



atlas simply does it all

atlas System Selection Guide

Disclosure

This document is confidential and is the property of Syrris Inc.

No attempt should be made to copy this document in any way without prior consent.

© 2007 Syrris Inc All rights reserved



Contents

1	What is atlas?	4
2	atlas™ systems	6
2.1	Selection factors	6
3	atlas lithium	7
3.1.1	System Description	7
3.1.2	System photographs	7
3.1.3	Component List	8
3.2	atlas sodium	9
3.2.1	System Description	9
3.2.2	System photograph	9
3.2.3	Component List	10
3.3	atlas potassium.....	11
3.3.1	System Description	11
3.3.2	System photograph	11
3.3.3	Component List	12
4	Description of the Modules	13
4.1	Atlas Base	13
4.1.1	Description	13
4.2	Magnetic stirrer.....	14
4.2.1	Description	14
4.3	Hotplate	15
4.4	Scorpion overhead stirrer	16
4.4.1	Description	16
4.5	Temperature node	17
4.5.1	Description	17
4.6	Single reactor dry bath	18
4.6.1	Description	18
4.7	Triple reactor dry bath	19
4.7.1	Description	19
4.8	atlas jacketed reactor	20
4.8.1	Description	20
4.9	atlas reactor clamp	21
4.9.1	Description	21
4.10	atlas Oil drain unit	22
4.10.1	Description	22



4.11	atlas reactor lid.....	23
4.11.1	Description	23
4.12	atlas software.....	24
4.12.1	Description	24
4.13	Accessories.....	26



1 What is atlas?

atlas is a cost effective modular batch synthesis system, simple to use and quick to set up.

atlas features:

- A wide range of synthesis scales – presently 50ml to 2000ml vessels
- A simple control system
- Compact bench-top footprint
- A modular design allows the system to be reconfigured as required - with no tools
- Many options – allowing you to set up the ideal reactor system for each piece of chemistry in minutes, for example:
 - Magnetic or overhead stirring
 - Hotplate or thermoregulator based heating
 - Unique “coldplate” for oil-free cooling of vessels (available Q2 2007)
 - Round bottom flasks or jacketed vessels
 - One-touch control or PC operation
 - Internal or external temperature monitoring
- Multiple atlas systems can be readily grouped together for parallel reactions, sequential reactions etc.

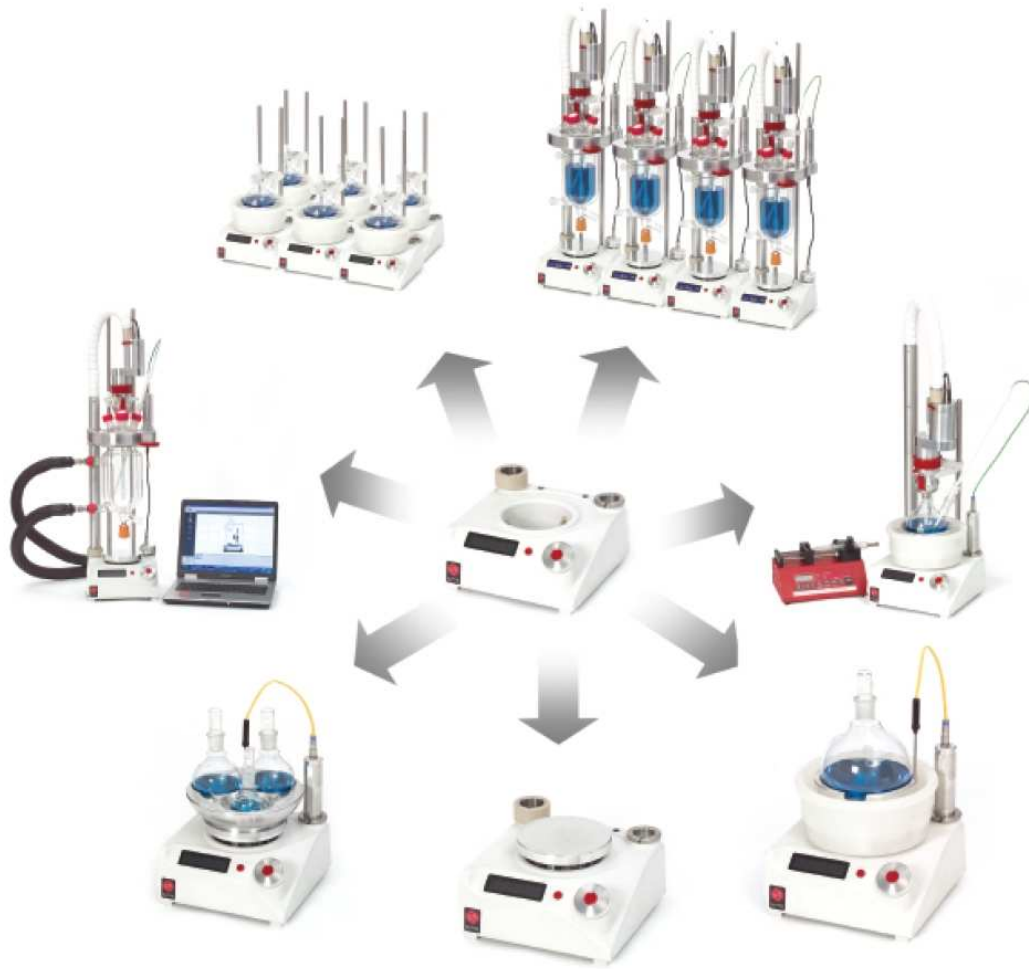
The heart of the atlas system is the base module, a compact unit measuring about 10 inches square and 5 inches high:



The base unit can be configured into a wide range of systems by adding simple functional modules, such as hotplates, stirrers, sensors, clamps, etc. None of these items needs a tool, and any electrical connections that are made are foolproof – they can't be connected the wrong way round or to the wrong port!

All functions can be controlled using the turn and click control wheel on the base – though you can hook up a PC using a USB cable if you wish to capture data or run sophisticated recipes.

Using this modular approach, an atlas system has dozens of possible options, some illustrated below:





2 atlas™ systems

atlas is available in three major variants: lithium, sodium and potassium.

atlas is a modular system, so the three variants can each be used as a starting point for further enhancements.

2.1 Selection factors

Use the two simple factors below to decide which system is appropriate for your chemistry needs.

- Do you need round bottom flasks (RBF), or jacketed reactors?

Lithium and sodium use RBF; potassium uses jacketed reactors.

- Do you want to use magnetic or overhead stirring?

Lithium uses magnetic stirring; sodium and potassium use overhead stirring

	lithium	sodium	potassium
Vessels	RBF	RBF	Jacketed
Stirring	Magnetic	Overhead	Overhead

Of course, any atlas system can easily be converted into any other, with the appropriate modules, so you can answer “yes” to all options if you wish!



3 atlas lithium

3.1.1 System Description

Select atlas lithium for reactions using round bottom flasks, with the convenience of electrical heating and cooling, and easy to use magnetic stirring.

Vessels from 50ml to 1000ml can be accommodated in the unique nested dry bath system.

Use up to 3 different size vessels at once.

atlas lithium controls the reaction temperature, with internal or external sensor options. Two temperature range options are offered:

- heat only, from ambient to 350°C
- heat and cool to give sub-ambient to 150°C operation, and programmable cooling curves

Magnetic stirring: 0 to 1200rpm.

Recommended options include temperature monitoring, triple reactor dry bath and computer control.

3.1.2 System photographs





3.1.3 Component List

The atlas lithium includes the following components:

	Title	Qty
Modules	Base Unit	1
	Hotplate	1
	Magnetic Stirrer	1
	Atlas single reactor dry bath	1
	Single flask clamp arm	1
Accessories		
	Support rods (Pk 2)	1

See Section 4 below for upgrade options.

3.2 atlas sodium

3.2.1 System Description

Select atlas sodium for reactions using round bottom flasks, with the convenience of electrical heating and cooling, and powerful overhead stirring.

Vessels from 50ml to 1000ml can be accommodated in the unique nested dry bath system. Use up to 3 different size vessels at once.

atlas sodium controls the reaction temperature, with internal or external sensor options. Two temperature range options are offered:

- heat only, from ambient to 300°C
- heat and cool, to give sub-ambient to 150°C operation, and programmable cooling curves.

Overhead stirring: 0 to 1000rpm.

Recommended options include triple reaction dry bath and computer control.

3.2.2 System photograph



3.3 atlas potassium

3.3.1 System Description

Select **atlas** potassium when you need a jacketed reaction vessel for high performance temperature control, plus overhead stirring.

Vessels are available from 100ml to 2000ml in a range of formats.

atlas potassium controls your circulator, allowing any desired profile from -70°C to $+200^{\circ}\text{C}$ (range depending on circulator performance). Quick connect fluid hoses and a semi-automatic drain down allows easy changing of vessels.

The self-aligning stirrer is available in a range of paddle shapes and offers controllable and powerful stirring from 0 to 1000rpm.

Recommended options include pumps (syringe, peristaltic or diaphragm) computer control.

3.3.2 System photograph



3.3.3 Component List

The atlas potassium includes the following components

	Title	Qty
Modules	Base Unit	1
	Scorpion overhead stirrer	1
	Temperature Node	1
	Node socket	1
	Node tree	1
	Stirrer seal and guide	1
	Jacketed vessel clamp	1
	Oil Drain Unit	1
	Port	1
Accessories	Temperature probe	1
	Stirrer	1
	Oil pipes between vessel and oil drain unit (Pk 2)	1
	Reaction vessel seal	
	Jacket Lid	1
	Jacketed reaction vessel 500ml	1
	Reaction vessel drip tray	1
	Support rods (Pk 2)	1

See Section 4 below for upgrade options.



4 Description of the Modules

4.1 Atlas Base

4.1.1 Description



The **atlas** base unit is the most critical component of any **atlas** system. It physically provides a base around which all the other modules can be built but also provides control and connectivity.

The inbuilt control system offers an easy to use menu, which allows access to any of the control functions of the system. A large, easy to read, display indicates current status and set-points



4.2 Magnetic stirrer

4.2.1 Description



The magnetic stirrer is a plug in module for the **atlas** base unit.

The magnetic stirrer provides stirring from 0-1200rpm with stirring rates set from the **atlas** front panel.



4.3 Hotplate



An easy to fit hotplate for the **atlas** base unit. Capable of heating to 300°C, the hotplate is a standard 135mm diameter allowing compatibility with existing lab apparatus.

A Peltier based heater cooler module will shortly be available.



4.4 Scorpion overhead stirrer

4.4.1 Description



The scorpion stirrer system provides overhead stirring for atlas. Connecting directly to the atlas base unit the scorpion provides a flexible arm that can be connected to the stirrer guide. The entire system is designed to be assembled, disassembled and modified without the use of any tools.

The stirrer guide holds a standard PTFE stirrer shaft and seals the system onto a standard round bottom flask or jacketed vessel.

The scorpion system is controlled directly from the atlas front panel and can provide stirring from 0-1000rpm.



4.5 Temperature node

4.5.1 Description



The temperature node allows RTD probes to connect to the atlas base. The node connects to the port at the rear of the atlas base as shown.

The temperature measured by the RTD probe is displayed on the front panel of the atlas base.

Two standard types of RTD probe can be used (although others are available). The first is a metal probe for use to monitor the external temperature of a reactor dry bath. The second is PTFE coated and designed for immersion within a reactor or flask.



4.6 Single reactor dry bath

4.6.1 Description



The **atlas** dry bath is designed to allow round bottom flasks to be heated from an **atlas** hotplate without the use of oil baths.

Individual inserts allow different sizes of round bottom flask from 50ml to 1000ml to be heated from a standard hotplate.

The dry bath has a tough plastic exterior to allow the bath to be moved when hot without exposing the user to elevated temperatures.



4.7 Triple reactor dry bath

4.7.1 Description



The **atlas** dry bath is designed to allow round bottom flasks to be heated from an **atlas** hotplate without the use of oil baths.

Individual inserts allow different sizes of round bottom flask from 50ml to 250ml to be heated from a standard hotplate. Three different size flasks can even be used at the same time.

Inserts from the single reactor dry bath are interchangeable with those for the triple bath. Additional inserts are available to reduce the minimum size to 25ml.

A version of the triple reactor dry bath is available with a "cool-wall".



4.8 atlas jacketed reactor

4.8.1 Description



The jacketed reactor for **atlas** is a standard chemical reactor with an oil jacket for temperature control. Available in a range of different sizes (from 100ml to 2000ml) and profiles (round bottom, conical, dished) the reactors utilise an interchangeable reactor lid to make changing between reactors quick and easy.

The jacketed system also requires

- Vessel lid
- Jacket clamp
- Stirrer
- Oil drain unit (and pipes)

Other options that will add to the functionality of the **atlas** jacketed reactor are

- Temperature node & probe
- Syringe, diaphragm and peristaltic pumps
- Scorpion stirrer system
- **atlas** PC software

4.9 atlas reactor clamp

4.9.1 Description



The atlas reactor clamp is a quick-release clamping mechanism for jacketed reactors.

Designed to make changing reactors both quick and easy the reactor clamp has a single control on the front (the red lever shown left) which when operated releases (or holds) the reactor. The reactor clamp also features supports for temperature nodes and the scorpion stirrer.

When used with the oil drain system this give a vessel changeover time of less than five minutes and ensures a minimum exposure to vessel coolant



4.10 atlas Oil drain unit

4.10.1 Description



The atlas oil drain unit provides the ability to drain oil from a jacketed reactor back into a thermoregulator without exposure to the oil.

This unit also provides a rigid framework for mounting the reactor clamp and jacketed reactor.

Use the oil drain unit with:

- atlas jacketed reactor



4.11 atlas reactor lid

4.11.1 Description



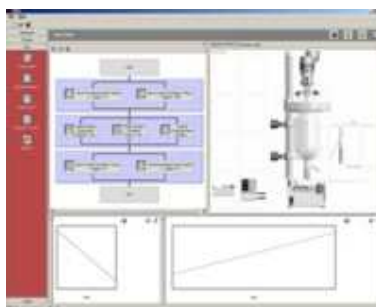
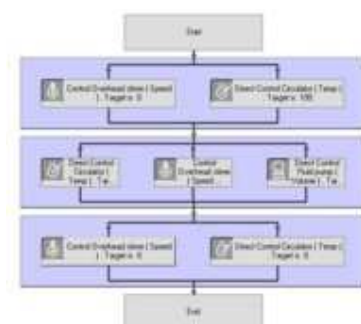
atlas jacketed reactors (such as that featured in the atlas potassium) use a standard reactor lid. This is interchangeable across the range of reactor sizes for convenience and ease of use.

Other lid configurations may be supplied upon consultation. Contact us for further details



4.12 atlas software

4.12.1 Description



atlas offers reaction automation without the need for a PC. However, when required, atlas software can be used for reaction control and data capture. The software is designed to be intuitive and easy to use with a simple 1,2,3 approach as shown here.

1. Design your apparatus - allows a range of third party equipment to be automated as part of your experiment
2. Design your method - allows a range of controlled steps to be undertaken either sequentially or simultaneously
3. Run your experiment - monitor, interrupt, change or adapt your experiment as you go along knowing that any changes will be saved together with the experiment data

To get you started, atlas software is supplied with a range of useful template experiments.

atlas software will control and monitor all experiment parameters in real time and automatically log data to a file.



The recipe can be paused at any point with full on the fly editing.

The software includes comprehensive alarms and fail-safe checking. In-built recipe protection prevents operation outside user specified parameters.

atlas software can be used to control individual instruments, or a whole array, allowing true multi-chemistry.



4.13 Accessories

A number of accessories are required to complete the atlas range:

Oil pipes between atlas and thermoregulator. These insulated hoses connect your chosen thermoregulator unit to the atlas oil drain unit described above. Various lengths are available – 2m hoses are standard. Contact us if you require us to add these as part of your system.

Oil pipes between atlas and vessel. These insulated hoses feature quick release connections at the vessel, so that the vessel can be removed without tools.

Stirrers. Various stirrer profiles are available. An anchor stirrer complementing a round bottom vessel is standard.

Stirrer seal and guide. This unit screws into the top of the vessel lid, and provides a seal and guide for the stirrer shaft.

Temperature probe. Two probe types are available – metal probes to fit into a dry bath for external temperature measurement, and PTFE coated probes for in-vessel measurement. We will select the appropriate unit depending on the atlas system ordered – i.e. metal probe for lithium and sodium, PTFE probe for potassium.

Pumps. A range of atlas-compatible pumps can be supplied if required, although most standard pumps used in the laboratory can be controlled by atlas PC software. Peristaltic, diaphragm and syringe pump options are available. Contact Syrris for detailed specifications.



5 Complete Parts List

Description	Part No.
Base Unit	2101000
Hotplate	2101001
Magnetic Stirrer	2101002
Scorpion Overhead Stirrer	2101004
Temperature Node	2101021
Node Socket	2101023
Node Tree	2101024
Stirrer Seal And Guide	2101011
Jacket Clamp	2101012
Triple Reaction Arm With Rods	2101043
Single Reaction Arm With Support Rods	2101040
Oil Drain Unit	2101013
Atlas Single Reactor Dry Bath	2101041
Atlas Triple Reactor Dry Bath	2101042
Port	2101020
Stirrer	2101032
Temperature Probe	2101022
Oil Pipes Between Distribution Vessel And Huber X 2	2101015
Oil Pipes To Vessel X 2	2101014
Syringe Feed	2101050
Peristaltic Feed	2101051
Diaphragm Pump Feed (Gala)	2101052
Software Sold With A System	2300102
Reaction Vessel Drip Tray	2101039
Support Rods (Pk 2)	2101009
Jacket Lid Dn 100	2101030
Jacketed Vessel 100ml	2101033
Jacketed Vessel 250ml	2101034
Jacketed Vessel 500ml	2101035
Jacketed Vessel 1l	2101031
Jacketed Vessel 2l	2101036
RTD To B19 Adaptor	2101025
Reaction Vessel Seals	2101016
Stirrer Seals	2101017