

USER MANUAL

CELLBOX Ceiling Units

Air-cooled chillers as packaged units in ready-to-operate design

for the following unit types: Chillers

CELLBOX KD 100 – 600

Freezers **CELLBOX TD 100 – 600**



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1. General Information

- The purpose of this operating manual is to ensure the proper commissioning of our equipment. To ensure trouble-free operation, all instructions and regulations regarding use, operation, and maintenance must be followed.
 - Description of the Devices
 - Installation
 - Commissioning
 - Maintenance
- **The CELLBOX KD cooling units are intended exclusively for cooling pre-chilled goods in cold storage rooms; the CELLBOX TD freezing units are intended for freezing pre-frozen goods in freezer rooms. Other uses are not permitted. Any other use is improper and may result in damage to the unit.**
- **CELLTHERM is not liable for damage resulting from failure to follow these operating instructions.**
- The nameplate on the unit must not be covered and must be replaced immediately if damaged.
- Keep this manual in a safe place.
- CELLTHERM reserves the right to modify this operating manual at any time.
- After removing the packaging, all individual parts of the block system must be checked to ensure that they are undamaged and complete.
- Use of the device is strictly prohibited if there is a risk of explosion.
- In the event of any malfunctions, the system must be turned off and disconnected from the power supply.
- Care, maintenance, and necessary repairs to the block systems may only be performed by qualified personnel.
- The unit must not be cleaned with a high-pressure washer or steam.
- The device must not be operated without its housing.
- No containers with liquids may be placed on the device.
- The device must not be placed near heat sources.
- In the event of a fire, only dry chemical fire extinguishers may be used.
- Packaging material must be disposed of properly.

2. Identification features of the devices

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

- Part number
- Serial number
- Current consumption (A)
- Power consumption (W)
- Refrigerant
- Voltage (V/Ph/Hz)
- Maximum operating pressure: High pressure / Low pressure
- Class according to directive

Serial number structure

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

3. Description of the units

CELLBOX block 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 occurs automatically at cyclical intervals, which can be adjusted by changing the parameters. Defrosting can also be started manually (see note on page 7).

4. Installation

- Installation of the units must be performed exclusively by qualified personnel.
- Wear protective gloves during transport and installation.
- The units may only be installed and operated in rooms with an adequate supply of fresh air. Detailed information on permissible ambient temperatures can be found in the technical specifications. For other installations, please contact the manufacturer.
- Ceiling-mounted units must only be installed on the ceiling of the refrigerator or freezer compartment. For further details, see **Figs. 1–4**.
- For ceiling installation, the minimum clearances shown in **Fig. 5** must be observed.
- Sufficient working space must be provided for maintenance work in accordance with safety regulations.
- To ensure trouble-free operation of the units, we recommend the following minimum wall thicknesses for the chambers:
Refrigeration chamber KD 80 mm; Freezer chamber TD 100 mm or 120 mm.

4.1 Installation Instructions

- Depending on the size of the unit, the required cutout must be made in the chamber cover (see **Figs. 1–4**).
- The unit can be transported to the cell ceiling using suitable devices attached to the designated suspension points.
- Apply sealing tape to the outside of the opening. Insert the evaporator straight from above.
- Then secure the unit to the outer ceiling elements using the grooves provided for this purpose (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 unit's defrost pan is also equipped with a drain pipe to discharge condensate in the event of malfunctions or failures. We strongly recommend connecting this drain to a suitable location; see Fig. 6.**

4.2 Electrical Connection

The unit must be protected on-site with a suitable fuse. There is no fuse inside the unit.

- The corresponding 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. Please verify that the mains voltage and the fuse required for the unit are present (see nameplate).
- Mount the door switch in a suitable location on the door frame of the refrigerator/freezer to ensure proper operation. Using the door switch turns off the evaporator fan every time the door is opened. This switch can also be used to turn on the lighting.
- The lighting can be mounted at any location inside the cell (follow the instructions on the lamp socket).
- On CELLBOX TD units, a door frame heater can also be connected in addition to the lighting. However, this connection must be protected on-site with an additional fuse.
- **CAUTION:**
Never connect the “LIGHTING CABLE” or the “DOOR FRAME HEATER” to 230 V mains voltage. All connection cables are marked accordingly.

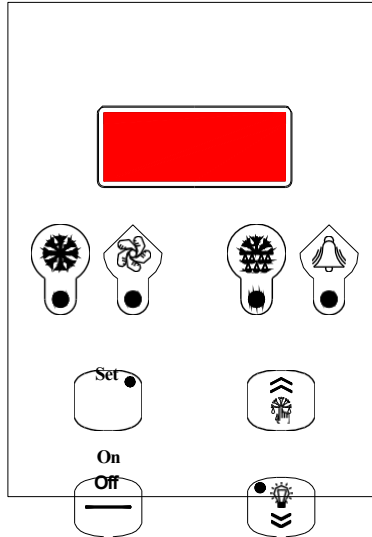
The system must comply with legal regulations. Maintenance work may only be performed on systems disconnected from the power supply. CELLTHERM assumes no liability for failure to comply with the above recommendations and legal regulations.






5. Commissioning

Before commissioning the unit, observe the following points:




- All mounting screws must be tightened.
- The electrical connections and fusing must be properly installed.
- The cell door must be closed to ensure proper operation of the door contact switch.

6. Description of the Control Unit



	<p>Green "COMPRESSOR" LED OFF: Compressor off ON: Compressor on FLASHING: Startup in progress (active delay or fuses)</p>
	<p>Green "FAN" LED OFF: Fan off ON: Fan on FLASHING: Power-up process in progress (delay active or fuses)</p>
	<p>Green "DOWN" LED OFF: Defrost off ON: Defrosting is on FLASHING: Manual defrost in progress; defrost request in progress</p>
	<p>Yellow "ALARM" LED OFF: No alarm ON: Serious alarm has occurred (and alarm relay has been activated) FLASHING: No serious alarm or serious alarm set (alarm relay off)</p>
	<p>+SETPOINT button, green "SETPOINT/SET REDUCED" LED ON: Setpoint display FLASHING: Reduced setpoint activated "ENTER" button: Used to set the setpoint, provides access to the programming menu, and displays the device status (when pressed for 1 second); hold down for 5 seconds to access programming.</p>

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	<p>"UP" button: Enables manual defrost (when held down for more than 5 seconds), increases the parameter value on the display, and scrolls through the menu list.</p>
	<p>"ON/OFF" button: Manual on/off, confirms the parameter value, and returns to the previous menu; press and hold for more than 5 seconds to turn the unit on or off.</p>
	<p>"DOWN" button: Allows manual control of the lighting (press and hold for 1 second), decreases the parameter value on the display, and returns to the menu list.</p>

6.1 Turning the device on/off

When the device is powered on, the display alternates between showing "OFF" and the current cell temperature. To turn the device 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 corresponding minimum and maximum operating temperatures for the devices:

	Minimum	Maximum
Plus the temperature of the CELLBOX KD	-5	+ 5
Minimum temperatures CELLBOX TD	-25	-15

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

- **Press and release SETPOINT:** "Set" is displayed (the procedure is slightly different for alarms; see the section "Displaying the device status").
- **Press SETPOINT:** The green SET LED lights up and the setpoint is 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 turns off and "SEt" is displayed).

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

6.3 Procedure for changing parameters

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

Therefore, do not change these values unless necessary. Furthermore, all necessary changes should be made by a qualified technician.

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

: Level 0 = Setpoint parameters, direct access (see Note 6.2)

=Level 1 Frequently used parameters, access without password (see note below regarding Level 1)

Changing a Level 1 parameter

- Press and hold 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 code for the first parameter of the selected menu appears on the SET button
- Press the UP or DOWN buttons until the desired parameter is displayed
- 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 none of the buttons are pressed for more than 15 seconds, the set value is saved in the corresponding parameter and the parameter change is completed.

Device Status Display

- Press the SET button briefly: If an alarm is active, the message "SET" or "AAL" is displayed.
- Press the UP or DOWN button until the desired AAL status is displayed
 - Current alarms (if any)
 - SEt Setpoint
 - Pb1 Sensor value Temperature of the cell
 - Pb2 Temperature value of the
 - evaporator
 - (Pb3 sensor) Value from sensor 3 (if
 - present) Out Status of
 - the relay output InP Status of the digital
 - inputs
- Press the SET button to display the value
- In alarm, output, or input status, press the UP or DOWN button to scroll through the current alarms, outputs, or inputs
- Press the SET or ON/OFF button (or wait for the 5-second timeout to expire) to return to the status list
- Press the ON/OFF button (or wait for the 5-second timeout to expire) to return to the normal view.

6.4 Parameter Overview

Code	Level	Description	Range	Unit	Standard	
		List -PPS Password				
PPA		Access password for parameters Entering the programmed passwords allows access to protected parameters	0 ... 255		-	
		List -REG Setting the parameters				
SEt	0	Setpoint	LSE ... HSE	°C [°F]	2.0	
dIF	1	Difference >+Difference between temperature setting -> actual temperature ≤ Setpoint -> Setpoint Off	0.1 ... 50.0	°C [°F]	2.0	
		List -Pro Sensor parameters				
CA1	1	Calibration sensor 1	The value assigned to these parameters is added to (positive value) or subtracted from (negative value) the temperature measured by the sensor	°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 start-up time in case of a faulty sensor	If the control unit's sensor fails, the compressor is cycled on and off according to 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 in case of a faulty sensor		0 ... 60	min	15
dOn	1	Delay when starting the compressor The time interval between the start request and the actual start-up of the compressor. For network-controlled regulation in this mode, this refers to the start-up delay from compressor to compressor	0 ... 250	sec	0	
dOF	1	Minimum compressor shutdown time Time period after deactivation during which the compressor cannot be restarted	0 ... 60	min	3	
dbi	1	Delay between starts Time period after the last activation during which the compressor cannot be restarted	0 ... 60	min	0	
OdO	1	Output delay upon power-up (compressor, fan, defrost) Allows the controller activation to be delayed after the unit starts up according to the set time. The transition from standby mode to active operation (pressing the "ON" key on the keypad) cancels the delay.	0 ... 60	min	0	
		List -dEF Defrost parameters				
dtY	1	Defrost type =0 with heating element, end upon reaching the temperature or the maximum safety time (time limit) =1 with hot gas, ends when the temperature is reached or the maximum safety time (time limit) is reached For resistance defrosting, wait 1 second after the compressor is turned off and the relay is turned on.	0.1		1	
dit	1	Interval between defrost cycles Maximum time (from start to start) between two consecutive defrost cycles. After this time has elapsed, a defrost cycle is initiated (cyclic defrost). The timer is reset after each defrost cycle (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 while compressor is running =1 Counts continuously	0.1		1	
dOH	1	Delay in defrost start when power is on The time after the unit is turned on during which all (with the exception of manual defrost) are rejected.	0 ... 250	min	0	
dEt	1	Defrost time limit Once the set time has elapsed, the defrost cycle also starts. The cycle ends if the final temperature of the defrost cycle has not been reached, and the drain phase begins.	1 ... 250	h/min/sec	15	

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Code	Level	Description	Range	Unit	Standard	
dSt	1	Temperature at the end of defrost Temperature of sensor 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 sensor 2 is malfunctioning, defrosting always end before the time limit expires	-50.0 ... 199.0	°C [°F]	10.0	
dS2	1	Temperature at the end of the second evaporator defrost Temperature of sensor 3 at which the second evaporator defrost the evaporator is terminated. If the temperature at the start is the set value, defrosting is not initiated. Z If sensor 3 fails, defrosting is stopped when the time limit expires. The function is only activated if P01=3o4, Co4=3, and CP0=2 (alarm relay for defrosting the second evaporator and sensor 3 for temperature measurement of the second evaporator). In this case the condensation phase begins after defrosting of both evaporators is complete.	-50.0 ... 199.0	°C [°F]	10.0	
dPO	1	Defrosting with power supply on =0 disabled =1 Defrosting at device startup	0,1	Flag	0	
		List of fan parameters -FAn				
FSt	1	Temperature for fan shutdown	≥Probe2 FSt: Fan off ≤<Photo-Probe2 (FSt – FAd): Fan on	-50.0 ... 199.0	°C [°F]	8.0
Photo	1	Fan start-up temperature	<Probe2 (Photo - FAd): Fan off	-50.0 ... 199.0	°C [°F]	-50.0
FAd	1	Differential circuit for fan		1.0 ... 90.0	°C [°F]	2.0
Fdt	1	Drain time Period following the drainage phase during which the fans remain switched off	0 ... 60	min	1	
min	1	Drainage time Time period after defrosting in the compressor and turn off the evaporator fan for better drainage of the evaporator	0 ... 60	min	2	
dFd	1	Fan shutdown during defrosting =0 Fan on (behavior defined by FPT) =1 Fan off	0,1	Flag	1	
FCO	1	Fan deactivation after compressor shutdown =0 Fan off =1 Fan on (operation defined by FPT) =2 Fan in operating cycle	0 ... 2		0	
Fon	1	Fan on-time for the operating cycle (FCO=2)	1 ... 60	min	1	
FoF	1	Duration of fan shutdown in the work cycle (FCO=2)	1 ... 60	min	1	
		List -ALr Alarm parameters				
AFd	1	Temperature Differential Threshold Alarm Sets the temperature threshold at which an alarm for a high or low value is triggered. A low temperature is present	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 triggered For reference, the unsigned value is added to the setpoint	-50.0 ... 199.0	°C [°F]	10.0	
LAL	1	Lower alarm limit Below this value (absolute or relative to the setpoint), the alarm is triggered The unsigned value is subtracted from the setpoint as a reference	-50.0 ... 199.0	°C [°F]	-10.0	
PAO	1	Temperature alarm delay upon power-up	0 ... 10	h	4	
dAO	1	Temperature alarm delay after defrosting Time period after the end of the drain phase during which no alarm is triggered In the case of simultaneous defrosting via the network, this period refers to the command to end defrosting	0 ... 999	min	60	
OAO	1	Temperature alarm delay after the door closes Time period after the door closes during which no alarm is triggered	0 ... 10	h	0	

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dAt	1	Activate defrost after the alarm time has elapsed Signal to enable the possible end of defrosting upon reaching the value Maximum Duration (time limit). =0 Message disabled =1 Message enabled	0.1	Flag	1
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Code	Level	Description	Range	Unit	Default
		List — Display Settings			
ndt	1	Display of the decimal point =0 Display without decimal point; =1 Display with decimal point.	0,1	Flag	1
ddl	1	Display during defrost phase =0 normal display (as set in par. ddd) =1 Freezing of the displayed temperature value from the start of defrosting until the end of defrosting and until the setpoint is reached. =2 "dF" until the end of the defrost cycle and until the setpoint is reached. The ddl parameter is processed only if the default display (Par. ddd) specifies a controller sensor (Sensor 1 or network sensor)	0,1,2		0
Ldd	1	Time limit for display lockout during the defrost cycle Time period starting from the end of the defrost cycle (end of the drip phase) after which the normal display is restored.	0 ... 255	min	6
Danger	1	Select °C or °F =0 °C =1 °F This selection affects only the temperature unit. The values of the temperature parameters 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 Keyboards disabled =1 Main keyboard terminal enabled =2 Second keyboard terminal enabled =3 Keypads enabled (the one that sends a request 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 network parameters – LAN			
dEA	1	Network address of the supervisor (only for master device) The address entered in each master device must take into account the number of slave devices in the preceding LAN: "dEA" = "dEA[previous master device]" + "L01[previous master device]" + 1 The master network address for the slave device is "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 are shown alternately on the control display; if there are multiple alarm messages, they are displayed one after another, alternating with the temperature.
- The alarm LED lights up.
- The alarm relay is activated.

For certain alarm messages and notifications, the LED and/or the relay are not activated. The alarm messages and the corresponding actions are listed in the following table.

Pressing any key deactivates the relay (if it was activated), and the LED flashes while the alarm code is displayed on the screen. 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 listed in the following table:

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Displayed code	Description/Check	LED Active	Relay active	Reset mode
E1	Fault in the cold room temperature sensor If the sensor is used for control, the compressor is cycled on and defrost is disabled; if the mains sensor has been activated, the control unit disconnects the faulty sensor	Yes	Yes	Automatically after correction
E2	Defrost sensor error Defrosting ends after the time limit expires	Yes	Yes	automatically after correction
E3	Error 3 of the sensor (condenser temperature) The corresponding control elements are deactivated. Activated	flashing	no	Automatically after correction
	Error on the third sensor (temperature of the 2nd evaporator) Defrosting was terminated after the timeout expired.	Yes	Yes	
No	Thermal alarm Control unit is switched off	Yes	No	Automatically after correction
No	High-pressure switch alarm Control unit is switched off	Yes	not	automatically resolved
not	Low-pressure switch alarm Control unit is switched off	Yes	No	Automatically after correction
E4	Recurring thermal protection alarm Control unit is permanently switched off	Yes	Yes	At startup
E5	Repeated high-pressure switch alarm Control unit is permanently switched off	Yes	Yes	At startup
E6	Repeated alarm from the low-pressure switch Control unit is permanently switched off	Yes	Yes	At startup
LO	Low-temperature alarm	Yes	Yes	Automatically after correction
HI	High temperature alarm	Yes	Yes	Automatically with corrective action
EE	Error during data storage default values are loaded	Yes	Yes	after power-on or next memory parameter
Ec	Alarm for cleaning the compressor	flashes	does not	automatically after correction
An	alarm network (*)	Yes	Yes	automatically after correction
Ed	Alarm if defrost time is exceeded	flashes	no	automatically during the next defrost
Off	Time limit for the alarm when the door is open Normal operation is restored	flashing	no	automatically off Remedy
nx	Slave x in alarm (only on the master device)	Yes	Prog.	Automatic after correction
Ux	Slave x is not connected (only on the master device) Slave is not being controlled	flashing	no	Automatically with corrective action
u0	The master is not connected (only on the slave) The slave disconnects from the network and operates autonomously	flashing	not	automatically after correction

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dx	Download from slave x failed (only on the master device)	Lightning	not	manually or automatically using the workaround
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- (*) A network alarm is an alarm message sent by a master device to all network devices, as previously programmed, when the master device's alarm relay is triggered.

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The following special conditions are displayed during operation:

Display Code	Description	Note
OFF	Device in standby mode (operation off)	Remains until the next command ON
dF	Defrosting in progress	see section "ddL"
dFu	Defrosting was not performed	Appears for 2 seconds if the defrost error has not been resolved because the evaporator temperature is already above the defrost end temperature (parameter dst).
uM	Main unit	After power-up, network configuration of the unit Displayed unit
uSx	Slave unit x	
Cn	Terminal/controller connection interrupted	Terminal is not receiving control data

If the connection between the terminal and the control unit does not function properly at startup, "88.8" appears on the terminal display and all LEDs turn off.

EMERGENCY SYSTEM

CAUTION:

The procedures described below must be performed exclusively by qualified personnel.

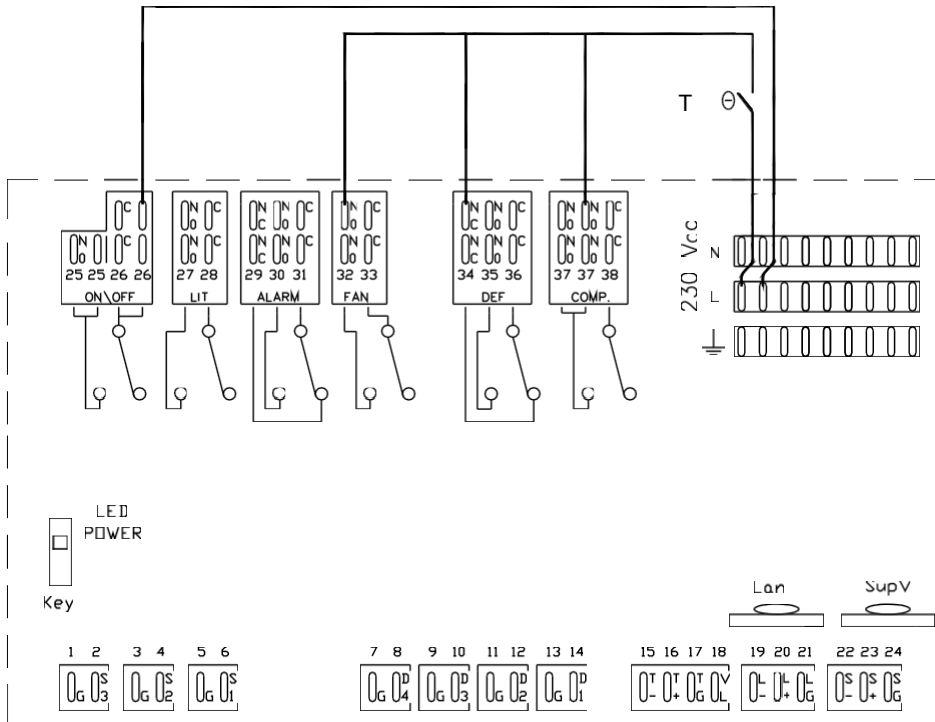
If the electronic control module is defective or not functioning properly and cannot be replaced immediately, you can use the EMERGENCY OPERATION SYSTEM to maintain operation of the device until the control module is replaced.

Follow these steps:

1. Turn off 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. Connect the thermostat, as shown in the wiring diagram, between terminal L, the NO terminals (terminals 32, 37), and the NC terminal (terminal 34) of the relays for the compressor, defrost, and fan (COMP, DEF, and FAN).
4. Create a jumper between terminals L and the NO terminal of the ON/OFF relay (terminal 26 for powering the cabinet heater, door, and drain, if present).
5. Reconnect the power supply to the block 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 fault.
The defrost cycle is disabled throughout the entire emergency operation phase; therefore, the cold room door should be opened as infrequently as possible.

When installing a new control unit, the connections described in steps 2, 3, 4, and 5 must be restored.

Fig. A



T = Thermostat

9. Maintenance and Care

- **CAUTION: All maintenance and/or servicing work must be performed with the unit turned off and disconnected from the power supply.**
- Check regularly to ensure the evaporator is clean and, in particular, that it is not blocked by ice buildup. If blocked by ice, defrosting must be performed (press the “UP” button for more than 5 seconds). Repeat this process until the evaporator is completely clean. Check again after 12 hours.
- The condenser should be cleaned regularly. We recommend blowing it out from the inside to the outside with compressed air to remove dust and grease (to be performed only by qualified personnel).

Regularly check that the condensate drain is not clogged. For CELLBOX TD block systems, also check that the drain hose heater is functioning properly.

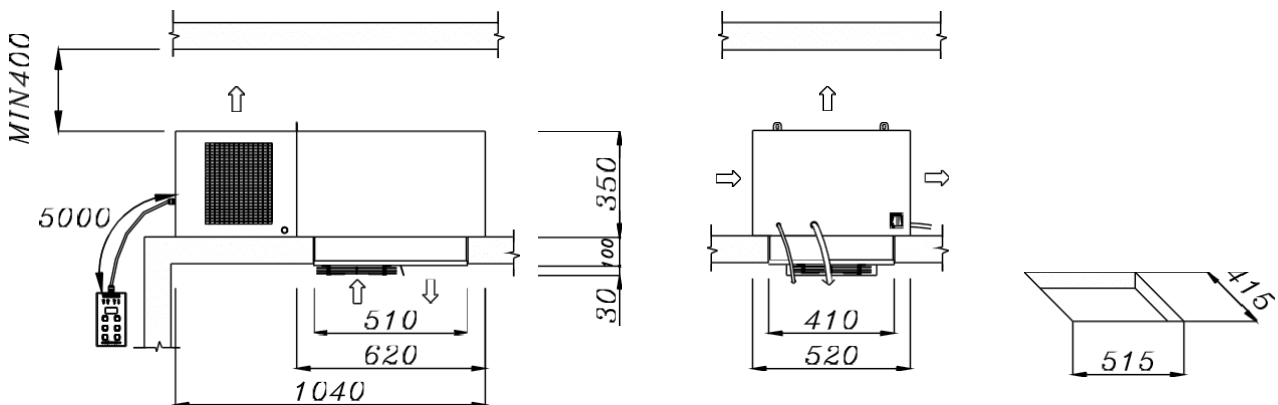
10. Decommissioning and Disposal

When decommissioning and disposing of the unit, the following steps must be taken: Disconnect the unit from the power supply and all electrical connections, and remove it. The refrigerant in the system must not be disposed of improperly. The compressor oil from the buffer must be collected separately. Therefore, it is recommended to dispose of the system exclusively at designated/appropriate collection points in accordance with legal regulations.

11. Dimensions

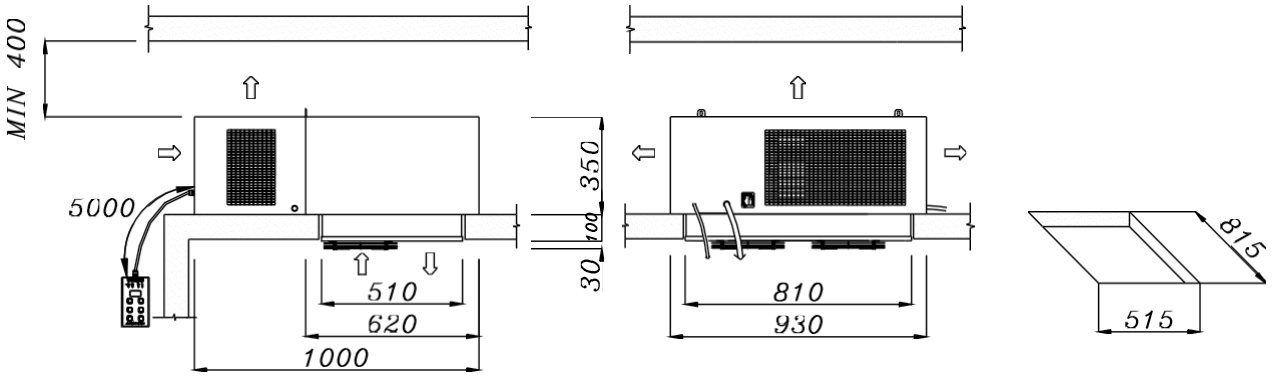
The following illustrations show the corresponding dimensions of the unit systems as well as the installation and working clearances.

Fig. 1



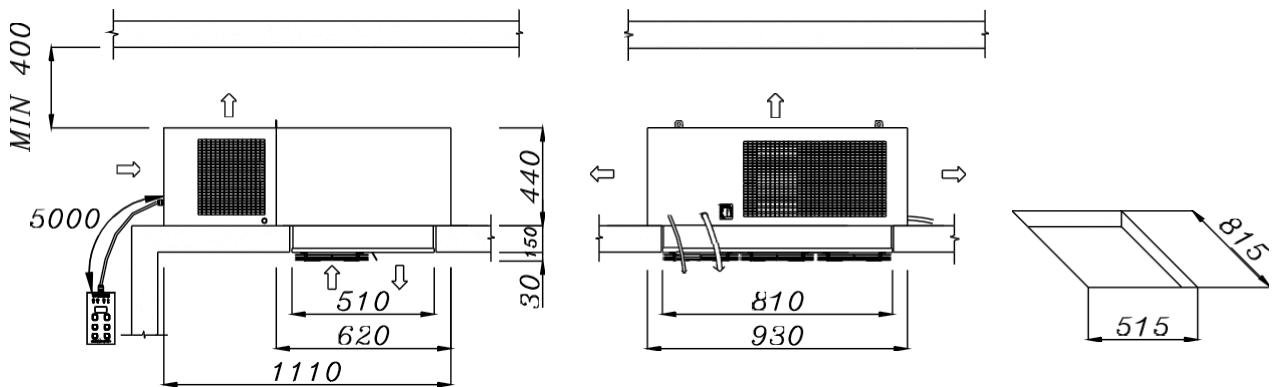
CELLBOX KD		CELLBOX TD			
	Net weigh t [kg]		Net weigh t [kg]		
100	59	100	64		
200	60	200	71		

Fig. 2



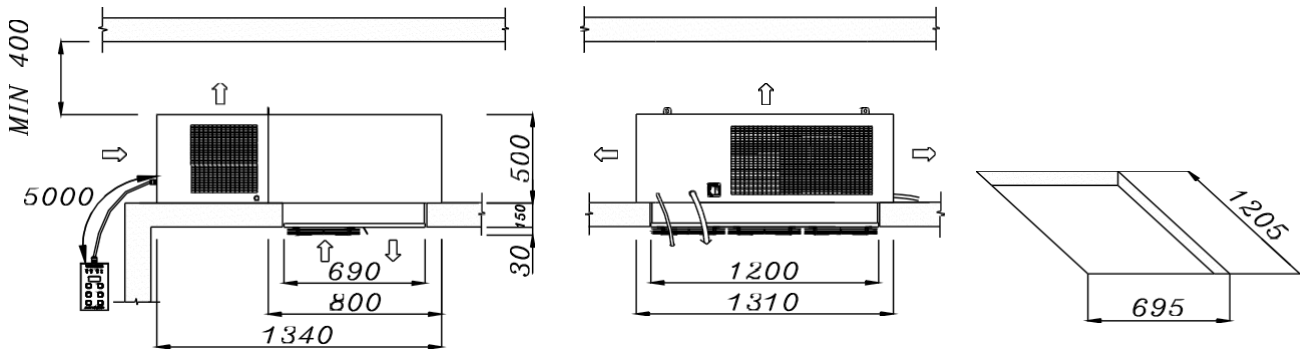
CELLBOX KD		CELLBOX TD			
	Net weight [kg]		Net weight [kg]		
300	93	300	99		
400	97				

Fig. 3



CELLBOX KD		CELLBOX TD			
	Net weight [kg]		Net weight [kg]		
500	143	400	130		
600	160				

Fig. 4



CELLBOX TD					
		Net weight			
		[kg]			
		500	193		
		600	200		

Fig. 5

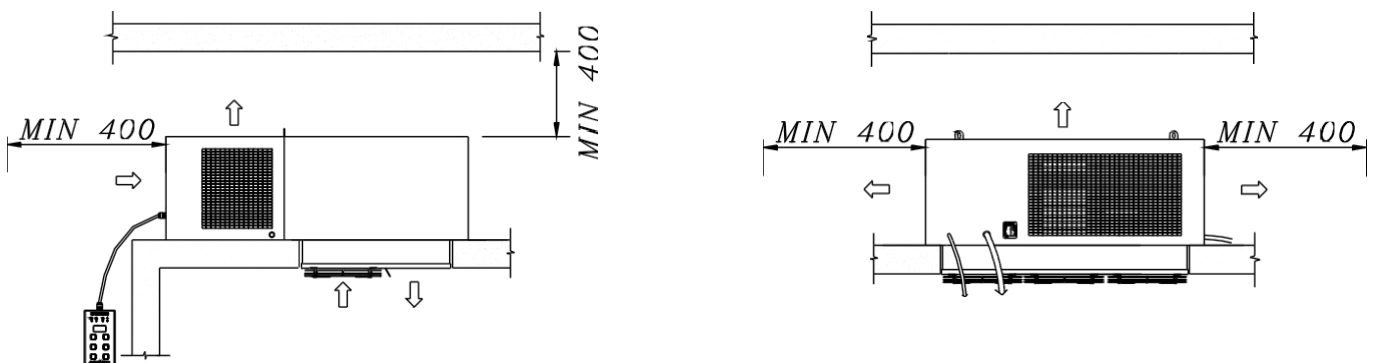
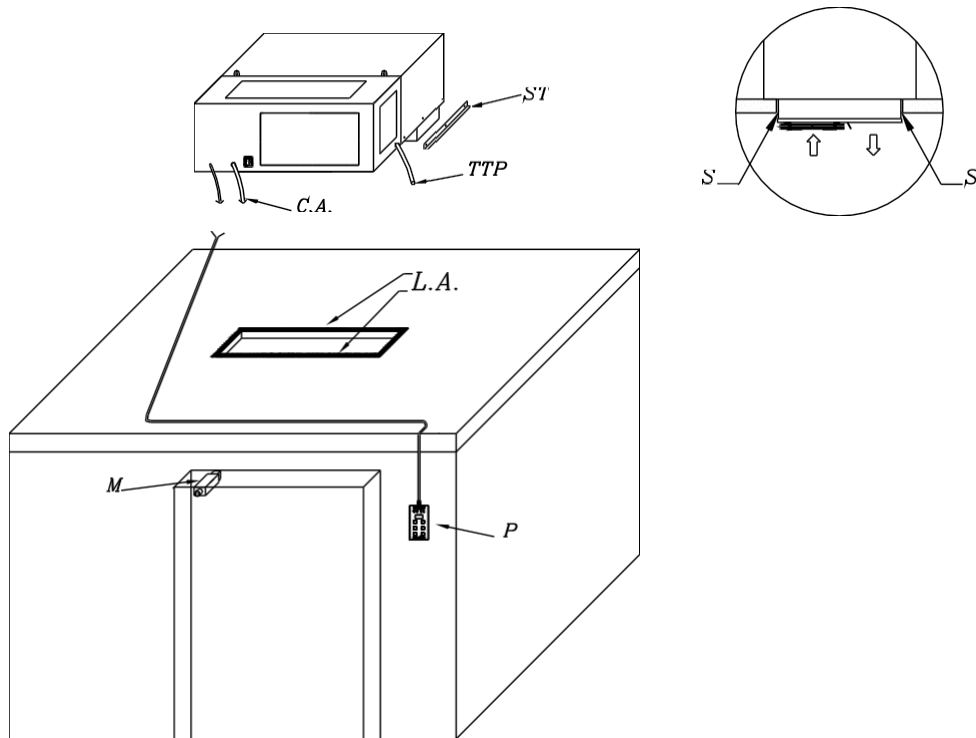


Fig. 6



Legend:

- TTP** = Additional downspout
- ST** = Clamp bracket
- CA** = Power cable **M**
- M** = Door switch
- LA** = Sealing tape
- P** = Remote control
- S** = Silicone



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