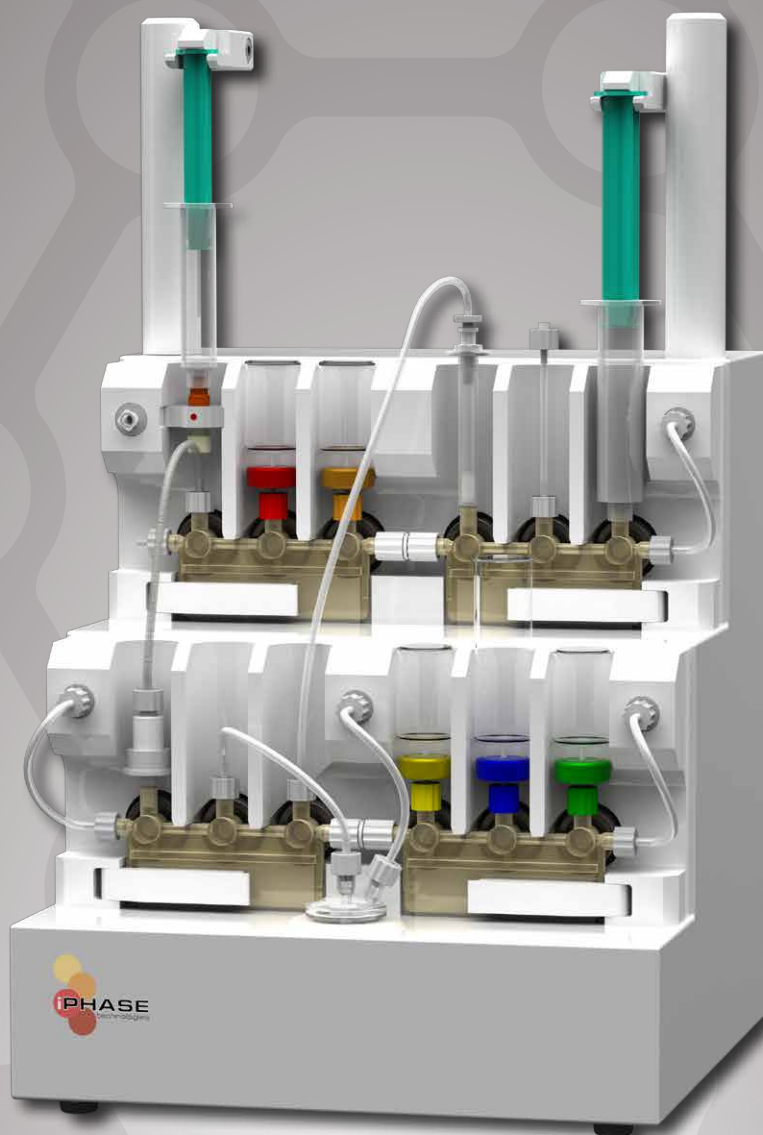
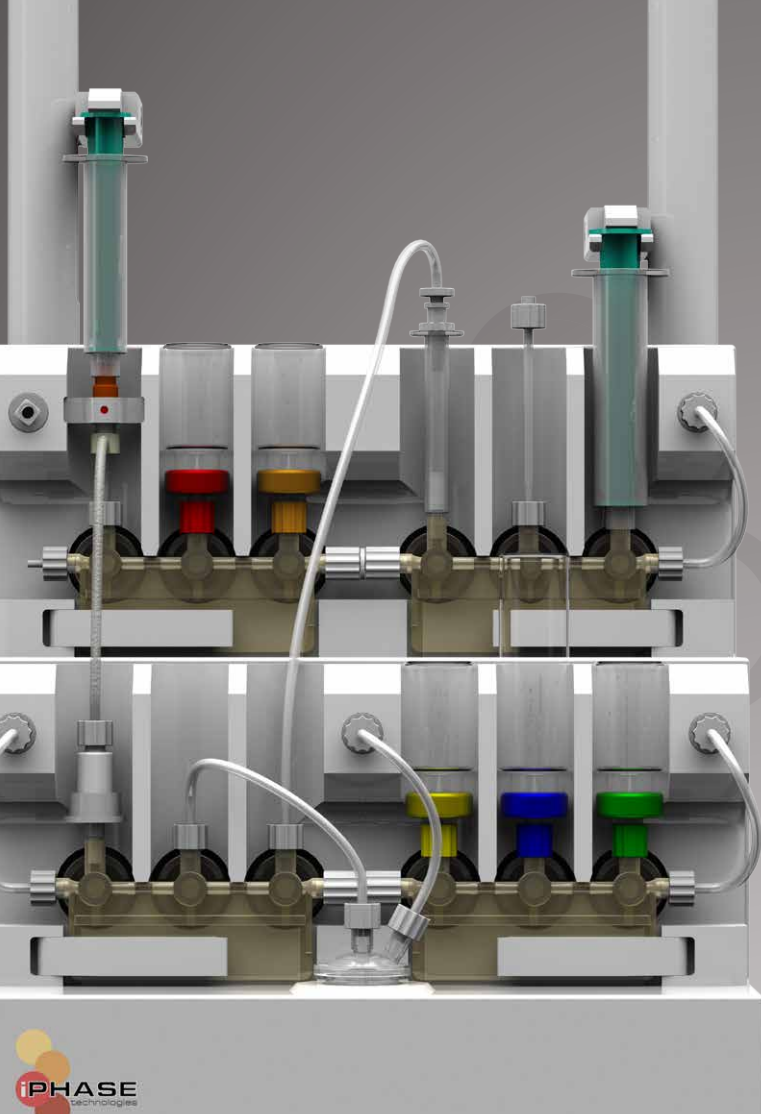


# MultiSyn

compact multi-synthesis radiosynthesizer



[www.iphase.com.au](http://www.iphase.com.au)



# MultiSyn

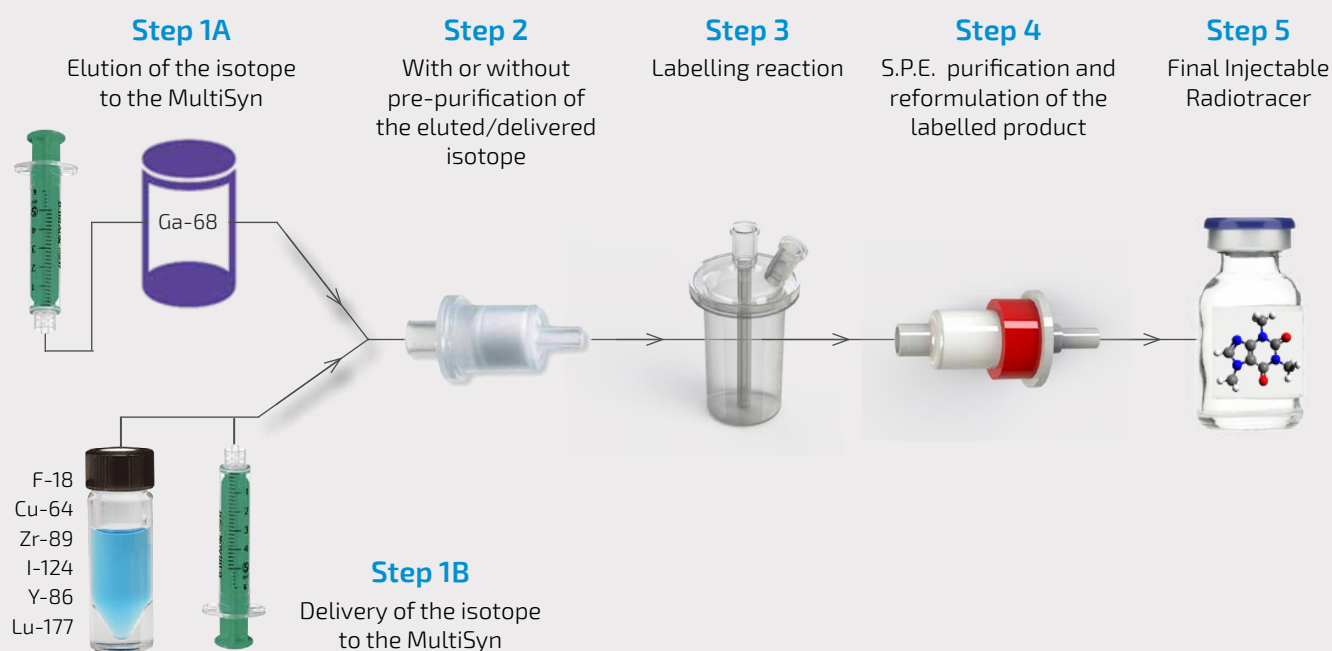
Multi-Purpose. Powerful.

With the MultiSyn, we have developed the most compact, versatile and easy to use disposable cassette radiosynthesizer suitable for both R&D and routine production.



## Typical Synthesis

The MultiSyn can perform the following synthetic steps, or you can setup your own by simply modifying the non-proprietary hardware cassette and graphically generating a new synthesis recipe method using our open software interface.



# Multi-Isotope

One synthesizer for all your radiochemistry needs



Standardize and simplify your labs radiochemistry requirements with one versatile synthesizer. By simply changing the hardware cassette, you can easily switch to another radiosynthesis without any cross-contamination.

## Disposable Cassette & Reagents

The sterile disposable synthesis cassette and reagent set helps avoid cross-contamination and ensures reproducible results.

This enables you to effortlessly meet the most stringent quality control GMP compliance standards.

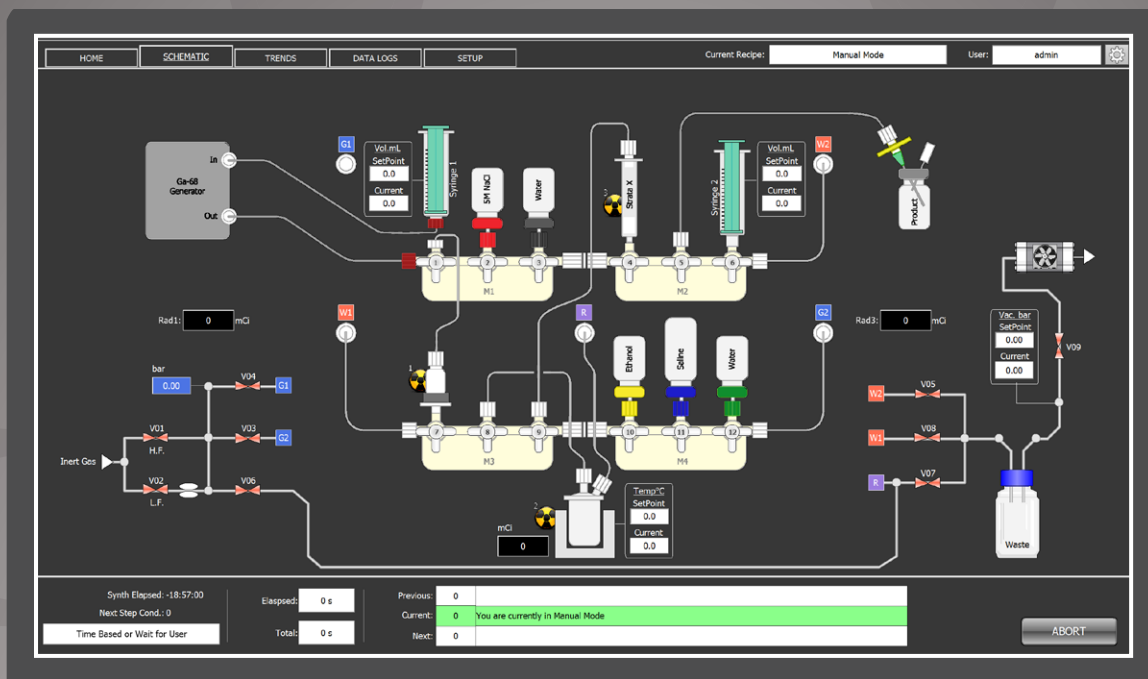
By using non-proprietary components, the user can modify and develop their own cassettes.

Low metal contaminant materials are used.



# Open User Interface

System control & visual synthesis recipe development all in one platform



- ✓ Easy to use open software interface for easy tracer development
- ✓ Guides you step-by-step during the synthesis
- ✓ Can be installed on multiple computers for remote synthesis

- ✓ Recording of all process variables and report generation (21 CFR Part 11 & GMP compliant)
- ✓ Traditional PC or Touch Screen Tablet Control
- ✓ Built-in remote diagnostics enabling simplified troubleshooting



## Real-Time Sensor Trends

All sensor information can be displayed graphically in real-time trends.



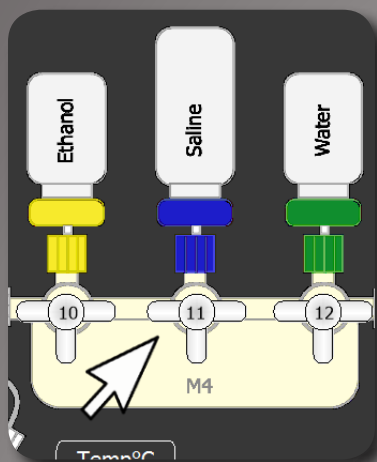
## Historical Data Review

Review previous synthesis results as trend graphs with data analysis functions.



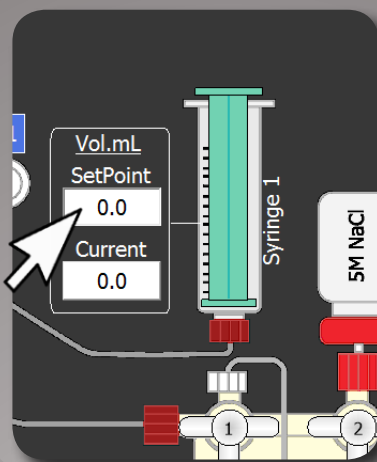
# Graphical **Synthesis Recipe** Development

Click • Define • Save



## 1. Click a schematic

Click a schematic element such as solenoid valves and rotary actuators to turn them on/off or to set positions.



## 2. Define a parameter

Define parameters such as reactor temperatures, syringe volumes & step parameters (description, time, condition).

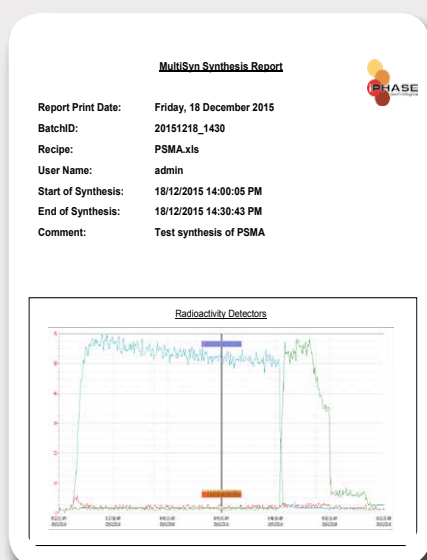


## 3. Save Step

Click the Save Step button and the software will automatically fill-in the Excel® recipe step list automatically.

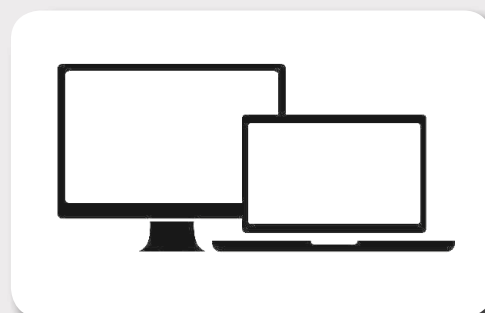
			(sec)	Manifold Rotary Tap Position (0=off, 1=left, 2=right)												(mL)	(mL)	Process Valve (0=off, 1=on)								(0-255 °C)	(-1.0-0.0 bar)				
Step	Step Message	Step Condition	Step Time	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8	RT9	RT10	RT11	RT12	Syringe 1 Position	Syringe 2 Position	V01	V02	V03	V04	V05	V06	V07	V08	Reactor Temp	Vacuum Setpoint	PO 1	PO 2	PO 3	
61	Eluting generator to reactor	0	5	0	0	0	0	0	0	2	1	0	0	0	0	0.5	0.0	0	0	0	0	0	0	1	0	0	0.0	0	0	0	
62	Eluting generator to reactor	42	30	0	0	0	0	0	0	2	1	0	0	0	0	0.0	0.0	0	0	0	0	0	0	1	0	0	0.0	0	0	0	
63	Eluting generator to reactor	0	10	0	0	0	0	0	0	2	1	0	0	0	0	0.0	0.0	0	0	0	0	0	0	1	0	0	0.0	0	0	0	
64	Flushing HCL to reactor	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	1	1	1	0	0	1	0	0	0.0	0	0	0	
65	Flushing HCL to reactor	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0.0	0.0	0	1	1	1	0	0	1	0	0	0.0	0	0	0	
66	Labelling reaction - Heat up phase	11	360	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	120	0.0	0	0	0	
67	Labelling reaction - Heat up phase	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	120	0.0	0	0	0	
68	Labelling reaction - Cool to reaction temp	15	360	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	95	0.0	0	0	0	

Synthesis recipes are stored as easily editable Excel® step list files.



## Synthesis Reports

Generate and print synthesis reports to satisfy your labs documentation and GMP requirements.



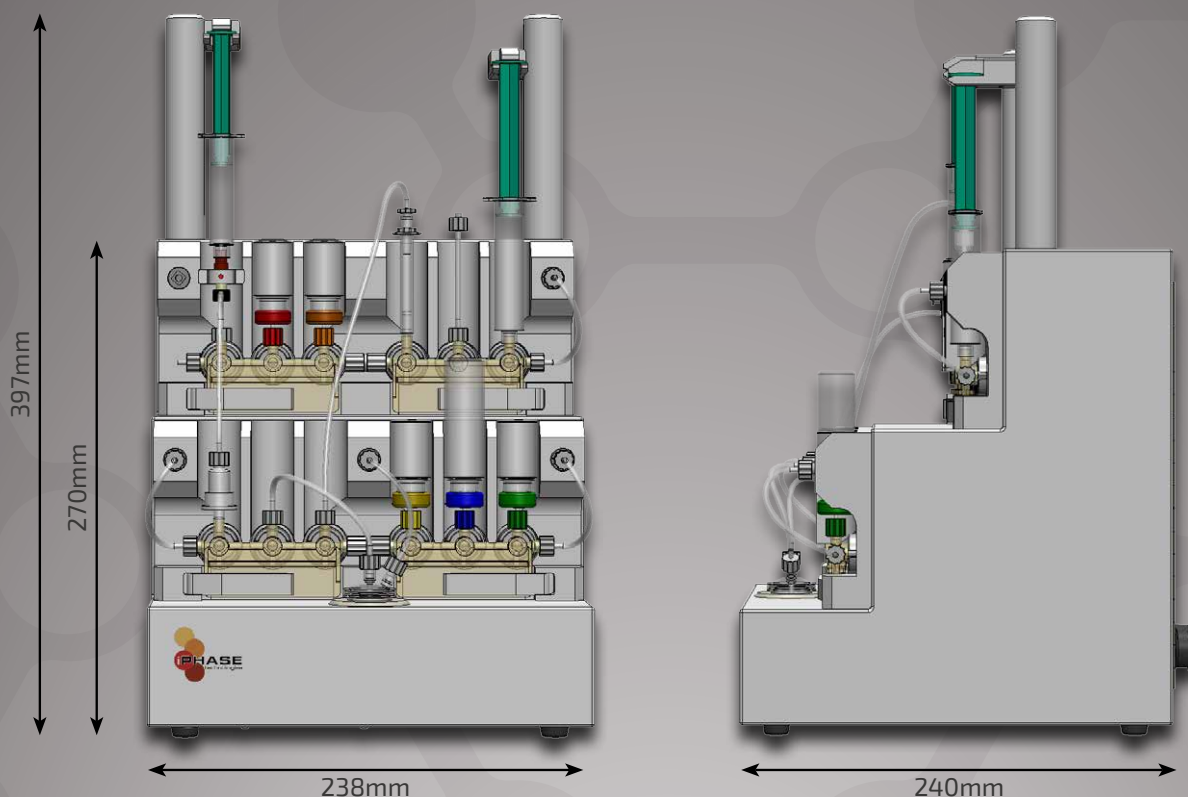
## Install on Multiple Computers

Develop the synthesis recipe in your office and test the recipe in the lab.

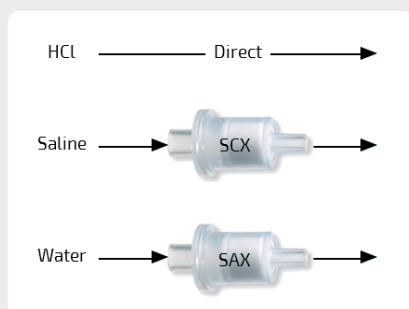


# Compact Dimensions

Easily install multiple synthesizers in the one hotcell



## Compatible With All $^{68}\text{Ga}$ Generators



The MultiSyn is compatible with all commercially available  $^{68}\text{Ga}$  generators.

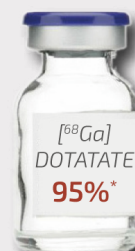
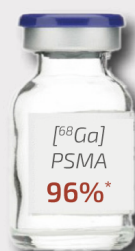
The MultiSyn has a built-in force limiting syringe drive for generator elution and can perform no pre-purification, as well as cationic or anionic pre-purification of the generators eluate.

## External Control Electronics



By locating the control PLC components outside of the hotcell eliminates the possibility of damage to the electronic components due to high radiation fields thereby significantly increasing system reliability.

## Exceptional Performance



.... more isotopes and tracers to come!

\*Decay corrected radiochemical yields.  
Uncorrected yields:  $^{68}\text{Ga}$ PSMA = 80.5%,  $^{68}\text{Ga}$ DOTATATE = 74.7%

# iPHASE Support

## Key aspects of our support structure

### Technical Support

You are always a phone call or an email away from an experienced iPHASE engineer or staff member to assist with any queries. Achieving customer satisfaction is our primary objective.

### Spare Parts

Complete stock of spare parts for all synthesizers are available and can be expressed shipped to you to minimise downtime.



### Remote Diagnostics

Remote diagnostics are built into every system we make. This enables our experienced engineers to diagnose, test and guide the user to the quickest solution to an issue should it arise.



### Continuing Education

The field of radiochemistry is ever changing and our continuing education program is there to ensure your team is fully up to date with our latest developments.



### Upgrades

Due to the ever evolving nature of technology, we are continually following the trends and applying the latest technologies to our systems to increase performance, productivity and reliability.



### Hands on Training

Personalized hands on training will ensure your staff will easily learn and master all aspects of our automated technology.

# Technical Specifications

Hardware	
Reactor	<ul style="list-style-type: none"> <li>• 10mL low metal contaminant Topas COC reactor or 10mL glass reactors</li> <li>• Heating to 150°C when using a Topas COC reactor and 220°C when using glass reactors</li> <li>• Contained compressed air cooling to ambient temperatures (all exhaust compressed air can be piped outside of the hotcell to eliminate contamination or pressurizing of the hotcell environment by the compressed air used to cool the reactor)</li> <li>• Optional Vortex Tube compressed air cooling to approx. 8°C</li> </ul>
Stopcock Actuators	<ul style="list-style-type: none"> <li>• 12 x 3-position electric servo actuators</li> <li>• Can rotate all the disposable manifold stopcocks to 3 positions: left, right and off</li> </ul>
Manifold Clamps	<ul style="list-style-type: none"> <li>• Unique magnetically locking latches for disposable stopcock manifold clamping</li> </ul>
Syringe Drives	<ul style="list-style-type: none"> <li>• 2 x electrically actuated syringe drives</li> <li>• Multi-syringe size capable: 1mL, 5mL, 10mL &amp; 20mL sizes</li> <li>• Force limiting drive control circuit stops driving the syringes plunger if the back-pressure is too high, and automatically resumes drive once the back pressure is reduced. This specialized circuit is especially usefully when eluting <sup>68</sup>Ga generators with high back pressures and delivers smooth &amp; reliable generator elutions.</li> </ul>
Vacuum Pump	<ul style="list-style-type: none"> <li>• Built-in chemically resistant vacuum pump, dual head</li> <li>• Max vacuum -0.95bar</li> </ul>
Automation	<ul style="list-style-type: none"> <li>• Industrial PLC (Programmable Logic Controller) with wired or wireless communications to the interface laptop or tablet PC</li> <li>• PLC is housed in an external compact enclosure which is located outside of the hotcell to eliminate radiation damage to the electronics. This ensures reliable operation even in high radiation fields.</li> <li>• Synthesizer is connected to the PLC enclosure via 2 multi-pin electrical cables</li> </ul>

Sensors	
Radioactivity	<ul style="list-style-type: none"> <li>• 3 tungsten collimated linear CsI(Tl) crystal PIN diode radioactivity detectors</li> </ul>
Pressure	<ul style="list-style-type: none"> <li>• 2 x pressure sensors for vacuum and inert gas pressure monitoring</li> </ul>
Temperature	<ul style="list-style-type: none"> <li>• Thermocouple sensor for reactor temperatures</li> </ul>

Software	
Graphical Interface	<ul style="list-style-type: none"> <li>• Easy to use open platform operator interface, with sensor trends, historical data logging &amp; analysis, synthesis reports, multi-level password protected user access, CFR 21 CFR Part 11 &amp; GMP compliant</li> </ul>
Synthesis Recipes	<ul style="list-style-type: none"> <li>• Easily generated using unique Click-&amp;-Save graphical recipe development technology and stored as Excel® step lists</li> </ul>

Utilities and Dimensions	
Compressed Air	<ul style="list-style-type: none"> <li>• 6-8 bar (87-116 psi), 6mm O.D. push-in tube connection</li> </ul>
Inert Gas	<ul style="list-style-type: none"> <li>• Helium, Nitrogen or Argon; 2-8 bar (29-116 psi), 1/8" O.D. tube compression connection</li> </ul>
Case	<ul style="list-style-type: none"> <li>• Compact solvent resistant powder coated case</li> </ul>
Dimensions	<ul style="list-style-type: none"> <li>• 238 mm x 270/397 mm x 240 mm (WxHxD)</li> </ul>



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