

# RapidTrace<sup>®</sup> +

Automated SPE Workstation



# Automate Your Extractions

Increase your throughput and productivity

The RapidTrace+ is a robust automated platform for quickly developing rugged, reliable SPE methods in regulated pharmaceutical, clinical and forensic laboratories. The RapidTrace+ eliminates SPE bottlenecks so you can realize the full benefits of today's powerful analytical instruments.

## The SPE Landscape

Advanced bioanalytical techniques like LC/MS/MS and GC/MS are meeting the increasing demand for greater speed and specificity in toxicological screening. Conventional sample preparation methods have not kept pace. Solid phase extraction (SPE) in particular, an essential step in the analysis of many biomolecules, has become a throughput limiting factor in many laboratories.

## The New Solution

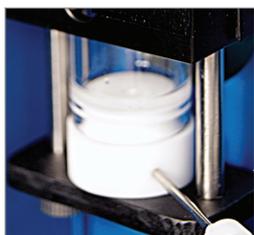
The RapidTrace+ is the perfect complement to high speed analytical techniques, a powerful high-throughput workstation dedicated specifically to SPE. In its fully modular configuration, a ten module workstation can process up to 100 samples per hour.

## The RapidTrace+ delivers:

- More samples per headcount
- Faster turnaround of results
- Improved quality, precision, accuracy and sensitivity
- Consistency of preparation
- Compliance with regulatory requirements
- Improved safety
- Quick response to peak or unexpected work loads

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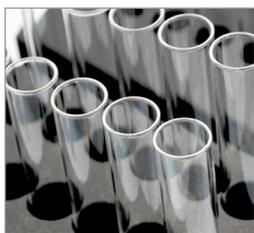
<b>contents</b>	<b>page</b>
RapidTrace+	3
Advantages	4
Specifications	5
Accessories & Related Products	6
Upgrades	7
Ordering Information	7



Closed fluid path system with segregated waste lines maintain integrity of sample



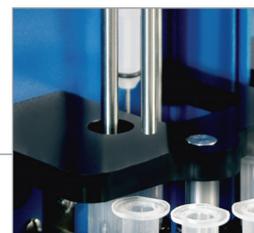
Eight solvent/reagent lines for maximum methods flexibility



Magnetically encoded racks of routine samples



Reagent mixing chamber allows automated online reagent blending in the method



Positive pressure, stepper motor syringe pump delivers precise flow rates



Compatible with 1, 3 and 6 mL version SPE columns

## RapidTrace<sup>+</sup>

### Intuitive SPE Automation

#### Rapid, Automated Sample Preparation for Routine Processing and Method Development

The RapidTrace+ is designed for advanced processing and the rapid development of rugged sample preparation methods. It is extremely reliable and precise, incorporating easy-to-use features for quick method optimization. RapidTrace+ has been successfully implemented in a variety of laboratories all over the world.

The Biotage RapidTrace+ eliminates manual sample processing bottlenecks so that analysts can realize the full benefits of today's powerful analytical instruments. RapidTrace+ is the perfect complement to highspeed analytical techniques, a powerful high-throughput workstation dedicated to unattended automated sample preparation.

The enhanced RapidTrace+ broadens usability and increases instrument performance.

#### Fast and Easy Method Development with Easy-to-Use Software

Utilizing the familiar Microsoft® Windows® interface, operators can easily implement a structured, rational strategy for method-development to determine optimum processing conditions for each sample. The methods can be written in minutes and recalled in seconds. Optimization of processing conditions is possible in a fraction of the time compared with conventional manual techniques. Column formats, reagents, concentrations and flow rates can be thoroughly explored as the system allows for incremental manipulation of any parameter (eg. pH, solvent concentration, cartridge type, flow rate etc) in order to determine effects on recovery and precision. Operators can insert, delete or manipulate steps and easily adjust parameters.

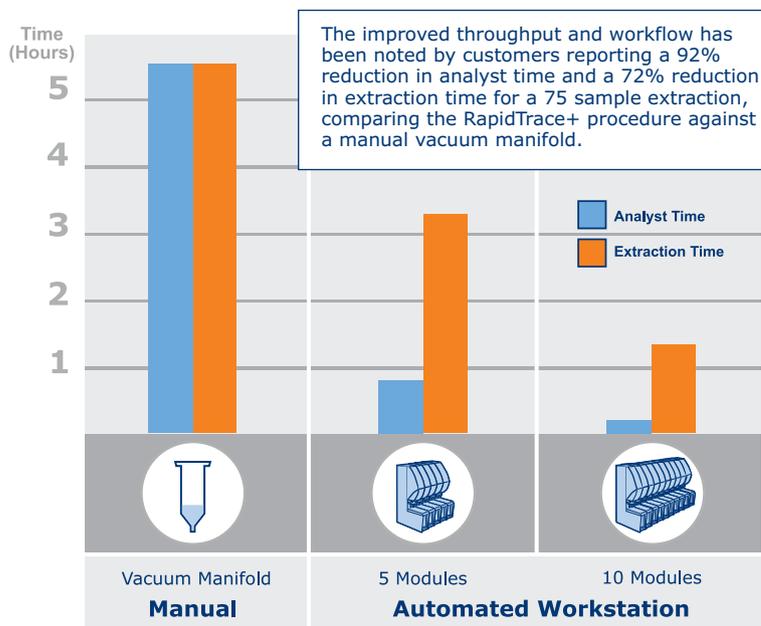
Methods can be assigned to an individual sample or by module. The methods stored in the RapidTrace+ controller can be easily transferred to other RapidTrace+ workstations. Additionally, methods can be saved and run concurrently or true, unattended, "multi-method" sample processing. This unique and rational method design capability dramatically speeds the development of rugged and reliable methods.

# Technological Advantages for High Performance

## Unmatched Performance and Throughput

The RapidTrace+ reduces time-consuming manual sample preparation methods and ensures that processing times match analytical capabilities. Every step of the sample preparation process is automated and rigorously controlled to give you a level of reproducibility unmatched by manual techniques.

All sample and solvent flow rates are individually controlled under positive pressure. Each step in the processing can be optimized for maximum accuracy and precision.



- **NEW! Compatible with 1, 3, and 6 mL SPE Columns**

Increased bed height enables the use of a wider range of SPE cartridges including all ISOLUTE® and EVOLUTE® bed masses allowing for flexibility in methodology.

- **NEW! Larger sample volumes**

A new 5 position rack for 40 mL scintillation vials allows for larger sample volumes to be processed, often desired for food and environmental applications.

- **NEW! Delay Start feature**

Easily leave extracted samples unattended. Extracts are freshly prepared when you return.

- **Modular design allows for up to 10 linked units**

The Modular design allows users to start with one module and expand up to 10 linked units. Modules within a group can run different methods independently and if one module is shut down for operator attention, other units remain operational so that sample throughput is not halted.

- **Accelerated methods development and optimization**

Utilizing the easy-to-use interface, it is simple to implement a structured, rational strategy for optimum SPE conditions in experiments.

- **Readily transferable methods**

Methods stored in the RapidTrace+ controller can be instantly recalled and transferred to other units with 100% confidence.

- **Positive Pressure Syringe Displacement**

Positive pressure displacement allows for accurate processing and improves reproducibility in flow rate sensitive methods

- **Safety and Security**

Enclosed working parts ensures operator safety and reduced exposure to solvents and hazardous compounds. Additionally, password protected control software limits access to methods ensuring method security. Combined with magnetically encoded racks, run initiation is simplified and the possibility of loading an incorrect procedure is reduced.

- **8 Solvent Inlet Lines**

Allows for more flexible use of solvents and provides an excellent system for method development.

- **Segregated Waste Lines**

Four segregated output lines allow for easy separation of aqueous, organic and biological waste. Useful to simplify hazardous waste handling and reduce disposal costs.

- **Simple and Reliable**

Simple, rugged design with a minimum of moving parts and easily accessible consumables allows for a robust system with minimum "down-time".

## Technical Specifications

### Column sizes

- 1, 3 or 6 mL

### Sample size

- **0.1 mL to 14 mL**  
C50000 – RapidTrace+ Workstation 3 mL  
(0.1 to 40 mL with upgrade to new rack sensor)
- **0.1 mL to 40 mL**  
C125713 – RapidTrace+ Workstation 6 mL

### Syringe pump

- Load Volume 0.1 mL to 5.8 mL

### Flow rates

- 0.1 mL/min to 42 mL/min (0.006 mL/sec to 0.7 mL/sec)

### Liquid Handling Accuracy

- Volumes 3.0 mL  $\pm$  1%

### Mixing Capability Cycle

- Maximum mixing volume of 5.0 mL in mixer

### Liquid Sensing

- Volumes of 1.2 mL or larger

### Solvent inlets

- 8 reagent inlets, individually configurable aspirate/dispense rates

### Waste outlets

- 4 separate

### Gas inlet (optional)

- 1-gas inlet, 2.8 bar maximum

### Connections

- RS232 Input: Connects the module to the controller
- RS232 Output: Used when multiple modules are connected

### Dimensions

- 10 cm x 55 cm x 60 cm (W x D x H)

### Weight

- 14,5 kg

### Power Requirements

- 50–60 Hz, 100–240 VAC  $\pm$ 10%

## Magnetically Encoded Racks

Magnetically Encoded Racks enable the user to designate a specific method to a rack.

When using magnetically encoded racks, the method does not have to be initiated via the controller software, because the module reads the magnets and automatically knows which method to run. The module runs the number of samples corresponding to the number of sample test tubes placed in the rack.

This means that software control of the system can be bypassed and methods will not be altered during routine operation. Labs around the world find this useful in production mode.

Increase throughput by controlling up to 10 RapidTrace+ systems with single computer using the intuitive method development software.



## Compliance validation

Each unit includes a Validation Manual that allows operators to walk through the validation process of their RapidTrace+. This ensures that the instrument provides the consistently clean extracts required for today's sophisticated analytical instruments and regulatory bodies. The Validation Plan defines the methods and the documentation utilized in the development, execution and reporting of a validation for a RapidTrace+. It addresses installation, operation and performance qualification. This comprehensive document enables operators to meet GLP, GMP and GOP requirements.

## Accessories



### Racks

There are several racks available, utilizing the unique magnetic encoding system:

- 13 x 100 mm fraction sample  
12 x 75 mm fraction tube
- 13 x 100 mm fraction sample  
13 x 100 mm fraction tube
- 16 x 100 mm fraction sample  
16 x 100 mm fraction tube
- 13 x 100 mm fraction sample  
12 x 75 mm fraction tube  
9 position chilled rack
- 40 mL sample flash (5 position)  
16 x 100 mm fraction tube  
(10 position)



### O-Rings

The O-Rings used on the RapidTrace<sup>+</sup> are subject to wear and will need to be replaced occasionally depending on usage:

- 6 mL SPE O-Ring, CHEMRAZ™
- 3 mL SPE O-Ring, CHEMRAZ
- 1 mL SPE O-Ring, CHEMRAZ
- Cannula SPE O-Ring, CHEMRAZ
- Waste Station O-Ring, CHEMRAZ



### Vial Adapters

These adapters are designed for use with the 13 x 100 mm sample tube with 12 x 75 mm fraction tubes, to collect the fraction directly into a vial rather than a test tube. Transferring the sample from a test tube to a vial takes additional time and can result in a loss of some of the sample. There are two adapters available:

- 11 mm diameter vial  
(standard 1.5mL GC vial)
- 4 mL vial (threaded HPLC vial)



### Test Tubes

Disposable borosilicate glass test tubes for RapidTrace<sup>+</sup>. These tubes are also compatible with TurboVap LV Evaporator for further downstream processing.

- 12 x 75 mm
- 13 x 100 mm
- 16 x 100 mm

## Related Products



### SPE Solutions

Biotage manufactures a wide range of products to ensure options based on the degree of cleanliness required and the cost effectiveness demanded by the analysis. Solid Phase Extraction, Supported Liquid Extraction and Protein Precipitation techniques are uniquely supported by consumables, automation and accessories. Your Biotage representative can help you choose the best solution for your needs.



### Solvent Evaporation

Biotage offers the largest range of solvent evaporation systems designed for faster evaporation of volatile and high-boiling solvents and sample transfer minimization. Utilizing patented vortex shearing technology, rotation, controlled heating or vacume technology, Biotage will automate your process. Ask your representative about:

- TurboVap® systems
- SPE Dry™
- V-10

## Ordering Information

### RapidTrace+

Product	Quantity	Part Number
<b>RapidTrace+ Systems</b>		
RapidTrace+ Workstation, 1 mL and 3 mL (10 columns)	1	C50000
RapidTrace+ Workstation, 6 mL (5 columns) 3 mL and 1 mL only, with appropriate plunger (see accessories)	1	C125713
RapidTrace Start-Up Kit w/ Software	1	C52006
RapidTrace Notebook Controller	1	C52689

### Accessories

Product	Quantity	Part Number
<b>Racks</b> (Each RapidTrace+ requires one rack)		
13x100 mm sample tube 12x75 mm fraction tube	1 rack	C50974
13x100 mm sample tube 12x75 mm fraction tube	5 racks	C50976
13x100 mm sample tube 13x100 mm fraction tube	1 rack	C58309
16x100 mm sample tube 16x100 mm fraction tube	1 rack	C56786
13x100 mm sample tube 12x75 mm fraction tube (9 Position Chilled Rack)	1 rack	C56536
40 mL sample flask (5 position) 16x100 fraction tube (10 position)	1 rack	C133968
Magnet kit for encoding racks	10 pack	C54405

Product	Quantity	Part Number
<b>Vial Adapters</b>		
11 mm Vial Adapter	10 adapters	C55091
4 mL Vial Adapter	10 adapters	C55827
<b>Test Tubes</b>		
12 x 75 mm Test Tubes, uncapped	1,000/case	C44651
13 x 100 mm Test Tubes, uncapped	1,000/case	C40707
16 x 100 mm Test Tubes, uncapped	1,000/case	C40708
<b>O-Rings</b>		
6 mL SPE O-Ring, CHEMRAZ	1 O-Ring	C46643
3 mL SPE O-Ring, CHEMRAZ	1 O-Ring	C45096
1 mL SPE O-Ring, CHEMRAZ	1 O-Ring	C60969
Cannula O-Ring, CHEMRAZ	1 O-Ring	C45096
Waste Station O-Ring, CHEMRAZ (3 in a Waste Station)	1 O-Ring	C58526
<b>Miscellaneous</b>		
6 mL Column Plunger	1	C69983
3 mL Column Plunger	1	C52231
1 mL Column Plunger	1	C52229
3 mL SPE Gel Adapter Kit	1	C58728
1 mL SPE Gel Adapter Kit	1	C58759
1 mL Adapter Sleeves	kit of 11	C59807
Tubing Weight Kit for Reagent Lines	8 weights	C50973
Check Valve Kit for Manifold Reagent Lines	8 valves	C55076

## The Advantages of Upgrading Your Current RapidTrace

### A broader range of SPE columns

Increased bed height capability enables the use of the most industry standard columns, including the entire Biotage ISOLUTE and EVOLUTE range of 1, 3 and 6 mL columns allowing for a more flexible approach to sample volume.

### Software upgrade 2.1

Customer installable software and firmware.  
*Note: 6 mL columns are only compatible with the 6 mL model, see below for upgrade information.*

**Part Number – C133966**

### Run 40 mL sample volume

A new 5 position rack for 40 mL scintillation vials for processing sample volumes up to 40 mL.

### 40 mL rack upgrade with sensor

Service visit required to install and upgrade the instrument to run the new 40 mL sample rack. Kit includes software and one rack.

**Part Number – C133967**

### Run 6 mL columns

The 5 position turret for 6 mL columns is updated for easier column loading/unloading. Additionally, adapters enable the use of up to 5 x 1 mL or 3 mL columns in the 6 mL turret.

### 6 mL Turret upgrade kit

Service visit required to upgrade existing RapidTrace 3 mL instruments with the new 6 mL compatible turret. Kit includes software and adapters for 1 mL and 3 mL columns.

**Part Number – C133969**

# Your Complete Partner for Effective Chemistry

Biotage is a worldwide supplier of instruments and accessories designed to facilitate the work of laboratory and process chemists. With our deep knowledge of the industry, academic contacts and in-house R&D teams, we can deliver the best solutions to your challenges. We take great pride in our flexibility and ability to meet our customer's individual needs. With strong foundations in both analytical, organic and process chemistry, we can offer the widest range of solutions available on the market.

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### Part Number: PPS395

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