



HOSHIZAKI EUROPE B.V.

HOSHIZAKI SERVICE MANUAL

ADVANCE COUNTERS

ACR 135DG - ACR 180DG - ACR 225DG



**As the user, please use the operating instructions.
This service manual does not include operating Instructions.
It is only intended for the service technician.
The user requires important safety Information not Included
here.**



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Safety information



This service manual does not include comprehensive operating instructions for the user; it is only a further supplement to the operating instructions.



It is intended for a trained service technician. As a result, many important safety instructions for the user are missing with regard to the scope and readability. In case of doubt, please observe the information in the operating instructions for transport, installation, operation and electrical safety and never pass on this service manual in place of the operating instructions.

Intended use

This device is intended for the storage of packaged foods at a constant temperature. This device must not be used to cool down or freeze foods.

Area of application:

Climate category	Ambient temperature and air humidity
4	+30°C with %55 RH
5	+40°C with %40 RH

3) Location

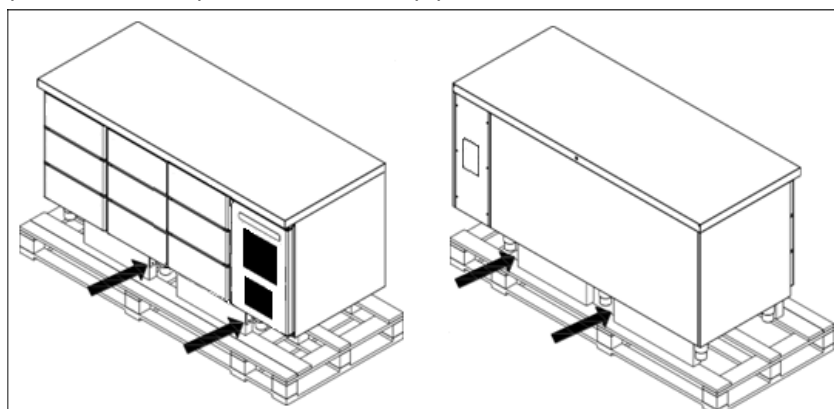
When receiving the counter, check the packaging material for damage.

If any damage occurs at the packaging material, it should be considered if the cabinet might have been damaged too. If the damage is substantial, please contact your dealer.

The transport pallet can be removed by loosening the screws that fasten the pallet to the counter.



This task requires at least 2 persons. The set up place must be level and horizontal.





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If the counter has been transported in horizontal position it must stand upright at least 2 hours before it is started to allow the oil from the compressor to run back.



Because of the heavy weight of the counter, the floor might be damaged or scratched when moving the cabinet.



Correct set up gives the most effective operation.



The counter should be located in a dry and adequately ventilated room. For electrical safety reasons, the cabinet must not be operated outside. The refrigeration technology of the cabinet does not function outside or in unheated rooms (particularly in colder seasons) and can be damaged by low temperatures.



To ensure efficient operation, it may not be placed in direct sunlight or against heat-emitting surfaces. The counter is designed to operate in an ambient temperature between +16 °C and +40°C. The air exchange in this area must not be obstructed from the front or the side by screens.



Avoid placement of the counter in a chlorine/acid-containing environment (swimming bath etc.) due to risk of corrosion.



The counter and parts of the interior is equipped with a protecting film, which should be removed before use.



Clean the counter with a mild soap solution before use.



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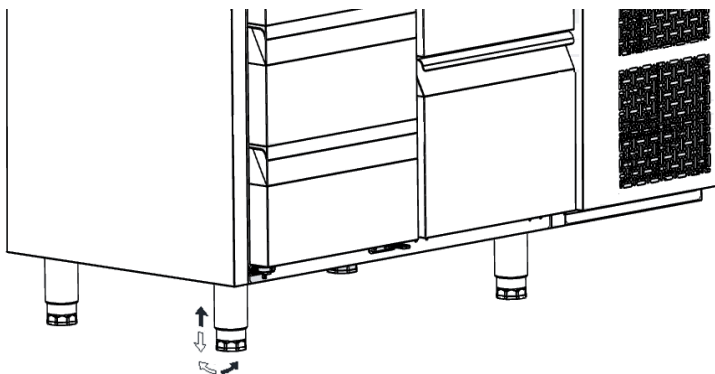
Counters on legs:

Counters on legs require an even, solid floor. Cabinets on legs are levelled by turning the internal part of the leg:



Counters on castors:

Cabinets on castors require a level, even and solid floor to provide a stable foundation. After correctly positioning the cabinet, the two brakes on the front castors must be applied.



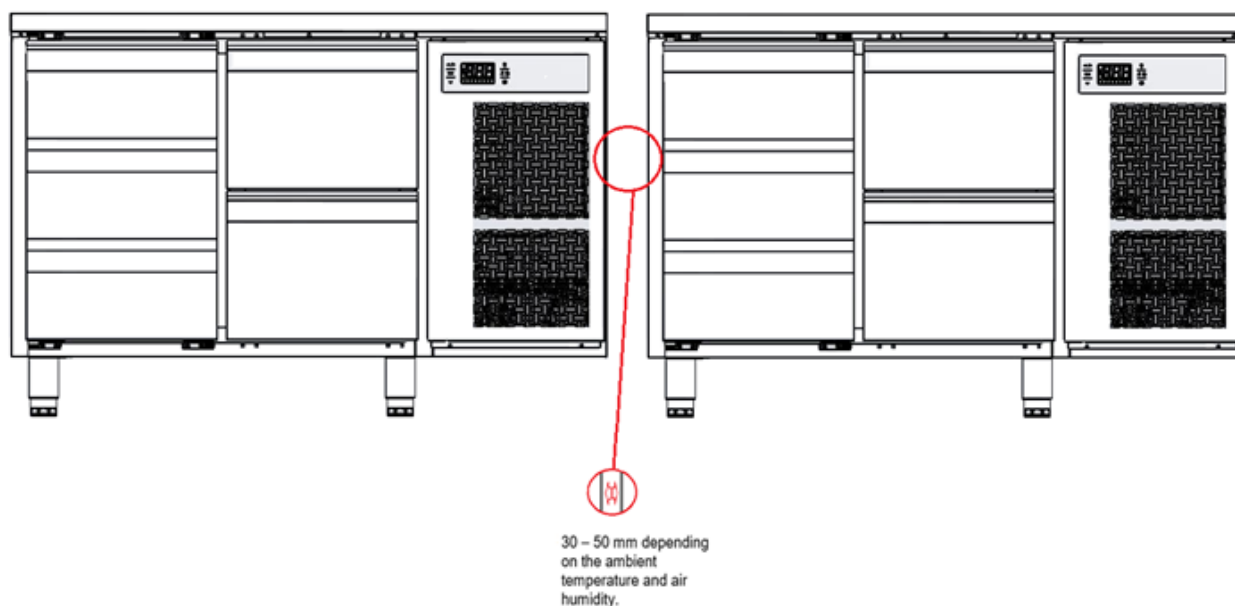
Setting up several devices side by side

Depending on the temperature and air humidity at the installation site as well as the selected set point setting, the water in the ambient air can condense on the surface of a refrigerating unit due to its design.

If several cooling or refrigeration units are set up side by side, this condensation effect becomes stronger, and a lower air quantity can circulate between the devices. As a result, a minimum distance of **30 to 50 mm** must be kept between the devices depending on the temperature and air humidity.

These gaps must not be sealed either at the top or bottom, but can be covered by a stainless-steel panel from the front for aesthetic purposes. The panel must be removable for cleaning within the gaps.

If it is not possible for air to circulate freely at the bottom, e.g. due to a base installation, then the gaps cannot be sealed at the front.





Condensation water re-evaporation

The cabinets are equipped with a chamber for re-evaporation of the condensation water. This equipment is intended for the amount of condensation water that accumulates on average with a maximum of 72 door openings per day according to ISO 22041.

The actual amount of condensation water may vary depending on usage and ambient conditions. If the number of door openings per day exceeds 72, or the condensation water pan overflows due to other usage factors, the user must use the product strictly under the specified conditions to prevent overflow. If the amount of condensation increases despite not changing the usage or the ambient conditions, the cabinet may have a defective door seal or a door that does not close properly.

Electrical connection

The 220-230 V/50 Hz mains connection is established by plugging the provided cable with appliance connector into a socket with earthed protective contact. 30 mA residual current circuit breaker is required.

There may be special regulations from your local energy supply company regarding earthing measures that must be observed.

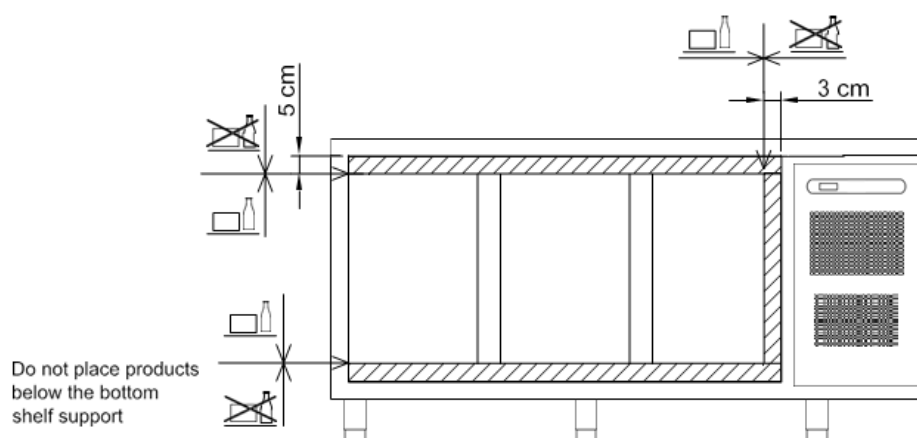


When working with the electrical equipment, the device must always be disconnected from the mains by pulling out the power plug. It is NOT sufficient to switch off the device with the ON/OFF button as parts of the device are still live

Instructions for daily use











In order to achieve the necessary air circulation in the interior, only store goods within the corresponding markings (loading marks) and on the grates (never on the floor or in front of the air outlets).

No electrical devices may be operated inside the device.





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	Do not block vent holes in the front panel.
	Do not damage the refrigeration system parts.
	During normal operation, some parts of the refrigeration system in the compressor compartment might reach high temperatures and could therefore cause burns if touching these components.
	Do not use electrical devices inside the cabinet.
	To ensure correct and efficient air flow in the cabinet, the shaded areas must be kept free of products
	All products to be stored, that are not wrapped or packed, must be covered in order to avoid unnecessary corrosion of the inner parts of the cabinet.
	If any controller parameters are changed from default, this could cause that the appliance is not functioning normally, and harmful temperatures could damage products that are kept inside the appliance.
	If the appliance is turned off, wait minimum 3 minutes before turning the appliance on again. This is to protect the compressor from damage
	Maximum loading of wire shelf: 20 kg
	Do not store explosive substances such as aerosol cans with flammable propellant in this appliance.



Cleaning and maintenance

The device must be cleaned regularly. The intervals depend on the usage and level of soiling (at least annually).



Before carrying out any cleaning or maintenance operations, unplug the unit



Don't touch or wet the machine compartment parts. This could result in failure or breakdown.



To prevent possible damage, don't clean the plastic parts with water above 40° C or in a dishwasher.

Interior & Exterior of Cabinet and Shelves



Clean the interior and exterior at least once a week for sanitary use.



Clean off the interior and exterior of cabinet with a soft cloth soaked in cold or warm water containing the proper amount of neutral cleaner and wrung dry. Don't use a water jet to clean the machine compartment.



Chemical agents other than neutral cleaner might cause damage to the interior and exterior surfaces.

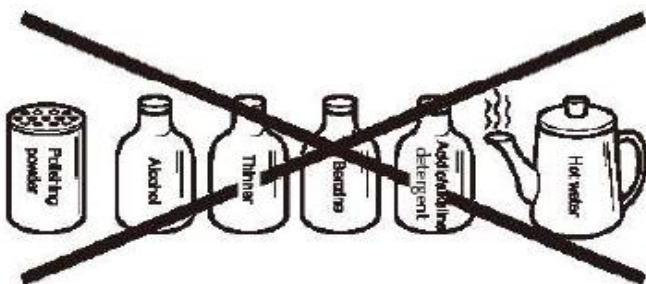


Any remaining detergent will damage metal or plastic surfaces. Use a soft cloth dampened with warm water to wipe it off.



Don't use the following items, they could damage painted or plastic surfaces:

- Polishing powder, alcohol, thinner, benzene, acidic or alkaline detergent, hot water, petroleum, soap powder, metal scourer or brush, etc. Especially detergent to clean grease on ventilator or microwave



Note: Some solutions other than the above may also damage painted or plastic surfaces. Immediately stop using such solutions if they cause any problems!



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The door gasket and its contact surface get soiled easily. Clean every surface of these parts thoroughly. Remnants of food will accelerate aging.



Use a cloth to wipe off any water staying inside the cabinet.

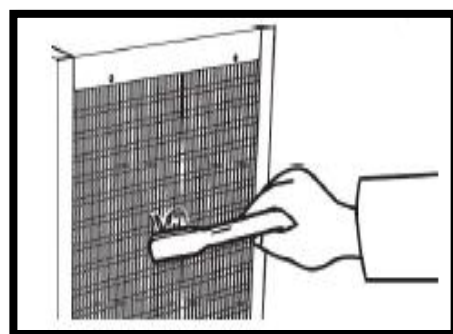
Condenser



Use vacuum cleaner or a soft brush to remove dust and stains from the condenser.



Warning: If users clean the condenser with hard brush, such as dishwasher brush, the coating of condenser may peel off.



Air Filter



To prevent deformation do not wash the air filter hot water above 40°



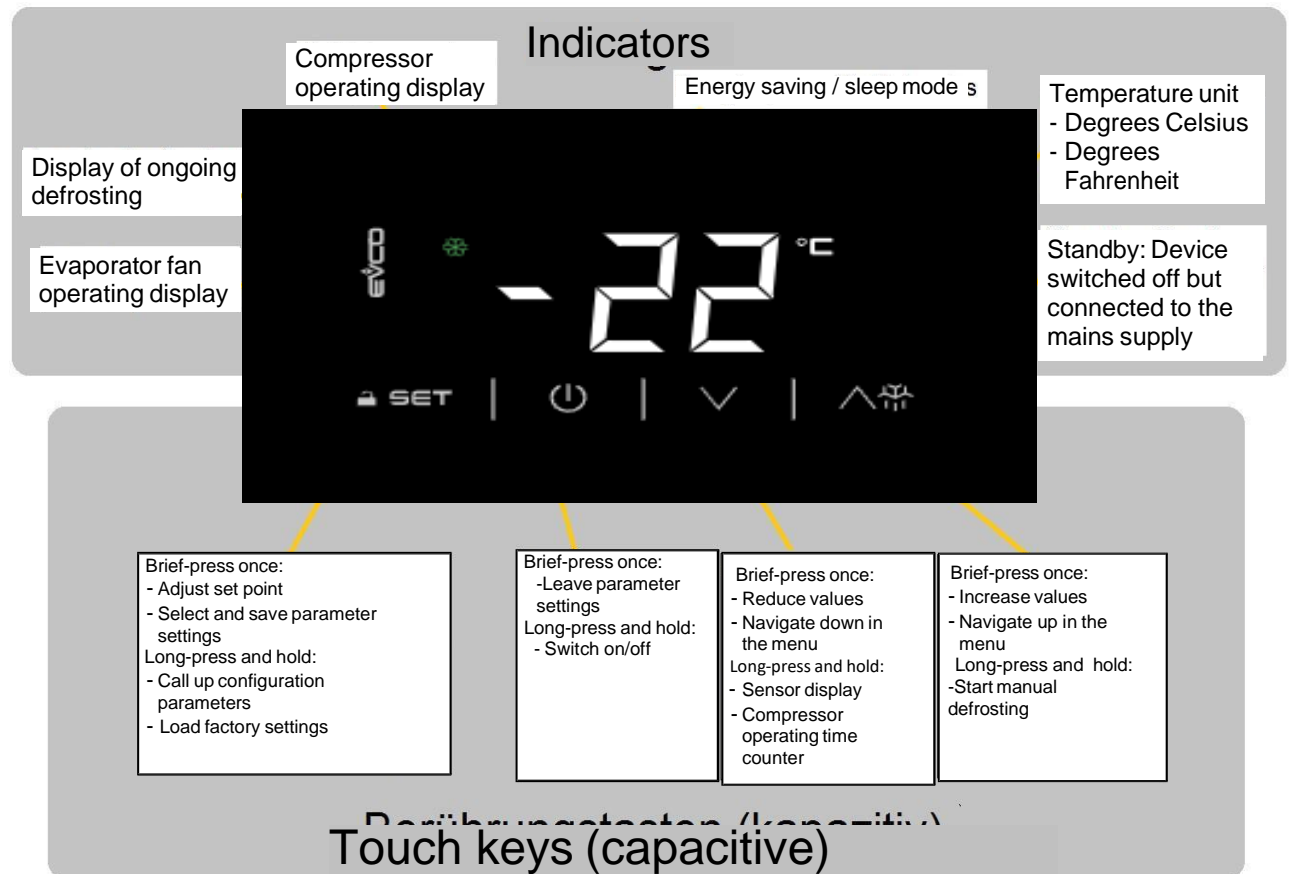
Plastic mesh air filters remove dirt or dust from the air and keep the condenser from getting clogged. If the filters get clogged, the refrigerator/freezer's performance will be reduced.





Check the filters at least twice a month. When clogged or when the temperature controller shows "CH" use warm water and a neutral cleaner to wash the filters. Don't operate the unit with the air filters removed, or the condenser will get clogged, resulting in failure.

- 1) Open the front panel and remove the air filter. To prevent injury, don't touch the condenser fins directly.
- 2) Wash the air filter carefully with cold or warm water containing the proper amount of neutral cleaner. Rinse and dry the air filter thoroughly.
- 3) To refit the air filter, put the two tabs into the heat exchanger or fins in condenser and tightly attach the air filter over the condenser.



Control elements









Touch keys

Key	Function description
	By briefly pressing the key, you can adjust the set point or open a parameter within the parameter settings, save any value changes and leave the settings. By pressing the key for a longer time, you can call up the configuration parameters or the reset to factory settings. The longer key press will also remove the automatic key lock.
	By briefly pressing the key, you can discard a change in the parameter settings and exit the setting. By pressing the key for a longer time, you can switch the device on and off, provided the switch-off is not prevented by the parameter "POV"=0. The longer key press will also remove the automatic key lock.



Key	Function description
	By briefly pressing the key, you can increase the displayed value (set point, parameter or password input). Pressing the key for a longer time starts the manual defrosting. The longer key press will also remove the automatic key lock.
	By briefly pressing the key, you can decrease the displayed value (set point, parameter or password input). By pressing the key for a longer time, the sensor temperatures “Pb1”, “Pb2” and the compressor operating time counter “Ch” are called up and deleted under “rCh”. The longer key press will also remove the automatic key lock.

Display symbols

Symbol	Meaning
	This symbol shows that the device is connected to the mains supply but is switched off (standby mode).
	If this symbol lights up, the compressor is switched on. If this indicator flashes, either the temperature set point is being changed or the compressor is starting but is delayed by the controller safety settings (parameter “C0”, “C1”, “C2”).
	This symbol lights up constantly throughout the defrosting. If it flashes, the dripping time is running or the start of the defrosting phase has begun but is delayed by a continuous minimum compressor running time.
	If this symbol lights up, the evaporator fan is running. If it flashes, the fan is deactivated or the start is delayed due to the parameter settings.
	If this symbol as well as the temperature indicator light up, the device is operating in energy saving mode. This indicator is purely informative (the energy saving operation cannot be manually switched on or off). If only this symbol lights up, the control panel is also in sleep mode in order to save energy from the display. You can end sleep mode by pressing any key.
	Not used for this device
HACCP	Not used for this device
AUX	Not used for this device



Device settings



All settings are configured via the capacitive touch keys of the control panel on the front of the device. There are no function elements for the menu selection, parameter settings or sensor calibration on the back of the device.

Commissioning

The cabinet must be connected to the mains using the connection cable provided (safety plug). This is followed by testing all the display segments.

If the device was switched off before being disconnected from the mains, the device will go into standby mode after the display test. If it was switched on before being disconnected from the mains, it starts in normal operation with the most recently set temperature set point.

Switching on (from standby state)

You switch on the cabinet by pressing the ON/OFF button  for approximately 4 seconds.  flashes while it is being switched on. No display test follows.


Start defrost

In the default settings, the device starts without a start defrost. If the parameter “**d4**” has been changed to “1”, the start defrost begins and lasts for max. the time period “d3” or ends upon reaching the temperature “**d2**” on the evaporator sensor. The compressor starts once the time period “**C0**” has elapsed at the earliest.

Key lock, sleep mode

The keys lock automatically if no key has been pressed for 30 seconds in order to prevent unintentional entries due to fleeting contact or while wiping the control panel. The abbreviation “Loc” is displayed in this case. “Loc” is also displayed when a key is touched while locked. The keypad can be unlocked by pressing any key for 4 seconds; “UnL” is displayed.

The display switches off during the energy saving function after the time period “**HE3**”, then only

the symbol  remains lit. The display switches back on when any key is pressed.



Display of set temperature (set point)

If required, the keypad can be unlocked by pressing any key for 4 seconds; "UnL" is displayed. Briefly press the key ; the compressor indicator flashes and the temperature set point is displayed.

By briefly pressing or again, or after 15 seconds without pressing any keys, the device returns to normal operation.

Temperature setting (changing the set point)

If required, the keypad can be unlocked by pressing any key for 4 seconds; "UnL" is displayed. Briefly press the key ; the compressor indicator flashes and the temperature set point is displayed; it can be changed via or . Press to save the value and leave the parameter. You can leave and discard the change (escape) by pressing .

Switching off the device in standby mode:






You switch on the cabinet by pressing the ON/OFF button for approximately 4 seconds. flashes while it is being switched off. In standby mode, is constantly lit.

Alarm and fault messages, display of the defrosting process






Indicator	Description
AL	Lower temperature alarm, parameter "A1", delay "A7"
AH	Upper temperature alarm, parameter "A4", delay "A7"
dEF	Device is undergoing the defrost process (if "D6"="2") or a reset to default factory settings
Id	Door alarm, parameter "Id", parameter "i0", "i1"
Pr1	Defective room sensor, emergency programme parameter "C4", "C5"
Pr2	Defective evaporator sensor, defrosting after time period "d3"








Evaporator sensor temperature display

Press the key  for approx. 2 seconds until "rCH" appears, then press  until "Pb2" is displayed. The evaporator temperature is displayed after pressing the key . The display disappears after briefly pressing  or , or automatically after 60 seconds without touching any keys.







Room sensor temperature display

Press the key  for approx. 2 seconds until "rCH" appears, then press  until "Pb1" is displayed. The room temperature is displayed after pressing the key . The display disappears after briefly pressing  or , or automatically after 60 seconds without touching any keys.

Compressor run time display (operating time counter)

Press the key  for approx. 2 seconds until "rCH" appears, then press  until "CH" is displayed. The counter reading is displayed after pressing the key . The display disappears after briefly pressing  or , or automatically after 60 seconds without touching any keys.

Deleting the compressor run time (operating time counter)

Press the key  for approx. 2 seconds until "rCH" appears. If required, press  until "rCH" is displayed. Briefly press the key ; "0" is displayed. Within 15 seconds, press the key  or  to input the password "149" for resetting the counter and briefly press . The indicator " - " flashes on the display for 4 seconds. The counter has been reset.










Setting the alarm limits

The controller does not manage separate user parameters except for the temperature set point "SP". The alarm settings are configured in the configuration parameters; see below.
















Resetting to factory settings (as-delivered state of the controller)

This loads the default values (factory settings) set by the controller supplier. Please note that these do not necessarily match the as-delivered state of the cooling or refrigeration device; individual parameters may need to be adjusted.

Press and hold the key  **SET** for approximately 4 seconds, and "PA" will appear on the display. Briefly press the key  **SET**; "0" is displayed. Within 15 seconds, press the key  or  to input the password "149" for resetting the factory settings and briefly press  **SET**. "dEF" will be displayed. Briefly press the key  **SET**; "0" is displayed. Within 15 seconds, use the key  or  to set this value to "4" and briefly press  **SET** again. The indicator "- -" flashes on the display for 4 seconds. The process must then be completed by restarting the device by disconnecting it from the mains. After the restart, the device will be in normal operation mode.

Reading and changing the service parameters

No other procedure can be running. Press and hold the key  **SET** for 4 seconds. "PA" is indicated on the display. Briefly press the key  **SET**; "0" is displayed. Within 15 seconds, use the key  or  to input the password (default value "-19") and briefly press  **SET**. The first parameter "SP" (set point) is displayed. Use the keys  and  to switch between the parameters and  **SET** to open a parameter. The set value appears, and it can be changed using  and . Press  **SET** to save the value and leave the parameter. You can leave and discard the change (escape) by pressing . You then leave the settings menu and return to the normal temperature display.

You can also leave the configuration parameter (while saving the changes) by pressing  **SET** for 4 seconds, or it happens automatically after 60 seconds if no further keys are pressed.

*The password can be changed via the "PAS" parameter.



Parameter List

		ACR-130	ACR-180	ACR-225
P. CODE	DESCRIPTION	VALUE	VALUE	VALUE
SP	Set point	3	3	3
CA1	Room sensor offset	0	0	0
CA2	Evap sensor offset	0	0	0
P0	Sensor type	1	1	1
P1	Decimal point	0	1	0
P2	Unit of measurement	0	0	0
P4	Second analog input	1	1	1
P5	Magnitude displayed	0	0	0
P8	Delay display of temp.	0	0	0
r0	differential	2	3.0	2
r1	Min working set point	-2	0	-2
r2	Max working set point	8	10	8
r4	Working set point increase	2	2.0	2
r5	Operation type	0	0	0
r12	Differantial type	1	1	1
C0	Delay switching on comp.	0	0	0
C2	Min comp switch off dur.	2	2	2
C3	Min comp swtich on time	0	0	0
C4	Dur. comp. Sw. Off Pr1 err	5	5	5
C5	Dur. comp. Sw. On Pr1 err	5	5	5
C6	Cond. Over heat alarm	60	60	60
C7	Cond. Comp shut down alarm	100	65	100
C8	Comp. Shut down alarm delay	1	1	1
d0	defrost interval	8	12	8
d1	Type of defrost	0	2	0
d2	Temperature at end of defrost	8	8	8
d3	Max defrost duration	60	60	60
d4	Defrost when device switched on	0	0	0
d5	Time defrost activ. - switch on	0	0	0
d6	Display temp during defrost	2	2	2
d7	Dripping duration	3	2	3
d8	Defrost activation type	0	0	0
d9	Evap temp. For suspend defr. interval	0	0	0
d11	Defrost max time reached err.	0	0	0
d15	Min comp sw. on time before defrost	0	0	0
d18	Defr. Interval evap temp below d22	100	100	100
d19	Defrost activ. Evap temp. Below	3	3	3
d20	Comp. Swit. On consicu. Time for defr.	240	240	240



		ACR-130	ACR-180	ACR-225
P. CODE	DESCRIPTION	VALUE	VALUE	VALUE
d22	Evap temperature for d18	2	2	2
A1	Min. room temperature alarm	10	10	10
A4	Max. room temperature alarm	10	10	10
A6	Dly max room temp. Alrm aft swit. on	99	99	99
A7	Delay min max temp	120	30	120
A8	Dly max temp alrm aftr evap fan stnstll	120	30	120
A9	Dly max temp alrm aftr door swt input	30	30	30
A11	Differential of A1 and A4	1	1	1
F0	Evap fan activity	3	3	3
F1	Evap fan switch off above temp	8	8	8
F2	Evap fan activity during defr. and drip	1	0	0
F3	Evap fan deactvtion after comp swt on	2	2	2
F4	Evap fan swt off during enrgy save fnc	30	30	30
F5	Evap fan swt on during enrgy save fnc	30	30	30
i0	Evap fan or comp activton by door swt	2	2	2
i1	Door switch activity type	1	1	1
i2	Door switch alarm activity and delay	2	2	2
i3	Door switch activity time	10	10	10
i10	Door swit activity and abot enrgy sving	0	0	0
i13	Numb of door swt act for defrost	0	0	0
i14	Min duration of door swt for defrost	0	0	0
u0	2nd relay management	1	0	1
u2	aux input manuel activated	1	0	1
u4	door resistances start time	1	0	1
HE2	Max duration for energy saving	0	0	0
HE3	Energy saving func activation	0	0	0
POF	Key activation	1	1	1
PAS	Access to password	-19	-19	-19

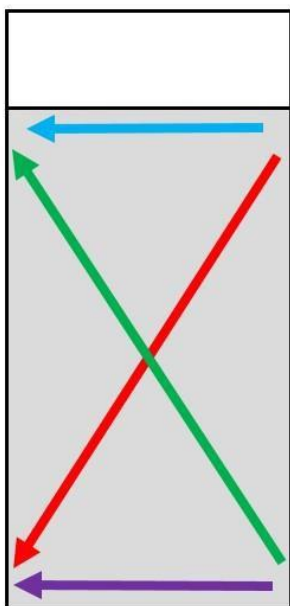


Switching the door hinge side:

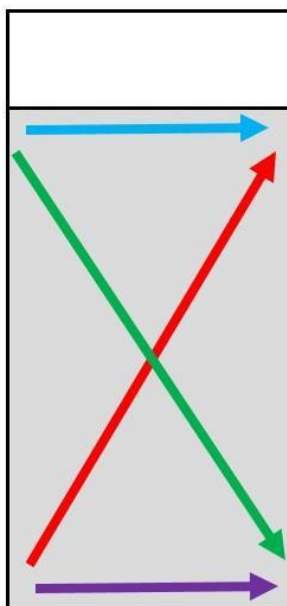
The door hinge side can be changed without additional parts. The hinge brackets are asymmetrical, so you must take special care to not get them mixed up – if in doubt, label them before making the modification.



Since physical strength is required to change the door hinges on two opposite ends of the door, the door hinge change should be carried out by two suitably qualified persons for safety reasons. Otherwise, there is a risk of injury and damage to the device.



Change from DIN right to DIN left links



Change from DIN left to DIN right rights



Change from DIN right to DIN left:

The door is turned by 180°, then the hinge brackets are moved diagonally, rotated by 180°. The doorcloser is moved from the bottom right to the bottom left; the square with M8 internal thread is moved from the top right to the top left.

Change from DIN left to DIN right:

The door is turned by 180°, then the hinge brackets are moved diagonally, rotated by 180°. The doorcloser is moved from the bottom left to the bottom right; the square with M8 internal thread is moved from the top left to the top right.



Measures for taking the device out of operation for long periods

- Disconnect the power plug from the socket or switch off the circuit fuse.
- Remove all foods from the cabinet.
- Clean the cabinet (see cleaning section).
- Do not fully close the door; this will prevent unpleasant odours



Warning

Please note that as soon as you disconnect the device from the mains, condensation water may drip from the cabinet onto the floor. This could damage the floor and make it slippery.

Disposal

Electrical and electronic equipment (EEE) contains materials, components and substances that could pose a threat to humans and the environment if proper disposal (WEEE) is not observed.

Products labelled with a crossed-out bin symbol belong to this group of electrical and electronic components. The crossed-out bin symbol indicates that this type of waste must not be disposed of with regular household waste, but must instead be collected and sorted separately.

If the device requires disposal, this must be carried out in a proper and environmentally friendly manner. The applicable laws and directives related to disposal must be observed.

Please ask your specialist dealer or your local authority about proper disposal.





Technical Support & Ordering Spare Part

Technical support for **resellers and service partners**:

Branches

Hoshizaki UK - UK, Ireland

TEL: +44 845 456 0585

uksales@hoshizaki.co.uk

Hoshizaki Deutschland - Germany, Switzerland, Austria

TEL: +49 (0)5121 697370

vertrieb@hoshizaki.de

Hoshizaki Benelux - Netherlands, Belgium, Luxembourg

TEL: +31 (0)85 0188370

info@hoshizaki.nl

Hoshizaki France - France

TEL: +33 (0)1 48 63 93 80

info@hoshizaki.fr

Hoshizaki Iberia - Spain, Portugal

TEL: +34 (0)93 478 09 52

info@hoshizaki.es

Hoshizaki Denmark - Denmark

TEL.: +45 89 88 53 50

salg@hoshizaki.dk

Hoshizaki Norway - Norge

TEL.: +47 22 88 17 50

salg@hoshizaki.no

Hoshizaki Sweden - Sverige

TLF.: +46 108 84 87 47

OrderSE@hoshizaki.dk

Hoshizaki Italia – Italia

TEL: +39 348 3022156

commerciale@hoshizaki.it

Hoshizaki Europe B.V – All other countries in Europe and Africa

TEL: +31 (0)20 691 84 99

sales@hoshizaki.nl -- <http://hoshizaki-europe.com/>

Please always note the cabinet type, part number and serial number when making enquiries and placing orders. This information can be found on the label.

If you have a smartphone, we recommend sending us a photo of the label and, if in doubt, of the cabinet and the defective part as well.



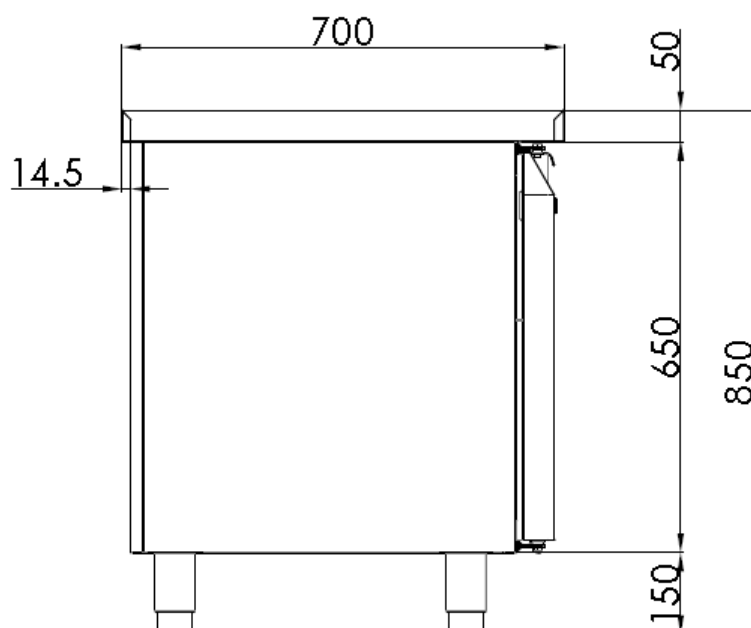
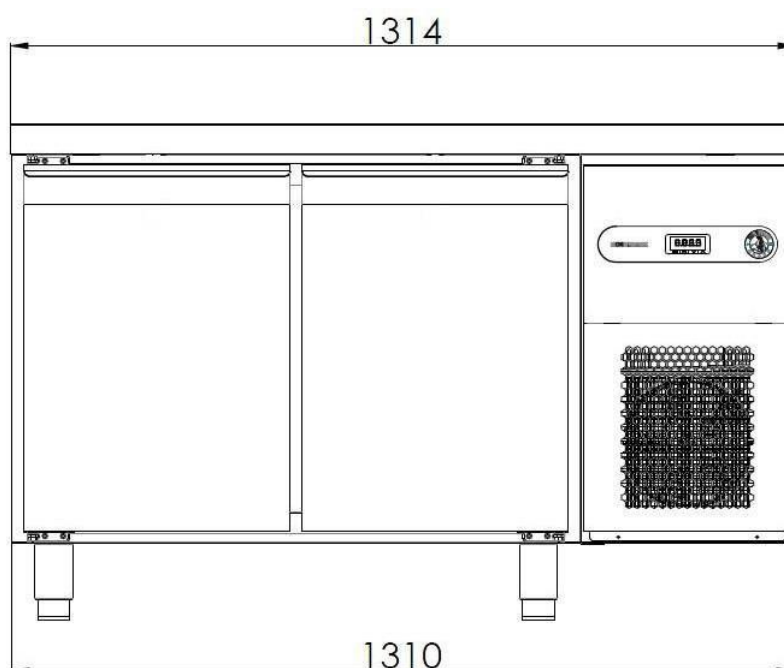
Technical data:

Trademark			Hoshizaki								
Model Name			ACR-130DG			ACR-180DG			ACR-225DG		
Configuration doors/drawers			LR	22	32	LRR	222	332	LLRR	2222	3332
Intended use			Storage			Storage			Storage		
Chilled operating temperature			X	X	X	X	X	X	X	X	X
Frozen operating temperature											
Multi use cabinet											
Vertical Cabinet											
Counter cabinet			X	X	X	X	X	X	X	X	X
Parameter	Symbol	Unit									
Energy Efficiency Class	EEC		C	C	C	C	C	C	C	D	D
Energy Efficiency Index	EEI		40.63	36.21	36.93	37.89	43.39	45.00	43.54	60.06	63.23
24 hour Energy Consumption	E24h	kWh	2.48	2.10	2.10	2.54	2.71	2.71	3.18	4.02	4.02
Annual Energy Consumption	AEC	kWh	905.20	766.5	766.5	927.10	989.15	989.15	1160.70	1467.30	1467.30
Net volume for compartment 1	Vn1	litre	85.7	63.9	47.9	85.7	63.9	47.9	85.7	63.9	47.9
Net volume for compartment 2	Vn2	litre	85.7	63.9	63.9	85.7	63.9	47.9	85.7	63.9	47.9
Net volume for compartment 3	Vn3	litre				85.7	63.9	63.9	85.7	63.9	47.9
Net volume for compartment 4	Vn4	litre							85.7	63.9	63.9
Total Net volume	VnT	litre	171.4	127.8	111.8	257.1	191.7	159.7	342.8	255.6	207.6
Climate class	CC		5			5	4	4	5	4	4
Refrigerant			R290			R290			R290		
Charge		kg	0.055			0.079			0.095		
GWP			3			3			3		
CO2 Equivalent		CO2	0.165			0.237			0.285		
Heavy-duty; This appliance is intended for use in ambient temperatures up to 40°C			X	X	X	X			X		
Contact details:	HOSHIZAKI EUROPE B.V. Address: Burgemeester Stramanweg 101 1101 AA Amsterdam, The Netherlands Tel.: +31 (0)20 691 8499 http://hoshizaki.europe.com/										



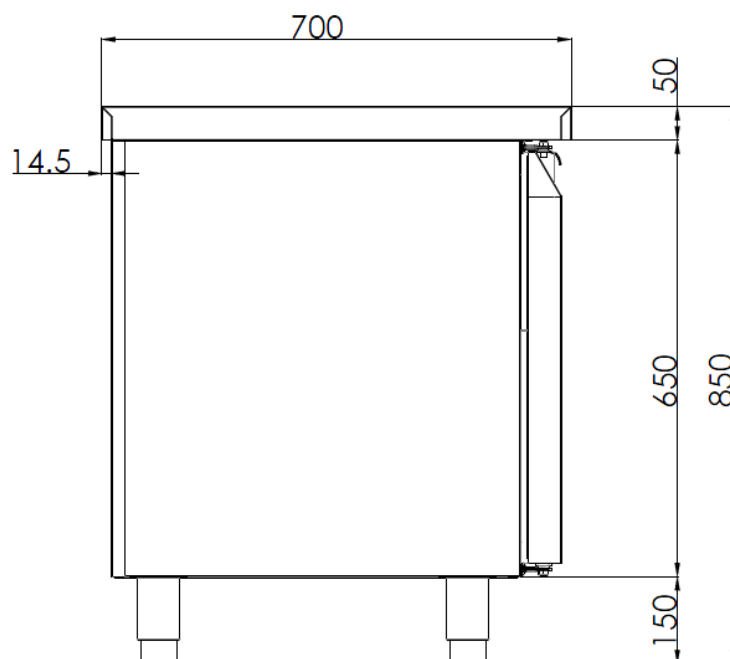
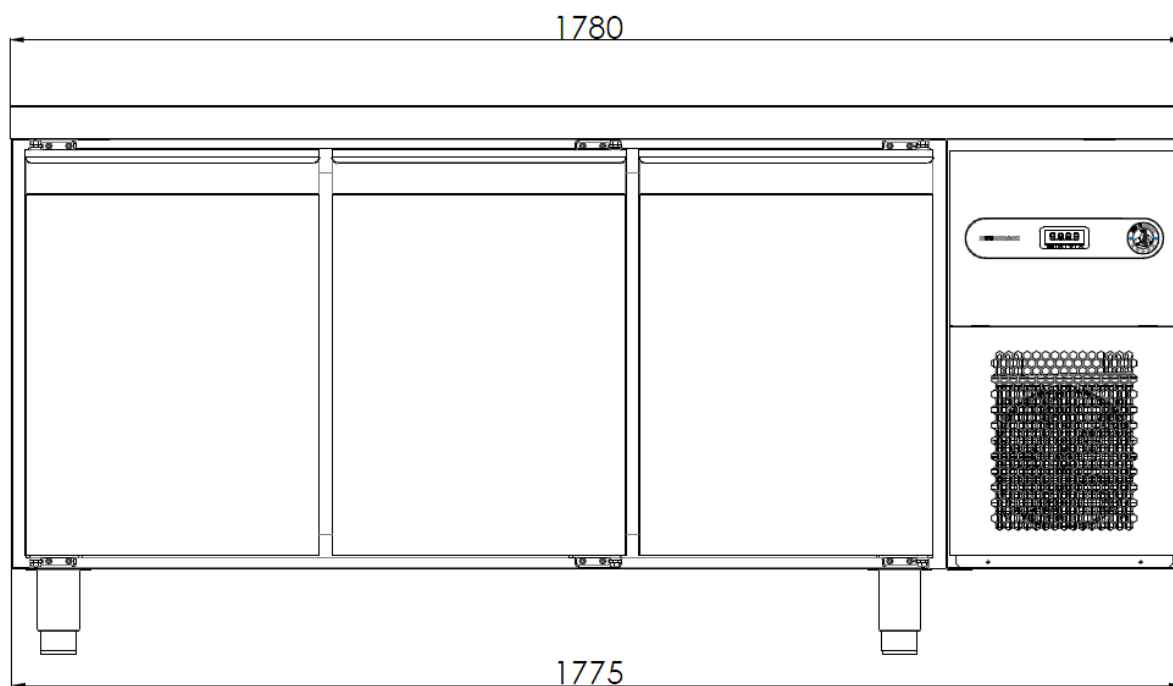
Dimensions

ACR - 135





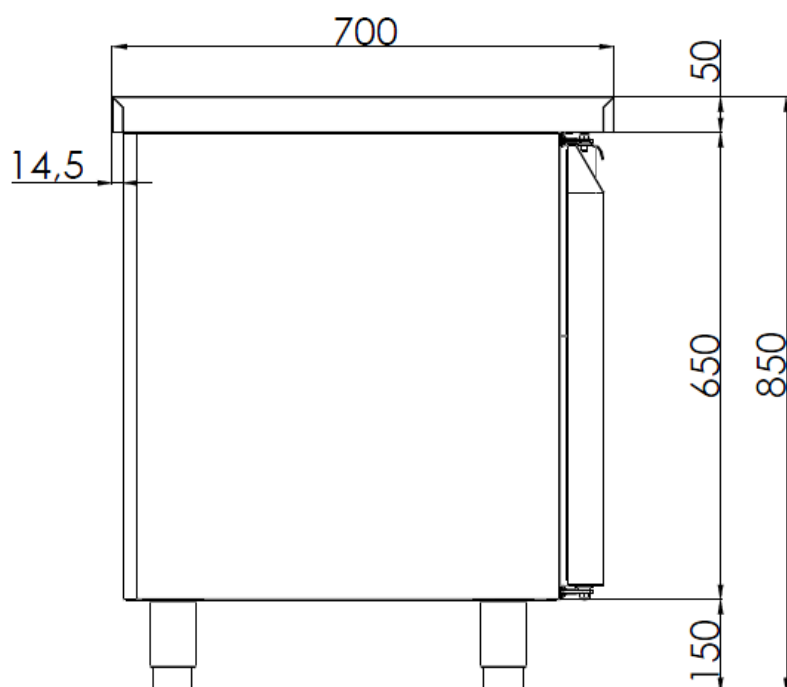
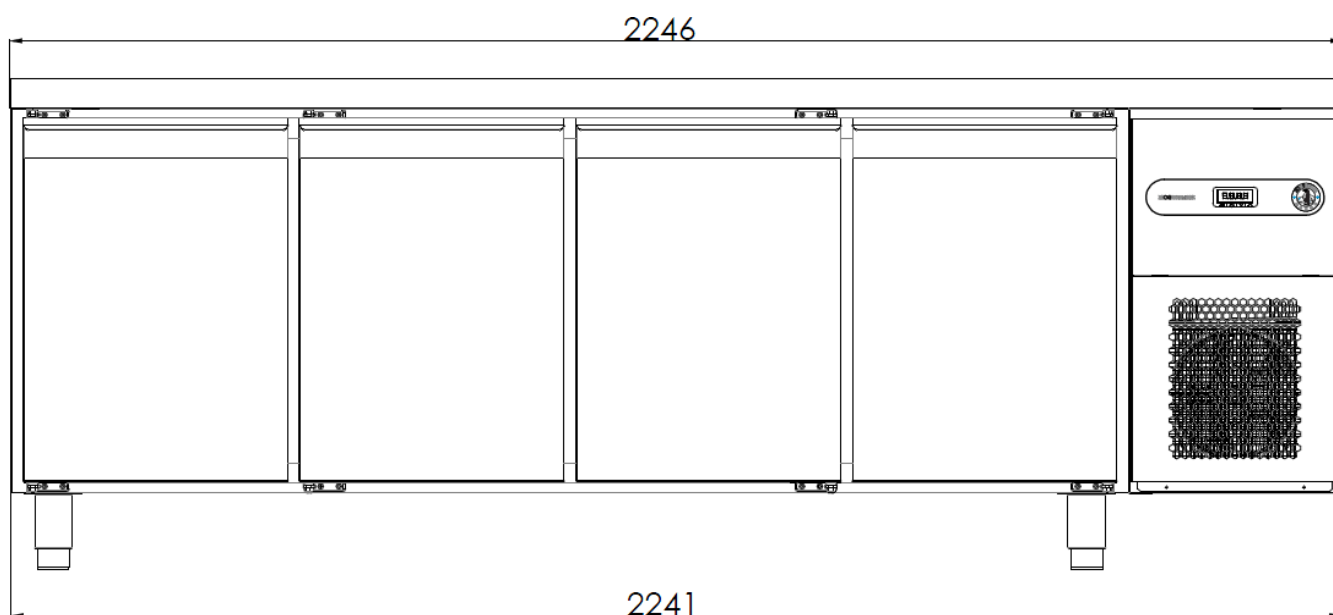
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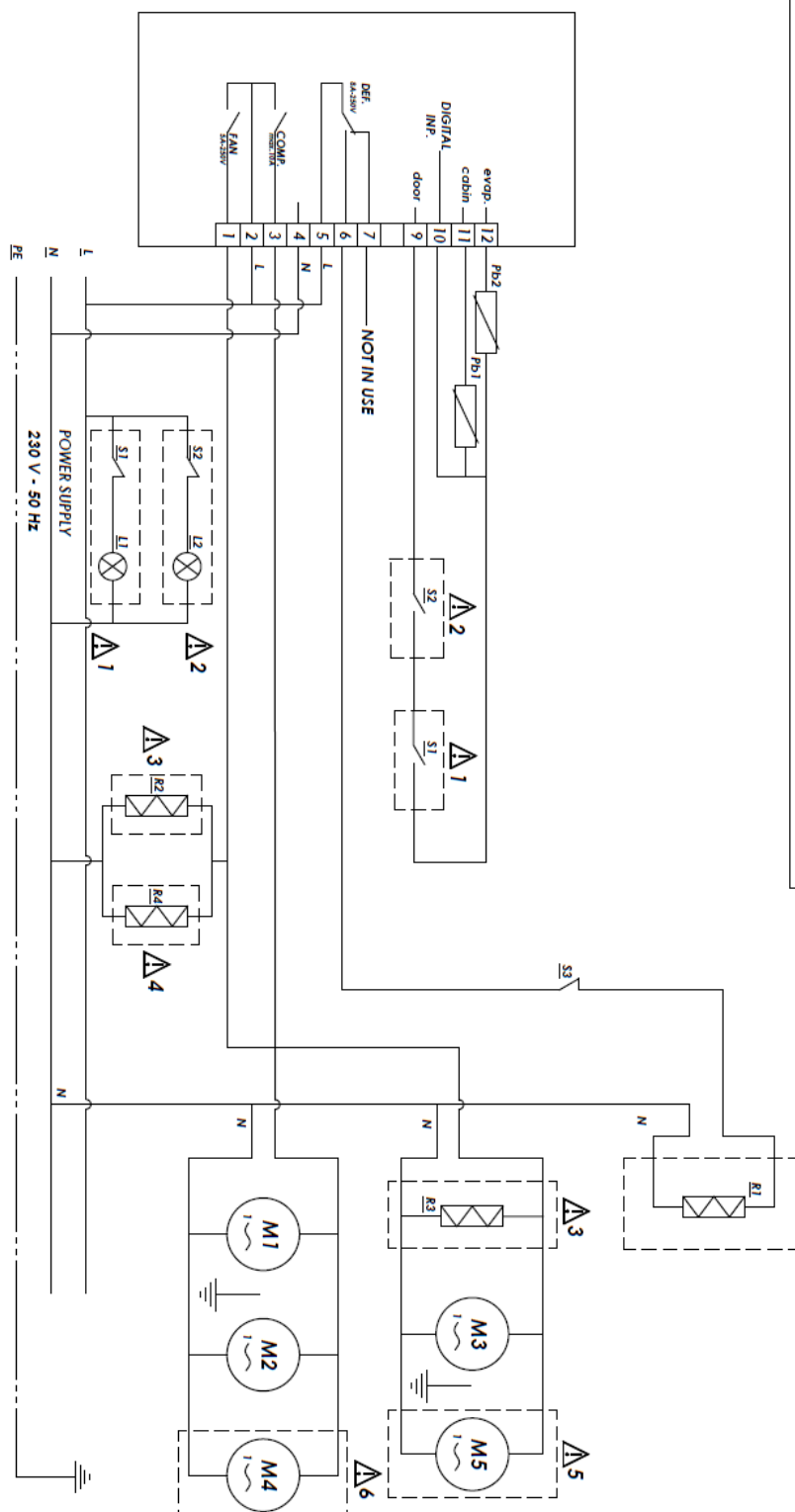
ACR - 225





Wiring diagram

EVCO EV3B23N7 Models Digital Thermostat



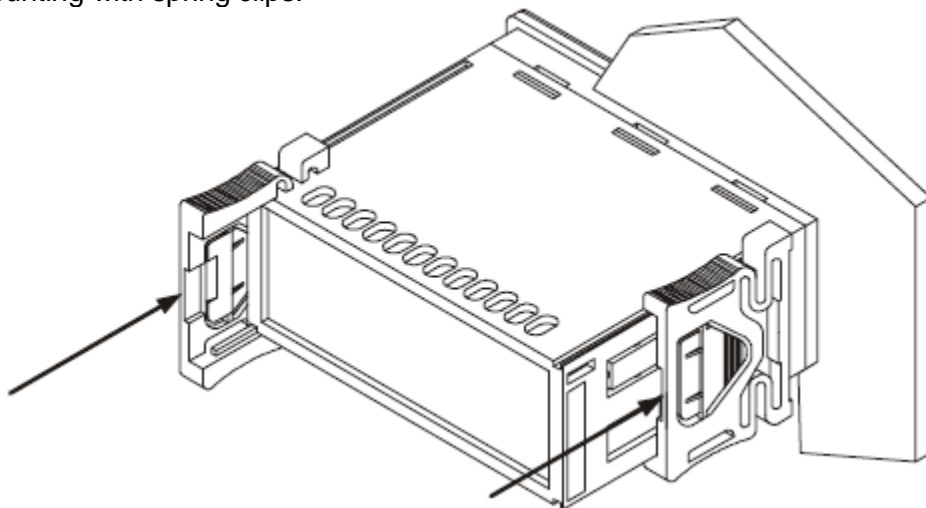
DESCRIPTIONS

- | | | |
|--|-----------------------|-----------------------------|
| △1 Available only on SUF /SUF 135. | S1: Door Switch 1 | R1: Defrost Heater |
| △2 Not available on counter type models. | S2: Door Switch 2 | R2-R4: Drain Line Heater |
| △3 Available only on SUF 65 | M1: Compressor | R3: Door frame cable heater |
| △4 △5 △6 Available only on double door freezer | M2-M4: Condenser Fan | L1/L2: Led light |
| | M3-M5: Evaporator Fan | |
| | Pb1: Cabin Probe | |
| | Pb2: Evaporator Probe | |



Mounting and connecting the controller

Mounting with spring clips:



Cooling system

Standard cooling system

