



Document Number:	SASoM/EQUIP/067.v2
Title:	Use and maintenance of the Biometra TPersonal Thermocycler
Version:	v2
Author:	Peter Mullen

Effective from:	26/09/2018
Valid to:	25/09/2023

SOP History		
Number	Date	Reason for Change
v1	26/09/2013	Original
v2	26/09/2018	Update and change of author

1.0 Purpose –

The purpose of this SOP is to outline the principles of the routine use of the Biometra TPersonal PCR thermocycler in Laboratory 248 at the St Andrews School of Medicine (SASoM).

2.0 Scope –

This SOP applies to routine use and maintenance of the Biometra TPersonal PCR thermocycler. within the SASoM.

3.0 Responsibilities –

It is the responsibility of all users of the Biometra TPersonal PCR thermocycler within the SASoM to comply with this SOP.

4.0 Procedure –

The Biometra TPersonal Thermocycler is intended to be used for performing polymerase chain reactions.

Prior to connecting the TPersonal to the mains, make sure that the setting of the voltage selector at the bottom of the instrument is in accordance with your mains voltage and that it is equipped with the correct fuses.



Operation of the thermocycler

1. After switching on the TPersonal the serial number of the instrument and the software version is displayed.
2. The TPersonal then checks all programs in all subdirectories (so called RAM check).
3. The function of the four soft keys beneath the display is context sensitive! The respective function is shown in the display.
4. Cursor key:
 - a. The right cursor key moves the cursor to the next field. This cursor can also be used to complete data entry. By pressing the right cursor settings will be saved and the cursor moves to the next field. In the file directory, this key moves the cursor forward to the next (lower) level.
 - b. The left cursor key moves the cursor back to the previous field. In the file directory, this key moves the cursor back to the higher level.
5. Create a program.
 - a. Press the softkey under [Edit] in the main screen.
 - b. Use the cursor key to select a subdirectory.
 - c. Press [Enter] to enter highlighted subdirectory.
 - d. The program storages are displayed. Use cursor keys to select a program store.
 - e. Each program is specified by a program number and a subdirectory number. To make retrieval of a program easier, enter a name for each program. Use the left and right cursor keys to select letters, numbers and symbols and softkeys under the display to accept or delete letters or fill in a blank.
 - f. Confirm the name with [name ok]
6. Specify the pre-settings for the program.
 - a. Enter a temperature for the heated lid in a range of 30 °C to 99 °C.
 - b. Select pre-heating of the lid in order to avoid sample evaporation when the program starts with the initial heating phase. During pre-heating, the block temperature is held at 25 °C. Use the cursor key to switch between "ON" and "OFF"
7. Specify program steps
 - a. Press [Enter] to open the programming spread-sheet. Navigate in the spreadsheet without limitations with the four cursor keys.
 - b. Each setting is confirmed by pressing [Enter]: Enter temperature for the first step and press [Enter].
 - c. In the next row enter the time for this temperature: If you enter a number without "dot" this value will be interpreted as seconds ("300" = 5 minutes). To program minutes enter a "dot" after the number of minutes. To enter hours enter 2 "dots" after the number. Example: for 1 h, 30 min, 20 sec = 1"dot" "dot" 30 "dot" 20. To program a pause, press "0" and [Enter]. "Pause" will be displayed for this step in the time row.
 - d. Repeat these steps for all steps of the PCR program.
 - e. NOTE: It is recommended to choose 16 °C as a "hold" temperature at the end of the PCR program (rather than 4 °C)! This will extend the life-time of the thermocycler.
 - f. Enter a loop (to jump back to a previous step and repeat the cycle): In the row labelled with the arrow, enter the step target (e.g. step "2"). In the row



Equipment Operation Procedure

labelled with the hash (#), enter the number of back loops/ cycles to be performed. Total cyclor number = (n back loops) + 1, e.g. enter 29 for a total number of 30 cycles.

- g. Save program with [Save Pgm].
 - h. Confirm changes with [Yes]. The run time is calculated.
8. Inserting or deleting a program step:
- a. Open the program spreadsheet.
 - b. Press [Insert/Del]
 - c. Enter the number of the step that you want to insert or delete and press [Delete].

Sample loading:

- Use **ONLY suited thin-wall plastic ware** in the TPersonal thermocycler. Tubes and plates must show good fit when placed in the thermoblock. Only use tubes that are suited for high temperatures (tight lids).
- Ensure that both the rear and bottom ventilation slits not clogged by dust or other material. There must be sufficient distance between the ventilation slots on the rear side of the Thermocycler and a wall or another instrument (min 10 cm). Danger of **overheating!**

TPersonal is equipped with a height adjustable heated lid.

1. Release pressure by turning the wheel **counter clockwise**. As soon as there is no more resistance the pressure has been released.
 - a. The lid should not be opened under pressure because this leads to damage of the locking mechanism and tubes!
2. Open the lid by pressing the front of the lid down and releasing it.
3. Place the samples into the wells of the heating block
 - a. When only few samples are put in the block place additional tubes in the four corner positions. This is to evenly distribute the lid pressure and prevents single tubes from excessive pressure. Use of few tubes may result in damage of the tubes by excessive pressure!
4. After the samples have been placed in the block close the lid. Turn the wheel **clockwise** until you hear a clicking noise. In this mode the pressure will not increase further, even when you keep on turning the wheel.

Running a program

1. Select the main screen
2. Press [Start/Stop]
3. Select directory with cursor keys or enter directory number and press [Enter].
4. Select program with cursor keys or enter program number. To check a program prior to start, press [View]
5. To run program press [Start]. The program is started
 - a. To view remaining run time press [Info].
6. To stop or pause a program press [Start/Stop].
 - a. Press [Pause] to pause block (and hold it in the current state). Continue the run by pressing [Start/Stop].
 - b. Press [Stop] to stop the block.



Equipment Operation Procedure

Removing samples at the end of the run:

1. If a hold-step has been programmed, stop the program as described above.
2. Release the pressure and open the lid as described in section "Sample loading".
3. Close the lid (DO NOT screw down the lid). If any condensation has built up in the block in the end of the run, leave the lid open until it has dried out. Close the lid as soon as it has dried.

5.0 Personal protection –

Howie coat and gloves must be worn at all times when using this equipment.

- The thermoblock and the heated lid will reach high temperatures during operation. Both thermoblock and heated lid can cause burns.
- Rapid heating of the thermoblock can cause liquids to boil explosively. Close the lid before starting a program
- Be aware that samples are reaching high temperatures. Do not touch or open hot tubes or microplates, because hot liquid may quickly spill out.
- Do not touch the heated lid.

6.0 Training –

All users have to be trained before using the Instrument by a designated person.

7.0 Related documents –

- 7.1 Manufacturer's operation manual.
- 7.2 Risk Assessments – RA/COSHH/012
RA/GEN/003
RA/GEN/008

Controlled



8.0 Approval and sign off –

Author:

Name: Peter Mullen

Position: Research Assistant

Signature: _____ Date: _____

Management Approval:

Name: Mary Wilson

Position: Laboratory Manger

Signature: _____ Date: _____

QA release by:

Name: Alex MacLellan

Position: QA Manager

Signature: _____ Date: _____

Confidential