PCRmax

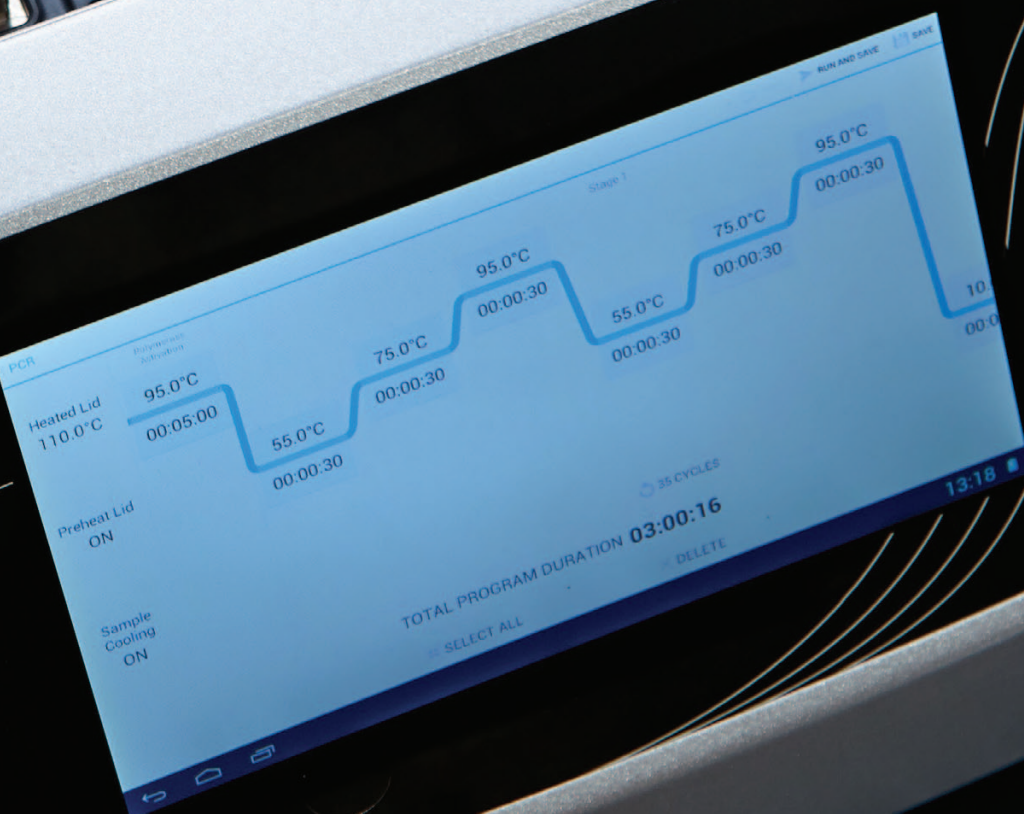## Alpha Cyclers

Endpoint PCR range and
Alpha Track Reporting

Speed. Confidence. Value. Sensitivity. Performance.

The PCRmax Alpha Cycler Range

The PCRmax Alpha Cyclers are developed to deliver not only the best quality data you can expect from a thermal cycler but also to innovate and exceed the high standards expected by the community. With options of either one, two or four independently controllable blocks, the Alpha Cycler is a platform which scales to the throughput of the laboratory. With programs easily transferable between any Alpha Cycler instrument and user specific defaults stored on the user's USB login device (any USB drive can be programmed as a login device) there are no issues with transferring work between systems or collaborating/sharing across multiple sites.

Speed. Confidence. Value. Sensitivity. Performance.

Alpha Cycler Key Features

- **Android driven HD touchscreen.**
- **Automated protocol optimisation with Program Wizard.**
- **Remote run and system monitoring via the Alpha Track Application.**
- **Authorise any USB drive to be the user's login key.**
- **Lock, protect and create favourite programs for ease of access and security.**
- **96 or 384 well blocks available with block types having gradient functionality.**
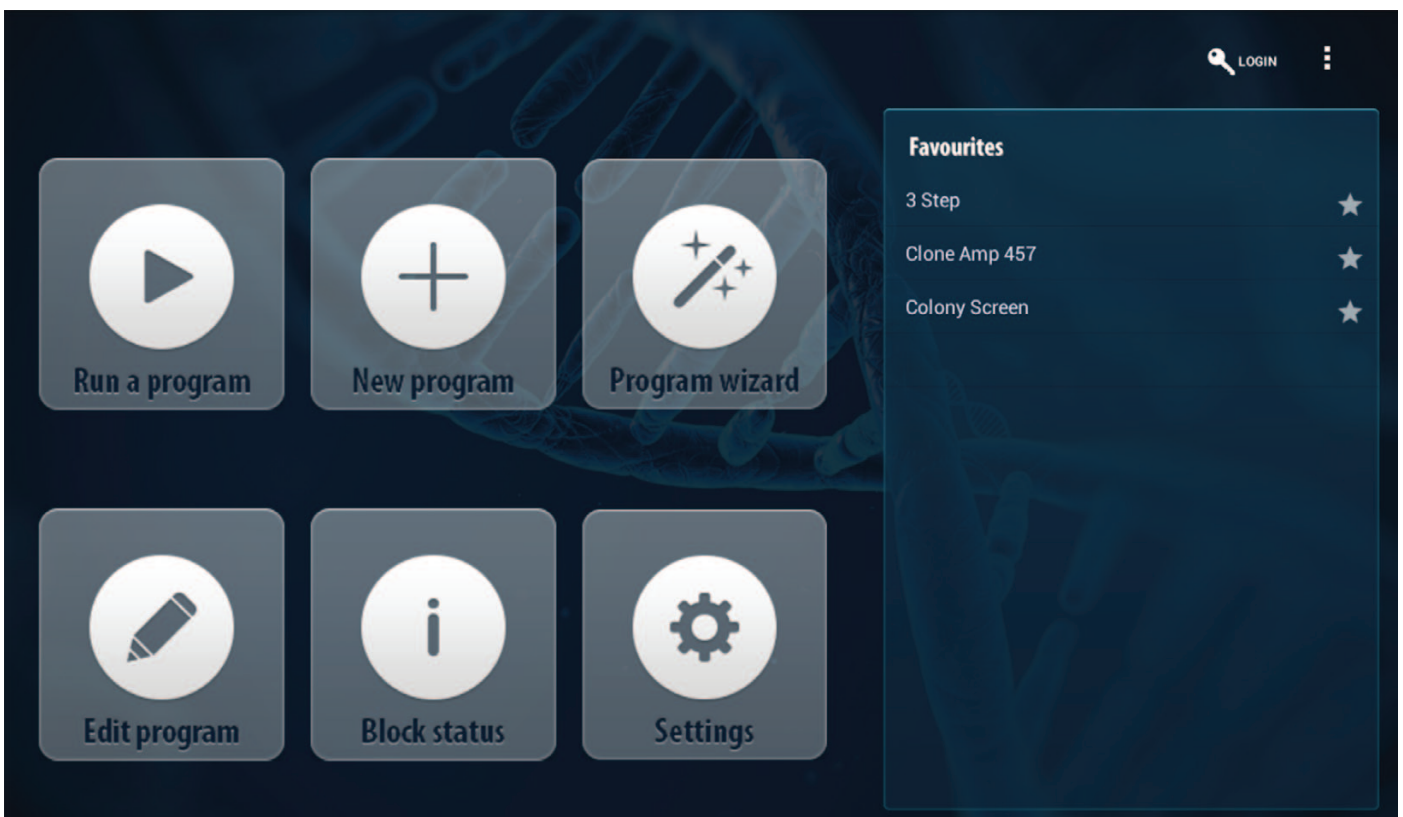- **Multiblock unit.**

PCRmax Alpha Cyclers

Introducing new and informative features to the PCR market to give end users more confidence and control over each run.

Software

All Alpha Cyclers are driven by the same software allowing for simple use and transition between instruments for both users and protocols. The intuitive Android interface makes the system easy to use with minimal to no training. The home screen above highlights the clear and simple to follow nature of the Alpha Cycler software.
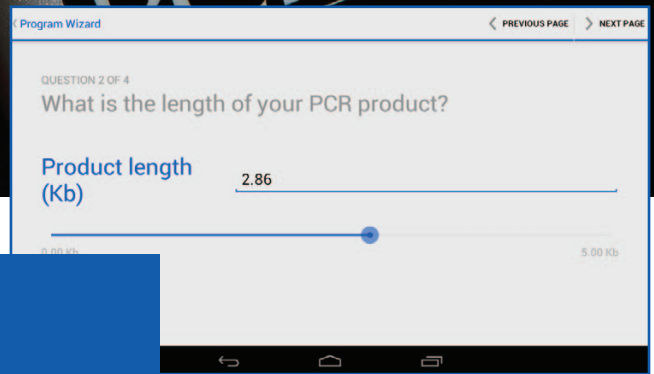
Advanced Feature Set

Alpha Cycler uses an Android operating system and is controlled by either a 7"
(AC-1) or 10" (AC-2 and AC-4) HD touchscreen interface. Each Alpha Cycler has:

Remote monitoring via the free Alpha Track App.
Program Wizard to automate optimisation.
USB login for easy access to any system.
Potential to detect an error state before it effects results.
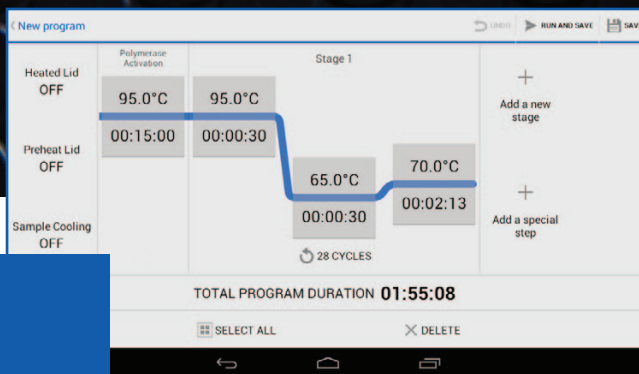
Program Wizard

Program Wizard

All Alpha Cycler systems also contain a novel Program Wizard which allows users to automatically optimise a PCR protocol.
Let the Alpha Cycler's Program Wizard optimise your reaction for you, simply:

• Input the forward and reverse primer sequences, define the amplicon length and source of the template and the built-in and validated algorithms will define a bespoke protocol for your target.

• Program Wizard allows for high specificity touch down PCR and will accommodate for GC/AT imbalances in your target sequence to get optimal Tms and hold times.

Program Storage

Set the Alpha Cycler to display Favourite, Most Frequent or Most Recently used programs on the home screen for easy and fast access. No need at all to access the system's memory or hunt though files, just select, confirm and run.
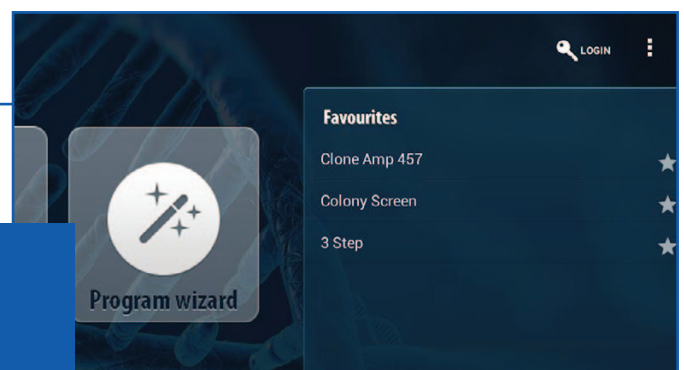
Program Manager
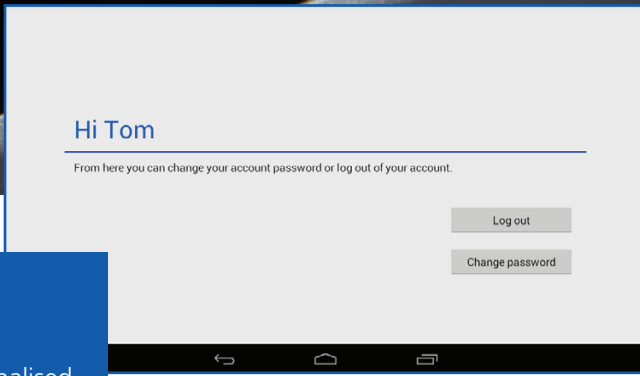
Alpha Track
App

Remote Monitoring via Alpha Track App

Users can scan the displayed QR code to allow them to remotely check on run status and the health of the system, to give confidence in the system's continued performance. Alpha Track will:

- Start a countdown clock of all running blocks on the unit.
- Allow users to specify alarm notifications for system finish.
- Check on the progress of runs.
- Send health reports to have the system checked for any errors or deviations from system performance.

System Health Checks

Each QR code scanned with Alpha Track contains a health check on the system. This report can be sent to service teams who can diagnose any issues with any system anywhere in the world and report back to the individual any issues the system may be having. It's like a service visit every time the system is run.

USB Logins

Users can make any USB device their own login key. This means users don't need to remember passwords for each system, they simply insert the USB key to login which:

- Sets all defaults to the user's specific settings.
- Allows access to logged in user programs.
- Protects programs from being accessed by any other user.
- Allows users to use multiple systems in different locations like their own unit. Simply remove the USB and the user is logged out and their programs are not displayed on the system.

Gradient Technology

All Alpha Cycler block formats, 96 or 384 well, run gradients across the 12 or 16 columns respectively. Allowing for a much finer optimisation of your temperatures and by extension more specific PCR product amplification. Each block also contains 8 individual heat sources (Peltier elements) which are monitored and controlled by the system for improved accuracy of gradient and fixed hold temperatures.

With the Alpha Cyclers gradient converter you can in one click adjust the gradient step to the specific temperature of the column that gave the best results: no need to re-write the protocol just convert the gradient to the optimised temperature.

Active Sample Cooling

Active Sample Cooling (ASC) is an approach which the Alpha Cycler takes to reduce non-specific amplification in your PCR reactions.

Active Sample Cooling can all but stop the formation of primer dimers early in cycling. When even a very small number of primer dimers occur early in a reaction these will often be preferentially amplified over your target as PCR will preferentially amplify these shorter fragments over the longer target amplicon, wasting components needed to generate your target, thereby reducing your yields.

ASC works by simply chilling the block to 4 degrees and holding it there until the heated lid gets to temperature. Other systems often allow the heated lid to pollute your samples with heat allowing the primer dimers to form early in cycling and these can amplify through the remaining cycles giving the characteristic fuzzy bands at the bottom of your gel.

Separate Complimentary Products: Arcis Prep Kit

Arcis DNA Prep Kit Protocol: Existing sample prep systems are often time-consuming and require laborious heating and centrifugation steps. The Arcis DNA Prep Kit requires only 2 steps and takes less than 3 minutes.

DNA Yield vs Sample Processing Time: These competitors to Arcis DNA Prep Kit all require additional instrumentation and the processing times range from 20 minutes to 4 hours.

Arcis DNA Prep Kit, 2 step Process. 3 minutes

Add 30µl sample (e.g. blood) to Tube 1
Mix thoroughly
Incubate 1 min at ambient temp

Take 5µl and add to Tube 2

Mix thoroughly
Add 5µl from Tube 2
to PCR Master mix

DNA Ready-to-go

STEP 1

STEP 2

Arcis DNA Prep Kit reduces 5 steps to 2 simple steps

Sample Processing Time (minutes)[*]

Arcis
Zymo
Qiagen
Promega

Average DNA Yield (ng)

■ Yield   ■ Time
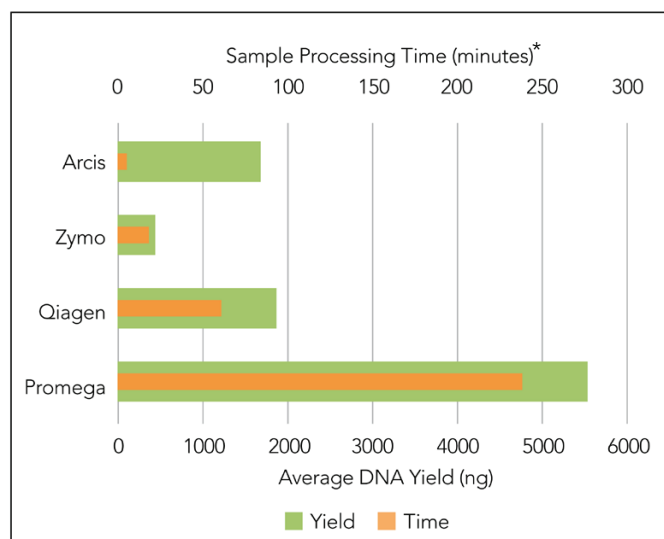
*A comparison of PCRdirect® Ultra-Fast Sample Prep with 3 commercial DNA extraction kits. Fothergill J and Hilliam Y, University of Liverpool (2015)

PCRmax Eco 48 Real Time qPCR System

The PCRmax Eco 48 real time PCR system is a high specification, economically priced real time thermal cycler that accommodates a unique 48-well polypropylene PCR plate utilising the same geometry as standard 384-well plates, but only 1/8 of the size. This enables users to dramatically reduce the qPCR reagent volumes compared to traditional 96-well instruments, saving users precious sample, whilst still producing a strong fluorescence signal. Minimizing the plate size also significantly improves thermal uniformity. A minimum volume of 5µl is validated, resulting in a more efficient use of expensive and 'hard to acquire' template DNA samples.
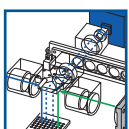
The Eco 48 Real-time system offers the qPCR capabilities of larger instruments in a compact, accurate footprint. Innovative features include a precise thermal system for unrivalled temperature control, an advanced optical system for highly sensitive fluorescence detection, a 48-well plate for flexible sample throughput and intuitive, icon-driven software for error-free instrument operation.
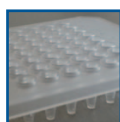
PCRmax Eco 48 Key Features

- MIQE compliant.
- HRM functionality is provided as standard and can discriminate class IV SNP 99.9% of the time.
- The Eco 48 can utilise four colours for easy multiplexing.
- Industry leading ±0.1°C temperature uniformity (recorded at 95°C no settle time).
- High uniformity provides high quality data.
- Fast cycling enables several experiments per day, all at an economical price.
- Fastest block-based real-time PCR system with the ability to run 40 cycles in 20 minutes (or less when optimised).
- The PCRmax Eco 48 is an open platform that can utilise any chemistry, dye or PCR reagent.
- Calibrated for SYBR®, FAM™, HEX™, VIC™, ROX™ and Cy®5 fluorescent dyes.
- Easy to use software, streamlined for novices and experts.
- No need to run triplicates, to compensate for poor thermal uniformity of block.

Do more, with less

Results from multiple instruments can be combined together

Eco 48 wells	24 samples	36 samples
HIGH uniformity - Run **duplicates**	Run time **40 minutes**	per hour

±0.1°C uniformity means Eco 48 requires fewer replicates than a conventional 96 well system

The Eco 48 is capable of running 40 cycles in 40 minutes.

Fewer replicates and faster cycling allows Eco 48 to process more samples than a standard 96 well system.

Conventional 96 wells	32 samples	24 samples
LOW uniformity - Run **triplicates**	Run time **1 hour 20 minutes**	per hour

Sensitive optical system delivers precise detection for a range of fluorophores

Convenient 48-well format meets the throughput needs of most researchers
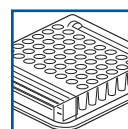
Unique thermal system provides unmatched temperature control for accurate results

Technical Specification

Unit	AC-1	AC-2	AC-4
Format:	Single block	Dual Block	Quad block
Block Options:	96 or 384 well format	96 or 384 well format	96 or 384 well format
Maximum heating rate:	3.4°C per second	3.4°C per second	3.4°C per second
Block temperature range:	10°C to 100°C (4°C final hold)	10°C to 100°C (4°C final hold)	10°C to 100°C (4°C final hold)
Block uniformity at 55°C:	± 0.3°C	± 0.3°C	± 0.3°C
Temperature accuracy at 55°C:	± 0.25°C	± 0.25°C	± 0.25°C
Gradient:	Yes (on all formats)	Yes (on all formats)	Yes (on all formats)
Maximum Gradient:	29°C	29°C	29°C
Minimum Gradient:	1°C	1°C	1°C
Maximum number of programs stored:	1000	1000	1000
Maximum fan noise:	50dB	50dB single block running	50dB single block running
		52-58db two blocks running	55-58db four blocks running
Peltier element type:	8	8	8
Adjustable heated lid temperature:	35°C to 115°C or off	35°C to 115°C or off	35°C to 115°C or off
Heated lid pressure:	Adjustable	Adjustable	Adjustable
Software platform:	Android	Android	Android
Program interface:	7" inch HD	10" inch HD	10" inch HD
Data transfer:	USB port	USB port	USB port
Auto re-start on power failure:	Yes	Yes	Yes
Dimensions (L x W x H) in mm:	430 x 260 x 200	470 x 535 x 335	700 x 535 x 335
Weight:	11.8kg	30kg	47kg
Voltage:	100-230, 50-60Hz	100-230, 50-60Hz	100-230, 50-60Hz
Power:	450W	900W	1600W
Electricity (standard 30 cycle program)	0.3 kWh	0.3 kWh	0.3 kWh

Ordering Information

Product Code	Description
AC196	Alpha cycler 1 chassis with a single 96 well block
AC1384	Alpha cycler 1 chassis with a single 384 well block
AC296	Alpha cycler 2 chassis with two 96 well blocks
AC2384	Alpha cycler 2 chassis with two 384 well blocks
AC2196	Alpha cycler 2 chassis with one 96 and one 384 well blocks
AC496	Alpha cycler 4 chassis with four 96 well blocks
AC4384	Alpha cycler 4 chassis with four 384 well blocks
AC4196	Alpha cycler 4 chassis with one 96 and three 384 well blocks
AC4296	Alpha cycler 4 chassis with two 96 and two 384 well blocks
AC4396	Alpha cycler 4 chassis with three 96 and one 384 well blocks

PCRmax

www.pcrmax.com