



## Thermo Shaker and BlockThermostats with Smart Control

**MKR 13 – MKR 23 – MHR 13 –  
MHR 23 – MHL 23 – TK 23**

Operating Manual

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## Basic Data

### Safety and Electromagnetic Compatibility (EMC)

The systems comply with the standards and directives mentioned in the applicable CE declaration.



#### **Please take note of the following safety measures:**

- » Do only connect the system to an earthed mains power socket of 230 V, 50 Hz.
- » Do not place hot blocks on inflammable or not heat-resistant surfaces.
- » Make sure to only use containers in the block which are suitable for the desired temperature range.
- » If liquid gets into the system, immediately pull out the plug and contact our service department to ensure complete safety.
- » Please do not touch or transport hot systems.
- » Contact with highly flammable fluids must be avoided.
- » The ventilation of the device must not be blocked. To ensure the proper ventilation at all times please consider a minimum distance of 10 centimeter on each side of the device.
- » Damaged mains cable should only be replaced with equal ones.

### Warranty

All functions of the systems have been tested thoroughly. After that, the system and the accessories were packed carefully in perfect condition.

If, however, any damages or defects are detected during installation or setup, please inform DITABIS immediately (see our Terms and Conditions at [www.ditabis.de](http://www.ditabis.de)).

If used under normal laboratory conditions according to the Operating Manual, DITABIS grants a warranty of 1 year for the material and workmanship, starting with the day of shipment.

### Disclaimer of warranty

In case of unspecified use of the device, the manufacturer assumes no responsibility.

## Important Information

This manual complies with the standards and directives mentioned in the EN DIN 61010-1 Norm. IQ, OQ and PQ documents are available on request.



The systems are provided with a high-precision self-optimising temperature controller. Due to the self-optimisation it might occur that the set temperature is exceeded in individual cases.



Please note, that by heating your samples dangerous gases may be emitted. In this case, the device must be used with an extractor hood.



If the ThermoMixers are operated with a high shaking frequency, the vibrations of the system might transmit to the underground. Please do consider this when placing the system.

Contact with highly flammable liquids must be avoided. The exchangeable block may be hot.

The ventilation of the device must not be blocked. To ensure the proper ventilation at all times please consider a minimum distance of 10 centimeter on each side of the device.

## Environmental conditions

The ideal area of operation of the devices is achieved at 80% relative air humidity at most and lays between +3°C - +50°C ambient air temperature. This values should not be under run or exceeded.

## Temperature accuracy

Every HLC by DITABIS system is calibrated with a gauged high-precision temperature measuring device to temperature accuracy and reproducibility. This process is performed at a room temperature of +20°C and a block temperature of +37°C. The absolute calibration of the heating unit can also be performed for a certain temperature range if the customers desires. HLC by DITABIS reaches a very high accuracy by measuring the block temperature directly inside the block. It can, however, not be avoided that the cold room temperature affects the sample temperature in case of high a large temperature difference between room and block temperature. The anti-condensation plate reduces this effect. We recommend using the anti-condensate plate BA 24 / BA 96 or the tempering tub BT 01 / BT 02, if high temperature accuracy in the sample is required.

When setting a process time, please note that the sample temperature is always reached a little later than the displayed block temperature.

## First Steps

### Setup

Plug the mains cable in the IEC socket on the back of the system and connect it with the mains power 230 V, 50 Hz via a Schuko socket.

### Changeable blocks

At delivery, the changeable blocks are packed separately. Place the blocks on the tempering plates and take care of the proper alignment of the central threaded bolt and the two small corner bolts ensuring that the block lays accurately on the tempering plate. Then attach the block with the short socket screw tightly at the bottom of the tempering plate to get the block fixed for shaking and to obtain even better temperature accuracy.

Check the tight attachment of the block by pulling it up. If it loosens, please use the longer screw.



Never start the process without the block being tightly attached. Do always use two blocks for two-block systems, even if only one of them is used. This ensures safety as well as a smooth shaking operation.

Switch on the system with the mains switch on the back of the system. The start menu will be displayed. The green LED turns on as soon as a process is running.

## Operation

### Parameter Setting

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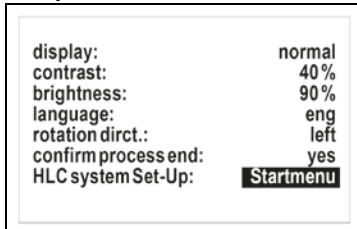
#### Start menu



This menu is displayed after the power-on, after abortion of after the normal completion of a process.

The last set values are retained even after the switch-off of the system.

#### Setup menu



Push the **up arrow key for 5 seconds**, then the setup menu is displayed. With **+** and **-** the values can be selected for setting. The selected box flashes, with **ok** it will be permanently set for changing. With the keys **+** and **-**, the input or the values can be changed.

If an input is confirmed with **ok**, the box is highlighted flashing again.

With confirming the button **Start menu**, the start menu is displayed again.

The following values can be adapted:

display (-colour)

contrast

brightness

language

rotation direction

confirm process end:

Yes: at the process end, a signal is audible

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until the **ok** key is pushed. Until then, the process runs with the previous data.  
No: the process ends without confirmation.

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### Temperature set value



Navigate with **+** and **-** to the temperature input box and confirm with **ok**. The individual numbers can be selected with **arrow left** and **right**, their value can be changed with **+** and **-**.

The input is confirmed with **ok** and the cursor automatically jumps to the **Start** button.

### Important information

For cooling systems, the minimum temperature may not be smaller than the difference from room temperature mentioned below.  
MKR 13/ TK 23: 16°C below r.t.  
MKR 23: 11°C below r.t.

A set value change can also be made in the same way during a running process. After confirming the input with **ok**, the new set value is effective immediately. For the hundreds, the following values can be selected:

- 0 for temperatures up to +99,9°C
- 1 for temperatures from +100,0°C
- for temperatures below 0,0°C

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### Mix set value



Navigate with **+** and **-** to the shaking frequency input box and confirm with **ok**. The individual numbers can be selected with **arrow left** and **right**, its value can be changed with **+** and **-**.

The input is confirmed with **ok** and the cursor automatically jumps to the button **Start**. The last number (1. digit) can not be selected and changed.

A set value change can also be made in the same way during a running process. After confirming the input with **ok**, the new set value is effective immediately.

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### Duration of the process (time)

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### setting)



Navigate with **+** and **-** to the time input box and confirm with **ok**. The individual numbers can be selected with **arrow left** and **right**, its value can be changed with **+** and **-**. The input is confirmed with **ok** and the cursor automatically jumps to the button **Start**.

For an endless process, select **00:00**.

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### 100% Short-Mix (vortexing)



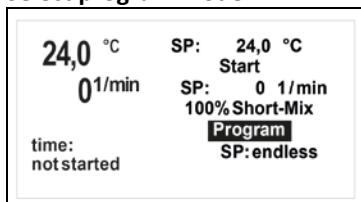
Navigate with **+** and **-** to the button **100% Short-Mix** and confirm with **ok**.

The system shakes with maximum mixing speed regardless of a process is started or not.

During the whole shaking process **ok** must be pushed continuously. The vortexing function cannot be used longer than **8 seconds**.

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### Select program mode



Navigate with **+** and **-** to the button **Programs** and confirm with **ok**.

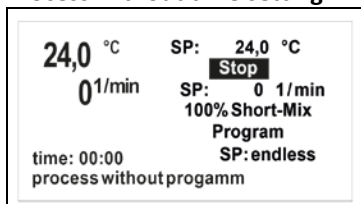
For detailed information on programming see page 10.

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### Process without time setting



Only set a set temperature and a set shaking frequency but set the time on continuous **00:00**. Now, the process time is displayed continuously.

It only starts to run if the temperature set value is reached.

A set value change can also be made as described above during a running process. Changes are retained also after the completion of the process and are displayed in the start menu as current set values.

For terminating the process, push **Stop**.

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### Process with time setting



If a process time is set, the remaining time is displayed in the menu. The time only starts to run if the temperature set value is reached. This does also apply for subsequent temperature changes. A set value change can also be made as described above during a running process.

The process ends with or without a signal, depending on the settings in the setup menu.

#### For changes during the process

If set value changes have been made, you can select to save these changes and to have them displayed in the start menu as new set values.

#### Stopping the process before the expiration of the time

If the process is stopped before the expiration of the time, you can select whether the process really should be terminated or it should continue. Depending on the selection,

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the start menu or the selection to continue the process from the stop (time runs from stop) or to make a restart (time runs from zero) is displayed.

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### Process end

Setting in setup:

#### **Confirm end: Yes**

If a process time is preset, the expiration of the time is indicated by a flashing LED and a signal, the process continues. You can terminate the process with **ok**.

#### **Confirm end: No**

If a process time is preset, only the information that the process is completed is displayed after the expiration of the time. The device turns off automatically.

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## Working with the Programming Function

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### Program menu

1 2 3 4 5 6 7 8 9 .....	Startmenu
free: 12/30...	Delete..... Start
temp (°C): 42,0	prog-no: 1
rising time: 6	cycles: 1
speed: 1100	step: 4
pause (min): 0,5	hours: 01
mix (s): 1	minutes: 25

Navigate with **+** and **-** to the button **Programs** and confirm with **ok**.

A total of 30 different program steps can be preset, distributed on max. 9 different programs.

Confirm the highlighted flashing program number if you want to change it. With **+** and **-**, the program numbers 1-9 can be selected. Confirm the progr. no. with **ok**. If you want to edit the displayed program, select the different adjustable parameters with **+** and **-**. For editing, confirm with **ok** and change the value. For final confirmation confirm with **ok** again.

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### Setting of the individual paramatera:

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For editing, navigate to the relevant button with **+** and **-** and confirm with **ok**. Set the desired value with **+** and **-**, navigate to the different numbers with arrow left and right and confirm with **ok** again.

**Cycles** = Number of repetitions of the program, selection 1-9 possible.

**Step** = Section within a program. Selection 1-9 possible.

**Hours** = Duration of the section in hours

**Minutes** = Duration of the section in minutes

**Temperature** = Set temperature of the section

**Rising time** = Time setting for tempering the sample to set temperature. This setting is only required if the sample is to be tempered slower than technically possible.

If the sample is to be tempered as fast as possible, set the value to 0.

**Rotational speed** = Shaking frequency with which the blocks are shaken. The last number (1. digit) can not be selected and changed.

*To temper the sample with changing mixing and resting phases (**interval shaking**), intervals can be set. Resting and shaking phases alternate until the expiration of the time, in parallel with the tempering process. Set the intervals with **Pause [min]** and **Mix [s]**:*

**Pause [min]** = Resting time of up to 9.9 minutes. If no intervals are to be set, enter the value 0.0 here.

**Mix [s]** = Short shaking time up to 9 seconds after resting time

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## Starting a program

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1 2 3 4 5 6 7 8 9	Startmenu
free: 12/30	Delete <b>Start</b>
temp (°C): 42,0	prog-no: 1
rising time: 6	cycles: 1
speed: 1100	step: 4
pause (min): 0,5	hours: 01
mix (s) 1	minutes: 25

Select the relevant prog. no. and confirm the **Start** button in the program menu.

### Changing parameters during the program process

42,0 °C	SP: 42,0 °C
1100 1/min	<b>Stop</b>
	SP: 1100 1/min
	100% Short-Mix
time: 01:30	SP: 02:00
process running	P1-Z1-S1

Change of temperature and rotational speed as well as performing a Short-Mix are possible during a running program.

The set time is the time of the running step, the remaining time is the time of the complete process.

In the lower right part of the display, program no., cycle and step are indicated.

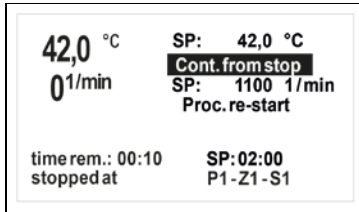
### Termination/ interruption of the program:

42,0 °C	SP: 42,0 °C
1100 1/min	<b>stop process</b>
	SP: 1100 1/min
	cont. proc.
time: 01:30	SP: 02:00
process running	P1-Z1-S1

If you push **Stop**, the options **stop process** and **continue process** are displayed.

42,0 °C	SP: 42,0 °C
1100 1/min	<b>Startmenu</b>
	SP: 1100 1/min
stopped and finished	

If you select **stop process**, the **Start menu** or **Save changes** is displayed if parameters have been changed during the process.



If you select **Continue with prog**, the selection **Continue from stop** or **Prog Restart** is displayed (program starts from cycle 1, step 1).

## Assembly of Accessories

### Anti-Condensation Plate BA 24 / 96 (800012900 / 800013000)

The anti-condensation plate BA 96 (800013000) is placed on the attached block, no assembly steps are required.

For using the anti-condensation plate BA 24 (800012900), remove the socket screw in the block with the enclosed screwdriver. Screw the enclosed threaded pin with isolation knob into the anti-condensation plate. Place the anti-condensation plate on the block and screw the threaded pin in deeper so that it takes hold of the bolt of the system and with that tightly attaches block and anti-condensation to the system.

### Data Transfer

A USB 1.1. interface for the communication with a PC is provided as a standard. Connect the system via the USB-port on the left side with a USB-cable to your PC. If this is not available at your computer, install the suitable USB-driver. You will find it under [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm). These USB-drivers generate a new virtual COM-interface in your PC. The chip in the Smart Control is called FT232B.

### Access process data via USB

Start a terminal program (e.g. Hyper terminal) on your PC.

This program you will find under Windows in "Programs" / "Accessories" / "Communication". The window "Hyper Terminal" is opened. Proceed systematically, please note that for the connection setting for "Bits per second" 115200 is selected.

Select at "Transfer": "Record Text", enter the location and define the file name as .txt Start the Hyper Terminal and the process. Every minute, the following data are recorded in text format and separated by comma:

Time from start (hh:mm)	Time from new program step (step time)
Temperature in °C (tmp)	
Rotational speed in 1/min (rpm)	Rise time (rem. risetime_m)
Program no. (prg)	Interval mix ( mix_s)
Cycle (cycle)	Interval pause (pause_m)
Program step (step)	

If you open the text file you selected for saving, you can see the complete process in the form shown on the right.

Since the data are separated by commas, you can easily create an Excel file and generate one or more curves from that.

```

xx:xx,+37.0,0200,01,01,01,00:01,00,9,0.2
time hh:mm,tmp,rpm,prg,cycle,step,steptime
hh:mm,rem. risetime_m,mix_s,pause_m
00:00,+26.9,0000,01,01,01,00:00,00,9,0.2
00:01,+33.7,0220,01,01,01,00:00,00,9,0.2
00:02,+36.7,0000,01,01,01,00:00,00,9,0.2
00:03,+36.9,0000,01,01,01,00:00,00,9,0.2
START
Setpoints
xx:xx,+70.0,0300,01,01,02,00:12,10,9,0.1
time hh:mm,tmp,rpm,prg,cycle,step,steptime
hh:mm,rem. risetime_m,mix_s,pause_m
00:04,+36.9,0000,01,01,02,00:00,10,9,0.1
00:05,+39.1,0000,01,01,02,00:01,09,9,0.1
00:06,+42.1,0000,01,01,02,00:02,08,9,0.1
00:07,+45.2,0300,01,01,02,00:03,07,9,0.1
00:08,+48.4,0300,01,01,02,00:04,06,9,0.1
00:09,+51.7,0000,01,01,02,00:05,05,9,0.1
00:10,+54.9,0000,01,01,02,00:06,04,9,0.1
00:11,+58.2,0300,01,01,02,00:07,03,9,0.1
00:12,+61.5,0300,01,01,02,00:08,02,9,0.1
00:13,+64.7,0000,01,01,02,00:09,01,9,0.1
START
Setpoints
STOP

```

### Enter process data via USB

For the process control of a HLC system with Smart Control via a USB-interface, four commands are possible and required:

#### Start

Starts a process without program with the parameters indicated on the display.

Time settings, if applicable, are deleted and overwritten by continuous since time settings must be programmed on the computer.

### **Stop**

Stops all processes and returns to the start menu, running programs / processes are aborted.

### **t=0370**

Changes the set temperature to a new value.

The temperature must always be entered with four digits.

t=0370 sets 37.0°C, t=0050 sets 5.0°C, t=-060 sets -6.0°C.

t= is the identification for a temperature value. The associated numerical value reflects the value in tenth of a degree.

The first digit after the = can be a 0, a 1 or a hyphen. Invalid temperature values are - like for the input at the system - replaced by the next valid value.

### **r=020**

Changes the set rotational speed to a new value.

The rotational speed must always be entered with three digits.

r=120 sets 1,200 1/min, r=045 sets 450 1/min.

r= is the identification for a rotational speed value. The associated numerical value reflects the value in 10 1/min.

Invalid rotational speed values are - like for the input at the system - replaced by the next valid value.

### **r=000**

Stops the rotational speed, e.g. if shaking should be stopped but tempering be continued.

Other inputs like e.g. r=0 are interpreted as rotational speed and cause the motor to rotate with the minimum rotational speed.

### **Every command must be confirmed with "CR"**

In case of unknown commands and/or in case of spelling errors, nothing is done.

The inputs in the setup menu like colour, contrast and brightness of the display, language, rotation direction etc. can only be done at the operating panel of the system itself.

## Troubleshooting

### **The display remains blank**

Please check if the mains switch on the back side is switched on.

If it is switched on but voltage is present at the socket, check the micro-fuse and replace if required. (IEC 127-2/III, 250 V, 2 A time-lag).

This fuse - and a spare fuse - are located in the IEC-bushing (in which the connection cable is plugged). The fuse box can be pulled out with a screwdriver.

### **The system does not cool, heat or shake as set**

Check whether the display indicates the correct system type name at power-on. If not, please contact the HLC by DITABIS service department.

### **There are excessive temperature fluctuations**

Check the seat of the changeable block by pulling it up. If it is too loose or if the block exhibits roughness, e.g. contamination, the heat/ coolness is not transferred correctly.

### **Information on the capacitive touch display**

The touch display reacts on finger pressure, even when wearing thin latex gloves, but not on stylos.

Due to its glass surface, the front panel is insensitive to dirt, chemicals and mechanical damage. Please avoid scratches in the coating since they can cause malfunctions. Please take note of the following cleaning instructions.



## Maintenance

### Cleaning

Regularly clean the housing and the changeable blocks of the ThermoMixers and BlockThermostates.



#### Precautions for avoiding electric shock

Electronic devices can cause electric shocks in case of an operating error. Never try to repair electric parts. Never open the housing.

- Switch off the system and disconnect it from the power supply before starting with cleaning or disinfection works.
- Never let get liquids inside the housing (ventilations slit).
- Do not perform spray disinfection.
- Do only connect the system with the power supply if it is completely dry.

The repair service may only be performed by staff authorized and trained by the manufacturer. A modification of the system is not permitted.



#### Caution when handling aggressive chemicals

Do not use aggressive chemicals like e.g. strong and weak bases, strong acids, formaldehyde, acetone, halogenated hydrocarbons or phenol for cleaning the system and its accessories.

- In case of contamination with aggressive chemicals, clean the system with a neutral detergent immediately.
- Use neither corrosive detergents nor aggressive solvents or abrasive polishing agents.

## **Cleaning**

1. Disconnect the system from the power supply before you start cleaning.
2. Clean all outer parts of the system with a mild detergent and a lint-free cloth.
3. Wipe off the detergent with Aqua dest..
4. Dry all cleaned parts.

## **Disinfection**

1. Disconnect the system from the power supply before you start disinfecting.
2. Let the system cool down.
3. Clean the system as described above.
4. Select a disinfection method compliant to the applicable local legal regulations and directives.
5. Wipe off all outer parts of the system with the disinfectant and a lint-free cloth.

## **In Case of Service**

If a technical problem arises, please contact your local dealer or the DITABIS service department. The DITABIS contact information can be found at [www.ditabis.de](http://www.ditabis.de). If required, the system will be returned for repair – please take note of our service guidelines, which can be found at [www.ditabis.de](http://www.ditabis.de) as well.

## **Decontamination before shipment**

If you send the system to the authorised technical service for repair or to your distributor for disposal, decontaminate all parts you want to send. Document the decontamination in a Decontamination Certificate (incl. serial number) and include it with the shipment.

## Technical Data

Technical Data	MKR 13
Temperature-working range	Room temp. -18°C to +100°C
Temperature-adjustable range	-18°C to +105°C
Accuracy / resolution	+/- 0.1°C / 0.1°C
Average heating time C	25°C – 90°C: 5°C / min
Average cooling time	90°C – 25°C: 6,4°C / min 25°C – 10°C: 1,5°C / min
Shaking frequency	200 – 1,500 rpm
Orbit	3 mm round
Dimensions (W x D x H)	220 x 330 x 125 mm
Capacity	1 changeable block
Weight	9 kg
Electr. heating/cooling power	130 W
Electr. supply	230 V, 50 Hz

Technical Data	MKR 23
Temperature-working range	Room temp. -11°C to +70°C
Temperature-adjustable range	0°C to +80°C
Accuracy / resolution	+/- 0.3°C / 0.1°C
Medium heating time up to +40°C	app. 5°C / min
from 41°C	app. 4°C / min
Medium cooling time up to +20°C	app. 5°C / min
below 21°C	app. 2°C / min
Shaking frequency	100 – 1,200 rpm
Orbit	3 mm round
Dimensions (W x D x H)	220 x 330 x 125 mm
Capacity	2 changeable blocks
Weight	9 kg
Electr. heating/cooling power	200 W
Electr. supply	230 V, 50 Hz

Technical Data	MHR 13
Temperature-working range	Room temp. +3°C to +130°C
Temperature-adjustable range	0°C to +135°C
Accuracy / resolution	+/- 0.1°C / 0.1°C
Average heating time up to +40°C	25°C – 90°C: 13°C / min
Shaking frequency	100 – 1,500 rpm
Orbit	3 mm round
Dimensions (W x D x H)	220 x 330 x 93 mm
Capacity	1 changeable block
Weight	7 kg
Electr. heating/cooling power	200 W
Electr. supply	230 V, 50 Hz

Technical Data	MHR 23
Temperature-working range	Room temp. +3°C to +130°C
Temperature-adjustable range	0°C to +135°C
Accuracy / resolution	+/- 0.1°C / 0.1°C
Medium heating time up to +40°C	app. 5°C / min
from 41°C	app. 4°C / min
Shaking frequency	100 – 1,500 rpm
Orbit	3 mm round
Dimensions (W x D x H)	220 x 330 x 93 mm
Capacity	2 changeable blocks
Weight	7 kg
Electr. heating/cooling power	350 W
Electr. supply	230 V, 50 Hz

Technical Data	MHL 23
Temperature-working range	Room temp. +3°C to +130°C
Temperature-adjustable range	0°C to +135°C
Accuracy / resolution	+/- 0.1°C / 0.1°C
Medium heating time up to +40°C	app. 5°C / min
from 41°C	app. 4°C / min
Shaking frequency	100 – 1,300 rpm
Orbit	3 mm round
Dimensions (W x D x H)	220 x 330 x 93 mm
Capacity	2 changeable blocks
Weight	7 kg
Electr. heating/cooling power	350 W
Electr. supply	230 V, 50 Hz

Technical Data	TK 23
Temperature-working range	Room temp. -16°C to +90°C
Temperature-adjustable range	-10°C to +95°C
Accuracy / resolution	+/- 0.1°C / 0.1°C
Medium heating time up to +40°C	app. 5°C / min
from 41°C	app. 4°C / min
Medium cooling time up to +20°C	app. 5°C / min
below 21°C	app. 2°C / min
Dimensions (W x D x H)	220 x 330 x 125 mm
Capacity	2 changeable blocks
Weight	7 kg
Electr. heating power	130 W
Electr. supply	230 V, 50 Hz

## Changeable Blocks & Accessories

### Changeable blocks






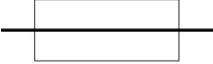
	Art. No.	Dimensions of the Containers
For micro test tubes	800010800	BM 02 for 96 x 0.2 ml conical & 8-container stripes
	800010900	BM 05 for 38 x 0.5 ml conical
	800011000	BM 15 for 24 x 1.5 ml conical
	800011100	BM 20 for 24 x 2.0 ml cylindrical
For sample tubes	800011500	BP 10 for 24 x D=10.3 mm, 46 mm deep, round bottom, lid
	800011600	BP 12 for 24 x D=12 mm, 20 mm deep, flat bottom
	800011700	BP 15 for 24 x D=15 mm, 30 mm deep, flat bottom
	800011800	BP 16 for 24 x D=16.5 mm, 46 mm deep, round bottom, lid
	800014200	BP 17.0 for 24 x D=17 mm, 30 mm deep, flat bottom
	800016100	BP 19.2 for 24 x D=18.7 mm, 25 mm deep, flat bottom
	800015200	BP 23.0 for 12 x D=22.5 mm, 56 mm deep, flat bottom
	800016000	BP 25.5 for 12 x D=23.0 mm, 56 mm deep, flat bottom
800011900	BP 28 for 8 x D=28 mm, 40 mm deep, flat bottom	
For centrifuge tubes	800012200	BZ 15 "Falcon" tubes 14 x 15 ml, with isolation lid
	800012300	BZ 50 for "Falcon" tubes 6 x 50 ml, with isolation lid
For PCR plates	800010400	BC 96 for 96-well "V"-bottom
	800010300	BC 84 for 384-well
For micro plates	800012000	BV 96 for 96 x round or "V"-bottom
	800010600	BF 96 for flat bottom
For deep-well plates	800010500	BD 96 for 96-deep-well-plates
For other applications	800011200	BN 10 for 36 rectangular cuvettes, outer diameter 12.5 mm
	800012100	BW 01 as tub for deep-well, stacked microtiter plates and other containers, incl. isolation lid and unloading device
	800014100	SO 10.4 for 24 x D=10,4 mm, 180 mm deep
	800012600	SO 12.0 for 24 x 12ml test tubes
	800012700	SO 20.5 for 12 x 20ml test tubes
For customized containers	800010700	BM 00 without drilling, height 25 mm
	800011300	BO 37 without drillings, height 37 mm
	800011400	BO 50 without drillings, height 50 mm

For Slides      800012400      BY 12 for 12 slides for hybridisation

## Accessories

Art. No.	Description
800012800	BI 01 Isolation lid
800013800	BT 01 Tempering tub for 1 block, transparent
800013900	BT 02 Tempering tub for 2 blocks, transparent
800012900	BA 24 Anti-condensation plate for 1 block (micro test tubes)
800013000	BA 96 Anti-condensation-plate for 1 block (PCR/ test plates)
800013100	BR 05 Rack with holder f. tubes 0.5 ml
800014300	BR 15 Rack with holder f. tubes 1.5/ 2,0ml

## Explanations

	Caution! Risk of electric shock!
	Caution!
	Caution! Hot surface!
	Important information
	Earth conductor
	Fuse





