

PRODUCT BROCHURE PCR SYSTEM

High Performance Gradient  
Thermal Cycler

# SuperCycler™



Find out why everyone is  
talking about the

# SuperCycler™

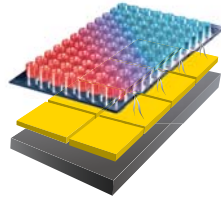
Smaller...Faster...Lighter...Cheaper...

And perhaps the most user friendly  
PCR cycler ever...?



# Platform

**Block**  
**Sensor**  
**Peltier**  
**Heatsink**



The SuperCycler™ is a high performance block cycling system configured and optimised for Industry standard 200ul individual or strip tube (domed or flat-capped) or 96-well plates (low or high skirt) with wtrip caps or adhesive film seals. It incorporates state of the art electronics, precision quality peltier devices and a flexible user interface.

## Configuration

The SuperCycler™ utilises eight Peltier devices to actively heat and cool the block between 4°C and 99°C.

Peltier devices are driven by four independent thermal sensors arranged evenly across the block. This Configuration of peltiers and sensors enables a highly linear gradient to be established via a sophisticated computer control system. A precision composite alloy- block with low mass and high thermal conductivity gives good ramp rates, long peltier life and low well to well temperature variation.

## Linearised Gradient

Thermal gradient technology enables a varying temperature to be set across the reaction wells of the block. Applications of this feature include the ability to optimize the annealing temperature of an assay in a single experiment by determining the temperature of the wells that yield the best result.

The SuperCycler™ is capable of generating a linear gradient of between 0°C and 20°C across the block. The software interpolates and displays the temperature of each column of wells in real-time during a run.

Most other gradient thermal cyclers generally use fewer Peltier devices and sensors producing a less uniform gradient across the block. The resulting non linear gradient makes it difficult to predict actual sample temperature in each well and leads to optimization experiment prone to error.

## Heated Lid Evaporation Control


The SuperCycler™ employs an applied pressure heated lid design to keep the air contained within the tube hotter than the reaction volum. This causes any evaporation to condense back into the cooler reaction liquid, thereby eliminating the need for oil or wax condensation overlay.

## User Interface

The SuperCycler™ offers the choice of 2 powerful user interface options. The Primary interface is via an internal high performance graphical controller. A large 7" widescreen color touch panel gives a vibrant and flexible means of run setup and monitoring. All SuperCycler™ also have a USB port interfacing to Windows based PC software. This software opens the user up to easy profile setup, sharing of files, and post run examination of any temperature data.

New software features and updates are regularly incorporated and available as free upgrades via web download.


Both interface options provide a graphical and intuitive means of cycler setup and control. During run progress, temperatures measured across the block are displayed in real-time as a scrolling graph and numerical output. The PC based software also allows logging of the actual well temperatures throughout the run which can be post examined.



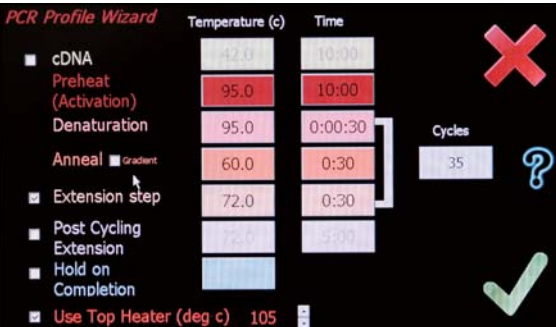
**Desktop 'Home' Screen**  
Access all systems functions from here by pressing the icons

**Wizard Mode**

- Allows rapid setup of most typical runs
- Use the checkboxes to enable the optional steps
- Press the temperature and time boxes to adjust these values
- Select OK to proceed to the run review screen



**PCR Profile Creation.**  
You can load an existing experiment from either the internal drive or an external USB drive, or create a new thermal profile using either the Wizard or the manual builder.



Step	Temperature (c)	Time	Cycles
cDNA	42.0	10:00	
Preheat (Activation)	95.0	10:00	
Denaturation	95.0	0:00:30	
Anneal	60.0	0:30	35
Extension	72.0	0:30	
Hold on Completion			
Use Top Heater (deg c)	105		

# Interface

## Thermal profile engine

The SuperCycler™ has a powerful thermal profile engine implemented within. A profile may contain up to 100 events. Each 'event' can be either a hold at temperature, pause, ramp or 2 to 5 step cycling with up to 100 repeats. Any event or step can contain gradient, touchdown or long range features. An almost unlimited number of profiles may be stored on the device for re-running. Despite its capabilities profile setup is straightforward.

### Live Graphing

Gives vivid feedback of the thermal activity.

### Manual Control

Enables the user to set the block to a specific temperature quickly without creating a thermal profile. This function is useful for incubating reactions such as DNA digestion or ligation. Manual Mode also supports thermal gradient.

### Oligo Calculator

Is incorporated into the software to assist the operator in oligonucleotide design.

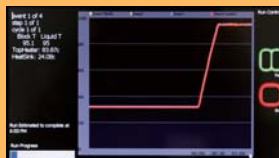
### Quickstart Wizard Mode

SuperCycler™ software includes a Quickstart Wizard utility which enables the user to configure easy to moderate complexity profiles in just moments. Pre-programmed protocols are available to set up quickly for your convenience or which are easily edited as your own methods with only a single click.



#### Configuration Tools

- 8 Configuration and tools tab pages are accessible from the Configuration Icon
- on the 'Home' page. These include:
- Block thermal options, top heater options
- Calibration (thermal & touch panel)
- File manager to transfer user files to / from USB memory sticks
- Software updating tool (free updates available online)
- Oligo calculator & multiple games



#### Running Screen

Live Graphical display of temperatures Numerical temperature display Zone temperatures displayed in gradient mode

### External Connectivity

The SuperCycler™ features a front access USB host port enabling the user to easily transfer files between units using an ordinary USB memory stick. This USB interface also supports either a mouse or keyboard.

### Pause

Allows the user to pause the profile at any number of pre programmed points while emitting an alert beep. The current set temperature is held indefinitely until the continue button is pressed. Holds are useful if there is a need to remove tubes or add reagents at a particular point in a run.

### User Accounts

Enables easy separation and organisation of user run profiles.

### LongRange

Feature enables the time of a particular cycling step to be automatically increased or decreased by a preset amount over a specified range of cycle repeats. The Long Range increasing time mode feature is often used to provide gradually extended times for enzymatic polymerization of longer products during later cycle repeats of an amplification reaction.

Long Range decreasing time mode can be used to shorten the total run time. During later cycles the majority of enzymatic polymerization is occurring on previously generated amplicons which are shorter in length than the original template. Shorter hold times are often sufficient for polymerization of these shorter length products.

### TouchDown / up

Enables the temperature of a step to be automatically increased or decreased by a preset amount over a range of successive cycle repeats. It's primary use is as a mechanism to minimize primerdimer artifacts by gradually decreasing the annealing temperature during initial cycle repeats of an amplification profile.



#### Upgrade Software

The upgrade file you receive from our support team or the website should be placed on the main root directory of your USB memory stick.

# Specifications

<b>Thermal Cycling System</b>	High performance active heating and cooling using quality Peltier elements x 8 & precision sensors x 4
<b>Temperature Range</b>	4°C–99°C
<b>Temperature Accuracy</b>	±0.25°C of set temperature, 1 minute after target
<b>Temperature Uniformity</b>	±0.5°C, 30 seconds after target
<b>Temperature Resolution</b>	0.1°C increments
<b>Heating / Cooling Rate</b>	3°C/sec maximum(block)
<b>Well Configuration</b>	96-Well block supporting : 0.2 mL tubes or strip tubes with flat or domed caps; 96-well high-or lowskirt plates with strip caps, adhesive cover, or oil overlay
<b>Linear thermal gradient</b>	Programmable 0–20°C across block width(12 wells)
<b>Condensation control</b>	Automatic utilising applied pressure heated lid
<b>Heated Lid Temperature Range</b>	Controllable 60°C–110°C
<b>Dimensions</b>	W180mm(7") D 285mm(11.2"); 350mm(13.8") including cables H 190mm(7.5") lid closed(340mm (13.4") lid open)
<b>Weight</b>	5.5kg(11 lbs)
<b>Color</b>	White on black
<b>Electrical</b>	100–240 VAC @ 4 Amp(50/60 Hz) Automatic voltage sense Standard IEC Inlet plug
<b>External Connectivity Interface</b>	USB1.1 interface to Windows XP / Vista based PC USB host port - File transfer to & from USB memory stick - mouse / keyboard connection - printer *(future software release)
<b>Internal Interface(optional)</b>	Embedded graphical controller with 7" widescreen touch sensitive color backlit display
<b>Software</b>	Supplied with unlimited user license. Free upgrades available via web download.
<b>Functionality</b>	Touchdown/up, long-range, linear thermal gradient, program pauses, temperature graphing, temperature logging(PC only), User accounts, Profile load & saving, Manual mode, USB file transfer.
<b>Included Accessories</b>	Power Cable, User manual, Touchscreen Stylus



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