Risk Assessment Form

Procedure	Use of Microplate Thermo shaker PHMP-4 (Grant-Bio)

Name(s) of person performing the work	Users (Lab manager & Lab Technician & Tenants & Licensee's)		
Name & position of assessor	Owen Baker & Khwaja Islam Lab Tech & Lab Manager	**Signature**	
Date of assessment	12/01/2021	**RA Number**	BioE 0042

Outline of procedure / activity:

The Grant-bio microplate Thermo shaker PHMP-4 is located in Innovation lab 1 (696.10.14) which is used for shaking 1 to 4 standard 96-well plates in the thermal regulation mode.

The Thermo shaker was designed using the multi-system principle, which allows using it as three independent devices: incubator for lasting incubation of micro quantities (insect, plant cell cultures, etc.) in plates; plate shaker for operation in the cold room or other conditions, which do not require temperature stabilization; microplate thermo-Shaker for immunochemistry and molecular diagnostics, where the requirements to the result reproducibility and thus to the precise method regulation are particularly high.

Operator must be trained in the use of the Microplate thermo shaker PHMP-4 to guarantee safe daily use. Untrained Personnel are not be allowed to operate the Microplate thermo shaker PHMP-4. Users should operate Microplate thermo shaker PHMP4 according to instructions in the manual. User must always ensure that power cable is in good condition, no wires exposed.

Operation:

1. Connect the external power supply unit to a grounded power socket and set the power switch located on the rear panel of the unit to position I ("ON").
2. The display will turn on with the upper line (Set) showing time, speed and temperature set earlier and the lower line (Actual) showing current readings of the same parameters (thermoblock temperature °C, which automatically starts rising according to the temperature set in the upper line). The time of temperature stabilisation depends on the initial temperature.
3. Setting the parameters. Use the readings in the upper line of the display (Set), while setting the necessary parameters. Setting time (TIME).
4. Using the ▲ and ▼ **TIME** keys set the required working time interval in hours and minutes (increment - 1 min). Pressing the key for more than 3 s will increase the increment. Setting speed (RPM).
5. Using the up and down arrow **RPM** keys set the required speed (increment 10 RPM). Pressing the key for more than 3 s will increase the increment. Setting temperature (T, °C).
6. Using the ▲ and ▼ **TEMP** (°C) keys set the necessary temperature (increment 0.1°C). Pressing the key for more than 3 s will increase the increment.

7. While the platform is not shaking (**STOP** indication on the display), press **Time RUN/STOP** key and hold for 8s to enter lid temperature mode (LID indication on the display). Press **RPM RUN/STOP** key to exit the mode.
8. Program execution. After the thermal stabilisation of the unit (when the set and current temperature readings become the same).

   Caution!: The platform heating can be turned off only by setting the required temperature below 25°C (the display will show OFF – T, °C – set point). It can be used in cold rooms as a mixing device without thermal regulation in this mode. 4.

Microplate fixation:

PHMP-4: Lightly pull the clip away from the centre with your thumb and place microplate on the platform with the other hand. Caution! For model PHMP: Load only pairs of microplates for best fixing.

1. Press the **RPM-RUN/STOP** key. The platform will start rotating and the timer indicator will start counting up the time interval (with 1 min precision).
2. After finishing the program the platform motion will stop and the timer will show the flashing reading **STOP** accompanied by the repetitive sound signal until the **RPM-RUN/STOP** key is pressed.
3. If the working time is not set (or is reset) and the timer indicator in the upper line shows 00:00, pressing the **RPM-RUN/STOP** key will start continuous operation of the Thermo-shaker (timer indicator will start counting up the time interval in the lower line (Actual)) until the **RPMRUN/STOP** key is pressed again.
4. The timer can be reset during operation if required. Press the **TIME-RUN/STOP** key once (Fig. 1/□) to stop the timer. Press the **TIME-RUN/STOP** key again to restart the timer.
5. The platform motion can be stopped at any time by pressing the **RPM-RUN /STOP** key. In this case the program realisation run and the platform motion will stop and the timer will switch into the STOP mode saving previously set time. Press the **RPM-RUN/STOP** key to repeat the operation with the same time and speed.
6. After finishing the operation set the power switch, located on the rear panel of the unit, in position O (Off) and disconnect the external power supply from electric circuit.
7. The device is pre-calibrated at the factory (calibrating coefficient is 1.000) for operation with temperatures, measured by a sensor, installed in the heating block.
8. To enter the calibration coefficient, hold the Stop key (fig. 1/8) pressed for more than 8 s to activate calibration mode. The calibration coefficient will be shown on the display.
9. Restoring factory settings. Set 1.000 value using the ▲ and ▼ T (°C) keys (fig. 1/6) as shown on Fig. 2/1 to restore the factory settings. Press the Run key (fig. 1/7) once to save the changes and exit the calibration mode.

   Note! The platform temperature will be constantly maintained in accordance with the set temperature. This allows the devise to be used again without pre-heating.

   Caution! At the end of the set time period the platform movement is stopped automatically, but the heating can be stopped only by reducing the temperature using the TEMP (ºC) key (lower key) till the OFF sign appears in the upper part of the display. 4.
   Note. Coefficient value changes are recommended after the unit has reached 30°C.

Cleaning & disinfection:
Standard ethanol (70%) or chemgene for cleaning of laboratory equipment can be used for cleaning and disinfection of the unit.

Safety cautions:

- Surfaces can become hot during use.
- Use only as specified in the operating manual provided.
- The unit should not be used if dropped or damaged.
- The unit must be stored and transported in a horizontal position (see package label) at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%.
- After transportation or storage keep the unit at room temperature for 2–3 hrs before connecting it to the electric circuit.
- Use only cleaning and decontamination methods recommended by the manufacturer.
- Do not make modifications to the design of the unit.

During operation:

- Do not leave the operating unit unattended.
- Do not impede the platform motion.
- Do not operate the unit in environments with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.
- Do not check the temperature by touch. Use a thermometer.
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

Potential hazards

Substance or item handled	Associated Hazard (s)	Existing Control Measures	Risk (L/M/H)	Further Action required	Risk (L/M/H)
Surfaces can be hot during operation	Skin Burns due to hot surfaces	Wear proper PPE; (lab coat and heat protective gloves and safety specs). Users will have their own risk assessment / SOP in place before work begins. Avoid touching hot surfaces.	M	No further action required if the existing control measures are adhere to.	M
Mains connection socket with power switch	Electrical hazard - Electrical shock – danger of death	Only switch on the device if the device and power cable are undamaged. Only trained personal are allowed to use the machine. Instrument is earthed, protective earth connection for the machine is provided using 13A plug fitted to the machine (RCD protected). Make sure it has been PAT tested. Regular visual checks of power cords for fault, fraying or wear and regular electrical safety check. Any faults reported and repaired before use. Always handle any components of the system with care and with clean, dry hands. Do not clean, open the housing, or access any electrical parts while the instrument is	L	No further action required if the existing control measures are adhere to.	L

		connected to the mains.			
Biological samples in microplate	Biohazard samples	When handling biological samples adhere to user's SOP and COSHH. It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.	L	No further action required if the existing control measures are adhere to.	L

Persons potentially at risk:

Only the user or others near by

Action in event of an accident or emergency:

1. **Fire**: raise the fire alarm and evacuate the area.

Arrangements for monitoring effectiveness of control:

Daily inspection of equipment by lab technician.

Annual preventative maintenance carried by external contractor.

Instruction and training given to all operators which is reviewed annually.

Existing operators receive annual refresher training.

Annual pat testing by external contractor.

Arrangements for monitoring effectiveness of control: Review of the Risk Assessment:

Date of review		Name of reviewer	
Date of next review		Signature	

Have the control measures been effective in controlling the risk?

Yes	No

Have there been any changes in the procedure or in the information available which affect the estimated level of risk from the listed substances

Yes	No

What changes to the control measures are required?

Declaration by Tenants/Licensees/Technicians:

I confirm that I have read this Risk Assessment and that I understand the hazards and risks involved and will follow all of the safety procedures stated. Where PPE has been identified as a control measure, I will ensure that it is worn.

Declaration by Laboratory Manager (LM):

I confirm that the tenant/licensee/technician who has signed below is competent to undertake the work. My counter-signature indicates that I am happy for the work to proceed.

Name (Please print)	Signature	LM Countersignature	Date

Name (Please print)	Signature	LM Countersignature	Date