STEM Reaction Blocks

Quick Efficient Reproducible Controllable

STEM Reaction Bloc

- Precise temperature control enables reactions to be closely monitored.
- Powerful high-speed uniform stirring.
- Small reaction vessels help to reduce the volume of products, solvents and reagents required.
- Choice of operation manually on a bench or within an auto-sampler.

Precise Temperature Control Ensures All Chemical Reactions can be Monitored Closely:

Within a temperature range of –30° to 150°C, the RS12 can operate 12 individual temperature zones simultaneously, with four reaction vessels per zone.

The maximum temperature difference between any two zones is between 60°C and 130°C depending on set temperatures. Control heating and cooling ramp rates range from 0.1° to 5.0°C/minute.

Improve Your Productivity While Decreasing Sample Size:

The RS12 has been specifically designed for screening of chemical reactions using small samples. Reducing the amount of product, reagent or solvents used to gather needed information. Each reaction vessel is only 12-mm in diameter and has a working volume of 250 to 2000 micro-liters.

Powerful High-Speed Stirring:

With a stirring range from 250 to 1200 rpm, the stirring for the RS12 is achieved by energizing stationary magnetic coils creating a rotating electromagnetic field. Specially selected stir bars ensure maximum coupling between the stir bar in the sample and the electromagnetic field.

Safety Always:

The well-insulated heat block keeps the casework safe-to-the-touch while the thermal cut out eliminates runaway conditions.
This combination of precise electronic control and rugged design ensures the safety of the end-user.

Easy Integration into Robotic System:

Due to their low profile and footprint, all STEM Reaction Blocks can fit into most robotic systems without interfering with the other components on the platform. Heating and stirring cycles can be controlled by external software as part of a fully automated system through the RS232, RS485 or GSIOC Port.

Greatest Flexibility-Maximum Number of Applications:

Designed for greater flexibility with a wide range of accessories, including optional reflux head, special glass reaction vessels, stir bars, software and reaction vessel trays.

STEM Reaction Bloc

Liquid Cooled Reflux Head Minimizes Sample Loss.

While Gas Inlet System Allows for the Performance of Inert Chemistry.

The liquid cooled reflux head provides efficient condensing and refluxing within the reaction vessels. The Gas Inlet/ Evacuation System allows for the conduction of air-sensitive and water-sensitive chemistries, while minimizing sample loss within the reaction vessel.

- The reflux head has a double-wall insulated design ensuring efficient and uniform cooling across the reflux head while eliminating condensate formation on the outside of a reflux head.
- Cooling liquid is introduced through the liquid inlet/outlet ports ensuring maximum performance between the individual cold fingers in the reflux head and the reaction vessels.
- An integral gas manifold with inlet and outlet ports allows a vacuum to be pulled or gas to be ported into each of the reaction vessels for conducting air-sensitive or water-sensitive chemistries.
- An effective, gas-tight seal is obtained between the reaction vessels and the cold fingers to minimize solvent evaporation losses and assisting in evacuation through the gas manifold.
- The reflux head is easily installed by placing it on top of the RS12, turning down the attachment knob, and connecting it to a circulation cooler.
- Individual reaction positions are identified by an alpha-numeric matrix for ease of tube and sample identification.

Custom designed glass reaction vessels ensure a snug fit within the reflux head, minimizing sample loss and improving the performance of your chemistry.

Manufactured of the highest quality glass, the glass reaction vessels fit snuggly into the RS12 unit. Vessels are easy to clean or they can be disposed of after each use.


ReactArray
RS12
By Barnstead STEM

STEM Reaction Bloc

PERCENTAGE OF SOLVENT RETAINED BY MASS AFTER REFLUX FOR 18 HOURS.

Solvent	Boiling point (°C)	Zone temp (°C)	Percentage Retained [1]
Toluene	110	115	97.5
Water	100	105	96.3
Acetonitrile	82	86	96.5
Ethanol	79	84	96.7
Hexane	69	74	92.8
THF	66	70	95.1
Methanol	65	70	97.1
Acetone	56	60	92.1
Dichloromethane	40	45	91.4
Diethylether	34	36	89.7

[1] *The average value across the zone.*

PRODUCT SPECIFICATIONS:

Model Number	RS12
Number of Zones	12 Zones (4 cells per zone)
Number of Reaction Vessels	48
Reaction Vessel Data	12mm D x 50mm H
Reaction Vessel Volume Range	250ul to 2ml
Stir Speed Range ^ (rpm)	250 to 1200
Temperature Range	*-30° to 150°C
Temperature Stability	± 0.5° C
Temperature Ramp Rate	1 to 5°C/min in 0.1°C steps
Adjacent Zone Temperature difference	100°C between adjacent zones at temperatures above –20°C Decreasing to 60°C at –30°C 130°C between adjacent 2 Omni's at temperatures 10 to 20°C
Interface	RS232, RS485, GSIOC
Overall Dimensions mm (ins)(LxHxW)	**350Lx170Hx80W (13.8x6.7x3.2)
Shipping Weights kg (lbs.)	22 (48.5)
Overall Dimensions mm(ins) (LxHxW)	***300Lx65Hx80W (11.8x2.6x3.2)

* *A chiller containing water with an approx 1.3Kw cooling capacity @ 4°C-5°C will achieve –30°C*

** *Plus 45mm for rear coolant pipes*

*** *Plus 35mm for rear coolant pipes*

^ *Using A2S10072 in water at ambient*

provide effective vessel sealing.

Plugs can easily be pierced with standard syringes.

Specially selected stir bars optimize the vortex and performance in the reaction vessels.

These specially selected stir bars provide a strong magnetic coupling with the stationary magnetic coils of the rack. In order to ensure correct stirring you must use ATS10072 stir bars.

Chemically resistant tube trays have alpha-numeric identification for vessel location—these trays are disposable.

Labeled for easy reading these 48 position tube racks are molded of chemically resistant plastic.

423 and 428 Instrument Controlled Software Kits are easy to use and learn.

Two separate control software kits are available for the RS12. One operates the unit from the PC, while the second allows the use of a handheld PDA.

Both kits are easy to learn. These Window based software packages are ideal for system control and data acquisition. The PC controlled software kit is excellent for scheduling new protocols or editing an existing protocol. A graphical presentation located within the kit shows the scheduled protocol for all twelve zones, allowing the user to compare one zone to another. Real time values are available if so desired.

ORDERING INFORMATION

Catalogue No	Description	Electrical 50/60Hz (Volts)
PS12000	RS12, 12 Controlled Zone (4 cells per zone)	100-240Volt
ATS100070	Reflux Head	N/A

ACCESSORIES

Model No	Description	Quantity
ATS10070	Reflux Head Viton	1
ATS10106	Reflux Head Chem-Raz	1
ATS10071	Glass Tubes	100
ATS10073	Caps for Glass Tubes	100
ATS10072	Stir Bars	100
ATS10074	Stir Bar	1000
TBA	Tube Rack (48 position)	1
TBA	423 Software Kit for PC	1
TBA	428 Control Software Kit for	1

** Handheld Computers not Included*

Optimization Workstation

- ROUTE SCREENING
- PROCESS SCREENING
- PROCESS OPTIMIZATION
- SCALE-UP VERIFICATION
- ROBUSTNESS TESTING

ReactArray

The Chemist's Workstation

- Automates reaction preparation, sampling, quenching, and dilution with optional on-line analysis facility
- Investigates process variables efficiently, repeatable and economically
- Gives approximately 10-fold productivity improvement over manual process studies

Reactarray is the latest chapter in the success story that began with the SK233. With over 180 installations, the SK233 and 215SW has become the world's most popular process screening and optimization workstation.

Large Capacity

Large working platform for maximum flexibility
On-board wash station minimizes cross contamination
Inerting manifold preserves air and moisture sensitive reagents

Compact Design

Small enough to fit into a standard fume cupboard.
Auto-sampler Dimensions (W x D x H): 787 x 680 x 749mm

Simple Software

A clear, graphical user interface for easy set up and control of your reactions.

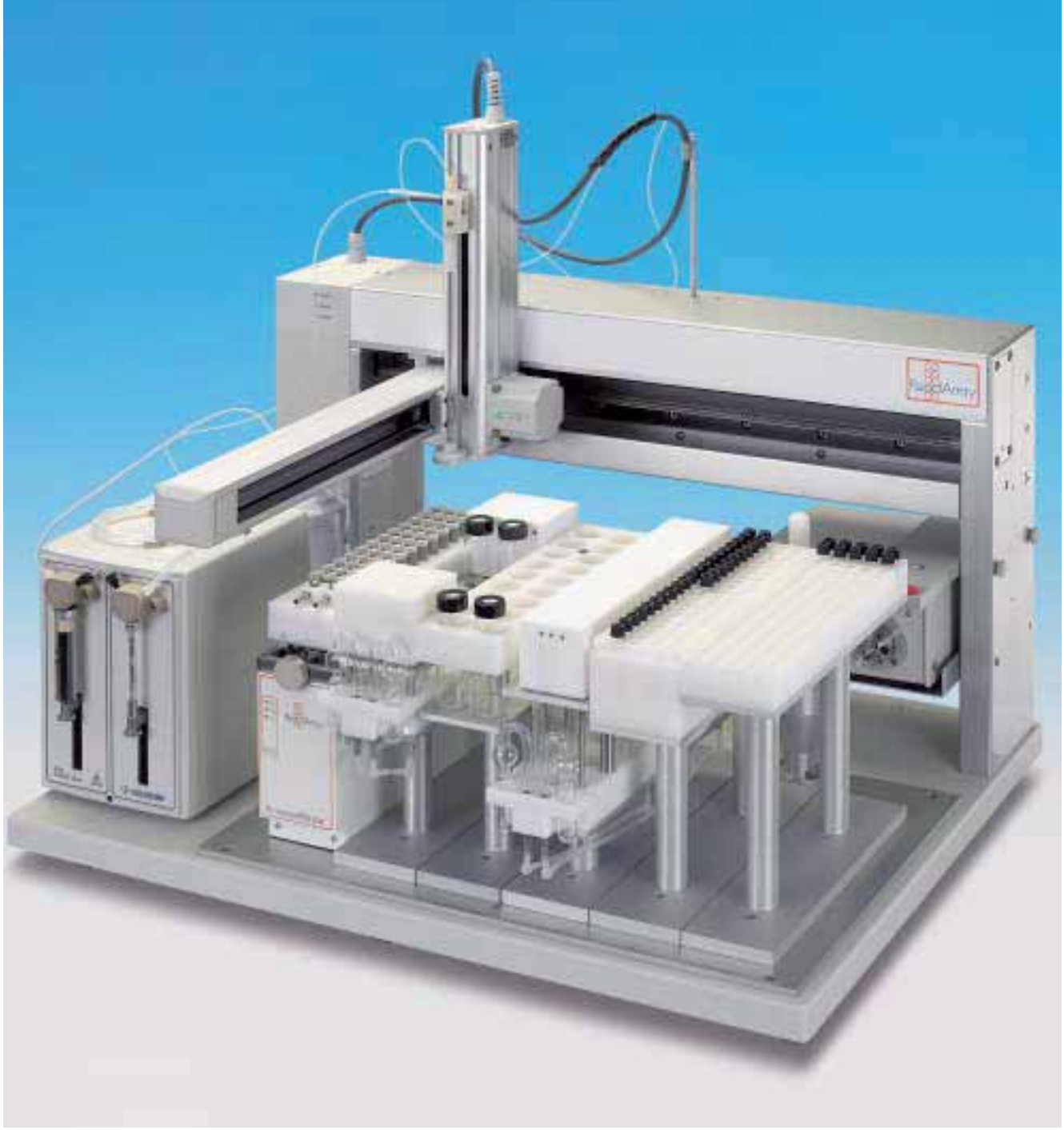
Precisely controlled reaction environments

An expanding range of specially developed Reaction Stations and a choice of patented Reaction Vessels to study a growing range of chemistries and process variables.

Modular Design for Future Upgrades

Ensures you will have access to all the exciting new software, reactions racks and solvent/reagent racks now under development.

STEM ReactArr



Take Control of Your Reaction

Simply Plug and Play

Reaction Racks

Choice of Five Reaction Blocks

RS10 Reaction Rack

10 independent temperature and stirring position on one block
Temperature range:-30°C* to +150°C (*Requires external chiller option)
Stirring Speed Range: 250-1200 rpm
In-situ real time feedback of both temperature and stirring
ReactArray Vessels for refluxing and inerting
Reaction Volume: 2-25ml

RS1000 Reaction Rack

Single temperature and stirring speed across block
Temperature Range: From ambient +5°C to +150°C
Stirring Speed Range: 400-2000 rpm
ReactArray vessels for refluxing and inerting
Reaction Volume: 2-25ml

RS1050 Reaction Rack

Single temperature and stirring speed across block
Temperature Range:-30°C to +70°C
Stirring Speed Range: 400 to 2000 rpm
ReactArray vessels for refluxing and inerting
Reaction Volume: 2-25ml

RS600 Reaction Rack

Single Temperature and Stirring Speed Across Block
Temperature Range: Ambient +5°C to +150°C
Stirring Speed Range: 400 to 2000 rpm
ReactArray vessels for refluxing and inerting
Reaction Volume: 2-25ml

RS12 Reaction Rack

12 Independent Temperature Zones (4 Vessels per Zone)
Temperature Range: -30C to 150C
Stirring Speed Range: 250 to 1200 rpmß
Reaction Volume: 250-2000 micro-litres

Analytical Racks—Choice of Two Racks

Single Tier Analytical Rack (108 x 2ml vials)
Two-Tier Analytical Rack (175 x 2ml vials)

Solvent and Reagent Racks

Single Tier Reagent Rack (18 x 40ml Scintillation Vials)
Single Tier Solvent Rack (6 x 130 ml Bottles)

Inerting Racks—Choice of Two Racks

Reagent Racks (18 x 40 ml Scintillation Vials)
Solvent Rack (6 x 130 ml Bottles)

For more information visit our web site at
www.reactarray.com

Or call Amy Wagner (Barnstead International) at
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