

HettCube 200 / 200 R
HettCube 400 / 400 R
HettCube 600 / 600 R



EN Operating Instructions

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AB66000EN / Rev. 02 / 10.16

EC Declaration of conformity

of the manufacturer

Andreas Hettich GmbH & Co. KG • Föhrenstraße 12 • D-78532 Tuttlingen • Germany

We hereby declare under our sole responsibility that the designated device and its accessories, which are listed in the technical documentation for this device and whose conformity has been assessed together with the device, conform to the Directive 98/79/EC on in vitro diagnostic medical devices.

Type of device:

Incubator / cooled incubator

Type designation:

HettCube 200 / 200 R, HettCube 400 / 400 R, HettCube 600 / 600 R

The conformity evaluation process was performed in accordance with appendix III of Directive 98/79/EC.

The following additional European directives and ordinances have been applied:

- EMC directive 2014/30/EU
- Low voltage directive 2014/35EU
- RoHS II Directive 2011/65/EU (without involvement of a notified body)
- Ordinance (EC) No. 1907/2006 (REACH) (without involvement of a notified body)

Applied standards:

According to the list of applied standards, which is part of the product file.

Tuttlingen, 2016-07-20



Klaus-Günter Eberle
Manager



Hettich
LAB TECHNOLOGY

Standards and regulations which apply to this device

The device is a high-end technical product. It is subject to extensive testing and certification procedures according to the following standards and regulations in their respectively valid version:

Electrical and mechanical safety for design and final testing:

Standard series: IEC 61010 (conform to standards of DIN EN 61010)

- IEC 61010-1 "Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements" (Pollution Degree 2, Installation Category II)
- IEC 61010-2-010 "Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials"
- IEC 61010-2-101 "Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment"

Electromagnetic Compatibility:

- EN 61326-1 "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements"

Risk management:

- DIN EN ISO 14971 "Application of risk management to medical devices"

Restriction of Hazardous Substances (RoHS II):

- EN 50581 "Technical documentation for assessing electric and electronic devices with regard to the restriction of hazardous substances"

European directives applied for conformity assessment procedures:

- In vitro diagnostic device directive 98/79/EG
EC conformity assessment procedure according to annex III "EC DECLARATION OF CONFORMITY" – self-declaration by the manufacturer
- Directive 2011/65/EU for the restriction of use of certain hazardous substances in electric and electronic devices. Carrying out the EC conformity assessment process is the sole responsibility of the manufacturer, without the involvement of a notified body.

Applied medical device regulations outside Europe:

- **USA:** QSR, 21CFR 820 "CFR Title 21 - Food and Drugs: TITLE 21- FOOD AND DRUGS, CHAPTER I - FOOD AND DRUG ADMINISTRATION DEPARTMENT OF HEALTH AND HUMAN SERVICES, SUBCHAPTER H - MEDICAL DEVICES, Part 820 QUALITY SYSTEM REGULATIONS"
- **Canada:** CMDR, SOR/98-282 "Medical Devices Regulations"

Certified quality management system according to

- ISO 9001 "Quality management systems – Requirements"
- ISO13485 "Medical devices - Quality management systems - Requirements for regulatory purposes"

Environmental management system according to

- ISO 14001 "Environmental management systems - Requirements with guidance for use"

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1 Intended use

This device is a medical product (microbiological incubator) for the purposes of the IVD directive 98/79/EC.

This is used for cultivating micro-organisms (e.g. bacteria, fungi) and is used in microbiology labs.

The combination of natural and forced circulated air results in low drying-out rates of the cultures, high temperature consistency and precise temperature distribution. Therefore, the device is suitable for incubating human pathogens, which

- require a characteristic optimum temperature (campylobacter jejuni or coli at 42°C, of clostridium difficile at 36°C).
- require long-term cultures (mycobacterium tuberculosis at 36°C / up to 8 weeks).

Also the incubation tasks of similar materials and samples with equally high demands are possible.

The incubator is only intended for this purpose.

Another use or one which goes beyond this, is considered to be non-intended. The company Andreas Hettich GmbH & Co. KG is not liable for damage resulting from this.

Observing all information in the operating instructions and complying with the measures described therein is also a part of the intended use.

2 Residual risks

The device is built according to the state-of-the-art and the recognized safety regulations. If used and handled improperly, there could be life-threatening danger to the user or third parties, or the device could be impaired or there could be other property damage. The device is only to be used for its intended purpose and only when it is in safe working condition.

Disturbances that can interfere with the safety are to be immediately rectified.

3 Technical specifications

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 200				
Type	62000	62000-01	62000-03	62000-04	62000-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.033 kWh	0.04 kWh			
Inner volume	150 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing). II 2				
– Set-up site					
– Altitude					
– Ambient temperature					
– Humidity					
– Excess-voltage category (IEC 60364-4-443)	II				
– Pollution degree	2				
Device protection class	I				
Not suitable for use in explosion-endangered areas.					
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity	EN / IEC 61326-2-6, Class B				
Type of protection (EN 60529)	IP 20				
Temperatures	1 K above the ambient temperature up to 65°C ²⁾ 0,1°C $\pm 0,1$ K $\pm 0,2$ K $\pm 0,1$ K ≤ 3 min				
– Temperature range					
– Temperature setting precision					
– Temperature deviation over time at 37°C					
– Spatial temperature deviation at 37°C					
– Spatial temperature deviation at 25°C					
– Recovery time (after 30 s with door open) at set temperature of 37°C	≤ 3 min				
Noise level	≤ 41 dB(A)	≤ 42 dB(A)			
Interior dimensions	535 x 690 x 420 mm				
B x D x H	535 x 690 x 420 mm				
Exterior dimensions	710 x 825 x 970 mm				
B x D ¹⁾ x H	710 x 825 x 970 mm				
Weight	approx. 92 kg ³⁾	approx. 97 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	80 kg				

1) without door handle and feedthrough (\varnothing 42 mm)

2) lowest settable temperature 20°C.

3) with glass door + 6 kg

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.
The data applies to devices with standard equipment.

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 400				
Type	64000	64000-01	64000-03	64000-04	64000-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.043 kWh	0.05 kWh			
Inner volume	310 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing).				
– Set-up site					
– Altitude					
– Ambient temperature					
– Humidity					
– Excess-voltage category (IEC 60364-4-443)	II				
– Pollution degree	2				
Device protection class	I				
Not suitable for use in explosion-endangered areas.					
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity					
Type of protection (EN 60529)	IP 20				
Temperatures	1 K above the ambient temperature up to 65°C ²⁾				
– Temperature range					
– Temperature setting precision	0,1°C				
– Temperature deviation over time at 37°C	$\pm 0,1$ K				
– Spatial temperature deviation at 37°C	$\pm 0,2$ K				
– Spatial temperature deviation at 25°C	$\pm 0,1$ K				
– Recovery time (after 30 s with door open) at set temperature of 37°C	≤ 4.5 min				
Noise level	≤ 41 dB(A)	≤ 42 dB(A)			
Interior dimensions	535 x 690 x 850 mm				
B x D x H					
Exterior dimensions	710 x 825 x 1425 mm				
B x D ¹⁾ x H					
Weight	approx. 117 kg ₃₎	approx. 122 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	100 kg				

1) without door handle and feedthrough (\varnothing 42 mm)

2) lowest settable temperature 20°C.

3) with glass door + 10 kg

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.
The data applies to devices with standard equipment.

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 600				
Type	66000	66000-01	66000-03	66000-04	66000-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.049 kWh	0.06 kWh			
Inner volume	520 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing).				
- Set-up site					
- Altitude					
- Ambient temperature					
- Humidity	II				
- Excess-voltage category (IEC 60364-4-443)	2				
- Pollution degree	I				
Device protection class	Not suitable for use in explosion-endangered areas.				
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity					
Type of protection (EN 60529)	IP 20				
Temperatures	1 K above the ambient temperature up to 65°C ²⁾				
- Temperature range	0,1°C				
- Temperature setting precision	$\pm 0,1$ K				
- Temperature deviation over time at 37°C	$\pm 0,2$ K				
- Spatial temperature deviation at 37°C	$\pm 0,1$ K				
- Spatial temperature deviation at 25°C	≤ 5.5 min				
- Recovery time (after 30 s with door open) at set temperature of 37°C					
Noise level	≤ 41 dB(A)	≤ 42 dB(A)			
Interior dimensions	535 x 690 x 1415 mm				
B x D x H					
Exterior dimensions	710 x 825 x 1990 mm				
B x D ¹⁾ x H					
Weight	approx. 164 kg ³⁾	approx. 169 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	120 kg				

1) without door handle and feedthrough (\varnothing 42 mm)

2) lowest settable temperature 20°C.

3) with glass door + 14 kg

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.
The data applies to devices with standard equipment.

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 200 R				
Type	62005	62005-01	62005-03	62005-04	62005-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.033 kWh	0.04 kWh			
Cooling medium	R 134a (Contains fluorinated greenhouse gases documented by the Kyoto Protocol)				
Amount of refrigerant	160 g				
Global-warming potential (GWP)	1300				
Inner volume	150 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing).				
– Set-up site					
– Altitude					
– Ambient temperature					
– Humidity					
– Excess-voltage category (IEC 60364-4-443)	II				
– Pollution degree	2				
Device protection class	I				
Not suitable for use in explosion-endangered areas.					
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity					
Type of protection (EN 60529)	IP 20				
Temperatures	0°C to 65°C ⁴⁾				
– Temperature range	0,1°C				
– Temperature setting precision	$\pm 0,1$ K				
– Temperature deviation over time at 37°C	$\pm 0,2$ K				
– Spatial temperature deviation at 37°C	$\pm 0,1$ K				
– Spatial temperature deviation at 25°C	≤ 3 min				
– Recovery time (after 30 s with door open) at set temperature of 37°C					
Noise level	≤ 44 dB(A)				
Interior dimensions	535 x 690 x 420 mm				
B x D x H					
Exterior dimensions	710 x 825 x 970 mm				
B x D ¹⁾ x H					
Weight	approx. ₃₎ 103 kg	approx. 108 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	80 kg				

1) without door handle and feedthrough (\varnothing 42 mm)

3) with glass door + 6 kg

4) lowest settable temperature -5°C. Reaching a temperature $< 0^\circ\text{C}$ depends on the ambient conditions, however.

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.

The data applies to devices with standard equipment.

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 400 R				
Type	64005	64005-01	64005-03	64005-04	64005-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.043 kWh	0.05 kWh			
Cooling medium	R 134a (Contains fluorinated greenhouse gases documented by the Kyoto Protocol)				
Amount of refrigerant	160 g				
Global-warming potential (GWP)	1300				
Inner volume	310 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing). II 2				
- Set-up site					
- Altitude					
- Ambient temperature					
- Humidity					
- Excess-voltage category (IEC 60364-4-443)	II				
- Pollution degree	2				
Device protection class	I				
Not suitable for use in explosion-endangered areas.					
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity	EN / IEC 61326-2-6, Class B				
Type of protection (EN 60529)	IP 20				
Temperatures	0°C to 65°C ⁴⁾ 0,1°C $\pm 0,1$ K $\pm 0,2$ K $\pm 0,1$ K ≤ 4.5 min				
- Temperature range					
- Temperature setting precision					
- Temperature deviation over time at 37°C					
- Spatial temperature deviation at 37°C					
- Spatial temperature deviation at 25°C					
- Recovery time (after 30 s with door open) at set temperature of 37°C	≤ 4.5 min				
Noise level	≤ 44 dB(A)				
Interior dimensions	535 x 690 x 850 mm				
B x D x H	535 x 690 x 850 mm				
Exterior dimensions	710 x 825 x 1425 mm				
B x D ¹⁾ x H					
Weight	approx. 128 kg ³⁾	approx. 133 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	100 kg				

1) without door handle and feedthrough (\varnothing 42 mm)

3) with glass door + 10 kg

4) lowest settable temperature -5°C. Reaching a temperature $< 0^\circ\text{C}$ depends on the ambient conditions, however.

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.

The data applies to devices with standard equipment.

Manufacturer	Andreas Hettich GmbH & Co. KG, D-78532 Tuttlingen				
Model	HettCube 600 R				
Type	66005	66005-01	66005-03	66005-04	66005-05
Mains voltage ($\pm 10\%$)	220 - 240 V 1~	120 V 1~	110 V 1~	100 V 1~	127 V 1~
Mains frequency	50 - 60 Hz				
Connected load	480 VA	450 VA			
Current consumption	2 A	---			
Energy consumption at 37°C	0.049 kWh	0.06 kWh			
Cooling medium	R 134a (Contains fluorinated greenhouse gases documented by the Kyoto Protocol)				
Amount of refrigerant	160 g				
Global-warming potential (GWP)	1300				
Inner volume	520 l				
Ambient conditions (EN / IEC 61010-1)	Indoors only Up to 2000 m above sea level 16°C to 35°C Maximum relative humidity 75% (non-condensing).				
– Set-up site					
– Altitude					
– Ambient temperature					
– Humidity					
– Excess-voltage category (IEC 60364-4-443)	II				
– Pollution degree	2				
Device protection class	I				
Not suitable for use in explosion-endangered areas.					
EMV	EN / IEC 61326-2-6, Class B				
Emitted interference, Interference immunity					
Type of protection (EN 60529)	IP 20				
Temperatures	0°C to 65°C ⁴⁾				
– Temperature range					
– Temperature setting precision	0,1°C				
– Temperature deviation over time at 37°C	$\pm 0,1$ K				
– Spatial temperature deviation at 37°C	$\pm 0,2$ K				
– Spatial temperature deviation at 25°C	$\pm 0,1$ K				
– Recovery time (after 30 s with door open) at set temperature of 37°C	≤ 5.5 min				
Noise level	≤ 44 dB(A)				
Interior dimensions	535 x 690 x 1415 mm				
B x D x H					
Exterior dimensions	710 x 825 x 1990 mm				
B x D ¹⁾ x H					
Weight	approx. ₃₎ 175 kg	approx. 180 kg ³⁾			
Maximum load per standard feed	50 kg				
Maximum total load	120 kg				

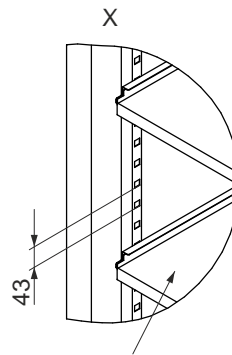
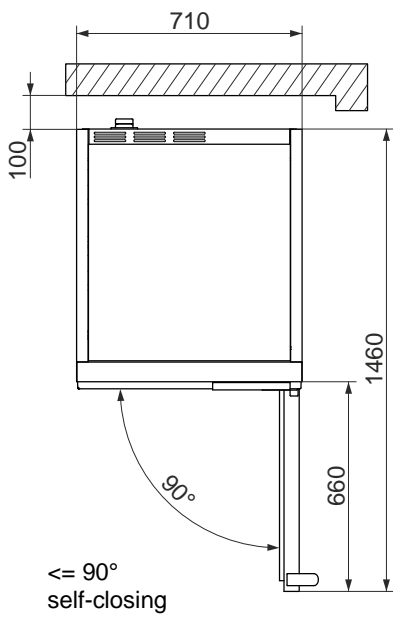
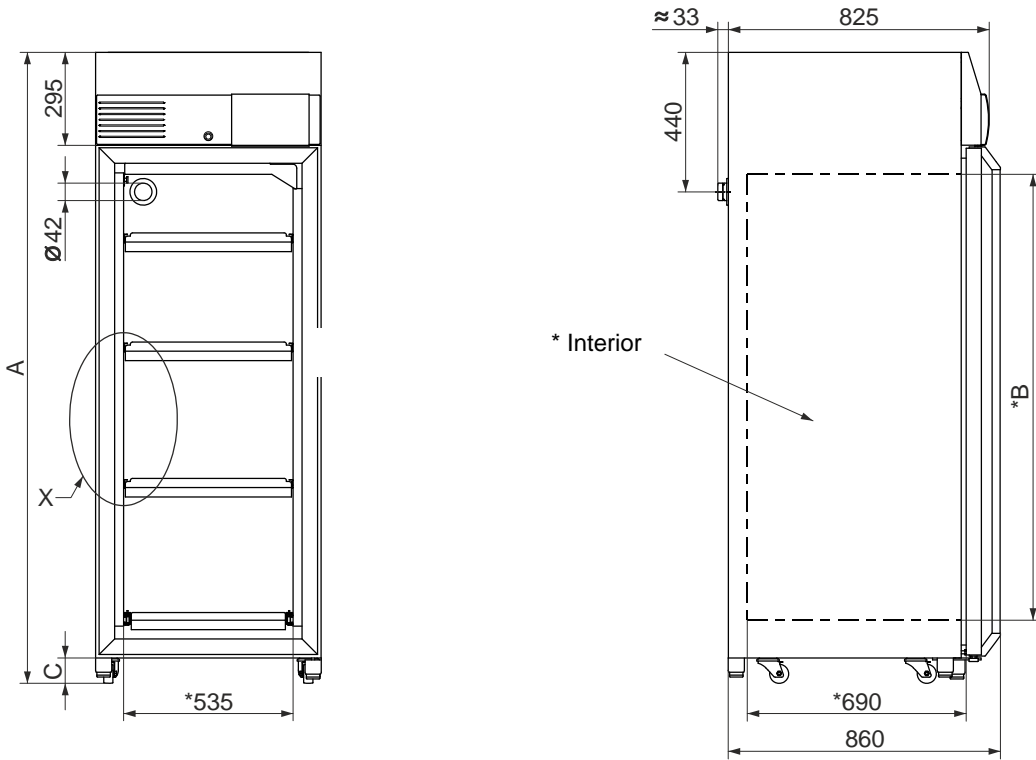
1) without door handle and feedthrough (\varnothing 42 mm)

3) with glass door + 14 kg

4) lowest settable temperature -5°C. Reaching a temperature < 0°C depends on the ambient conditions, however.

All temperature data was measured at an ambient temperature of 22°C and according to DIN 12880:2007-05.

The data applies to devices with standard equipment.



Number of engagement positions (D)
Max. number of standard slide-in modules (E)

	HettCube 200 / 200 R	HettCube 400 / 400 R	HettCube 600 / 600 R
A	970 mm	1425 mm	1990 mm
*B	420 mm	850 mm	1415 mm
C	min. 56 mm	min. 80 mm	min. 80 mm
D	8	18	31
E	4	9	16

4 Notes on safety



No claim of warranty will be considered by the manufacturer unless ALL instructions in this manual have been followed.



- **The incubator may only be operated when it is set up correctly (see "Set-up" chapter).**
- **The door of the device may only be locked if no one is inside the device.**

- **Before commissioning the incubator, the operating instructions are to be read and observed. Only those persons who have read and understood the operating instructions may operate the device.**
- Along with the operating instructions and the legal regulations on accident prevention, you should also follow the recognised professional regulations for working in a safe and professional manner. These operating instructions should be read in conjunction with any other instructions concerning accident prevention and environmental protection based on the national regulations of the country where the device is to be used.
- The incubator is built according to the state-of-the-art and is reliable. It could pose a danger to the user or third parties, however, if it is not used by trained personnel or improperly or not as intended.
- The guidelines for laboratories (BGI 850-0) are to be observed for the device operation and the set-up site.
- To avoid damage due to condensate, when changing from a cold to a warm room, the incubator must warm up for at least 3 hours in the warm room before it may be connected to the mains.
- The incubator must not be operated outside.
- The incubator may not be operated in potentially explosive areas.
- It is forbidden to put flammable or explosive materials or materials which react together with high energy in the incubator.
- The user must inform himself about the potential health hazards which can be posed by the used sample material, and, if necessary, take appropriate measures to rule out such hazards.
- The use of external devices inside the incubator only makes sense for cooled incubators which can compensate for the additional heat output. For cooled incubators, the total heat output of 400 W inside the incubator must not be exceeded. If the incubator is switched off or if it fails, the external devices inside the incubator must be switched off immediately in order not to damage the incubator. For other important information, see the "Heat compensation" chapter.
- Do not step or lean on the floor of the interior, the slide-in modules and drawers or the door.
- The bottom of the interior must not be used as a storage shelf.
- The sample material should not be placed outside of the defined utilized space. See the chapter "Definition of the utilized space". The specified temperature data refer to the defined utilized space.
- Repairs must only be carried out by personnel authorised to do so by the manufacturer.
- Only original spare parts and original accessories licensed by the Andreas Hettich GmbH & Co. KG company are allowed to be utilised.
- The following safety regulations apply:
EN / IEC 61010-1 and EN / IEC 61010-2-010 as well as their national deviations.
- The safety and reliability of the incubator are only guaranteed if:
 - the incubator is operated according to the operating instructions.
 - the electrical installation at the set-up site of the incubator meets the requirements of the EN / IEC regulations.

5 Symbol meanings



Symbol on the device:

Attention, general hazard area.

Before using the device, make sure you read the operating instructions and observe the safety information!



Symbol in this document:

Attention, general hazard area.

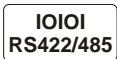
This symbol refers to safety relevant warnings and indicates possibly dangerous situations.

The non-adherence to these warnings can lead to material damage and injury to personal.



Symbol on the device and in this document:

Beware of biohazard.



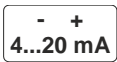
Symbol on the device:

Interface RS422/485 (only for device with interface RS422/485).



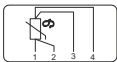
Symbol on the device and in this document:

Floating alarm output.



Symbol on the device and in this document.

Analogue output for independent temperature measurement in the interior.



Symbol on the device and in this document.

4-pin output for independent temperature measurement in the interior.



Symbol in this document:

This symbol refers to important circumstances.



Symbol on the device and in this document:

Symbol for the separate collection of electric and electronic devices according to the guideline 2002/96/EG (WEEE). The device belongs to Group 8 (medical devices).

Applies in the countries of the European Union, as well as in Norway and Switzerland.

6 Scope of delivery

- 1 Connecting cable 2.5 m (4.0 m for Switzerland, Great Britain)
- 2 Key
- 1 Plug for feedthrough on the rear wall
- 1 HTS* slide-in module with telescope pull-out
- 1 Standard slide-in module (HettCube 200 / 200 R)
- 2 Standard slide-in modules (HettCube 400 / 400 R)
- 3 Standard slide-in modules (HettCube 600 / 600 R)
- 1 Copy of operating instructions

* HTS: Hettich Tray System

7 Transport and storage

The device may only be stored in closed and dry rooms.

When the device is transported and stored, the following ambient conditions must be complied with:

- Ambient temperature -20°C to $+60^{\circ}\text{C}$
- Relative humidity: 20% to 80%, non-condensing

8 Unpacking the device



The device may only be transported with a pallet truck as long as it remains on the wooden pallet.
The device must not be lifted and transported by the door handle or the door.

- Remove the packaging bands.
- Remove the box and packing material.



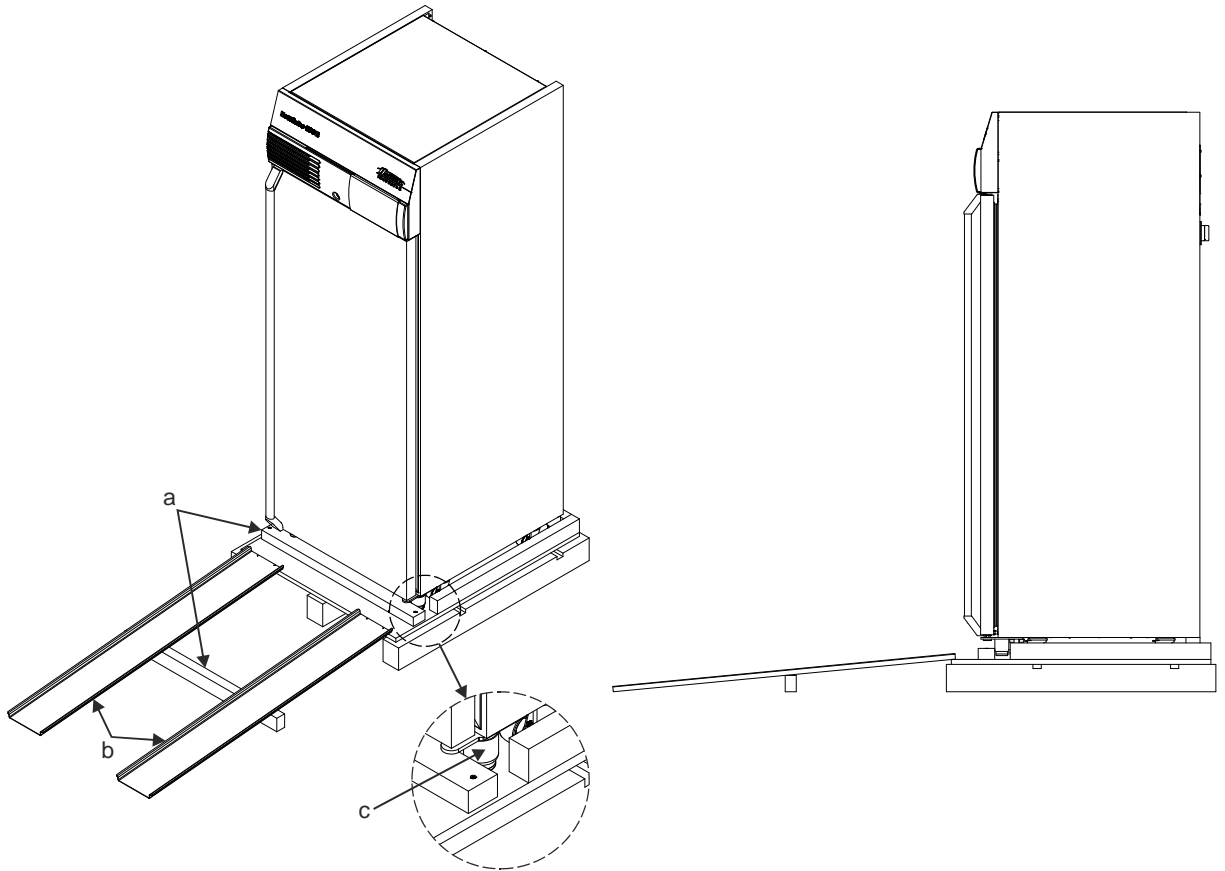
The padding on the inside of the door serves as a transport safety device for the slide-in modules and drawers. This padding may be removed only at the installation site of the device.

- Remove the device from the wooden pallet.



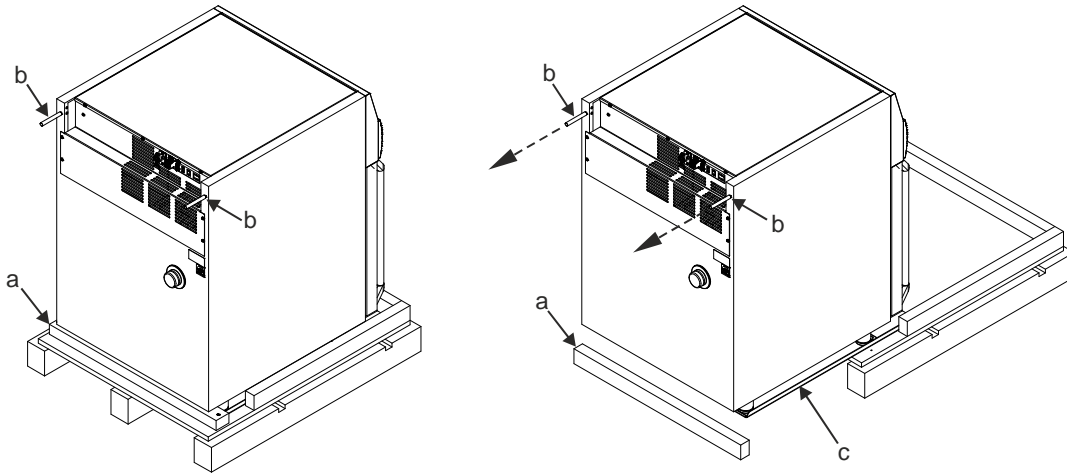
Transport the device to its installation site while it is still on the wooden pallet.

Only for HettCube 400 / 400 R and HettCube 600 / 600 R devices:



- Remove the front wooden beam (a).
- Fasten the metal rails (b) to the wooden pallet with two nails each.
- Push the front wooden beam (a) under the metal rails (b) to support these.
- Completely screw in the levelling elements in the feet (c) of the device.
- Roll the device carefully down from the wooden pallet using the metal rails (b).

For HettCube 200 / 200 R device only:



- Remove the front wooden beam (a).
- Plug the supplied washers onto the metal bars (b) and screw the metal bars (b) into the two holes on the rear panel.
- Put the front wooden beam (a) about 50 centimetres in front of the wooden pallet.
- Hold the two metal bars (b) and carefully pull the device off the wooden pallet using the metal rails (c).



Do not lift the device with the metal bars (b), as otherwise the rear panel may be damaged.

- Unscrew the metal bars (b) from the rear panel of the device.
- Successively lift the device on the left and right sides slightly and remove the two metal rails (c).

9 Set-up



The device may only be set up and connected by authorized, skilled personnel.

The device may only be transported with a pallet truck as long as it remains on the wooden pallet. The device must not be lifted and transported by the door handle or the door.

When choosing the set-up site, take the weight of the device and its load into account. See the chapter "Technical data".

The set-up site must not be directly exposed to sunlight or be located near heat sources.

Ventilation openings may not be blocked. A distance of 100 mm must be maintained from the ventilation slots and openings of the incubator.

To avoid damage due to condensate, when changing from a cold to a warm room, the incubator must warm up for at least 3 hours in the warm room before it may be connected to the mains.



If needed, Customer Service can mount the door hinges on the other side.

- Remove the packaging. See the chapter "Unpacking the device".
- Set up and level the device stably on a flat, non-flammable surface.

Only for HettCube 400 / 400 R and HettCube 600 / 600 R devices:

- Screw the levelling elements that are screwed into the device feet far enough downward that they touch the floor and the rollers are completely relieved.
- Align the device horizontally by turning the device's levelling elements.
- Screw the adjusting foot on the door downward until it is approx. 7 mm above the floor to keep the device from tipping. Screw the hexagon nuts upward and tighten to secure the adjusting foot.

For HettCube 200 / 200 R device only:

- Align the device horizontally by twisting the levelling elements screwed into the device feet.
- Only for devices with a glass door:
Screw the adjusting foot on the door downward until it is approx. 7 mm above the floor to keep the device from tipping. Screw the hexagon nuts upward and tighten to secure the adjusting foot.



2 of the HettCube 200 / 200 R devices may be stacked on top of each other.

The upper device has to be fixed with the stack kit (order number 60009) onto the lower device and additionally secured against tipping.

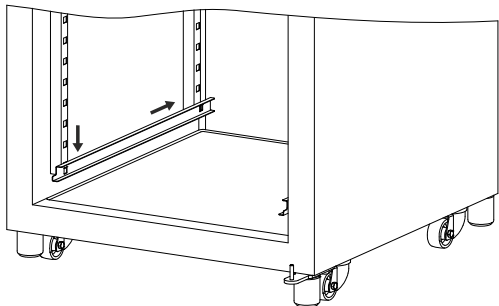
- If required, adjust the height of the slide-in modules and drawers; see the chapters "Adjusting the standard slide-in modules" and "Inserting slide-in modules and drawers with telescope pull-out".

10 Inserting the standard slide-in modules

The standard slide-in modules are held by support rails.



The standard slide-in modules are not secured against falling out. Do not completely pull out the slide-in modules.



Inserting the support rails and standard slide-in modules:

- Push the support rails into the rear latching rail at the desired height and then engage in the front latching rail.
- Inserting the standard slide-in modules into the support rails.

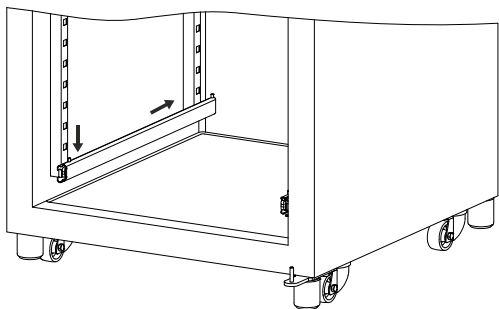
Removing the standard slide-in modules and the support rails:

- Pulling the standard slide-in modules out of the support rails.
- Disengage the support rails upward and out of the front latching rail and then pull out toward the front from the rear latching rail.

11 Inserting the slide-in modules and drawers with telescope pull-out

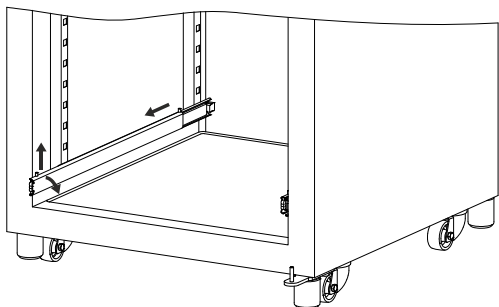
Before inserting the slide-in modules and drawers (available as accessories), the telescope rails included in the delivery must be inserted.

Inserting the telescope rails and the slide-in modules and drawers:



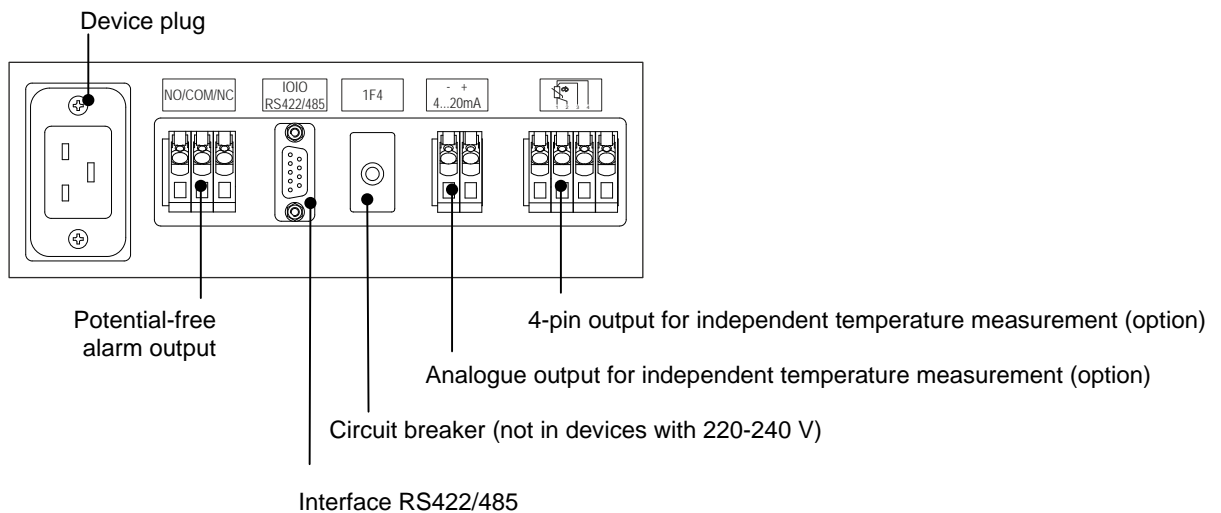
- Push the telescope rails into the rear latching rail at the desired height.
- Engage the telescope rails in the front latching rail.
- Place the slide-in module or the drawer on the telescope rails and slide it back until the two notches located in the rear of the slide-in module or the drawer are in the pins of the two telescope rails.
- Put the slide-in module or the drawer on the front portion of the telescope rails and engage it in the pins of the two telescope rails.

Removing the slide-in modules and drawers of the telescope rails:



- Lift the slide-in module or the drawer, unhook it from the telescope rails and remove it.
- Pull the telescope rails out a little.
- Hold the telescope rails at the pulled-out part, slightly twist towards the centre of the device and pull upwards from the front latching rail.
- Pull forward the telescope rails from the rear latching rail to pull them out.

12 Commissioning



- As needed, connect the interface adapter to the RS422/485 interface of the device with the RS422/485 connecting cable and connect to the PC with the USB interface cable.
- As needed, connect the potential-free alarm output (see chapter "Potential-free alarm output").
- Device with analogue output for independent temperature measurement:
As needed, connect the analogue output (see chapter "Analogue output for independent temperature measurement in the interior").
- Device with 4-pin output for independent temperature measurement:
As needed, connect the 4-pin output (see chapter "4-pin output for independent temperature measurement in the interior").
- Check whether the mains voltage agrees with the specification on the name plate.
- Connect the device to a standardized mains socket with the connecting cable. The connected load can be found in the "Technical data" chapter.



The connecting cable must be freely accessible at all times in order to be able to disconnect the device from the mains.

- Press the main switch . The display will light up.
- Adjust the temperature. See the chapter "Setting the temperature".
- If necessary, set the temperature monitor. See the chapter "Temperature monitor".

13 Interface

The device is equipped with an RS422/485 interface.


The RS422/485 interface is labelled with the symbol.

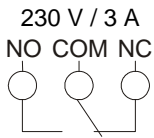
A PC can be connected to this interface. The device can be controlled and data queried with the PC. A program required for this is available upon request.



As an option, converters are available for USB or Ethernet.

14 Potential-free alarm output

 The floating alarm output may only be connected by authorized, skilled personnel.



The floating alarm output is labelled with the **NO COM NC** symbol.

An in-house alarm system can be connected to this floating alarm output.

The potential-free alarm output switches when the following malfunctions occur (collective alarm):

- The door is opened for longer than 2 minutes.
- The temperature deviates by more than 1 K from the setpoint.
- The temperature monitor signals excessive temperatures in the interior.




With this fault, the potential-free alarm output can not be reset by pressing the **EXIT** button.

After this fault occurred, the potential-free alarm output can be reset by pressing the **EXIT** button.

15 Feedthrough with screw plug


The device has a feedthrough on the rear side with a diameter \varnothing 42 mm.

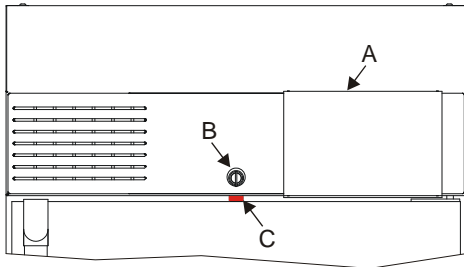
Through this opening, cables from external measuring systems can be fed into the interior.

 After feeding through the cable, the feedthrough must be sealed with the foam plug included in delivery to prevent temperature deviations in the interior.
If the feedthrough is not used, this must be sealed with the screw plug.

16 Door lock

To prevent the device from being operated and to prevent the door from being opened by unauthorized personnel, the device can be locked. Individual cylinder locks are used. If the keys are lost, the cylinder lock must be replaced.

 Before locking, make sure that no one is inside the device.



- Push the cover (A) to the right.
- Stick the key in the lock (B).
- Turn the key counter-clockwise to lock the device. Once the device is locked, the red bolt (C) is visible.
- Turn the key clockwise to unlock the device. The red bolt (C) will no longer be visible.

17 Definition of the utilized space

Utilized space dimensions:

Model	HettCube 200/200 R	HettCube 400/400R	HettCube 600/600R
Width	486 mm		
Depth	560 mm		
Height	301 mm	731 mm	1290 mm

Utilized space volume:

$$V_{\text{utilized space}} = \text{Width} \times \text{Height} \times \text{Depth}$$

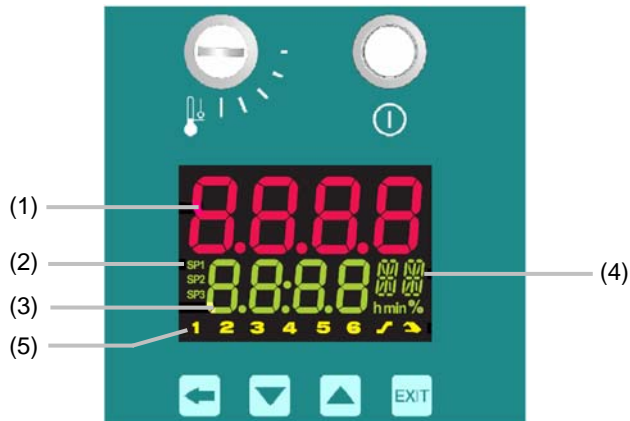
18 Loading





The maximum load per standard slide-in module is 50 kg.
The maximum load per slide-in module or drawer with telescope pull-out is 40 kg.

Load the device so that the sample material is only within the utilized space and make sure there is sufficient air circulation inside the device. This is complied with due to the fact that the sample containers don't project over the edges of the standard slide-in modules.

19 Operating and display elements



19.1 Display

- (1) Actual temperature value (displayed in red)
- (2) Active setpoint (factory setting: SP1)
- (3) Temperature setpoint, parameter symbols, menu symbols (green display)
- (4) Temperature unit (°C, °F)
- (5) Status display. The operating state of the device is displayed.
 - 1 The control is turned off.
 - 2 Over-temperature (temperature monitor).
 - 3 The heating is turned on.
 - 4 The cooling is turned on.
 - 5 Not assigned.
 - 6 Temperature alarm
 -  Program function is active.
 -  Manual mode (function can't be activated)

19.2 Operating elements



Main switch



Temperature monitor



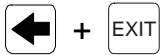
- Calling the menus.



- Setting the temperature, program and parameters .
If the ▼ or ▲ key is kept pressed, the value is increased or decreased with increasing speed.



- Closing the menus.
- Switch off acoustic alarm.



- Start or end program.

20 Setting the temperature



If the temperature value is changed, the temperature monitor might have to be adjusted. See the chapter "Temperature monitor".

For cooled incubators, a temperature can be set between -5°C and 65°C in steps of 0.1°C. Reaching a temperature < 0°C depends on the ambient conditions, however.

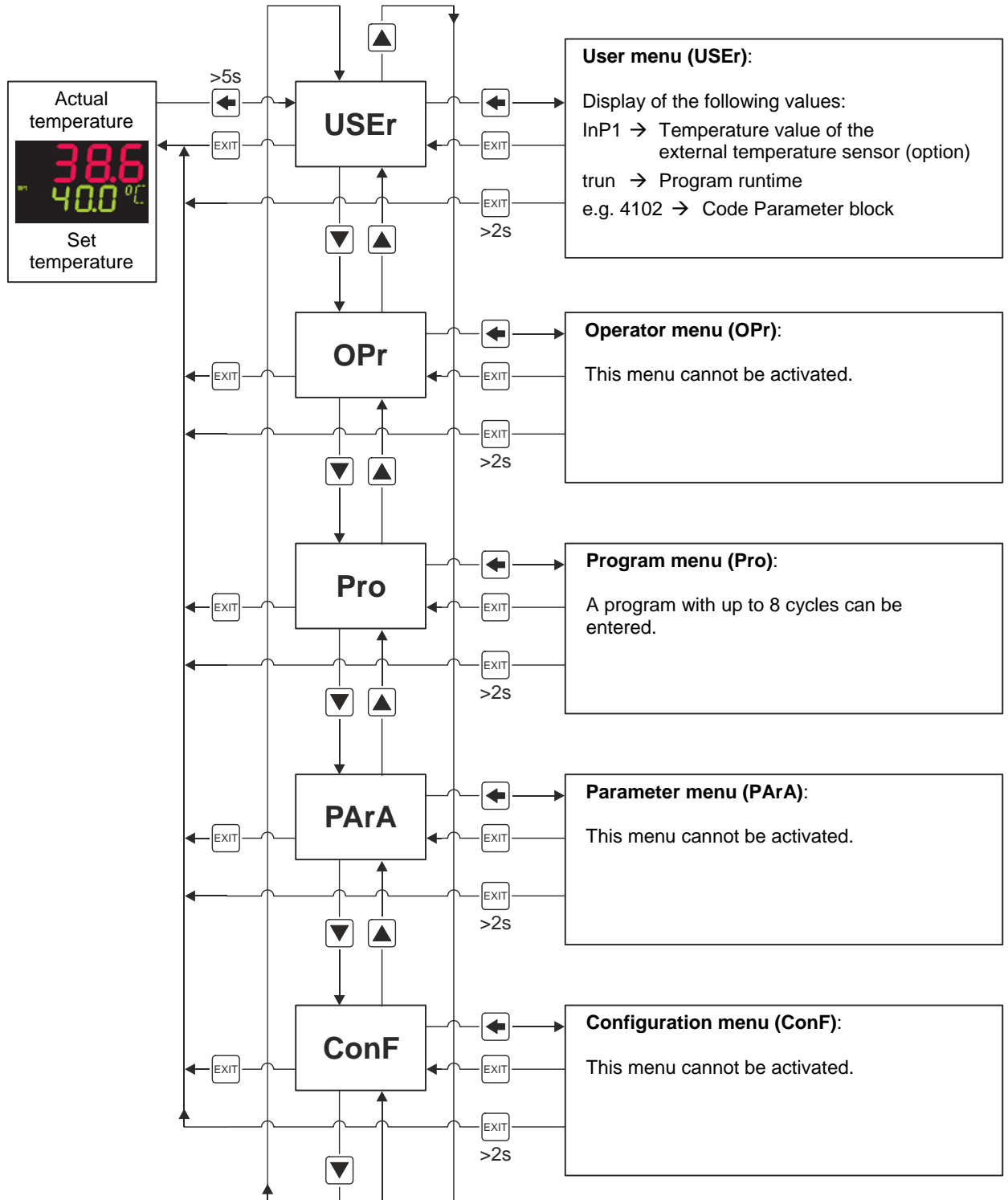
For incubators, a temperature can be set between 20°C and 65°C in steps of 0.1°C. However, the temperature is controlled only in the range from 1 K above the ambient temperature to 65°C.

- Set the desired temperature with the ▼ and ▲ keys. The setting is stored after 2 seconds automatically.

21 Menu overview

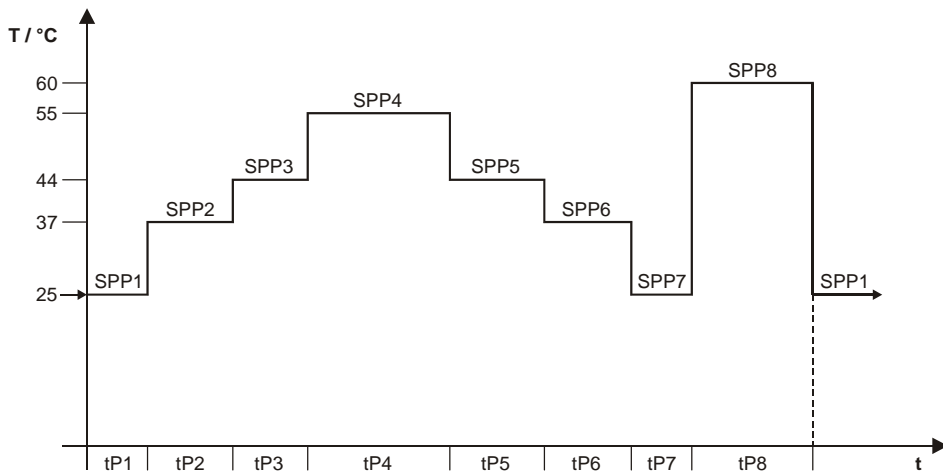
The parameters for setting the device can be found in different menus.

 If no key is pressed for 180 seconds, or if the **EXIT** key was pressed for longer than 2 seconds, the actual and set temperatures are displayed again.



22 Programming

A program can be entered where a maximum of 8 cycles with different temperatures can be strung together. For each cycle, a temperature (SPP1 to SPP8) and a cycle time (tP1 to tP8) have to be set. After the last cycle, the program starts again from the beginning.



SPP1 to SPP8: Temperature, adjustable in steps of 0.1°C. Adjustable from -5°C to 65°C (HettCube R models) and from 20°C to 65°C (HettCube models).

tP1 to tP8: Cycle time, adjustable between 1 hour (00:01) and 99 days and 23 hours (99:23), in steps of 1 hour.



It is also possible to configure the device so that the cycle time can be set between 1 minute to 99 hours and 59 minutes in steps of 1 minute. If necessary, notify Customer Service.

22.1 Entering the program



If not all 8 cycles are required, the time 00:00 must be set in the cycle after the last used cycle.

Entering parameters can be cancelled at any time by pressing the **EXIT** key. In this case, the settings are not stored.

If no key is pressed for 180 seconds, or if the **EXIT** key was pressed for longer than 2 seconds, the actual and set temperatures are displayed again.

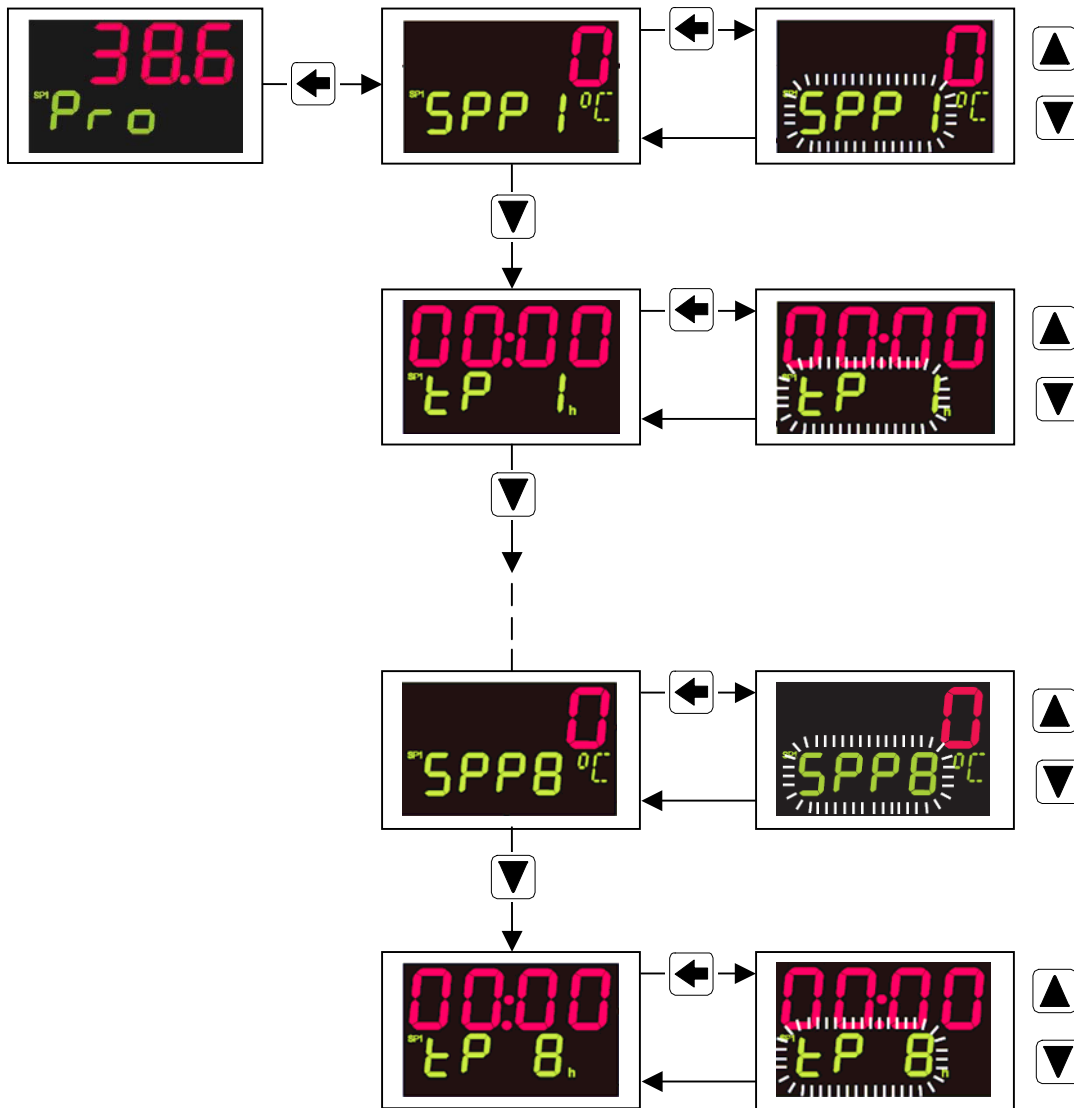
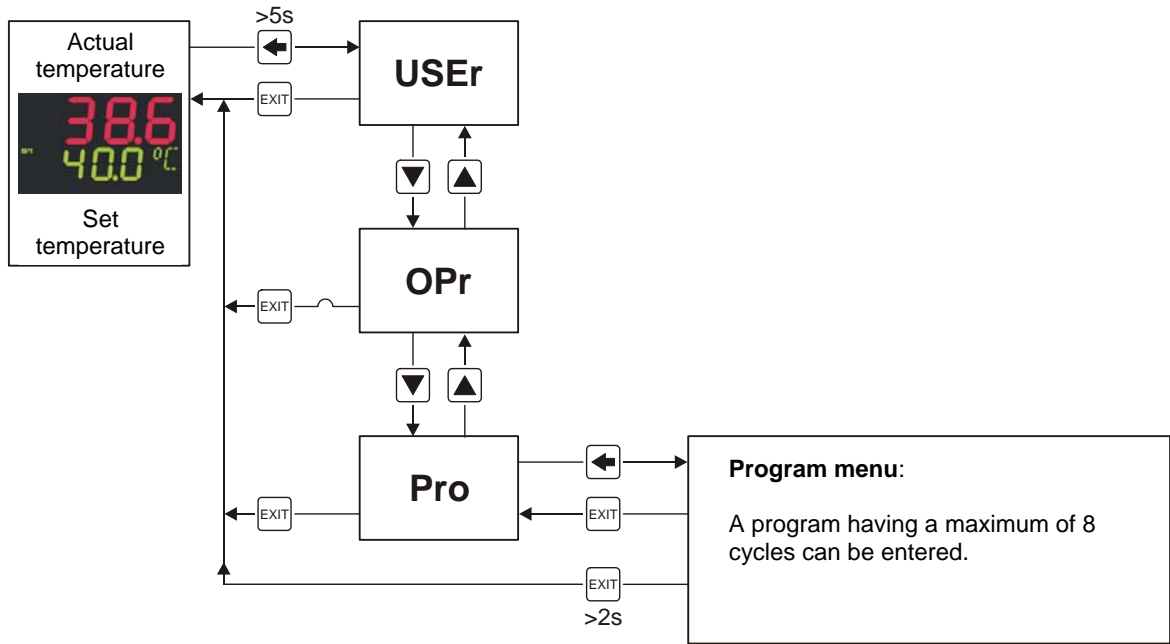
The temperatures (SPP1 to SPP8) and the cycle times (tP1 to tP8) are set in the program menu.

- Press and hold the **☑** key for 5 seconds. After 5 seconds, **USER** appears on the display.
- Press the **▼** key until **Pro** is displayed.
- Press the **☑** key.
- Select the desired parameter with the **▼** and **▲** keys.
- Press the **☑** key. The parameter symbol will flash.
- Set the desired value with the **▼** and **▲** keys.
- Press the **☑** button to save the setting.



The setting is stored after 2 seconds automatically.

- Select the next parameter and set, or press the **EXIT** key to exit the menu.



22.2 Starting the program



If the mains fails, the program is aborted.
As soon as the device is ready for operation again, the temperature is regulated to the set temperature.

- Press the and **EXIT** keys at the same time. **Strt** is displayed briefly and the symbol is illuminated. The symbol is illuminated until the program is finished.

22.3 Ending the program

- Press the and **EXIT** keys at the same time. The symbol will go out. The program runtime is reset to 00:00. After ending the program, the temperature is regulated to the set temperature.

22.4 Stopping and continuing the program

- Press and hold the **EXIT** key for 2 seconds. After 2 seconds, the set temperature display starts to flash and keeps flashing until the program is continued.



The set temperature is regulated while the program is stopped.

- To continue the program, keep the **EXIT** key pressed for 2 seconds. The set temperature display stops flashing and the program is continued.

22.5 Querying the program runtime (trun)

It can be queried how long the program has been running already.



If no key is pressed for 180 seconds, or if the **EXIT** key was pressed for longer than 2 seconds, the actual and set temperatures are displayed again.

- Press and hold the key for 5 seconds. After 5 seconds, **USEr** appears on the display.
- Press the key. The program runtime (trun) is displayed.



After 180 seconds, the actual and set temperature are displayed automatically.

- Keep the **EXIT** key pressed for 2 seconds so that the actual and set temperatures are displayed.

23 Optical and acoustic alarm

If a malfunction occurs, there is an optical and acoustic alarm. For information about troubleshooting, see the chapter "Malfunctions".

- The acoustic alarm is ended by pressing the **EXIT** key.

24 Temperature monitor

The device is equipped with a temperature monitor, protection class 3.1, in accordance with DIN12880:2007-05. The temperature monitor is for protecting the device (device protection), its surroundings and the sample material (sample protection) against impermissible, excessive temperatures.

If the electronic temperature regulation fails during operation, the temperature monitor takes over the regulating function.

24.1 Setting the temperature monitor as device protection

The temperature monitor must be set to the maximum value.

- Adjust the dial of the temperature monitor with a coin by turning it clockwise to the end stop.

24.2 Setting the temperature monitor as sample protection

The temperature monitor must be set a little higher than the selected set temperature on the controller. To check at what temperature the temperature monitor responds, the device must be put into operation and the desired setpoint set on the temperature controller.


- Adjust the dial of the temperature monitor with a coin by turning it clockwise to the end stop (device protection).
- After the preselected temperature setpoint has been reached, turn the dial on the temperature monitor counter-clockwise up to the switching point until it switches off and **t_{AL}** is displayed.
- The optimal setting of the temperature monitor is reached by turning the dial clockwise until the **t_{AL}** display disappears.

25 Operating the device at a temperature setpoint below 4°C

If the device is operated at a set temperature below 4°C, the evaporator can ice up. This would lead to a reduction in the cooling performance. In this case, defrost the device regularly. To defrost, set the temperature to 60°C and remove the feedthrough cover.

26 Heat compensation

The heat output of external devices inside the incubator is compensated.



The use of external devices inside the incubator only makes sense for cooled incubators which can compensate for the additional heat output. If such applications or external devices are used in incubators without cooling, this can quickly result in overheating, which the incubator cannot compensate for. Due to the overtemperature, sample material could be negatively influenced. Overtemperatures over longer periods of time can damage the incubator. When using external devices inside the cooled incubator (e.g., via the feedthrough), make sure that the technical values regarding heat compensation are still valid (max. 400 Watt). The compensation power of 400 W only refers to the cooled incubators HettCube 200 R / 400 R / 600 R. If the incubator is switched off or if it fails, the external devices inside the incubator must be switched off immediately in order not to damage the incubator. If in doubt, consult with Andreas Hettich GmbH & Co. KG or their contact partner.

Heat compensation, HettCube 200 R / 400 R / 600 R

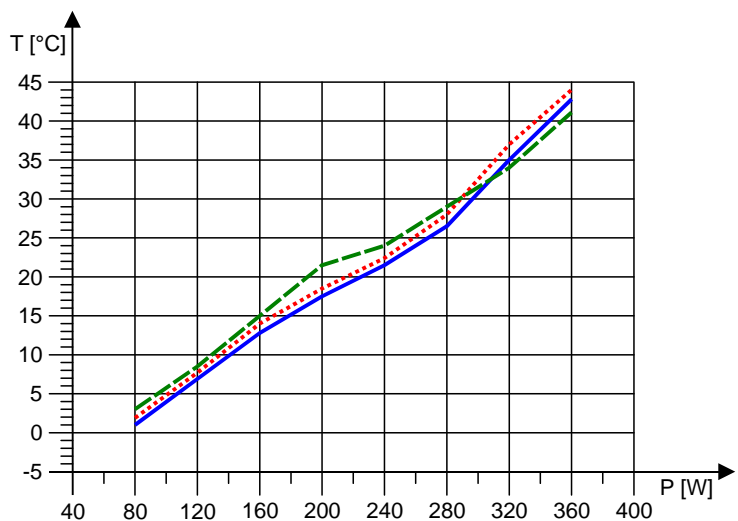
The lowest reachable temperature values when using external devices with different heat outputs inside the incubator.

T [°C] : Temperature in °C

P [W] : Power in Watts


- Temperature HettCube 200 R (0°C to +65°C)
- ⋯ Temperature HettCube 400 R (0°C to +65°C)
- - - Temperature HettCube 600 R (0°C to +65°C)

The data applies to devices with standard equipment.



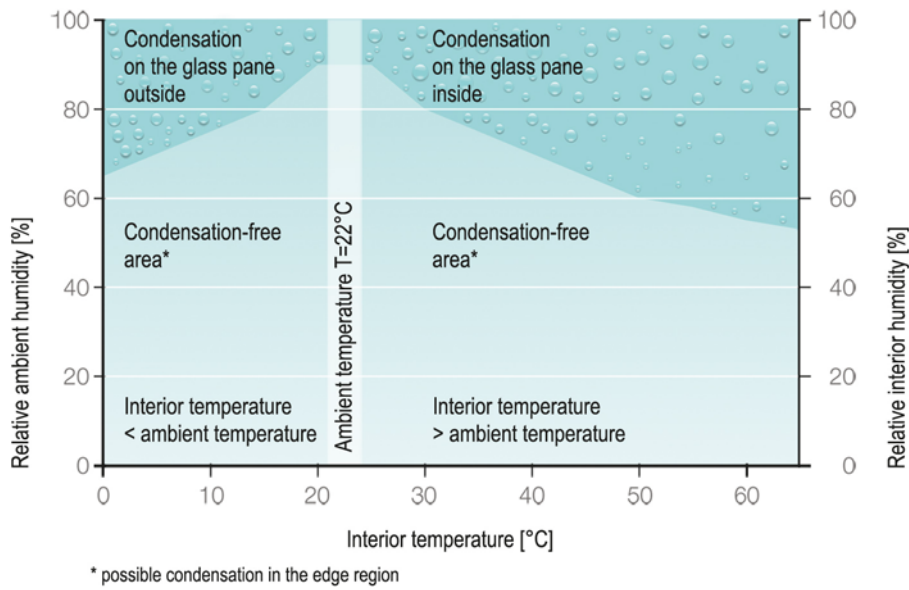
27 Glass door
(only for devices with a glass door)

The glass door consists of several stacked glass panes.
 The outer pane of the door is made of safety glass (ESG glass).

 For devices with a glass door, the temperature deviation values and the power consumption increase slightly.

Depending on the ambient temperature and the relative ambient humidity, there may be condensation on the inside and outside of the glass door.
 The following diagram illustrates the condensation of the glass door.

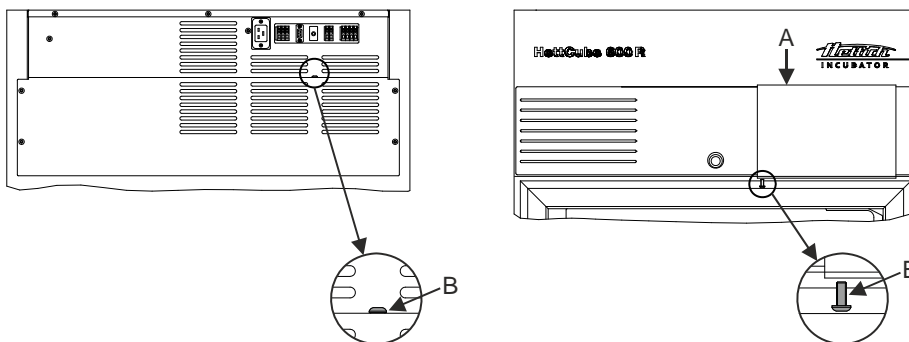
Condensation diagram for HettCube of sizes 200/400/600 with glass doors at an ambient temperature of +22°C



28 Fixing the control panel cover

To prevent the device from being operated by unauthorized personnel, the control panel cover can be fixed with a screw.

 There is a screw that can be used for fixing the cover at the rear panel of the device.



Fixing the control panel cover:

- Unscrew the screw (B) from the rear panel of the device.
- Push the cover (A) to the right and fix it with the screw (B).

28.1 Important information for using the orbital shaker (HSM 10) in HettCube incubators



- The orbital shaker (HSM 10) may only be operated in the incubator at the maximum speed of 250 rpm, if it is at the bottommost slide-in position in the incubator.
- If the orbital shaker (HSM 10) is at a higher slide-in position, it may only be operated at a maximum speed of 200 rpm.
- If several orbital shakers (HSM 10) are used inside the incubator, they may also only be operated at a maximum speed of 200 rpm.
- If the orbital shaker (HSM 10) is placed on a telescopic slide-out, the telescopic slide-out must be fixed in place before operating the shaker.
- When using the orbital shaker (HSM 10) inside an incubator, a safety area of 20 mm around the device must be complied with.
- The heat capacity of the orbital shaker (HSM 10) is the same as its power consumption.
- The lowest reachable temperature value in the cooled incubator, when using the orbital shaker (HSM 10) inside the incubator, can be found in the heat compensation curve in the operating instructions of the HettCube.
- For incubators without cooling, the lowest reachable temperature value is calculated as follows:
The lowest reachable temperature value = ambient temperature + temperature rise of the interior; for values, see following table.

Model	Ambient temperature	Temperature rise of interior
HettCube 200	21°C	12 K Only 1 orbital shaker (HSM 10) may be operated in the incubator.
HettCube 400	21°C	11 K 18 K, when operating 2 orbital shakers (HSM 10), each at a speed of 200 rpm. A maximum of 2 orbital shakers (HSM 10) may be operated in the incubator.
HettCube 600	21°C	8 K 14 K, when operating 2 orbital shakers (HSM 10), each at a speed of 200 rpm. A maximum of 2 orbital shakers (HSM 10) may be operated in the incubator.

29 Options and accessories

29.1 Overview

Option / accessories
Converter to USB
Converter to Ethernet
Program for programming and recording data of the HettCube for a period of max. 60 days
Independent, flexible PT 100 sensor (4 wires) with an analogue output of 4 – 20 mA on the rear side of the device with external alarm monitoring for recording the temperature in the event of a power failure (LIM compatible)
Independent, flexible PT 100 (4-wire) sensor with 4-pin connection on the rear side of device (LIM-compatible)
Object temperature display with flexible PT 100 sensor (4 wire), can be documented with Hettich software
Interior plug, EU shock-proof IP54, max. load 400 Watt 1)
Feedthrough on the left side of the device, Ø 22, 42 or 67 mm
Slide-in module made of stainless steel with guide made of stainless steel (standard slide-in module), max. load 50 kg
HTS 2) slide-in module made of stainless steel with telescope pull-out up to 70%, max. load 40 kg
HTS 2) drawer made of stainless steel with telescope pull-out up to 70%, max. load 40 kg, height 30, 65 or 105 mm
Löwenstein slide-in module (standard), max. load 10 kg
HTS 2) Löwenstein slide-in module with telescope pull-out up to 70%, max. load 10 kg
Petri-dish slide-in module (standard), max. load 10 kg
HTS 2) Petri dish slide-in module with telescope pull-out up to 70%, max. load 10 kg
Hettich Rack (L) for test tubes, length 100-125 mm
Hettich Rack (XL) for test tubes, length 126-170 mm
Glass door for HettCube
Stack kit for secure stacking of two HettCube models 200 or 200 R on top of each other
Roller container for a HettCube model 200 or 200 R
Hettich orbital shaker HSM 10

- 1) Further options, such as country-specific interior sockets for the US, Great Britain and Switzerland, on request.
- 2) HTS: Hettich Tray System

29.2 Converter to USB

A converter from the RS422/485 interface to USB is available.

Scope of delivery: 1 converter, 1 connecting cable (D-SUB extension 1:1, 9-pin, 5m), 1 USB cable 0.9m (from PC to the converter), 1 CD-ROM (mini CD) with interface drivers, 1 CD-ROM (CD) with program for programming and recording the HettCube data.

29.3 Converter to Ethernet

A converter from the RS422/485 interface to Ethernet is available.

Scope of delivery: 1 converter, 1 connecting cable (D-SUB extension 1:1, 9-pin, 5m), 1 adapter (2x9-pin, male) 1 patch cable (5 m), 1 CD-ROM (mini CD) with interface drivers, 1 CD-ROM (CD) with program for programming and recording the HettCube data.


29.4 Program for programming and recording HettCube data

A program for programming and recording HettCube data is available. Data from a device can be recorded for a period of max. 60 days.

 This program is already included in the scope of delivery of the converter to USB and Ethernet.

29.5 Analogue output for independent temperature measurement in the interior

The device can be equipped with an additional temperature sensor (PT100) and an analogue output for independent temperature measurement.


The analogue output is labelled with the  symbol.

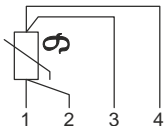
Analogue output 4-20 mA DC, temperature range 0-100°C, external voltage supply 7.5 ... 30 V DC.

External temperature measuring devices can be connected to this output.

29.6 4-pin output for independent temperature measurement in the interior

The device can be equipped with an additional temperature sensor (PT100) with a 4-pin output for independent temperature measurement.

The 4-pin output is labelled with the  symbol.






External temperature measuring devices can be connected to this output.

29.7 Display of the temperature of the sample material

The device can be equipped with an additional temperature sensor (PT100). The temperature of the sample material can be measured with this temperature sensor. This temperature can be displayed.

 If no key is pressed for 180 seconds, or if the **EXIT** key was pressed for longer than 2 seconds, the actual and set temperatures are displayed again.

- Press and hold the  key for 5 seconds. After 5 seconds, **USER** appears on the display.
- Press the  key. The temperature of the sample material (InP1) is displayed.

 After 180 seconds, the actual and set temperature are displayed automatically.

- Keep the **EXIT** key pressed for 2 seconds so that the actual and set temperatures are displayed.

29.8 Interior socket

As an option, the device can be equipped with an interior socket (type of protection IP54).

The socket is thermally secured to prevent damage to the incubator by over-temperature. At a temperature of 75°C (\pm 5 K) in the interior, the socket is automatically turned off and turned on again at a temperature of 53°C (\pm 14 K).

The socket is also equipped with electrical fuses. In switch (A), for switching the socket on and off, there is an over-current protection fuse. This triggers if the maximum load of 400 W is exceeded.



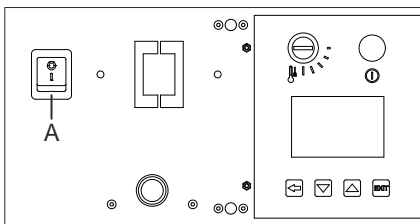
Sockets or the use of external devices in the interior of the incubator are only useful in cooled incubators, which can compensate for this additional heat output. For more important information, see the chapter "Heat compensation".

The maximum load of the interior socket is 400 W.

It is also possible to equip the device with several interior sockets. In this case, the total power of 400 W may not be exceeded regardless of the number of outlets used.

Please contact Andreas Hettich GmbH & Co. KG or your contact partner as needed.

The switch (A) for switching the interior socket on and off is located behind the cover of the front panel; see figure.



In order to be able to operate switch (A), the cover of the control panel must be removed.



Before removing the cover, make sure that it is not fixed with a screw; see the illustration in the chapter "Fixing the control panel cover".

To remove the cover, grab it on one side and pull out.

29.9 Feedthrough on the left side of the device

The device can be furnished with a feedthrough on the left side of the device.

The feedthrough is available with a diameter of \varnothing 22 mm or \varnothing 42 mm or \varnothing 67 mm and has a screw plug.

It is also possible to install the feedthrough at the back of the device. Please contact

Andreas Hettich GmbH & Co. KG or your contact partner as needed.

For how to use the feedthrough, see the chapter "Feedthrough with screw plug".

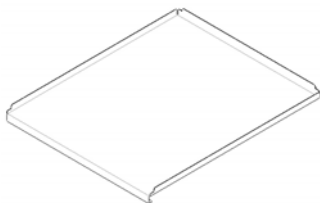
29.10 Standard slide-in module

The standard slide-in modules are held by support rails.



The standard slide-in modules are not secured against falling out. Do not completely pull out the slide-in modules.

The maximum load per standard slide-in module is 50 kg.



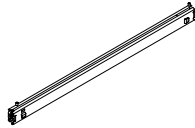
Standard slide-in module

29.11 Slide-in module and drawers with telescope pull-out

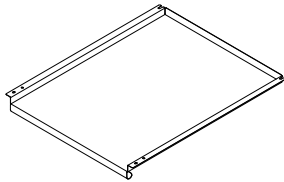
The slide-in module and the drawers can be pulled out by 70%. A stop prevents the slide-in module and drawers from falling out.



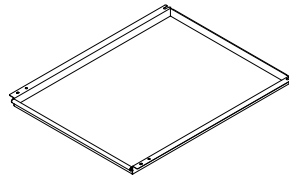
The maximum load per slide-in module or drawer with telescope pull-out is 40 kg.



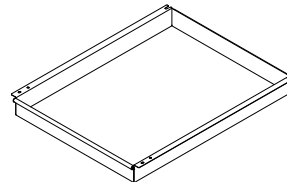
For slide-in modules and drawers with telescope pull-out, two telescope rails each are needed. These are included in the delivery for orders of slide-in modules and drawers.



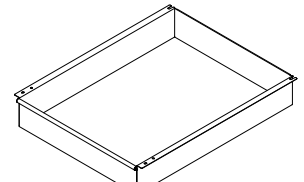
Slide-in module



Drawer, 30 mm high



Drawer, 65 mm high



Drawer, 105 mm high

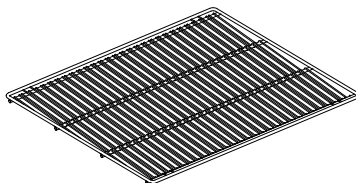
29.12 Löwenstein slide-in module

The Löwenstein slide-in module is designed for the storage of test tubes in an oblique position.

This slide-in module is available with support rails and telescope rails. These are included in the delivery for orders of slide-in modules.



The maximum load per Löwenstein slide-in module is 10 kg.



Löwenstein slide-in module

29.13 Petri-dish slide-in module

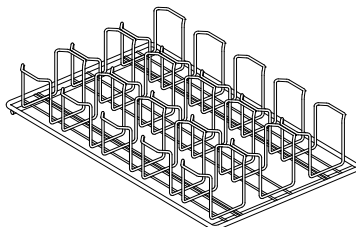
The Petri dishes slide-in module is designed for the safe storage of stacked Petri dishes.

This slide-in module is available with support rails and telescope rails. These are included in the delivery for orders of slide-in modules.

Two slide-in modules fit in one support rail or on one telescopic rail.



The maximum load per Petri-dish slide-in module is 10 kg.



Petri-dish slide-in module

29.14 Glass door

All HettCube models are available with a glass door.

The advantage of a glass door is that one can look into the device without having to open the door.

29.15 Stack kit

(for HettCube 200 / 200 R only)

2 of the HettCube 200 / 200 R devices may be stacked on top of each other.

The stack kit is required to stack 2 devices on top of each other securely.

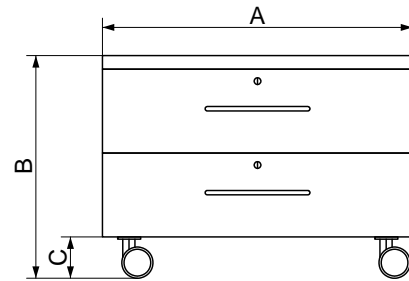
The top device also has to be secured against tipping. We recommend the fixing kit (order number 60012) to securely attach the upper device to the wall.

29.16 Roller container

(for HettCube 200 / 200 R only)

For the HettCube 200 / 200 R devices, there is a roller container available, on which the devices can be placed.

- Fasten the 4 mounting brackets for the device feet to the top section of the roller container using the screws (M5) included in delivery.
- Lift the device with an appropriate number of helpers and place it on the roller container so that the mounting brackets are in the device feet.



A = 770 mm C = 101 mm
B = 550 mm Depth = 800 mm

29.17 Orbital shaker HSM 10

The orbital shaker HSM 10 can mix fluids in various containers. The maximum load is 10 kg.

30 Maintenance and servicing



The device can be contaminated.



Pull the mains plug before cleaning.

Before any other cleaning or decontamination process other than that recommended by the manufacturer is applied, the user has to check with the manufacturer that the planned process does not damage the device.

The filter mat behind the ventilation slots is electrostatically charged and therefore may not be cleaned. In the event of strong contamination, the filter mat must be exchanged. For devices with cooling, we recommend that the filter mat be exchanged once a year.



For easier cleaning of the interior, the rails and sheets can be removed from the interior.

- They may only be cleaned by hand and disinfected with liquids.
- The water temperature must be between 20 – 25°C.
- Only detergents/disinfectants may be used which:
 - have a pH between 5 - 8
 - do not contain caustic alkalis, peroxides, chlorine compounds, acids and alkaline solutions
- In order to prevent appearances of corrosion through cleaning agents or disinfectants, the application guide from the manufacturer of the cleaning agent or disinfectant are absolutely to be heeded.



The housing of the device has an exterior RAL 9016 powder coating.
The interior of the device is made of stainless steel (1.4301).

30.1 Surface cleaning and care

- Clean the housing and the interior of the device regularly and, if necessary, clean with soap or a mild detergent and a moist cloth. This is for hygienic purposes and prevents corrosion due to adhering contaminants.
- Ingredients of suitable detergents:
soap, anionic tensides, non-ionic tensides.
- After using detergents, remove the detergent residue by wiping with a damp cloth.
- The surfaces must be dried immediately after cleaning.
- The interior is to be checked for damage once a year.



If damage is found which is relevant to safety, the device may no longer be put into operation. In this case, notify Customer Service.

30.2 Surface disinfection

- If infectious material gets into the interior, disinfect it immediately.
- Ingredients of suitable disinfectants:
ethanol, n-propanol, isopropyl alcohol, ethyl hexanol, corrosion inhibitors.
- After using disinfectants, remove the disinfectant residue by wiping with a damp cloth.
- The surfaces must be dried immediately after disinfecting.

30.3 Removal of radioactive contaminants

- The agent must be specifically labelled as being an agent for removing radioactive contaminants.
- Ingredients of suitable agents for removing radioactive contaminants:
anionic tensides, non-ionic tensides.6
- After removing the radioactive contaminants, remove the agent residue by wiping with a damp cloth.
- The surfaces must be dried directly after removing the radioactive contaminants.

30.4 Autoclaving



Autoclaving accelerates the ageing process of plastics. In addition, it can cause discolourations in plastics.

The slide-in modules, drawers, support rails, telescope rails, latching rails and plates in the interior can be autoclaved at 121°C / 250°F (20 Min).

Before autoclaving, these parts must be removed from the interior.

Nothing definitive can be said about the degree of sterility.

30.5 Removing the rails and sheets from the interior

For easier cleaning of the interior, the rails and sheets can be removed from the interior.

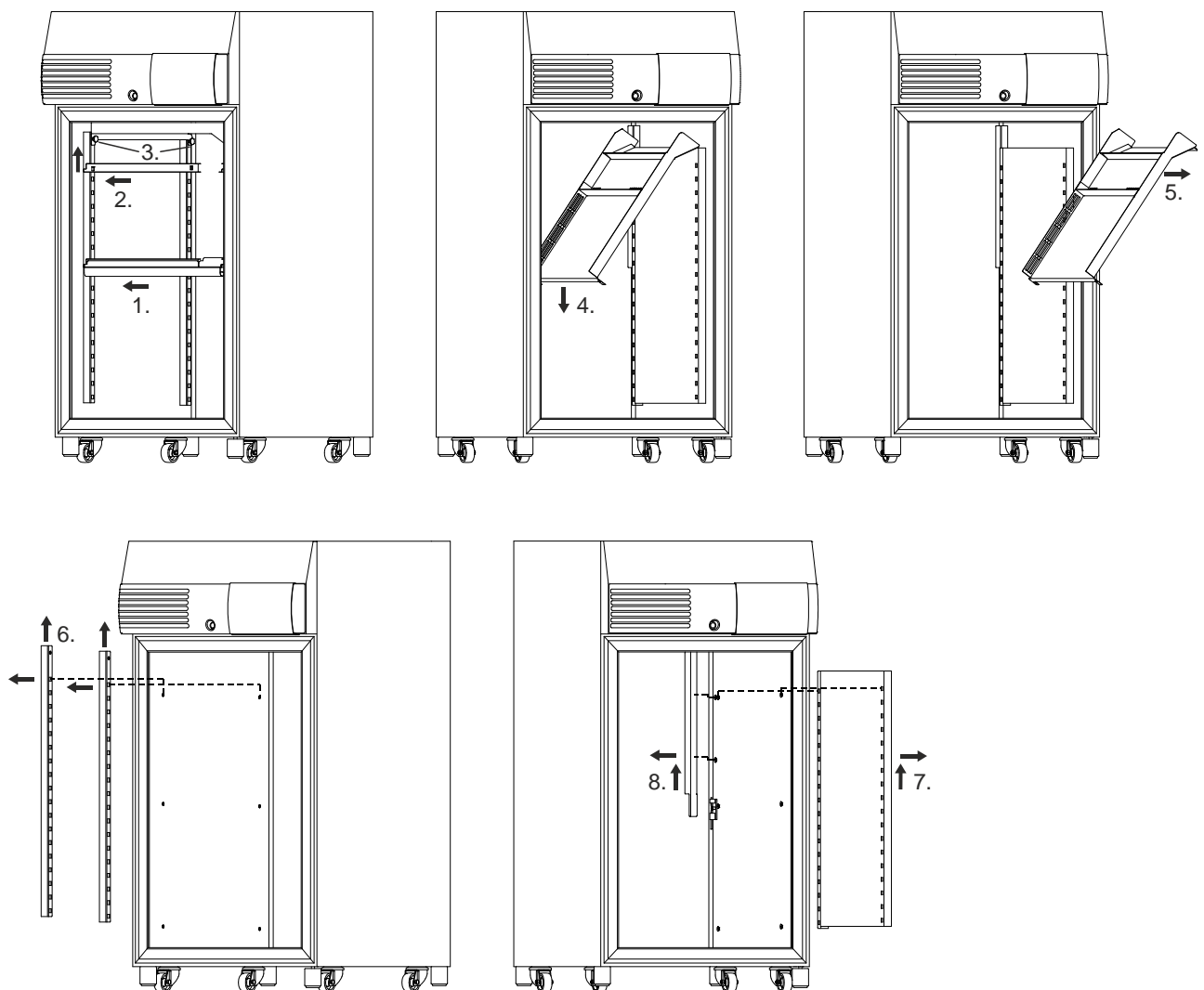
Removal:

1. Remove the slide-in modules and drawers.
2. Disengage the support rails upward and out of the front latching rail and then pull out toward the front from the rear latching rail.
3. Hold onto the baffle sheet and screw out both knurled screws.
4. Flip the top baffle sheet down.
5. Remove the baffle sheet toward the front.
6. Disengage the two latching rails upward and then remove toward the front.
7. Disengage the right baffle sheet upward and then remove toward the front.
8. Disengage the cover sheet of the temperature sensor upward and then remove toward the left.



Installation is done in the opposite order.


When installing the upper baffle sheet, push this upward and fasten with the two knurled screws. It must be flush with the ceiling of the interior.



31 Malfunctions

If the error can't be remedied using the troubleshooting table, notify Customer Service.


Please specify the type of device and the serial number. Both numbers can be found on the name plate of the device.

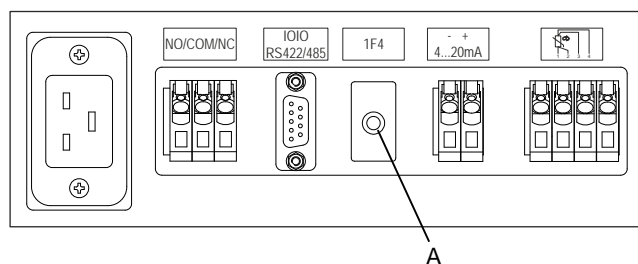
 If a malfunction occurs, there is an optical and acoustic alarm.
The acoustic alarm is ended by pressing the **EXIT** key.

Display	Cause	Remedy
No display	No voltage	<ul style="list-style-type: none"> - Check the supply voltage. - Turn the circuit breaker on again, see "Switching on the circuit breaker" chapter (only with types xxxxx-01, xxxxx-03, xxxxx-04 and xxxxx-05). - Switch on the main switch.
t – AL	The door is open. After 2 minutes there is an acoustic alarm. Temperature in the interior is too high or too low. The temperature deviates from the setpoint by more than 1K. Temperature monitor incorrectly set.	<ul style="list-style-type: none"> - Close the doors. - Adjust the temperature monitor.
- 1999	Controller error.	- Notify customer service.
9999		
- - - -		
The setpoint display is flashing.		
ProF		
OPt		

32 Activating the automatic circuit breaker

(only for types xxxxx-01, xxxxx-03, xxxxx-04 and xxxxx-05)

 Switch off the mains switch and disconnect the device from the mains!



- Press the plastic pin (A) of the circuit breaker.
- Reconnect the device to the mains.

33 Returning Devices

If the device or its accessories are returned to Andreas Hettich GmbH & Co. KG, in order to provide protection for people, the environment and materials, it has to be decontaminated and cleaned before being shipped.

We reserve the right to refuse contaminated devices or accessories.

Costs incurred for cleaning and disinfection are to be charged to the customer.

We ask for your understanding in this matter.

34 Disposal

Before disposal, the device must be decontaminated and cleaned to protect people, the environment and property.

When you are disposing of the device, the respective statutory rules must be observed.

Pursuant to guideline 2002/96/EC (WEEE), all devices supplied after August 13, 2005 may not be disposed as part of domestic waste. The device belongs to group 8 (medical devices) and is categorized in the business-to-business field.



The icon of the crossed-out trash can shows that the device may not be disposed as part of domestic waste.

The waste disposal guidelines of the individual EC countries might vary. If necessary, contact your supplier.