en // Operating Instructions Cold Box B 35-50

Compliance with the operating instructions is a basic prerequisite for opereating the FRYKA freezers safely and for achieving the specified product qualities and service features. FRYKA-Kältetechnik GmbH is not liable for any bodily injuries, material or financial damages due to non-compliance with the operating instructions. There is no liability for material defects in such cases.

1 General information

1.1 Intended Use

The freezer is designed for cooling or freezing liquids and solids. The freezer is not for use in households, damp rooms or outside. The freezer is not approved for use as medical product or for foodstuffs. It does not have an explosion-protected design so should not be installed or operated in areas subject to explosion.

1.2 Scope of supply

- Freezer
- Power cord
- Plug (1x red/2x black) for connecting an external alarm system to the potential-free alarm contact
- Operating instructions
- Key for door lock

1.3 Explanation of the safety notes

Safety notes are marked by a pictogram and a signal word. The signal word describes the severity of the threatened danger.

DANGER

› Imminent threat to the life and health of persons (severe injury or death).

WARNING

› Potential threat to the life and health of persons (severe injury or death).

CAUTION

› Potentially dangerous situation (slight injuries or material damages).

NOTE

› Obligation to behave or act in a certain way in handling the unit.

1.4 Conformity

The refrigeration cycle has been checked for leakage. The unit complies with the relevant safety regulations as well as EC directives 2006/95/EC, 2004/108/EC and 2011/65/EU.

2 Safety and warning notes

2.1 Before you start operation of the unit

Read these operating instructions carefully! They contain important information about installation, safe operation and maintenance of the freezer. Keep all documents for later use. Make certain that those responsible for the unit and users have read the operating instructions completely and understood them.

WARNING

- Inappropriate use can result in considerable personal injury or material damages.

Third parties should not make any changes to the freezer. If any changes are made without the manufacturer's agreement, all explanations about the freezer lose their validity. Only skilled personnel trained by the manufacturer or authorised technicians may make changes or repairs or conduct maintenance.

WARNING

- Improper interventions or repairs may lead to considerable personal injury or material damages.

The manufacturer does not assume any liability for damages due to technical changes to the freezer, improper handling, abuse or use of the freezer without heeding the operating instructions.

2.2 General safety instructions

WARNING

- This freezer is not designed for persons with physical, sensory or mental impairments, or persons without enough experience or knowledge, unless they are shown how to use the freezer and are initially supervised by a person responsible for their safety.
- Never clean or defrost the freezer using a steam-cleaning unit! The steam can come into contact with electric parts and cause a short circuit. Rist of fire and electric shock!
- Pull out the power cord for maintenance, cleaning or repair work. Always pull on the plug, not on the cable.
- Remove a defective freezer from the power supply immediately and never use any defective freezer. Check the freezer and accessories for damage at regular intervals.
- Do not store any explosive or inflammable materials or spray cans with inflammable fuels such as butane, propane, etc. in the unit. Any gases or liquids escaping may ignite due to electric components.

NOTE

- Do not remove frost or ice layers using pointed or sharp objects.
- Never cover or close the ventilation grille of the freezer.
- Do not drill any holes in the outer housing or in the interior, because otherwise you may damage or destroy the insulation or refrigeration system.

3 Quick reference guide

This quick reference guide is no substitute for reading the operating instructions! It contains important information about how to use the freezer safely. Make certain that those responsible for the unit and users have read the operating instructions completely and understood them.

3.1 Installing the freezer and starting it up

- Install on only a flat surface as well as in dry and ventilated/air-conditioned rooms. Do not install near sources of heat. Maintain a distance of at least 30 cm from the ventilation grille to the nearest object (wall, etc.) Heed the permissible ***ambient temperature*** (Chapter "***Technical data***" // see page 37).
- Connect the freezer only to a properly installed socket with grounding contact. Operate the freezer only with the mains voltage, current and frequency indicated on the rating plate.

3.2 Operation

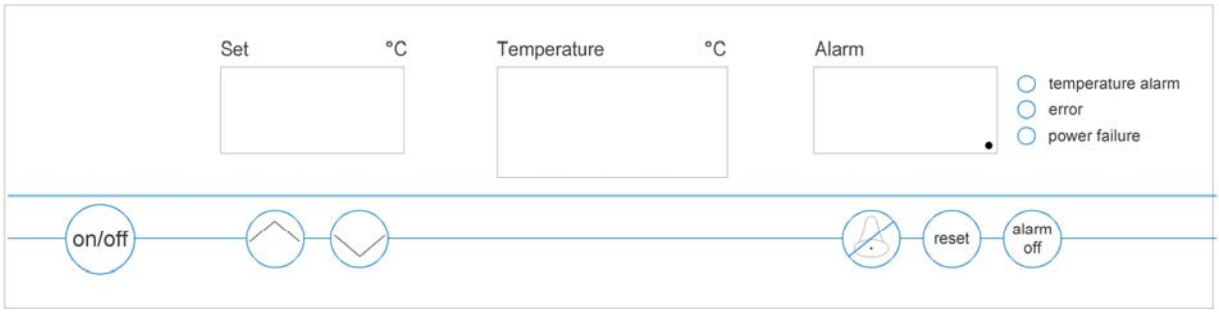
- Switching on/off: Press the "on/off" key for two seconds.
- Set the desired temperature: Use the arrow keys.
- Only place chilled/frozen materials in the unit after the desired temperature has been reached.

CAUTION

- Avoid lengthy contact with the chilled/frozen materials. Remove the chilled/frozen materials only with corresponding personal protection gear (gloves).
  The risk of cold-burns!

3.3 Alarm

- In normal operation, a small red dot lights in the bottom right corner of the "Alarm" display.
- "Tone off": Mute the alarm tone for 15 minutes.
- "reset": Reset the alarm to normal operation.
- "alarm off": Switch off the alarm (off after cooling)
- "temperature alarm": indicates a temperature alarm
- "error": indicates various other errors or malfunctions
- "power failure": indicates a battery defect or a power outage



4 Installation and set-up

4.1 Install the freezer

WARNING

- Fire and electric shock risks due to moisture. If current-carrying parts or the power cord become moist, a short circuit may occur. The unit is designed for use in enclosed rooms. Do not operate the unit outside or in areas moist or splashed with water.

The freezer is suitable for installation only in dry and ventilated/air-conditioned rooms. Heed the permissible ***ambient temperature*** (Chapter "***Technical data***" // see page 37). The freezer should not be left in direct sunshine or be near a source of heat such as radiators.

Install the freezer on a flat surface.

NOTE

- Do not operate the unit in a tilted position. The refrigeration unit may otherwise fail to work.
- Too much heat at the installation site may have the same effect.

Install the freezer in such a way as to ensure optimum ventilation. Maintain a distance of at least 30 cm from the ventilation grille to the nearest object (wall, etc.).

4.2 Connect the freezer

Wait at least one hour after connecting the freezer before starting it up. Check the unit for damages each time before starting the freezer up. Only connect the freezer to a properly installed socket with earthing contact. The socket may be earthed with a maximum 16A slow-to-blow earth.

NOTE

- Operate the freezer only with the mains voltage, current and frequency indicated on the rating plate. Not heeding the instructions may cause the unit to malfunction or cause defects.

WARNING

- Do not use any extension cords or distributor banks. A risk of fire and overheating.

4.3 Switch on the freezer

Before switching it on, make sure that the sealing of the door is dry and clean.

NOTE

- Empty the interior before you switch on the freezer. Starting with the interior full may cause overloading and a shutdown of the refrigeration unit.

Press the "on/off" key to switch on the freezer. Set the desired interior temperature using the arrow keys. The value is displayed in the "Set" display. The value for the current interior temperature is displayed in the "Temperature" display. Press all keys for at least two seconds for the command to be executed. This is to prevent unintentional pressing.

The unit starts operation after a brief delay. Once the unit reaches the desired temperature, the chilled/frozen materials can be placed inside.
The alarm is activated automatically when the freezer is switched on. Temperature monitoring is only activated once the desired interior temperature is reached for the first time.

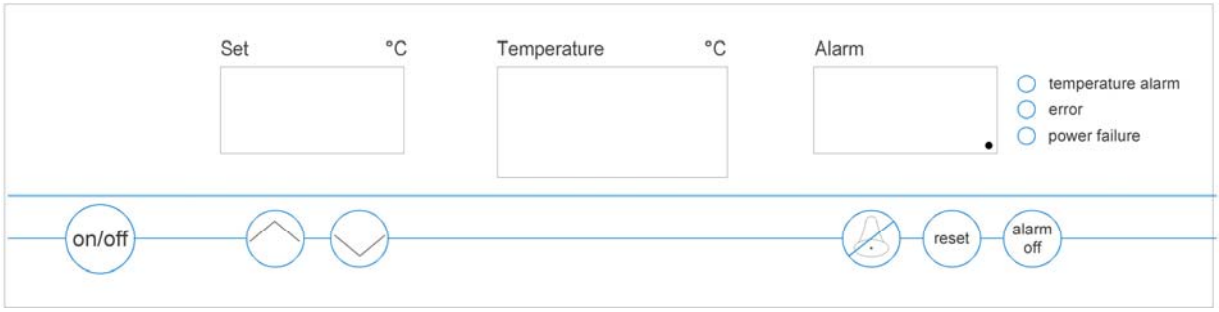
CAUTION

- Avoid lengthy contact with the chilled/frozen materials. Remove the chilled/frozen materials only with corresponding personal protection gear (gloves).
  The risk of cold-burns!

5 Control and operation

5.1 Control

Press the "on/off" key to switch on the freezer. Set the desired interior temperature using the arrow keys. The value is displayed in the "Set" display. The value for the current interior temperature is displayed in the "Temperature" display. Press all keys for at least two seconds for the command to be executed. This is to prevent unintentional pressing.



5.2 Alarm

In normal operation, a small red dot lights in the bottom right corner of the "Alarm" display.

Buttons:

- The alarm tone can be switched off for 15 minutes by pressing the "Tone off" key. If the alarm still exists thereafter, the alarm tone sounds again.
- You can reset the alarm to normal operation by pressing the "reset" key if no current malfunction is displayed anymore.
- The alarm is switched off when you press the "alarm off" key. However, this is possible only if the freezer has been switched off using the "on/off" key. This is to prevent unintentional switching off the alarm.

Displays:

- The "Alarm" display serves for displaying the error codes. When there is a temperature alarm, this display shows the highest temperature achieved in the interior during the malfunction. Consequently, you can judge whether the chilled/frozen material has been damaged.
- "temperature alarm": Indicates a temperature alarm
- "error": Indicates various other errors or malfunctions.
- "power failure": Indicates a battery defect or a power outage.

In normal operation, the alarm can be subjected to a function test that lasts approx. 10 seconds. To do this, press the "Tone off" key. If F8 is displayed, there is an alarm malfunction.

You can find the precise significance of error codes in the ***Status and error messages table*** (Chapter "***Status and error messages***" // see page 33).

5.3 Switching off

To switch off the freezer, press the "on/off" key; OFF is displayed in the "Temperature" display. Switch off immediately after the alarm. To do this, press the "alarm off" key. OFF is also displayed in the "Alarm" display.

NOTE

- If the freezer is switched off, the alarm must also be switched off to avoid discharging the alarm battery.

Carry out the procedure ***Defrost*** (Chapter "***Defrosting***" // see page 31) even if you switch off the unit for only a short time.

6 Design und function

6.1 General information

Operation of the freezer is via an electronic two-step control. The values of TARGET and ACTUAL temperature are shown in the display. The interior temperature is measured by a temperature sensor PT100.

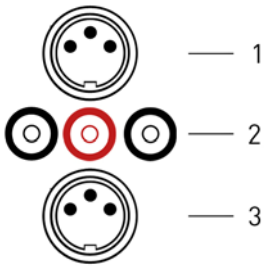
6.2 Alarm

An independent alarm component monitors functioning of the freezer. A rechargeable battery is integrated into the alarm. This enables functioning of the alarm independent of mains power for 72 hours. The battery is charged automatically in normal operation.

NOTE

- We expressly point out that customers must devise an emergency plan in the case of freezer outage to ensure continual cooling of the chilled/frozen material. FRYKA-Kältetechnik GmbH is not liable for damages caused by defrosting of chilled/frozen material due to a unit defect.

6.3 Interfaces



The interfaces are at the mains power connection and marked correspondingly.
The RS485 interface is designed as 3-pin jack. The freezer can be connected to a PC via a USB gateway to read temperatures and adjust software parameters (actual and target values)
(2) An external alarm system can be connected to a potential-free alarm contact via the three individual jacks (black – red – black). The required plugs are included in the scope of delivery.
(3) The interior temperature is output as voltage signal (100 mV/K) at the 3-pin jack. An external temperature recording system can be connected.
Output signal: 0V = 0°C / -10V = -100°C

6.4 Refrigeration unit

The refrigeration unit is composed of a completely hermetic compressor, which cools copper tubes that are wound around the interior.
The refrigeration unit is switched on and off to control the temperature.
The refrigeration unit is air-cooled. Process heat is dissipated via a fin coil heat exchanger, which is force-ventilated by ventilators.

7 Maintenance

7.1 Defrosting

First empty the freezer interior then switch it ***off as described*** (Chapter "***Switching off***" // see page 28). Then pull out the power cord. Open the freezer, and leave it in this state until the ice in the interior has defrosted. Remove the condensation water. You thereby prevent mould and bacteria formation. You can additionally disinfect the interior. Pay attention especially to drying in the seal area. The defrosting frequency depends on the use and frequency of opening. In any case, defrost the freezer when there is severe icing in the seal area. Operation is ***restarted*** (Chapter "***Switch on the freezer***" // see page 26) as described.

WARNING

- Never clean or defrost the freezer using a steam-cleaning unit! The steam can come into contact with electric parts and trigger a short circuit. A risk of fire and electric shock!

7.2 Refrigeration unit

Clean the fin coil heat exchanger of the freezer every six months whatever the degree of soiling at the installation site.

NOTE

- A soiled fin coil heat exchanger results in overheating and outage of the freezer!

CAUTION

- Avoid direct contact with the fin coil heat exchanger – the fin coils are sharp-edged. Danger of cuts!

Switch off the freezer as described and pull out the mains power plug. Loosen the attachment screws of the right side grille on the back of the freezer and remove the grille. Clean the black fin coil heat exchanger with compressed air or using a brush/vacuum cleaner. Replace the grille.
Other components of the freezer are designed for continuous operation and do not require any maintenance.

7.3 Block/unblock setpoint adjustment

To reach the parameter level, press the two arrow keys simultaneously and keep them pressed down for approx. 5 seconds. P-P is displayed in the "Set" display. Then press the "on/off" key and after the "up arrow" key. P1 is displayed in the "Set" display. Then press the "up arrow" until P19 is displayed in the "Set" display. Press the "on/off" key and then the "up arrow" key to set the value to 1 (setpoint adjustment activated) or "down arrow" to set the value to 0 (setpoint adjustment deactivated).
The control returns automatically to operation mode after approx. one minute.

8 Troubleshooting

WARNING

- Only technicians authorised by the manufacturer should do repairs or intervene in the refrigeration cycle or the freezer control.
- Improper interventions or repairs can result in considerable bodily injury and/or material damages.
- Pull out the mains power plug before performing maintenance or repair work.

8.1 Replacing the Battery

Switch off the freezer as described and pull out the mains power plug to replace the battery. Loosen the attachment screws of the left side grille on the back of the freezer and remove the grille. Pull the two cables off the battery, and replace the battery. Connect the new battery with the cables (red cable on red-marked battery connection). Replace the grille.

8.2 Internal thermal protection

The compressors of the refrigeration unit are equipped with internal thermal protection. This switches off the compressors and consequently the cooling if there is overheating. As a result, the interior temperature increases and a temperature alarm follows.

Check the following possible causes:

- Is the fin coil heat exchanger soiled?
- Is ambient temperature too high?
- Is optimal ventilation of the freezer ensured?
- Are the ventilators operating?

The cooling is switched on again automatically after the compressor has cooled down (approx. one to two hours).

You can obtain an overview of the status and error messages in the following table.
You can obtain additional information and help when there are malfunctions and error messages from the manufacturer.

8.3 Status and error messages

Display 1 Set °C	Display 2 Temp. °C	Display 3 Alarm	Alarm tone	Lamp 1 Temp. alarm	Lamp 2 Error	Lamp 3 Power failure	Cause	Remedy
Setpoint	Actual value	Decimal point					Error-free operation	-
	OFF						Refrigeration unit switched off	-
		OFF					Alarm circuit switched off	-
---							Setpoint adjustment blocked	To ***unblock*** (Chapter "***Block/unblock setpoint adjustment***" // see page 31) parameter P19 and set it to the value "0".
	Actual value blinks	Max. temp.	1:3 sec.	lights			Temperature alarm: the temperature in the interior deviates from the set temperature.	- ***Clean*** (Chapter "***Maintenance***" // see page 31) the fin coil heat exchanger. - Check the ventilator. - Ambient temperature too high (>30° C)? - Is optimal ventilation of the freezer ensured? - Switch off the freezer, let it stand for 1-2 h and then switch it on again.
		Max. temp.	1:3 sec.	lights			Temperature alarm: the temperature in the interior deviates from the set temperature.	- ***Clean*** (Chapter "***Maintenance***" // see page 31) the fin coil heat exchanger. - Check the ventilator. - Ambient temperature too high (>30° C)? - Is optimal ventilation of the freezer ensured? - Switch off the freezer, let it stand for 1-2 h and then switch it on again
	F1		1:3 sec.		lights		Sensor error F1 refrigeration unit runs in continuous operation	Sensor defect; send the unit to the manufacturer for repair.
		F3	1:3 sec.		lights		Sensor error F3 Alarm circuit not ready to operate	Please contact the manufacturer.
		F4	1x per min.	lights			Sensor limit value alarm F4 Freezer overheated	- ***Clean*** (Chapter "***Maintenance***" // see page 31) the fin coil heat exchanger. - Ambient temperature too high (>30° C)? - Is optimal ventilation of the freezer ensured?
		F4	1:3 sec.		lights		Sensor error F4	Please contact the manufacturer.
		F5	1:3 sec.		lights		Sensor error F5	Please contact the manufacturer.
		F6	1:3 sec.			lights	Alarm battery defect	Switch the unit off and on again. If the error occurs again, the battery is defect and must be ***replaced*** (Chapter "***Troubleshooting***" // see page 32). You can obtain a replacement battery from the manufacturer or your dealer.
Dark	Dark	Max. Temp.	1:3 sec.			blinks	Unit without power supply, power outage	Correct the problem of the power outage. Check whether the mains power cord of the unit is inserted.

	F7		1:3 sec.		lights		Door open	Close the door
		F8					Self-test failed	Please contact the manufacturer.
		F9	1:3 sec.		lights		No feedback from the control	Please contact the manufacturer.
	EP1		1:3 sec.		lights		Control defect	Please contact the manufacturer.
		EP1	1:3 sec.		lights		Defect alarm circuit	Please contact the manufacturer.
	Actual value	F10	1:3 sec.		lights		The 1st level of the refrigeration unit has too little power	***Clean*** (Chapter "***Maintenance***" // see page 31) the fin coil heat exchanger. If the error occurs again, send the unit to the manufacturer for repair.

9 Decommissioning, disposal

9.1 Decommissioning

Defrost the unit as ***described*** (Chapter "***Defrosting***" // see page 31).
Leave the mains power cord disconnected if the freezer is not used for a longer time (energy saving).

NOTE

- Operate the freezer for at least 10 hours every year to charge the alarm battery. Otherwise, a battery may become defective due to exhaustive discharge.

9.2 Disposing of old freezer

Old freezers are not valueless waste. Valuable raw materials can be recycled with environmentally compatible disposal. Have a specialist firm dispose of your old freezers, or contact your supplier or manufacturer. The freezer is to be disposed of in waste separate from unsorted residential waste (domestic refuse).
Do not damage the refrigeration cycle of an old freezer during transport, to avoid uncontrolled leakage of the refrigerent and oil still in it.

10 Transport, packaging and storage

NOTE

- Transport the freezer only in an upright position and well packed to prevent damages.
- Only ship the freezer on pallets via a forwarding company.

10.1 Disposing of packaging

The packaging protects your freezer against transport damages. Please be helpful: Dispose of the packaging in an environmentally compatible way. Your municipal authorities can provide information about current disposal options.

11 Technical data

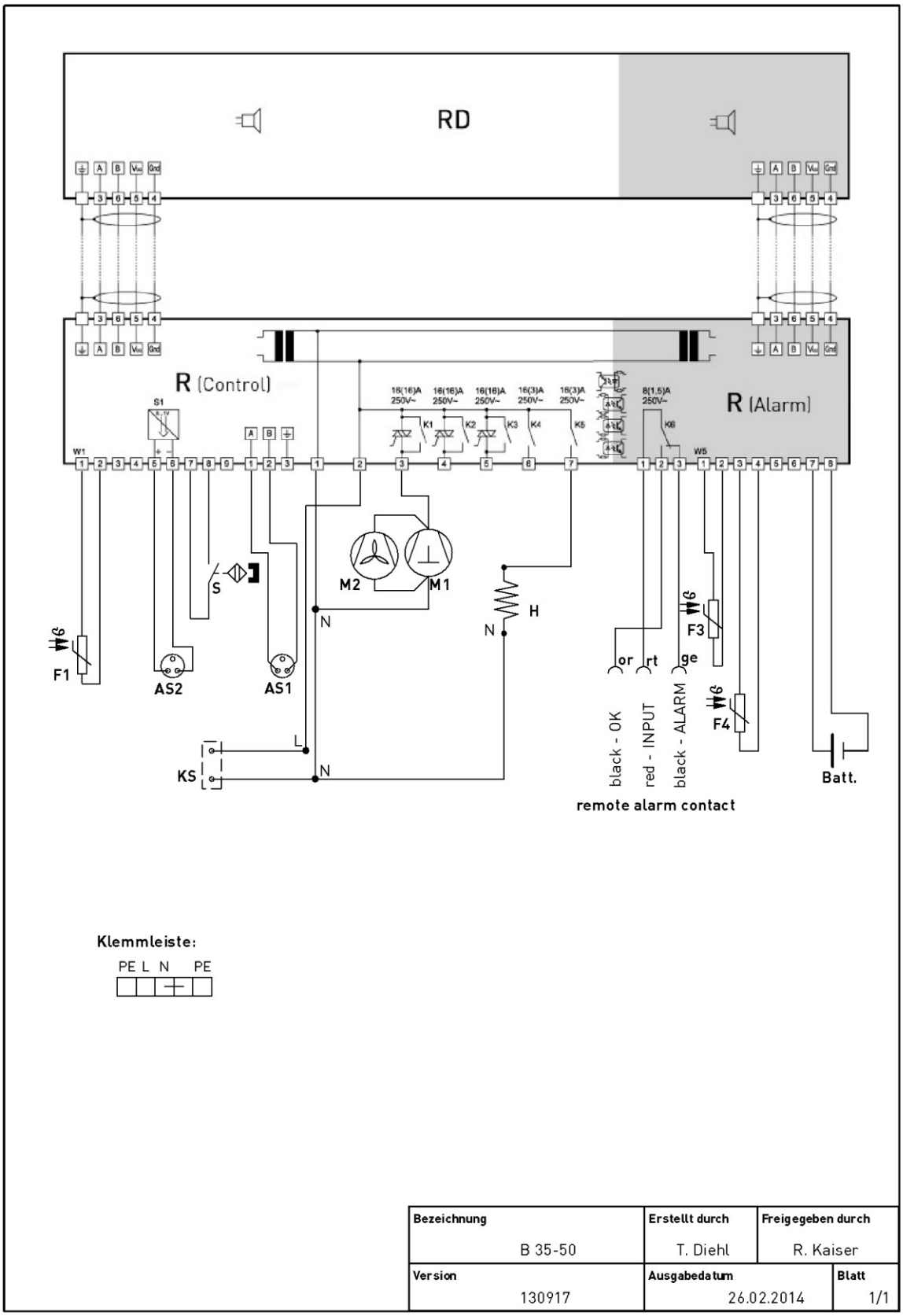
Temperature range	-50°C to -10°C
Capacity [l]	35
Interior [WxDxH] [cm]	42,5 x 30 x 28
External dimensions [WxDxH] [cm]	58 x 76,5 x 54
Weight [kg]	65
Ambient temperature	+12°C to +30°C
Electrical connection	230V / 50Hz
Protection class	IP 21
Max. current consumption [A]	2,5
Floor space required (feet) [WxD] [cm]	57 x 62
Noise emissions [db(A)]	42,5
Energy consumption [kWh/24h]	2,9

All data refer to nominal voltage and nominal frequency.
Ambient temperature 20°C // freezer operating at -50°C

11.1 Parts list

Code	Description	Article number
M1	Compressor	540SC12CLX230
M2	Fan motor	641M4Q230 + 644FL200SG
WT1	Condenser	610FCE121180
Ft1	Filter dryer	660FT1562
E1	Capillary	-
RD	Display	710ST100A
R	Mainboard (Control+Alarm)	710ST100S
F1	Temperature sensor controller	790PT1002MJ
F3	Temperature sensor alarm	790PT1002MJ
F4	Temperature sensor liquid-line	790PT1002MJ
S	Magnetic door switch	653ROS
H	Frame heater	780HBFST10
AS1	Port RS485	770D3S680
AS2	Port temperature recorder 100mV/K	770D3S680
KS	Rubber connector power supply	770KGS6067
Contains refrigerant R507-x (Mix) (GWP 3850). See type plate for filling capacities.		

11.2 Wiring diagram



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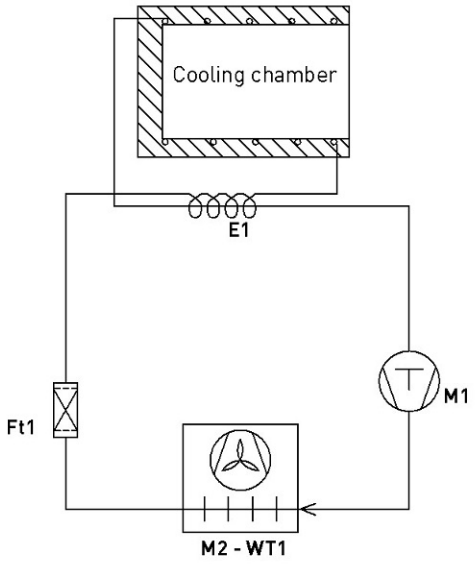
11.3 Refrigeration circuit



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