IV PRODUKT

Air handling with focus on LCC

Operation and maintenance instructions

THE NEW

EcoCooler

ECO – EcoCooler

ECX – EcoCooler with cooling recovery

Cooling unit
NEW EcoCooler 100-980

Order number :

Project :

Original instructions

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IV PRODUKT

Air handling with the focus on LCC

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1 General

1.1 Intended use

The EcoCooler cooling unit is designed for cooling supply air in buildings (comfort cooling).

The cooling unit is designed to be installed together with IV Produkt AB air handling units. The cooling unit should not be used as a standalone unit.

1.2 Safety precautions

Safety precautions for cooling units installed together with ventilation units can be found in the **Operation and Maintenance Instructions** and the **Assembly Instructions** for the relevant range of units.

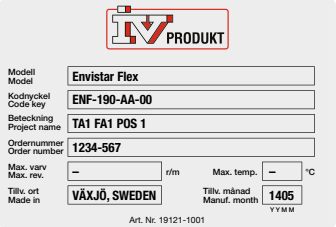
1.3 Manufacturer

The cooling unit is manufactured by:

IV Produkt AB
Sjöuddevägen 7
SE-350 43 VÄXJÖ

1.4 Designations

The details of the cooling unit can be found on the model identification label placed on the front cover.



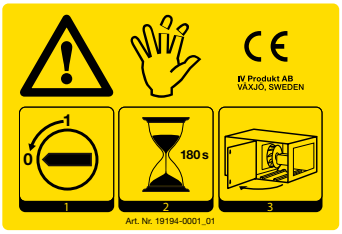
Typical model identification label

1.5 CE marking and EU Declaration of Conformity

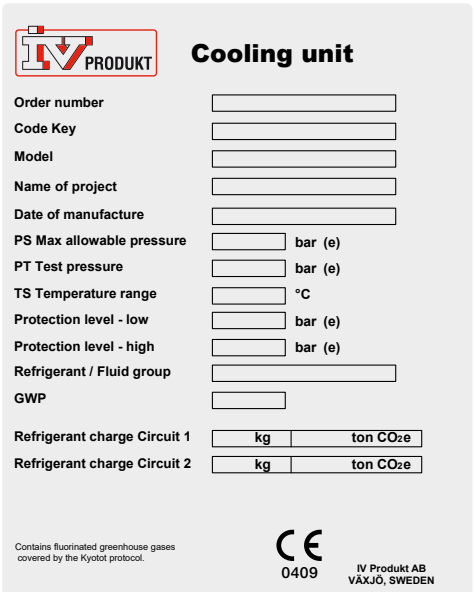
The cooling unit is CE-marked, which means that upon delivery, it conforms to applicable provisions in EU Machinery Directive 2006/42/EC as well as to the EU Directives applicable to the type of unit, e.g. Pressure Equipment Directive (PED) 2014/68/EU.

As certification confirming that the requirements have been met, we provide an EU Declaration of Conformity, which is available at docs.ivprodukt.com.

The CE marking applies to units that IV Produkt AB manufactures and supplies in the form of a unit without additional control equipment. For the CE marking of IV products to apply, the applicable requirements of the EU Machinery Directive 2006/42/EC and related directives for control equipment shall be met when installed for the unit.



Typical CE label for air handling units



Typical CE label for cooling units

1.6 Maintenance

Regular maintenance of cooling units should be performed by a qualified cooling engineer.

1.7 Handling of refrigerant

The following information summarises the requirements and guidelines for handling the refrigerant used in cooling units. For further information, see the F-gas Regulations (EU/517/2014) and the Refrigerant Regulations (SFS 2016:1128). The purpose of the regulations is to contribute to achieving EU goals for reduced climate impact in accordance with the Kyoto Protocol.

Operator responsibilities

Generally speaking, the unit operator must:

- Minimise and prevent leakage
- Take corrective action to remedy any leakage that arises
- Ensure that the service and repair of the refrigerant circuit is carried out by a certified refrigeration technician
- Ensure that refrigerant is handled in an environmentally secure manner and in accordance with national regulations.

By operator, we mean the European Parliament's definition: "...the natural or legal person exercising actual power over the technical functioning of the equipment and systems...".

The levels for the various actions to be taken for a system are calculated using carbon dioxide equivalents, CO_2 e(tonnes). This figure is calculated by multiplying the refrigerant's GWP value (Global Warming Potential) by the filling amount in kilos. GWP for R410a is 2088. A filling amount of 5.0 kg R410a therefore corresponds to (5.0×2088)/1000 = 10.44 CO_2 e(tonnes). The unit is marked with refrigerant quantity and carbon dioxide equivalent.

Leakage inspection and registration

The following applies for one-piece units with 5 CO_2 e(tonnes) refrigerant content or more per circuit:

- **Leakage inspection** must be carried out by a certified refrigeration technician:
  – When installing/commissioning the unit
  – Periodically at least once per 12 months,
  i.e. no more than 12 months between inspections
  – within one month of any work being performed (e.g. sealing a leak, replacing a
  component).
- The operator must **record** events, such as the volume and type of refrigerant topped up, refrigerant taken into possession, results of inspections and work done, person and company who carried out service and maintenance.

If the total refrigerant quantity below 5 CO_2 e(tonnes), no periodic leak detection or record keeping is needed.

If the total refrigerant content of the ventilation system exceeds 14 CO_2 e(tonnes), the result of the inspections (inspection report) must be sent to the regulatory authorities and be in their possession no later than 31 March of the following year.

For a unit that will contain 14 CO_2 e(tonnes) or more, the intended operator must inform the supervisory authority of the installation well in advance.

1.8 Extended warranty

In cases in which the equipment delivered falls under a 5-year warranty, in accordance with ABM 07 with supplement ABM-V 07 or in accordance with NL 09 with supplement VU13, the IV Produkt Service and Warranty Manual is supplied with the product. In order to lay claim to an extended warranty, a complete, documented and signed IV Produkt Service and Warranty Manual must be presented.

1.9 Spare parts

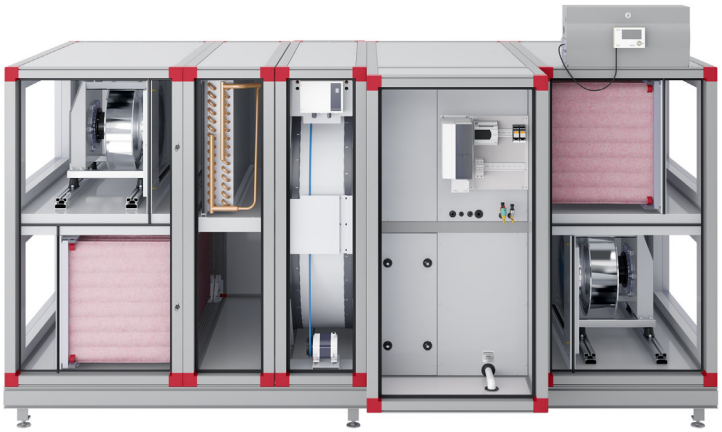
Spare parts and accessories for this unit are ordered from your nearest IV Produkt sales representative. Always specify the product code when ordering. The code is stamped on a separate data label, affixed to each functional section. A separate spare parts list is supplied with the unit.

1.10 Dismantling and decommissioning

When an air handling unit is to be dismantled, separate instructions must be followed, refer to Dismantling and decommissioning the AHU under Documentation at docs.ivprodukt.com.

2 Technical description

2.1 Cooling unit, EcoCooler



Fan and filter section (extract air fan)

EcoCooler cooling unit (with cooling recovery, code ECX)

Fan and filter section (supply air fan)

EcoCooler is a range of integrated speed controlled cooling units with stepless cooling power. The cooling units are designed for cooling supply air in buildings (comfort cooling).

EcoCooler is designed to be installed together with IV Produkt AB air handling units. The cooling unit should not be used as a standalone unit.

Two different versions of EcoCooler are available:

- ECO, without cooling recovery (no rotor)
- ECX, with cooling recovery (with rotor). Cooling recovery means that the heat exchanger (rotary heat exchanger) starts up when the extract air/room temperature drops below the outdoor temperature and cooling is required.

Cooling circuit function

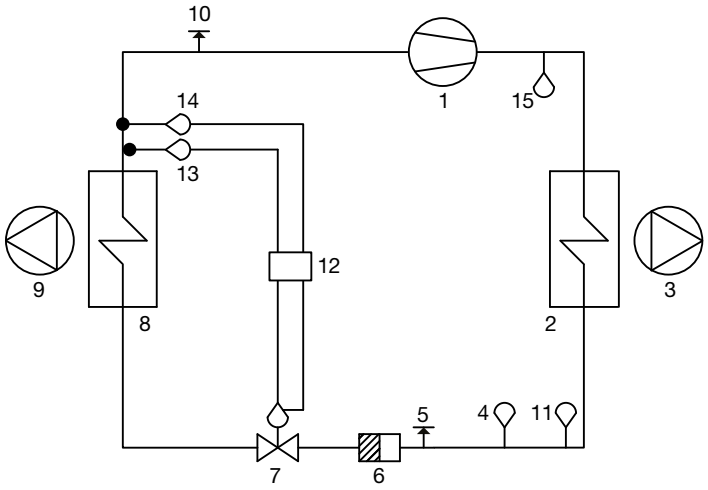
Most cooling units operate according to the same principle. The cooling unit moves the heat in the air from a location where the heat is unwanted or unneeded, to another location where the heat can be emitted.

From the compressor (position 1) the refrigerant is pressed as hot gas to the condenser (position 2) where heat is emitted. The refrigerant condenses from gas to liquid when it is cooled by the extract air.

The refrigerant passes the pressure reducing expansion valve (position 7) and undergoes a phase transformation in the evaporator (position 8) from liquid to gas (the refrigerant evaporates).

Inside the evaporator (position 8), the refrigerant absorbs the heat required for phase transformation. The heat is taken from the supply air which is thus cooled.

The cold refrigerant in gaseous form is drawn back into the compressor (position 1) where it is compressed and thus heated. The gas is also used for cooling the compressor's electric motor. The refrigerant now contains both the heat from the supply air, the compressor's motor heat and the compression heat.



Flow chart for EcoCooler refrigerant systems (for refrigerant volume, see the type label on the unit)

1	Compressor	9	Supply air fan
2	Condenser	10	Measurement outlets – low pressure
3	Extract air fan	11	Liquid line sensor
4	Pressure switch – high pressure	12	Control unit
5	Measurement outlet – high pressure	13	Temperature sensor suction gas
6	Drying filter	14	Pressure sensor – low pressure
7	Expansion valve	15	Hot gas sensor
8	Evaporator		

Compressor

The EcoCooler is fitted with a speed-controlled compressor. Depending on the size, the EcoCooler can also be fitted with a switch controlled compressor.

When cooling is required, the frequency inverter increases the speed of the compressor. When there is more than one compressor, they are activated in fixed steps while the speed-controlled compressor is activated between steps. The function is reversed where less cooling is needed.

Compressor protection

In the event of an alarm initiated by the control equipment or the safety circuit, the compressor stops and an alarm indication is given. If the unit is equipped with integrated control equipment, the alarm can be read on the Climatix display.

In the event of an alarm, correct the fault and then reset the alarm. If the safety circuit alarm trips repeatedly, an authorised refrigeration service company must be called in.

The safety circuit consists of a high pressure switch with a manual reset button. The safety circuit can trip in the event of high pressure in the system. To avoid accidental stoppages at high pressure, the unit will lower the power using the high pressure sensor.

Cooling function

For internal control (MX), the cooling unit is interlocked across the ventilation unit. If any of the fans stop, the cooling unit will also stop. The interlock and demand signal is sent via Modbus.

For external control (US, UC and MK), the interlock signal must be sent via a potential-free relay. The demand signal must be sent via 0–10 V.

Circuit board

The circuit board for the cooling unit contains the following:

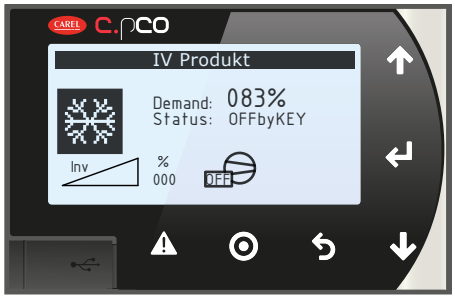
- Main switch
- Fuse
- Control unit with integrated control for expansion valve next to speed controlled compressor
- Control unit for expansion valve next to fixed speed compressor

The circuit board is installed inside the unit and is internally prewired and tested at the factory.

Current limiting

The control unit for EcoCooler is equipped with a function that measures the cooling unit's power consumption. The power consumption can be limited to an adjustable value. If the unit is connected to a fuse that is less than the one recommended in Chapter 3, this function should be used.

To activate the function, do the following in the control unit:

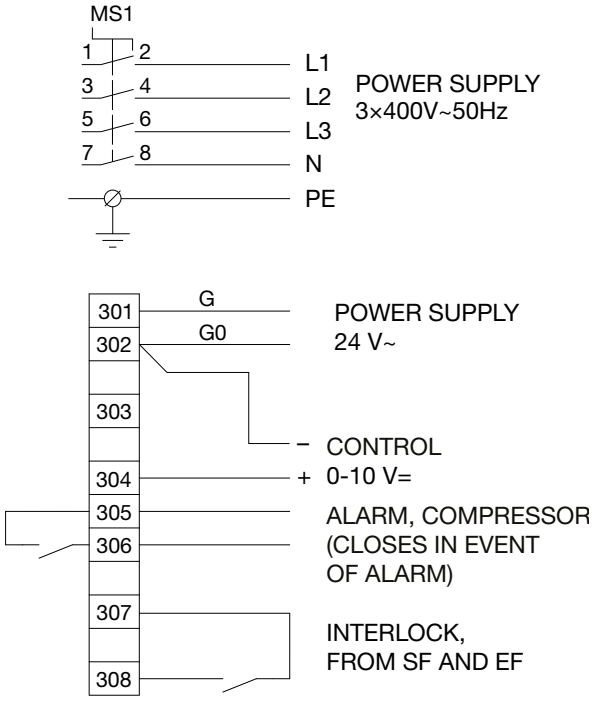


1. Press the circle button.
2. Press the down arrow to highlight status – I/O.
3. Press the enter arrow button.
4. Press the up arrow to access the "Current limit" menu.
5. Press the enter arrow so the cursor starts flashing.
6. Press the up arrow to change "NO" to "YES".
7. Press the enter arrow so the cursor starts flashing on the row below.
8. Use the up/down arrows to set the fuse size.
9. Press the enter arrow button.
10. Press the back arrow button twice to return to the start menu.

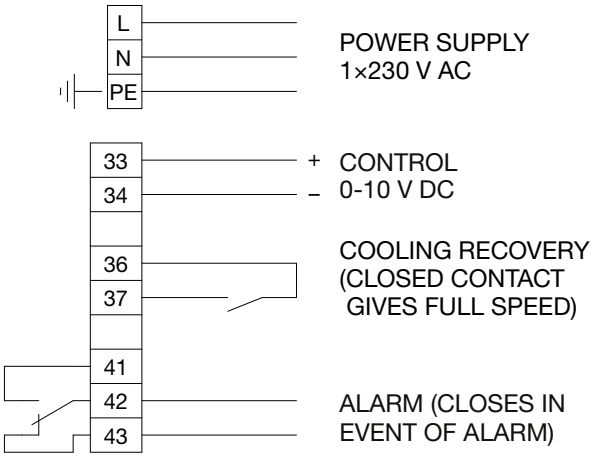
3 Wiring instructions (US, MK)

For MX and UC, see separate wiring diagram.

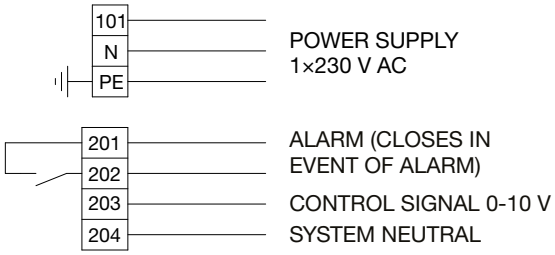
3.1 Electrical connections, ECO and ECX cooling units



3.2 Electrical connections, ECX rotary heat exchanger



3.3 Electrical connections, ECO and ECX electric heaters



4 Operation

4.1 Commissioning rules

Commissioning may only be carried out by skilled personnel and according to the following check list and commissioning record (supplied with the cooling unit). A copy of the commissioning record, after being signed by the person who commissioned the unit, must also be signed by the seller before it is sent to the IV Produkt Ordering Department.

The validity of the product warranty is conditional on the system having been correctly commissioned. No modifications to the cooling unit may be made during the warranty period without the approval of IV Produkt.

Follow the troubleshooting instructions in the troubleshooting chart before contacting a service representative for servicing a unit under warranty. This will prevent any unnecessary service calls.

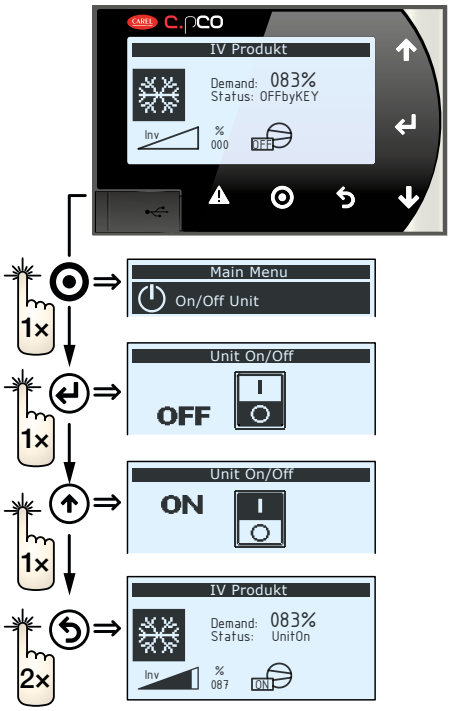
4.2 Check list for commissioning cooling unit

The cooling unit must not be put into operation until all the items in the check list have been checked off.

1. Visually inspect the cooling unit for damage after transport and assembly. ☐
2. Check that the cooling unit is correctly positioned and that the open space in front of the unit for servicing is sufficient (1.5 x depth of the unit, min. 1200 mm).
   For more information, see the separate assembly instructions for each unit series. ☐
3. Check that the drain connection (evaporation water drainage) is connected to a floor drain via a separate water trap. Check that the drainage pipe slopes correctly to the drain. For more information, see the separate assembly instructions for each unit series. ☐
4. Check that the incoming supply voltage, zero and earth are connected (see Section 3). ☐
5. Check that control cables are connected (see chapter 3). ☐
6. Check that the automatic circuit breakers are set to the ON position and switch on the voltage. ☐
7. It is important that the oil is warm inside the speed controlled compressor crankcase before starting the cooling unit. The crankcase heating must be switched on long enough before the unit begins operating so that the oil maintains a temperature of at least 30°C. The maximum warm-up time is approximately 2–3 hours. The temperature can be measured externally at the bottom of the compressor. ☐
8. Start the air handling unit (supply and extract air fans). ☐
9. Check that there are supply and extract air flows and that they have been adjusted and recorded. ☐

10. Test all control functions according to the air handling unit's functional description. ☐

11. Start the cooling unit via the control unit according to the following menu sequence: ☐



12. Check that the start and cooling signal is shown in the display. Status should be
"UnitOn" and Demand should show a percentage value. If UnitOn is not displayed and Demand is less than 10 per cent, the setpoint should be temporarily changed to make start possible. Use Climatix hand controller and go to Quick menu > Setpoints/Settings > Setp. conf.heat. Adjust setpoint until the unit starts. ☐

13. Check that the unit indicates a temperature change in the supply air, note the operating data and check that no alarms are displayed. ☐

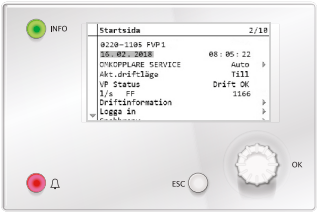
14. Reset the setpoint and allow the unit to operate until it stops as per the intended control function for the air handling unit. ☐

    NB: The time until restart is at least 10 minutes.

15. Make sure that an inspection to detect leakage is carried out and that an inspection report is drawn up; see "1.7 Handling of refrigerant" on page 4. ☐

4.3 Cooling status

Unit incl. control (Climatix code MX)



Status information can be read on the Climatix display (Main menu > Unit > Cooling). The following will be presented:

Climatix	Value	Explanation
Cooling unit status	UnitOn	Status of cooling unit
Cooling	x%	Cooling load from Climatix cooling regulator.
Freq. inv. output	x.x%	Frequency to the compressor.
Compr. no	Comp1	
Compr. Sum alarm	Normal	
Alarm management	>	The alarm is displayed if there is a fault with the inverter or compressor. In the event of an alarm, see “Alarm information for inverter and compressor” page 18.
**********		
Compressor C1	On/Off	Compressor operating mode.
Suction gas temp C1	x.x°C	Measured suction gas temp.
Evaporation temp C1	x.x°C	Calculated evaporation temp based on low pressure.
Low pressure C1	x.x bar	Relative pressure from low pressure sensor.
Overheating C1	x.xK	Measured overheating.
High pressure C1	x.x bar	Relative pressure from high pressure sensor.
Expansion valve 1	x.x%	Expansion valve position.
Condensation temp C	x.x°C	
Hot gas temperature	x.x°C	Temperature of output from compressor
Liquid line temperature	x.x°C	Temperature downstream of condenser
Supercooling	x.x°C	Measured supercooling

5 Maintenance instructions

5.1 General

This part of the instructions is generic. It is designed to enable you to carry out a simple periodic inspection of the unit and to show some simple checks you can perform before calling in expert support in the event of a fault.

For those qualified to work on the unit, the attached connection and circuit diagrams and the control manual will provide the necessary information, or alternatively at docs.ivprodukt.com.

5.2 Periodic inspection

General

The IV Produkt cooling unit has been designed and fabricated along given operation parameters that must be met in order for the unit to operate optimally and provide good operating economy. The operation parameters must not be changed unless a check is first made to ascertain that the changes will be within the unit's operating range.

Requirements and guidelines for handling refrigerant

For requirements and guidelines, see "1.7 Handling of refrigerant" on page 4.

Inspection

Check:

1. The fins on the condenser and evaporator to detect mechanical deformations
2. The drip tray and drain with water trap (clean if necessary)
3. That the water trap (without non-return valve) is filled with water.

Cleaning

If the fins on the condenser and evaporator are fouled, they should be vacuumed from the inlet side. Alternatively, you can blow them clean with compressed air from the outlet side. If they are severely fouled, you can clean them with warm water mixed with dishwashing detergent that will not corrode aluminium.

Function

Check that the cooling unit is operating as it should by temporarily lowering the temperature setting (setpoint).

6 Alarm management and troubleshooting

6.1 Troubleshooting in the event of an alarm

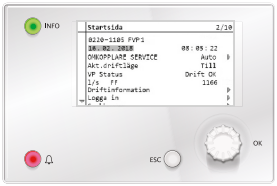
The alarms for the cooling circuits are presented on the control unit display. To ascertain what has caused the alarm, follow the procedure below.

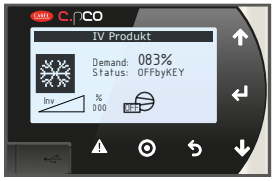
Inspection		Possible cause	Corrective action
Is the alarm "94 Drive offline"displayed?	YES ⇒	The frequency inverter does not have supply voltage 3×400V	Connect the supply voltage to the frequency inverter Check fuses Check cabling for communication between frequency inverter and Carel
NO ⇓			
Has the high pressure switch tripped? Is the alarm "121 Compr 1, High pressure switch" or "180 Compr 1, High pressure switch" displayed?	YES ⇒	No or too low air flow across the condenser Defective high pressure switch	Check the air flow across the condenser. Reset the pressure switch manually Check/replace
NO ⇓			
Is the alarm "118 Compr 1, Low evaporation pressure" or "176 Compr 2, LowEvap-Pressure" displayed?	YES ⇒	Insufficient refrigerant volume No or too low air flow across the evaporator Defective expansion valve or low pressure control	Look for leakage, seal the leak and top up with refrigerant Check/adjust the flow Check/replace
NO ⇓			
Is the LED flashing red on the frequency inverter?	YES ⇒	Phase failure/voltage failure Overload/defective stepless compressor	Check the 3-phase supply, measure the incoming voltage. Reset the frequency inverter by switching off the voltage for 1 minute or more. Check that the compressor is running without dissonance. Reset the frequency inverter by switching off the voltage for 1 minute or more. Check that the compressor is running without dissonance.
Is the alarm "189 Phase Rotation order"displayed?	YES ⇒	Incorrect phase sequence for supply voltage on compressor 2	Shut off voltage and switch two of the incoming phases
NO ⇓			
Is the alarm "AL 120 Compr 1 Low pressure diff." displayed?	YES ⇒	No pressure difference between the high-pressure and low-pressure side	Contact service
NO ⇓			
Is the alarm "AL 59 Compr 1 Low Cond Temp" displayed?	YES ⇒	Condensation temperature too low	Contact service

Alarm information for inverter and compressor

For unit incl. control (code MX), alarm information can be read on the Climatix display (Main menu > Unit > Cooling > Alarms).

For unit excl. control (code UC, MK, US), alarm information can be read on the Carel display. Press the alarm symbol to view alarms.

 **Climatix alarm** (code MX)	**Explanation and corrective action**
Cooling unit	
Sum alarm	Sum alarm, check alarm in Carel, see table below.
Alarm C1 R. pressure switch	High pressure switch tripped or alarm for frequency inverter.
Alarm C1 EEV motor fault	Fault on electrical connection to expansion valve.
Alarm C1 low pressure sensor	Power cut or short circuit to low pressure sensor. Check EVD, cabling and sensor.
Alarm C1 suction gas sensor	Power cut or short circuit to suction gas sensor. Check EVD, cabling and sensor.
Alarm C1 high pressure sensor	Power cut or short circuit to high pressure sensor. Check EVD, cabling and sensor.
Alarm C1 low overheating	Compressor stoppage caused by low overheating.
Alarm C1 LOP	Compressor stoppage caused by low evaporation temperature.
Alarm C1 MOP	Compressor stoppage caused by high evaporation temperature.
Alarm C1 communication EVD	Fault on communication to EVD (expansion valve control).
Alarm C1 low suction gas temp	Low suction gas temperature.

 **Carel alarm** (code UC, MK, US)	**Explanation and corrective action**
76 Drive MainsPhaseLoss	Check that all three phases are connected to the frequency inverter.
81 Drive U_phaseLoss	
82 Drive V_phaseLoss	
83 Drive W_phaseLoss	
94 Drive offline	No communication with the frequency inverter. Check that the frequency inverter is energised with 3-phase 400V.
118 Compr 1, Low evaporation pressure	Circuit 1, low evaporation temp/pressure. Check leakage in cooling circuit.
121 Compr 1, High pressure switch	Circuit 1, high pressure switch tripped. Check air flow.
172 Compr 2, Motor protector	Circuit 2, motor protection alarm
174 Compr 2, High pressure switch	Circuit 2, high pressure switch tripped. Check air flow.
176 Compr 2, LowEvapPressure	Circuit 2, low evaporation temp/pressure. Check leakage in cooling circuit.
180 Compr 1, High pressure switch	Circuit 1, high pressure switch tripped. Check air flow.
189 Phase rotation order	Incorrect phase sequence gives incorrect rotation direction. Switch two of the incoming phases.

6.2 Troubleshooting via symptoms

Symptom	Possible cause	Corrective action
Low cooling power - too high temperature in the cooled object	The power supply has been interrupted.	Check the control/safety switches and fuses.
	No air flow or too low air flow across evaporator.	Check that nothing is inhibiting the air flow.
	The control equipment is incorrectly pre-set/defective	Adjust the settings or replace the equipment.
Compressor is not operating	The power supply has been interrupted.	Check the control/safety switches and fuses.
	Compressor has opened a safety circuit.	Check and reset, if needed.
	Defective compressor	Check/replace
Frost on the evaporator	The expansion valve is incorrectly preset/ defective	Check/replace
	Insufficient refrigerant volume	Search to detect leakage, seal the leak and charge with refrigerant
	Low supply air flow	Adjust the flow

Alarm reset

In the event of an alarm initiated by the frequency inverter or the safety circuit, the compressor stops and the sum alarm relay is energised. The alarm is displayed in the control unit menus “Operating information, compressors” and “Status: Alarm”.

In the event of an alarm, take corrective action to correct the fault, and then press the “Alarm reset” button on the control unit for 3 seconds. If the safety circuit alarm trips repeatedly, an authorised refrigeration service company must be called in.

Larmåterställning Driftinformation kompressor

7 Technical data

7.1 EcoCooler without cooling recovery (code ECO)

Cooling unit			EcoCooler for Envistar Flex and Flexomix (ECO)						
Size			100	150	190	240	300	360	400
Power variant			2V	2V	2V	2V	2V	2V	2V
Air flow	min.	m^3/s	0.22	0.33	0.42	0.49	0.57	0.74	0.8
	max.	m^3/s	1.01	1.63	2.09	2.44	2.87	3.71	4.00
Max cooling power*		kW	13.8	20.8	27.5	28.7	40.0	47.0	51.6
Power need compressor		kW	3.1	4.8	5.7	5.7	8.5	11.3	12.0
No. of compressors		units	1	1	1	1	1	1	1
Max. operating current		A	7.2	10.7	13.5	13.5	21.4	26.1	28.2
Rec. fuse protection, 3x400V+N 50Hz		A	10	16	20	20	25	32	32
Refrigerant R410a	circuit 1	kg	1.9	3.0	4.1	4.6	5.4	6.7	7.3

Cooling unit			EcoCooler for Envistar Flex and Flexomix (ECO)											
Size			480		600			740		850			980	
Power variant			1V	2V	1V	2V	3V	2V	3V	1V	2V	3V	1V	2V
Air flow	min.	m^3/s	0.93	0.93	1.16	1.16	1.16	1.42	1.42	1.61	1.61	1.61	1.95	1.95
	max.	m^3/s	4.66	4.66	5.78	5.78	5.78	7.08	7.08	8.06	8.06	8.06	9.77	9.77
Max cooling power*		kW	55.7	66.5	57.3	69.5	82.2	74.6	102.2	78.8	94.8	118.7	81.3	127.4
Power need compressor		kW	11.8	16.7	11.5	16.3	18.3	15.6	22.2	14.9	16.5	24.8	14.8	25.4
No. of compressors		units	1	1	1	1	2	1	2	1	2	2	1	2
Max operating current		A	28.2	36.7	28.2	36.7	45.9	36.7	56.3	36.7	45.9	60.5	36.7	63.6
Rec. fuse protection, 3x400V+N 50Hz		A	32	40	32	40	50	40	63	50	50	63	50	80
Refrigerant R410a	circuit 1	kg	8.5	8.5	8.4	8.4	6.9	11.2	10.3	12.8	10.3	10.3	16.2	11.6
	circuit 2	kg	-	–	–	–	3.5	–	4.6	–	6.5	6.5	–	8.2

** Applies with $t_{outdoor\ air}$ +26℃, RH 50% and $t_{outlet\ air}$ +22℃.*

7.2 EcoCooler with cooling recovery (code ECX)

Cooling unit			EcoCooler for Envistar Flex and Flexomix (ECX)						
Size			100	150	190	240	300	360	400
Power variant			1V	2V	2V	2V	2V	2V	2V
Air flow	min.	m^3/s	0.22	0.33	0.42	0.49	0.57	0.74	0.8
	max.	m^3/s	1.01	1.63	2.09	2.44	2.87	3.71	4.00
Max cooling power*		kW	18.1	26.7	36.1	37.2	47.9	60.4	67.3
Power need compressor		kW	3.2	4.9	6.1	6.0	8.5	11.6	11.3
No. of compressors		units	1	1	1	1	1	1	1
Max. operating current		A	7.2	10.7	13.5	13.5	21.4	26.1	28.2
Rec. fuse protection, 3×400V+N 50Hz		A	10	16	20	20	25	32	32
Refrigerant R410a	circuit 1	kg	1.9	3.0	4.1	4.6	5.4	6.7	7.3

Cooling unit			EcoCooler for Envistar Flex and Flexomix (ECX)										
Size			480		600			740		850			980	
Power variant			1V	2V	1V	2V	3V	2V	3V	1V	2V	3V	1V	2V
Air flow	min.	m^3/s	0.93	0.93	1.16	1.16	1.16	1.42	1.42	1.61	1.61	1.61	1.95	1.95
	max.	m^3/s	4.66	4.66	5.78	5.78	5.78	7.08	7.08	8.06	8.06	8.06	9.77	9.77
Max cooling power*		kW	52.2	85.9	65.7	90.4	106.2	97.1	131.8	102.5	123.3	153.7	107.1	164.5
Power need compressor		kW	12.2	17.2	11.9	16.1	19.0	16.2	23.1	15.4	17.3	25.7	15.2	25.4
No. of compressors		units	1	1	1	1	2	1	2	1	2	2	1	2
Max operating current		A	28.2	36.7	28.2	36.7	45.9	36.7	56.3	36.7	45.9	60.5	36.7	63.6
Rec. fuse protection, 3x400V+N 50Hz		A	32	40	32	40	50	40	63	50	50	63	50	80
Refrigerant R410a	circuit 1	kg	8.5	8.5	8.4	8.4	6.9	11.2	10.3	12.8	10.3	10.3	16.2	11.6
	circuit 2	kg	-	–	–	–	3.5	–	4.6	–	6.5	6.5	–	8.2

** Applies with $t_{outdoor\ air}$ +26℃, RH 50%, $t_{outlet\ air}$ +22℃ and standard rotor in hygroscopic design (HY).*

Change history

180401.01	New generation EcoCooler. Size 400 added. Change cooling medium to R410a.

Air handling with focus on LCC

You are welcome to contact us

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