

FLEX2 ROBOTIC SAMPLING PLATFORM

Precision and Accuracy You Can Rely On



For 30 years, EST Analytical has been a leader providing automated solutions that improve productivity and efficiency in the laboratory. As an ISO9001: 2015 Certified USA based manufacturer, we offer products that are of the highest quality, reliability and value, backed with support that has no rival in the industry.

The Flex 2 Robotic Sampling Platform was designed to empower chemists who are being asked to do more with less. Robotic platforms have been around for years, but the ability to take advantage of the complete capability of the platform has been limited due to the difficulty in programming. The Flex 2 offers a new user interface that is intuitive and simple to use. Complex routines such as internal standard addition, solvent addition or agitation for extraction are accomplished through our drag-and-drop interface that makes even the most difficult routines simple to perform.



KEY FEATURES

- Global partner with superior support
- ISO9001 Quality Management
 System Certified
- Improved location positional accuracy with new encoder motors
- Reduced positional noise
- Compatible with any GC or as a stand alone workstation
- Two rail sizes are available: 82cm a 123cm
- ✓ Multi-SPME fiber change capability
- Multi-tool change capability
- Advanced positional awareness
- New electronics
- Robust communication protocol





The Flex 2 offers a wide range of capabilities, but none is as important as its precision and accuracy during liquid injections and sample preparation. All steps and speeds in the process are programmable. Viscous samples can be handled by slowing plunger speeds and needle discrimination can be decreased on high molecular weight samples with hot needle injections. All parameters are easily programmable using our innovative drag-and-drop Flex 2, FlexOS control software.



LIQUID ROUTINES INCLUDE:

- High precision improves %RSD
- A wide variety of syringe sizes
- Control of plunger and injection speeds
- Multiple injection port capability
- Air gapping
- Liquid Injection Range
- 0.5µl to 10µl with standard 10µl syringe
- 50µl to 500µl with optional 500µl syringe





Sample Preparation

One of the key design concepts of the Flex 2 Robotic Sampling Platform was to open the true power of a XYZ system to the chemist. Robotic platforms can only be utilized to their full potential if the user can program their complex routine themselves.

The power of our innovative Method Development software is demonstrated in its ability to perform complex sample preparation routines. Mixing, heating, addition of standards or solvent, derivatization agents with wait times and multiple syringe rinses can all easily be programmed. Many customers choose to utilize the Flex 2 on a bench top, without being mounted on a GC, to simply take advantage of its ability to reliably perform automated sample preparation.

SAMPLE PREPARATION

- Automated internal standard addition
- Automated derivatization
- Automated dilutions
- / Mixing
- Heating



Check out our Method Development software. Create simple complex routines without the need for a third party programmer.



The key to success in headspace analysis is precise temperature control. Very small variations in temperature can change results by more than 10%. The precise temperature control offered by the Flex 2 incubator station eliminates this variable. The Flex 2 design also eliminates valves and transfer lines found on other systems which can cause high carryover, discrimination and degradation of thermally-labile compounds. With fewer parameters to control, method development and troubleshooting are simplified.

EST Analytical offers a wide range of application notes from various industries using headspace analysis. To download our application notes, visit www.estanalytical.com/flex-app-notes.



Don't see what you are looking for? Contact EST! We routinely customize solutions for a wide variety of industries.



KEY FEATURES

- 6 position incubator with precise temperature control up to 200°C
- Orbital and Oscillation mixing at various speeds
- Intelligent automation maximizes throughput
- Various syringe sizes available up to 5ml (2.5ml standard)
- Multiple vial sizes can be used with inserts in the incubator (20ml standard)
- Headspace Injection Range
- 100µl to 2500µl with standard 2.5ml syringe
- 100µl to 1000µl with optional 1.0ml syringe
- 500µl to 5000µl with optional 5.0ml syringe



Solid Phase Micro Extraction (SPME)

SPME has become one of the most powerful tools used by chromatographers over the past decade. With a wide variety of phases available, samples can be selectively enriched to provide more sensitivity while reducing unwanted compounds.

During the extraction process, the SPME fiber is traditionally exposed to the sample while in the sample incubator. At the same time, the incubator is set to move in an orbital rotation to decrease extraction time. This orbital rotation can, over time, cause damage to the fiber. Through the Flex 2, FlexOS control software, the user can choose to move the incubator in an oscillating movement instead of orbital movement which dramatically reduces stress on the fiber and extends fiber lifetime.

Multi Fiber Exchange (MFX)

MFX takes SPME automation to a new level for both routine and research laboratories. MFX allows the system to automatically change between 6 or even 12 fibers that are installed on the system. For routine analysis these could all be a single SPME fiber type. Sequences can be programmed to perform, for example, 50 extractions. The fiber can then be changed, a QC sample run, and an additional 50 samples can be analyzed and so on.

Research and method optimization with SPME can be a trial and error process which takes time and a lot of manual intervention with other systems. With MFX, multiple fibers can be run under different conditions to automate method optimization.



KEY FEATURES

- SPME option includes conditioning station
- Orbital and oscillation of the 6 position incubator during extraction
- Optional single-magnet mixer station
- Unlike other techniques, SPME fully automates extraction and desorption



EST Analytical is a global company. No matter where you are, we have a support solution for you.

Multi-Tool Changer

Unlock the power of an easy to use automated platform with the new MultiTool Exchange (MTX) option from EST analytical. The option comes standard with three tools, but depending upon the size of the rail (Standard vs XTR), users can have many more tools ready to use.

MTX enables the true capability of the XYZ platform through use of the FlexOS software platform. The easy to use interface makes the tool changing process simple and easy to use which enables any user to easily create complete sample preparation methods.



KEY FEATURES

- Add Internal standard to a 20ml HS vial before incubation and perform headspace analysis all unattended
- Automated dilutions with larger volume syringes, followed by a 1 ul injection using a 10ul syringe
- Change between SPME and Headspace to evaluate different techniques to selectivity and sensitivity
- Change between different SPME fibers to optimize your SPME application or to have a fresh SPME fiber available for high throughput analysis



* The Multi-tool Exchange can easily be added to the rail

During SetUp, trays and other devices are added to the rail from a built in library. Each device can be easily calibrated using a simple to use configuration wizard with pictures and step by step instructions.

	Cor	figuration Wizard					C	RESET POSITION	1 KEYBOARD CONTROL INFO	
ANCEL WIZARD PREVIOUS STEP PREVIOUS STEP </td <td></td> <td></td> <td></td> <td>FLEX</td> <td></td> <td></td> <td>Insert v</td> <td>ials</td> <td></td> <td></td>				FLEX			Insert v	ials		
PReX3 Configuration Frg. 2 ml, 105 Prs Trg. 100 ml, 32 Prs Trg. 2 ml, 105 Prs Frg. 2 ml, 105 Prs	C	ANCEL WIZARD							PREVIOUS STEP NEXT STEP	
 Configuration Instrument FLX01 Status Methods Sequences Configuration Diagnostics Options Help Logout 										
Configuration Status Methods Sequences Configuration Diagnostics Options Instrument FLD Instrument FLD Instrument FLD Image: Sequences Image: Sequence	🖲 FlexOS								- 0	×
Instrument FLX01		Configuratio <u>n</u>							EST Analytical 💄	
Methods Sequences Configuration Diagnostics Options Help Logout Incubator, 2/10/20 mL, 6 Single Magnet Mizer Needer/Fiber Conditioner SPME Fiber Holder (MFX) Multiple Tool Exchange () Single Magnet Mizer Needer/Fiber Conditioner SPME Fiber Holder (MFX) Multiple Tool Exchange () Single Injection Port Image: Configuration () Image: C	6	Instrument FLX011	Tray, 2 mL, 105 Pos	Tray, 10/20 mL, 32 Pos	Tray, 100 mL, 8 Pos	Tray, 2 mL, 98 Pos, Chiller	Solvent/Waste, 10 mL, 4	Solvent/Waste, 100 mL, 2		
Sequences Configuration Diagnostics Options Incubator, 2/10/20 mL, 6 Single Magnet Mixer Needle/Fiber Conditioner SPME Fiber Holder (MFX) Mattiple Tool Exchange () Single Injection Port Incubator, 2/10/20 mL, 6 Single Magnet Mixer Needle/Fiber Conditioner SPME Fiber Holder (MFX) Mattiple Tool Exchange () Single Injection Port Incubator, 2/10/20 mL, 6 Single Magnet Mixer Needle/Fiber Conditioner SPME Fiber Holder (MFX) MITX Image: Control Image: Contro <td< td=""><td>8</td><td>Methods</td><td>fei fei</td><td>let let</td><td>77</td><td></td><td>1</td><td>Ť</td><td></td><td></td></td<>	8	Methods	fei fei	let let	77		1	Ť		
		Sequences Configuration					and the		lei	
Options Incubico, 2/10/20 mL, 6 Single Magnet Mixer Needle/Fiber Conditioner SPME Fiber Holder (MFX) Multiple Tool Exchange () Single Injection Port Image: Conditional System Image: Condition Image: Conditional System <td>×</td> <td>Diagnostics</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>0</td> <td></td>	×	Diagnostics				-			0	
	¢:	Options Help	Incubator, 2/10/20 mL, 6	Single Magnet Mixer	Needle/Fiber Conditioner	SPME Fiber Holder (MFX-	Multiple Tool Exchange (I	Single Injection Port	1	
FST P	Ċ	Logout					MTX	Q A So		
analytical	E	ST.	Double Injection Port							

Drag Accessories to the rail from a built-in library of available options. Need something different? Let us know and our team can develop it for you!

Flex Software: Run Status

From the Run Status Screen, a complete overview of the system is possible. Temperature set points, sequence status, estimated time to complete the sequence is displayed.



The software displays each step in the method with the time left to complete each step.

Flex Software: Method Development

This is the key element that enables chemists to maximize the true power of the Flex 2 platform. The user can simply choose a routine and drag it over to a list of tasks for the autosampler to perform.

Once it is added to the task list, the user can program the details for that specific task. Methods are automatically checked for certain criteria to avoid errors and/or conflicts.

FlexOS			- o >
Method Details	Routines		
Name Liquid Slow - Example	Routine Library Sample Preparation	Method Tasks	· · · · · · · · · · · · · · · · · · ·
Comments	Fill With Air	Wait	Tool Liquid Syringe, 10 μl* 🗨 🛢
	Incubate/Agitate	Wait Mode Time passed	
	Preheat (?		
	Dispense liquid into Vial	Rinse Syringe	Tool Liquid Syringe, 10 μl* 🚽 🛢
	Syringe Fill	Solvent / Waste Station Solvent Position Solvent/Waste, 10 mL, 4 Pos (1) - Position 1	▼
CANCEL SAVE METHOD	Liquid and Headspace	Solvent Needle Depth 5 Waste Position Solvent/Waste, 10 mL, 4 Pos (1) - Position 1	millimeters ?
Validation	Headspace Sample ?	Waste Needle Depth 5	millimeters
This method has no validation issues.	Headspace Sweep Needle ?	# Rinse Cycles 1 Solvent Volume 10 Fill Rate 40	microliters
	Liquid Sample	Empty Rate 40	microliters/second
	Rinse Syringe	Liquid Sample	Tool Liquid Syringe, 10 μl* 🚽 🛢
	Utility	Sample Parameters	

Drag routines to the right to create a sequence of tasks for the Flex 2 to perform.

Flex Software: Sequence and Integration

Sequences can be created easily by choosing from the Method library, the sample position and sample type. The line can be easily duplicated for all of your samples by highlighting the samples in your tray.

Integration with Agilent software means a single sequence can be developed with just a few mouse clicks.

laybreak it View Window Help							-	٥
	e o 	-						
equence Information		Method	Tray	Vial #	RPV	Sample Type	Description	100
	1	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	1	1	BLANK		
	2	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	2	1	CALIBRATION		
etungs	3	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	3	1	CALIBRATION		
quence Name	4	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	4	1	CALIBRATION		
lood Alcohol	5	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	5	1	CALIBRATION		
	6	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	6	1	BLANK		
alidation	7	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	7	1	SAMPLE		
reak few Window Help ance Information rgs noe Name d Alcohol ation this sequence has no known issues. CANCEL SAVE SEQUENCE reters reter	8	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	8	1	SAMPLE		
This sequence has no known issues.	Seconds Seconds Tray, 10/20 mL, 32 Pos (1) 1 B BANK Description 1 Biood Alcohol Tray, 10/20 mL, 32 Pos (1) 1 1 BLANK							
CANCEL SAVE SEQUENCE	10	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	10	1	SAMPLE		
	11	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	11	1	SAMPLE		
CANCEL SAVE SEQUENCE	CANCEL SAVE SEQUENCE 11 Diodo Alcohol Tray, 10/20 flL, 32 Pos (1) 12 Blood Alcohol Tray, 10/20 flL, 32 Pos (1) 13 Blood Alcohol Tray, 10/20 flL, 32 Pos (1) 14 Blood Alcohol Tray, 10/20 flL, 32 Pos (1) 14 Blood Alcohol Tray, 10/20 flL, 32 Pos (1)	12	1	SAMPLE				
		Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	13	1	SAMPLE		
	14	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	14	1	SAMPLE		
arameters	15	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	15	1	SAMPLE		
	16	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	16	1	SAMPLE		
General Settings	17	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	17	1	CALIBRATION		
Jeneral Octangs	18	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	18	1	SAMPLE		
tart delay	19	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	19	1	SAMPLE		
seconds	20	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	20	1	SAMPLE		
he amount of time to wait before the first line of the sequence begins	21	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	21	1	SAMPLE		
equence execution count	22	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	22	1	SAMPLE		
equence execution count	23	Blood Alcohol	Tray, 10/20 mL, 32 Pos (1)	23	1	SAMPLE		
'he total number of times to execute this sequence in a row	24	Blood Alcohol	Tray, 10/20 mL, 32 🔻	24	1	Calibration 🔻		
Fiming and Planning								
Standby mode	25							
enabled, the sequence will not begin until all heated zones have reached their	26							
roper temperature.	27			_				-
Prepare samples ahead of time								

Create a single sequence and run it from your GC software

(513) 642-0100

EMAIL EST@ESTanalytical.com

WEBSITE ESTanalytical.com

A D D R E S S 503 Commercial Drive Fairfield, Ohio 45014