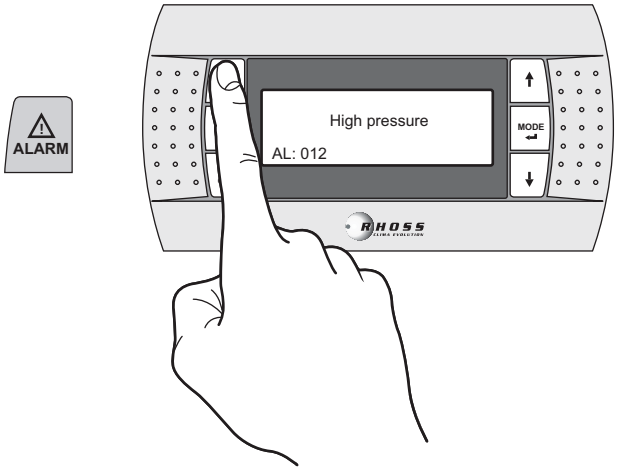
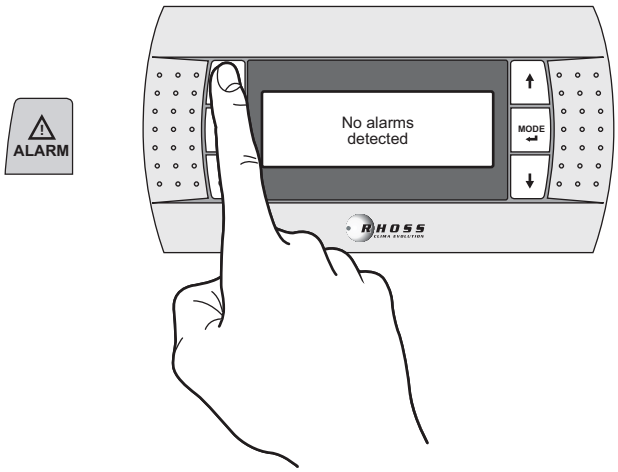
I.6.8 ALARM SIGNALS

IMPORTANT!
Malfunctions and alarms displayed by the machine should NEVER be ignored. The problem should be checked and resolved as soon as possible. If the alarm re-occurs, call technical assistance.

If the unit's electronic board detects any malfunctions, the **ALARM** key will light up on the control panel and the alarm code in question will appear on the display, with reference to the following table.



If the alarm is a type **A** alarm, it will be automatically reset. If the alarm is a type **M** alarm, you will need to press the **ALARM** key for 3 seconds to reset it. If the alarm is a type **A3M** alarm, it will be automatically reset 3 times and will then need to be manually reset.



Alarm	Alarm description		Reset
AL: 002	Antifreeze lockout alarm	Indicates that probe ST2 has detected a lower temperature than the set antifreeze Set-point.	**M**
AL: 005	Differential pressure switch alarm	Indicates that the differential pressure switch between the system input and output water has been activated.	**A3M**
AL: 010	Low pressure alarm	Indicates that the low pressure switch has been activated.	**A3M**
AL: 012	High pressure Alarm	Indicates that the high pressure switch has been activated.	**M**
AL: 020	Fan thermal alarm	Indicates that the thermal protection inside the fan's electric motor has been activated.	**M**
AL: 021	Alarm pump 1	Indicates that following the AL: 005 alarm the pump may be faulty.	**A3M**
AL:022	Alarm pump 2	Indicates that following the AL: 005 alarm the pump may be faulty.	**A3M**
AL: 030	ST1 probe malfunction alarm (B1)	Indicates that either the probe is faulty or has detached from connector B1. Check whether it's working and replace if necessary.	**A**
AL:033	ST4 probe malfunction alarm (B4)	Indicates that either the probe is faulty or has detached from connector B4. Check whether it's working and replace if necessary.	**A**
AL:034	ST2 probe malfunction alarm (B5)	Indicates that either the probe is faulty or has detached from connector B5. Check whether it's working and replace if necessary.	**A**
AL:035	Faulty pressure transducer alarm	Indicates that either the pressure transducer is faulty or has detached from connector B6. Check whether it's working and replace if necessary.	**A**
AL: 037	ST8 probe malfunction alarm (B8)	Indicates that either the probe is faulty or has detached from connector B8. Check whether it's working and replace if necessary.	**A**
AL: 040	Maintenance pump 1	This alarm does not indicate a malfunction but only signals that the number of working hours of the pump has exceeded the set value. The unit continues to operate as normal.	**A**
AL: 041	Maintenance compressor 1	This alarm does not indicate a malfunction but only signals that the number of working hours of the compressor has exceeded the set value. The unit continues to operate as normal.	**A**
AL: 042	Maintenance compressor 2	This alarm does not indicate a malfunction but only signals that the number of working hours of the compressor has exceeded the set value. The unit continues to operate as normal.	**A**
AL:046	Maintenance pump 2	This alarm does not indicate a malfunction but only signals that the number of working hours of the pump has exceeded the set value. The unit continues to operate as normal.	**A**
AL: 055	Clock card alarm	Indicates that the clock card (accessory) is faulty: cut off and resume the unit's power. If the alarm persists, contact an authorised service centre and the clock card will be replaced.	**A**
AL: 056	Phase sequence alarm	Indicates that the L1-L2-L3 phase sequence to the mains switch is incorrect. Cut the unit off, adjust the sequence and resume power.	**M**
AL: 057	Min/max voltage alarm		**A**
AL:060	High temperature alarm IN rec/des	Indicates that the recovery outlet water temperature has exceeded the safety threshold.	**A3M**

A Automatic reset
M Manual reset
A3M Automatic 3 times, then manual

II.8.1 CONFIGURATION

Safety component calibration settings

Pressure switch	Cut-in	Reset
high pressure	40.2 bar	28.1 bar - Manual
low pressure	2 bar	3.3 bar – Automatic
water differential	80 mbar	105 mbar - Automatic
Safety valve	41.7 bar	-

DANGER!
The safety valve is calibrated to 41.7 bar. It could cut in if the calibration valve is reached during the refrigerant charging operations, causing a burst that could cause scalding.

Configuration parameters	Standard setting
Summer working temperature set point	7°C
Winter working temperature set point (THAEY)	45°C
Working temperature differential	2°C
Antifreeze temperature set point	1,5°C
Antifreeze temperature differential	2°C
Water differential pressure switch time upon start-up	120"
Water differential pressure switch exclusion time upon start-up	15"
Circulation pump switch off time delay	15"
Minimum time between two consecutive compressor start-ups	360"

The units are tested in the factory, where they are also calibrated and the default parameter settings are put in. These guarantee that the appliances run correctly in rated working conditions. The machine configuration is carried out in the factory and should never be altered.

IMPORTANT!
If a unit is used for the production of chilled water, check the adjustment of the thermostatic valve.

II.8.2 UNIT START-UP AND STARTUP AFTER PROLONGED SHUTDOWN

DANGER!
Always use the switch to isolate the unit from the mains before carrying out any maintenance work, even if it is for inspection purposes only. Make sure that no one accidentally supplies power to the machine, lock the mains switch in the OFF position.

Before starting the unit, perform the following checks:
○ The electricity power supply must comply with the specifications on the data plate and/or the wiring diagram and it must fall within the following limits:
- Variation of the power supply frequency: ±2 Hz.
- variation of the power supply voltage: ±10% of the nominal voltage;
- imbalance between the supply phases: <2%.

○ the electrical power supply system must be able to supply adequate current and be suitably sized to handle the load;
○ open the electric panel and make sure the terminals of the power supply and of the contactors are tight (they may have come loose during transport, which could lead to malfunctions);
Electrical connections must be made in compliance with the local installation standards in force in the place where the unit is installed, and with the instructions in the wiring diagram provided with the unit.

II.8.3 START-UP PROCEDURE

IMPORTANT!
The unit must be started up for the first time by skilled technicians only, qualified to work on conditioning and refrigerant units.

Once the unit installation and connection operations have been completed, it can be started up for the first time.
For a correct first start-up of the unit carefully follow the diagrams provided in the following paragraphs.

II.8.3.1 General unit conditions

START

Have the technical clearance distances indicated in the manual been respected? → **NO** → Restore the indicated technical spaces.

↓ **YES**

Are the finned coils free from obstructions? → **NO** → Clean the finned coils.

↓ **YES**

Are the fan grilles free from obstructions? → **NO** → Remove the obstructions.

↓ **YES**

Is the unit damaged due to transport/installation? → **YES** → **Danger!** Do not start the unit! Restore the unit!

↓ **NO**

The general conditions of the unit are compliant!

II.8.3.2 Checking the compressor oil level

START

Is the oil level sufficient? → **NO** → Top up as necessary

↓ **YES**

Was pre-heating activated at least 24 hours before start-up? → **NO** → Activate pre-heating and wait 24 hours.

↓ **YES**

The compressor is ready for startup!

II.8.3.3 Checking the water connections

START

Have the water connections been made to a professional standard? → **NO** → Bring the connections up to standard.

↓ **YES**

Is the water input/output direction correct? → **NO** → Correct the input/output direction.

↓ **YES**

Are the circuits full of water and have the pipes been bled of any air residue? → **NO** → Fill the circuits and/or bleed the air.

↓ **YES**

Does the water flow conform to what is stated in the user manual? → **NO** → Correct the water flow.

↓ **YES**

Do the pumps turn in the right direction? → **NO** → Correct the rotation direction.

↓ **YES**

Are the flow meters (if installed) active and correctly connected? → **NO** → Repair or replace the component.

↓ **YES**

Are the water filters placed upstream from the heat exchanger and recovery unit in good working order and correctly installed? → **NO** → Repair or replace the component.

↓ **YES**

The water connections are compliant!

II.8.3.4 Checking the electrical connections

START

Does the unit power supply match the values indicated on the plaque? → **NO** → Restore the correct power supply.

↓ **YES**

Is the phase sequence correct? → **NO** → Restore the correct phase sequence.

↓ **YES**

Does the earth conform with current regulations? → **NO** → **Danger!** Restore the earth connection!

↓ **YES**

Are the power circuit electric conductors of the size indicated in the manual? → **NO** → **Danger!** Replace the wires immediately!

↓ **YES**

Is the circuit breaker positioned upstream from the unit of the right size? → **NO** → **Danger!** Replace the component immediately!

↓ **YES**

The electric connection is compliant!

II.8.3.5 First start-up (Standard Unit)

START

Ask all unauthorised personnel to leave the area.

De-activate the magnetothermal switches on the compressor power supply.

Simulate an empty start in order to ensure that the power contactors have been inserted correctly.

Are the power contactors inserted correctly? → **NO** → Check and replace the component if necessary.

↓ **YES**

Disconnect the power from the auxiliary supply again.

De-activate the magnetothermal switches on the compressor power supply.

Power the auxiliary circuit.

Start up the machine using the control panel (ON/OFF key). → All ON/OFF operations must be carried out **EXCLUSIVELY** using the **ON/OFF** key on the control panel.

Choose the operating modes (MODE key).

Check the correct rotation of the pumps and fans, the flows and the operation of the heat exchangers sensors. → **NO** → Check and replace the component if necessary.

Start-up procedure completed!

II.8.3.6 First start-up (Unit with recovery)

START

Ask all unauthorised personnel to leave the area.

De-activate the magnetothermal switches on the compressor power supply.

Simulate an empty start in order to ensure that the power contactors have been inserted correctly.

Are the power contactors inserted correctly? ➡ **NO** ➡ Check and replace the component if necessary.

⬇ **YES**

Disconnect the power from the auxiliary supply again.

De-activate the magnetothermal switches on the compressor power supply.

Power the auxiliary circuit.

Start up the machine using the control panel (ON/OFF key), also starting up the recovery circuit pumps and disabling the heat recovery units through the control panel or excluding the heat recovery differential pressure switch consent. ➡ All ON/OFF operations must be carried out **EXCLUSIVELY** using the **ON/OFF** key on the control panel.

Check that the pumps rotate correctly, check the flows and the operation of the heat recovery sensors. ➡ **NO** ➡ Check and replace the component if necessary.

Put the unit in the right mode (summer or winter), then activate the recovery unit consent.

Start-up procedure completed!

II.8.3.7 Checks to be made while the machine is running

START

Ask all unauthorised personnel to leave the area.

⬇ **YES**

Cut-in test: use the water intercept valves to reduce the flow to the evaporator. ➡ Is the water differential pressure switch activated correctly? ➡ **NO** ➡ Check and/or replace the component.

⬇ **YES**

Is the working pressure reading correct? ➡ **NO** ➡ Stop the unit and check the cause of this anomaly.

⬇ **YES**

If you take the pressure on the high pressure side to approx. 8 bar, are there gas leaks of > 3 grams/year? ➡ **YES** ➡ Stop the unit and check the cause of the leak (EN 378-2).

⬇ **NO**

Does the unit display feature any alarms? ➡ **YES** ➡ Check the cause of the alarm. See table of alarms.

⬇ **NO**

Start-up procedure completed!

II.8.4 TABLE OF ALARMS

The display on the control panel displays the alarms, with reference to the following table. Alarms are reset by pressing the ALARM key on the control panel once the cause has been identified and eliminated.

Type of alarm	Possible cause	Cut-in
AL:002 Antifreeze alarm	Set-point set too low	Check set-point and reset
	Insufficient water flow	Check and adjust if necessary
AL:005 Alarm for water differential pressure switch on condenser/evaporator	Insufficient water flow	Restore the correct water flow
	Presence of air in the water system	Bleed
	Intercept valves closed	Open valves
	The circulating pump (if present) does not run	See Troubleshooting section
	Water circuit filter obstructed	Check and clean if necessary
AL:010 Low pressure alarm		Indicates that the low pressure switch has been activated: the alarm is reset manually from the keyboard. Note: the alarm will be automatically reset 3 times in the region of an hour and will then need to be reset manually. When this alarm is triggered the AL:021 and AL:022 signals are activated simultaneously. If the alarm persists refer to Troubleshooting section.
AL:012 High pressure switch alarm		Indicates that the high pressure switch has been activated: reset the pressure switch manually by firmly pressing the button on the pressure switch itself. Then reset the alarm manually from the keyboard. If the alarm persists refer to Troubleshooting section.
AL:020 Fan thermal protection activation alarm	Short-circuited fan	Check and replace the fan if necessary
AL:21 Alarm pump 1 **AL:22 Alarm pump 2**		Indicates that following the AL: 005 alarm the pump may be faulty. The alarm is reset manually from the keyboard. Note: the alarm will be automatically reset 3 times in the region of an hour and will then need to be reset manually.
AL:030 Inlet water temperature sensor alarm (ST1)	Sensor faulty	Replace the sensor
	Sensor detached from connector B1	Insert terminal into connector B1
AL:034 Temperature sensor alarm: evaporator outlet water (ST2)	Sensor faulty	Replace the sensor
	Sensor detached from connector B5	Insert terminal into connector B5
AL:033 Temperature sensor alarm: buffer tank outlet water (ST4)	Faulty sensor	Replace the sensor
	Sensor detached from connector B4	Insert terminal into connector B4
AL:035 Pressure transducer alarm	Transducer faulty	Replace the transducer
	Transducer detached from connector B6	Insert transducer into connector B6
AL:037 Inlet water recovery temperature sensor alarm (ST8)	Sensor faulty	Replace the sensor
	Sensor detached from connector B8	Insert terminal into connector B8
AL:041 Compressor 1 maintenance signal **AL:042 Compressor 2 maintenance signal**		This alarm does not indicate a malfunction but only signals that the number of working hours of the compressor has exceeded the set value. The unit continues to operate as normal. Contact an authorised service centre for maintenance intervention. Press the ALARM key to deactivate the signal.
AL:055 Clock card alarm		Indicates that the clock card (accessory) is faulty: cut off and resume the unit's power. If the alarm persists, contact an authorised service centre and the clock card will be replaced. The alarms are reset automatically.
AL:056 Phase sequence alarm		Indicates that L1-L2-L3 phase sequence all'interruttore generale is incorrect. Cut the unit off, adjust the sequence and resume power. The alarms are reset automatically.
AL:057 Min/max voltage alarm		Indicates that the general power supply voltage (in volt) is outside the set range. Check power line. The alarms are reset automatically.
AL:060 Inlet water high temperature alarm rec/des		Indicates that the recovery inlet water temperature has exceeded the safety threshold.