SpotSee®

HemoTemp II - Activator Manual

Programmable Heating Blocks

Operating Instructions:

Model 114001LCR (120v)
Model 114001LCR-2 (230v)

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1. Safety

The following symbols mean:

Caution: Read these operating instructions fully before use and pay attention to sections containing this symbol.

Caution: Surfaces can become hot during use.

Always observe the following safety precautions:

- Use only as specified by the operating instructions or the intrinsic protection may be impaired.

⚠ After transport or storage in humid conditions, dry out the unit before connecting it to the supply voltage.

- Connect only to a power supply with a voltage corresponding to that on the serial number label.
- Ensure that the main switch and isolating device (power supply connector) are easily accessible during use.
- Before moving, disconnect at the power supply socket.
- If liquid is spilled inside the unit, disconnect it from the power supply and have it checked by an experienced person.
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or inside the equipment.
- Before using any cleaning or decontamination method, except those recommended by the manufacturer, user should check with the manufacturer that the proposed method will not damage the equipment.
- Clean the unit only with a damp cloth; do not use chemical cleaning agents.
- Place unit on a solid, level work surface or laboratory bench.

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2. General Information

The Programmable Heating Blocks are designed for precise controlling of sample temperatures. Heating Blocks, also known as dry bath incubators, use aluminum inserts to suit the use of many types of laboratory test tubes, plates, and containers. Boekel programmable heating blocks are designed to be used with standard aluminum dry blocks (nominally 3" deep x 3 ¾" wide x 2" high) of varying configurations for heating test tubes, microtubes, and other small vessels. The Programmable Heating Blocks use an advanced touch screen control system to create and store programs. Programs can have a maximum of five different temperature steps and there is a repeat function for thermal cycling procedures. An option external temperature probe is available for spot temperature checking and controlling the unit temperature.

- 114001LCR (120v)
- 114001LCR-2 (230v)

These devices can be used for any temperate sensitive reaction including:

- Bio Indicator heating block
- Blood Bank incubator
- Blood Bank Indicators
- Blood bank patient testing
- Cancer Research
- Cell Digestion for DNA
- Co-denaturing probes
- Denature Restriction Enzymes
- DNA Digestion
- DNA extraction
- Drug research
- Drying Samples
- Enzyme preservation
- Enzyme-substrate reactions
- Forensic Laboratory Tests
- Fuel cell research
- Heat treatment of Oocytes
- Heating Lysis tubes
- Heating of nanoparticles
- In situ hybridization
- Incubation of bacteria
- Incubation of LAL tubes
- Maintain medium temperature
- Molecular biology
- PCR
- Probe elongation for beadchip
- Prostate cancer research
- Protein Assay Kit
- Protein folding research
- Sample Preparation
- SDS-loading buffer
- Target Amplification
- Transfusion Testing
- Warming reagents and samples

3. Getting Started

3.1 Unpacking

Remove packing materials carefully and retain for future shipment or storage of the unit.

The Boekel Scientific Touch Screen Heating Block includes:

- Heating Block (1 piece)
- Power Cord (1 piece)
- Operating Instructions (1 copy)

3.2 Instrument Placement

Place the Heating Block on a solid level surface so that there is at least 10 cm of clearance from adjacent walls and devices and that the ventilation slots on the side of the unit are free from obstruction.

Connect the Heating Block to the power cord and plug into an acceptable wall power outlet.

Switch the unit to the on position utilizing the power on/off switch located on the rear left side of the instrument.

3.3 Instrument Connections and Power Button

Below is an image of the back of the unit with descriptions of the components.

4. Operation

4.1 Home Screen Navigation (Figure 1) – Navigation and Screen Overviews

The system has been designed to be easy to use and easy to navigate. Below is an overview of the system menus and screens accessed from the home screen. A detailed description of each of these screens is provided in the manual.

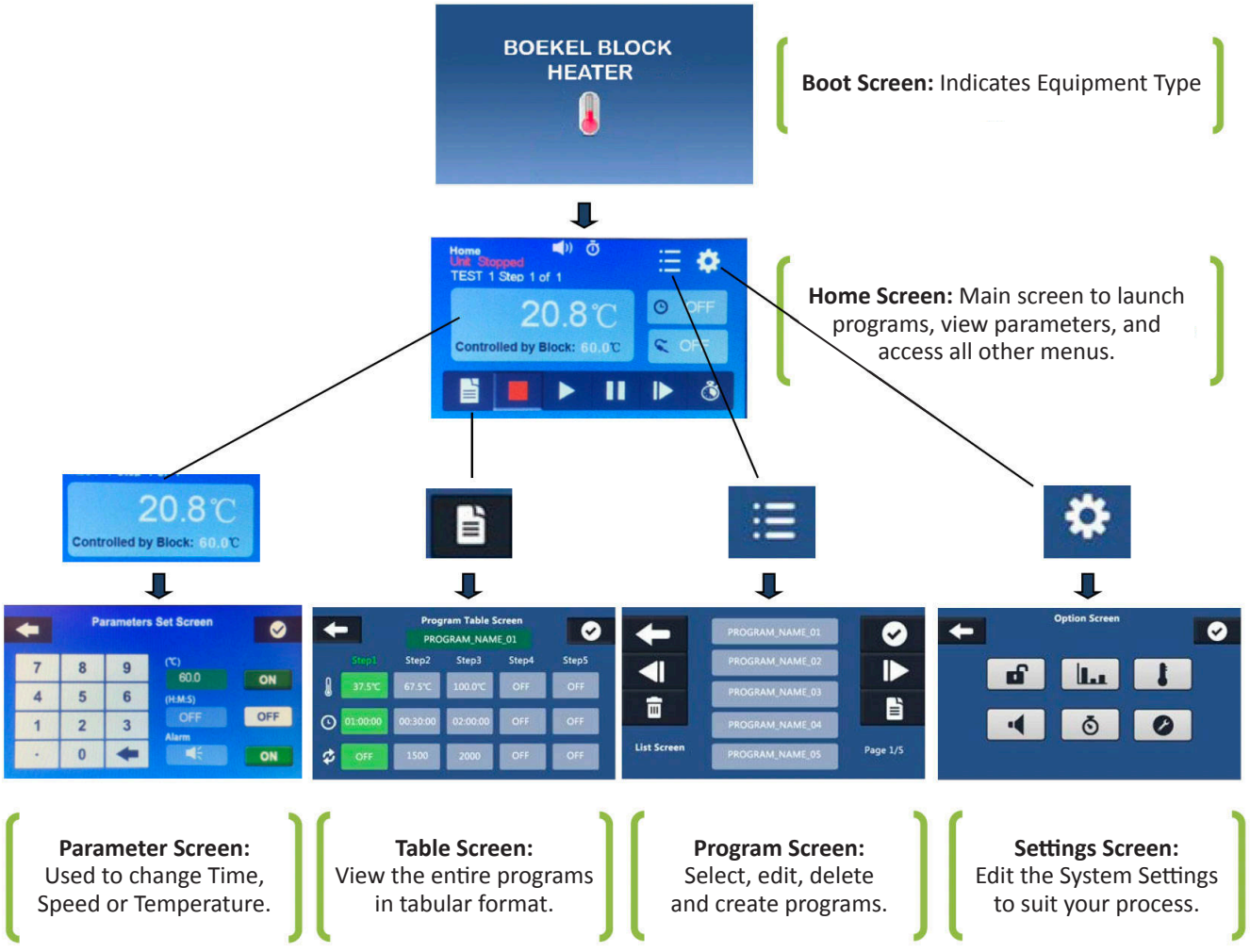


FIGURE 1

4.2 Options Screen Navigation (Figure 2) – Navigation and Screen Overviews

Below is an overview of the options accessed from the Settings Screen.

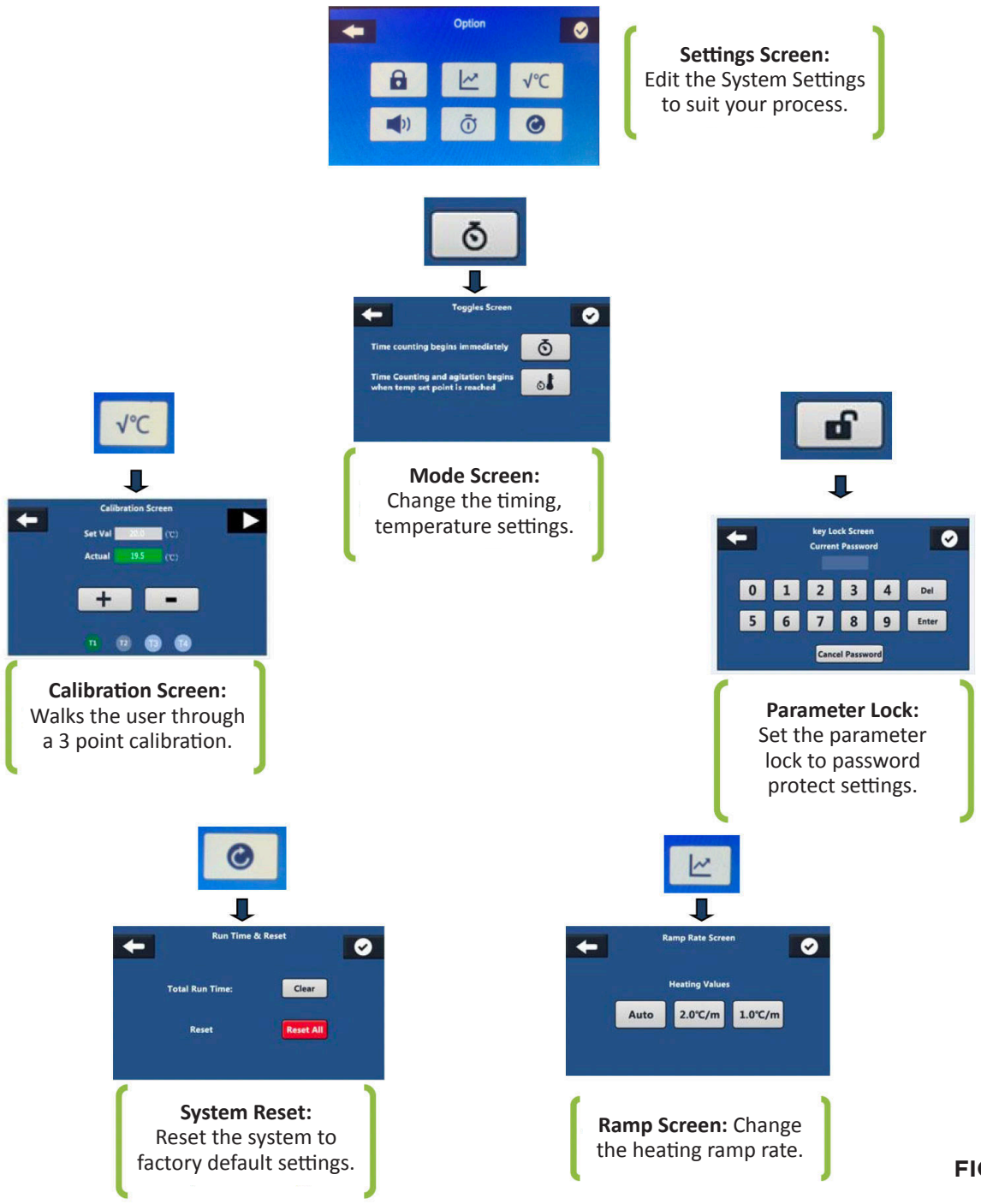


FIGURE 2

4.3 Home Screen (Figure 3)

The home screen displays all operating parameters and allows for access to menus to configure the unit.

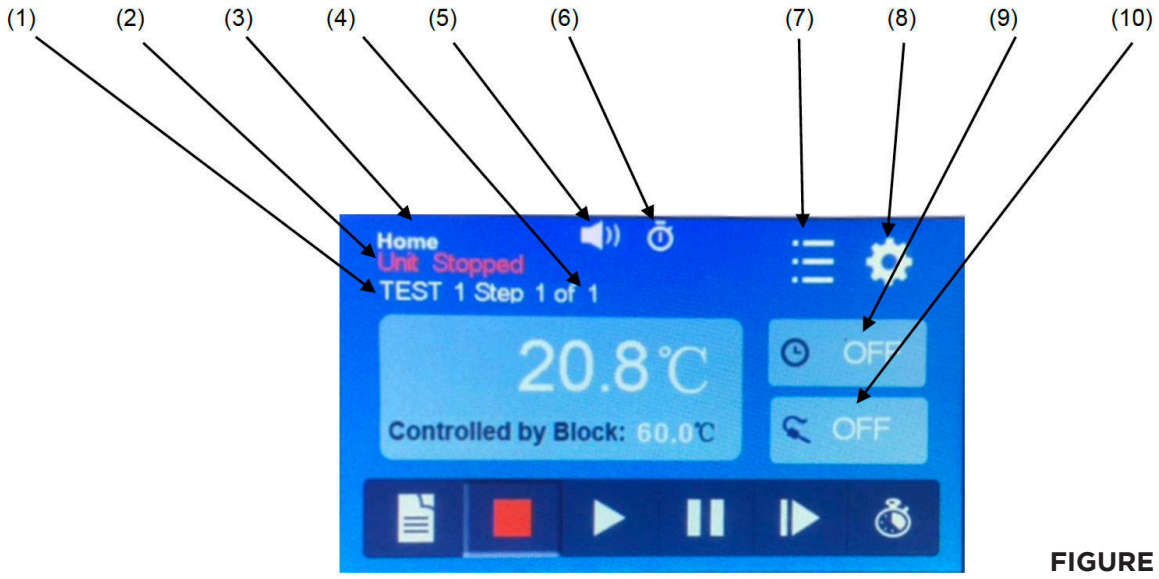


FIGURE 3

(1) Program Name – Displays the name of the program that is launched.

(2) System Information – Displays information about the unit while in operation.

(3) Screen Name – Name of screen for reference.

(4) Step Number – Indicates the step number executed and in total.

(5) Speaker Icon – Indicates if sound is turned on/off. The unit will beep after each step, and when a program is complete.

(6) Timer Mode Icon – Indicates what mode the unit is operating in:

- **a.** Time counting begins immediately.
- **b.** Time counting begins when the unit reaches the set temperature.

(7) Program List – Pressing this will take you to the list of programs. From this menu programs can be launched, edited, or deleted.

(8) Settings Icon – This icon brings up the settings screen. The settings screen is for calibration, ramp rate, sound, system reset, system timers, and the parameter lock.

(9) Time Icon – Indicates the time left in a step. Pressing this icon will enter the parameter set screen where the time can be edited.

(10) External Temp Probe Icon – Indicates the external temperature probe reading. The Icon is green when the probe is controlling the heating block. Otherwise the internal temperature sensor is controlling the temperature.

NOTE: Parameter changes cannot be made while the unit is running. The unit must be stopped first.

4.3 Home Screen Continued (Figure 4)

The home screen displays all operating parameters and allows for access to menus to configure the unit.

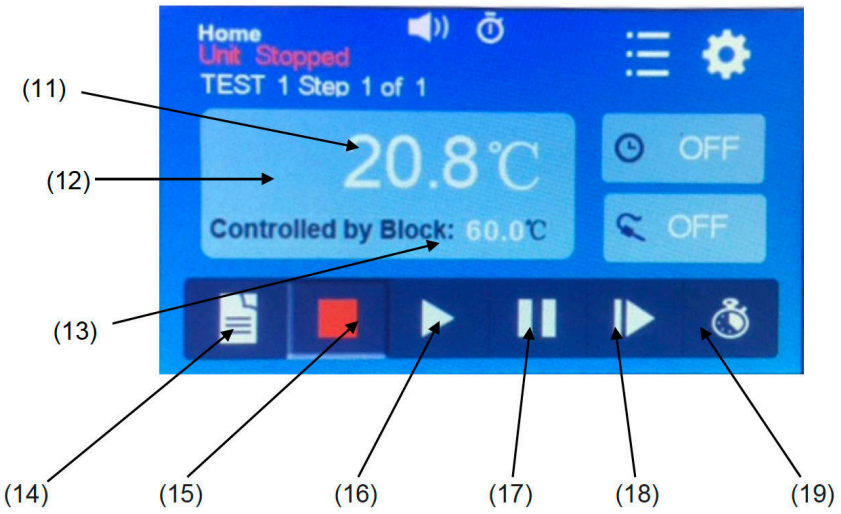


FIGURE 4

(11) Current Temperature – The current temperature of the samples in the block.

(12) Heating Indicator – This area will show whether the unit is heating to maintain the setpoint temperature. A red thermometer will be visible when actively heating.

(13) Setpoint temperature – The target temperature the unit will try to maintain and whether this is being controlled by the block or by the external temperature probe.

(14) Program Setup – Displays temperature, probe selection, repeat, and time settings in tabular format for all programmed steps.

(15) Stop Icon – Stops running the current program.

(16) Play Icon – Starts the program or runs the unit at the current settings.

(17) Pause Icon – Pauses the timer but continues to maintain the set temperature.

(18) Skip Icon – Automatically skips to the next step in the program.

(19) Laboratory Timer – This button brings up four independent laboratory timers for general purpose laboratory timing. These timers do not control the blocks they are just for independently timed processes.

NOTE: Parameter changes cannot be made while the unit is running. The unit must be stopped first.

4.4 Parameter Set Screen (Figure 5)

The parameter set screen is access by pressing the time, temperature, or the external probe window on the home screen. It can also be accessed in the table view when changing parameters. This screen is used to modify parameters. Parameters cannot be modified without a passcode when the parameter lock is enabled.

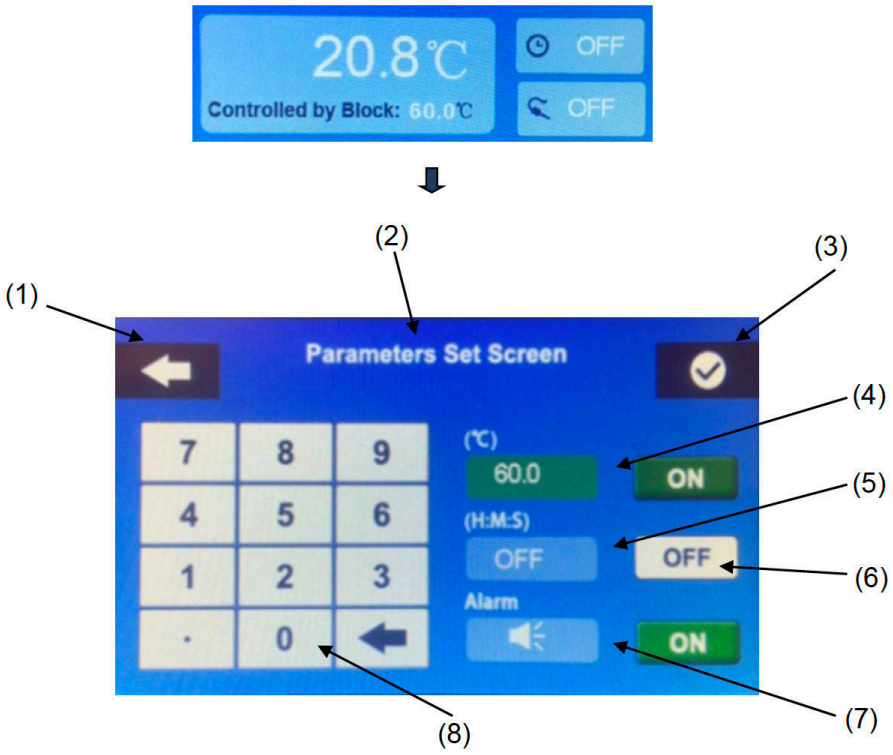


FIGURE 5

(1) Back Arrow – Returns to the previous screen without saving settings.

(2) Screen Name – Name of screen for reference.

(3) Confirm Check – Saves the changes made to the parameters and returns to the previous screen.

(4) Temperature Configuration – Touching this box allows for setting the temperature setpoint.

(5) Time Configuration – This determines the run time for the temperature set points. Setting this value to off will cause the unit to run indefinitely. When the time is turned off the unit will run at the temperature manually stopped. This is indicated by the ∞ symbol.

(6) On/Off Button – Turns On/Off the ability to control a parameter. If all buttons are set to off the step is excluded.

(7) Alarm Configuration – Adds or removes the alarm when the end of the step is complete.

(8) Number Entry Pad – Used to change the values of a parameter.

4.5 Program Setup Screen (Figure 6)

The program setup is accessed from the Home screen and the Program List screen. This screen displays all parameter setpoints for an entire program and it can be set to continuously repeat a program. The setpoints and the program name can be edited from this screen.

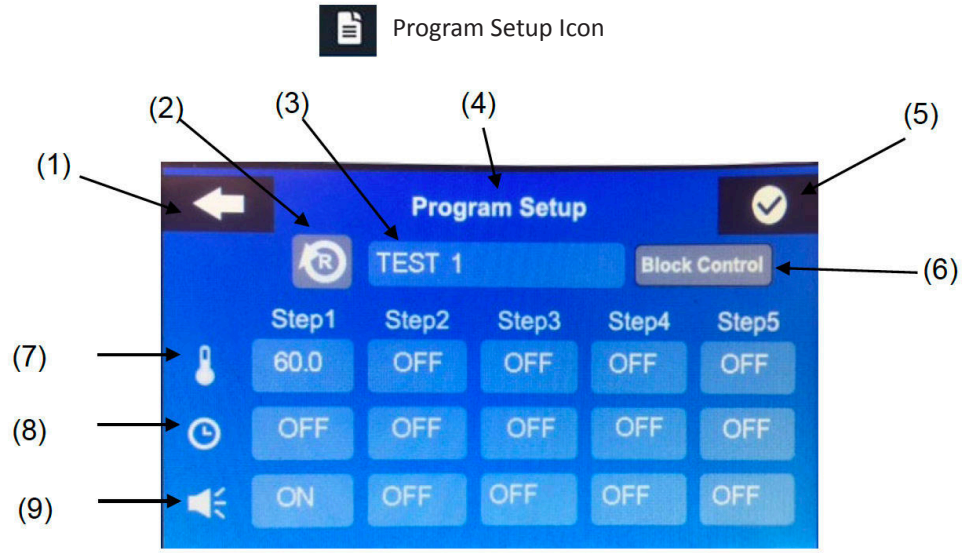


FIGURE 6

(1) Back Arrow – Returns to the previous screen without saving settings.

(2) Repeat Button – Pressing this button will repeat the steps when the sequence is finished.

a. Gray Icon – Repeat is not active

b. Green Icon – Repeat is active

(3) Program Name – Displays the program name for the steps. Touch this block to edit the program name.

(4) Screen Name – Name of screen for reference.

(5) Confirm Check – Saves the changes made to the parameters and returns to the previous screen.

(6) Block / Probe Temp Control – Pressing this button will determine whether the unit temperature is controlled by the internal block temperature sensor or the external optional temperature probe.

a. Gray Icon – Block Control – The internal temperature sensor will be used to control the heating.

b. Green Icon – External Probe Control – The External Probe will be used to control the heating.

(7) Temperature Row – Displays the temperatures for the steps of the program. Touching a box will bring up the Parameter Setup screen for the step selected.

(8) Time Row – Displays the times for the steps of the program. Touching a box will bring up the Parameter Setup screen for the step selected.

(9) Alarm Row – Displays if the alarm is active on the step. If the alarm is active the alarm will sound at the end of the step.

4.6 Program List Screen (Figure 7)

The program list screen is access from the main menu. This screen lets you view, edit, create, save and delete programs.

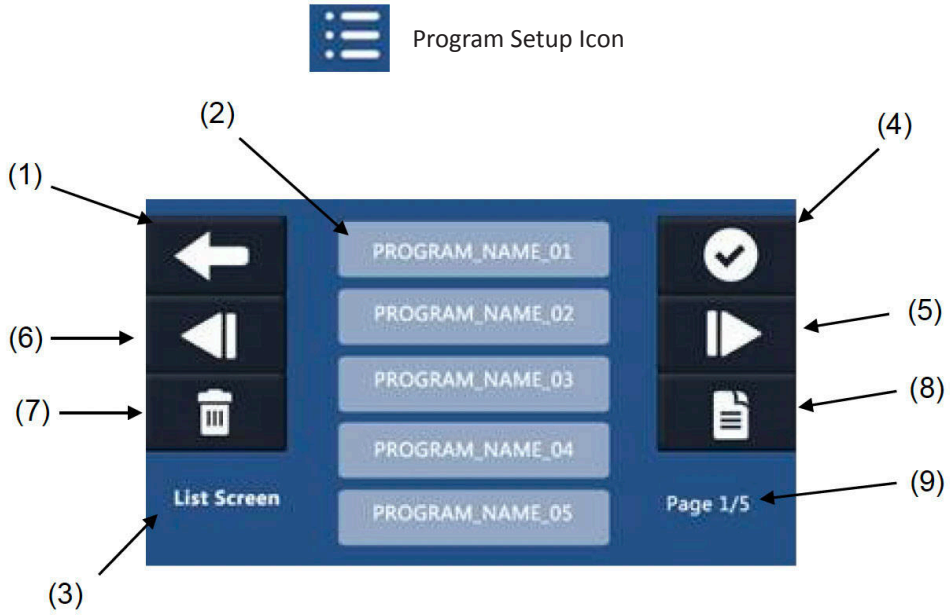


FIGURE 7

(1) Back Arrow – Returns to the previous screen without saving settings.

(2) List of Programs – Displays five programs per page. The system stores up to 25 programs.

(3) Screen Name – Name of screen for reference.

(4) Confirm Check – Saves the changes made to the parameters and returns to the previous screen.

(5) Page Forward – Skips to the next page of programs.

(6) Page Backward – Skips to the previous page of programs.

(7) Delete Program – Deletes an existing program. User will have to confirm this change.

(8) Program Setup – Displays temperature, mixing, and time settings in tabular format for all programmed steps.

(9) Page Number – Indicates what page of programs is being displayed.

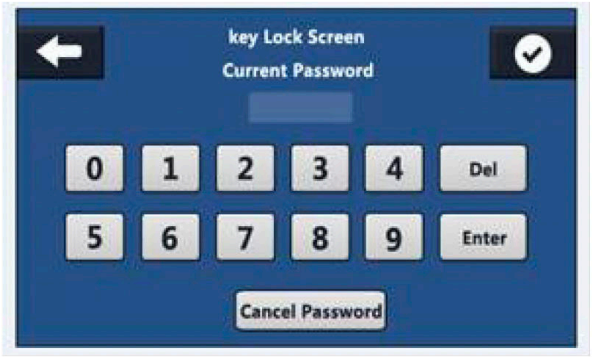
4.7 Options Screens

The options screen is accessed from the Home Screen only. This menu is for advanced system configuration.

Options Screen Icon

4.71 Parameter Lock

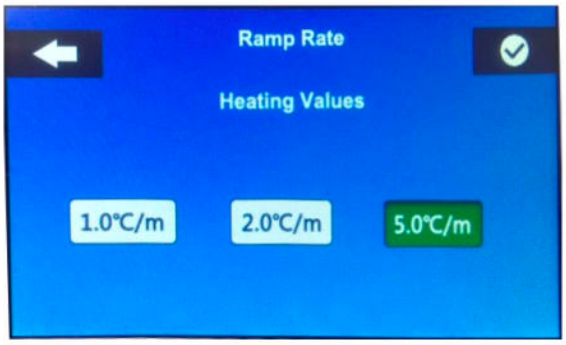
The parameter lock is used to protect unit settings. When a Parameter lock is initiated the user inputs a password and confirms the password. The user can select and run programs but no parameters can be changed until this password is entered again. The parameter lock is removed by resetting the unit in the Run Time & Factory Reset menu:



Parameter Lock

4.72 Heating Temperature Ramp Rate

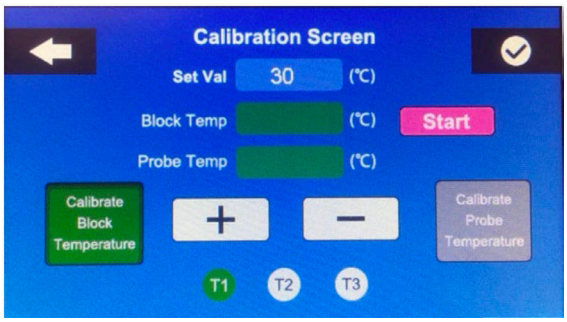
The default value is approximately 5˚C per minute. There are two other options; 2˚C per minute and 1˚C per minute.



Ramp Rate Screen

4.73 Temperature Calibration

It is recommended that the Block Temperature Sensor and the External Probe Sensor (optional) are calibrated once a year and this figure is based on usage. The temperature calibration is a three-point calibration. The user will use a calibrated sensor to input the actual temperature values. The unit uses 3 setpoints 30˚C, 60˚C, and 90˚C. Once the temperature has stabilized the user will enter the value that is displayed on their calibrated sensor. A temperature measuring device that is accurate within +/- 0.2° C is recommended. A green confirm button will appear to confirm the entry. The calibration cycle can take more than 30 minutes based on starting temperature and ambient temperature.



Temperature Calibration Screen

Calibration Instructions:

1) Depress the Calibrate button in the Settings Screen:

2) Place the calibration temperature measurement device (accuracy of +/- 0.2° C or better) in a center well of a block. The well needs to be filled with water or oil to ensure proper heat transfer.

3) Press the START button.

4) The unit will start to bring the temperature of the block to 30˚C. This may take up to 15 minutes and it is dependent on the ambient temperature. When the unit has stabilized at the setpoint the “Actual” box will change from “WAIT” to 30˚C. Use the + and - keys to adjust this temperature to match the reading of the calibration device. Touch “Confirm” when this is complete.

5) Repeat Step 4 for the remaining temperature setpoints.

6) After touching “Confirm” for the 90˚C calibration setpoint the unit is calibrated, and it will return to the “Home Screen”.

7) Repeat the process for the External Temperature Probe by returning to the calibration screen and pressing the “Calibrate Probe Button”.

4.74 Speaker Settings

To adjust the speaker settings touch the speaker icon. If the speaker is turned on the unit will beep three times when a program is complete and once when a step is complete.

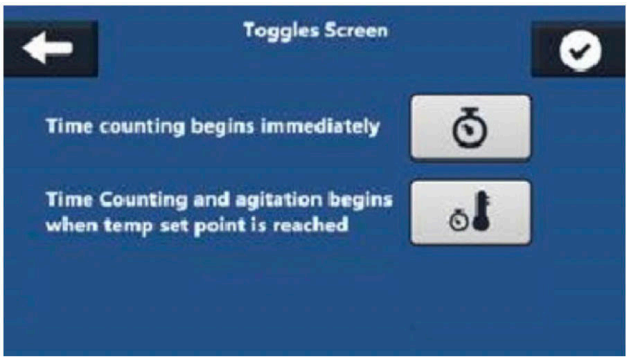
4.75 Timer Mode

The unit has three modes for timing, mixing and temperature control. These modes are:

a. Time counting begins immediately.

b. Time counting begins when the unit reaches the set temperature.

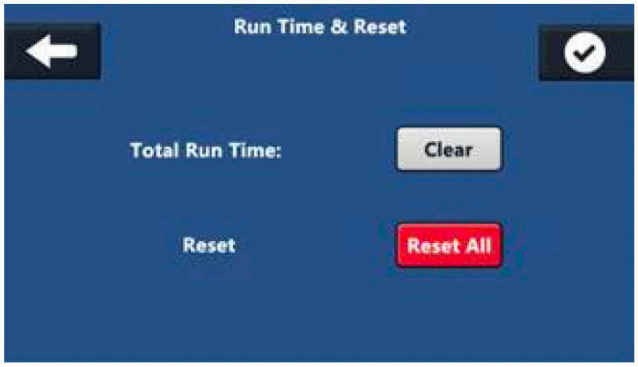
The user can select the proper mode in this menu to best suit their process.



Timer Mode Screen

4.76 Run Time & Factory Reset

The unit can be reset to its factory default settings. There is also an onboard timer to keep track of unit usage rate and service intervals.



Run Time & Factory Reset Screen

4.8 Optional Temperature Probe

The unit can be used with an optional external temperature probe. The optional external temperature probe connects to the plug on the back of the unit. The external temperature probe can measure temperature independently from the block temperature or it can control the block heating. To enable temperature control by the external probe, press the probe control button in the program screen, see section 4.5 item (6). To calibrate the external temperature probe, see section 4.73 Temperature Calibration.

4.8 Aluminum Heating Blocks

The unit can easily be fitted with many aluminum blocks that are configured to accommodate different consumables. Below is a list of aluminum heating blocks available from Boekel Scientific.

Part Number	Description
110006	Aluminum Heating Block 35 x 6mm tubes
110010	Aluminum Heating Block 20 x 10mm tubes
110013	Aluminum Heating Block 20 x 13mm tubes
110016	Aluminum Heating Block 12 x 16mm tubes
110020	Aluminum Heating Block 6 x 20mm tubes
110025	Aluminum Heating Block 6 x 25mm tubes
110035	Aluminum Heating Multi Block 3 x 25mm tubes 5 x 12mm tubes 6 x 6mm tubes
110040	Aluminum Heating Block 24 x 1.5ml tubes
110045	Aluminum Heating Block 24 x 0.5ml tubes
110048	Aluminum Heating Block 48 x 0.2ml tubes
110051	Aluminum Heating Block 1 x 96 well microplate
110096	Aluminum Heating Block 1 x 96 well 0.2ml plate, strips, tubes
110099	Aluminum Heating Block 24 x 1.5ml dolphin tubes

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5. Specifications

Electrical	115 / 230V UL, CE and CSA approved
Temperature Range	Ambient + 5°C to 120°C With overtemp protection
Temperature Stability	+/- 0.2°C from 37°C to 100°C
Temperature Accuracy	+/- 0.25°C at 37°C
Control	Touch Screen with Alarms, Timers, and Temperature Step Control
Programs	Store up to 25 separate programs with 5 steps per each program & repeat function.
Capacities	1 Block, 2 Block and 4 Block Models
Optional Accessories	External Temperature Probe Aluminum Heating Blocks
Timer	Settable Up to 99 Hours, 59 Seconds or ∞
Operating Temperature	10°C to 30°
Product Dimensions: W x D x H **1 Block** **2 Block** **4 Block**	 6” (153 mm) x 8.75” (223 mm) x 3.255” (83 mm) 6” (153mm) x 12” (305mm) x 3.25” (83mm) 6” (153 mm) x 18” (204mm) x 3.25” (83mm)
Product Weight / Shipping Weight **1 Block** **2 Block** **4 Block**	 3.25 lbs / 1.5 kg 4.9 lbs / 2.3 kg 8.1 lbs / 3.7 kg

6. Warranty and Service

6.1 Warranty

When used in laboratory conditions and according to these operating instructions Boekel warrants this product to be free of defective parts, materials and workmanship for a period of two years from the date of shipment. The liability of Boekel Scientific for any defective equipment during the warranty period shall be limited to the repair of defective equipment or replacement thereof without charge for parts or labor.

6.2 Service

A Boekel Scientific Returned Material Authorization (RMA) number provided by Boekel Scientific is required before any Boekel products are returned for any reason. Contact Boekel Customer Service at 1-800-336-6929 Extension 5. A Decontamination Certificate must be completed, signed by the user, and returned to Boekel Scientific prior to receiving the RMA number. Please be sure to mark the outside of the returned goods package with this RMA number to ensure prompt handling.