USER MANUAL

CELLBOX Ceiling Units

Air-cooled chillers as a ready-to-use modular system

for the following types of units: Chillers **CELLBOX KD 100 - 600**

CELLBOX TD 100 - 600 Freezers

CE

0. Index

1. General	Page 2
2. Unit Identification Features	Page 3
3. Description of units	Page 3
4. Installation	Page 3-4
5) Commissioning	Page 4
6) Controls/Operations/Parameters	Page 5-10
7 Alarm signals	Page 10-12
8. Emergency system	Page 12-13
9. Maintenance and Care	Page 13
10. Disposal / Recycling	Page 14
11. Dimensions / Illustrations	Page 14–17
12. Maintenance overview	Page 18

1. General Information

- The purpose of this operating manual is to ensure the proper startup of our equipment. To ensure trouble-free operation, all instructions and regulations regarding use, operation, and maintenance must be followed.
  - Description of Units
  - Installation
  - Start-up
  - Maintenance
- **CELLBOX KD refrigeration units are intended exclusively for cooling pre-chilled goods in refrigeration chambers, and CELLBOX TD deep-freezing units for deep-freezing pre-frozen goods in deep-freezing chambers. Other applications are not permitted. Any other use is improper and may result in damage to the unit.**
- **CELLTHERM assumes no liability for any damage that may result from failure to follow these operating instructions.**
- The nameplate on the unit must not be covered, and if it is damaged, it must be replaced immediately.
- Keep these instructions in a safe place.
- CELLTHERM reserves the right to modify this user manual at any time.
- After removing the packaging, check all individual parts of the block system to ensure they are undamaged and complete.
- Use of the device is strictly prohibited if there is a risk of explosion.
- If any malfunctions occur, shut down the system and disconnect the power supply.
- Care, maintenance, and necessary repairs of the block systems may only be performed by qualified personnel.
- The device must not be cleaned with a high-pressure washer or steam.
- The device must not be used without its housing.
- Do not place containers with liquids on the device.
- The device must not be placed near heat sources.
- In case of fire, use only powder fire extinguishers.
- Packaging material must be disposed of properly.

2. Identifying features of the units

All block systems are equipped with a nameplate containing the following technical information:

- Item number
- Serial number
- Current consumption (A)
- Power consumption (W)
- Refrigerant
- Voltage (V/Ph/Hz)
- Maximum operating pressure: High pressure / low pressure
- Class in accordance with the directive

Serial number format

- Lines 1 and 2: Year of manufacture
- Lines 3 and 4: Production week
- Lines 5–8 Sequential number

3. Unit description

CELLBOX modular systems consist of a condenser unit with an electronic control panel (outside the chamber) and an evaporator unit (inside the chamber).
The units are equipped with hot gas defrosting and are controlled via an electronic control panel. Defrosting takes place automatically at regular intervals, which can be adjusted by setting the parameters. Defrosting can also be initiated manually (see note on page 7).

4. Installation

- Installation of the units must be performed exclusively by qualified personnel.
- Protective gloves must be worn during transport and installation.
- The units may only be installed and operated in rooms with adequate fresh air circulation. For detailed information on permissible ambient temperatures, refer to the technical data. For other installations, please contact the manufacturer.
- Ceiling units may only be installed on the ceiling of a refrigeration/freezer chamber. For more detailed information, see **Figs. 1–4**.
- For ceiling mounting, observe the minimum clearances shown **in Fig. 5.**
- Ensure sufficient working space for maintenance in accordance with safety regulations.
- To ensure trouble-free operation of the units, we recommend the following minimum chamber wall thicknesses: KD refrigeration chamber 80 mm; TD deep-freeze chamber 100 mm or 120 mm.

4.1 Installation Instructions

- Depending on the size of the unit, make the required cutout in the chamber cover (see **Figs. 1–4**).
- The unit can be transported to the ceiling of the cold room using the provided suspension brackets and appropriate lifting equipment.
- Apply sealing tape to the outside of the recess. Insert the evaporator straight from above.
- Then secure the unit to the external ceiling components using the provided grooves (**see Fig. 6**).
- Inside the chamber, the recess must be sealed all around with silicone or a suitable sealant to prevent leaks and the resulting ice formation in the chamber, see Fig. 6.

- **The defrost tray of the units is also equipped with a drain pipe to discharge condensate in the event of a malfunction or failure. We strongly recommend connecting this drain to a suitable location; see Fig. 6.**

4.2 Electrical Connection

The unit must be protected by an appropriate fuse on site. There is no fuse inside the unit.

- The appropriate connection plugs (400 V or 230 V) are located on the unit. Depending on the output voltage, a suitable outlet must be available on-site. Check that the mains voltage and the fuse required for the unit are available (see nameplate).
- Mount the door switch in a suitable location on the door frame of the refrigerator/freezer in a manner that ensures proper operation. Using the door switch ensures that the evaporator fan shuts off every time the door is opened. This switch can also be used to turn on the lighting.
- The lighting can be installed anywhere in the chamber (follow the instructions provided with the light fixture).
- For CELLBOX TD units, in addition to the lighting, door frame heating can also be connected. However, this connection must be protected by an additional fuse on-site.

- **NOTE:**
  Never connect the "LIGHTING CABLE" and "DOOR FRAME HEATER" to the 230 V mains voltage. All connection cables are appropriately labeled.

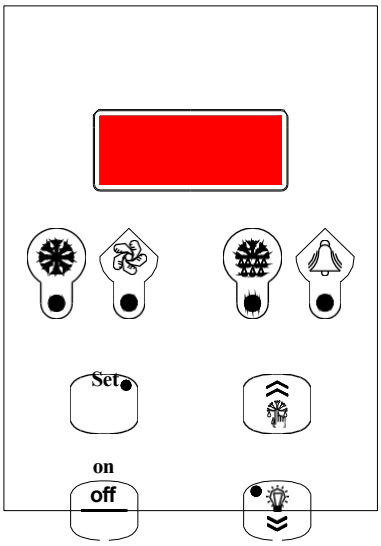
The system must comply with statutory regulations. Any maintenance work may be performed only when the system is disconnected from the power supply. CELLTHERM assumes no liability arising from failure to comply with the above recommendations and statutory regulations.

5. Startup

Before starting the device, ensure the following:

- All mounting screws must be tightened.
- Electrical connections and fuse protection must be properly installed.
- The chamber door must be closed to ensure proper operation of the door contact switch.

6. Control Unit Description



	Green "VERDICHTER" LED OFF: Compressor off ON: Compressor on **FLASHING: Starting up (active delay or fuses)**
	Green "GEBLÄSE" LED OFF: Fan off ON: Fan on **FLASHING: Starting up (delay active or fuses)**
	Green "DOWN" LED OFF: Defrosting off ON: Defrosting on **FLASHING: Manual defrost is active; defrost request is active**
	Yellow "ALARM" LED OFF: No alarm ON: A serious alarm has occurred (and the alarm relay has been activated) **FLASHING: no serious alarm or serious alarm set (alarm relay off)**
	+SETPOINT button green "SETPOINT/SET REDUCED" LED ON: setpoint value displayed FLASHING: Reduced set has been activated "ENTER" button: Used to set the setpoint, access the programming menu, and display the device status (when pressed for 1 second); press and hold for 5 seconds to access programming.

	"UP" button: Allows manual defrosting (press and hold for more than 5 seconds), increases the parameter value on the display, and scrolls through the menu list.
	"ON/OFF" button: manual on/off, confirm parameter value, and return to the previous menu; **press and hold for more than 5 seconds to turn the device on or off.**
	"DOWN" button: Allows manual control of lighting (press and hold for 1 second), decreases the parameter value on the display, and returns to the menu list.

6.1 Turning the unit on/off

When the unit is powered on, the display alternates between the word "OFF" and the current cell temperature. To turn the unit on (or off), press and hold the ON/OFF button for more than 5 seconds.

6.2 Temperature control in the cold room

Below is an overview of the appropriate minimum and maximum operating temperatures for the units:

	Minimum	Maximum
CELLBOX KD temperature range	-5	+5
CELLBOX TD low temperatures	-25	-15

You can access the temperature setpoint directly to view and change the value.

- **Press and release SETPOINT**: "Set" will appear (if alarms are present, the procedure is slightly different; see the Device Status Display section).
- **Press SETPOINT**: the green SET LED will light up and the setpoint will be displayed.
- **Press UP and DOWN** to set a new value
- **Press SETPOINT or ON/OFF** (or wait 5 seconds) to confirm the value (the SET LED will turn off and "SEt" will appear).

Press ON/OFF (or wait 5 seconds) to return to the normal display

6.3 Parameter Change Procedure

The operation and control of the block systems are regulated by internal parameters that are stored in the control unit's electronic memory by the manufacturer (see table).

Do not change these values unless necessary. Furthermore, any necessary changes should be performed by a specialist.

The parameters are organized by function and security/access levels as follows

: Level 0 = setpoint parameter, direct access (see note 6.2)
=Level 1 Frequently used parameters, access without a password (see the note below regarding Level 1)

Changing a Level 1 parameter

- Press the SET button for 2 seconds until "reg" (parameter setting) appears on the display.
- Press the UP or DOWN buttons until the desired menu appears
- The SET button will display the code for the first parameter of the selected menu
- Press the UP or DOWN buttons until the desired parameter appears
- Press the SET button to display the parameter value
- Press the UP or DOWN buttons to set the desired value
- Press the SET button to confirm the value and return to the parameter list; or press ON/OFF to confirm the value and return to the menu list.
- Press the ON/OFF button to switch from the parameter list to the menu list
- Press the ON/OFF button again to exit parameter editing mode

If neither button is pressed for more than 15 seconds, the specified value will be saved in the corresponding parameter, and the parameter editing mode will close.

Displaying the device status

- Press and release the SET button: if an alarm occurs, the message "SEt" or "AAL" will be displayed.
- Press the UP or DOWN button until the desired AAL status appears
  Current alarms (if available)
  SEt Setpoint
  Pb1 Probe value Cell temperature Pb2
  Evaporator temperature value of
  probe Pb3 Probe 3 value (if present) Out
  Relay output status InP
  Digital input status
- Press the SET button to display the value
- For alarm status, output status, or input status, use the UP or DOWN button to scroll through current alarms, outputs, or inputs
- Press the SET or ON/OFF button (or wait for the 5-second timeout) to return to the status list
- Press the ON/OFF button (or wait for the 5-second timeout) to return to the normal view.

6.4 Parameter Overview

Code	Level	Description		Range	Unit	Default
		List **-PPS** Password				
PPA		Password for accessing parameters Entering programmed passwords allows access to protected parameters		0 ... 255		-
		List **-rEG** Setting parameters				
SEt	0	Setpoint		LSE ...HSE	°C [°F]	2.0
diF	1	Difference >+Temperature setpoint difference -> Setpoint On. Temperature ≤ Setpoint -> Off Setpoint		0.1 ... 50.0	°C [°F]	2.0
		List **-Pro** Probe parameters				
CA1	1	Calibration probe 1	The value assigned to these parameters is added (positive value) or subtracted (negative value) from the temperature recorded by the probe	-20.0 ... 20.0	°C [°F]	0.0
CA2	1	Calibration probe 2				0.0
CA3	1	Calibration probe 3				0.0
		List of compressor parameters **-CPr**				
Ont	1	Compressor activation time with a faulty sensor	In the event of a controller sensor failure, the compressor is cycled on and off with the set on and off times: Ont=0: compressor always off Ont>0 and OFt=0: compressor always on	0 ... 60	min	15
OFt	1	Compressor shutdown time with a faulty sensor		0 ... 60	min	15
dOn	1	Compressor start delay The time interval from the start request to the actual start of the compressor. In the case of network control in this mode, this is the start-up delay from compressor to compressor		0 ... 250	sec	0
dOF	1	Minimum compressor shutdown time The period after deactivation during which the compressor cannot be restarted		0 ... 60	min	3
dbi	1	Delay between starts The period after the previous activation during which the compressor cannot be restarted		0 ... 60	min	0
FromO	1	Output delay for power-on (compressor, fan, defrost) Allows the activation of control to be delayed after the unit starts up according to the set time. Switching from standby mode to active mode (ON command on the keypad) eliminates the delay.		0 ... 60	min	0
		List **-dEF** Defrost parameters				
dtY	1	Defrost type =0 with heating resistor, ends upon reaching temperature or maximum safety time (time limit) =1 with hot gas, ends upon reaching temperature or maximum safety time (time limit) For resistance defrosting, wait 1 second after the compressor is turned off and the relay is activated.		0.1		1
dit	1	Interval between defrosts Maximum time (from start to start) between two consecutive defrosts. After this time has elapsed, defrosting is initiated (cyclic defrost). The timer is reset after each defrost (even if it is not a cyclic defrost). =0 Cyclic defrosting disabled		0 ... 250	h/min/sec	6
dct	1	Counting mode Defrost interval =0 counts when the compressor is running =1 always counts		0.1		1
dOH	1	Defrost start delay when power is on The time from when the device is turned on during which all (except for manual defrost) are rejected.		0 ... 250	min	0
dEt	1	Defrost time limit After the set time has elapsed, the defrost process is also activated. It will be terminated if the defrost end temperature is not reached, and the drain phase will begin.		1 ... 250	h/min/sec	15

Code	Level	Description		Range	Unit	Default
dSt	1	Defrost end temperature The temperature of probe 2 at which defrosting ends. If the temperature at the start of defrosting is higher than the set value; if defrosting has not been initiated. If probe 2 is malfunctioning, defrosting is always terminated before the time limit expires		-50.0 ... 199.0	°C [°F]	10.0
dS2	1	Second evaporator defrost end temperature Temperature of probe 3 at which defrosting of the second evaporator defrosting will be completed. If the temperature is higher at the start defrost than the set value; defrosting will not be initiated. Z If probe 3 fails, defrosting will be stopped by the timeout expiring. **The function is activated only when P01=3o4, Co4=3, and CP0=2** (defrost alarm relay for the second evaporator and probe 3 for detecting the temperature of the second evaporator). In this case The defrost phase begins after defrosting of both evaporators is complete.		-50.0 ... 199.0	°C [°F]	10.0
dPO	1	Defrosting with power on =0 disabled =1 Defrosting during device startup		0,1	flag	0
		List of blower parameters **-FAn**				
FSt	1	Fan shutdown temperature	≥Probe2 FSt: Fan off ≤<Photo Probe2 (FSt - FAd): Fan on <Probe2 (Photo - FAd): Blower off	-50.0 ... 199.0	°C [°F]	8.0
Photo	1	Fan activation temperature		-50.0 ... 199.0	°C [°F]	-50.0
FAd	1	Differential fan on/off		1.0 ... 90.0	°C [°F]	2.0
Fdt	1	Drip time The period following the drain phase during which the fans remain off		0 ... 60	min	1
dt	1	Discharge time period after defrosting in the compressor and Evaporator fan to be switched off for better evaporator evacuation		0 ... 60	min	2
dFd	1	Fan shutdown during defrost =0 Fan on (operation defined by FPt) =1 Fan off		0,1	flag	1
FCO	1	Blower deactivation after compressor shutdown =0 Fan off =1 Fan on (operation defined by FPt) =2 Blower in operating cycle		0 ... 2		0
Fon	1	Blower on-time for operating cycle (FCO=2)		1 ... 60	min	1
FoF	1	Blower shutdown duration in the operating cycle (FCO=2)		1 ... 60	min	1
		List **-ALr** Alarm parameters				
AFd	1	Differential temperature threshold alarm Specifies the temperature threshold at which a high or low alarm is triggered. low temperature occurs		1.0 ... 90.0	°C [°F]	2.0
HAL	1	Upper alarm threshold Above this value (absolute or relative to the setpoint), the alarm is activated For reference, the unsigned value is added to the setpoint		-50.0 ... 199.0	°C [°F]	10.0
LAL	1	Lower alarm threshold Below this value (absolute or relative to the setpoint), the alarm is activated For reference, the unsigned value is taken from the setpoint subtracted		-50.0 ... 199.0	°C [°F]	-10.0
PAO	1	Temperature alarm delay for power-on		0 ... 10	h	4
dAO	1	Temperature alarm delay after defrost The period after the end of the drain phase during which no alarm is signaled In the case of simultaneous defrosting via the network, the period refers to Defrost end command		0 ... 999	min	60
OAO	1	Temperature alarm delay after door closure The period after the door closes during which the alarm is not triggered		0 ... 10	h	0

dAt	1	Enable defrost after the alarm timeout Signal indicating the possible end of defrosting upon reaching the value Maximum duration (timeout). =0 Message disabled =1 Message enabled	0,1	flag	1

Code	Level	Description	Range	Unit	Default
		List **-** display parameters			
ndt	1	Display decimal point =0 Display without decimal point; =1 Display with a decimal point.	0.1	flag	1
ddL	1	Display during defrost phase =0 normal representation (as specified in par. ddd) =1 Freeze the displayed temperature value from the start of defrosting until the end of defrosting and the setpoint is reached. =2 "dF" until the end of defrosting and reaching the setpoint. **The ddL parameter is processed only if the standard display (par. ddd) provides for a controller probe** (probe 1 or network probe)	0,1,2		0
Ldd	1	Display lock timeout during defrost The period from the end of defrosting (end of the drip phase) after which normal display is restored.	0 ... 255	min	6
hazard	1	Select °C or °F =0 °C =1 °F This selection affects only the temperature unit. The temperature parameter values retain their current values and must therefore be manually adjusted to the Fahrenheit scale.	0.1	flag	0
		List **-CnF** Configuration parameters			
LOC	1	Keyboard lock =0 Keypads disabled =1 Main keyboard terminal enabled =2 Keypad Second terminal activated =3 Keypads activated (the one that requests first has priority until the end)	0 ... 3		1
rEL	1	Software version Read-only value indicating the software version	0.0 ... 99.9		read-only
		List of **LAN** parameters			
dEA	1	Supervisor network address (for master device only) The address entered for each master device must account for the number of slave devices in the preceding LAN: "dEA"="dEA[previous master device]"+"L01[previous master device]"+1 Master network address for the slave device equal to "dEA[Master]"+"L00")	1 ... 199		1

ALARM NOTES

In the event of an alarm, the following functions are triggered:

- The corresponding alarm code appears on the display. The alarm code and the normally displayed temperature appear alternately on the control display; if there are several alarm messages, they are displayed one after another, alternating with the temperature.
- The alarm LED lights up.
- The alarm relay is activated.

The LED and/or relay are not activated for certain alarm messages and notifications. Alarm messages and their corresponding actions are listed in the table below.

Pressing any button deactivates the relay (if it has been activated), and the LED flashes while the alarm code is shown on the display. Once the cause of the alarm has been resolved, the LED turns off and the alarm is no longer displayed. The available alarm codes are shown in the table below:

Displayed code	Description/Check	LED Active	Relay active	Reset mode
E1	**Cooling coil temperature sensor error** If the sensor is for control purposes, the compressor is cycled on and defrost is disabled; if the network sensor has been activated, the faulty sensor will be disabled by the control unit	Yes	Yes	automatically after correction
E2	**Defrost sensor error** Defrosting ends after the timeout	Yes	Yes	automatically after correction
E3	**Third sensor error** (condenser temperature) the relevant controls are disabled. activated	flashes	no	automatically after correction
	Third sensor error (temperature of the 2nd evaporator) Defrosting was completed after the timeout.	Yes	Yes	
No	**Thermal alarm** Control unit is off	Yes	No	automatically after correction
No	**High-pressure switch alarm** The control unit is switched off	Yes	no	automatically Remedy
No	**Low-pressure switch alarm** The control unit is turned off	Yes	No	automatically after correction
E4	**Recurring thermal alarm** the control unit is permanently disabled	Yes	Yes	During startup
E5	**Repeated high-pressure switch alarm** the control unit is permanently disabled	Yes	Yes	During startup
E6	**Repeated low-pressure switch alarm** the control unit is permanently disabled	Yes	Yes	During startup
LO	**Low temperature alarm**	Yes	Yes	automatically after correction
HI	**High temperature alarm**	Yes	Yes	automatically with Remedy
EE	**Data storage error** default values are loaded	Yes	Yes	after power-on or next parameter storage
Ec	**Compressor cleaning alarm**	flashes	no	automatically after correction
On	**Alarm network (*)**	Yes	Yes	automatically after correction
Ed	**Defrost timeout alarm**	flashes	no	automatically at the next defrost
From	**Open door alarm timeout** Normal operation is restored	flashes	no	automatically from Remedy
nx	**Slave x in alarm** (only on the master device)	Yes	Program	automatically after correction
Ux	**Slave x is not connected (**only on the master device) Slave is not controlled	flashes	no	automatically with Remedy

u0	**Master is not connected** (only on slave) Slave disconnects from the network and operates autonomously	flashes	no	automatically after correction
dx	**Slave x download failed** (only on the master device)	flashes	no	manually or automatically using Workaround

(*) A network alarm is an alarm signal sent by the master device to all network devices after prior programming, when the alarm relay on the master device is activated.

The following special statuses are displayed during operation:

Indicated Code	Description	Note
OFF	Device in standby mode (operation off)	remains until the next ON command
dF	Defrosting in progress	see section "ddL"
dFu	Defrosting was not performed	appears for 2 seconds if the defrost error was not executed because the evaporator temperature is already above the defrost end temperature (parameter dst).
uM	Main unit	After power-on, device network configuration Displayed unit
uSx	Slave unit x	
Cn	Terminal/controller connection interrupted terminal/controller	The terminal is not receiving any control data

If the connection between the terminal and the controller does not work properly during startup, "88.8" will appear on the terminal display and all LEDs will turn off.

EMERGENCY SYSTEM

NOTE:
The procedures described below may only be performed by qualified personnel.
If the electronic control module is damaged or malfunctioning and cannot be replaced immediately, you can use the EMERGENCY SYSTEM to keep the unit running until the control module is replaced.

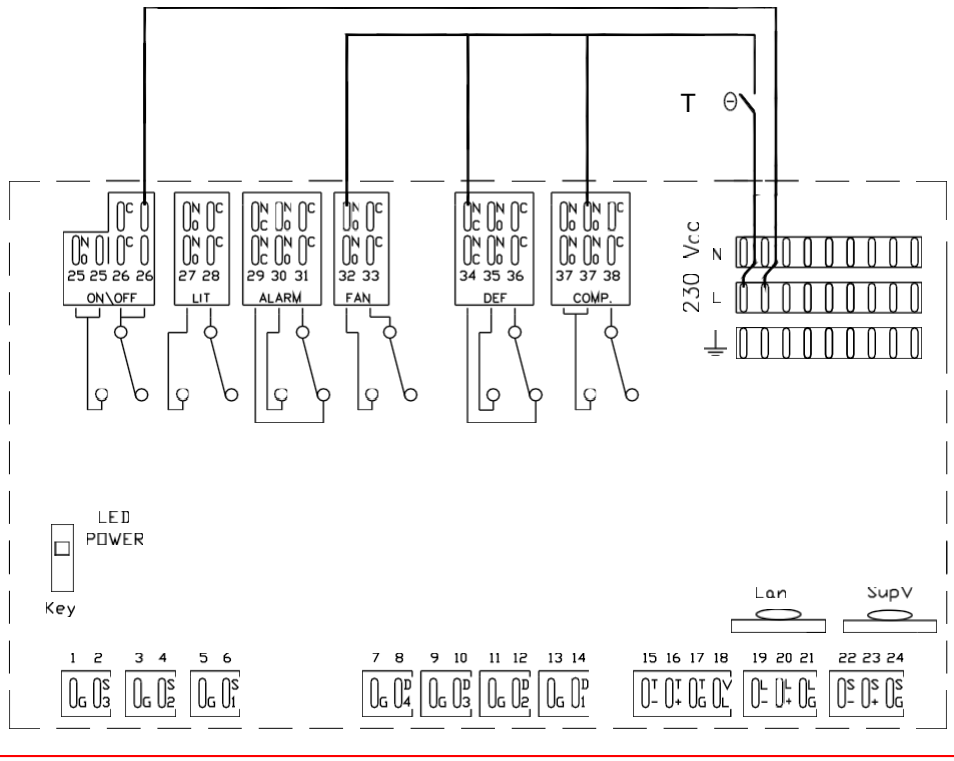
Follow these steps:

1. Disconnect the power supply to the block system
2. Remove all jumpers between terminals L and the common contacts of the card's relays (terminals 25-28-33-36-38).
3. As shown in the diagram, connect the thermostat between terminal L, the NO terminals (terminals 32, 37), and the NC terminal (terminal 34) of the compressor, defrost, and fan relays (COMP, DEF, and FAN).
4. Create a jumper between the L terminal and the NO terminal of the ON/OFF relay (terminal 26 to power the case, door, and drain heater, if present).
5. Reconnect power to the unit system and set the thermostat to the desired temperature.
6. **NOTE:**
   Please note that this is a temporary connection! In any case, contact a specialist dealer as soon as possible to resolve the cause of the malfunction.

   During the entire emergency phase, the defrost cycle is disabled; therefore, the cold room door should be opened as infrequently as possible.

When installing a new control unit, restore the connections listed in steps 2, 3, 4, and 5.

Fig. A



T = Thermostat

9. Maintenance and Care

- **NOTE: All maintenance and/or service work must be performed with the system is turned off and disconnected from the mains power supply.**

- Periodically check that the evaporator is clean and, in particular, that it is not blocked by ice buildup. If blockage occurs due to ice buildup, defrosting is necessary (press the "UP" button for more than 5 seconds). Repeat this step until the evaporator is completely clean. Check after 12 hours.

- Clean the condenser periodically. We recommend blowing compressed air from the inside out to remove dust and grease (professionals only).

Regularly check that the condensate drain opening is not blocked. For CELLBOX TD block systems, also check that the drain line heater is functioning properly.

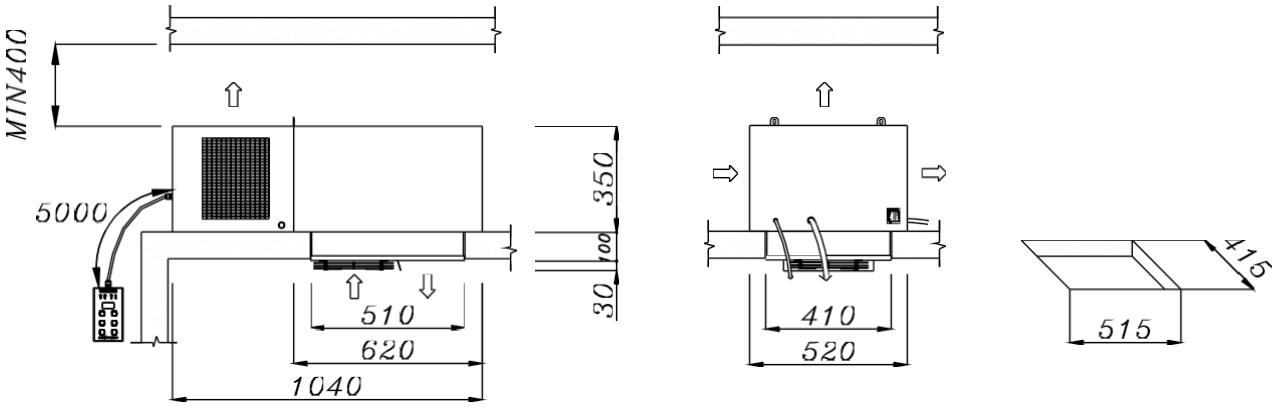
10. Decommissioning and Disposal

If the unit is taken out of service and is to be disposed of, perform the following steps: Disconnect the power supply and all electrical connections, and dismantle the unit. The refrigerant in the system must not be disposed of improperly. The buffer compressor oil is subject to special collection. Therefore, it is recommended to dispose of the system exclusively at designated/appropriate collection points in accordance with statutory regulations.

11. Dimensions

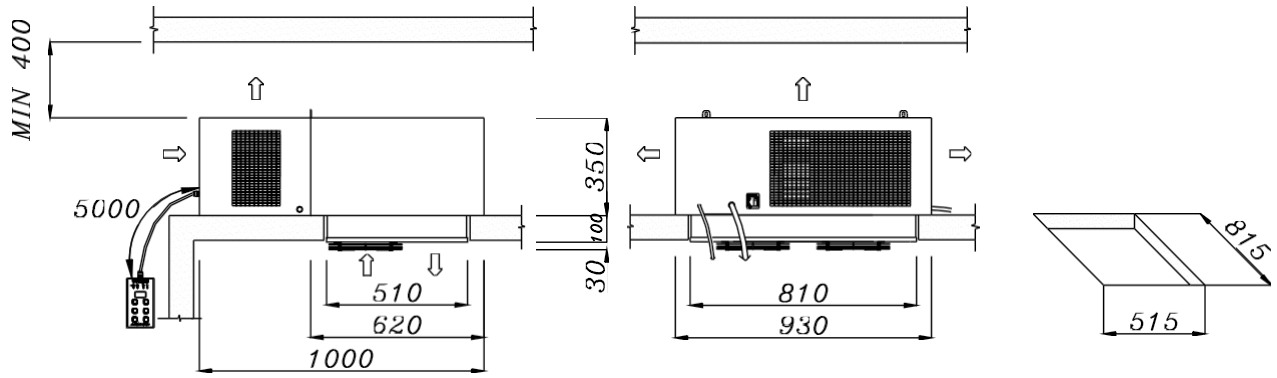
The following drawings show the relevant dimensions of the unit systems as well as installation and working clearances.

Fig. 1



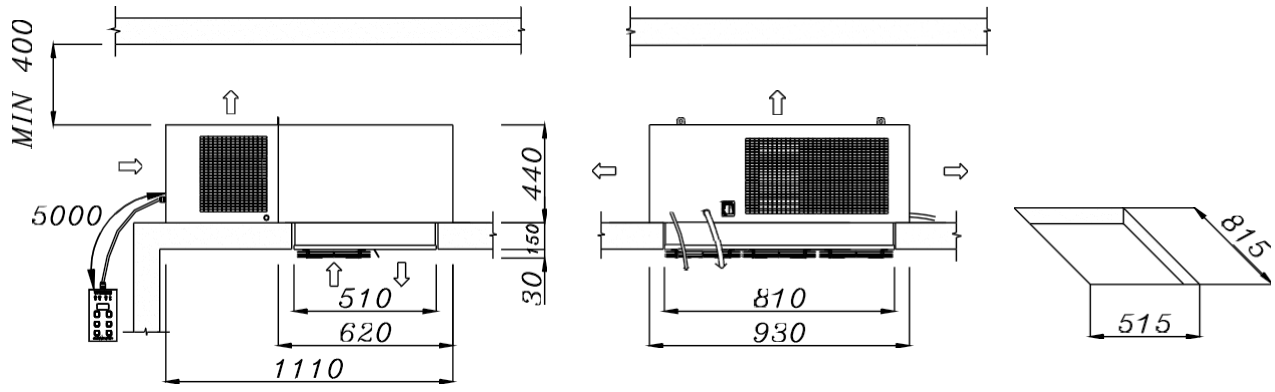
CELLBOX KD		CELLBOX TD			
	Net Weig ht [kg]		Net Weig ht [kg]		
100	59	**100**	64		
200	60	**200**	71		

Fig. 2



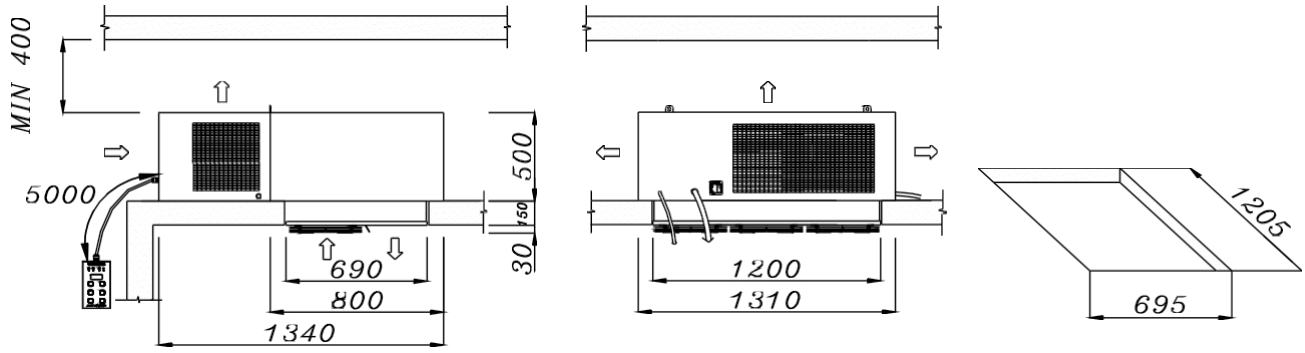
CELLBOX KD		CELLBOX TD			
	Net Weig ht [kg]		Net Weig ht [kg]		
300 **400**	93 97	**300**	99		

Fig. 3



CELLBOX KD		CELLBOX TD			
	Net Weig ht [kg]		Net Weig ht [kg]		
500 **600**	143 160	**400**	130		

Fig. 4



		CELLBOX TD			
			Net Weig ht [kg]		
		500 **600**	193 200		

Fig. 5

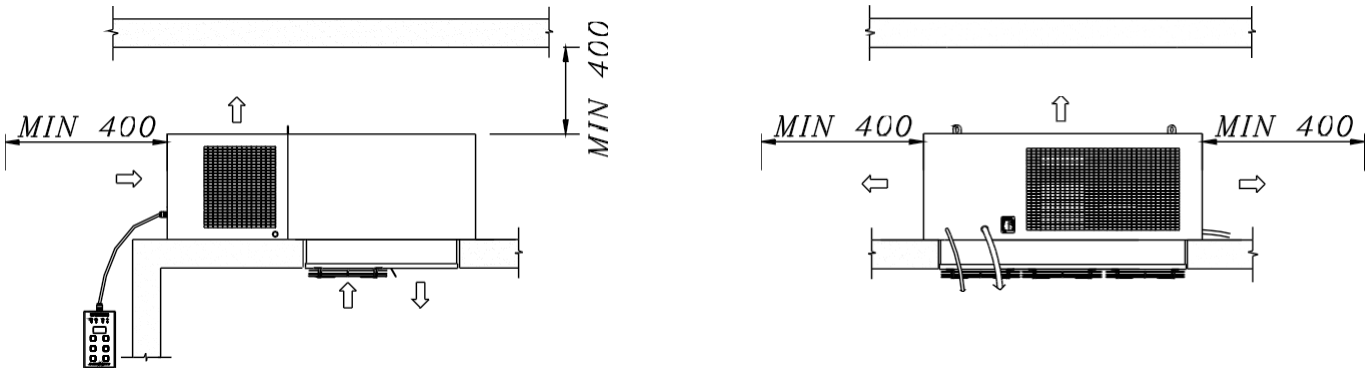
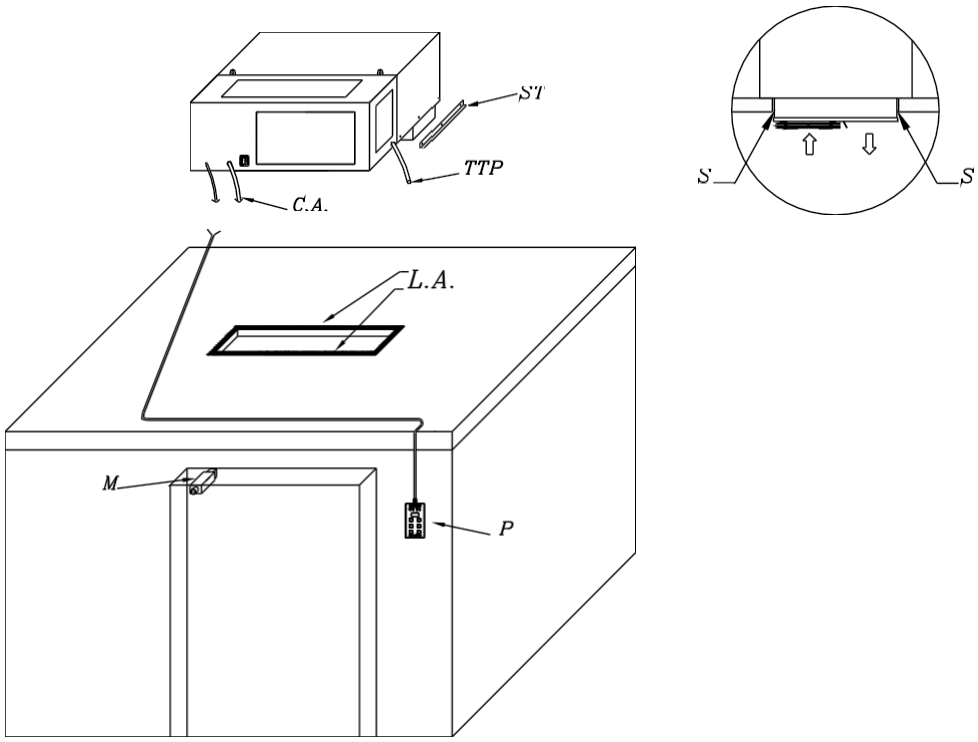


Fig. 6



Legend:

TTP = Additional drain pipe
ST = Clamp bracket
CA = Power cord **M**
= Door switch
LA =
Sealing tape
P = Remote control
S = Silicone

12. Maintenance overview

Date	Actions taken	Signature

GGM Gastro International GmbH
Weinerpark 16
D-48607 Ochtrup

www.ggmgastro.com info@ggmgastro.com
+49 2553 7220 0