

CG Palm-Cycler

Gradient Thermal Cycling

The new Gradient Palm-Cycler combines robust engineering advanced performance and a palmtop PC interface for supreme user-friendly flexibility.



Features

- Active-cooled block (range 4°C to 99°C)
- 8 Peltiers and 4 platinum sensors
- True linear gradient capability (1°C to 24°C)
- Intuitive Palm computer interface
- Easy programming and backup
- Advanced cycling options (Touchdown, Long Range, Ramp Rate, Hold List, etc)
- Advanced functions (graphing interface, autocalibration, oligo calculator etc)
- Built tough to last
- Familiar Windows operating system
- Allows total flexibility in cycle programming
- SD memory cards for program transfer & backup
- Computer supports advanced software (for autocalibration, primer design, virtual runs, etc)
- Intuitive graphical user interface with large backlit, color, touch-sensitive screen
- In-built palm calendar software makes a perfect lab booking system!
- It is an indigenous product
- Oligo Calculator Software

Palmtop PC Interface

A palmtop PC interface provides the convenience of the familiar graphical windows® operating system combined with a backlit color touchscreen for an unsurpassed user experience in a thermal cycler.

The power of a palmtop PC computer allows advanced software functions to be included and total flexibility in thermal cycle programming new software features are regularly incorporated

and available as free upgrades via web download.

An SD memory card is included for convenient backup and transfer of programs between instruments. Each card can hold thousands of saved cycle programs.

In addition, the calendar software included with the palmtop PC computer makes a perfect booking system for laboratories where the instrument is in high demand!



True Linear Gradient

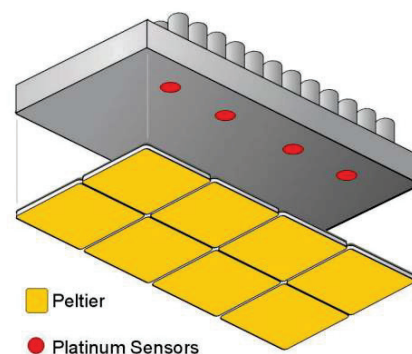
Thermal gradient technology enables opposite sides of a thermal cycler block to be set to a different temperature. The wells across the block then span the set temperature range, creating a thermal gradient. A gradient can be used, for example, to optimize the annealing temperature of an assay in a single experiment by simply determining the temperature of the wells that yielded the best result.

The Palm-Cycler® uses eight Peltier devices to actively heat and cool the block from 4°C up to 99°C. Peltier devices are controlled by four separate thermal sensors arranged across the block. The distribution of sensors enables a true linear gradient to be established via feedback loops from the sensors to the computer. Furthermore, Palm-

Cycler software can interpolate and display the temperature of each column of wells in real-time during a run.

With the Palm-Cycler, a linear gradient of between 1°C and 24°C can be set across the block.

Unlike the Palm-Cycler, other thermal cyclers typically use fewer Peltier devices and sensors. A thermal gradient produced by these instruments can be very non-linear, having a fast thermal decay zone at one or more regions of the block. An asymmetric gradient such as this makes it very difficult to predict actual sample temperature in each well and makes optimization experiments prone to error.



Thermal Gradient Cycling

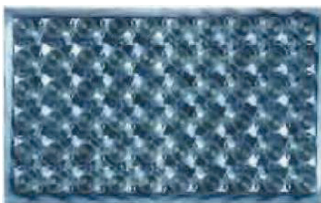
- When enabled, a programmable gradient from 1°C to 24°C can be setup from left to right on the Palm-Cycler
- 8 Peltiers and 4 sensors enable a true linear gradient to be established
- Gradient technology allows the user to quickly identify the best possible set of annealing conditions in one run when optimizing cycling conditions



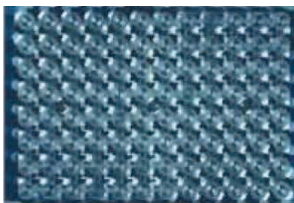
Shortly, Palm Cycler will be available with new "Pharos" Palm Top

Support for all Reaction formats

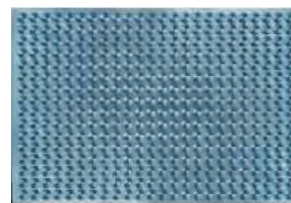
There are three models of Palm-Cycler to suit different sample tube formats:



60-well format to suit large volume reactions in individual 0.5ml tubes with attached caps



Industry Standard 96-well format for 0.2ml individual or strip tubes (domed or flat - capped) or 96-well plates (low or high skirt) with strip caps or adhesive film seals.



Industry Standard 384-well format for plates with adhesive seals.

Real-time Graphs

Palm-Cycler software graphically displays the current measured temperature across the block in real-time as cycling progresses, even for a thermal gradient (A opposite). Blue lines on the graph indicate target temperatures for each thermal sensor and the red lines report the measured temperature at each sensor location.

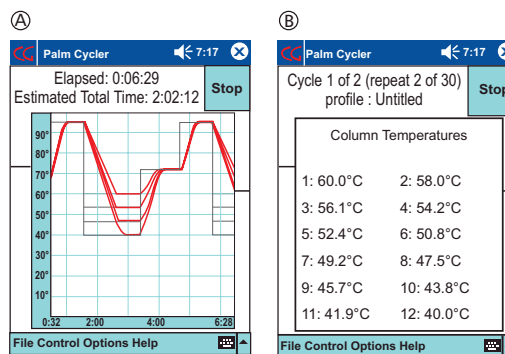
Four sensors across the Palm-Cycler block enable accurate interpolation of the temperature in each well. Shown opposite (B) are the interpolated temperatures of all twelve columns across a 96-well block (i.e. 12 columns x 8 rows) as displayed in real-time by the software.

Programming Interface

Cycling programs are created and edited in Program mode. A program is graphically represented, as shown opposite for a three step program (A). The touchscreen interface makes the Palm-Cycler simple and intuitive to use: displayed parameters such as temperature, time, step number, or repeat number can be changed simply pressing on a displayed value to open an Edit dialog (B opposite).

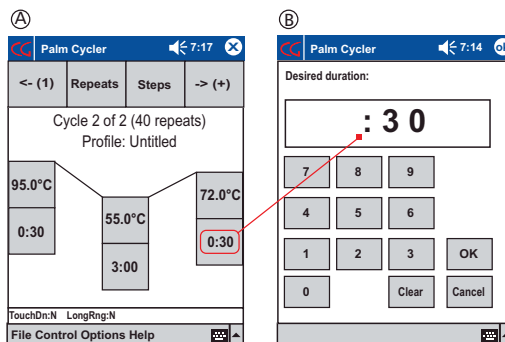
Ramp Rate Control

Thermal transition times (or ramp rates) can be precisely controlled by the Limit Rate function. Limit Rate allows the user to specify the time taken to transition from one set temperature to the next.



Hold Lists

The Hold function allows the creation of one or more pauses in the program. With this feature active, the unit will pause at the programmed point while emitting an alert beep. The set temperature will be held indefinitely until a 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.



Manual Control

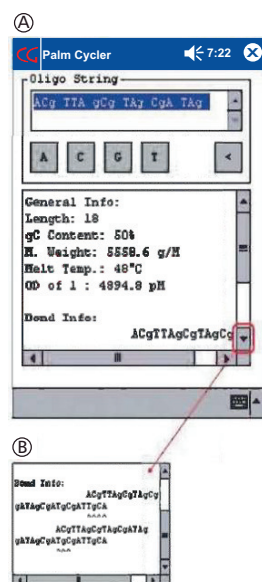
In Manual Mode, the Palm-Cycler block can be set to hold a specified temperature for an indefinite time. This function is useful for incubating reactions such as DNA digestion or ligation. Simply select Manual Mode from the control menu and key in the temperature desired. Manual Mode also supports a thermal gradient in which the upper and lower temperatures are set.

Touchdown And Long Range

Touchdown and Long Range are auto-increment programming tools supported by the Palm-Cycler. Touchdown allows the temperature of a step to be automatically lowered by a set amount over a specified range of successive cycle repeats. It is usually used as a mechanism to avoid primerdimer artifacts by gradually lowering the annealing temperature during early cycle repeats of an amplification reaction.

Long Range programming enables the time of a particular step to be automatically increased by a set amount over a specified range of successive cycle repeats. Long Range programming is often used to provide gradually extended times for enzymatic polymerization of longer products during later cycle repeats of an amplification reaction. It is most useful for targets longer than about 1 kb.

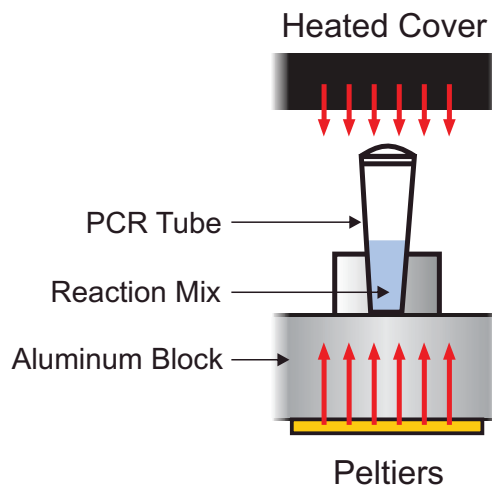
Oligo Calculator



Palm-Cycler software includes a full-featured oligo calculator as an aid to oligonucleotide design. In addition to a range of calculated values, the software self-aligns the oligo to show the occurrence of self-complementary bonds. This can be used, for example, to identify palindromes and primer-dimers. Example oligo information is shown here (A). Scrolling the window down displays the self-aligned bond information (B).

Zero-condensation Heated Lid Design

The Palm-Cycler uses a heated lid to keep the void air volume in the tube hotter than the reaction (see below). This drives any evaporation and condensation back into the cooler reaction liquid. Thus no oil or wax condensation barrier is needed.



Heated Lid (Hot Bonnet) Technology

Thermal Calibration

In some situations it may be desirable to have the Palm-Cycler matched to an external thermal accuracy standard. The software includes an auto-calibration wizard in the Help menu to enable dynamic recalibration by the user.

The calibration process begins with measurement of Palm-Cycler well temperatures using a thermocouple probe of the desired accuracy. Measured temperatures are then used to overwrite existing Palm-Cycler calibration settings so that accuracy is matched to the probe.

Power Interruption and Auto-resume

If for any reason the Palm-Cycler is turned off, the power fails or the palmtop PC is disconnected during a run the palmtop PC will sound a warning alarm for 30 seconds. If reconnection occurs during that time the program will continue. If not, a Disconnected message appears onscreen indicating the name of the terminated program and the cycle, step and repeat number at which interruption occurred.

Technical Specifications

Thermal Cycling System	Active heating and cooling using 8 Peltier elements + 4 Platinum sensors
Temperature Range	4°C-99°C
Temperature Accuracy	±0.25°C of set temperature, 1 minute after clock start
Temperature Uniformity	±0.5°C, 30 seconds after clock start
Temperature Resolution	0.1°C increments
Heating/Cooling Rate	2.5°C/sec maximum
Condensation control	Automatic using a heated lid design
Special Functions	Auto-resume on power fail, on-line logging and graphing, touchdown and long-range programming, linear thermal gradient (programmable up to 24°C), adjustable ramp rate, oligonucleotide calculator, program holds, manual mode, online help, thermal calibration wizard.
Configurations	60-Well version (CG 6000-000) - Supported consumable: 0.5 mL Tubes with attached caps
	96-Well version (CG 9600-000) - Supported consumables: 0.2 mL tubes or strip tubes with flat or domed caps; 96-well high-or low-skirt plates with strip caps or an adhesive cover
	384-Well version (CG 3840-000) - Supported consumables: 384-well plates with an adhesive cover
Dimensions	H 220 mm (8.7") lid closed
	H 330 mm (13.0") lid open
	W 310 mm (12.2")
	D 295 mm (11.6") ; 370 mm (14.6") including cables
Weight	10.9 kg (24 lbs)
Electrical	100-120 VAC @ 2 Amp (50/60 Hz), 200-240 VAC @ 2 Amp (50/60 Hz)
Startup Accessories	Blue Silicon Pad. Provided with 96- and 384-well configurations only Secure Key for Palm Device.
	SD Memory Card (2 GB)
	Power Cable
	User Manual
	Palmtop PC accessories (manufacturer's standard set)
Software	Supplied, with unlimited user license.
Warranty	1 years on instrument, manufacturers warranty on palmtop PC device



Ordering Information

Cat #	Description	Price (₹)
CG6000-000	CG Palm Cycler 60 well version ; supported consumables (0.5 ml tubes with attached caps)	
CG9600-000	CG Palm Cycler 96 well version ; supported consumables (0.2 ml tubes or strip tubes with flat or domed cap 96-well high - or low - skirt plates with strip caps or an adhesive cover	
CG3840-000	384 well version ; supported consumables, 384-well plates with an adhesive cover	