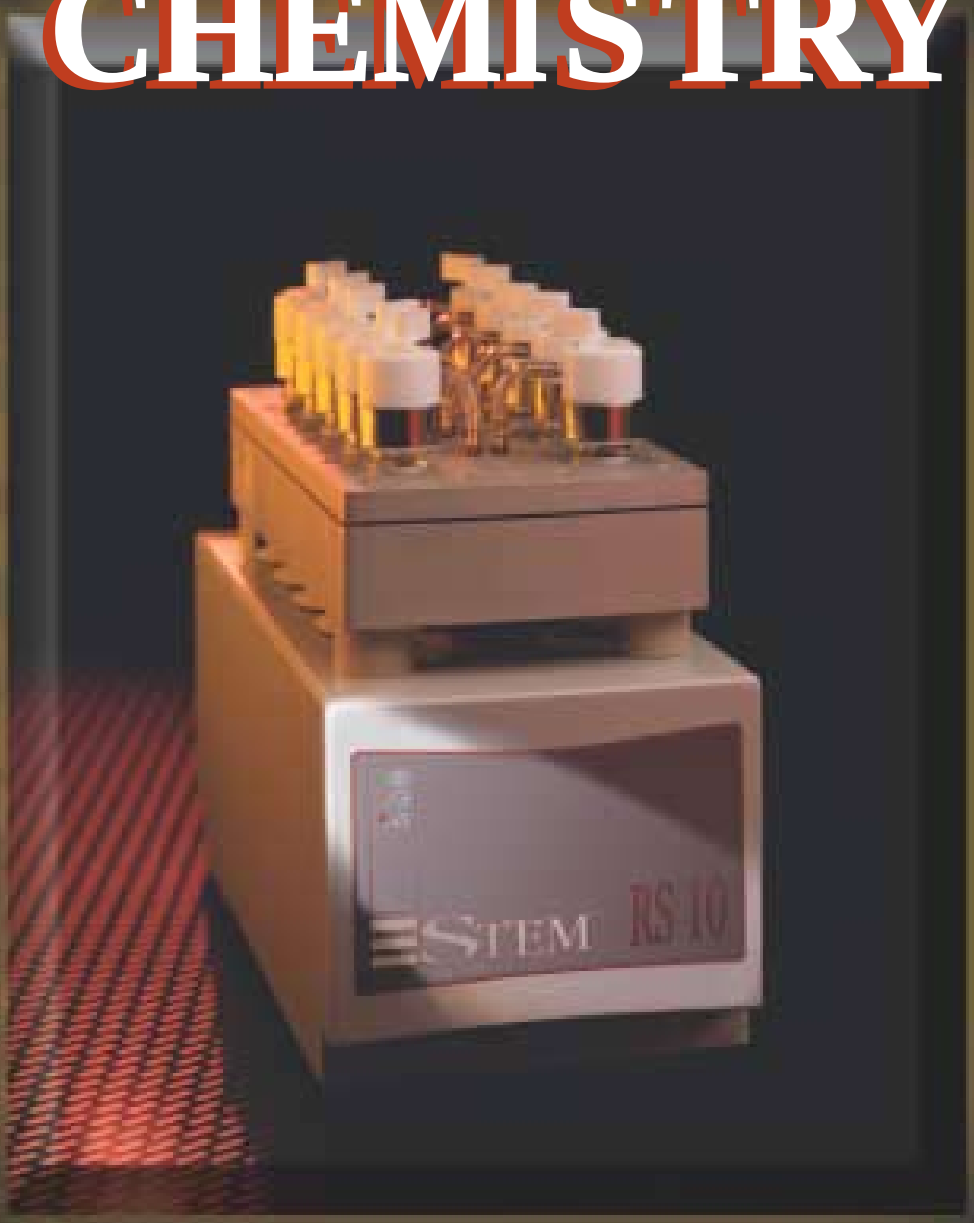
Quickly Discover

the **Optimal Conditions** *for Your*

CHEMISTRY



STEM Reaction Blocks

Quick • Efficient • Reproducible • Controllable.

Step Beyond The Traditional Methods of Chemistry

STEM equipment offers you options to do chemistry at a level more advanced than ever before. Capture intermediates or lock out unwanted gases. Perform reactions at higher temperatures or control exothermic reactions. Optimize conditions for performing reactions or run chemistry in solid or solution phases. Your choices are endless depending on which product and accessories you choose.

STEM introduces a new line of Reaction Blocks to fit your application.

- ***RS10*** Reaction Block with ten individually controlled cells
- ***RS2*** Reaction Block with two individually controlled zones (five cells per zone)
- ***RS1*** Reaction Block with one controlled zone (ten cells per zone)

RS10 shown with optional reflux head, glass tubes and caps.

SAVE MONEY & TIME
with the Addition of These STEM Reaction Blocks in Your Laboratory.

Reaction Blocks Designed specifically for:

Defining alternate synthetic routes for producing compounds

Evaluating the effects of changing temperature and reagent concentrations on yield, purity and cost

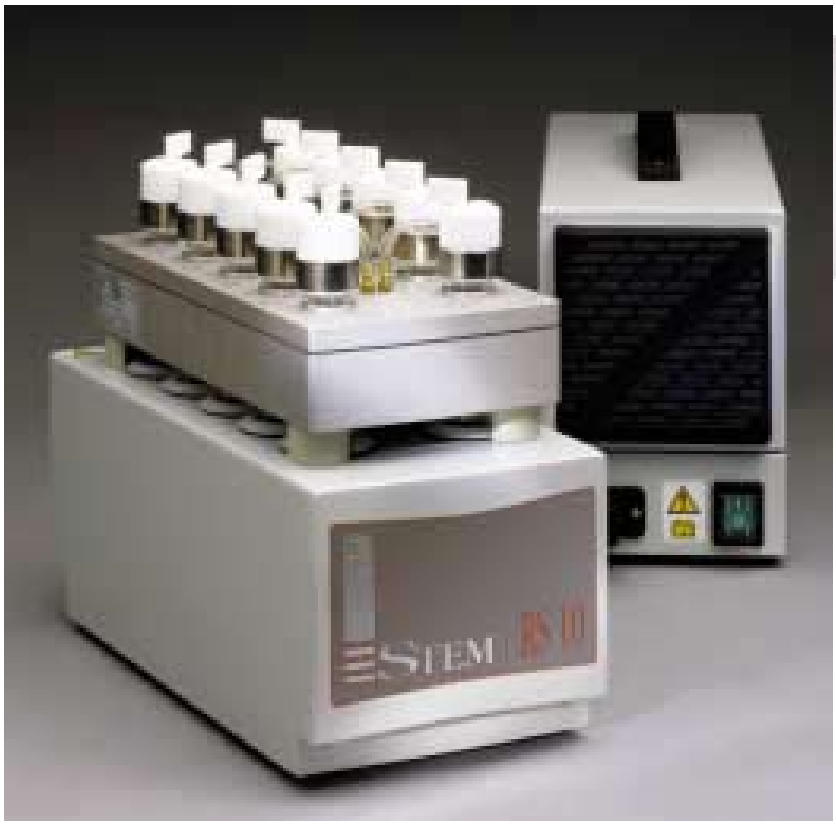
Determining the best combination of catalyst, reagents and solvents for synthesis

Defining end-points, the presence of intermediates and impurities, in the reaction vessel

Conducting solution stability test on drug substances

Studying process variables to define process deviation ranges used for pilot/manufacturing scale.

THREE Control Options from STEM



- *Choose the RS10 if you need a reaction block that has ten Individually Controlled Cells*
- *Choose the RS2 if you need a reaction block that has two Individually Controlled Zones (five cells per zone)*
- *Choose the RS1 if you need a reaction block that has one Controlled Zone (ten cells per zone)*

Precise Temperature Control Ensures All Chemical Reactions can be Monitored Closely

All Reaction Blocks can be controlled over the complete temperature range from -30°C to +150°C. The maximum temperature difference between any two positions or zones is 180°C with zero cross talk. Control heating and cooling ramp rates from 0.1 to 5°C/Minute.

Stir Magnets Stay Coupled Guaranteeing Maximum Yield

Specially designed stir magnets ensure maximum coupling between the stir bar in the sample and the powerful motor. Unlike other manufacturers, we do not use coil magnets, which can produce uneven stirring at slow speeds and de-coupling of the stir bar at high speeds or in dense (viscous) solutions. Six different magnetic stir bars are available.

Soft Start—Reduces Sample Fragmentation

In order to avoid fragmentation of the sample or losing the stir bar, command changes in motor speed are implemented slowly by the firmware.

Safety Always

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

Easy Integration into Robotic Systems

Due to their low profile and footprint, STEM Reaction Blocks can fit into most robotic systems. And, with the design of the insulation of the unit, this unit will not interfere 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 port.

Greatest Flexibility-Maximum Number of Applications

Designed for greater flexiblity with a wide range of accessories, including optional reflux head, special glassware, stir bars, adapters sleeves and MultiTemp Controller.

Did You Know?

STEM Reaction Blocks can easily fit into most robotic systems and are designed not to interfere with other components on the platform.

Additional Features of RS10 Model

Intelligent Stirring Control Monitors Performances

The **RS10** has implemented many features allowing you to monitor the stirring process even when you aren't in the laboratory. For example, if the motor stalls or jams, power is removed from the motor and a "motor-jammed" message is reported back to the controlling system. Then an attempt is made every minute to restart the motor and if successful the "motor-jammed" status is cleared. If the setpoint speed can not be achieved without losing the stir bar, then a new internal setpoint is established at 70% of the setpoint speed at which the loss occurred. A capture error is reported back to the PC Software.

RS10 monitors changes in the viscosity of your solution.

Throughout the process, a "viscosity" value is reported, which is used to detect any changes in the viscosity of a solution. This relative value is reported back and recorded by the PC Software.

Product Specifications

Model Number	RS10	RS2	RS1
Number of Individual Controlled Positions	Ten individually controlled cells	Two Zones (five cells per zone)	One Zone (ten cells per zone)
Stir Speed Range (rpm)	250 to 1200	250 to 1200	250 to 1200
Temperature Range	-30° to 150° C	-30° to 150°C	-30° to 150°C
Temperature Uniformity	0.5° C	0.5°C	0.5°C
Interface	RS232/RS485	RS232/RS485	RS232/RS485
Overall Dimensions Inches (WxDxH)	13.6 x 6.3 x 5.5	13.6 x 6.3 x 5.5	13.6 x 6.3 x 5.5
Shipping Weight Lbs (kg)	24 lbs (11 kg)	24 lbs (11 kg)	24 lbs (11 kg)

Ordering Information

Model Number	Description	Electrical (50/60 Hz) Volts	List Price U. S. $
PS10000A	RS10, ten individually controlled cells	100-240 Volt	$32,500.00
PS10002A	RS2, two controlled zone (five cells per zone)	100-240 Volt	$21,140.00
PS10001A	RS1, one controlled zones (ten cells per zone)	100-240 Volt	$18,120.00

Reacto Station Accessories Allow Greater Flexibility

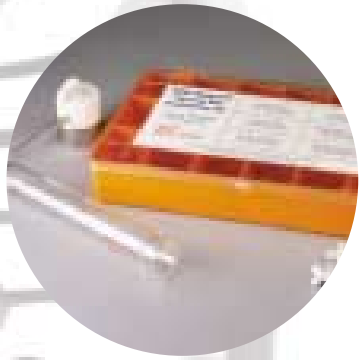
Water Cooled Aluminum Reflux Head Minimizes Sample Loss and Gas Inlet System Allows for the Performance of Inert Chemistry.

Efficient condensing and refluxing is provided through the use of an optional water-cooled aluminum reflux head. Cooling water is introduced through the inlet/outlet ports. Individual reaction positions are numbered (1-10) for ease of tube and sample identification.

A central gas inlet/outlet port combined with the gas-tight PTFE caps allow for a vacuum to be pulled and/or inert gas (nitrogen) to be ported into each individual tube.

Gas Tight Caps Allow Individual Reaction to be Performed

Gas-tight PTFE caps feature a PTFE valve, which is resistant to corrosion from vapors. The simple open/close valve permits on/off control of the gas flow to the individual tubes, allowing individual reaction tubes to be isolated or removed during synthesis, without interrupting the other tubes. The caps incorporate a nitrile rubber O-ring and gas inlet, while a pierceable septum located in the top of the PTFE cap permits the addition or removal of reagents throughout the synthesis process. Two types of caps are available—a standard cap with valve and a special cap with a valve and a inlet specifically designed to hold the thermocouple probes. This airtight system is not only good for inert conditions but it is also particularly suited for other critical applications like hydrolysis or moisture sensitive experiments.



Various Types of Stir Bars Ensure Proper Vortex for Specific Applications

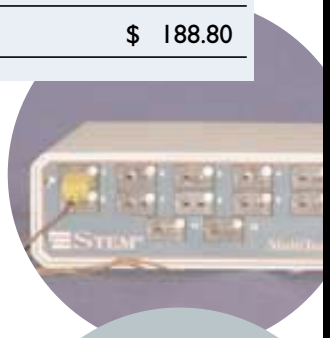
Different styles of stir bars should be used depending on the application. A PTFE Stirring Bar Evaluation Kit is available, which allows you to try different stir bars for your different applications. Each kit contains three types of stirring bar styles in two different sizes. The rare earth medium cross-shaped stirring bar creates a deep vortex and are ideal for stirring resins and viscous samples. Rare earth elliptical stirring create a vigorous stirring even for viscous samples. Octagonal stirring bars are the general purpose stirring bars.

Adapter Sleeves Allow Greater Flexibility

The standard tube size is 25mm, which can be adjusted to 24 mm, 20 mm, and 16 mm diameter by using the optional adapter sleeves. Other adapter sleeves can be produced upon request.

**PTFE is a trademark of Dupont*

Model #	Description	Qty.	List Price U.S. $
ATS10000	Reflux Head RS10	1	$ 1950.00
ATS10011	Glass Tubes 24mm x 150mm	12 per pkg.	$ 180.00
ATS10013	Glass Tubes 25mm x 150mm	12 per pkg.	$ 180.00
ATS10020	Cap with Valve and Sensor Inlet	6 per pkg.	$ 240.00
ATS10025	Cap with Valve and Inlet for Thermal Probe	6 per pkg.	$ 320.00
ATS10029	Octagonal Stir Bar, large	20 per pkg.	$ 40.00
ATS10033	Octagonal Stir Bar, small	40 per pkg.	$ 65.00
ATS10030	Cross Shape Stir Bar, large	20 per pkg.	$ 115.00
ATS10034	Cross Shape Stir Bar, small	40 per pkg.	$ 175.00
ATS10028	Elliptical Stir Bar, large	20 per pkg.	$ 125.00
ATS10035	Elliptical Stir Bar, small	40 per pkg.	$ 190.00
ATS10001	MultiTemp Controller	1	$ 650.00
ATS10027	Thermocouple Probe with 1m lead	6 per pkg.	$ 500.00
ATS10005	323 Control Software Kit for PC	1	$ 1250.00
ATS10006	328 Control Software Kit for Palm™ IIIC Handheld Computers, Palm™ IIIC not included	1	$ 1250.00
ATS10032	Magnetic Stir Kit	1	$ 62.00
ATS10031	Magnetic Stir Bar Retriever	1	$ 25.00
PS80135	Adapter Sleeve & Seal Kit, 25mm to 24m	10 per pkg.	$ 188.80



MultiTemp Controller can Monitor or Control the Temperature of Each of the Ten Reactions

The MultiTemp Controller has 12 ports to hold 12 separate probes. The MultiTemp unit can be connected to the RS10 and used to either monitor or control the temperature of each tube.

EASY Integration Into Robotic System. 323 & 328 Instrument Controlled Software

- Two software kits are available: one kit operates with a PC, the other kit operates with a Palm IIIC handheld computer.
- Easy to learn, windows based software is simple to operate.
- The control software kits used for system control and data acquisition offer a fast and easy means of scheduling a new protocol or editing an existing protocol.
- A graphical presentation located within the software shows the scheduled protocol for each position allowing you to compare one cell to another. Real time values are available if so desired.

The 323 PC based control software comes free with each block. 328 Palm™ IIIC handheld computer based control software is available as an option.

Palm™ is a trademark of Palm, Inc.

STEM Reacto Stations™

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