Thermo Scientific
Heratherm Compact Microbiological Incubator

IMC 18

Operating Instructions

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Safety Information

Basic operating precautions

These operating instructions describe the Heratherm Incubator IMC 18.

The Heratherm Incubator IMC 18 has been manufactured to the latest state of the art and been tested thoroughly for flawless functioning prior to shipping. However, the device may present potential hazards, particularly if it is operated by inadequately trained personnel or if it is not used in accordance with the intended purpose. Therefore, the following must be observed for the sake of accident prevention:

- The Heratherm Incubator IMC 18 is only to be used by trained and authorised personnel.
- The present operating instructions, applicable safety data sheets, plant hygiene guidelines and the corresponding technical rules issued by the operator shall be used to create written procedures targeted at personnel working with the subject matter device, detailing:
  - the disinfection measures to be employed for the device and the accessories used with it,
  - not to be used in a humid atmosphere,
  - the protective measures which are to be taken when processing certain agents,
  - action to be taken in case of accidents.
- Maintenance work on the device is only to be carried out by trained and authorised specialists.
- The contents of these operating instructions are subject to change at any time without further notice.
- Concerning translations into foreign languages, the German version of these operating instructions is binding.
- Keep these operating instructions close to the device so that safety instructions and important information are always accessible.
- Should you encounter problems that are not detailed adequately in these operating instructions, please contact Thermo Fisher Scientific immediately for your own safety (see chapter Contact Information).

Safe usage instructions

Observe the load of the shelves (refer to chapter technical data).

Distribute the items evenly and do not place them too close to the interior walls, so as to ensure a good temperature distribution.

Guarantee

Thermo Fisher Scientific warrants the operational safety and functions of the Heratherm Incubators IMC 18 only under the condition that:

- the device is operated and serviced exclusively in accordance with its intended purpose and as described in these operating instructions,
- the device is not modified,
- only original accessories that have been approved by Thermo Fisher Scientific are used.

The warranty is valid from the date of delivery of the device to the customer.

Explanation of safety information and symbols

Safety information and symbols used in the operating instructions

		 **Indicates a hazardous situation which, if not avoided, will result in death or serious injuries.**
		 **Indicates a hazardous situation which, if not avoided, could result in death or serious injuries.**
		 **Indicates a situation which, if not avoided, could result in damage to property.**
		 **Is used for useful hints and information regarding the application.**

Additional symbols for safety information

		Wear safety gloves!
		Wear safety goggles!
		Harmful liquids!
		Electrical shock!
		Fire hazard!
		Contamination hazard!

Symbols on the device / Applicable standards

Observe operating instructions

VDE test mark
This device has been tested by the VDE on the basis of DIN EN 61010-1 (IEC 61010-1) and DIN EN 61010-2-010 (IEC 61010-2-010) and bears the VDE GS symbol for tested safety. It is subjected to production monitoring by the VDE.

CE-conformity mark: confirms the conformity with the EU directives having validity for this product, this being confirmed in the EC Declaration of Conformity for this product.

Mark of conformity USA/Canada
This device has been tested by the Canadian Standards Association (CSA) on the basis of CAN/CSA-C22.2 No. 61010-1 and CAN/CSA-C22.2 No. 61010-2-010, UL 61010-1 and IEC 61010-2-010 and bears the cCSAus symbol for tested safety. It is subject to production monitoring by the CSA.

Intended use of the device

Correct use

The Heratherm Incubator IMC 18 is a laboratory device in the standard version and serves the preparation and cultivation of microbiological cultures and micro-organisms in safety levels L1 and L2. The device enables the special physiological ambient conditions which these cultures require to be simulated due to it exactly controlling the useable space temperature. The device is only to be used in indoor locations.

Incorrect use

To avoid the risk of explosion do not load the device with tissue, material, or liquids that:

- are easily flammable or explosive,
- release vapor or dust that forms combustible or explosive mixtures when exposed to air,
- release poisons,
- create a humid atmosphere,
- release dust,
- have an increased biological risk potential (safety level L3, L4).

The incubator are not to be stacked.

		NOTE **A use of the device which is not intended can be hazardous.**

Delivery of the device

Packaging

The Heratherm Incubator IMC 18 is delivered in a rugged packaging box. All packaging materials can be separated and are reusable:

Packaging materials

Packaging carton:	Recycled paper
Foam elements:	PE-foam
Packaging film:	Polyethylene

Acceptance inspection

After the device has been delivered, check the delivery immediately for:

- completeness,
- possible damage.

If components are missing or damage is found on the device or the packaging, in particular damage caused by humidity and/or water, please notify the carrier as well as Thermo Scientific Technical Support immediately.

Scope of supply

Quantity of components supplied	Pieces
Perforated shelf	**2**
Power cord, version US *	**1**
Power cord, version EMEA/APAC *	**4**
Mains adapter 12 V DC	**1**
Instruction Manual	**1**

***** Only one power cord package is included - based on standard of the countries.

Installation

Environmental conditions

The Heratherm Incubator IMC 18 device must only be operated in a location that meets all of the specific ambient condition requirements listed below:

Location requirements

- Cited in a dry area within a closed space which is free from draughts.
- Dust loading should be in keeping with the degree of contamination, which is Degree 2 according to DIN EN 61010-1 (IEC 61010-1). Using the incubator in an atmosphere with electrically conductive dust is prohibited.
- The minimal distance to adjacent surfaces must be observed on all sides (see Section 3.3).
- The operating room must be equipped with appropriate ventilation.
- Solid, level, fire-proof surface.
- Vibration-proof substructure (floor stand, lab table) capable of bearing the dead weight of the device and its accessories.
- The electrical circuitry of the device has been designed for an operating height of up to 2000 m above sea level.
- The permissible ambient temperature is between +18 °C and 32 °C (+64.4 °F and + 89.6 °F) for an incubation temperature of between 17 °C and 40 °C (62.6 °F and 104 °F).
- Relative humidity up to 80% (maximum; preferably 60-70%), non condensing.
- Dew is to be avoided, e.g. after changes of location or transportation. Should condensation exist, wait until the moisture has evaporated completely before connecting the device to a power source and powering up.
- Avoid direct exposure to sunlight.
- Devices that produce excessive amounts of heat must not be placed near the device.
- Storage temperature: When the device is placed in intermediate storage, make sure that the ambient temperature is between 20 °C and 60 °C (68 °F and 140 °F) and the maximum relative humidity does not exceed 90%, non-condensing.

Room ventilation

Heat dissipating from the device during continuous operation may cause a change in the room climate.

Therefore, the device must only be installed in rooms with sufficient ventilation.

Do not install the incubator in room recesses without ventilation.

When several devices are to be placed in the same room, additional ventilation may have to be provided as necessary.

The room ventilation is to be of a technical form which is designed in accordance with the thermal input.

Installation

When installing the device, make sure that the installation and supply connections remain freely accessible. The minimum wall clearance is 5 cm / 2 in on the sides and back. No other devices are to be placed on the device.

		NOTE **The cooling fan on the back of the device is not to be covered. It is not to suck-in any loose items (e.g. paper).**

Transport

The device is not to be lifted by the door or attachments when being transported.

Description of unit

Device overview

Front view

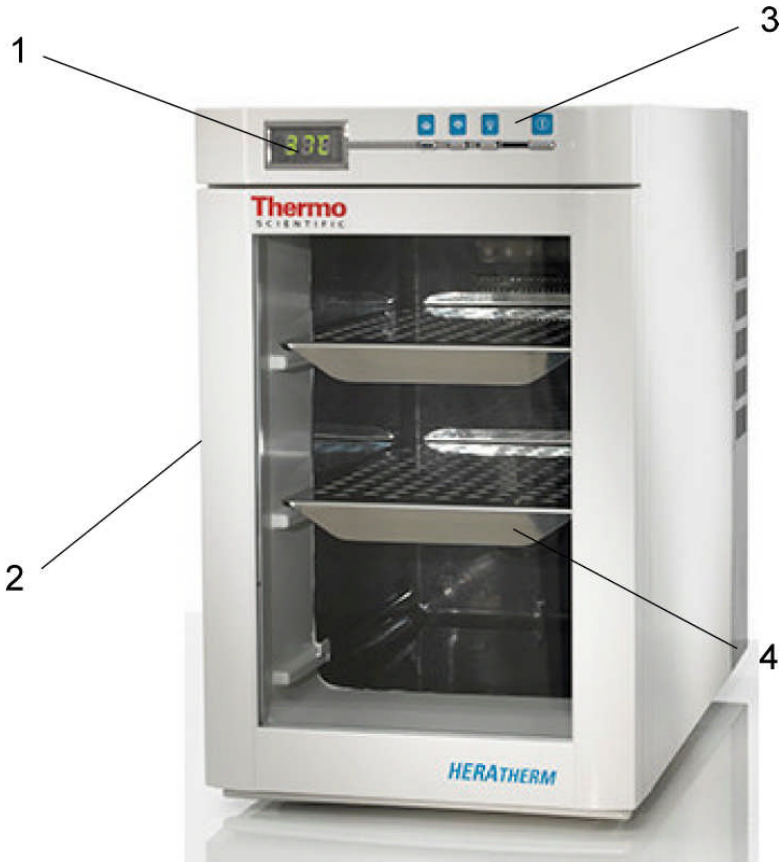

Figure 4-1: Front view Heratherm Incubator IMC 18

[1] Temperature display
[2] Door/door handle
[3] Control panel
[4] Perforated shelf

Rear view

Figure 4-2: Rear view Heratherm Incubator IMC 18
[1] Fan
[2] Mains adapter

Mains connection

The mains connection of the device is done by connecting the enclosed mains adapter to the 100 V to 240V a.c. supply; mains fluctuation +/-10%, 50/60 Hz

Useable space components

The surface of the useable space of the Heratherm Incubators IMC 18 is reduced to a minimum and therefore supports the protection against contamination and its easy and efficient elimination. All of the parts of the inner chamber of the Heratherm Incubator IMC 18 are made of plastic and have a smooth and easy to clean surface.

A heat exchanger element in the rear wall serves to heat or cool the useable space as required.

The useable space lighting can be switched on using the button  on the control panel.

Perforated shelf

The metal shelves have an anti-tipping device. The perforated shelf is described in detail in the chapter entitled Commissioning.

Condensation tray

A removable tray [Fig. 4-3; 2] is provided underneath the device which collects the condensation which occurs whilst the useable space is in use.

Figure 4-3: Shelves and the condensation tray in the Heratherm Incubators IMC 18

[1] Perforated shelf
[2] Condensation tray

Installation procedures

Remove the packing foil.

Insert the perforated shelves

Remove the transport securing devices from the perforated shelves.

Insert the perforated shelves in the grooved profiles on the side walls of the useable space.

Preparing the useable space

The Heratherm Incubator IMC 18 is not delivered in a sterile condition.

The following useable space components should be checked for cleanliness and disinfected prior to use:

- perforated shelves,
- useable space surfaces,
- door seal,
- useable space door.

Mains connection

DANGER **Electrical shock**

Contact with live electrical components may cause a lethal electric shock.
Before connecting the device to the power supply, check the power cord and the plug for damage. Do not use damaged cables for connecting the device to the power supply!

Connect the device to the on site fused mains supply with the following values:

- Safety fuse (time-lag) T 16 A or circuit breaker B 16.
- Connection via a fault current circuit breaker (triggering current ≤ 30 mA) is recommended.

Connection to the power supply source

1. Before connecting the device to the power source, check to see if the power supply voltage corresponds with the specifications on the nameplate on the rear of the device. If the voltage (V) and current (A) ratings given are not as required, do not connect the device to the power source!
2. Connect the IEC connector to the socket on the rear of the device.
3. Insert the earthed plug of the mains cable in a correctly earthed and fused socket.

		NOTE **Power sockets** **The socket which the device is connected to is to be fully accessible when operating the device so as to ensure that the plug can be removed should danger occur!**

4. Make sure the power cord is not subjected to tensile or compressive force.

		NOTE **Condensation** **The device should be in the room for a sufficiently long duration before it is switched on, in order to ensure that it can reach the ambient temperature. This prevents condensation forming on live components.**

Operation

Preparing the device

The device must not be released for operation before all major start-up activities have been completed (see chapter Installation procedures).

Device Check

Prior to starting operation, the following device components must be checked for their correct function:

- The seal in the door must not be damaged.
- The perforated shelves have been correctly inserted.

Starting Operation

1. Switch the device on with button  .
2. The display shows the current useable space temperature.
3. Set the target values for the temperature using buttons  and  on the control panel.
4. Wait until the device has reached the set temperature. The temperature control regulates the temperature at the set target temperature value.
5. Load the useable space.

		NOTE **Proper loading** **To ensure sufficient air circulation and uniform heating of the samples, do not use more than 70% of the maximum surface area of the useable space. Bulky objects in the useable space that dissipate heat may impair heat distribution.**

Handling and control

This chapter explains the operating elements of the Heratherm Incubators IMC 18 in addition to providing operating instructions.

Figure 7-1: Control panel Heratherm Incubator IMC 18

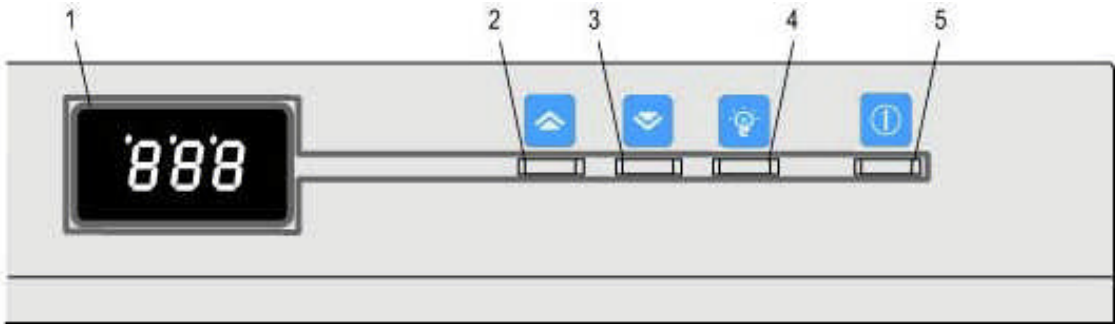

Table 7-1: Operating elements of the Heratherm Incubators IMC 18

No.	Designation	Function
1		Display with permanent indication of the current useable space temperature in °C in two figures (a switching over to other temperature units is not possible).
2		Increases the desired temperature by 1 °C (33.8 °F).
3		Decreases the desired temperature by 1 °C (33.8 °F).
4		Switches the interior light on or off.
5		Switches the Heratherm Incubator IMC 18 on or off.

Powering up and down

Switch the Heratherm Incubator IMC 18 on by pressing button  (Fig. 7-1; 5).

The display (Fig. 7-1; 5) is activated and shows the current useable space temperature.

To switch off the Heratherm Incubator IMC 18, press button  (Fig. 7-1; 5) again. The device switches itself off and the display turns off.

Setting the temperature

You can preselect temperatures between 17 °C and 40 °C (+63 °F and +104 °F). The thermal output and cooling capacity can be influenced by:

- the ambient temperature,
- the number of samples which are to be heated up or cooled down,
- the frequency with which the door is opened.

Press button  (Fig. 7-1; 3), in order to reduce the required temperature by 1 °C (34 °F) each time or press button  (Fig. 7-1; 2), in order to increase the temperature by 1 °C (34 °F) each time.

The display (Fig. 7-1; 1) shows the set required temperature when you press button.

Interior light

If you wish to turn the interior light on or off, press the  (Fig. 7-1; 4) button.

Shut-down

Shutting the device down

WARNING **Contamination hazard**

If the useable space surfaces are contaminated, germs may spread to the environment of the incubator.

1. Remove all items and all auxiliary agents from the useable space.
2. Turn the device off using the control panel.
3. Unplug the power connector and secure it against accidental reconnection.
4. Until the incubator is shut down, the useable space must be continuously ventilated. Leave the door open and secure it against accidental closure.

Cleaning and disinfection

Empty the condensation tray

Empty the condensation tray from underneath the device. To do so, pull the condensation tray completely out of the device (see Fig. 4-3), when the door is open.

DANGER **Electrical shock**

Contact with live electrical components may cause a lethal electric shock.
Disconnect the device from the mains before carrying out cleaning and disinfection work!

- **Switch the device off with button .**
- **Remove the plug from the socket and secure it against reconnection.**
- **Check whether the device is voltage-free.**

Cleaning exterior surfaces

Remove dirt residues and depositions thoroughly using a solution of lukewarm water and commercial detergent.

Wipe the surfaces clean using a clean cloth and clear water.

Then, wipe the surfaces dry using a clean cloth.

Vacuum the fan guard on the back with a household vacuum cleaner.

Wipe / spray disinfection

The manual wipe and spray disinfection is a three-stage process:

- predisinfection,
- cleaning,
- final disinfection.

Space is to be made available for this disinfection work which is suitable for a treatment of the removed device components with cleaning agents and disinfectants.

CAUTION **Incompatible cleaners**

Some device components are made of plastics. Solvents may attack plastics. Strong acids or alkaline solutions may cause embrittlement of plastics.

CAUTION **Moisture-sensitive components**

Do not spray cleaning agent onto the display.
When wiping over, ensure that no moisture is able to penetrate the display or run behind the door seal.
Wipe the display dry with a rag made of 100% microfiber.

CAUTION **Alcoholic disinfectants!**

Disinfectants having an alcohol content of more than 10% may form, in combination with air, easily combustible and explosive gas mixtures.

When using such disinfectants, avoid open flames or exposure to excessive heat during the entire disinfection process!

- **Use such disinfectants only in adequately ventilated rooms.**
- **After the disinfectant has been allowed to react, wipe the cleaned incubator components thoroughly dry.**
- **Observe safety regulations to avoid fire and/or explosion hazard caused by alcohol-containing disinfectants.**

CAUTION **Chloride-containing disinfectants!**

Chloride-containing disinfectants can corrode stainless steel.

- **Use only disinfectants that do not affect stainless steel!**

WARNING **Health hazard**

The surfaces of the useable space may be contaminated. Contact with contaminated cleaning liquids may cause infections. Disinfectants may contain harmful substances.

When cleaning and disinfecting, always observe the safety instructions and hygiene guidelines!

- **Wear safety gloves.**
- **Wear safety goggles.**
- **Wear mouth and respiratory system protection gear to protect your mucous membranes.**
- **Observe the safety instructions of the disinfectant s manufacturer and the hygiene supervisor.**

Predisinfection

1. Remove all samples from the useable space and store them in a safe place.
2. Spray or wipe over the surfaces of the useable space and or the perforated shelves with a disinfectant.
3. Allow time for the disinfectant to act as specified by the manufacturer.

NOTE **Moisture-sensitive components**

Do not spray disinfectants onto the rear of the interior.

Cleaning

1. Remove the perforated shelves from the useable space.
2. Wipe over the surfaces of the useable space and the removed perforated shelves with tepid water containing household washing-up liquid. Also remove all stubborn stains with warm water and washing-up liquid without residues.
3. Rinse the cleaned surfaces 3-5 times with autoclaved water so as to fully remove cleaning agent residues.
4. Then rub the surfaces and cleaned perforated shelves dry with a soft sterile cloth.

Final disinfection

1. Again spray or wipe over the surface of the useable space and the removed perforated shelves with a disinfectant.
2. Allow time for the disinfectant to act as specified by the manufacturer.
3. Replace the perforated shelves in the useable space.

Maintenance

Inspections and checks

The cooling circuit is maintenance-free and does not contain CFC.

To ensure the operational performance and safety of the incubator, the functions and the components listed below must be checked at regular intervals.

Daily check

Check the water level in the condensation tray underneath the device on a daily basis. In order to empty it, pull the condensation tray completely out of the device (see Fig. 4-3) when the door is open.

Annual inspection:

- Perform functional check of the control panel and of the device s temperature controller.
- Perform electrical safety check in accordance with the relevant national regulations.

Disposal

WARNING **Contamination hazard**

The incubator may have been used for treating and processing infectious substances, which may have caused contamination of the device and its components.

Prior to disposal, it is therefore mandatory that all incubator components be properly decontaminated!

- **Clean the incubator components thoroughly, then disinfect or decontaminate them (depending on application).**
- **Attach a declaration of decontamination with details on decontamination activities performed to the items that are to be disposed of.**

Overview of materials used

Component	Material
Thermal insulation components	PU-foam
Printed circuit boards	Covered electrical components with diverse plastics, on epoxy resin-bonded printed circuit boards.
Plastic components, general	see material labelling
Exterior housing	Plastic
Device rear panel	Plastic
Outer door	Plastic
Heater	Peltier element
Inner chamber	Plastic
Perforated shelves	Stainless steel
Door seal	Cellular rubber
Fan impeller	Plastic
Cables	Plastic-sheathed stranded copper wire
Packaging	Corrugated board, polyethylene film, and PE-foam

WEEE Conformity

This product is subject to the regulations of the EU Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96. It is marked by the symbol shown below:

Thermo Electron has entered into agreements with recycling and disposal companies in all EU Member States for the recycling and disposal of this device. For information on how Thermo Electron secures conformity with this directive, on recycling and disposal companies in your country and on the products of Thermo Fisher Scientific, which fall under the RoHS Directive (Restriction of the use of certain hazardous substances in electrical and electronic equipment), please visit the website www.thermo.com/WEEERoHS.

Technical Data

Designation	Value
Volume	4.75 US gal - 18 liter
Dimensions (W x H x D)	10.3 x 16.4 x 18.5 in - 260 x 415 x470 mm
Interior dimensions	7.8 x 12.2 x 12.2 in - 200 x 310 x 310 mm
Weight	approx. 15.9 lbs - 7.2 kg
Minimal wall distance	2 in - 50 mm on the sides and back
Number of shelves	Standard 2, maximum 3
Current consumption	0.45 A at 240 VAC, 0.85 A at 100 VAC
Protection class	II
Degree of protection	IP20
Max. mechanical load	4.4 lbs - 2 kg per shelf 11.0 lbs - 5 kg per device
Connection voltage	100-240V AC +/-10% 50/60 Hz, Connection with the enclosed mains adapter
Power consumption - Maximum - Energy consumption under no-load conditions at an ambient temperature of 23 °C (73.4 °F) and a useable space temperature of 37 °C (98.6 °F) - Energy consumption under no-load conditions at an ambient temperature of 23 °C (73.4 °F) and a useable space temperature of 17 °C (62.6 °F)	 45 W 14 W 20 W
Temperature deviations - spatial with an ambient temperature of 23 °C (73.4 °F) - temporal with an ambient temperature of 23 °C (73.4 °F)	 +/- 1.2 °C at 37 °C (+/- 34.2 °F at 98.6 °F) +/- 0.2 °C at 37 °C (+/- 32.36 °F at 98.6 °F)
Heating up time (device empty, to 98% of the set temperature)	37 °C (98.6 °F) - 30 minutes

Designation	Value
Recovery time (device empty, door 30 s open, to 98 % of the set temperature)	**37 °C (98.6 °F) - 5 minutes**
On site single fuses*	**- safety fuse (time-lag) T 16 A or circuit breaker B 16 - connection via a fault current circuit breaker (triggering current ≤ 30 mA) is recommended**
Controllable temperature range in the useable space	**+17...40 °C (+62.6...104 °F) with an ambient temperature of between 18 and 32 °C (64.4 and 89.6 °F)**

* The national electrical engineering rules and corresponding technical connection conditions are to be adhered to when connecting to the mains supply.

Contact Information

Overview of the international Thermo Fisher sales organisations

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