INTIEL

THE ELECTRONICS ON YOUR SIDE

Controller for cooling chambers and heat pumps type: CMHP

User's Manual

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1. Application

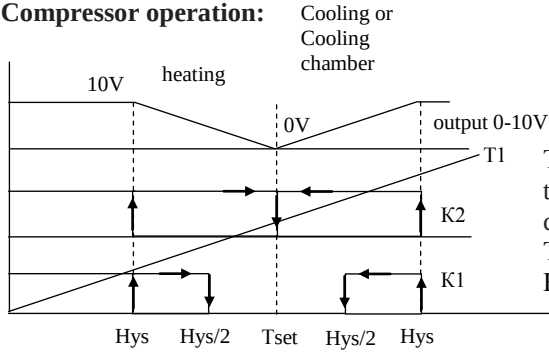
The controller is designed to drive cooling chambers or heat pump type air - air, air - water, water – water operating with one or two compressors.

2. Operation

The regulation is performed by a temperature in the chamber when it is cooling chambers or by outlet temperature when heat pumps (sensor T1) according to the set temperature.

In heat pump unit operates in heating or cooling, depending on the selected mode

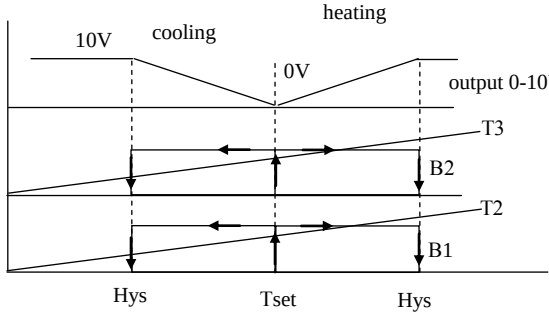
Compressor operation:



T1 – outlet temperature, or temperature within the chamber
Tset – setting
K1,K2 – compressors

Of the graph is shown working with two compressors for constant load they take turns (which first turn on, turn off first).

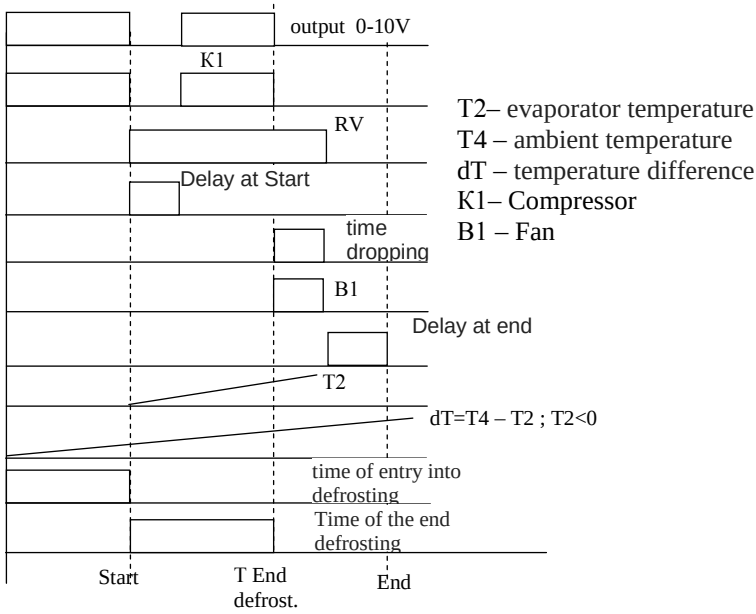
Fans operation:



T2,T3 – temperature of the evaporator / condenser
Tset – setting
B1,B2 – fans
Хис – hysteresis

Of the graph shows operation of the fans by evaporator temperature / condenser (sensors T2, T3), where the option is selected to work with the compressor graph is analogous to the work of the compressors. (see settings fans)

Operation of defrosting:
Defrosting is performed only in "Heating"
or option cooling chamber.



The graph shows the defrosting by the compressor and reversing the direction in systems with only one compressor.

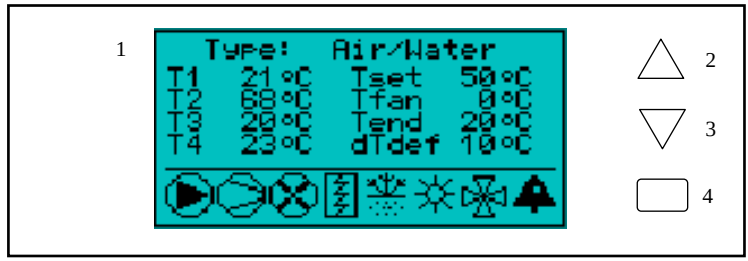
Defrosting can be done only by heaters or fan in refrigerators, not allowed reversal of the freon (RV = 0) and the heater (heater = 0). (see defrost settings)

Start defrosting happens at the time or at the temperature difference (dT) between surrounding temperature (sensor T4) and the temperature of the evaporator / condenser (sensor T2, T3).

End of defrosting happens when the temperature reaches T2 of the end or at the timeand in this case error message displays. The next exit on the temperature error will be cleared.

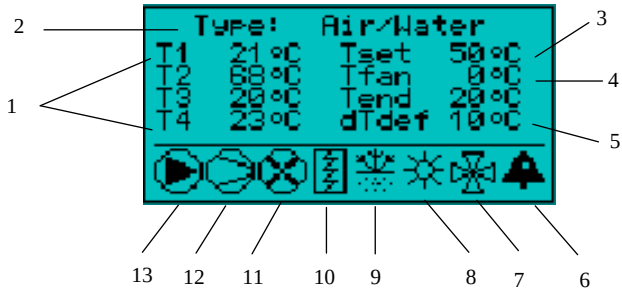
In the refrigerating chambers entry into defrost run only during.

3. Front panel



1 – display;
2 - button to change the "Next";
3 - button to change "back";
4 - button to enter / exit the programming mode, start / stop on hold for about 5 seconds (Sw2);

Description of the display:



1 - measured temperatures;
2 – application;
3 – setting of the maintain the temperature;
4 – setting fans temperature;
5 – setting a temperature difference of entry into defrost;
6 – presence of error message;
7 - operating valve reverse;
8 – heating mode ✹ / cooling mode ✳;
9 – defrost;
10 – switched on defrost heater;
11 – operation the fans;
12 – compressor operating or clock flashing ⏱ (time);
13 – pump operation at air / water and water / water, - fan in an air / air and in cooling chamber;

4. Programing

Setting parameters are divided into two groups. General open access and service access with a password.

4.1 General settings. With the buttons "▲" or "▼" scroll until the display shows the current temperatures menu, then press "▄":

Common Settings	
*Theat	50°C
Tcool	20°C
Hys	10°C
EXIT	

To select a setting, move the cursor "*" with buttons "▲" or "▼", to make a change and return to the choice of setting press "▄".

Setting that changes start flashes, with buttons "▲" or "▼" can change its value.

After completing the settings, select "EXIT" and press "▄" to save the changes.

name	meanings	limits	factory settings	*(note)*
Heat setting	Theat	-30 – 80 °C	50 °C	
Cool setting	Tcool	-30 – 80 °C	-20 °C	
hystiresis	Hys	2 – 20 °C	5 °C	

4.2 Setting service. With the buttons "▲" or "▼" scroll until the display shows "Service settings", then press "▄".

The password is 123. The numbers are introduced successively 1, 2 and 3 after each digit press button "▄".

4.2.1 Settings for the compressors. With the buttons "▲" or "▼" scroll until the display shows "Compressor settings", then press "▄".

To select a setting, move the cursor "*" with buttons "▲" or "▼", to make a change and return to the choice of setting press "▄".

Setting that changes flashes, with buttons "▲" or "▼" can change its value.

After completing the settings, select "EXIT" and press "▄" to save the changes.

name	*meanings*	*limits*	*factory settings*	*(note)*
Number of compressors	Count of compr.	1 – 2	2	
Delay at ON	Delay at ON	0 – 255 s	0 s	
Min. time work	Min. time work	0 – 255 s	0 s	
Min. time OFF	Min. time OFF	0 – 255 s	0 s	
Stop after off the valve /FV/	Stop after FV	0 – 255 s only refrigerating chambers	0 s	

4.2.2 Defrost settings. With the buttons "▲" or "▼" scroll until the display shows the inscription "Defrost settings", then click "▄":
For selection of setting. Move the cursor "*" with buttons "▲" or "▼", to make a change and return to the choice of setting, press "▄".
Setting that changes flashes with buttons "▲" or "▼" can change its value.
After completing the settings, select "EXIT" and press "▄" to save the changes.

name	*meanings*	*limits*	*factory settings*	*(note)*
Temperature difference for entry into defrost	dT	0 – 30 °C	10 °C	
Temperature for end defrost	T for end	0 – 20 °C	20 °C	
Entry into defrost by time	Start by time	0 – 900 min	0 min	
End defrost by time	End by time	0 – 255 min	0 min	
Delay at start	Delay at start	0 – 255 s	0 s	

name	*meanings*	*limits*	*factory settings*	*(note)*
Delay at end	Delay at end	0 – 255 s	0 s	
Dripping time	Dripping time	0 – 255 s	10 s	
Heater	Heater En/Dis	En – 1 Dis – 0	0	
Reversing valve	Rev. val. En/Dis	En – 1 Dis – 0	0	
Type of unit	Type of unit	Air / Air – 1 Air / Water – 2 Water / Water – 3 Fridge – 4	1	

4.2.3 Fans settings. With the buttons "▲" or "▼" scroll until the display shows the inscription "Fan settings", then click "▄":
For selection of setting Move the cursor "*" with buttons "▲" or "▼", to make a change and return to the choice of setting, press "▄".
Setting that changes flashes with buttons "▲" or "▼" can change its value.
After completing the settings, select "EXIT" and press "▄" to save the changes.

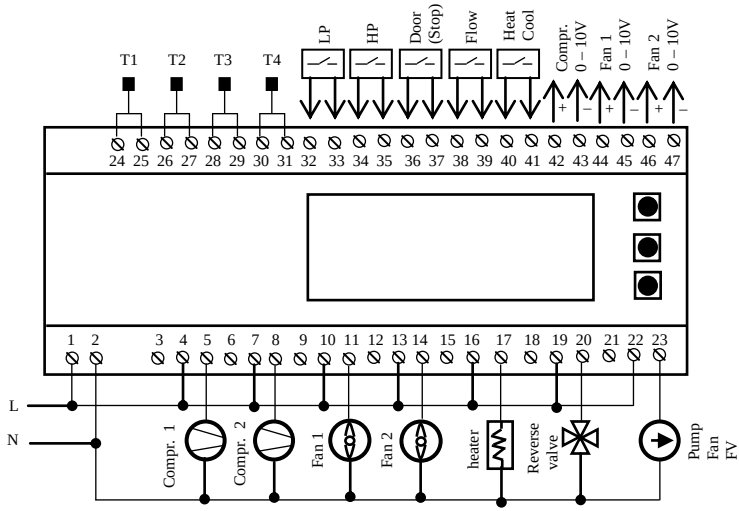
name	meanings	*limits*	*factory settings*	*(note)*
Heat seting	Tset_heat	-30 – 80 °C --- с компресора	30 °C	
Cool seting	Tset_cool	-30 – 80 °C --- с компресора	0 °C	
Hysteresis	Hysteresis	2 – 20 °C	10 °C	

4.3 Error note

With the buttons "▲" or "▼" scroll until the display shows the inscription "Error messages", then press "▄": To clear the error position the cursor "*" with buttons "▲" or "▼" to "Reset Alarms" and press "▄", or turn off and on by holding the button "▄".

name	*meanings*	*limits*	*factory settings*	*(Reset)*
Low pressure	LowP	OK / Err	stops the compressor and fan	atomatically
High pressure	HighP	OK / Err	stops the compressor and fan	manual
Door switct Or external switch ON/OFF (Sw1)	Door (Stop)	OK / Err	at refrigeration chambers fan stops and after 60 s and the compressor stops, START/STOP when another application	atomatically
Flow sensor	Flow sens	OK / Err	stops the compressor and fan	manual
Defrosting compressor 1	Defrost 1	OK / Err	-	atomatically
Defrosting compressor 2	Defrost 2	OK / Err	-	atomatically

5. Technical data and electrical connection



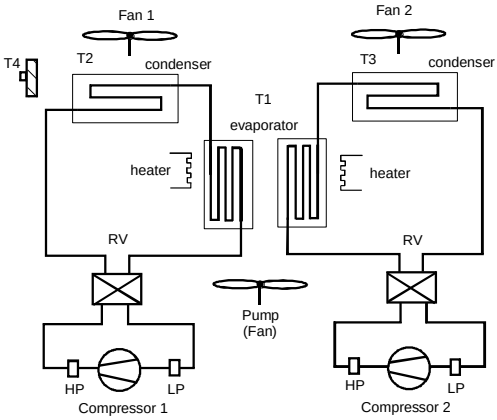
- Inputs "LP", "HP", "Flow", "Door" should be closed for normal operation when not in use put a bridge between the terminals.
- Input "Heat / Cool" in open contact mode is "heating" mode "cooling" at closed contact.

Technical data:

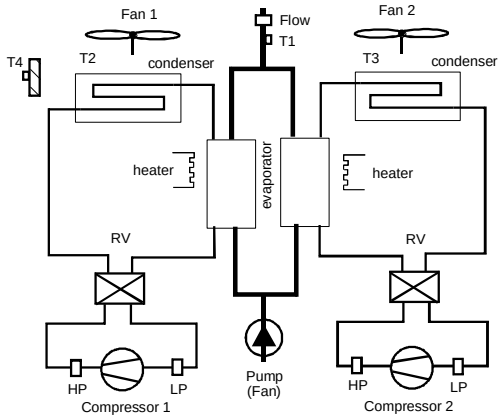
Supply voltage	~ 230V/50Hz
Sensors Pt 1000 temperature	(-50 to +250 ° C)
Inputs contact sensors	independent contact
Relay output	contact ~ 220V/3A
Analog outputs	0 - 10V/max.10mA
Measuring range	-30 +100 ° C
Measurement unit	1 ° C
Humidity	up to 80%
Degree of protection	IP20

6. Example of application

Air/air



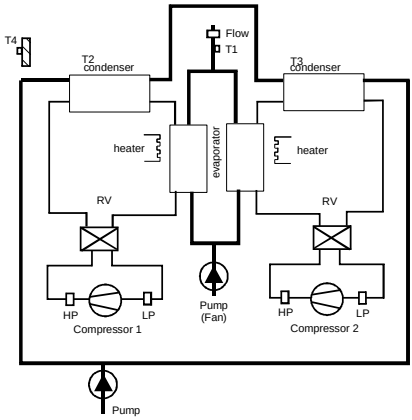
air / water



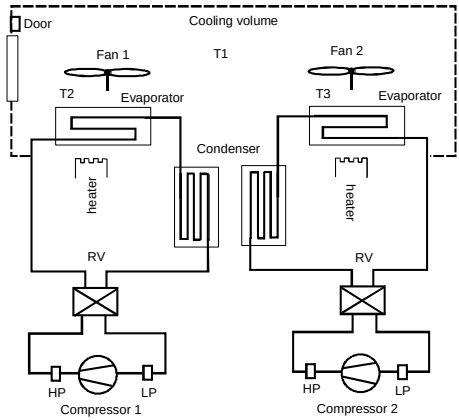
Shown in the diagram have a reversal of the hot vapor from the compressor. When there is a defrost by reverse warm air or water the flap or valve reverse connect in place of the heater and choose the option to defrost heater.

In the system air / air, the main ventilator is connected to the terminals of a pump.

Water/water



cooling chamber



In the cooling chamber when the compressor is stopped by gathering freon, freon valve connects to the place of the pump.

7.

8. Warranty

The warranty period is 24 months following the purchase date of the unit or its installation by an authorized Engineering Company, but not exceeding 28 months after the production date. The warranty is extended to the malfunctions that occur during the warranty period and are result of the production reasons or defective used parts.

The warranty does not relate to malfunctions corresponding to not-qualified installation, activities directed to the product body interference, not regular storage or transport.

The repairs during the warranty period can be done after correct filling of the manufacturer warranty card