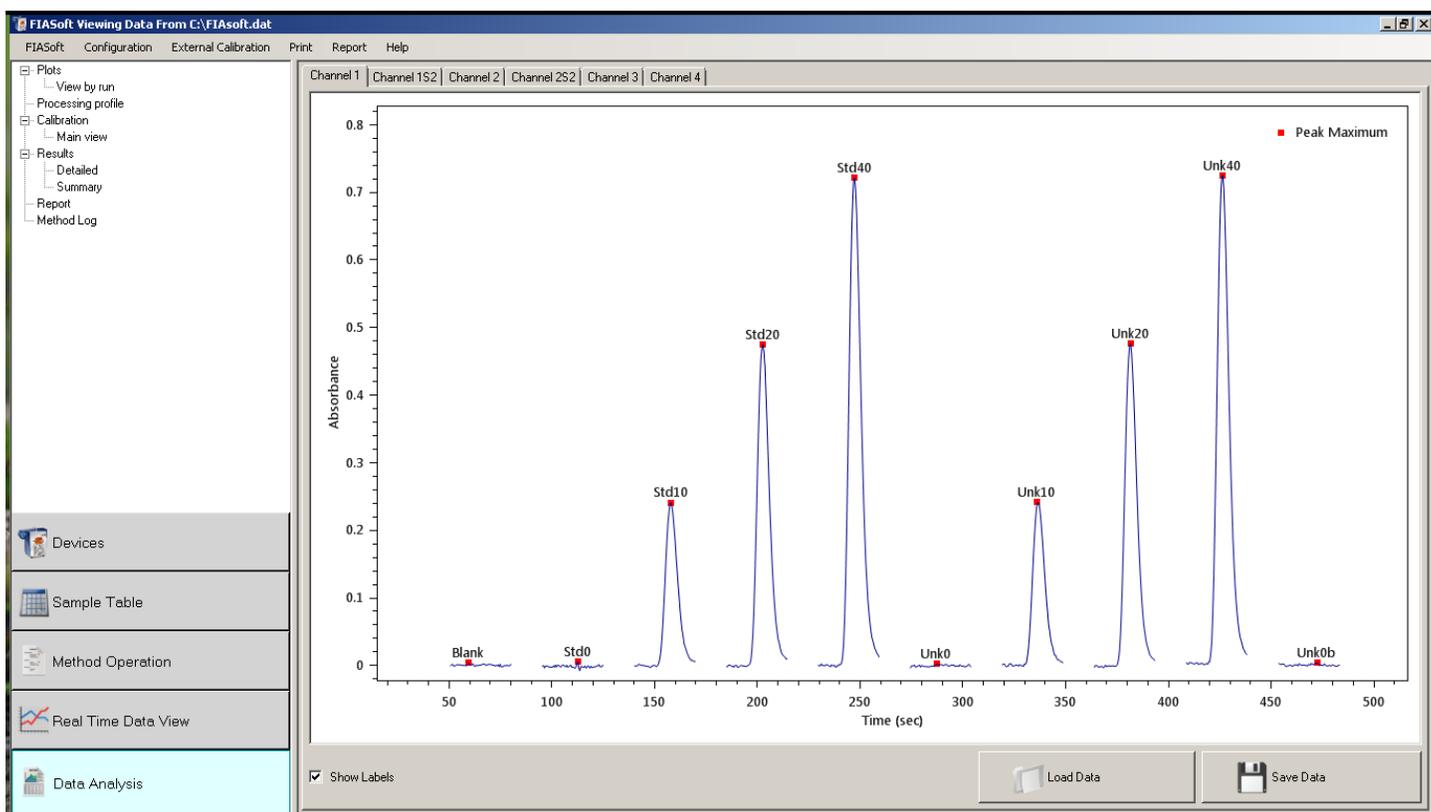
- **Faster and simpler configuration:** FIAsoft can auto-detect and configure many devices, while still allowing experienced users to tweak advanced settings.
- **Easy-to-use and streamlined interface:** FIAsoft's new interface is clean and easy to follow. Operations flow logically from one step to the next, allowing for smoother and faster operation.
- **Improved sample entry:** New features exist for entering and managing samples, including support for barcode readers, sample commenting, a dedicated standard table, and many others.
- **Enhanced plotting capabilities:** Plots and graphs in FIAsoft are faster and more responsive than ever before, allowing for smooth zooming, panning, and detailed inspection of data.

Status	Injection No	Sample Name	Rack Position	Sample Type	Level	Dilution Factor	Comment
Pending	1	Blank	RS1	Unknown	00	1	comment 1
Pending	2	Std0	RS1	Standard	01	1	comment 2
Pending	3	Std10	RS2	Standard	02	1	
Pending	4	Std20	RS3	Standard	03	1	
Pending	5	Std40	RS4	Standard	04	1	
Pending	6	Water	RS5	Unknown	00	1	
Pending	7	Water	RS6	Unknown	00	1	
Pending	8	Water	RS7	Unknown	00	1	
Pending	9	Water	RS8	Unknown	00	1	
Pending	10	Water	RS9	Unknown	00	1	
Pending	11	Wash	RS10	Unknown	00	1	
Pending	12	Unk1	RA1	Unknown	00	1	
Pending	13	Unk2	RA2	Unknown	00	1	
Pending	14	Unk3	RA3	Unknown	00	1	
Pending	15	Unk4	RA4	Unknown	00	1	
Pending	16	Unk5	RA5	Unknown	00	1	
Pending	17	Unk6	RA6	Unknown	00	1	
Pending	18	Unk7	RA7	Unknown	00	1	
Pending	19	Unk8	RA8	Unknown	00	1	
Pending	20	Unk9	RA9	Unknown	00	1	
Pending	21	Unk10	RA10	Unknown	00	1	
Pending	22	Unk11	RA11	Unknown	00	1	
Pending	23	Unk12	RA12	Unknown	00	1	

Our simple to use sample table includes barcode entry, sample comments, the use of dilution factors, and easy insertion of new samples, even during a run!

Improved Data Processing and Reliability

- **Modern, database driven data management:** FIAsoft's new SQL database backend improves the speed and reliability of data collection.
- **Faster, robust multithreaded data collection:** Data collection is done in an asynchronous, multithreaded environment, allowing detectors to operate completely independent of one another and any other processes running on the computer. This allows FIAsoft to achieve a high level of data throughput and reliability.
- **Improved data processing:** New filtering and background correction algorithms exist to improve data quality and minimize noise.
- **Support for up to 8 channels:** Efficient programming allows FIAsoft to manage more data than ever before. FIAsoft is capable of monitoring many types of detectors and can gather data from up to 8 channels.
- **Improved reliability:** FIAsoft has been rigorously tested to ensure stability and highly robust operation. FIAsoft is designed to meet the requirements of even the most demanding high volume laboratories.



New plotting capabilities in FIAsoft allow for smooth zooming, panning, and detailed data inspection. Results are displayed graphically as well as in tables and results can be exported in a variety of formats.