

## FIAnalyzer-2000

The new **FIAnalyzer-2000** offers the same dual channel FIA capabilities as two connected FIAnalyzer-1000s, except it's built into a single enclosure with a dual sample loop injection valve and an eight channel peristaltic pump.

The advantages compared to two single channel FIAnalyzer-1000s include cost savings, smaller bench space, increased speed (sample has less distance to travel to fill both sample loops), and simplicity. Consider connecting two FIAnalyzer-2000s to create an economical four channel FIA system.

The same assays compatible with the FIAnalyzer-1000 will work well with the FIAnalyzer-2000.

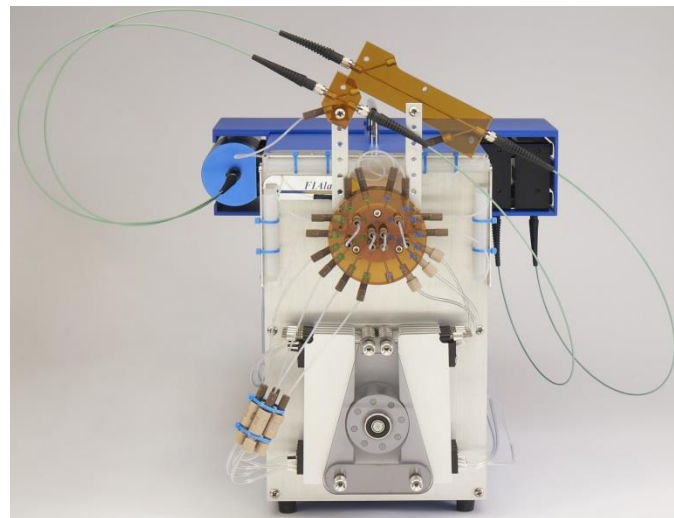
Example Analyte Combinations	Throughput
Nitrate and Nitrite	240/hr
Nitrate and Ammonia	120/hr
Nitrate and Chloride	240/hr
Nitrate and Sulfate	120/hr
Ortho Phosphate and Nitrate	240/hr
Ortho Phosphate and Ammonia	120/hr
Bray Phosphate and Potassium (with Flame Photometer for Potassium)	240/hr

### Typical FIAnalyzer-2000 System

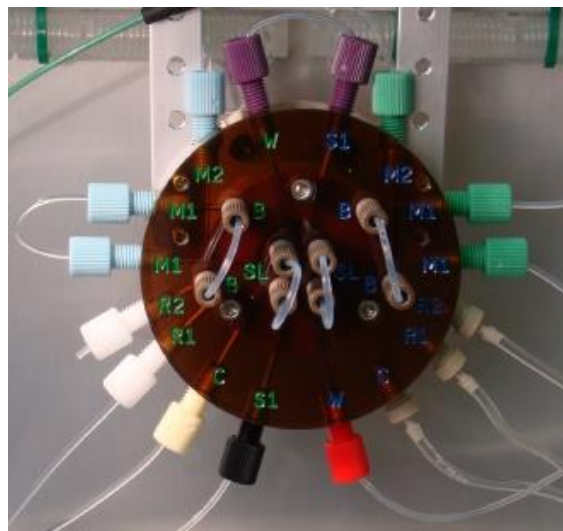
FIAnalyzer-2000  
 Integrated Dual FIA LOV Manifold  
 Two USB4000 UV/VIS Spectrometers  
 HL2000-LL Visible Tungsten Lamp

### Optional Components

Autosampler (120 to 520 sample capacities)  
 Long Path 50 cm Flow Cell for Low Level Assays  
 Heater (for Ammonia and Phosphate Assays)  
 BD50 Batch or IL-UV In-Line Digester  
 Flame Photometer for Potassium Assays



FIAnalyzer-2000 Dual Channel System



Lab-On-Valve for FIAnalyzer-2000

### Example Configurations

**Dual Assays:** Measure two analytes simultaneously.

**Extended Range:** Inject two different size sample loops into two different size flow cells to extend the dynamic range.

**Nitrate plus Nitrite:** Simultaneously measure nitrate plus nitrite (with column) and nitrite (without column), and automatically derive the separate nitrate and nitrite components.

## Flow Injection Add-On Components for the FIAlyzer-2000 Systems

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

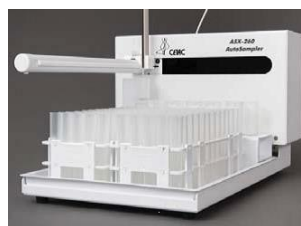
DH-2000 Deuterium Tungsten Halogen Lamp  
- for UV and visible colorimetric assays:  
215-2000 nm

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, and FIAlyzer-2000 systems, 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 SO <sub>4</sub> /L	1 cm flow cell	
Sulfate (Low)	60 samples/hour	2 to 200 mg SO <sub>4</sub> /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.

The screenshot displays the FIAsoft software interface. On the left, there is a navigation pane with options: Sample Table (selected), Standard Table, Devices, Method Operation, Real Time Data View, and Data Analysis. The main window contains a table with the following data:

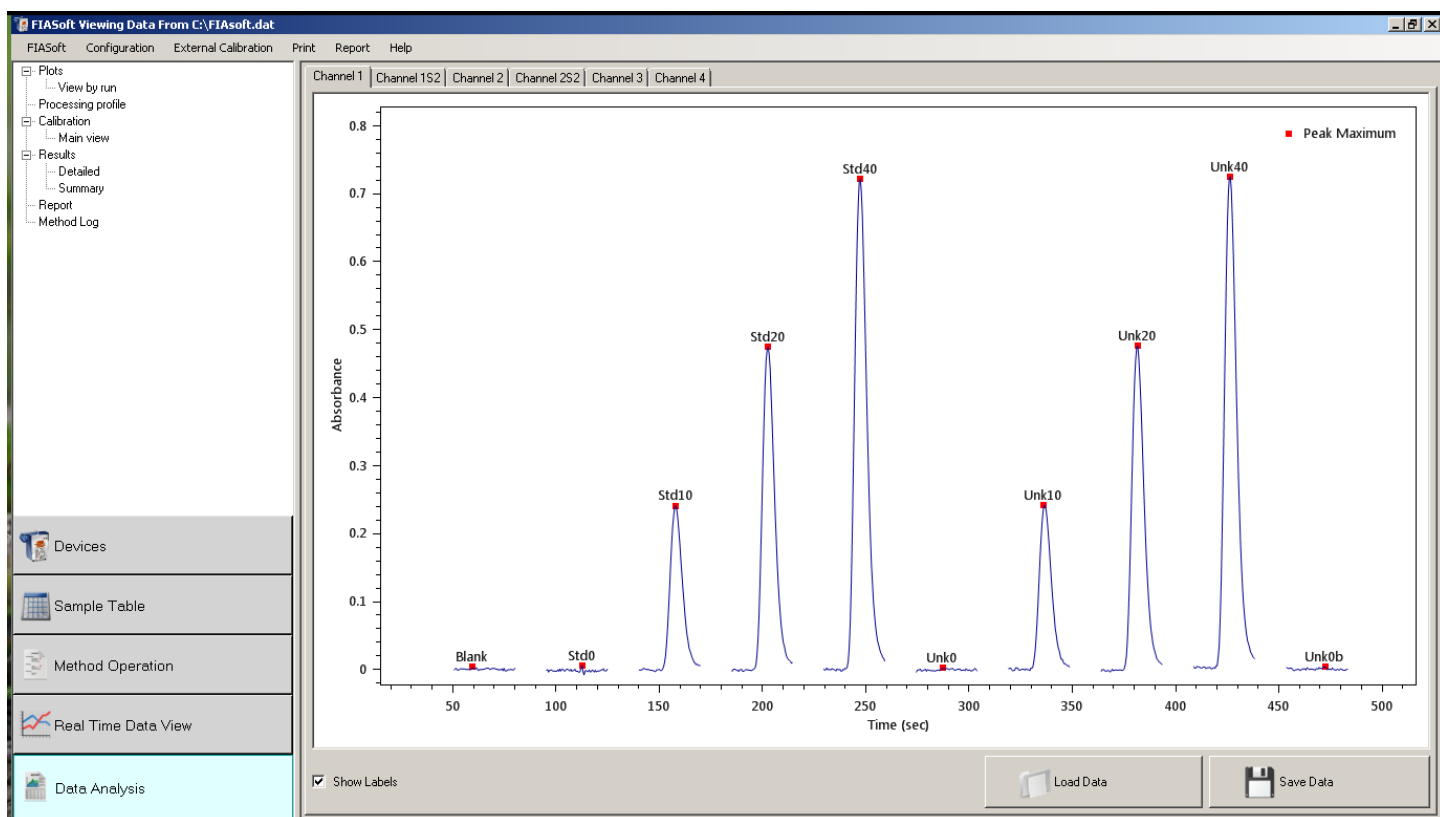
Status	Injection No	Sample Name	Rack Position	Sample Type	Level	Dilution Factor	Comment
Pending	1	Blank	RS1	Unknown	00	1	comment 1
Pending	2	Std0	RS1	Standard	01	1	comment 2
Pending	3	Std10	RS2	Standard	02	1	
Pending	4	Std20	RS3	Standard	03	1	
Pending	5	Std40	RS4	Standard	04	1	
Pending	6	Water	RS5	Unknown	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	

Below the table, there are several controls: radio buttons for 'Add Sample', 'Edit/Remove Sample', 'Rapid Entry', and 'Lock Table' (selected); a 'Selected Editor' dropdown menu set to 'Notepad'; a 'Launch Selected Editor' button; a 'Load Template' button; and a 'Save Template' button. There are also 'Apply' and 'Cancel' buttons on the right side of the interface.

*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.*