

Instruction Manual

Prime 25

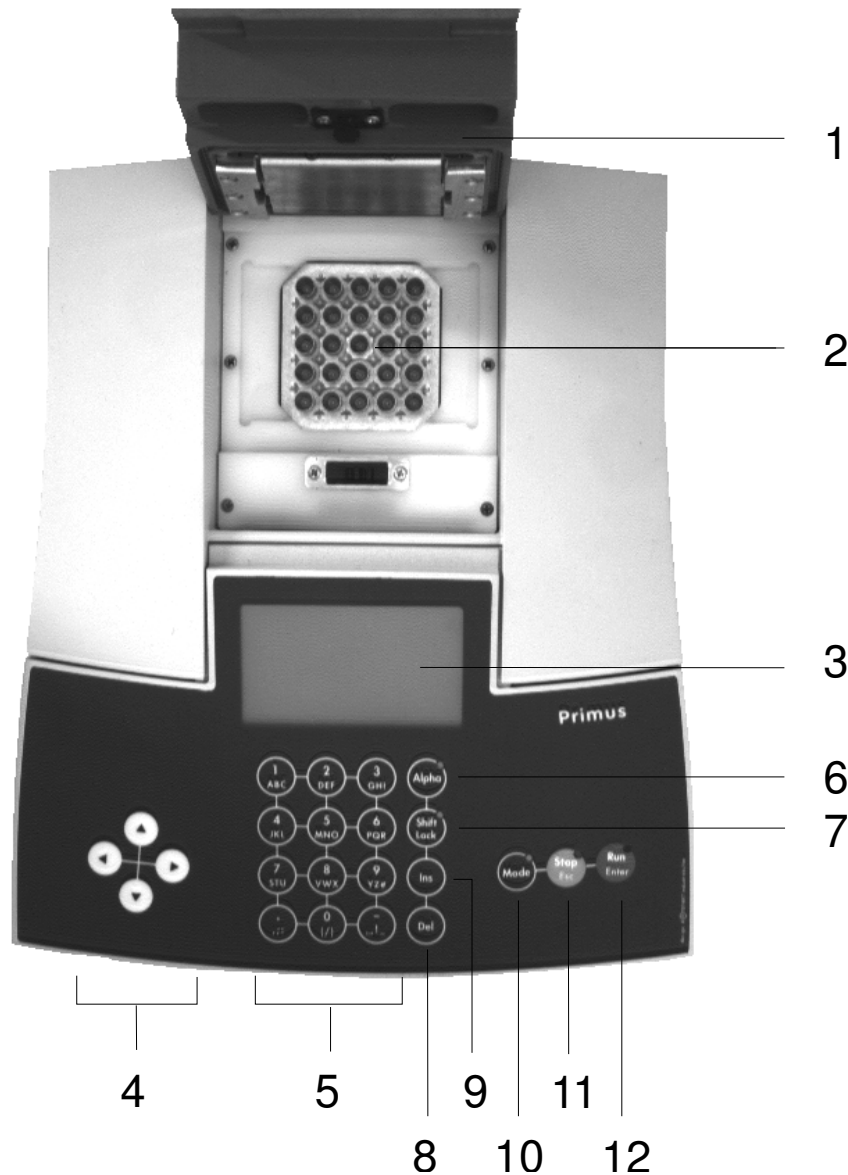
Innovative PCR Technology



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1. Operating elements of the Prime 25



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|----|-------------------------|---|
| 1 | Heated lid | With automatic height adjustment |
| 2 | Universal block | for 25 x 0.2 ml tubes or 13 x 0.5 ml tubes with flat caps |
| 3 | Display | Displays menus and programs |
| 4 | Cursor key pad | Moves the cursor on the display |
| 5 | Alphanumeric key pad | For entering parameters |
| 6 | Alpha key | Switches between numbers and letters |
| 7 | Shift lock key | Switches between lower and upper case |
| 8 | Delete key | Deletes parameters or functions |
| 9 | Insert key | Inserts parameters or functions |
| 10 | Mode key | Selects edit and display options |
| 11 | Stop / Esc key (red) | Exits a menu option to return to a higher menu level |
| 12 | Run / Enter key (green) | Selects menus and program options |

2. Installation of the Prime 25

Before using the Prime 25 for the first time, check the voltage range and be certain it corresponds to your power supply.

Place your Prime 25 in an adequate position in the lab. The unit should always be surrounded by at least 25 cm of free space to ensure proper cooling. Place several units beside each other, not behind each other.

Please avoid running the Primus cyclers without having tubes placed inside the block.

3. Main menu

The software for the Prime 25 is designed for simple and intuitive use. Generally, the arrow keys are used to move the cursor on the display screen. Text is entered using the alphanumeric key pad. The position of a letter on the key tells how many times the key must be pressed (in rapid sequence) to obtain that letter. Use the Run/Enter key to access the various function menus, and the Stop/Esc key to exit the function menus and return to the main menu.

When switching on the instrument, the screen first displays an initialisation routine, then the main menu appears from which all other functions of the Prime 25 are accessible.

3.1. RUN

To start the last run program select RUN. The program starts immediately.

Attention: The modifications in the program after the last run will be ignored. In this case, select the program with SELECT + RUN PROGRAM and press enter to start.

Programs can be interrupted at any time during a run with the Stop/Esc key. Follow the instructions on the display.

3.2. SELECT + RUN PROGRAM

To run a previously stored program select SELECT + RUN PROGRAM. A list of all stored programs (up to 90) is displayed. Select the desired program with the arrow keys, or enter the program number directly. Press enter to start. Before each run, a user name may be entered via the alphanumeric key pad. At this point you can decide whether a GLP report shall be printed via the parallel printer interface (GLP ONLINE PRINTS; GLP = Good Laboratory Practice). Switch between YES und NO with the (↑↓) cursor keys. A predicted program run time will be displayed before the start.

Programs can be interrupted at any time during a run with the Stop/Esc key. Follow the instructions on the display.

3.3. RUN INCUBATION

The Prime 25 may be used as incubator with the INCUBATION function. Choose the desired temperature (INCUB) and switch the lid heating on or off (LIDHT). The current temperature, the status of the lid heating and the total time are displayed. Use the Stop/Esc key to exit the INCUBATION function.

3.4. MODE/EDIT/UTILS

With this menu option you can edit and review all programming and operating functions.

3.4.1. PROGRAM

With the submenu PROGRAM programs may be created and changed..

3.4.2. VIEW

With the VIEW option, an overview of the stored programs may be viewed without risking an accidental alteration of the data. The GLP report of the last program run can be viewed on the display. Information about setup, system, and block are available here.

3.4.3. PRINT

With the PRINT menu programs, program lists, GLP reports and equipment information may be printed via the parallel printer interface.

3.4.4. SETUP

The basic setup of the Prime 25 is entered via SETUP. To enter the time and date use CLOCK. If several Primus thermal cyclers are connected via the lab bus (RS485), enter the machine's address here.

4. Programming

Thanks to the convenient user interface of the Prime 25, it is easy to create PCR programs of various degrees of complexity.

In the main menu, move the cursor to MODE/EDIT/ UTILS and press Enter twice, or go to the PROGRAM menu with the Mode key.

The following options are available:

NEW	To create a completely new program.
EDIT	To change an existing program.
COPY	To copy a previously stored program (e.g. to modify a program).
DELETE	To delete one or all programs.

4.1. Program steps

The following program steps are available for programming the Prime 25:

TEMP	a) Temperature b) Temperature change within a program loop. The sign states if the temperature is increased or decreased. c) Period of time for which the preset temperature is to be held. Using the „minus“ key "FOREVER" can be chosen d) Time change within a program loop. The sign indicates whether the time is increased or decreased.
RAMP	The ramp always starts at the temperature defined last and runs to the set temperature.
PAUSE	The process is paused for the stated time at the preset temperature. The pause may be interrupted at any time by pressing a key. The thermal cycler emits an audible signal when the pause is reached. After pressing the key Enter, the program continues with the next step.
LOOP[Start of a program loop which is closed by a subsequent Loop] step. Input the number of cycles. No "loop within a loop" (nested loops) are possible!
LOOP]	End of a program loop.
LIDHT	The heated lid may be switched on or off. The stated temperatures are kept constant within the program after the Lidheat step. Temperatures from 70 °C to 99 °C are valid.
STORE	Cooling to 8°C, the time is programmable.
LIDOP	The program is stopped and the user is asked to open the lid.
LIDCL	The program is stopped and the user is asked to close the lid.
END	The END step cannot be programmed or deleted, but is always found at the end of a program. When reaching this step, the instrument is actively run to ambient temperature and the operator is called to the instrument .

4.2. Sample program

Select MODE, then PROGRAM and create a new program with NEW. Enter a program name and confirm with Enter to access the programming functions.

01 LIDHT ON 99 °C Heated lid on, temperature 99 °C

Press Enter to insert a new program step. Move from each parameter to the next with the cursor keys (←→) or with Enter.

02 TEMP 94.0 °C +0.0 °C Denaturation at 94 °C
0:02:00 +0:00 For 2 minutes

Enter another program step with Enter. Choose one of the steps listed above by using the (↑↓) cursor keys, e.g., LOOP[.

03 LOOP[30x Open a program loop - 30 cycles

Continue by entering a temperature profile.

04 TEMP 94.0 °C +0.0 °C Denaturation at 94°C
0:00:30 +0:00 For 30 seconds
(Press 0 to enter the time in seconds)

05 TEMP 50.0 °C -0.5 °C Annealing at 50°C with stepwise
0:00:30 +0:00 temperature decrement by 0.5 °C (Touchdown)

06 TEMP 72.0 °C +0.0 °C Elongation with stepwise time increment
0:00:30 +0:05 by 5 seconds

End the cycling step with LOOP] and with the next step switch the heated lid off.

07 LOOP] End the program loop
08 LIDHT OFF Lid heat off

Ramps may be inserted into any program. The ramp starts from the last programmed temperature (here 72 °C) and decreases temperature to the set temperature (here 8 °C) at a constant rate.

09 RAMP 4.0 °C Target temperature 8 °C with
1.0 °C/s a speed of 1 °C per second

10 STORE 8.0°C +0.0°C Final temperature 8 °C
Forever +0.00 (Minus key!)

11 End End of program

With the cursor keys (↑↓) the HEADER of the program is accessible. Here, a comment (CMNT), author (AUTH), and user (USER) may be input. Also , a denaturation step in case of power failure (PWRFAILDENAT) may be programmed.

Exit the program editor with Stop/Esc. Edited or newly created PCR programs are tested in a simulation run before being saved and before running. You can only exit the editing mode if the program makes sense. If not, the editor will indicate possible error sources. A calculated program run time can be displayed (CALCTIM), and you can save your newly created PCR program with Enter.

5. Reaction vessels

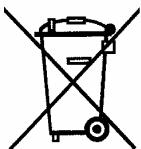
As reaction vessels you can use 0.2 ml tubes or 0,5 ml tubes with flat caps. For optimum results, only use thin-walled tubes with a slim cone.

Item	Description	Cat. No.
PCR Tubes 0.2 ml	natural, 1 bag à 1000	
(domed cap)	natural, 5 bags à 1000	
PCR Tubes 0.2 ml	natural, 1 bag à 1000	
(flat cap)	natural, 5 bags à 1000	
PCR Tubes 0.5 ml	natural, 1 bag à 1000	
(flat cap)	natural, 5 bags à 1000	

6. Disposal

In the territory of the EU electrical- and electronical devices, being labeled with a crossed dustbin, must not be disposed using the unsorted domestic waste.

Please contact PEQLAB or your local distributor in case a Primus advanced® thermal cycler should get disposed.



7. Technical specifications

Temperature

Temperature range of block	4.0°C to +105.0°C
Control accuracy of block	+/- 0.1 °C
Block Uniformity (at 72°C)	+/- 0.7°C
Cooling rate of block	2°C/sec
Heating rate of block	2°C/sec
Temperature range of heated lid	70°C to 99°C
Minimal setting steps heated lid	1 °C

Block

Capacity	25 x 0.2 ml tubes or 13 x 0.5 ml tubes with flat caps
Heated lid	Automatic height adjustment for various tube heights

Software

Memory	90 Programs with a maximum of 99 Steps/Program
Programming steps	Temp, Ramp, Pause, Loop[, Loop], LidHt, LidOp, LidCl, Store
Time (h:min:sec)	0:00:01 to 9:59:59, infinite ('forever')
Time increment/decrement (min:sec)	0:01 to 9:59
Temperature increment / decrement	0.1 °C to 9.9 °C
GLP report	
Instant incubation	
Autocalibration	
Comment, author, user for each program	
Remote control for use with PC	
Power failure recognition and auto restart	
Internal real time clock	
Service control system	

Interfaces

RS232 Interface (9600 Baud)
Parallel printer interface

General

Power consumption	120 VA
Power supply	230 V/115 V AC, 50/60 Hz
Dimensions (W x H x D)	225 x 250 x 280 mm
Weight including block	approx. 6.3 kg