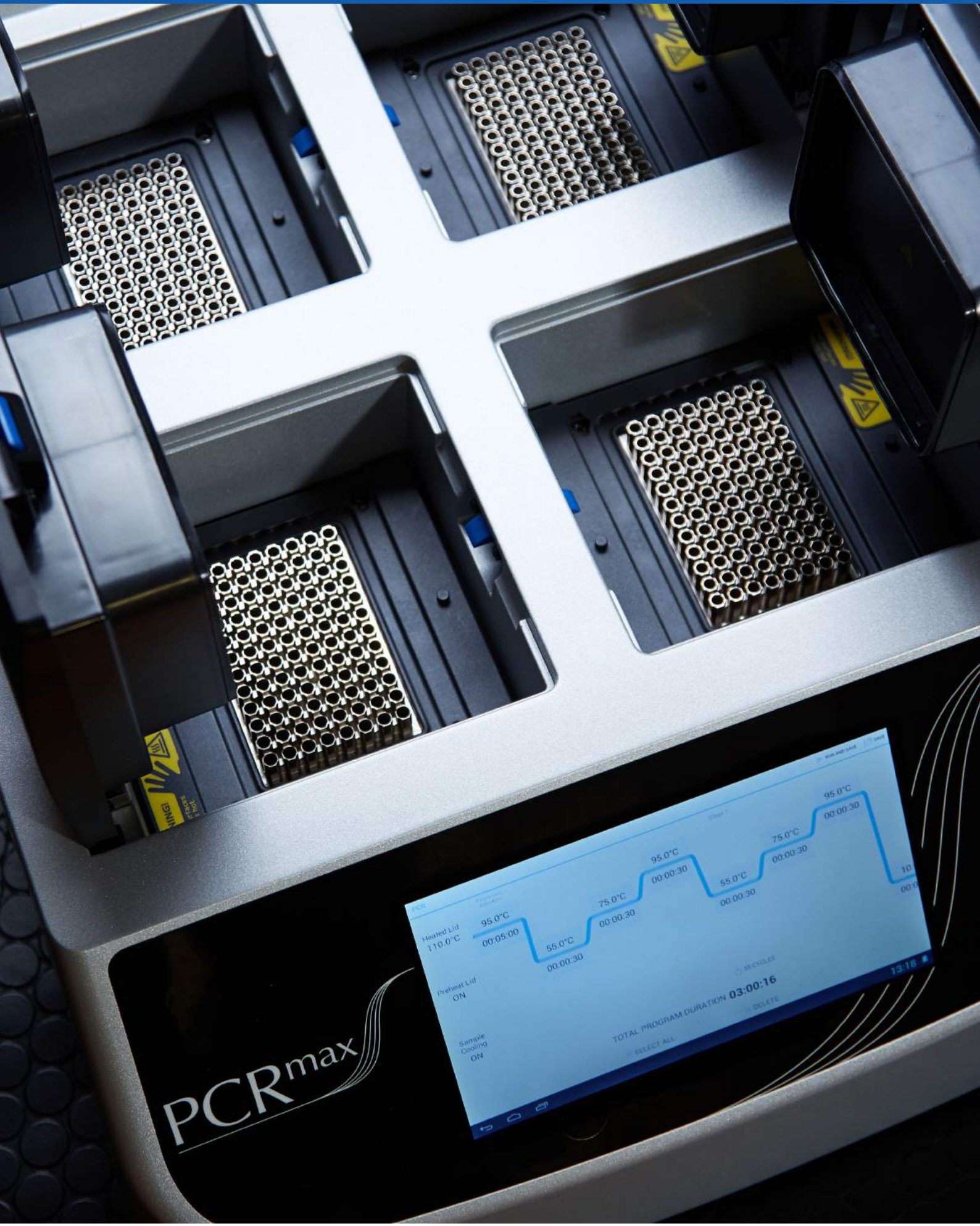


# PCRmax Alpha Cycler 1 and 4

## Operation Manual

PCRmax rev 2.5



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# Introduction

The Alpha Cycler thermal cyclers are standalone systems with flexible block options (96 or 384 well formats being available). The range includes both a single block variant, the AC-1 and a quad block variant, the AC-4.

The Alpha Cyclers range of block options allow for use of the most commonly used consumables including 0.2ml x 96 well plates, 0.2ml tubes, 0.2ml strip tubes and 384 well plates.

All combinations of base unit and block include a gradient feature, manually adjustable heated lid and programming features such as touchdown, active sample cooling, advanced reporting and health check options as standard to allow for most applications to be performed easily.



## ALPHA CYCLER CONFIGURATIONS

The Alpha Cycler systems can be configured with any combination of 96 or 384 well format blocks in the AC-1 and AC-4 chassis, see below.

Part code	Configuration
AC196	Single, 96 well
AC1384	Single, 384 well
AC496	Quad, 4 x 96 well
AC4384	Quad, 4 x 384 well
AC4296	Quad combo1 2 x 96 / 2 x 384
AC4396	Quad combo2 3 x 96 / 1 x 384
AC4196	Quad combo3 1 x 96 / 3 x 384

## Before use

Before using the Alpha Cyclor please ensure you have read this manual carefully. If there is any doubt relating to the proper use of this equipment, please contact your local distributor or PCRmax via the website: [www.PCRmax.com](http://www.PCRmax.com) or email [Enquiries@pcrmax.com](mailto:Enquiries@pcrmax.com).

### UNPACKING

When unpacking the unit please ensure that the following have been removed from the packaging:

Alpha Cyclor with block(s)

Mains cables (UK, EU, China and US)

USB stick containing operator's manual and default protocols

2x 15A Fuse which must be changed in certain territories and power supplies, see below.

The user is advised to keep the original packaging in case the instrument ever needs to be returned for service or repair. PCRmax accepts no responsibility for damage incurred unless the unit is correctly packed and transported in its original packaging.

### IMPORTANT NOTE:



**IF USING THE AC-4 AT 120V, BEFORE THE UNIT IS CONNECTED TO THE MAINS AND SWITCHED ON FOR THE FIRST TIME THE TWO 8A ANTI-SURGE FUSES MUST BE REPLACED WITH THE INCLUDED 15A ANTI-SURGE FUSES. THE FUSE HOLDERS ARE LOCATED BESIDE THE POWER SWITCH OF THE UNIT.**

**IF THE AC-4 IS INTENDED TO BE USED IN AUSTRALIA THE UNIT MUST BE A FIXED INSTALLATION AND CONNECTED DIRECTLY TO THE MAINS.**

### FUSE REMOVAL AND REPLACE

The anti-surge fuses are located on the right side of the system towards the rear, beside the power switch.

- Unscrew the fuse cover, using a flat head screwdriver or similar, and remove the fuse holder.
- Pop out the 8A fuse that system is shipped with and replace with the 15A required for 120V operation.
- Repeat the process for the second 8A fuse. **THIS MUST BE COMPLETED BEFORE CONNECTING THE SYSTEM TO THE LIVE MAIN AND POWERING UP THE UNIT.**

# Safety information

Please read all the information in this manual before using the Alpha Cyclor.

## WARNING

HIGH TEMPERATURES ARE DANGEROUS: they can cause serious burns to operators and ignite combustible material. Users should be aware of the following potential hazards:



- USE CARE AND WEAR PROTECTIVE GLOVES TO PROTECT HANDS
- DO NOT use combustible substances near hot objects
- DO NOT operate the instrument in the vicinity of inflammable liquids or gases
- DO NOT place any liquid directly into the instrument.
- DO NOT touch the heated lid when system is running or within 10 minutes of the system completing a run.
- DO NOT touch the block when the system is running or within 10 minutes of the system completing a run.

## OPERATOR SAFETY


All operators of PCRmax equipment must have available the relevant literature needed to ensure their safety. It is important that only suitably trained personnel operate this equipment, in accordance with the instructions contained in this manual and with general safety standards and procedures. If the equipment is used in a manner not specified by PCRmax Ltd. the protection provided by the equipment to the operator may be impaired.

All PCRmax instruments are designed to conform to international safety requirements and are fitted with an over-temperature cut-out. If a safety problem should be encountered, switch off the unit at the mains socket and remove the plug from the electricity supply.

## INSTALLATION

The instrument should be carried using both hands. Never move or carry the instrument when in use or connected to the mains electricity supply.

The AC- 4 has a weight of 45kgs; it is advised that three people lift and carry the unit should it need to be moved.

1. All PCRmax instruments are supplied with a power cable; this may be integral or plug-in.
2.  Before connecting the instrument to the mains electricity supply, check the voltage against the rating plate (located on the back of the unit). **Please note that the unit must be earthed to ensure proper electrical safety.**
3. The units are rated to operate at: for the AC-1 100-230V, 50/60Hz and for the AC-4 120-230V 50/60Hz.
4. Do not allow the Alpha Cyclor to overhang the bench.
5. Ensure the bench for the AC-4 can withstand the 45kg weight.
6. Place the unit on a suitable flat and level bench or in a fume cupboard if required, ensuring that the air inlet and outlet vents on the underside and rear are free from obstruction.
7. Ensure that the feet of the instrument do not overhang the side of the bench.
8. Plug the mains cable into the socket on the back (side in AC-4) of the instrument.
9. Switch on the instrument using the switch located on the back (side in AC-4) of the unit.

## REPLACEMENT CABLE

Should the mains lead need replacement, a cable of 1.5 mm<sup>2</sup> of harmonized code H05VV-F 3G connected to an IEC320 plug should be used. **IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN.**

## ENVIRONMENTAL CONDITIONS

The Alpha Cyclor is designed operate under the following conditions:

- Indoor use
- Ambient temperature range +5°C to +35°C
- Altitude to 2000m
- Relative humidity not exceeding 80%
- Mains supply fluctuations not exceeding 10%
- Over voltage category II IEC 60364-4-443
- Pollution degree 2

**Note:** The control specifications are quoted at an ambient temperature of 20°C ±2°C.

The instrument has been tested for radio frequency interference and is certified under EN61326.

## WARRANTY

PCRmax Ltd warrants this instrument to be free from defects in material and workmanship, when used under normal laboratory conditions for two (2) years. In the event of a justified claim, PCRmax Ltd will replace any defective component or replace the unit free of charge. This warranty does not apply if damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage by incorrect installation, adaption, modification, fitting of non-approved parts or repair by unauthorised personnel. PCRmax Ltd liability is limited to the cost of repair or replacement of the product and excludes in particular, indirect and consequential loss, damage, costs or expenses, including but not limited to wasted time, materials and expenditure or loss of use, profit, production, revenue, expected savings or goodwill. To make a claim please contact the supplier of the instrument. This warranty is in addition to, and does not affect any statutory rights.

This manual has been prepared for the convenience of PCRmax's customers and nothing in this manual shall be taken as a warranty, condition or representation concerning the description, merchantability, fitness for purpose or otherwise of the unit or components.

Notwithstanding the description and specification(s) of the instruments contained in the operator's manual, PCRmax reserves the right to make such changes as it sees fit to the instruments or to any of the components.

# L'information de sûreté

Veillez lire attentivement toutes les instructions de ce document avant d'utiliser le Alpha Cyclor.

## AVERTISSEMENT

Les TEMPÉRATURES ÉLEVÉES SONT DANGEREUSES car elles peuvent provoquer de graves brûlures chez l'opérateur et enflammer les matériaux combustibles. Les utilisateurs doivent porter une attention toute particulière aux points suivants :



- PROCEDER AVEC PRUDENCE ET PORTER DES GANTS POUR SE PROTEGER LES MAINS
- NE PAS utiliser de matériaux combustibles auprès d'objets chauds.
- NE PAS utiliser l'appareil à proximité de liquides ou de gaz inflammables
- NE PAS verser de liquides directement dans l'appareil.


## SÉCURITÉ DE L'OPÉRATEUR

Tous les utilisateurs de produits PCRmax doivent avoir pris connaissance des consignes et instructions nécessaires à la garantie de leur sécurité. Important: cet appareil doit impérativement être manipulé par un personnel qualifié et être utilisé selon les instructions données dans ce document, en accord avec les normes et procédures de sécurité générales. Dans le cas où cet appareil ne serait pas utilisé selon les consignes précisées par PCRmax Ltd., la protection pour l'utilisateur ne serait alors plus garantie.

Tous les appareils PCRmax sont conçus pour répondre aux normes de sécurité internationales et sont dotés d'un coupe-circuit en cas de surchauffe. En cas de problème de sécurité, couper l'alimentation électrique au niveau de la prise murale et enlevez la prise connectée à l'appareil.

## INSTALLATION

Porter l'appareil à deux mains. Ne jamais déplacer ou transporter l'appareil lorsqu'il est en fonctionnement ou branché à l'alimentation électrique.

1. Tous les appareils PCRmax sont livrés avec un câble d'alimentation, qui peut être intégré à l'appareil ou à raccorder.
2.  Avant de raccorder l'appareil à l'alimentation électrique sur secteur, vérifier la tension requise indiquée sur la plaque d'identification (située au dos de l'appareil). Il est important que l'appareil soit relié à la terre pour assurer la protection électrique requise. Brancher le câble secteur sur une prise appropriée, voir tableau ci-après.
3. Les unités sont évaluées pour fonctionner à AC-1 100-230V, 50/60Hz et AC-4 120-230V 50/60Hz.
4. Ne laissez pas l'Alpha Cyclor à surplomber le banc.
5. Assurer le banc pour le AC-4 peut supporter le poids 45kg .
6. Placez l'unité sur un banc plat et le niveau approprié ou dans une sorbonne si nécessaire, en veillant à ce que l'entrée d'air et sorties d'air sur le dessous et à l'arrière sont libres de toute obstruction.
7. Veiller à ce que les pieds de l'instrument ne dépasse pas du côté du banc.
8. Branchez le câble d'alimentation dans la prise à l'arrière (côté dans AC-4 ) de l'instrument.
9. Allumer l'appareil en utilisant l'interrupteur situé à l'arrière (côté dans AC-4) de l'unité.



## CÂBLE DE RECHANGE

S'il s'avère nécessaire de remplacer le cordon d'alimentation, utiliser un câble de 1 mm<sup>2</sup> conforme à la norme H05VV-F relié à une prise IEC320. **EN CAS DE DOUTE, CONSULTER UN ELECTRICIEN QUALIFIE.**

## CONDITIONS ENVIRONNEMENTALES

Le Alpha Cyclus est conçu pour fonctionner dans les conditions suivantes:

- Pour un usage intérieur seulement
- Température ambiante +5°C à +35°C
- Altitude inférieure à 2000m
- Humidité relative ne dépassant pas 80%
- Fluctuations de l'alimentation n'excédant pas 10% de la valeur nominale
- Catégorie II IEC 60364-4-443 de surtension
- Degré de pollution 2

**Remarque:** Les paramètres sont indiqués pour une température ambiante de 20°C. Ces caractéristiques peuvent se détériorer en dehors d'une température ambiante de 10 à 30°C.

L'appareil a été testé en matière de radiofréquences et est certifié selon la norme EN61326.

## GARANTIE

PCRmax Ltd garantit cet instrument contre tout vice de matière et de fabrication, quand il est utilisé dans des conditions normales de laboratoire pendant deux (2) ans. En cas de réclamation justifiée, PCRmax Ltd procédera gratuitement au remplacement de tout élément défectueux ou au remplacement de l'appareil. Cette garantie ne s'applique pas aux dommages provoqués par les incendies, accidents, mésusages, négligences, réglages ou réparations incorrects, aux dommages dus à une installation incorrecte, adaptation, modification, au montage de pièces non homologuées ou réparation par un personnel non autorisé. La responsabilité de PCRmax Ltd se limite aux coûts de réparation ou de remplacement du produit et exclut, en particulier, les pertes, dommages, coûts ou dépenses indirects et consécutifs, parmi lesquels, mais sans s'y limiter, les pertes de temps, de matériaux et les dépenses ou perte d'utilisation, de profit, de production, de chiffre d'affaires, d'économies escomptées ou écarts d'acquisition. En cas de réclamation, veuillez prendre contact avec le fournisseur de cet appareil. Cette garantie s'ajoute à vos droits légaux et n'affecte en rien ces derniers.

Le présent manuel a été exclusivement rédigé à l'attention des clients de la marque PCRmax et rien dans son contenu ne doit être pris comme une garantie, une condition ou une affirmation concernant la description, la commercialisation, l'adéquation à un usage particulier de l'appareil ou de ses composants.

Malgré la description et les caractéristiques techniques des appareils données dans le manuel de l'utilisateur, la société PCRmax se réserve le droit d'apporter les changements nécessaires à l'appareil ou à tout élément qui entre dans sa composition.

# Sicherheits- informationen

Lesen Sie diese Anleitung vor Verwendung des Alpha Cyclers bitte sorgfältig durch.

## ACHTUNG

HOHE TEMPERATUREN STELLEN EINE GEFAHRENQUELLE DAR. Sie können schwere Brandverletzung verursachen und brennbare Stoffe entzünden. Der Benutzer sollt sich mit den möglichen Gefahren vertraut machen:



- UMSICHTIG VORGEHEN UND SCHUTZHANDSCHUHE TRAGEN
- KEINE brennbaren Stoffe in der Nähe heißer Gegenstände verwenden
- Das Gerät NICHT in der Nähe entzündlicher Flüssigkeiten oder Gase betreiben
- Flüssigkeiten NICHT direkt auf das Gerät auftragen.

## SICHERHEIT DES BEDIENPERSONALS

Alle Benutzer von PCRmax Geräten müssen Zugang zu der entsprechenden Literatur haben, um ihre Sicherheit zu gewähren. Es ist wichtig, daß diese Geräte nur von entsprechend geschultem Personal betrieben werden, das die in dieser Gebrauchsanweisung enthaltenen Maßnahmen und allgemeine Sicherheitsbestimmungen und -vorkehrungen beachtet. Wenn das Gerät anders eingesetzt wird als vom Hersteller empfohlen, kann dies die persönliche Sicherheit des Anwenders beeinträchtigen.

Die Geräte von PCRmax entsprechen den internationalen Sicherheitsbestimmungen und sind mit einem automatischen Übertemperaturabschalter ausgestattet. Wenn ein Sicherheitsproblem auftreten sollte, muß das Gerät ausgeschaltet und vom Stromnetz getrennt werden.

## INBETRIEBNAHME

Das Gerät mit beiden Händen tragen. Das Gerät unter keinen Umständen transportieren, wenn es in Betrieb ist, oder während das Gerät noch am Netz angeschlossen ist.

1. Alle Geräte von PCRmax werden mit einem Netzkabel geliefert, das entweder eingesteckt wird oder fest mit dem Gerät verbunden ist.
2.  Vor dem Anschluss bitte kontrollieren, ob die Stromversorgung den Angaben auf dem Typenschild (auf der Geräterückseite) entspricht. **Um die elektrische Sicherheit zu gewährleisten, muss dieses Gerät geerdet werden.** Schließen Sie das Netzkabel entsprechend der folgenden Tabelle an einen geeigneten Stecker an.
3. Die Maßeinheiten werden veranschlagt, um an AC-1 100-230V, 50/60Hz , AC-4 AC-4 120-230V 50/60Hz zu funktionieren.
4. Lassen Sie das Alpha Cyclers die Bank überhängen.
5. Stellen Sie sicher von der Bank für die AC-4 können die 45kg Gewicht tragen.
6. Stellen Sie das Gerät auf einer geeigneten flachen und ebenen Tisch oder in einem Abzug , wenn erforderlich, sicherzustellen, dass die Zu- und Abluftöffnungen auf der Unterseite und Rückseite sind frei von Hindernissen .
7. Stellen Sie sicher , dass die Füße des Geräts nicht über die Seite der Bank überhängen.
8. Stecken Sie das Netzkabel in die Buchse auf der Rückseite ( Seite in AC-4) des Instruments.
9. Schalten Sie das Gerät mit dem Schalter an der Rückseite ( Seite in AC -4) des Geräts.

## **ERSATZKABEL**

Bei einem eventuellen Austausch des Netzkabels wird ein Kabel vom Typ H05VV-F mit 1 mm<sup>2</sup> Aderquerschnitt und Europastecker (IEC 320) benötigt. **IM ZWEIFELSFALL EINEN ELEKTROFACHMANN HINZUZIEHEN.**

## **UMWELTBEDINGUNGEN**

Der Alpha Cyler ist für den Einsatz unter folgenden Bedingungen ausgelegt:

- Gebrauch in Innenräumen
- Umgebungstemperatur zwischen +5°C to +35°C
- Höhe: bis zu 2000 m
- Relative Feuchte nicht über 80%
- Netzspannungsschwankungen nicht über 10%
- Überspannungsklasse 2 IEC 60364-4-443
- Verschmutzungsgrad 2

**Hinweis:** Die Gerätespezifikationen beziehen sich auf eine Umgebungstemperatur von 20°C und können sich außerhalb des Bereichs 10°C bis 30°C verschlechtern.

Das Gerät wurde auf HF-Störeinflüsse geprüft und entspricht den EMV-Bedingungen nach EN61326.

## **GARANTIE**

PCRmax Ltd gewährleistet, dass dieses Gerät zwei (2) Jahre lang keine Material- oder Herstellungsfehler aufweist, wenn es unter normalen Laborbedingungen verwendet wird. In einem berechtigten Garantiefall wird PCRmax Ltd alle defekten Komponenten oder das Gerät kostenlos austauschen. Diese Garantie gilt nicht, wenn der Schaden durch ein Feuer, einen Unfall, Missbrauch, Nachlässigkeit, falsche Einstellungen oder Reparaturen, falsche Installation, Adaptierung, Veränderung, den Einbau nicht zugelassener Teile oder die Reparatur durch nicht autorisiertes Personal verursacht wurde. Die Garantie von PCRmax Ltd ist beschränkt auf die Kosten der Reparatur oder den Austausch des Produkts und schließt ausdrücklich indirekte und nachfolgende Verluste, Schäden, Kosten oder Ausgaben aus, einschließlich aber nicht beschränkt auf Zeit-, Material- und Geldverlust oder den Verlust des Gebrauchs, von Gewinn, Produktion, Einkommen, erwarteten Einsparungen und des Firmenwerts. Um einen Garantiefall zu melden, wenden Sie sich bitte an den Vertriebspartner des Geräts. Diese Garantie gilt zusätzlich zu und nicht anstelle von geltendem Recht.

Diese Anleitung wurde zur Information der Kunden von PCRmax erstellt und stellt in keinster Weise eine Gewährleistung, Bedingung oder Darstellung bezüglich der Beschreibung, Marktgängigkeit oder Zweckdienlichkeit dieser Geräte oder Bauteile dar.

Unabhängig von Beschreibung und Spezifikation(en) des hier beschriebenen Geräts behält sich PCRmax das Recht vor, Änderungen an diesem Gerät oder dessen Bauteilen vorzunehmen.

# Informazioni di sicurezza

Leggere attentamente il presente manuale prima di usare il Alpha Cyclor.

## AVVERTENZA

Le ALTE TEMPERATURE SONO PERICOLOSE in quanto possono provocare serie ustioni agli operatori e dare fuoco al materiale combustibile. Gli utenti devono conoscere i seguenti pericoli potenziali:



- PRESTARE ATTENZIONE ED INDOSSARE GUANTI PROTETTIVI PER LE MANI
- NON usare sostanze combustibili vicino ad oggetti caldi
- NON mettere in funzione lo strumento nei pressi di liquidi o gas infiammabili
- NON collocare alcun tipo di liquido direttamente nello strumento.


## SICUREZZA DELL'OPERATORE

Il personale che utilizza l'apparecchiatura PCRmax deve avere a disposizione la documentazione necessaria al fine di assicurare la loro incolumità. È importante che solo personale adeguatamente addestrato utilizzi questo apparecchio, in conformità alle istruzioni contenute in questo manuale e nel rispetto delle normative e procedure generali di sicurezza. Se l'apparecchio è utilizzato in modo non specificato da PCRmax Ltd., la protezione fornita dall'apparecchiatura all'utilizzatore potrebbe essere a rischio.

Tutte le unità PCRmax sono state progettate in conformità ai requisiti internazionali di sicurezza e sono equipaggiate con un interruttore anti surriscaldamento. Se si dovesse verificare qualche problema di sicurezza, disconnettere l'apparecchio dalla rete.

## INSTALLAZIONE

Occorre trasportare lo strumento usando entrambe le mani. Non spostare né trasportare lo strumento quando è in funzione o collegato all'alimentazione elettrica di rete.

1. Tutti gli strumenti PCRmax sono forniti con un cavo di alimentazione; può essere integrale o plugin.
2.  Prima di collegare lo strumento all'alimentazione elettrica di rete, controllare la tensione confrontandola con la targhetta riportante i valori nominali (si trova sul retro dell'unità). **Notare che al fine di garantire la corretta sicurezza elettrica, occorre che l'unità sia messa a terra.** Collegare il cavo di rete ad una presa idonea secondo la tabella riportata alla pagina successiva.
3. Le unità sono stimate funzionare a AC-1 100-230V, 50/60Hz a AC-4 AC-4 120-230V 50/60Hz
4. Non permettere l'Alpha Cyclor a sbalzo in panchina .
5. Garantire la panchina per la AC-4 in grado di sopportare il peso 45kg.
6. Collocare l'unità su una panca piana e livello adeguato o in una cappa se necessario , assicurando che le bocchette di ingresso e di uscita sul lato inferiore e posteriore sono liberi da ostruzioni.
7. Assicurarsi che i piedini dello strumento non sporgono dal lato del banco.
8. Collegare il cavo di alimentazione nella presa sul retro ( lato in AC-4) dello strumento.
9. Accendere lo strumento con l'interruttore posto sul retro ( lato in AC-4) dell'unità.

## CAVO DI RICAMBIO

Qualora occorra sostituire il cavo di rete, si dovrà utilizzare un cavo di 1mm<sup>2</sup> codice armonizzato H05VV-F collegato ad una spina IEC 320. **IN CASO DI DUBBIO, RIVOLGERSI A UN ELETTRICISTA QUALIFICATO.**

## CONDIZIONI AMBIENTALI

Il Alpha Cyler è stato progettato per funzionare nelle seguenti condizioni:

- uso interno
- range di temperatura ambiente da +5°C a +35°C
- altitudine massima 2000 m.
- umidità relativa non superiore all'80%
- oscillazione dell'alimentazione di rete non superiore al 10%
- categoria di sovratensione II IEC 60364-4-443
- grado di inquinamento 2

**Nota:** le specifiche di controllo sono indicate ad una temperatura ambiente di 20°C. Le specifiche potrebbero peggiorare fuori da una temperatura ambiente compresa tra 10°C e 30°C.

Lo strumento è stato collaudato per interferenze da radiofrequenze ed è certificato secondo la norma EN61326.

## GARANZIA

PCRmax Ltd garantisce che, per un periodo di due (2) anni e se utilizzato nelle normali condizioni di laboratorio, questo strumento non presenterà alcun difetto dei materiali o di fabbricazione. In caso di reclamo giustificato, PCRmax Ltd sostituirà qualsiasi componente difettoso o rimpiazzerà l'unità in modo gratuito. Questa garanzia non si applica ai danni causati da incendio, incidenti, utilizzo improprio, negligenza, regolazioni o riparazioni scorrette, danni dovuti a installazione non corretta, adattamenti, modifiche o installazione di parti non approvate oppure riparazioni eseguite da personale non autorizzato. La responsabilità di PCRmax Ltd è limitata al costo della riparazione o della sostituzione del prodotto ed esclude in particolare qualsiasi perdita indiretta o secondaria, danno, costo o spesa, ivi inclusi, a titolo di esempio e in modo non esaustivo, perdite di tempo, materiali e spese oppure perdite di utilizzo, profitto, produzione, ricavo, risparmio atteso o avviamento. Per esporre un reclamo, contattare il fornitore dello strumento. Questa garanzia è in aggiunta ai diritti di legge e non ha alcun effetto su di essi.

Il presente manuale è stato preparato ad uso dei clienti di PCRmax e niente di quanto in esso contenuto costituisce garanzia, condizione o rappresentanza riguardo la descrizione, la commerciabilità, l'idoneità allo scopo o altrimenti dell'unità o dei componenti.

Nonostante la descrizione e le specifiche dello strumento contenuti nel manuale dell'operatore, PCRmax si riserva il diritto di apportare le modifiche ritenute opportune agli strumenti o a qualsiasi loro componente.

# Información de seguridad

Lea atentamente este manual antes de utilizar el Alpha Cyclor.

## ADVERTENCIA

LAS ALTAS TEMPERATURAS SON PELIGROSAS, ya que pueden ocasionar quemaduras graves a los operarios y prender el material combustible. Los usuarios deben conocer los posibles riesgos:



- TENGA CUIDADO Y LLEVE GUANTES DE PROTECCIÓN PARA PROTEGERSE LAS MANOS
- NO utilice sustancias combustibles cerca de objetos calientes
- NO utilice el instrumento cerca de líquidos o gases inflamables
- NO coloque un líquido directamente en el instrumento.


## SEGURIDAD DEL OPERARIO

Todos los usuarios de equipos PCRmax deben disponer de la información necesaria para asegurar su seguridad. De acuerdo con las instrucciones contenidas en este manual y con las normas y procedimientos generales de seguridad, es muy importante que sólo personal debidamente capacitado opere estos aparatos. De no ser así, la protección que el equipo le proporciona al usuario puede verse reducida.

Todos los equipos PCRmax han sido diseñados para cumplir con los requisitos internacionales de seguridad y traen incorporados un sistema de desconexión en caso de sobre temperatura. En caso de que surgiera un problema de seguridad, desconecte el equipo de la red.

## INSTALACIÓN

El instrumento se debe transportar con las dos manos. No mueva ni lleve el instrumento cuando se utilice o esté conectado al suministro eléctrico principal.

1. Tutti gli strumenti PCRmax sono forniti con un cavo di alimentazione; può essere integrale o plugin.
2.  Prima di collegare lo strumento all'alimentazione elettrica di rete, controllare la tensione confrontandola con la targhetta riportante i valori nominali (si trova sul retro dell'unità). **Notare che al fine di garantire la corretta sicurezza elettrica, occorre che l'unità sia messa a terra.** Collegare il cavo di rete ad una presa idonea secondo la tabella riportata alla pagina successiva.
3. Le unità sono stimate funzionare a AC-1 100-230V, 50/60Hz a AC-4 AC-4 120-230V 50/60Hz
4. Non permettere l' Alpha Cyclor a sbalzo in panchina .
5. Garantire la panchina per la AC-4 in grado di sopportare il peso 45kg .
6. Collocare l'unità su una panca piana e livello adeguato o in una cappa se necessario , assicurando che le bocchette di ingresso e di uscita sul lato inferiore e posteriore sono liberi da ostruzioni.
7. Assicurarsi che i piedini dello strumento non sporgono dal lato del banco.
8. Collegare il cavo di alimentazione nella presa sul retro ( lato in AC-4) dello strumento.
9. Accendere lo strumento con l'interruttore posto sul retro ( lato in AC-4) dell'unità.

## **CABLE DE REPUESTO**

Si es necesario sustituir el cable de alimentación, se debe utilizar un cable de 1mm<sup>2</sup> de código armonizado H05VV, conectado a un enchufe IEC320. **EN CASO DE DUDA, PÓNGASE EN CONTACTO CON UN ELECTRICISTA.**

## **CONDICIONES AMBIENTALES**

El Alpha Cycler está diseñado para utilizarse en las condiciones siguientes:

- Uso en interior
- Intervalo de temperatura ambiente +5°C a +35°C
- Altitud: hasta 2000 m
- Humedad relativa no superior al 80%
- Fluctuaciones del suministro eléctrico no superiores al 10%
- Categoría de sobrevoltaje II IEC 60364-4-443
- Nivel de contaminación 2

**Nota:** Las especificaciones de control corresponden a una temperatura ambiental de 20°C. Las especificaciones pueden empeorar si se utiliza el instrumento fuera del intervalo de temperatura comprendido entre 10°C y 30°C.

Se han realizado pruebas para comprobar la interferencia de radiofrecuencia del instrumento, el cual cumple la normativa EN61326.

## **GARANTÍA**

PCRmax Ltd garantiza que este equipo estará libre de defectos de materiales y mano de obra, si se utiliza en condiciones normales de laboratorio, durante un período de dos (2) años. En caso de reclamación justificada, PCRmax Ltd sustituirá cualquier componente defectuoso o cambiará la unidad gratuitamente. Esta garantía no es aplicable si los daños han sido ocasionados por incendios, accidentes, usos inapropiados, negligencias, ajustes o reparaciones incorrectas, así como si se trata de daños ocasionados por la instalación, adaptación, modificación o incorporación en el instrumento de piezas no aprobadas o su reparación por personal no autorizado. La responsabilidad de PCRmax Ltd se limita al coste de la reparación o sustitución del producto, y excluye específicamente pérdidas, daños, costes o gastos indirectos o accidentales, incluyendo pero sin estar limitado a ello, pérdidas de tiempo, materiales y gastos o pérdida de uso, beneficios, producción, ingresos, ahorros previstos u oportunidades comerciales. Si desea realizar una reclamación, póngase en contacto con el suministrador del equipo. Esta garantía complementa y no afecta a sus derechos legales.

Este manual se ha preparado con una finalidad informativa para los clientes de PCRmax y ninguna parte del manual se deberá considerar como una garantía, condición o reflejo con respecto a la descripción, comerciabilidad, idoneidad para un fin determinado o de otro tipo de la unidad o sus componentes.

Con independencia de la descripción y las especificaciones del instrumento que se indican en el manual del operario, PCRmax se reserva el derecho de realizar cambios en el instrumento o en cualquiera de sus componentes cuando lo estime oportuno.

## Contact Information

For technical, sales or servicing information, contact your local PCRmax distributor or PCRmax directly at:

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Tel: +44 (0)1785 812121

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E-mail: [Enquiries@pcrmax.com](mailto:Enquiries@pcrmax.com)

Help: [Help@pcrmax.com](mailto:Help@pcrmax.com)

Web: [www.pcrmax.com](http://www.pcrmax.com)



# Alpha Cyclor Specification

## Temperature

Block temperature range	4°C (10°C during cycling) to 100°C
Block uniformity (at 55°C)	≤±0.3°C
Temperature accuracy (at 55°C)	≤±0.25°C
Gradient availability	Between 10°C and 100°C
Maximum gradient	29°C on a 96 well block and 19°C on a 384 well block
Minimum gradient	1°C
Column uniformity with a 10°C gradient	≤±0.3°C
Final store	4°C to 100°C
Temperature set point adjustment	0.1°C

## Heating/Cooling Rate

Maximum heating rate	3.4°C/s
Minimum heating rate	0.1°C/s
Maximum cooling rate	1.0°C/s
Minimum cooling rate	0.1°C/s

## Heated lid

Selectable heated lid temperature	35 to 115°C or off
Lid uniformity	±5°C
Pre-heat lid	Yes
Warm up time from ambient	<2 min
Over-temperature cut-out	Yes
Regulated heated lid pressure	Manually adjustable

The heated lid is only operational if the block temperature is set above 35°C. Above figures are quoted at an ambient temperature of 20°C ±2°C

## Programming

Program interface	10" and 7" HD touch screen
Operation system	Android
Maximum number of programs stored	1000
Maximum number of stages per program	25
Maximum number of steps	10
Maximum number of cycles per stage	99
Programmable ramp rate	Yes, 0.1°C/s steps
Maximum hold time	4h 59m 59s
Minimum hold time	1s
Program Wizard	Yes
Active sample cooling	Yes, 4°C
Advanced reporting options	Yes
Touchdown	Yes

Incremented/decremented temperature	Yes
Incremented/decremented time	Yes
Pause facility	Yes
Program naming	Alpha numeric plus symbols
Password protection	Yes
Keyword selection	Yes
Run completion time	Yes
Auto resume on power failure	Yes, always, never or user-defined
Oligonucleotide T <sub>m</sub> calculator	Yes, based on the Nearest-Neighbour method <sup>1</sup>
Software updates	Free of charge from <a href="http://www.PCRmax.com">www.PCRmax.com</a>

### Communication ports

USB port on the front of the AC-1	Connection for USB memory stick
USB port on side of the AC-4	Connection for USB memory stick
Type B USB port on rear of unit	For Internal use only.

### Dimensions

	AC-1	AC-4
Height (mm)	200	200
Width (mm)	260	535
Length (mm)	430	700
Weight (kg)	10	45

### Power

	AC-1	AC-4
Voltage	100-230V, 50/60Hz	120-230V, 50/60Hz
Power	425W	1,600W
Fuse ratings		220V: 8 Amp x 2 120V: 15 Amp x 2

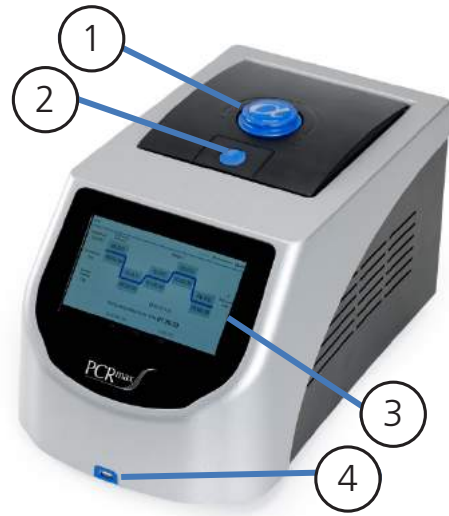
<sup>1</sup>Breslauer, K.J.; Frank, R.; Blocker, H. and Marky, L.A. (1986) Proc. Natl. Acad. Sci. USA 83, pp 3746-3750.

# Installation and operation

See also the **Safety Information** sections on pages 5 to 15.

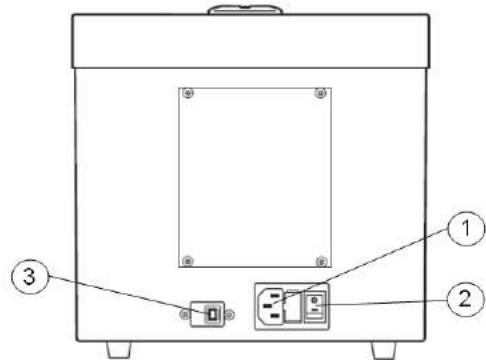
## Front view

1. Heated lid pressure knob
2. Lid release.
3. Android HD touchscreen interface
4. USB port for memory stick.



## Rear view

1. Mains cable inlet.
2. On/Off rocker switch
3. USB port for service and calibration only.



**Note:** On the AC-4 the mains cable inlet, On/Off rocker switch and USB port are situated on the side of the instrument for easier access.

## INSTALLATION

1. Place the unit on a suitable flat and level bench, ensuring that the air inlet vents on the sides are free from obstruction, as per the guidelines in the Safety Information sections.

**Note:** Ensure a 250mm gap to the side of the AC-4 power lead to allow disconnect of the electrical supply from the chassis if required, 100mm is sufficient for AC-1.

2. Note that block removal can only be performed by a qualified service engineer.
3. Plug the mains cable into the mains cable inlet of the unit.
4. Connect to the mains electricity supply with the plug provided or one wired correctly for the supply. Switch the power ON using the switch located on the rear (AC-1) or side (AC-4) of the unit. The front display will then light up.

## OPERATION

1. Release the heated lid by pressing the blue circular button located towards the front edge of the lid. The lid is sprung and should open to around 45 degrees with little assistance. To close the lid, lower the lid onto the block and press until you hear a click.
2. Place the samples in the block. If individual tubes or strip tubes are being used, space these out evenly across the block to equalise the pressure from the heated lid.
3. The heated lid has a rotating knob to adjust the lid pressure on the samples, allowing for a variety of consumables to be used. To adjust the pressure:
  - a. Rotate the knob anti-clockwise to raise the lid to the highest position.
  - b. Place the samples in the block and close the lid.
  - c. Rotate the knob clockwise until resistance is felt then give a further quarter of a turn; this will give the correct pressure. Do not over-tighten.
4. Once the pressure has been set it should not need to be adjusted unless a different consumable is used. Good standard practice is to check the pressure of the heated lid is adjusted correctly every time the system is run.
5. Keep fingers clear of rear hinged part of the lid while opening or closing.

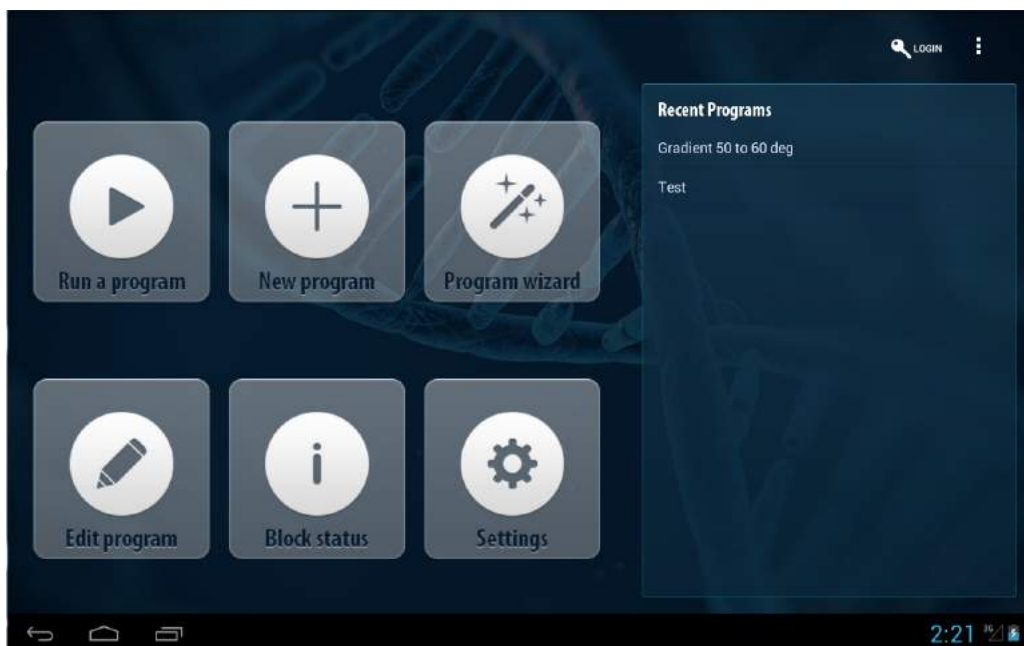


# General software features

## INTRODUCTION

The Alpha Cycler software is aimed at being consistent with all the instruments in the PCRmax range. The common themes of simplicity and performance are echoed in all PCRmax thermal cyclers. The software will boot automatically when the system is switched on.

The Alpha Cycler software allows the user to quickly and easily create thermal cycling programs using a simple and clear touch screen format. The software is structured into six modules which are accessed from the Home Screen. The Home Screen has the following buttons and associated features.



- **Run a program** allows the user to run an existing program, selecting from templates or programs saved on the unit.
- **New program** allows the user to manually build a custom thermal cycling program.
- **Program wizard** allows the user to automatically generate a protocol based on primer sequences, Tm's and template size.
- **Edit program** gives access to the **File Manager** and allows the user to search for programs and reports stored on the unit and to edit existing programs.
- **Block status** allows the user to monitor the progress of the program running on one or more of the blocks.
- **Settings** allows the user to define default states of the system e.g. temperatures for cycling steps, language and response to power outages etc.

The **Recent Programs** panel displays the most recent protocols which have been run on the system.

**Note:** The Recent Programs panel will allow users to quickly access and run common programs without the need to navigate the File Manager.

## BASIC ANDROID COMMANDS AND DATA/TEXT INPUT

The Alpha Cyclor system interface is Android based and as such responds and operates similarly to other Android devices.

The standard Android navigation bar is located at the bottom of all Alpha Cyclor screens:



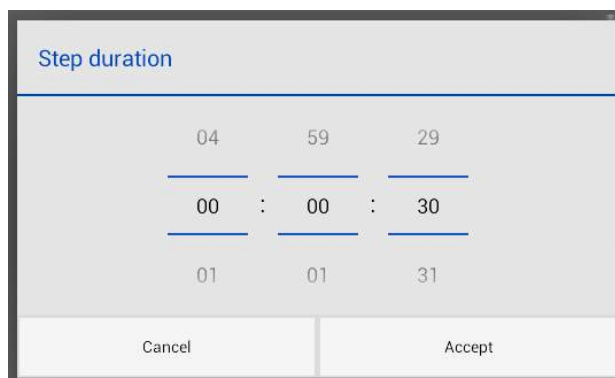
- **Back:** This will take you back to the previous page. Repeatedly press this button to go back multiple screens.
- **Home:** This will take you back to the Home Screen for the Alpha Cyclor.
- **Recent:** This will allow you to toggle between recent pages you have open. End users can also close open pages by swiping the windows left or right, as you would normally with Android interfaces.

**Note:** If you have opened multiple pages, for example you been in settings, started writing a protocol and had a protocol running, selecting the recent button allows you to easily toggle between these open pages.

When users are required to input data, either an Android keyboard will open in the screen or a scrolling wheel may appear (the scrolling wheel is used more for defining values such as number of cycles and time).



*Example keyboard*



*Example time wheel during step duration input*

## TEMPLATE PROGRAMS

To help with programming, a number of program templates are provided on the USB memory stick supplied with the system. These are available to copy and edit or can be run directly without changes. Details of the installed program templates are given below.

### Instrument and program defaults

Parameter	Gradient 50 to 60 deg.	3 Step Template	RT PCR Template
Heated Lid	110°C	110°C	110°C
Heated lid before program	On	On	On
Sample cooling	On	On	On
Polymerase activation	95°C, 05m00s	95°C, 05m00s	95°C, 05m00s
Final extension	72°C, 05m00s	72°C, 05m00s	72°C, 07m00s
Final store	10°C for infinite time	10°C for infinite time	10°C for infinite time

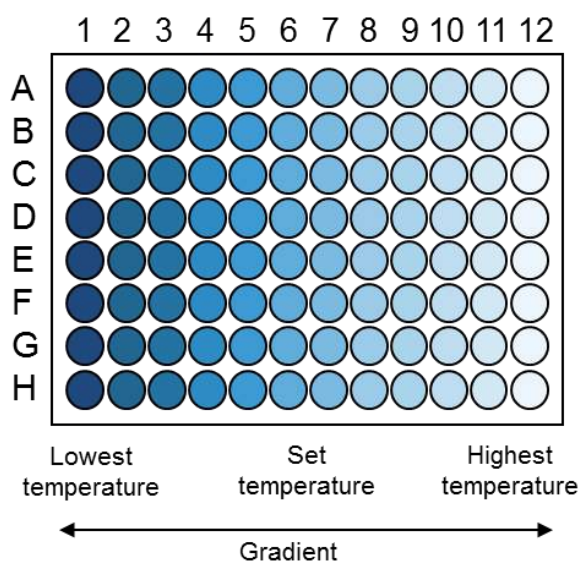
### Thermal cycling conditions

Parameter	Gradient 50 to 60 deg.	3 Step Template	RT PCR Template
<b>Stage 1</b>			
Number of cycles	35	35	1
Step 1	95°C, 00m30s	95°C, 00m30s	45°C, 40m00s
Step 2	50 to 60°C, 00m30s	56°C, 00m30s	95°C, 05m00s
Step 3	72°C, 00m30s	72°C, 00m30s	
<b>Stage 2</b>			
Number of cycles			40
Step 1			95°C, 01m00s
Step 2			55°C, 00m50s
Step 3			72°C, 01m00s

**Note:** There is also an Ice Bucket program which is a simple temperature hold at 4°C: the heated lid is switched off and the polymerase activation and final extension functions are disabled.

## GRADIENT

The gradient feature of the Alpha Cycler can be useful in optimising the annealing conditions for reactions. A gradient can be set around a temperature in any step of a program. The set temperature is the temperature in the middle columns and the range around the set point defines the gradient's minimum and maximum temperatures, see diagram below.



The maximum temperature gradient range which can be set is 29°C (depending on block type) and the minimum is 1°C; within the temperature range of 10°C and 100°C. Examples are given in the table below:

Gradient (°C)	Set temperature (°C)	Lowest temperature Column 1 (°C)	Highest temperature Column 12 (°C)
10	55	50	60
15	55	47.5	62.5
29	55	40.5	69.5

To program a gradient step see section **Manual program entry**.

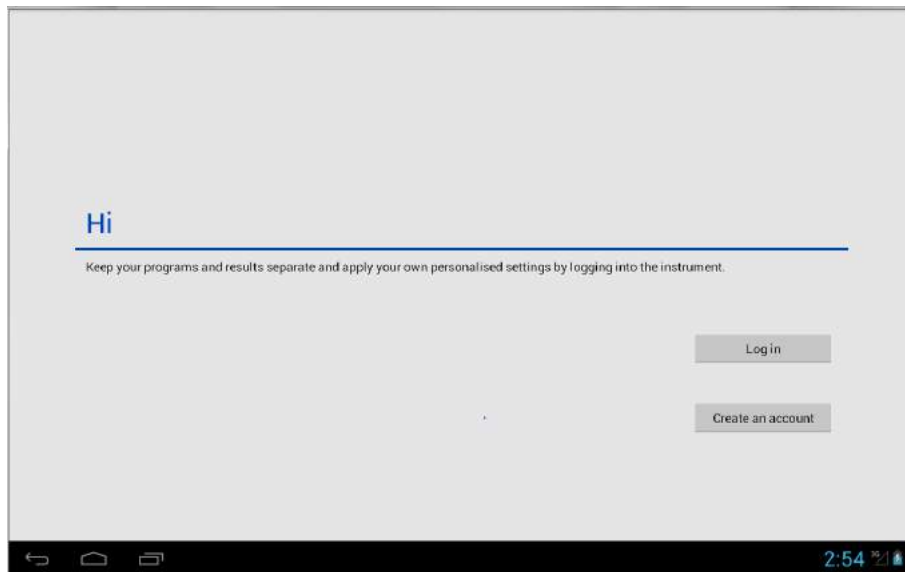


# Creating user profiles

The Alpha Cyclor system allows for individual user profiles to be created, simplifying file management and controlling access to certain programs.

## CREATING A NEW USER ACCOUNT

- To create a new user account tap the **LOGIN** button located at the top of the Home Screen.
- Select **Create an account**.
- Complete the details: User name, Password and Re-enter password. (A password is optional).
- Tap on **Create Account** to save the profile.



**Note:** Programs written by a logged in user will only be available to that user unless the user chooses to share these programs with everyone; see the programming section.

## TO LOG IN AS AN EXISTING USER

- Select **LOGIN** from the top of the Home Screen.
- Select **Log in** from the login screen.
- Log in with your user-specific name and password.
- Tap on **Log in**.

## LOGGING OUT

To log out simply tap the user name on the Home Screen and select **Log out**.

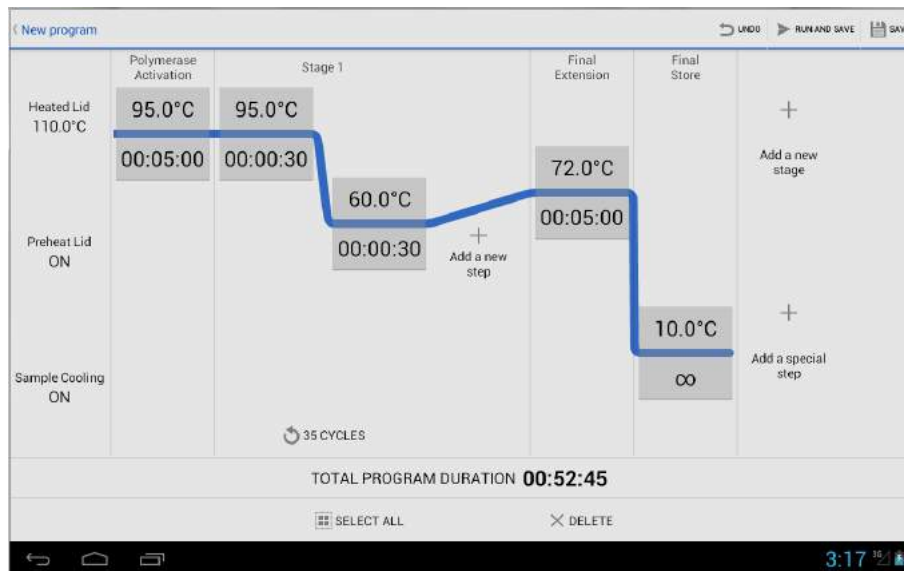
## CHANGING A USER PASSWORD

To change a password, while logged in, tap the user name button on the Home Screen and select **Change Password** from the login screen.

- Type in your current password.
- Type in a new password.
- Re-enter the new password.
- Tap on **Change Password** to confirm.

# Programming

This section gives instructions for the two methods of programming the Alpha Cyclers systems. The first method uses the **Program Wizard** to automatically generate a program based on a few user defined parameters. The second method is accessed through the **New program** button from the Home Screen and allows the user to control every element of the program.



**Note:** When programming an Alpha Cycler protocols are built with a **steps and stages** structure. Individual steps can be created and a collection of those steps make up a stage. Stages have a number of cycles applied to them and all steps in a stage will cycle the specified number of times before progressing to the next stage. Protocols can have multiple stages comprising multiple temperature steps.

## USING THE PROGRAM WIZARD

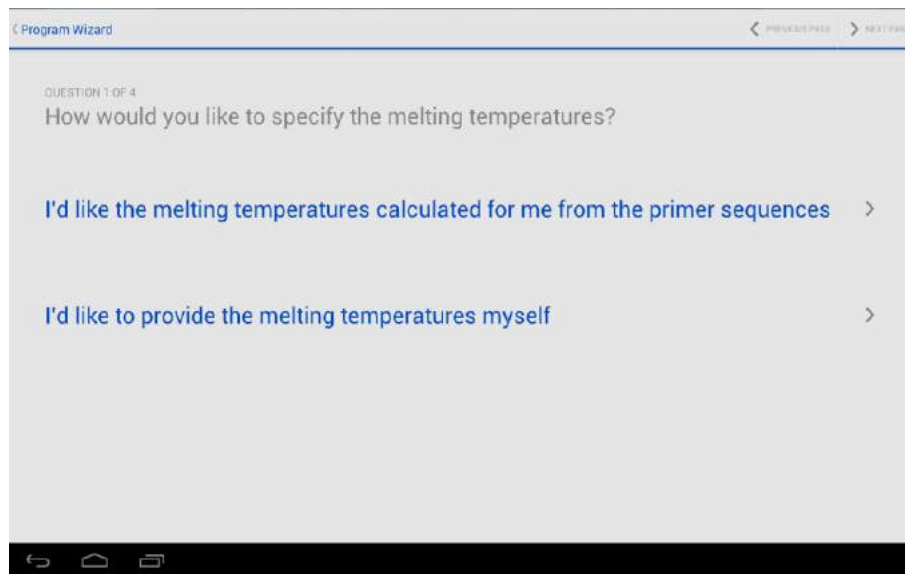
The Program wizard allows users to automatically generate a protocol based upon the following criteria:

- Primer Sequence or Tm's
- Length of amplicon
- Template source (bacterial, eukaryote or plasmid)
- Special considerations

Special considerations has a series of options which accommodate for the use of hot start *Taq* polymerases, adjusts the temperatures based upon the amplicons A/T and G/C bias and will allow for the user to add a touchdown PCR stage as a means of improving specificity.

- From the Home Screen select **Program wizard**.

The Program wizard consists of four steps which require user input in order to generate a suitable protocol. The first step is to specify the melting temperature either from the primer sequences or from the Tm values.



- If selecting the primer sequences, tap **“I'd like the melting temperatures calculated for me from the primer sequences”** to input the sequence of each primer.

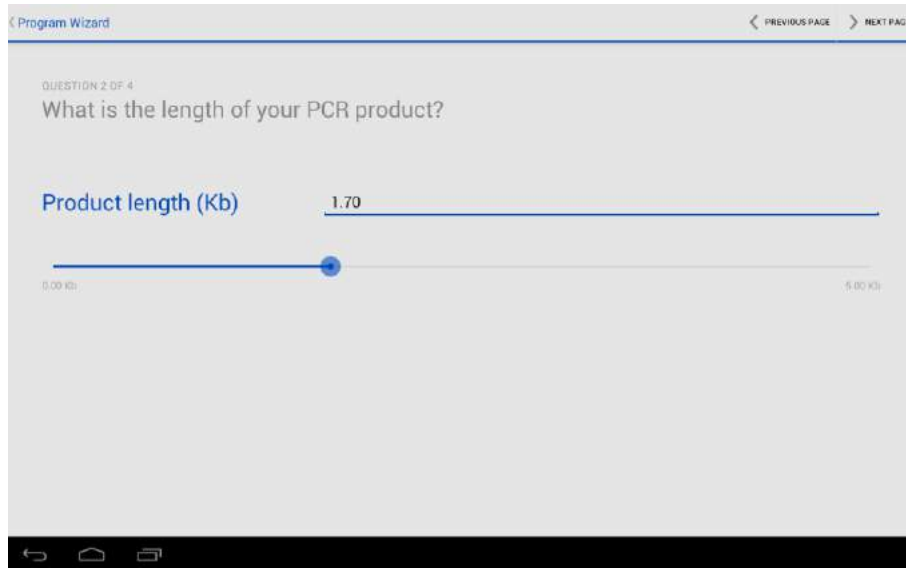


- Tap on the line **Primer Sequence 1**; a keyboard will appear on the screen. Type in the sequence of the first primer then tap on **Next**.
- Type in the sequence of the second primer then tap on **Done**.
- To input your own primer Tm values, tap **“I'd like to provide the melting temperatures myself”**.
- Tap on the line **Primer 1 (°C)**; a keyboard will appear on the screen. Type in the melting temperature of the first primer then tap on **Done**.
- Type in the melting temperature of the second primer then tap on **Done**.
- After completing either step, tap **NEXT PAGE** at the top right of the screen to progress to the next step. To go back, tap on **PREVIOUS PAGE**.

The next step is to input the length of the PCR product in kb.

- Either tap the line next to **Product length (Kb)** to enter the size of the PCR product (in kb) or drag the slider to the right or left to select the size.

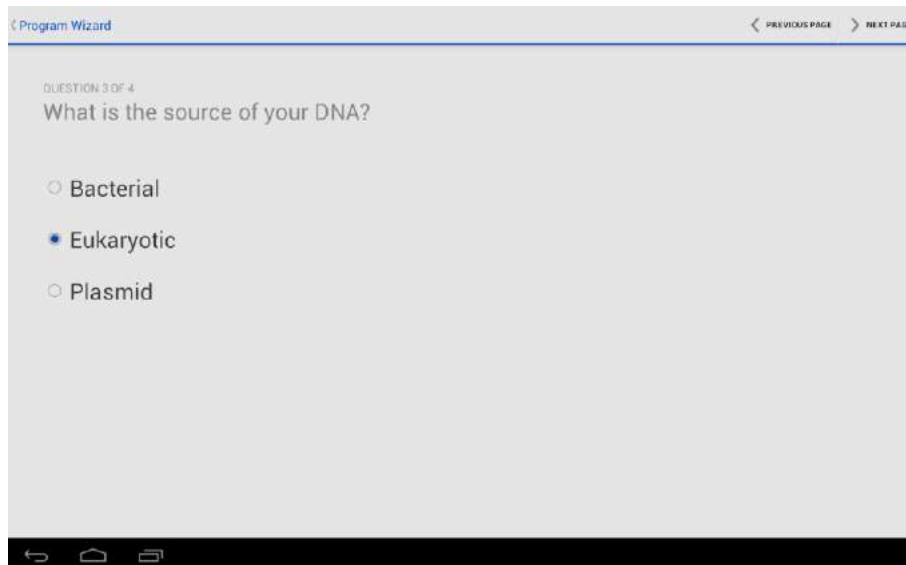
**Note:** values of between 0.05-5kb are valid, all values below 0.5kb will be given an extension time of 30 seconds.



- Tap **NEXT PAGE** at the top right of the screen to progress to the next step. To go back, tap on **PREVIOUS PAGE**.

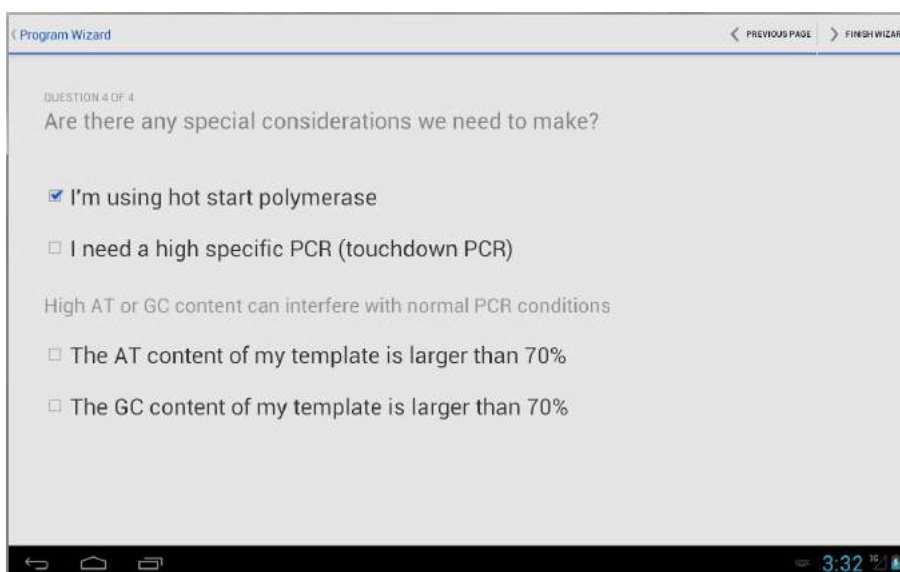
The next step is to select the source of the DNA.

- Select one of the three options.



- Tap **NEXT PAGE** at the top right of the screen to progress to the next step. To go back, tap on **PREVIOUS PAGE**.

Finally, use the check boxes to take into account any special considerations as listed on the final screen.



- When finished, tap **FINISH WIZARD** at the top right of the screen.

Once you have completed the Program wizard, the final program will be displayed based upon the answers/data given in the previous steps.



**Note:** all parameters of a Program wizard-generated program can be adjusted either before or after it is saved. Ensure that heated lid is set how you wish it to be and add any special stages such as a final extension or a store step at this point.

- To save the program, tap **SAVE** at the top right of the screen.
- Select whether the program will be available to **Everyone** or **Just me** (current logged-in user) and assign a name.
- Tap **Save**.

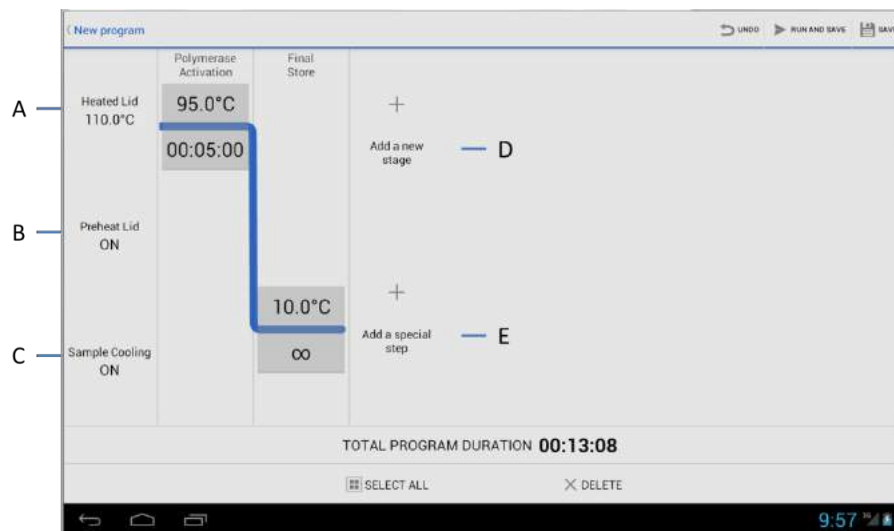
## MANUAL PROGRAM ENTRY

The Alpha Cyclor will also allow users to manually create a protocol by inputting the individual temperatures and hold durations for each step. Where a temperature or hold time is visible/required the user will be able to tap to select that step and either edit or input a time/temperature.

- From the Home Screen select **New program**.

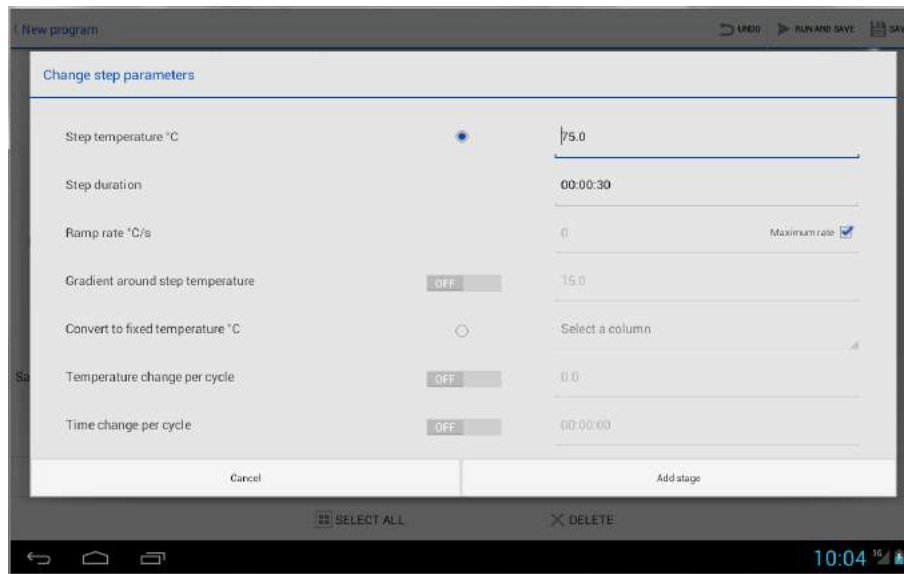
The basic program will contain the defaults as set by the user in the Settings (see section on Settings).

- Toggle on and off the **Heated Lid**.
- Toggle on/off **Preheat Lid**.
- Toggle on/off **Sample Cooling** before the run begins.
- Add a new stage** - adds a stage with one temperature step plus the option to add further temperature steps within the same stage. The stage can be cycled up to 99 times.
- Add a special step** - including Touchdown, Final Extension and Final Store steps.



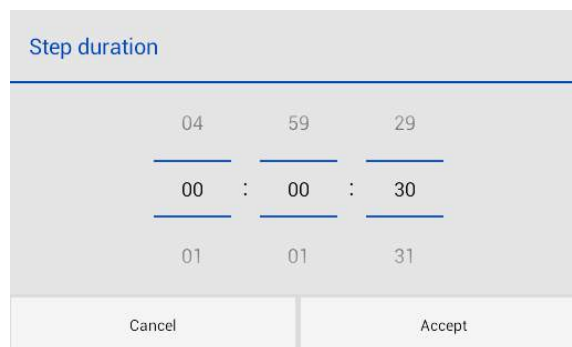
## ADDING A STAGE

Tap on **Add a new stage** to create the first stage and step in the program. You will initially need to define the parameters for the first temperature step:



To change the step temperature, tap on the default temperature value and enter the desired value followed by **Done**.

To change the step hold time, tap the default time value next to **Step duration** and a scrolling clock selection window will open. Scroll the hours, minutes and seconds to the desired time followed by **Accept**.



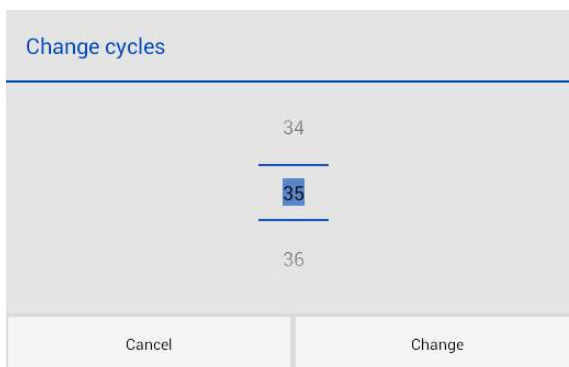
Tap **Add stage** to complete adding the first stage and step.



Continue by adding further steps and stages as required in the same way.

**Note:** If a protocol has several stages it may appear to extend beyond the screen; simply swipe the screen to the left or the right to view the protocol.

To adjust the number of cycles of a stage, tap on the cycle button at the bottom of each stage area; a scrolling selector will appear. Select the desired number of cycles followed by **Change**.



As the program is written, the total duration of the protocol is displayed at the bottom of the programming screen.

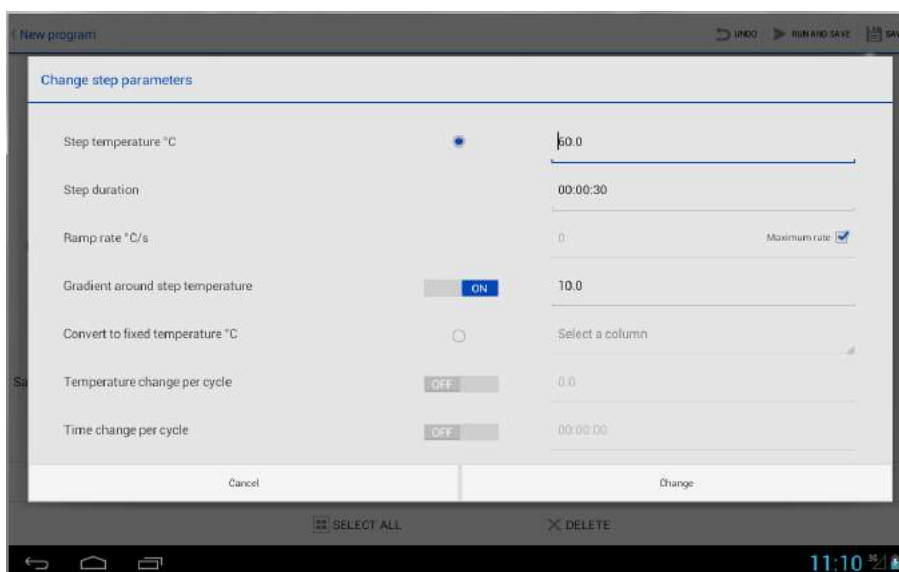
### EDITING STEP PARAMETERS

To edit the parameters of a step e.g. the temperature, hold time, ramp rate etc. tap on the grey shaded area of the step. The **Change step parameters** window (see below) will open. Make any changes to the parameters then tap on **Change** to accept.

**Note:** The ramp rate (heating/cooling rate from the previous step to the current step) can be defined between 0.1 °C/sec up to 3 °C/sec or MAX.

### ADDING A GRADIENT STEP

Select the step on which you wish to add a gradient and tap on the grey shaded area. The **Change step parameters** window will open. Toggle **ON** the parameter **Gradient around step temperature**. Next, define the range of temperature you wish to run the gradient over. Tap on **Change** to accept the changes.

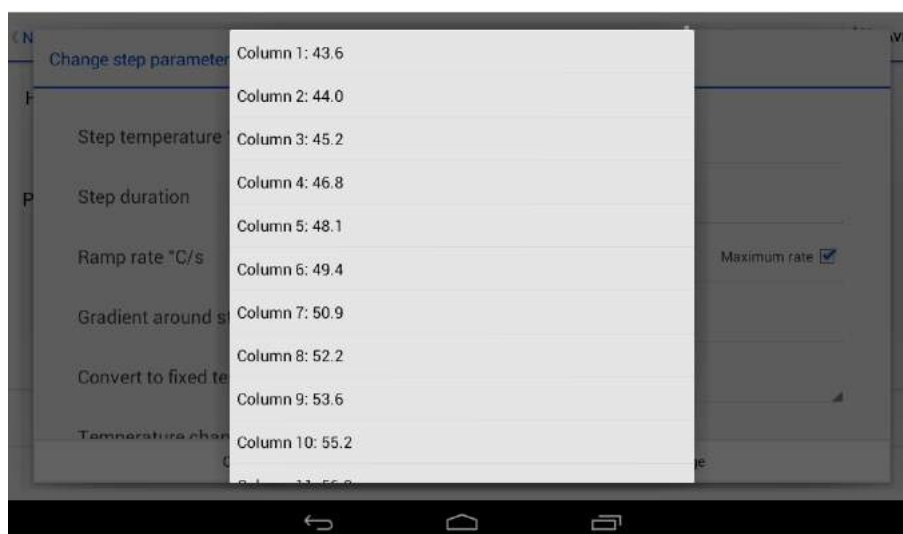


The gradient and range will then be displayed within the program.





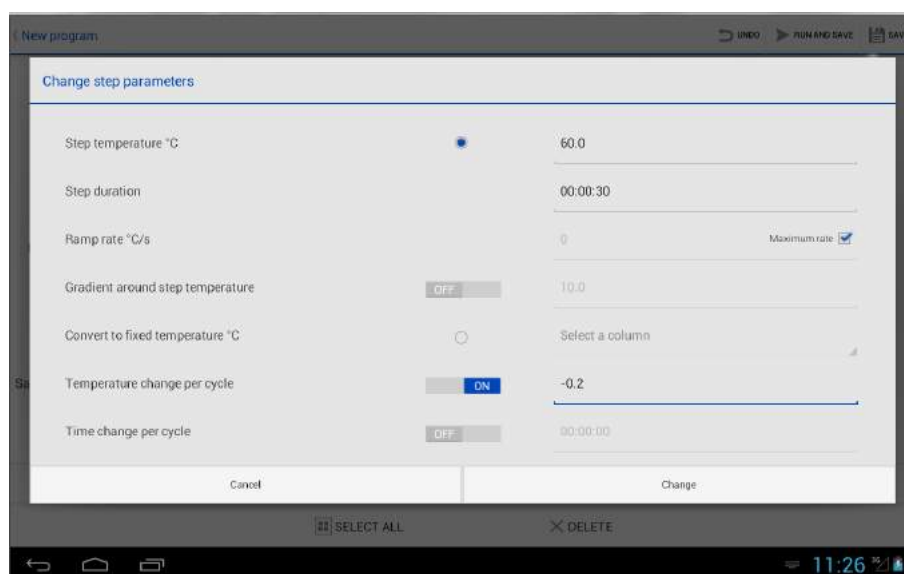
**Note:** After running a gradient protocol to optimise a reaction, the program can be easily modified to set the annealing temperature to that of the column in which the optimal reaction occurred. Simply tap on the gradient step to edit it then select **Convert to fixed temperature °C**. A window showing the actual temperature in each column of the block is displayed. Select the column which gave the optimal reaction conditions to re-set the annealing temperature.



### ADDING A TEMPERATURE OR TIME INCREMENT OR DECREMENT

Select the step on which you wish to add the increment or decrement and tap on the grey shaded area. The **Change step parameters** window will open. Toggle **ON** the parameter **Temperature change per cycle** or **Time change per cycle** as desired. Next, define the increment or decrement temperature or time. Tap on **Change** to accept the changes.

**Note:** The maximum allowed temperature increment/decrement is between -10 °C and + 10°C/cycle and the maximum time increment/decrement -30 seconds and +30 seconds/cycle. This will also be dependent on the number of cycles in the stage and the limits of the thermal block.



The temperature/time changes will be displayed with the program.



### DELETING A STEP OR STAGE

To delete a step, tap in the area just below or above the step (not in the grey area) so that the step is highlighted. Multiple steps may be selected. Next, tap on **DELETE** at the bottom of the screen. The step(s) will be deleted. To delete a complete stage, all steps within the stage must be deleted, this can be done by highlighting the temperature steps, press the screen underneath the temperature step box to highlight and then press **DELETE**.

**Note:** At the top of the screen there is an **UNDO** button to undo the last series of commands if a mistake such as unintentionally deleting a step/stage is made.

### SAVING THE PROGRAM

To complete writing a program and to store it to the cycler memory, tap **SAVE** on the top right corner of the program window. The **Save program** window will appear.

Save program

Program available to  Everyone  
 Just me

Program name

Cancel Save

Define who will have access to the program:

- **Everyone**, meaning all users of the system will have access to this protocol, or
- **Just me**, meaning only the current logged-in user will have access.

Add a name for the program for future identification then tap on **Save**.

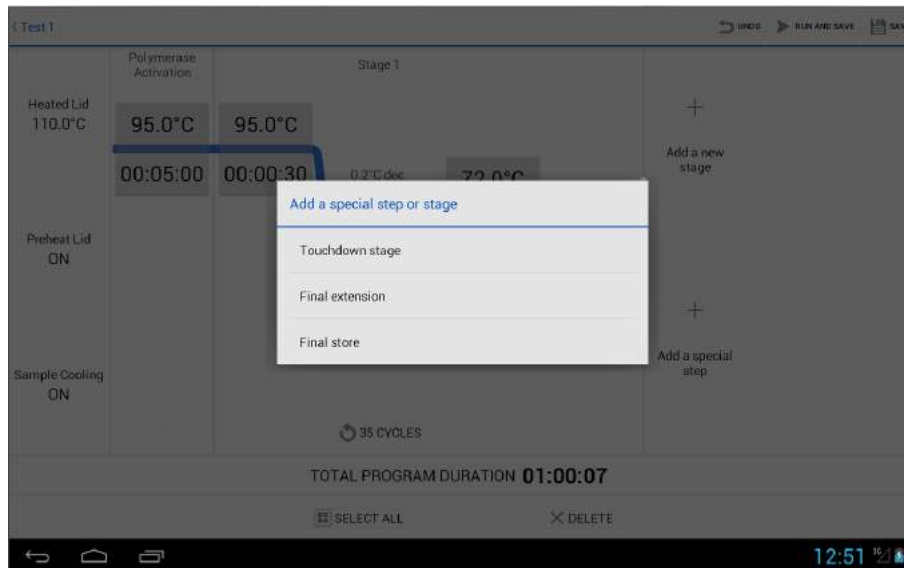
**Note:** The **RUN AND SAVE** button allows you to start the protocol from the programming screen without the need to first save and then go into the File Manager to run the protocol. Run and save can be useful for when you are modifying an existing protocol.

## Special steps

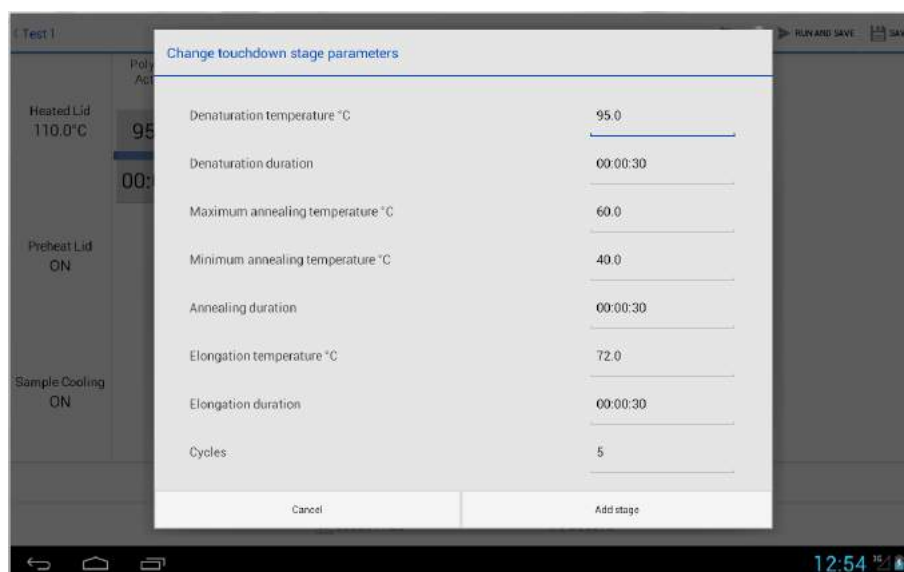
When writing a protocol there is an option to add a special step, these include:

- Touchdown
- Final Extension
- Final Store

Tap on **Add a special step** and the **Add a special step or stage** window will open.



**Touchdown stage** allows users to generate a touchdown protocol which will change the temperature uniformly across the entire block each cycle between two set temperatures (high to low) over a defined number of cycles.



Define the starting (maximum) annealing temperature and the end (minimum) annealing temperature. The temperature change per cycle will be equal to the difference in temperature between the maximum and minimum divided by the number of cycles - 1.

**Note:** The software allows the user to either increment or decrement the time and/or temperature of a step within a cycling stage. These features are used with applications such as touchdown PCR where the annealing temperature is gradually decreased during the cycling process and long range PCR amplification, where due to the size of the product, long annealing/extension times are required and the extension time is increased by, for example, 15 to 20s per cycle during the final stages of the reaction.

**Final extension** allows users to add a final temperature step at the end of normal cycling.

**Final store** allows users to store the PCR reactions in the system at a set temperature until they are ready to be taken out for further analysis. The default temperature is 10°C as this is suitable for storing DNA for prolonged periods of time.

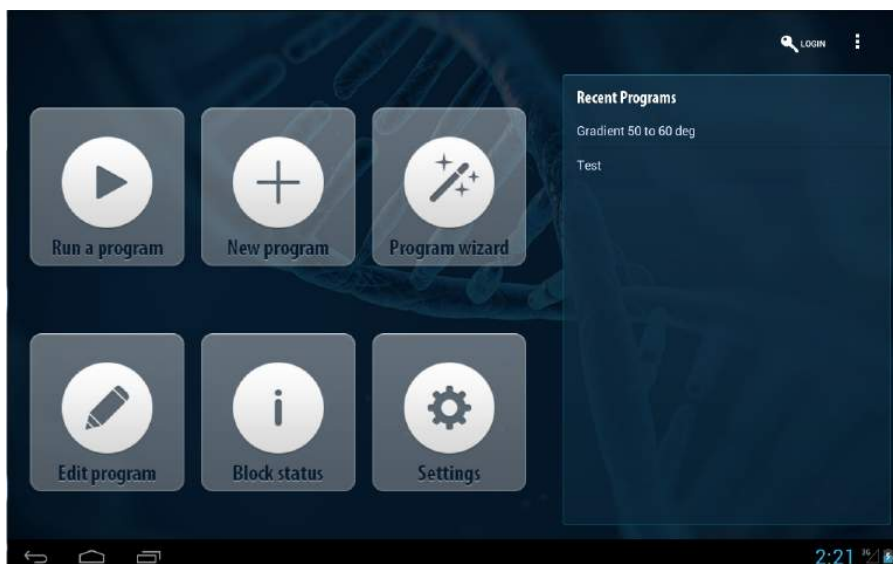
**Note:** Colder temperatures can be set, down to 4°C, but this is not essential for DNA work. It is advised to never store RNA for prolonged periods in a thermal cycler, at 4°C or any temperature.

## Running a program

There are two main options for running a program; either selecting the program from the Home Screen **Recent Programs** shortcut list or by searching through the system's **File Manager** accessed through either Run a program or Edit program.

### RUNNING A PROGRAM FROM THE SHORTCUT LIST

When a program has been run on the Alpha Cyclor it will appear in the **Recent Programs** list.



To re-run the same program, tap to select one of the programs from this list. The Pre-run screen will be displayed.

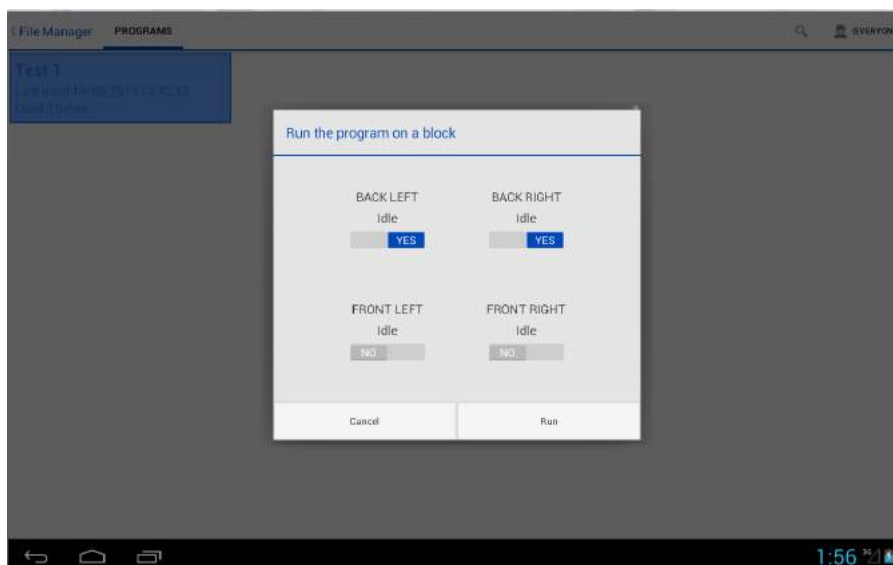


The Pre-run Screen shows a graphical representation of the program allowing for a rapid check of the temperature parameters. Any of the parameters can be edited at this point.

- Touch any stage or step to edit the program.
- Touch **RUN AND SAVE** to start the program. Note that this will over-write the existing program if any edits have been made.
- Touch **Back** to return to the previous screen.

**Note:** With the AC-4 you will be asked at this point on which block(s) the program is to be run. Any number of the available blocks can be selected. Select the required block(s) by tapping to display **YES**.

Tapping on **Run** will send the program to the thermal cycler and it will begin automatically.



### **RUNNING A PROGRAM FROM THE INSTRUMENT MEMORY**

If the program required is not present in the Recent programs list it must be located using the File Manager.

From the Home Screen, tap on **Run a program** to open the File Manager. Select the required program by tapping to highlight it.

**Note:** With the AC-4 you will be asked on which block(s) the program is to be run. Any number of the available blocks can be selected. Select the required block(s) by tapping to display **YES**.

Tapping on **Run** will send the program to the thermal cycler and it will begin automatically.

**Note:** This route of selecting a program does not allow you to view the thermal profile before it is run.

An alternative way of accessing the File Manager is to go through Edit program. Using this route you will be able to view the program in the Pre-run screen and make any changes before sending it to the thermal cycler. Once you are satisfied the program is correct, tap **RUN AND SAVE** to start the program as described above.

**Note:** With the AC-4 you can run any number of blocks simultaneously with the same program or select different programs to run on each individual block.

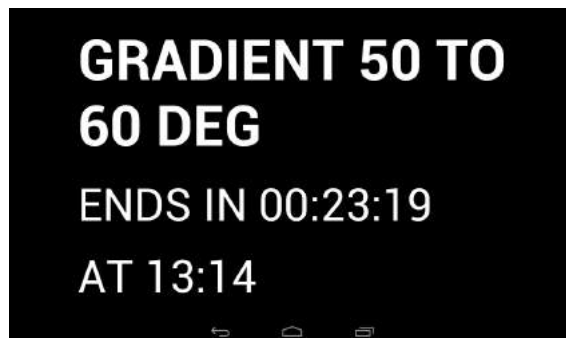
### **VIEWING A RUNNING PROGRAM**

Once the program has been started, the Home Screen will display information about which program is running and how long it has left to run.

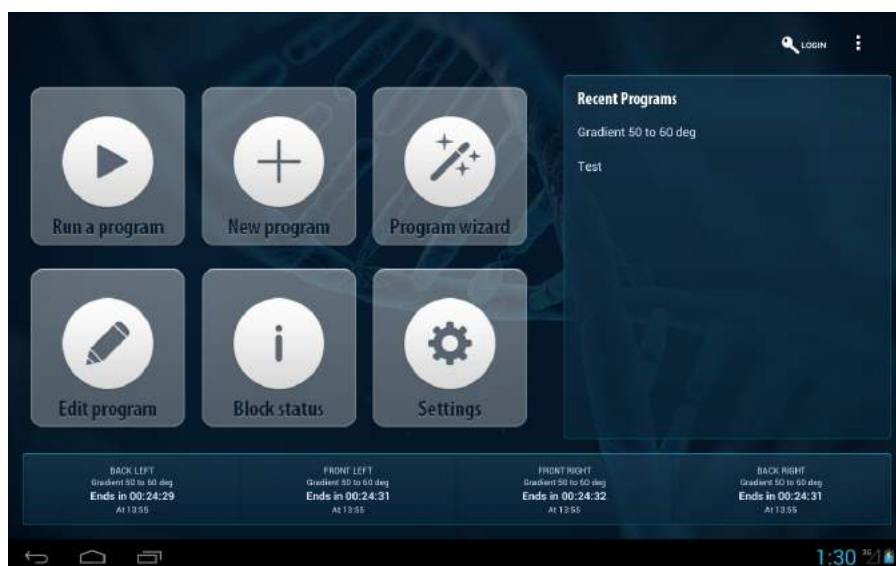
With the AC-1 this display is across the top of the screen. It shows the program name and end time.



There is also an option to display the countdown clock in full screen while the system is running. This feature is only available in the AC-1 and is accessed by clicking on the four arrow icon in the status bar.



With the AC-4, status of each block is shown separately across the bottom of the screen.



To view the running program in more detail, from the Home Screen tap on **Block status**.

**Note:** With the AC-4, the status of all four blocks will be displayed



To view an individual block, tap on the full screen icon close to program name. This will expand the run screen of the selected block to fit the entire screen.

**Note:** If a protocol has several stages which extend beyond the screen; simply slide the screen to the left or the right to view the protocol.



The current temperature step in the program will be shown highlighted. The cycle number will count up as the program progresses. The estimated run time and end time is updated at the end of each cycle.

When viewing an individual program there is the option to toggle between viewing the real time temperature of the block and the program display.

To view the block temperature, tap on **DISPLAY REAL-TIME TEMPERATURE** at the top right of the screen.

When Real Time Temperature is selected the user is shown the current temperature of the block as it progresses through the program. Approximately 5 minutes of temperature profile is shown on the display.

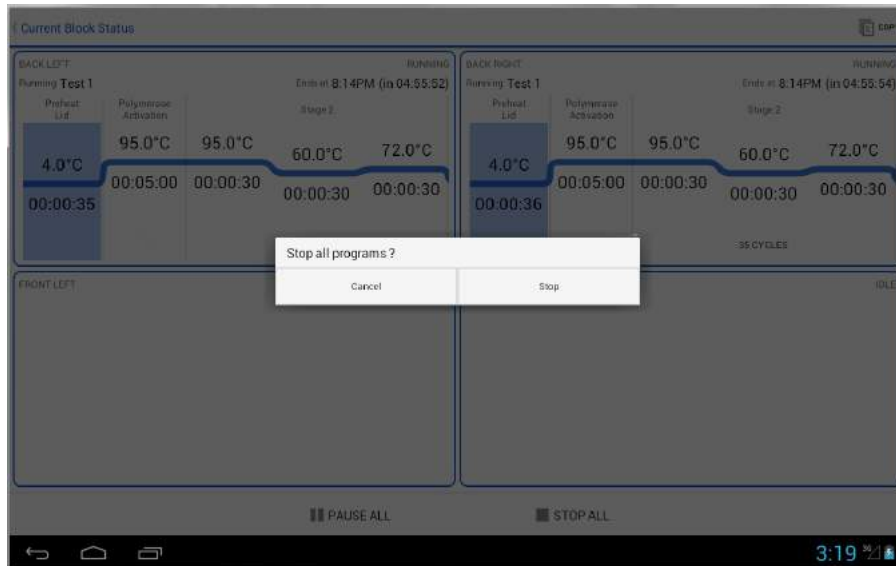
To return to the program, tap on **DISPLAY PROGRAM**.



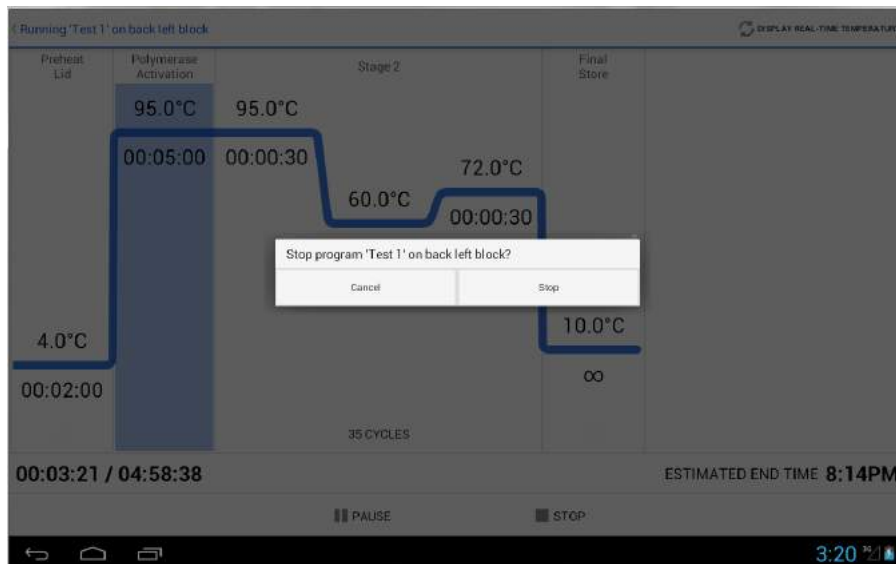
## STOPPING A PROGRAM

When in the full screen display, tap **STOP** to stop the program. A prompt will ask you to confirm the stop.

**Note:** For the AC-4 all active blocks can be stopped together from the multi-block display.



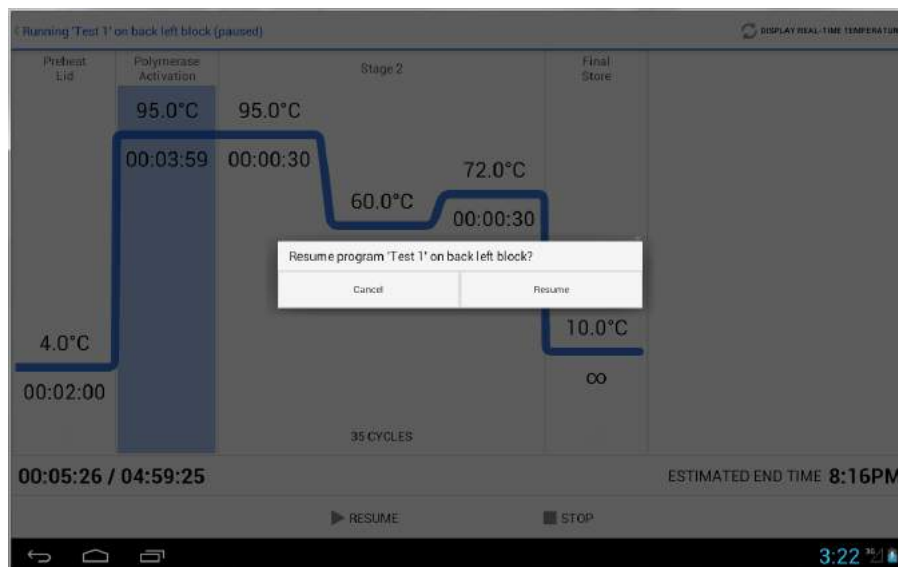
To stop an individual program, first select the full screen display by tapping on the block area close to program name to open up the full screen.



Alternatively, programs can be stopped from the Home Screen by tapping on the status bar. This will open up the run screen.

## PAUSING A PROGRAM

A program can be paused in the same way as stopping a program. After a program has been paused, it can be resumed by tapping on **RESUME**.



**Note:** It is possible to access all modules of the software while the unit is running a program. Simply use the **Return** button or **Home** button at the bottom of the screen to access other areas of the software.

## Program finished

When a program has completed, a **Summary Report** will be displayed on the screen.

- Click on **OK** to close the report.

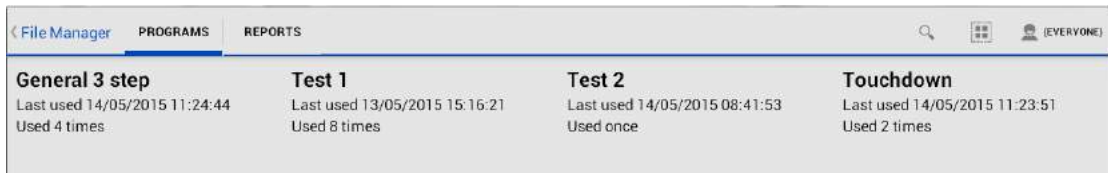
**Note:** With the AC-4 a report will be presented for each individual block as each program finishes.

Summary Report	
Program	Test 2
Block	Front Right
User	
Start time	14/05/2015 08:42:09
Duration	00:25:03
End time	14/05/2015 09:07:12
Status	Finished
OK	

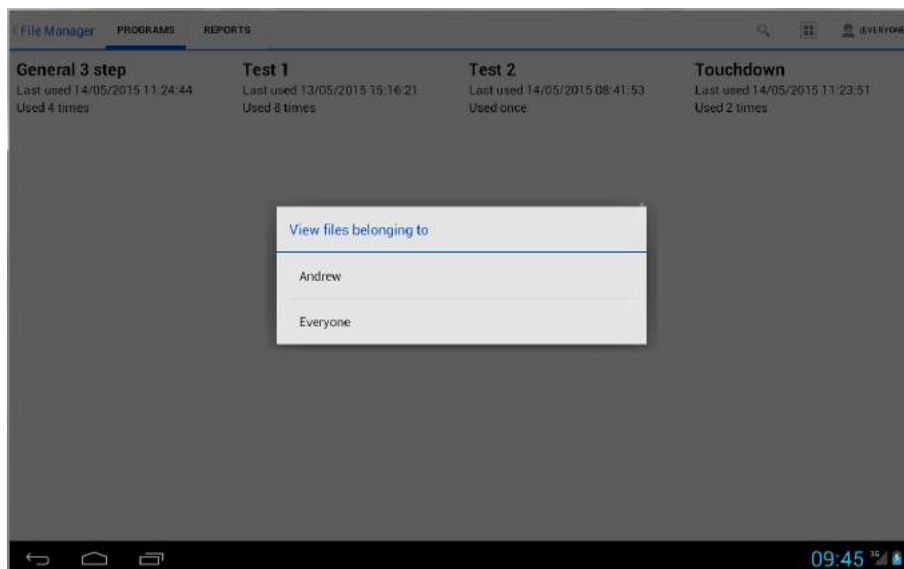
# Using the File Manager

The File Manager is used to find and view programs and reports stored in the system memory or on an external device such as a USB memory stick.

- To access the File Manager, tap on **Edit program** from the Home Screen.
- Touch **PROGRAMS** or **REPORTS** to view all those saved under the current profile (shown in the top right of the screen).



- To view the files belonging to different profiles, tap the **Profiles** icon (head and shoulders of a person) at the top right of the screen.
- Select whether to view the files available to **Everyone** or just the currently logged-in user.



**Note:** If a USB memory stick has been inserted into the USB port, A USB icon will also be visible at the top right of the screen.

- To view files stored on the USB memory stick, tap on the USB icon.

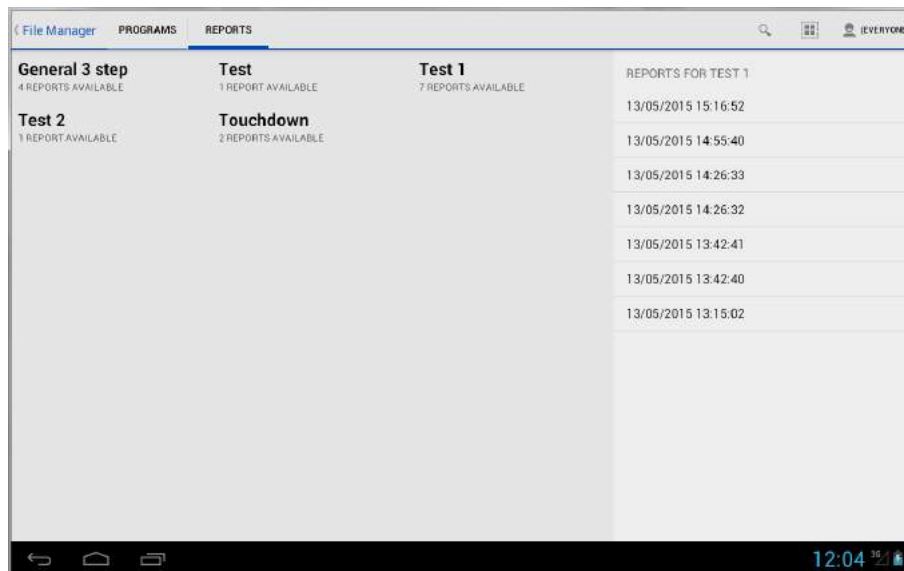
## SEARCH FOR A FILE

- Tap on the magnifying glass icon to enable a search for a particular program or report.
- Use the keypad to type in a keyword on which to search and then tap the magnifying glass symbol on the keypad. Only programs or reports containing the search term will be shown.
- To cancel the search tap on the **X** symbol.

## REPORTS

Reports of runs performed on the Alpha Cyclor are stored in the unit memory and can be accessed any time.

- To view the report lists, from the File Manager select **REPORTS**.
- Select a program name. All reports for that program will be displayed in chronological order.



- Tap on a report from the list and the individual Summary Report will be displayed. Tap **OK** to exit.

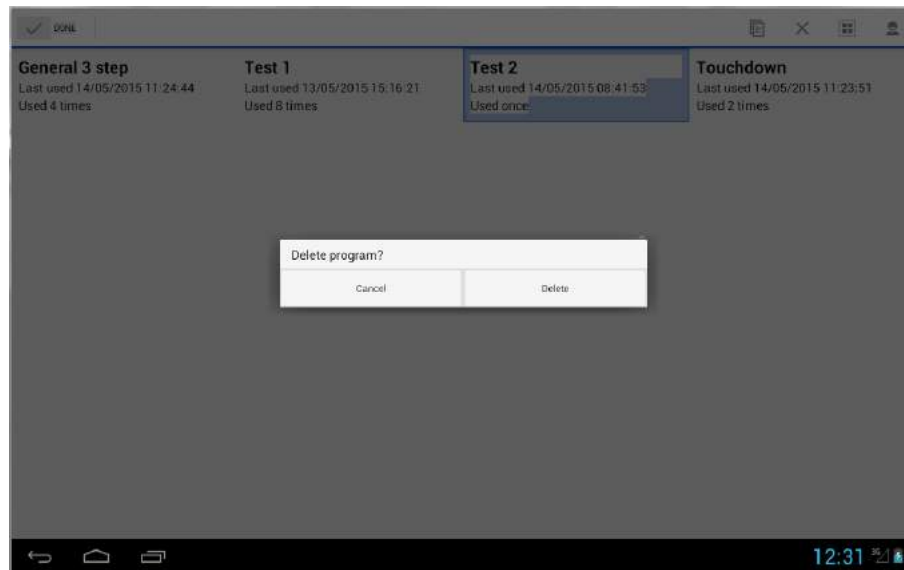
Summary Report	
Program	Test 1
Block	Back Left
Start time	13/05/2015 13:15:02
Duration	00:00:17
End time	13/05/2015 13:15:20
Status	Stopped by user
OK	

**Note:** It is not possible to view the temperature log contained within the report on the Alpha Cyclor itself, it must first be copied to a USB memory stick then viewed on a PC using Excel®. The file will be saved as a .csv file. See the directions given in the next section for copying files to a USB memory stick.

## DELETING A PROGRAM OR REPORT FROM THE FILE MANAGER

Programs and reports can be deleted from the File Manager.

- Tap the command button (icon with four squares) at the top right of the screen.
- Select the file(s) you wish to delete; selected files will be highlighted blue. Tap again to deselect.
- Touch the delete icon (large **X**) at the top right of the screen.
- A prompt will appear to confirm the delete; once confirmed the selected files will be deleted from the system's memory.



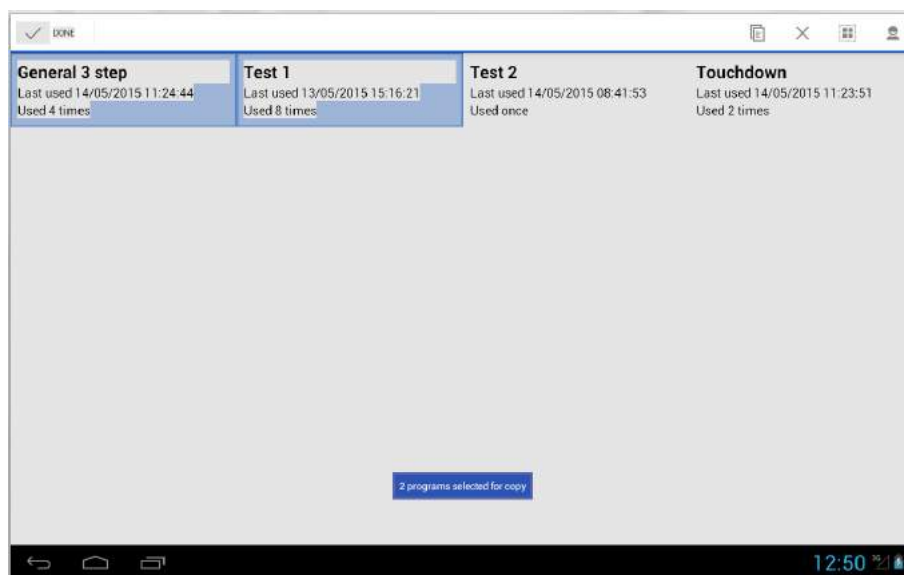
- If you choose not to delete a file, touch **Cancel**.
- Touch the tick icon next to **Done** to return to the File Manager.

# Copying and transferring Programs and reports

## COPYING A PROGRAM TO A USB MEMORY STICK

To copy a program from the system's memory to an external memory device such as a USB drive, first search for the desired program using the File Manager accessed through Edit program on the Home Screen.

- Insert a USB memory stick into the port on the Alpha Cyclor. A USB icon will appear at the top right of the screen.
- Tap the **Command** button (icon with four squares) at the top right of the screen.
- Select the file(s) you wish to copy; selected files will be highlighted blue. Tap again to deselect.
- Touch the **Copy** icon at the top right of the screen.
- A prompt will appear indicating that the selected files are ready for copy.



- To copy the files to the USB memory stick, tap on the **USB** icon to select the destination then tap the **Paste** icon (clip board).

## TRANSFERRING A PROGRAM FROM A USB MEMORY STICK TO THE ALPHA CYCLER

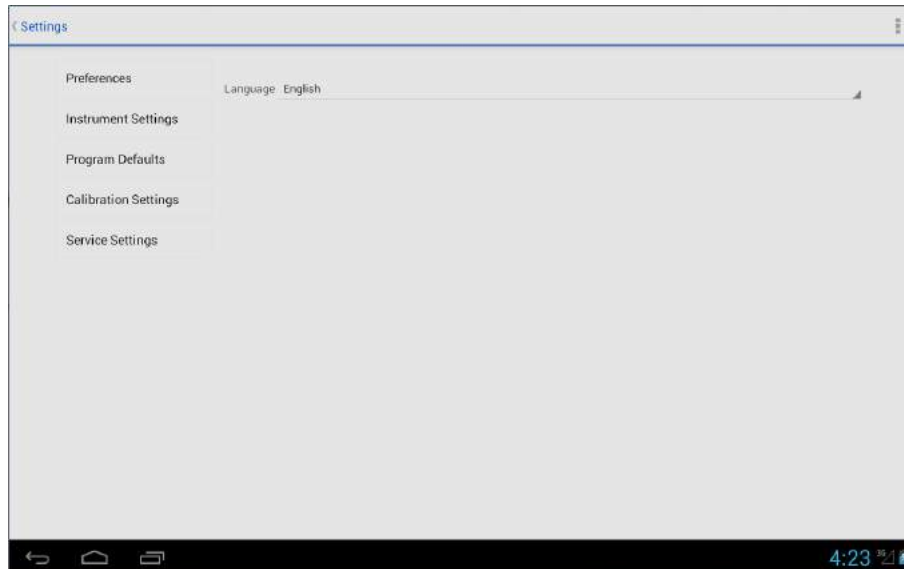
Transferring programs from one Alpha Cyclor to another avoids the user having to re-write new programs for each additional instrument and is an easy way to share optimised protocols with other Alpha Cyclor users.

- From the Home Screen select **Edit program** to open the File Manager.
- Insert a USB memory stick into the port on the Alpha Cyclor. A USB icon will appear at the top right of the screen.
- Select the **USB** icon to view any files saved on the device.
- Tap the **command** button (icon with four squares) at the top right of the screen.
- Select the files you wish to copy to the system memory (highlighted items will go blue)
- Define the destination of the files by clicking on the **Profiles** icon (head and shoulders of a person)
- Select the users you wish to make the copied programs available too and then tap the **Paste** icon (clip board).

# Instrument settings and defaults

The **Settings** button on the Home Screen gives access to the instrument settings and allows you to set up your own preferences and defaults for writing programs. Tap the **Settings** button on the Home Screen to access the instrument **Settings** menu.

**Note:** The system must be restarted for the system settings and defaults to be applied. If the settings are changed, always restart the system.

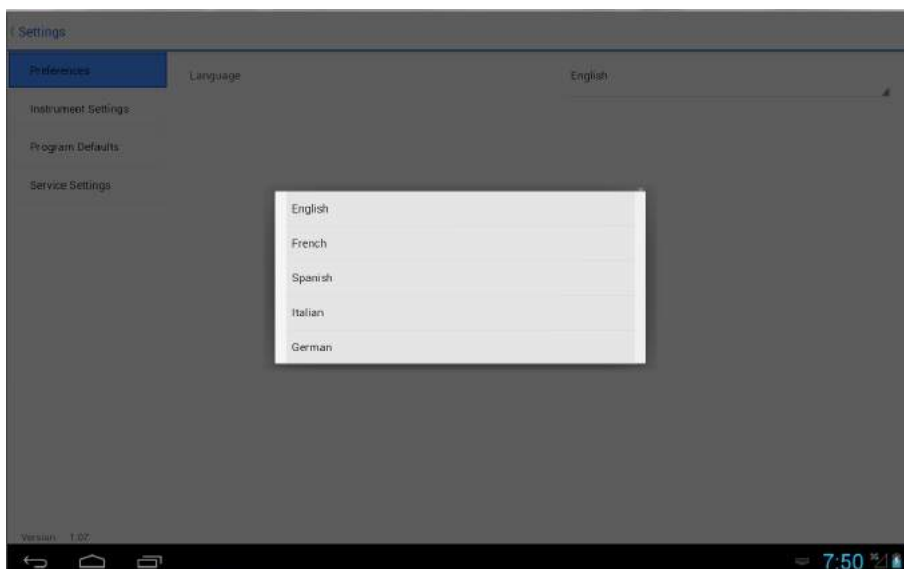


Touch any of the headings on the left hand side to view and edit those settings. Once all the settings and defaults have been set as required, touch the **Back** button at the bottom of the screen to return to the Home Screen.

## PREFERENCES

This allows you to select the preferred operation language. The options are:

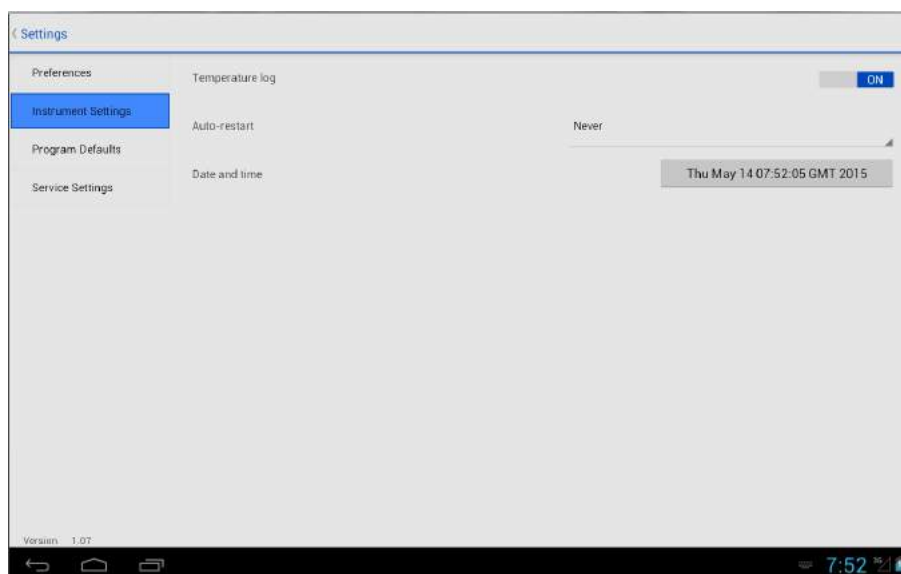
- English
- French
- Spanish
- Italian
- German





## INSTRUMENT SETTINGS

These allow setting of temperature logs, auto restart and date and time.



### TEMPERATURE LOG

When set to **ON** the temperature log will record the block temperatures for every run and save them as a Report. If temperature logs are not required, set to **OFF**.

### AUTO-RESTART

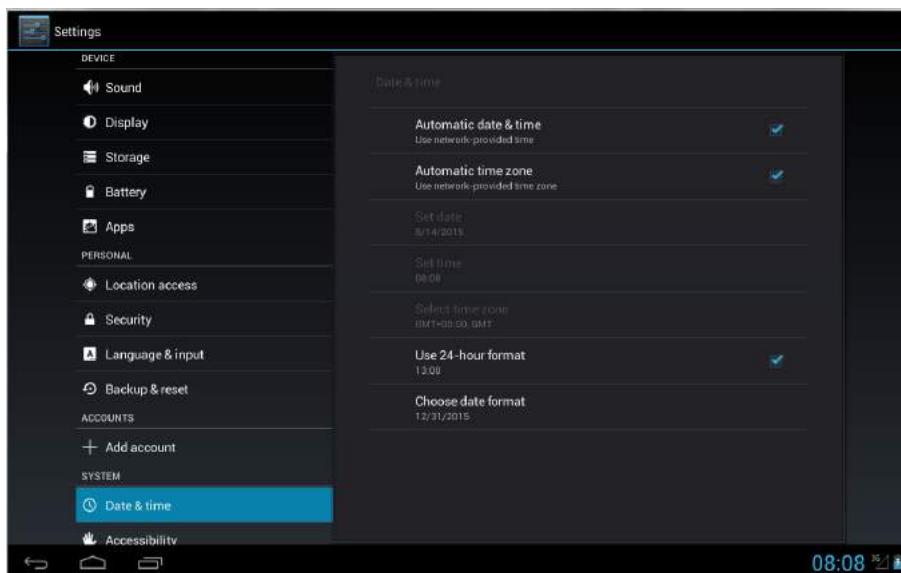
This determines whether the unit will restart after a power failure. Setting Auto-restart to **Always** will allow the unit to re-start irrespective of the length of the power failure. Selecting **Never** will mean the system will not auto-restart after a power outage. In addition, the user can select a time in which, if the power comes back on in that window, then the system will resume. The options are shown below.

Never
If power out for less than 10 mins
If power out for less than 30 mins
If power out for less than 1 hour
Always

**Note:** the time periods in the auto-restart allow the end user to select windows of power loss which they deem acceptable for the power to be disrupted during their protocols. Example: if the system is set to 10 minutes and the power is out for 8 minutes the system will resume, if the power is out for 12 minutes the system will not auto-restart.

## DATE AND TIME

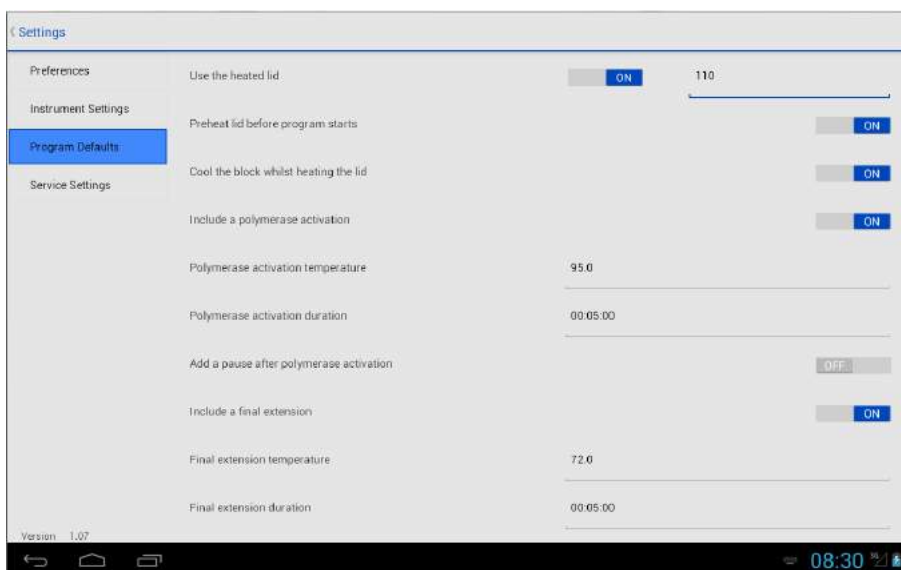
This allows you to set the current date, time and format. Check the required boxes then tap the back button to return.



## PROGRAM DEFAULTS

This section allows you to define a number of parameters as defaults which will be applied to all protocols created on the system.

**Note:** Defaults are merely a starting point and are not fixed, if the default value is not appropriate for your reaction simply edit that value here or during programing.



### Use the heated lid

Use this to set the heated lid temperature to approximately 10°C higher than the hottest block temperature in the program.

- Touch **ON/OFF** to toggle between settings.
- Touch the temperature button to set the required lid temperature (35°C to 115°C).

### Preheat lid before program starts

Set to **ON** to pre-heat the lid to the set temperature before the thermal cycling program begins (recommended, especially if the first step involves a high block temperature).

- Touch **ON/OFF** to toggle between settings.

### Cool the block whilst heating the lid

Set to **ON** to cool the block to 4°C while the lid preheats.

- Touch **ON/OFF** to toggle between settings.

### Include a polymerase activation

This will automatically program an initial denaturation/polymerase activation step at the beginning of a program.

- Touch **ON/OFF** to toggle between settings.
- Set the required activation temperature.
- Set the required activation time.

**Note:** The temperature and activation time may need to be altered for different reagents. This can be changed by editing an individual program.

### Add a pause after polymerase activation

This will cause the unit to pause at the same temperature as the polymerase activation step. The program will only continue when the user manually touches the resume button. This step can be useful when additions need to be made to the samples prior to the run i.e. hot start.

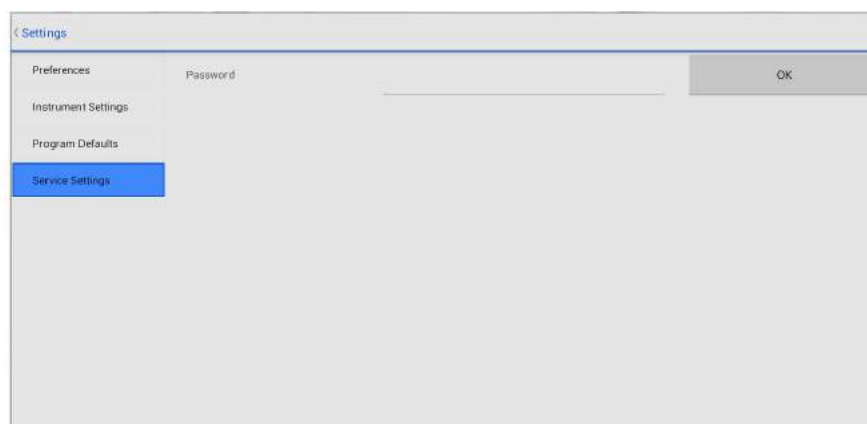
### Include a final extension

This will automatically add a final extension step to the program to ensure complete amplification of the products.

- Touch **ON/OFF** to toggle between settings.
- Set the required extension temperature.
- Set the required extension time.

## SERVICE SETTINGS

The service settings are for the use of authorised service engineers only. A service engineer's password is required to access these settings.



# Updating the Alpha Cyclor software

The Alpha Cyclor software can be updated by downloading the latest version from the PCRmax website [www.PCRmax.com](http://www.PCRmax.com) or by contacting your local distributor. You will need a USB memory stick on which to save the update.

## PROCEDURE

- Save the update file to the root folder on the USB device.
- Insert the USB device into the USB port on the Alpha Cyclor.
- On the Home Screen select the **Update** icon on the top right of the page, (icon of three stacked vertical dots).
- Select **Check for updates**.
- A dialogue box will open in which information about the upgrade will be provided and the user will be given the option to carry out the update or not.
- If **Yes** is selected the installer will describe the process on screen.
- The user will be asked to confirm the installation of the new Alpha Cyclor App and a confirmation note will assure end users that existing files and data will not be over written.
- Android will ask the user to confirm the install and show the access the Alpha Cyclor App has. Select **Install** to begin the installation of the new software.
- A progress screen will appear showing the installation, when complete the user may be prompted to open the new updated software. Select **Open** at this point.
- The installation will open and the user will be taken to the Home Screen.
- To confirm the installation of the new software check the version listing, this can be found in the lower left corner of the **Settings** page.

## Technical support and servicing

If you require further technical or application assistance please contact your **local distributor** (details can be found at <http://www.pcrmax.com/distributors>) or PCRmax at:

**E-mail:** [Help@pcrmax.com](mailto:Help@pcrmax.com)

**Phone:** +44 (0)1785 812121

**Fax:** +44 (0)1785 810405

For servicing information please contact your **local distributor** (details can be found at <http://www.pcrmax.com/distributors>) or:

### Service Department

PCRmax

Beacon Road

Stone

Staffordshire

ST15 0SA

**E-mail:** [service@PCRmax.com](mailto:service@PCRmax.com)

**Phone:** +44 (0)1785 810242

**Fax:** +44 (0)7770 014607

We are continually striving to improve our products and software. If you have any comments or suggestions on how we can do things better please send them to us at: **[enquiries@PCRmax.com](mailto:enquiries@PCRmax.com)**.

### REPLACING BLOCKS

Please note that thermal blocks in Alpha Cyclers thermal cyclers are not interchangeable.

Thermal blocks can be replaced under warranty in case of product breakdown and mechanical or electrical failure, but this must be performed by a qualified PCRmax trained service engineer and may in some instances require the unit to be returned to the factory.

## Additional information

### USER MAINTENANCE

Before cleaning your unit, disconnect it from the power supply. The outer case of the Alpha Cyclor may be cleaned with a cloth dipped in water or ethanol: hexane or 50% methanol can also be used. No part of the case or cover should be immersed in the solvents. Do not use aggressive solvents such as acetone or abrasive cleaners. The block may be wiped with water, ethanol or propan-2-ol and may be decontaminated by wiping with 2% Neutracon® or 1% bleach solution.

Before using any cleaning or decontamination method except those recommended here, the responsible person should check with PCRmax that the proposed method will not damage the equipment.

### FAULT FINDING

Note that this equipment should only be dismantled by properly trained personnel. Removing the outer cover exposes potentially lethal mains voltages. **There are no user serviceable parts within this equipment.**

Should you have any problems with your Alpha Cyclor which cannot be easily remedied, you should contact your supplier and return the unit if necessary. Please include details of the fault observed and remember to return the unit in its original packing. PCRmax Ltd. accepts no responsibility for damage to units which are not properly packed for shipping. If in doubt, contact your supplier, providing the serial number of the unit.

### FUSES

If the display on the front panel is not lit, one of the two fuses may have blown. Check that there is no external cause, such as a faulty plug or lead. Check both fuses and replace the faulty fuse with a new one of the correct value. Note that fuses should only be replaced by a qualified electrician.

The holder for the two fuses is built into the mains input socket. With the AC-4 the fuse holder is next to the mains On/Off rocker switch. First remove the power cable and then gently prise the fuse drawer open with a flat-bladed screwdriver or similar tool. Each fuse can be removed by using the screwdriver as a lever.

Exchange the faulty fuse in the fuse holder for a working fuse of the correct value. Finally, replace the fuse drawer in the fuse compartment and push the drawer shut. Fuses which blow repeatedly indicate a serious fault and you should contact your supplier for repair.

### INSULATION TESTING

This equipment is fitted with RFI suppression circuitry. Any check of the electrical insulation by means of high voltage dielectric testing (for example as in BS EN 61010-1) must be carried out using only a DC voltage.

This unit contains semiconductor components which may be damaged by electric field effects.

## Declaration of Conformity

### Alpha Cyclor, Alpha Cyclor 1 (AC-1), Alpha Cyclor 4 (AC-4)

These products comply with the requirements of the EU Directives listed below:

2004/108/EC      EMC Directive.  
2006/95/EC      Low voltage Directive (LVD)

Compliance with the requirements of these Directives is claimed by meeting the following standards:

EN 61326-1:2013 (Electrical Equipment for Measurement, Control and Laboratory use)  
EN 61010-1:2010 (3rd edition) (Safety Requirements Electrical Equipment for Measurement, Control and Laboratory use)  
ICE/EN 61010-2-010:2003 (Particular Requirement for Laboratory Equipment for Heating of Materials)

The above certificates and reports, from an independent test house, are available upon request.

CE mark affixed '15.

Signed:  (Mr S. Marriott)

Date: 8/6/15

Authority: Technical Director  
Bibby Scientific Ltd



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