# Service manual

**Refrigerator/freezer**

**LABEX®-Series PRO-ACTIVE / ULTIMATE**

Read the instructions prior to performing any task!

Philipp Kirsch GmbH
Im Lossenfeld 14
77731 Willstätt-Sand
GERMANY
Telephone:  +49 781 9227-0
Fax:  +49 781 9227-200
Email:  info@kirsch-medical.de
Internet:  www.kirsch-medical.de

D1232_04.25_KD_Typ(FROSTER-LABEX730)_ab Fabriknummer 700 18 25010 Schlüsselschalter, 2, en_GB

**Target audience**

This manual is aimed at the following persons:

Personnel:
- Customer service
- Certified refrigeration technician

**Models**

This manual is valid for the following model:

| Area | Model | Serial number from |
|---|---|---|
| Laboratory cooling | FROSTER–LABEX® 730 PRO-ACTIVE | 700 18 25010 |

The unit has the following specifications:

- independent rapid defrosting using hot gas
- Forced-air cooling
- Quick-freeze unit
- Delayed inner temperature display
- Lockable door
- Key switch for control
- Door handle
- Self-closing door
- Optical and acoustic warning system
- Power failure warning

**Contact**

**Germany**

PHILIPP KIRSCH GMBH

Im Lossenfeld 14

77731 Willstätt-Sand, Germany

Telephone: +49 (0) 781 9227 0

Fax: +49 (0) 781 9227 200

Email: info@kirsch-medical.de

Mon - Thurs: 08.00 to 12.15, 13.15 to 16.30 Fri: 08.00 to 12.00, 13.00 to 16.00

**Netherlands**

VDW CoolSystems

De Aaldor 8c | NL-4191 PC Geldermalsen, Nederland

Telephone: +31 345 582 546

Fax: +31 345 580 390

E-mail: service@vdwcoolsystems.nl

Order acceptance: 24/7 (24 hours, seven days a week)

**Illustrations**

The illustrations in this manuals are examples. They are intended for a basic understanding and may vary depending on the model.

# Table of contents

# 1 Safety

This section provides an overview of all important safety aspects for optimal protection of patients and staff, and for safe and trouble-free operation of the unit.

Non-compliance with the instructions and safety warnings in this instruction manual can cause considerable risks.

## 1.1 Symbols in this manual

**Safety instructions**

Safety instructions are marked with symbols in this manual. Safety instructions are initiated by signal words that express the degree of risk.

In order to avoid accidents, injury or damage and ensure maximum patient safety, always comply with safety instructions and act with care.

**DANGER!**
This combination of symbol and signal word indicates an imminently hazardous situation that will lead to death or serious injury unless avoided.

**WARNING!**
This combination of symbol and signal word indicates a potentially hazardous situation that can lead to death or serious injury unless avoided.

**CAUTION!**
This combination of symbol and signal word indicates a potentially hazardous situation that can lead to minor or slight injury unless avoided.

**NOTICE!**
This combination of symbol and signal word indicates a potentially hazardous situation that can lead to property damage or environmental damage unless avoided.

**Hints and recommendations**

*This symbol highlights useful hints and recommendations as well as information for efficient and trouble-free use of the unit.*

**Other markings**

| Mark | Explanation |
| --- | --- |
| → | Step-by-step instructions |
| ⇨ | Results of actions |
| ↯ | References to sections in this manual |
| ■ | Lists without a specified order |

## 1.2 Intended use

The unit is a laboratory freezer with an explosion-proof interior. The laboratory freezer is used for commercial storage of biological and chemical substances. The laboratory refrigerator is not a medical product.

## 1.3 Foreseeable misuse

The unit is not designed for domestic use. The unit is used for commercial storage of chilled goods in line with its intended purpose.

Do not use the unit to cool warm goods. Do not store chilled goods in the unit if their cooling chain was interrupted during delivery or stock transfer.

Do not store food or drink in the unit.

Do not store chilled goods that exceed the carrying capacity of the wire shelves and drawers.

## 1.4 Residual risks

**Improper use**

**DANGER!**

**Danger of igniting a potentially explosive atmosphere if used improperly!**

A corresponding risk assessment must be carried out and the proper explosion protection measures must be defined on the basis thereof. The comments from Note a Art. 256 of the ATEX guidelines in Directive 2014/34/EU 1st Edition from April 2016 and the obligations specified in Directive 1999/92/EC must be observed.

When the cold room door is opened, a cold atmosphere can flow out at the bottom. The formation of a potentially explosive area due to atmosphere escaping from the cold room must be avoided. Failure to observe this can result in severe to fatal injuries.

– Avoid electrical and electrostatic ignition sources in this area.
– Use directed, active ventilation.

**Hot surface**

**WARNING!**

**Danger due to hot surface!**

The marked areas of the unit can cause severe skin injuries if touched.

– Do not touch areas of the unit marked in this way.
– These areas are very hot and can still cause burns several hours after the unit has been switched off.

### Electrostatic discharge

**DANGER!**

**Danger due to electrostatic discharge!**

Electrostatic charging and discharging endangers or invalidates the function of the explosion-protected interior.

Make sure that no electrostatic discharge can take place in the interior.

– Before working in the interior of the unit, touch an earthed item (e.g. door handle).
– Clean the interior only with a damp cloth.
– Make sure that the chilled goods are stable and cannot fall over.
– Always use the LABEX® interior fittings.
– Store chilled goods in break-proof, conductive and closed containers.
– Use ESD protective equipment to minimise the risk of ESD charging.

### Blocked interior ventilation

**WARNING!**

**Risk of chilled goods damage due to a blocked inner ventilation !**

A blocked inner ventilation can cause issues to the air circulation inside the unit so that temperature homogeneity won't be ensured any longer. This can lead to a massive temperature deviation inside the unit and may result in damage to the chilled goods.

– Make sure that the ventilation in the upper area is not blocked.
– Do not cover the ventilation grids with chilled goods.
– Make sure that the air outlet in the lower area is not blocked.

### Escaping refrigerant

**WARNING!**

**Danger due to escaping refrigerant!**

The refrigerant used in the unit is explosive and pressurised, and can cause serious injury if it comes into contact with the eyes or skin.

– During transport and set-up, do not bend or pierce the tubing and the evaporator.
– Do not damage the surface coat (scratching it off, for example).
– Wear safety glasses and protective gloves when handling the refrigerant circuit.

**Tilting the unit**

**WARNING!**
**Danger of crushing injuries from falling unit!**
If the unit is tilted, it will fall over in an uncontrolled fashion. When the unit falls over, there is a danger of crushing to the hands and feet.

– Wear safety shoes and safety gloves when transporting the unit.
– Transport the unit in an upright position.

**Electrostatic discharge**

**DANGER!**
**Danger due to electrostatic discharge!**
Electrostatic charging and discharging endangers or invalidates the function of the explosion-protected interior.

Make sure that no electrostatic discharge can take place in the interior.

– Before working in the interior of the unit, touch an earthed item (e.g. door handle).
– Clean the interior only with a damp cloth.
– Make sure that the chilled goods are stable and cannot fall over.
– Always use the LABEX® interior fittings.
– Store chilled goods in break-proof, conductive and closed containers.
– Use ESD protective equipment to minimise the risk of ESD charging.

**Missing power supply**

**CAUTION!**
**Danger of goods and personal damage due to missing power supply!**
In the event of a power failure, the battery supplies power only to the warning system.

The cooling unit is switched off, which can damage or destroy the chilled goods and lead to a serious injuries as a result

– After a power failure, make sure that the cooling unit is supplied with power again.
– If necessary, move the chilled goods.

**Contamination of chilled goods**

**CAUTION!**

**Danger to chilled goods due to contamination!**

A dirty unit can contaminate the stored chilled goods. A contamination can damage or destroy the chilled goods.

– Do not store contaminated chilled goods in the unit.
– After any contamination, clean, disinfect and sterilise the unit and the chilled goods.
– Clean, disinfect and sterilise the unit in line with this instruction manual during operation.
– Comply with the applicable requirements for personal hygiene, disinfection and sterilisation.

**Frostbite from refrigerant**

**WARNING!**

**Risk of frostbite from refrigerant!**

At normal atmospheric pressure and ambient temperatures, liquid refrigerant vaporises so quickly that contact with skin or eyes could cause frostbite (risk of blinding).

– Wear safety glasses and protective gloves when handling the refrigerant circuit.
– Never carry out work on the cooling circuit independently. Never force the cooling circuit open.
– Please pay attention to the type plates in the interior and on the cooling machine.

## 1.5 Safety labelling

### Rating plate

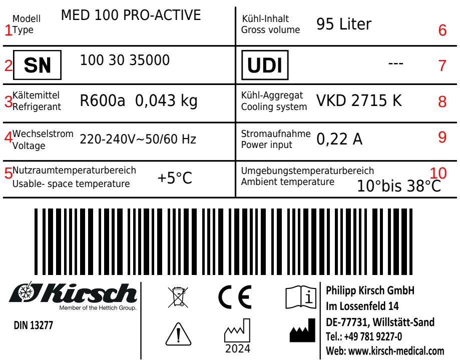
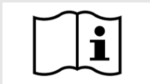
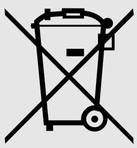



*Fig. 1: Example of a rating plate (MED 100 PRO-ACTIVE)*

The rating plate contains the following information (information corresponds to the red number):

1 - Model
2 - Serial number
3 - Refrigerant
4 - Alternating current
5 - Usable room temperature range
6 - Cooling system capacity
7 - UDI identifier for BL devices only
8 - Refrigeration unit
9 - Power consumption
10 - Ambient temperature range

| Symbol | Meaning |
|---|---|
|  | CE labelling |
|  | Read the instructions for use |
|  | Manufacturer |
|  | Date of manufacture |
|  | Serial number |
|  | Attention |
|  | Old devices must be disposed of separately from household waste.<br>Batteries or rechargeable batteries that are not permanently installed must be removed beforehand and disposed of separately. |

## 1.6 Personnel qualification

**Insufficiently qualified personnel**

**WARNING!**

**Danger of damage and injury due to commissioning by unqualified staff!**

If commissioning is performed incorrectly by unqualified staff, serious damage to the chilled goods can result, which in turn can lead to serious injuries.

– Have all tasks performed only by staff qualified for those tasks.

– Keep unauthorised persons away from the working area.

**Personnel qualifications**

These instructions specify the personnel qualifications required for the various areas of activity listed below:

**Certified refrigeration technician**
Due to their specialist qualification, knowledge and experience, and knowledge of the applicable standards and regulations, certified refrigeration technicians are able to perform work on refrigeration systems and the refrigerant in question, and identify and avoid potential dangers of their own accord.

The acquired certification also includes the expertise required to prevent emissions and safely handle refrigeration equipment of the relevant type and size. Refrigeration technicians have been trained and are certified to work at the specific location of use and are familiar with the relevant standards and regulations.

**Customer service**
Certain work can only be performed by the manufacturer's customer service or by a specialist company contracted by the manufacturer. No other staff is permitted to carry out this work. Contact the manufacturer's customer service to carry out the necessary work.

**Kirsch service contact:**

PHILIPP KIRSCH GMBH

Im Lossenfeld 14

77731 Willstätt-Sand, Germany

Telephone: +49 (0) 781 9227 777

Fax: +49 (0) 781 9227 200

Email: info@kirsch-medical.de

Mon – Thurs: 8.00am to 12.15pm, 1.15pm to 4.30pm, Fri: 8.00am to 12.00pm, 1.00pm to 4.00pm

**General personnel qualification requirements**

Only persons who can be expected to carry out their work in a reliable manner are authorised as personnel. Persons whose ability to react is affected by, for example, drugs, alcohol or medication are not authorised.

When selecting personnel, please take into account the age and job-related regulations in force at the place of work.

## 1.7 Personal protective equipment

Personal protective equipment is used to protect personnel against hazards that could affect their safety or health at work.

Always put on the personal protective equipment required in the various chapters of these instructions before starting the work in question.

Follow the instructions on personal protective equipment in the work area.

Personnel must wear personal protective equipment when performing the various tasks on and with the device. This equipment is referred to separately in the individual chapters in these instructions. This personal protective equipment is explained below:

**NOTICE!**
Suitable ESD protective equipment must be worn when using the device in order to protect the stored refrigerated goods. This must be compliant with the EN 61340-5-1 standard.

**Chemical-resistant protective gloves**
Chemical-resistant protective gloves protect the hands from aggressive chemicals.

**Protective gloves**
Protective gloves protect the hands from friction, abrasions, piercing or deeper injuries as well as from contact with hot surfaces.

**Protective goggles**
Protective goggles serve to protect the eyes from flying debris and splashes of liquid.

# 2 Detailed function description

## 2.1 Details on control

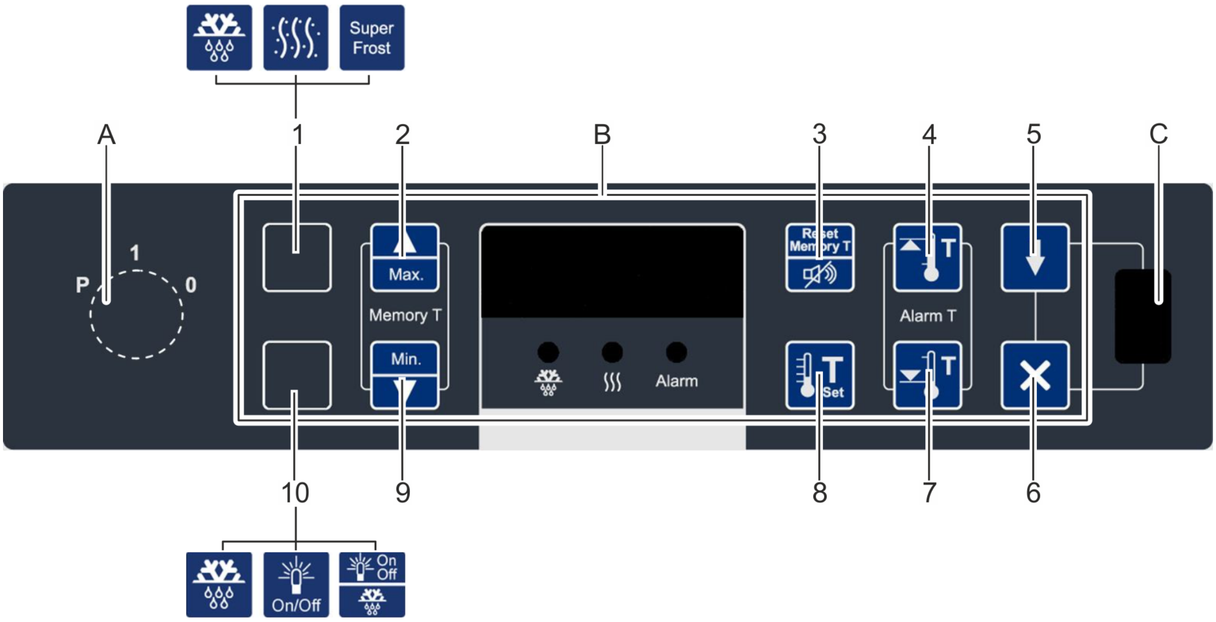



*Fig. 2: Display and control unit*

A Key switch
B Display and control unit (variable key assignment)
C USB port

Please find the functions description of the buttons and signs listed below:

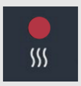
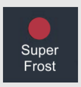
*Tab. 1: Buttons*

| Pos. no. | Button | Description | Function |
|---|---|---|---|
| 1 |  | *[Defrosting]* | Activate additional defrosting. |
| |   | *[SuperFrost]* | Activate SuperFrost function. |
| |  | *[Humidity]* | Adjust humidity. |
| 2 |   | *[Max.]* | Showing maximum value of the temperature memory. |
| 3 |   | *[Reset]* | Reset temperature memory.<br>Switch off buzzer. |

| Pos. no. | Button | Description | Function |
|---|---|---|---|
| 4 |   | *[Temperature warning max.]* | Set point upper temperature limit |
| 5 |  | *[Start]* | Start data download via PC-KIT-STICK |
| 6 |  | *[Cancel]* | Cancel data download via PC-KIT-STICK |
| 7 |   | *[Temperature warning min.]* | Set point lower temperature limit. |
| 8 |   | *[Target temperature]* | Set point operation temperature. |
| 9 |   | *[Min.]* | Showing minimum value of the temperature memory |
| 10 |  | *[Defrosting]* | Activate additional defrosting. |
| |   | *[Light]* | Switch interior lighting on/off permanently. |
| |   | *[Additional light / additional defrosting]* | Combination button:<br>Activate additional defrosting.<br>Switch interior lighting on/off permanently. |

*Depending on the version, certain buttons have a multiple function in combination with other buttons.*

*Tab. 2: Signs*

| Display | Description | Function |
|---|---|---|
|  | *'Defrosting'* | Defrosting is active. |
|  | *'Humidity'* | Humidity is active (temperature homogeneity improved, humidity high). |
|   | *'SuperFrost'* | SuperFrost is active. |

| Display | Description | Function |
|---|---|---|
|  | *'Alarm'* | An alarm was triggered. |

## 2.2 Temperature sensor

The device is equipped with several temperature sensors.

> *PRO-ACTIVE control: The new sensors are PT1000 and not PTC100.*

Please see the following table for the functions of the respective temperature sensors:

| Colour | Designation | Function |
|---|---|---|
| | Evaporator sensor (red) | Controls the defrost phase |
| | Control sensor (brown) | Controls the monitoring unit |
| | Control sensor (violet) | Controls the monitoring unit |

## 2.3 Error message and buzzer

**Alarm**

The unit is equipped with various alarm functions. When the alarm is triggered, it is optically and acoustically communicated via the display and control unit.

**Temperature alarm** tHI or tLO

- Occurs when the temperature exceeds or falls below the temperature warning limits.
- The remote warning contact is triggered.
- The display alternates between the current temperature and the error message.

**Door Open alarm** door

- Happens if the door is open for more than 60 seconds.
- After 180 seconds, the door-open alarm is forwarded via the remote warning contact.
- The alarm goes off when the door is closed.

**Power failure warning** PF

- Happens when the unit is no longer being supplied with power.
- The display alternates between the current temperature and the error message.
- Units with a battery and PC-KIT record the temperature for approx. 30 hours after power is lost.
- Units with a battery record the min. and max. temperature for approx. 30 hours after power is lost.

**Alarm indicating a defective display and control unit**

- Happens when the display and control unit is no longer functioning.
- The unit must be taken out of operation.

**Network-independent warning/ power loss**

**CAUTION!**

**Risk of damage to property and personal injury due to failure of the power supply.**

The battery supplies power to the warning device only in the event of a power failure. The refrigeration unit is switched off, which may damage or destroy the chilled goods.

– After a power failure, ensure that the power supply to the refrigeration unit is restored.
– If necessary, move the chilled goods.

The unit has a battery that provides power to the warning unit for approx. 30 hours in the event of a loss of power. This allows the temperature memory to continue to record in the event of a loss of power and the temperature alarm is triggered outside of the temperature warning limits. Complete temperature documentation is guaranteed for every refrigerator and freezer.

The battery charges during normal operation and is monitored by an automatic charging system.

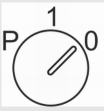
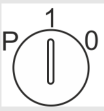
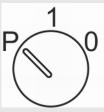
*Replace the battery when the 'bATT' error message occurs.* *Chapter 4.11 ‘Replacing the battery’ on page 39*

## 2.4 Safety regulation

As long as the temperature is outside the set warning limits, the monitoring unit intervenes in temperature control. When the temperature is too low, the compressor circuit is interrupted using relay K1B.

## 2.5 Key switch

*Tab. 3: Position of the key switch*

| Key position | Position | Function | Description |
|---|---|---|---|
|  | "0" | Switch off unit. | ■ Switch off unit (for example to perform a restart).<br>■ The Display shows OFF.<br>■ To put the unit in a currentless state, unplug the power plug. |
|  | "1" | Switch on unit. | ■ Operate unit.<br>■ Display and reset unit values (for example actual temperature or temperature limits).<br>■ Confirm alarms. |
|  | "P" | Program unit. | ■ Adjust unit (for example target values or temperature warning limits).<br>■ Display parameter lists.<br>■ Confirm alarms. |

*Always operate unit in key position "1" in order to prevent manipulation. During normal operation, remove key and store it safely.*

## 2.6 Defrosting

**Automatic defrosting**

The device defrosts automatically every 12 hours.

Automatic defrosting takes place with temporal and thermal monitoring.

When the defrosting process is active, the LED indicator *'Defrosting'* lights up in the Display.

The defrost water is channelled into the internal defrost water tank.

→ Empty the melt water container manually at regular intervals *'Melt water container (optional)' on page 22*.

**Additional defrosting**

In addition to automatic defrosting, the defrosting process can be started manually.

→ Hold down the *[Additional defrosting]* button for 4 seconds.

⇨ The defrosting process starts.

**Melt water container (optional)**

Fig. 3: Defrost water tank

The melt water container is in the interior on the bottom of the unit.

The defrost water is collected in it and does not evaporate automatically.

Check and empty the defrost water tank regularly.

## 2.7 Data export on the device with PC-KIT-STICK

**Saving data to USB**

The refrigerator has the option of exporting the stored data to a standard USB stick (max. 32 GB, formatted in FAT32 format).
A .jsn file is stored on the stick which can then be imported into KIRSCH-Datanet from version 5.0 by means of the procedure described below. The following procedure must be applied in order to save the data to the USB stick:

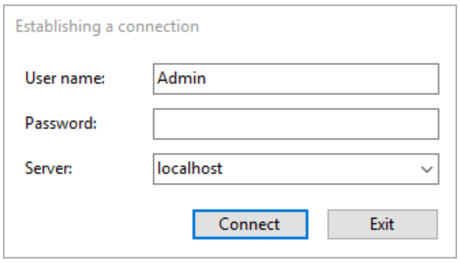
> **NOTICE!**
> The internal temperature memory records data for up to 90 days. It is therefore necessary to export the data regularly in order to avoid data gaps. We recommend exporting the data at regular intervals, e.g. weekly or monthly.

> **NOTICE!**
> Data can also be transmitted when the device is switched off (standby).

| No: | Instruction | Display | |
|---|---|---|---|
| 1 | Insert a USB stick | Wait until the following display appears: |  |
| | | The controller is ready for data transfer (continue with 2.) | |
| | | The USB stick is full. Please clear it, or use a different stick. |  |
| | | USB stick error when accessing the file system, or error when initialising the file system. Please use a different stick. |  |

| No: | Instruction | Display | |
|---|---|---|---|
| | | USB stick error<br>Data export failed, reinitialisation necessary. To do this, switch off the device using the key switch, then disconnect the device from the mains for 1 minute. Then recommission the device and start data export |  |
| 2 | Press the start button | The data is copied to the USB stick.<br>ATTENTION: Never remove the USB stick during the copying process (see 5.). This will render the data otherwise unreadable/corrupt. If necessary, cancel the process first (see 4.). |   |
| 3 | | The message "rdy" appears as soon as all data has been copied successfully. The USB stick can then be removed. |  |
| 4 | Cancelling with the Stop button | If desired, the copying process can be cancelled by pressing the Stop button. The USB stick can be removed as soon as "rdy" appears on the display. The data is then incomplete. |  |
| 5 | Error message | If the stick is removed during copying, this message appears for approx. 5 seconds and the normal temperature display then reappears. |  |

### Importing data into Kirsch Datanet

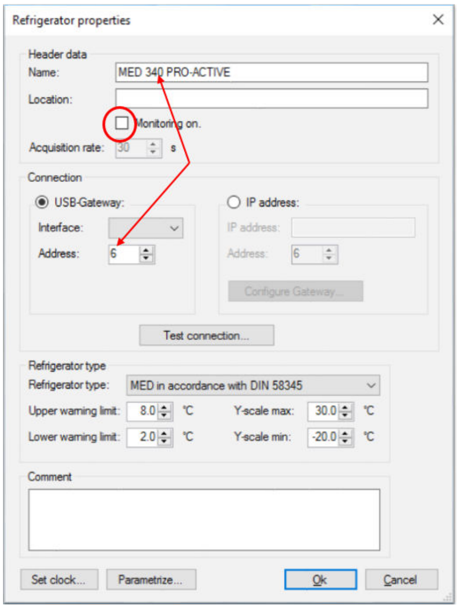



1. Open the KIRSCH Datanet software client and log in as Admin.

   The default access details are:

   - Username: Admin
   - Password: admin

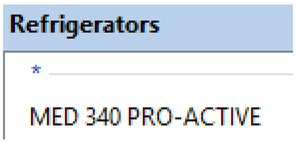
> **NOTICE!**
> Kirsch Service will not be able to reset the password if the default access details are changed and the password can no longer be found. You will then no longer have access to the database.



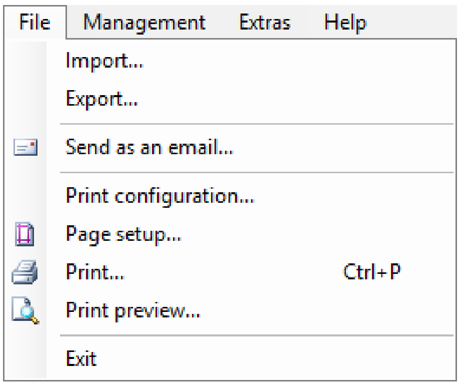

2. Add a new refrigerator via the menu item "Verwaltung/Kühlschrank hinzufügen" [Administration/Add refrigerator].
3. The following window appears:
4. Enter the name of the device and, optionally, the location.
5. Uncheck the box next to "Monitoring an" [Monitoring on].
6. Set the USB export address if several devices are to be managed.

> **NOTICE!**
> Each address can be used only once.

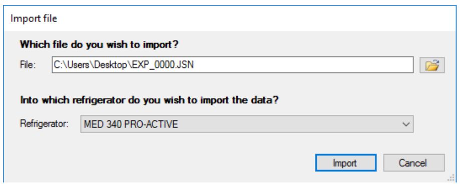
7. Select the cabinet type.
8. Confirm by pressing "OK".



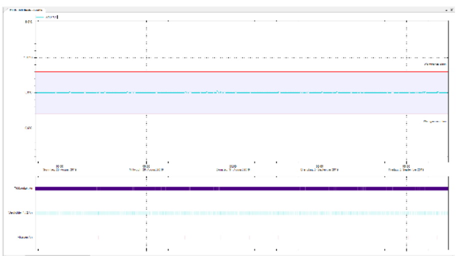

9. The newly created device appears in the "Kühlschränke" [Refrigerators] window on the left.
10. Insert the USB stick into the USB port on the computer.




11. Select the menu item "Datei/Datei importieren" [File/Import file] in the software.




12. Select the .jsn file to be imported from the USB stick via "Ordnersymbol" [Folder icon].
13. Select the desired refrigerator.
14. Click "Importieren" [Import] to import data.

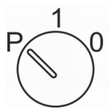


15. The imported data can be displayed by double-clicking on the desired refrigerator.

# 3 Function check

## 3.1 Checking the alarm trigger

The temperature display is electronically delayed to correspond to the chilled goods temperature. The electronic delay must be switched off to test the alarm trigger.




1. Set the key switch to 'P'.


2. Press and hold *[Temperature warning max.]* and *[Temperature warning min.]* simultaneously for 4 seconds.

   ⇨ The display shows a flashing dot .

   The test function has started.

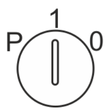
   > *For ProActive control, bear in mind that there is an upper (brown) and a lower (violet) sensor. Both sensors must be tested because the upper sensor warms up more quickly than the lower sensor. To test the upper sensor, press the 'Temperature warning max' button and to test the lower sensor, press the 'Temperature warning min' button.*

3. Warm or cool the monitoring sensor in the interior to the appropriate temperature limit.

   ⇨ The buzzer sounds.

   The remote warning contact is triggered.

   The display flashes between the temperature and the error message.




4. Set the key switch to "1" to end the test function.

   The test function ends automatically after 10 minutes.

   ⇨ The current temperature is shown on the display.

## 3.2 Checking sensors

1. Replace a defective sensor (e.g. F1) with any other sensor (e.g. F2).

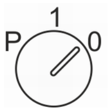
   ⇨
   - The error number of the replaced sensor (F2) is displayed: sensor (F1) is defective.
   - No error is displayed: The sensor input on the control and monitoring unit is defective.

2. Replace the defective component.

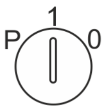
↳ *Chapter 4.5 'Replacing sensors' on page 37*

## 3.3 Initialising the control and monitoring unit

By resetting the control and monitoring unit, Con, PAr and iEC errors can be resolved.




1. Set key switch to "0" to switch off the unit.
2. Unplug the power plug.
3. After 5 seconds, reconnect the power plug with the power grid.




4. Set the key switch to "1" to put the unit back into operation.
   ⇨ The internal memory of the control and monitoring unit is restarted.

> *If Con, PAr and iEC errors are triggered again within a short period of time, replace the control and monitoring unit ( ↳ Chapter 4.6 'Replacing the control and monitoring unit' on page 37).*

## 3.4 Comparison of actual values

Carry out a comparison of actual values for the control in the following circumstances:

- When the measured interior temperature does not match the current display.
- When the measured interior temperature does not match the target value setting.
- When the control board or the control sensor and the display sensor have been replaced.

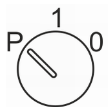
The interior temperature must be measured in the centre of the interior. When doing so, ensure that the sensor of the temperature measurement device is buffered so that the air temperature is not measured.

The control sensor and the display can be compared. The following rules apply for this:

- If the interior temperature is too warm, the control sensor setting must be represented as a negative number.
  - Example: Target temperature +4 °C, measured temperature +6 °C, comparison -2.0
- If the interior temperature is too cold, the control sensor setting must be represented as a positive number.
  - Example: Target temperature +4 °C, measured temperature +3 °C, comparison +1.0
- If the display shows a temperature that is too high, the display setting must be represented as a negative number.
  - Example: Displayed temperature +6 °C, measured temperature +4 °C, comparison -2.0
- If the display shows a temperature that is too low, the display setting must be represented as a positive number.
  - Example: Displayed temperature +3 °C, measured temperature +4 °C, comparison +1.0

If the measured temperature is different, first adjust the control sensor and then the display.

**Selecting the Usr level parameter list**




**1.** Set the key switch to 'P'.


**2.** Press and hold *[Max.]* and *[Min.]* simultaneously for 4 seconds.

⇨ The display shows Adr.

**3.** Use *[Max.]* or *[Min.]* to select the Usr list.


**4.** Press *[Target temperature]* briefly.

⇨ The display shows H6S.


**5.** Use *[Max.]* to select one of the following parameters:

- C66: Control sensor comparison
- J11: Display comparison

**Setting parameters**


**6.** Press and hold *[Target temperature]*.


**7.** Use *[Max.]* and *[Min.]* to change the value.


**8.** The value is saved by releasing *[Target temperature]*.

9. Set the key switch to "1" to switch to operating mode.

### Viewing correction of the offset value set

*It is possible to view the offset correction set when the control sensor has been adjusted (parameter C66).*

*This is transferred to parameters H11 and H36 – therefore, parameter C66 is set to a value of 0.0 when it is viewed again.*

*This allows later verification of whether an adjustment has already been performed, and to what extent.*

### Proceed as follows to view the offset correction set:

1. Set the key switch to 'P'.
2. Press and hold *[Max.]* and *[Min.]* simultaneously for 4 seconds.
   ⇨ The display shows Adr.
3. Use *[Max.]* to navigate to point **PAE**.
4. Confirm *[Target temperature]*.
5. Use *[Max.]* to navigate to level **H**.
6. Press and hold *[Target temperature]* and set **-12** using *[Min.]*.
7. Use *[Max.]* to navigate to the preferred parameter, e.g. **H11**.
8. Press and hold *[Target temperature]* to view the offset set.
   ⇨ **In the background, the adjustment set under C66 is transferred automatically to the two relevant sensors H11 and H36.**
9. Release *[Target temperature]*. The set value is saved automatically.
10. Set the key switch to "1" to switch to operating mode.

# 4 Maintenance and Customization

**DANGER!**

**Danger due to live parts!**

– Unplug the power plug before carrying out any work.

**WARNING!**

**Risk of death due to premature reactivation!**

In the event of reactivation, there is a risk of death for anyone in the danger zone.

– Before reactivating, ensure that no one is in the danger zone.

Only carry out repair work with the power supply disconnected.

Protective equipment:
- Chemical-resistant protective gloves
- Protective gloves
- Protective goggles

## 4.1 Status displays and error messages

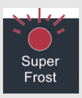
### 4.1.1 Status displays

Status displays are indications designed to provide information to the user (e.g. of ongoing defrosting).

No audible signal (hereinafter referred to as "buzzer") is emitted when the status is displayed.

A status display does not require immediate action by the user.

*Tab. 4: Status displays*

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
|  | – | LED display *[Defrosting]* lights up:<br>■ The defrosting process is active. | – | – |
|   | ✓ | LED display *[Alarm]* lights up:<br>■ One or more alarms have been triggered (collective alarm). | – | – |
|   | – | LED display *[SuperFrost]* lights up:<br>■ Super Frost is active. | – | – |

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| OFF | – | Standby display:<br>■ The unit is connected to the power grid and the key switch is set to position "0". | Turn the key switch to position "1" to switch on the device. | ✓ |

### 4.1.2 Error messages

Error messages indicate a device malfunction.

Error messages alternate on the display with the temperature display.

If there is more than one error, the errors are shown one after the other on the display.

In addition to the indication on the display, the buzzer sounds to indicate the error.

The device indicates the following errors visually and audibly:

- Unit error ( ☞ *'Error messages from the device' on page 31*)
- Software errors ( ☞ *'Error messages from the device' on page 31*)

If error messages occur, proceed as described below:

**Procedure for error messages**

1. Deactivate the buzzer.
2. Assess the error display according to the table.
3. Carry out recommended measures.
4. Acknowledge the alarm message.

**!**

**NOTICE!**

**Danger to chilled goods due to defective or faulty unit!**

A defect or fault in the unit means that its cooling performance is no longer ensured. Reduced cooling performance can cause considerable damage to chilled goods.

– Select an alternative storage location for the chilled goods.
– Ensure operating and storage conditions.
– Transfer chilled goods to new location.

**NOTICE!**

**Meaning of “X” for error and status messages**

X is not shown on the display.

– Instead, the display shows a number that describes the relevant part.

*In normal operation, USB sticks may not be connected to the unit because error displays and acoustic warning signals then do not occur.*

*Tab. 5: Error messages from the device*

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| FXL | ✓ | Sensor X:<br>■ Error or short circuit of the corresponding sensor.<br>■ The cooling controller is running the emergency program. | ■ Check the sensors and connections at the control board.<br>– Switch the sensors at the control board to test them.<br>– If error message F1L is displayed, switch sensors F1 and F2 at the control board.<br>– If error message F2L does not appear, replace the control board. | ✓ |
| FXH | ✓ | Sensor X:<br>■ Error or failure of the corresponding sensor.<br>■ Cooling controller is running the emergency program. | | ✓ |
| F11H | ✓ | ■ Defective battery connection cable.<br>■ Battery monitoring is not guaranteed. | ■ Switch off the alarm.<br>■ Replacing the battery connection cable<br>■ Replace the battery (*Chapter 4.11 ‘Replacing the battery’ on page 39*). | ✓ |
| LXL | ✓ | Fan X:<br>■ Speed of corresponding fan too low.<br>■ The temperature of the chilled goods may fluctuate. | ■ Check the interior blower for resistance from the outside.<br>■ If there is no blockage, replace the interior blower. | ✓ |
| LXH | ✓ | Fan X:<br>■ Speed of corresponding fan too high.<br>■ The temperature of the chilled goods may fluctuate. | | ✓ |

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| FA1 | ✓ | Fan:<br>■ Fan does not reach the required minimum speed after restarting the device.<br>■ The temperature of the chilled goods may fluctuate. | | ✓ |
| dFA | ✓ | Fan:<br>■ Fan speeds deviate too much from each other.<br>■ The temperature of the chilled goods may fluctuate. | | ✓ |
| r01L | ✓ | ■ Measured power consumption of cooling machine too low.<br>■ The temperature of the chilled goods may fluctuate. | ■ Carry out a control reset.<br>■ Check the functioning of the control board and cooling machine if the error occurs again after a short time.<br>■ Replace the faulty component. | ✓ |
| r01H | ✓ | ■ Measured power consumption of cooling machine too high.<br>■ The temperature of the chilled goods may fluctuate. | | ✓ |
| PAr | ✓ | Synchronisation error:<br>■ Synchronisation error between control panel and monitoring circuit.<br>■ No reliable cooling controller function. | ■ Carry out a control reset.<br>■ Replace the control board and display if the error occurs again after a short time. | ✓ |
| Cond | ✓ | Connection problem:<br>■ Synchronisation error between control panel and monitoring circuit.<br>■ No reliable cooling controller function. | | ✓ |
| Conr | ✓ | Connection problem:<br>■ Synchronisation error between control and alarm circuit.<br>■ No reliable cooling controller function. | | |

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| iEC | ✓ | Control error:<br>■ Error during self-testing in cooling controller.<br>■ The monitoring circuit is responsible for temperature control. | | ✓ |
| door | ✓ | Door Open alarm:<br>■ The door has been open for more than 60 seconds.<br>■ The door contact switch is defective. | ■ Close the door.<br>■ Check the function of the door contact switch.<br>■ Replace the door contact switch ( *Chapter 4.10 ‘Replacing the door contact’ on page 39*). | – |
| bAtt | ✓ | Defective battery:<br>■ Battery must be replaced.<br>■ The temperature documentation and alarm fail in the event of power failure. | ■ Switch off the alarm.<br>■ Replace the battery ( *Chapter 4.11 ‘Replacing the battery’ on page 39*). | – |
| PF | ✓ | Power failure:<br>■ Device does not cool.<br>■ Alarm is active.<br>■ The remote warning contact is triggered. | ■ Move chilled goods.<br>■ Check the power supply. | – |
| tHI | ✓ | Temperature alarm (high):<br>■ The upper temperature warning limit is reached or exceeded (for example due to very warm chilled goods or because the door was open too long). | ■ Move chilled goods.<br>■ View and check the temperature warning limit.<br>■ If necessary, correct the values of the temperature warning limits.<br>■ Observe the temperature curve. | ✓ |
| tLO | ✓ | Temperature alarm (low)<br>■ The lower temperature warning limit has been reached or exceeded (e.g. after the door has been open for a long time when the cooling machine is cooling the device).<br>■ Safety device responds, monitoring circuit has switched off cooling machine. | ■ Move chilled goods.<br>■ View and check the temperature warning limit.<br>■ If necessary, correct the values of the temperature warning limits.<br>■ Observe the temperature curve. | ✓ |

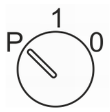
| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| rtC | ✓ | Incorrect time during data output:<br>■ In the event of an rtc error, the date and the year must be set. | ■ Set the time, date and year. | ✓ |

*Tab. 6: Error messages from the device*

| Display | Buzzer | Description | Measure | Unit key required |
|---|---|---|---|---|
| UCXX | – | Status display:<br>■ Copying process is running.<br>■ XX stands for the percentage progress of the copying process. | ■ Do not remove the USB stick. | – |
| rdY | – | Status display:<br>■ The copying process is complete. | ■ Remove the USB stick. | – |
| UE03 | – | Status display:<br>■ The memory of the USB stick is full. | ■ Use a USB stick with sufficient storage capacity. | – |
| UE33 | – | Error message:<br>■ USB stick error when accessing the file system, or error when initialising the file system. | ■ Please use a different stick | – |
| UE71 | – | Error message:<br>■ Data export failed, reinitialisation necessary. | ■ Switch off the device using the key switch, then disconnect the device from the mains for 1 minute.<br>■ Then recommission the device and start data export. | – |
| UE72 | – | Error message:<br>■ USB stick was removed during the copying process. | ■ Remove the USB stick and try again after 1 minute. | – |

> **NOTICE!**
> Note that the USB stick must be removed after data output as otherwise functions may be restricted.

### 4.1.3 Setting the time and date




1. Set the key switch to ‘P’.


2. Press the *[Target temperature]* button twice.
   ⇨ In 24-hour mode, the display shows the time for approx. 3 seconds.


3. Use the *[Min.]* or *[Max.]* button to set the desired time.
4. Confirm using the *[Target temperature]* button.

> *Press the [Target temperature] button several times until the desired setting, such as e.g. time, year or date, appears on the display. After the desired change has been made using the [Min.] or [Max.] button, confirm the entry using the [Target temperature] button.*

The following setting options are available:

- Time (24-hour mode)
- Year (format: YYYY)
- Date (format: DD.MM)

⇨ The time, year or date is set.

5. Set the key switch to “1”.

## 4.2 Switching the door hinge

The door must be turned 180° to ensure that the installed spring compressors still function correctly after the hinge switch.

**Changing the door hinge from right to left**

1. Unscrew the machine compartment panel and move it back.
2. Open the door to 90°.
3. Undo the upper hinge.
4. Tip the door forward until the hinge releases out of the opening.
5. Lift the door out of the lower hinge.
6. Unscrew the lower hinge.
7. Screw the previously upper hinge into the position for the lower hinge on the other side.
8. Turn the door 180° and with an opening angle of 90°, place it onto the hinge that is now in the lower position.
9. Guide the other hinge into the housing opening.
10. Mount the upper hinge.
11. Close the door and ensure it is aligned flush.

12. Switch the door handle as described in *Chapter 4.3 'Switching the door handle' on page 36*.

**Changing the door hinge from left to right**

1. Unscrew the machine compartment panel and move it back.
2. Undo the upper hinge.
3. Tip the door forward until the hinge releases out of the opening.
4. Lift the door out of the lower hinge.
5. Unscrew the lower hinge.
6. Screw the previously upper hinge into the position for the lower hinge on the other side.
7. Turn the door 180° and place it onto the hinge that is now in the lower position.
8. Manually pretension the other hinge and guide it into the housing opening.
9. Mount the upper hinge.
10. Close the door and ensure it is aligned flush.
11. Switch the door handle as described in *Chapter 4.3 'Switching the door handle' on page 36*.

## 4.3 Switching the door handle

1. Remove the two white plugs and the insulator on the inside of the door.
2. Unscrew the fixing screws.
3. Unscrew the threaded bushing.
4. Remove the door handle.
5. Insert the new door handle into the door from the outside.
6. Screw in the threaded bushing but do not tighten it. When doing so, ensure that no foam material enters the plunger guide.
7. Screw in the fixing screws.
8. Insert the isolator and plugs.
9. Tighten the threaded bushing slightly.

## 4.4 Replacing the display unit

Depending on the model, the display unit is in the panel above the door or lower down in the machine compartment panel.

**Display unit above the door in the machine compartment panel**

1. Unplug the connection plug for the control and monitoring unit.
2. Undo the screws of the display holder.
3. Remove the display unit from the machine compartment panel.
4. Fit the new display unit in the reverse order.

## 4.5 Replacing sensors

**Guide the defective sensor out of the housing**

1. Undo the fixing screws of the defective sensor.
2. Remove the sealing compound at the opening for the sensor.
3. Guide the defective sensor out of the housing.

**Access to the control and monitoring unit behind the cover plate behind the cooling machine**

4. Undo the cover plate screws behind the cooling machine.
5. Remove the cover plate.

**Detach the defective sensor from the control and monitoring unit**

6. Remove the connection plug of the defective sensor from the board.

**Mounting a new sensor**

7. Mount the new sensor in the reverse order. When doing so, ensure that the opening for the sensor is closed tightly with a new sealing compound.

## 4.6 Replacing the control and monitoring unit

Depending on the model, the control and monitoring unit is under the cover plate next to/behind the cooling machine or in the lower part of the unit behind the fitting cover.

**Control and monitoring unit behind the cover plate at the side of the cooling machine**

1. Undo the cover plate screws next to the cooling machine.
2. Remove the cover plate.
3. Remove the connection plug to the display unit.
4. Undo the screws of the control and monitoring unit on the terminal board.
5. Remove the control and monitoring unit.
6. Fit the new control and monitoring unit in the reverse order.
7. Recalibrate parameters *'C66'* and *'J11'* *Chapter 3.4 'Comparison of actual values' on page 26*.

## 4.7 Replacing the interior blower

*Only original replacement parts may be used to ensure that the specifications for explosion-proof interiors are not violated.*

1. Undo the fixing screws of the ventilation plate.
2. Remove the ventilation plate.
3. Remove the sealing compound at the opening for the connection cables.
4. Guide the connection cables of the defective interior blower out of the housing.
5. Detach the interior blower and the mounting plate from the back wall and remove.
6. Remove the interior blower from the mounting plate.
7. Secure the new interior blower to the mounting plate.
8. Reinstall the new interior blower on the mounting plate.

## 4.8 Replacing the door lock

**Door lock above the door in the top section**

1. Open the door.
2. Undo and remove the 2 screws beside the deadbolt.
3. Undo the screw in the machine compartment panel and remove it.
4. Remove the lock.
5. Remove the mounting bracket.
6. Fit the new lock in the reverse order.

## 4.9 Replacing the door seal

*The door does not have to be unscrewed to replace the door seal.*

1. Remove the defective door seal from the groove.
2. Clean the groove of any residue.
3. Depending on the model, spray fresh silicon into the groove.
4. Insert the new seal into the groove and gently tap it into the groove (e.g. with the ball of your thumb or with a mallet).
5. Ensure that the seal sits in the groove to the cover lip and seals completely at the housing.

## 4.10 Replacing the door contact

**Magnetic door contact switch in the machine compartment panel above the door (reed contact)**

1. Unplug the plug connector.
2. Open the door.
3. Push the clamp springs back with the screwdriver.
4. Pull out the switch at the pin.
5. Insert a new switch.
6. Secure the new switch with clamp springs.

## 4.11 Replacing the battery

**Battery at the top of the top unit next to the cooling machine**

1. Disconnect the red cable +.
2. Remove the red and blue cable from the battery.
3. Pull the battery out of the holder.
4. Install the replacement battery in reverse order.

## 4.12 Replacing the cooling machine

**DANGER!**
**Risk of death from refrigerant!**
The refrigerant used in the device is explosive and pressurised and may cause serious injury if it comes into contact with the eyes or skin.

– Please pay attention to the type plates in the interior and on the cooling machine.

Together with the evaporator, the cooling machine is a connection-ready unit that can be replaced without disconnecting the refrigerant circuit.

1. Remove the machine compartment panel.
2. Open the door.
3. Remove the ventilation plate.
4. Remove the upper right-hand line cover in the interior.
5. Remove the upper cover section.
6. Open the upper right-hand line opening.
7. Unscrew the compressor set.
8. Remove the machine cable at the terminal box of the cooling machine.

9. Release the evaporator and remove it to the front.
10. Carefully remove the cooling machine to the front. When doing so, ensure that the tubing is not damaged or kinked.

*For easier installation, the cold lines can be fixed to the compressor set at the condenser.*

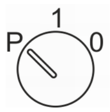
11. Fit the new cooling machine in the reverse order. When doing so, ensure that the tubing is not kinked or damaged.

# 5 Customizing parameters

**NOTICE!**
**Material damage from incorrectly set parameters!**
The basic settings of the unit can be changed using the following parameter lists. This could result in severe damage to the chilled goods or the unit.

The parameter settings may only be carried out by trained staff.

**Calling up the parameter list**




1. Set the key switch to 'P'.


2. Press and hold *[Max.]* and *[Min.]* simultaneously for 4 seconds.

   ⇨ The display shows Adr.


3. Use *[Max.]* or *[Min.]* to navigate to "Usr" level.


4. Press *[Target temperature]* to confirm the level.


5. For entries in "Usr", *[Max.]* and *[Min.]* can be used to navigate through the parameter list.

**Setting parameters**

6. Select the parameter to be changed.


7. Press and hold *[Target temperature]*.

   ⇨ The currently set value for the parameter is set.

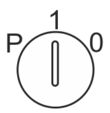

8. Set the parameter value using *[Max.]* and *[Min.]*.


9. Release *[Target temperature]*.

   ⇨ The set value is saved.

   The display changes automatically back to the basic state if no buttons are pressed for 45 seconds.

   Set the key switch to "1" after finishing work.



### Usr level

| Parameter | Function description | Adjustment range | Factory setting |
|---|---|---|---|
| H65 | Display of power consumption | Read only | – |
| An1 | Cold room sensor<br>(Mixed sensor delayed) | Read only | – |
| An2 | Superfrost sensor<br>(not used) | Read only | – |
| An3 | Moisture sensor<br>(not used) | Read only | – |
| An4 | Cold room sensor, upper | Read only | – |
| An5 | Cold room sensor, lower | Read only | – |
| An6 | Evaporator sensor | Read only | – |
| An7 | T-limit sensor alarm, upper | Read only | – |
| An8 | T-limit sensor alarm, lower | Read only | – |
| An9 | T-prevention sensor, upper | Read only | – |
| AnA | T-prevention sensor, lower | Read only | – |
| CS1 | Light function | 0: off<br>1: on | 0 |
| CS2 | Light delay time | 0...300 s | 10 s |
| C64 | Compressor shut-down hysteresis | -5.0 K...5.0 K | 0.0 |
| C66 | Control sensor comparison | -5.0 K...5.0 K | 0.0 |
| F8 | Fan speed regular operation | 0...10000 | 2100 |
| b5 | Battery buffering | 0: Deactived<br>1: Always active<br>2: Active when system on<br>3: Active for key switch 1 or 2 | 3 |

| Param-eter | Function description | Adjustment range | Factory set-ting |
|---|---|---|---|
| d1 | Defrosting interval | 0: no automatic defrosting<br>1...99 h | 12 |
| d3 | Stop at defrost temperature | 0.0…30.0 °C | 0.5 |
| d7 | Temperature difference for previous cooling | -15,0...0,0 K | -5.5 |
| d11 | Drip tray heating delay time | 0...60 min | 0 |
| A25 | "PowerFail" alarm suppression time | 0...300 s | 15 |
| G10 | Recording interval for data logger | 0…900 s | 120 |
| G95 | USB export ID of the refrigerator | 0...9999 | 0 |
| r5 | Automatic summer/winter time | 0: Deactived<br>1: Europe<br>2: USA<br>3: Australia<br>4: New Zealand | 1 |
| r6 | Time zone (UTC) [x * 15 min] | -48...52 (-12 h...13 h) | 4 |
| J11 | Display comparison | -20.0...20.0 K | 0.0 |
| L48 | TCP/IP activation | 0: deactivated<br>1: activated | 0 |
| L50 | IP address 3 | 0...255 | 192 |
| L51 | IP address 2 | 0...255 | 168 |
| L52 | IP address 1 | 0...255 | 0 |
| L53 | IP address 0 | 0...255 | 101 |
| L55 | IP mask 3 | 0...255 | 255 |
| L56 | IP mask 2 | 0...255 | 255 |
| L57 | IP mask 1 | 0...255 | 255 |

| Parameter | Function description | Adjustment range | Factory setting |
|---|---|---|---|
| L58 | IP mask 0 | 0...255 | 0 |
| L60 | IP gateway 3 | 0...255 | 192 |
| L61 | IP gateway 2 | 0...255 | 168 |
| L62 | IP gateway 1 | 0...255 | 0 |
| L63 | IP gateway 0 | 0...255 | 200 |
| L70 | MAC address 5 | 0...0xFF Read only | – |
| L71 | MAC address 4 | 0...0xFF Read only | – |
| L72 | MAC address 3 | 0...0xFF Read only | – |
| L73 | MAC address 2 | 0...0xFF Read only | – |
| L74 | MAC address 1 | 0...0xFF Read only | – |
| L75 | MAC address 0 | 0...0xFF Read only | – |

# 6 Appendix

The appendix contains the following applicable documents:

- Technical data
  ↳ *Chapter 6.1 ‘Technical data’ on page 46*
- wiring diagram
  ↳ *Chapter 6.2 ‘wiring diagram’ on page 49*
- Exploded view
  ↳ *Chapter 6.3 ‘Exploded view’ on page 51*
- Spare parts list
  ↳ *Chapter 6.4 ‘Spare parts list’ on page 52*

## 6.1 Technical data

| | LABEX® 105 PRO-ACTIVE | LABEX® 288 PRO-ACTIVE/ ULTIMATE* | LABEX® 340 PRO-ACTIVE/ ULTIMATE* | LABEX® 465**/468 PRO-ACTIVE/ ULTIMATE* | LABEX® 520 PRO-ACTIVE/ ULTIMATE* |
|---|---|---|---|---|---|
| **Cooling capacity, litres** | 95 | 280 | 330 | 460 | 500 |
| **Temperature setting (approx.), °C** | +2 to +15 | +0 to +15 | +0 to +15 | +0 to +15 | +0 to +15 |
| **Voltage, V** | 220 – 240 | 220 – 240 | 220 – 240 | 220 – 240 | 220 – 240 |
| **Frequency, Hz** | 50/60 | 50/60 | 50/60 | 50/60 | 50 |
| **Refrigerant quantity, grams** | 43 | 27 | 75 | 80 | 90 |
| **Refrigerant** | R600a | R600a | R600a | R600a | R600a |
| **Current consump-tion, amps** | 0.21 | 0.28 | 0.32 | 0.53 | 1.6 |
| **Power consumption, watts** | 30 | 40 | 50.3 | 80 | 234 |
| **Normal consump-tion, kWh/24** | 0.344 | 0.67 | 0.735 | 0.81<br>0.54* | 1.2 |
| **Perm. ambient tem-perature, °C** | +10 to +38 | +10 to +38 | +10 to +38 | +10 to +38 | +10 to +38 |
| **Specification of the temperature rise inside the device in the event of a power failure in minutes at an ambient tempera-ture of 25 °C** | * | 90 | 175 | 84<br>76** | * |
| **Temperature homo-geneity at a refer-ence ambient tem-perature of 25 °C, K** | * | 1.14 | 1.43 | 1.58<br>3.38** | * |
| **Temperature sta-bility at reference ambient tempera-ture of 25 °C, K** | * | 2.34 | 1.05 | 0.86<br>0.58** | * |
| **External dimensions incl. distance to wall (WxDxH), cm** | 54 x 54 x 82 | 67x72x132 | 67 x 66 x 189 | 74 x 77.5 x 189<br>74 x 76 x 176** | 77 x 76 x 195.5 |

| | LABEX® 105 PRO-ACTIVE | LABEX® 288 PRO-ACTIVE/ ULTIMATE* | LABEX® 340 PRO-ACTIVE/ ULTIMATE* | LABEX® 465**/468 PRO-ACTIVE/ ULTIMATE* | LABEX® 520 PRO-ACTIVE/ ULTIMATE* |
|---|---|---|---|---|---|
| **Usable size (WxDxH), cm** | 43 x 36 x 43 | 52.7 x 39 x 92 (Usable depth 15 cm less at the bottom) | 52.7 x 39 x 116 | 59 x 50 x 116<br>57 x 43 x 122** | 59 x 45 x 129 |
| **External dimensions with door open 90° (WxD), cm** | 54 x 106 | 67 x 130 | 67 x 124 | 74 x 142<br>74 x 140** | 77 x 144 |
| **Shelf size (WxD), cm** | 43 x 36 | 52.7 x 39 | 52.7 x 39 | 59 x 50 | 59 x 45 |
| **Internal drawer dimensions (WxDxH), cm** | 40.8 x 32 x 5.6 | 50.4 x 32 x 5.6 | 50.4 x 32 x 5.6 | 57 x 43 x 5.6 | – |
| **Max. drawer/shelf load, kg** | 13 / 25 | 16 / 40 | 16 / 40 | 24 / 40 | 24 / 40 |
| **Weight net/gross, kg** | 46 / 55 | 75 / 87 | 95 / 109 | 120 / 134 | 126 / 149 |
| **Noise emission, dB(A)** | 44.1 | 44.9 | 38.6 | 52.7<br>37.8** | 41 |

| | LABEX® 720 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 96 PRO-ACTIVE | FR LABEX® 330 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 530 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 730 PRO-ACTIVE/ ULTIMATE* |
|---|---|---|---|---|---|
| **Cooling capacity, litres** | 700 | 95 | 300 | 500 | 700 |
| **Temperature setting (approx.), °C** | approx. 0 to +15 | approx. -5 to -25 | approx. -10 to -30 | approx. -10 to -30 | approx. -10 to -30 |
| **Voltage, V** | 220 – 240 | 220 – 240 | 220 – 240 | 220 – 240 | 220 – 240 |
| **Frequency, Hz** | 50 | 50/60 | 50/60 | 50/60 | 50/60 |
| **Refrigerant quantity, grams** | 90 | 42 | 440 | 380 | 380 |
| **Refrigerant quantity, grams** | R600a | R600a | R452a | R452a | R452a |
| **Current consump-tion, amps** | 1.57 | 0.52 | 3.00 | 2.90 | 2.92 |
| **Power consumption, watts** | 237 | 119 | 540 | 550 | 534 |

| | LABEX® 720 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 96 PRO-ACTIVE | FR LABEX® 330 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 530 PRO-ACTIVE/ ULTIMATE* | FR LABEX® 730 PRO-ACTIVE/ ULTIMATE* |
|---|---|---|---|---|---|
| **Normal consumption, kWh/24** | 1.23 | 1.36 | 4.33 | 5.8 | 6.68 |
| **Perm. ambient temperature, °C** | +10 to +38 | +10 to +32 | +10 to +32 | +10 to +32 | +10 to +32 |
| **Specification of the temperature rise inside the device in the event of a power failure in minutes at an ambient temperature of 25 °C** | * | ** | * | * | * |
| **Temperature homogeneity at a reference ambient temperature of 25 °C, K** | * | ** | * | * | * |
| **Temperature stability at reference ambient temperature of 25 °C, K** | * | ** | * | * | * |
| **External dimensions incl. distance to wall (WxDxH), cm** | 77 x 98 x 195.5 | 54 x 54 x 82 | 74 x 78 x 159 / 74 x 78 x 166* | 77 x 76 x 195.5 | 77 x 97 x 195.5 |
| **Usable size (WxDxH), cm** | 59 x 65 x 129 | 43 x 36 x 43 | 57 x 42 x 80 | 59 x 45 x 129 | 59 x 65 x 129 |
| **External dimensions with door open 90° (WxD), cm** | 77 x 165 | 54 x 106 | 74 x 142 | 77 x 144 | 77 x 165 |
| **Shelf size (WxD), cm** | 59 x 65 | 43 x 36 | 57 x 42 | 59 x 65 | 59 x 65 |
| **Internal drawer dimensions (WxDxH), cm** | – | – | – | – | – |
| **Max. drawer/shelf load, kg** | - / 40 | 13 / 25 | - / 40 | - / 40 | - / 40 |
| **Weight net/gross, kg** | 143 / 169 | 50 / 59 | 125 / 142 | 141 / 164 | 157 / 183 |
| **Noise emission, dB(A)** | 42 | 38 | 51.2 | 52.3 | 51.6 |

* Details to follow

** Details not available (other standard)

## 6.2 wiring diagram

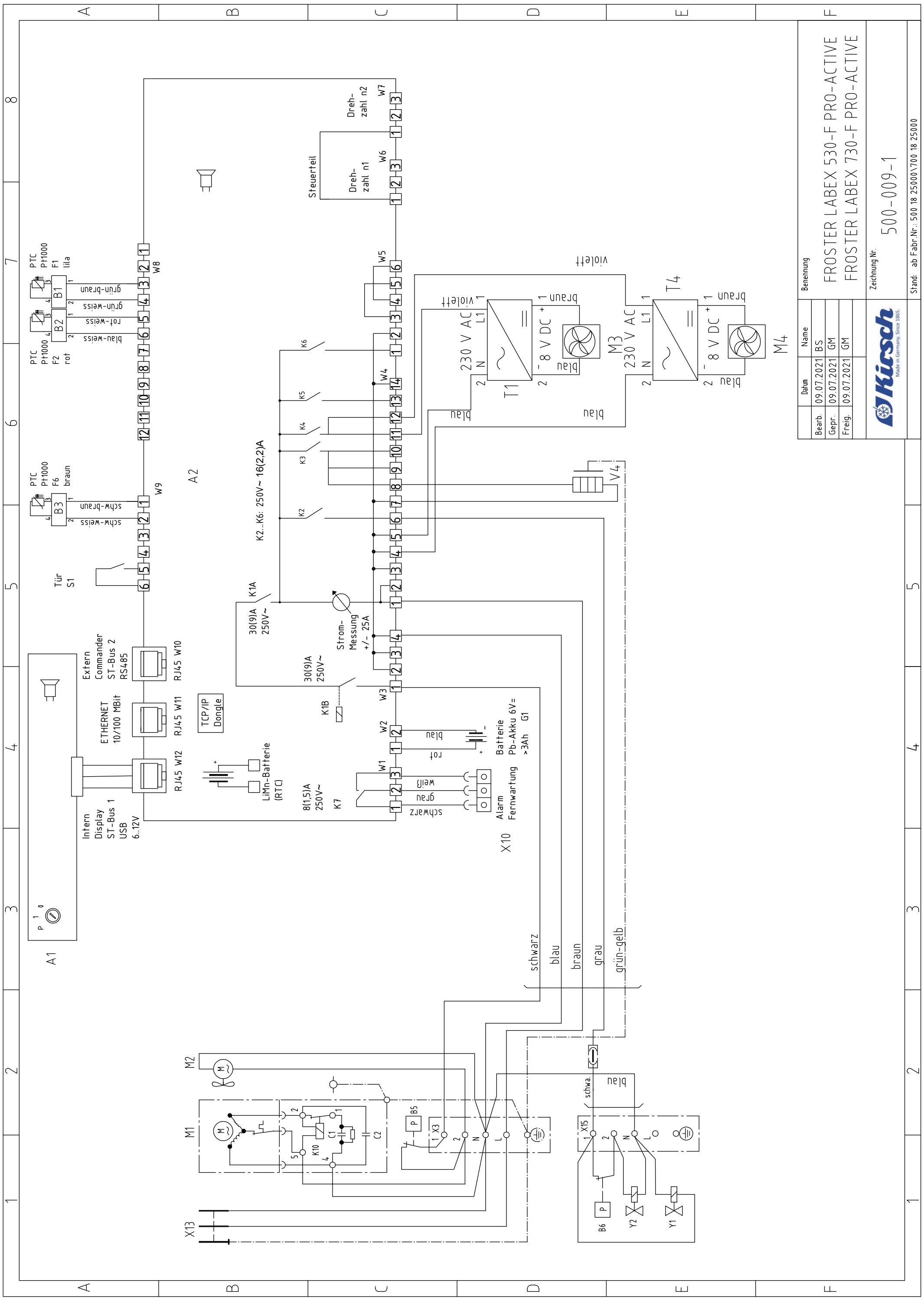



*Fig. 4: 500-009-1_Wiring_Diagram_FROSTER_LABEX_530_730-F_PRO-ACTIVE*

*The wiring diagram configuration varies depending on the model. The legend describes the maximum configuration.*

| | |
|---|---|
| A1 | Operating and display unit |
| A2 | Control and monitoring board |
| B1 | Safety barrier 9001 01-086-150-10 |
| B2 | Safety barrier 9001 01-086-150-10 |
| B3 | Safety barrier 9001 01-086-150-10 |
| B4 | Pressure switch |
| B5 | Pressure switch (pressure side) |
| B6 | Pressure switch (suction side) |
| B7 | Temperature limiter |
| C1 | Condenser |
| C2 | Capacitor for cooling machine fan/motor operating capacitor |
| F1 | Temperature sensor control / monitoring |
| F2 | Evaporator temperature sensor |
| F6 | Temperature sensor control / monitoring |
| G1 | Battery (option) |
| K1A | Compressor relay (hybrid) |
| K1B | Compressor relay (hybrid) |
| K2 | Defrosting relay |
| K3 | Melt water evaporation relay, door frame heating |
| K4 | AC interior fan relay |
| K5 | Lighting relay |
| K6 | Relay for drip tray heater/condenser |
| K7 | Remote maintenance relay |
| K10 | Start-up relay |
| K11 | Finder relay 30A |
| M1 | Compressor motor |
| M2 | Condenser blower |
| M3 | Recirculation blower |
| M4 | Recirculation blower |
| S1 | Door contact |
| T1 | Power supply (230V AA/ 10VDC) |
| T2 | Lighting ballast (option) |
| T3 | Power supply (230V AA/ 10VDC) |
| T4 | Power supply (230V AA/ 10VDC) |
| V1 | Drip tray heating |
| V2 | Melt water evaporation |
| V3 | Interior lighting (option) |
| V4 | Door frame heating |
| W1 | Remote warning contact connection |
| W2 | Battery connection |
| W3/W4 | Connection for power, compressor, ... |
| W5 | Drip tray heating connection |
| W6/W7 | DC fan connection |
| W8/W9 | Connection for sensor, door contact |
| W10 | Internal bus |
| W11 | LAN connection |
| W12 | Display connection |
| X1 | Terminal for FU signal |
| X3 | Cooling machine terminal |
| X10 | Remote warning contact |
| X13 | Power plug |
| X15 | Cooling machine terminal |
| X16 | 3-way socket |
| Y1 | Magnetic valve for hot gas line |
| Y2 | Magnetic valve |
| Y3 | Vacuum compensation valve |
| 1F1 | Residual-current circuit breaker |
| brown (braun) | |
| blue (blau) | |
| black (schwarz) | |
| grey (grau) | |
| green-yellow (grün-gelb) | |
| white (weiß) | |
| red (rot) | |
| purple (lila) | |

## 6.3 Exploded view

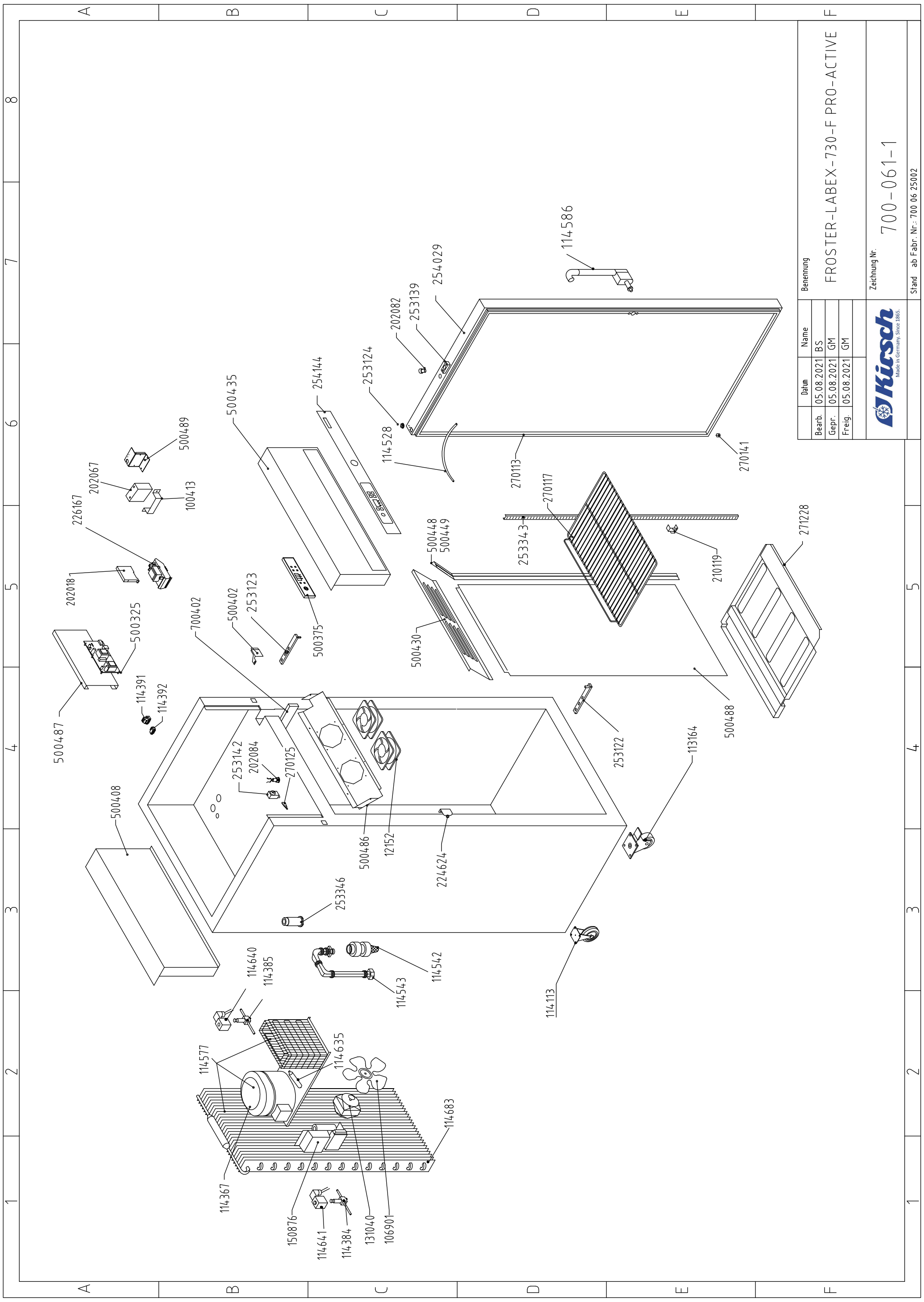


*Fig. 5: 700-061-1_Exploded_View_FROSTER LABEX 730-F PRO-ACTIVE*

## 6.4 Spare parts list

**Cooling machine**

| Current item number | Meaning |
|---|---|
| 114577 | Cooling machine VKD 5909 K/03 |
| 114367 | Compressor SC 18CL |
| 150876 | Start-up relay (complete with condensers) |
| 094910 | Start capacitor 80 µF (not depicted) |
| 114317 | Run capacitor 15 µF (not depicted) |
| 131040 | Blower motor VKZ 3002 |
| 106901 | Fan blade Ø = 230 mm |
| 028804 | Pressure switch, pressure side off 31 bar, on 21 bar (not depicted) |
| 088188 | Pressure switch off 7 bar, on 3 bar (not depicted) |
| 114385 | Magnetic valve NC EVR 2 Ø 6 mm (hot gas line) |
| 114640 | Coil bobbin for EVR 2 |
| 114384 | Magnetic valve EVR 6 NO Ø 10 mm |
| 114641 | Coil bobbin for EVR 6 |
| 114635 | Copper dryer 15 GR 6,1/3,1 |
| 114683 | Fins evaporator |

### Control

| Current item number | Meaning |
|---|---|
| 500325 | Control and monitoring unit (program J1 = 25) |
| 500375 | Display unit (program J1 = 25) |
| 11871 | Temperature sensor F1, 2 m, brown (not depicted) |
| 11869 | Temperature sensor F2, 2 m, red (not depicted) |
| 11918 | Temperature sensor F6, 3 m, violet (not depicted) |
| 114391 | Main body, 3-pole for remote warning contact |
| 114392 | 3-pin plug for remote warning contact |
| 114407 | Key for key switch (not depicted) |
| 202084 | Magnetic switch (reed contact) |
| 202067 | 6 V 4 Ah battery |
| 500489 | Battery holder/interface angle |
| 100413 | Battery bracket |
| 202018 | Safety barrier 9001 01-086-150-10 |
| 11819 | Power supply for recirculating blower |

### Housing

| Current item number | Meaning |
|---|---|
| 500435 | Machine compartment panel |
| 254144 | Fitting cover with filmed front |
| 500436 | Lock fastener (not depicted) |
| 253142 | Lock for door, closing 1001 |
| 270125 | Key no. 1001 |
| 500487 | Terminal board |
| 500408 | Terminal board cover plate |
| 253123 | Hinge with square |
| 253122 | Hinge with pin Ø 7 mm |
| 114542 | Foot valve ¾" |
| 114543 | Vacuum valve connection pipe |
| 114113 | Fixed castor |
| 113164 | Castor |

### Interior

| Current item number | Meaning |
|---|---|
| 12152 | Fan, LABEX |
| 500486 | Cross plate for blower |
| 500430 | Upper ventilation plate |
| 500488 | Lower ventilation plate |
| 500448 | Left attachment rails for ventilation plate |
| 500449 | Right attachment rails for ventilation plate |
| 253343 | Support rails 1200 mm |
| 224624 | Angle bracket for door handle |
| 270117 | Wire shelves with bracket 600 x 650 mm (for FROSTER-LABEX-730 model) |
| 210119 | Support bracket |
| 700402 | Cover strip 740 mm long FROSTER-LABEX-730 model |
| 271228 | Melt water dish for manual emptying, electrically conductive, black, for FROSTER-LABEX-730 model |
| 253346 | Duct for vacuum valve |
| 114528 | Ground strap |
| 500402 | Line duct cover part |

### Refrigerator door

| Current item number | Meaning |
|---|---|
| 254029 | Door, white, right/left, 1539 x 755 mm, self-closing |
| 253139 | Clamp for door |
| 270113 | Door seal 1496 x 716 mm |
| 114586 | Door handle 50 mm |
| 253124 | Plastic door bearing bush |
| 270141 | Plastic bushing for hinge pin |
| 202037 | Energy storage unit (not depicted) |
| 202082 | Magnet for door contact switch |

**Option**

| Current item number | Meaning |
|---|---|
| 11947 | PC-KIT-NET |

# 7 Index