



THERMOBILE

Thermobile Coolmobile CR MOBILE HEAT PUMP

***Cooling only : C8 & C17 Cooling
& heating : CR17 & CR34***



Features :

- Compressors High Efficiency
- Able to withstand ambient temperature, cooling from 20°C to 45°C (R410A)
- Optional EC fan for Cooling from 10°C to 45°C
- Analogic Pressure Transducer
- Phase sequence relay protected against reversed phases for 3 phase models
- Room temperature sensor thermostat
- Low noise level

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WARNING

EC declaration

We declare that the devices forming part of this manual complies with the directives 98/37 / EEC (Directive on the safety of machinery), 73/23 / EEC (Low Voltage Directive), 89/336 / EEC (Directive on Electromagnetic Compatibility and 97/23 / EEC (Directive on pressure equipment).

The devices forming part of this manual complies with the harmonized standards EN12100-1 / 2 (Safety of machinery), EN 60335-1 (Low Voltage), EN 60335-2 (Low Voltage), EN 61000-6-2 (Immunity) and EN 61000-6-3 (Emission).

Responsibility

This equipment is specifically used for what it has designed and produced. Any contractual liability of the manufacturer is excluded in case of damage to people, animals or property as a result of errors in installation, adjustment, maintenance and unsuitable jobs.

The devices must be fitted exclusively with original accessories. The manufacturer will not be held responsible for any damage resulting from the use of an inappropriate accessory to the device.

The appliances must be installed by qualified professionals, in compliance with the regulations and decrees, and following the instructions mentioned in this leaflet. References to norms, standards and guidelines cited in this document is for informational purposes only and speak only as of the date of issue thereof.

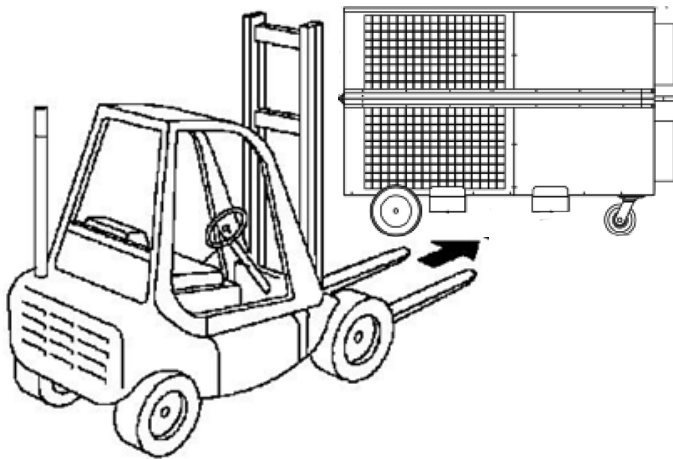
The manufacturer is responsible for the compliance of the apparatus with the rules, directives and construction standards at the time of marketing. Knowledge and compliance with legal provisions and standards inherent in the design, implementation, installation, commissioning and maintenance are the exclusive responsibility of the consulting firm, the installer and the 'user.

Reception - Storage

The device is delivered on wooden pallets, protected by cardboard and / or plastic wrapping. It is essential to check the status of the delivered material (even if the packaging is intact) and its compliance with the order.

In case of damage or missing parts, you should put the comments on the carrier's receipt of the most accurate way possible, "subject to unpacking" has no legal value, confirm these reservations by registered letter within 48 hours to the carrier. Please remember that it is the responsibility of the buyer to check the goods delivered, no appeal will be possible if this procedure is not followed.

Store the devices in a clean, dry, protected from shock, vibration, temperature variations and a less than 90% humidity atmosphere.



When using a forklift, it must be ensured that the fork fully support the device, they must exceed at the opposite side of their their entrance. handle with care ! A drop off can bring about permanent damage.



This technical manual must be kept in good condition inside the unit.



Features, illustrations and descriptions contained herein are, to our knowledge, accurate at the time of approval for printing. We reserve the right to change, to no longer offer certain features or to stop production of a model without notice, and is not a commitment on our part.

Security rules



- Do not cover, stop up or obstruct the openings of the unit, this could cause malfunctions!
- Do not restart the compressor repeatedly within a short period of time may result in overheating and damage to the compressor.
- Do not operate the equipment outside its recommended temperature range. Use of the product outside the temperature range specified in the technical characteristics, can cause frequent restarts of the cooling system which may damage it.
- Never make any changes to the settings that were performed by a qualified professional.
- Never touch the hot parts and / or moving parts.
- Do not place or hang anything on the unit.
- All work on the device is prohibited before having disconnected the power supply.
- Do not change the original settings, security or control, to the extent that it could create dangerous situations.
- In the case of a long period of non-operation, disconnect the power supply of the device. When putting into operation, it is advisable to call in qualified personnel. Generally all repair work or maintenance should be performed only by authorized and trained personnel.

Caution

Electrical components, running mechanisms can cause injury. To protect themselves from these risks during installation or maintenance, power supply should be disconnected. Everyone involved in the installation or maintenance of this equipment must respect the health and safety rules, and comply with the laws of the country of use.



Before performing service or maintenance operations on system, turn off main power switch of the unit. Electrical shock could cause personal injury.

This unit shall be installed in accordance with national wiring regulations.

If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.

The means for disconnection from the supply having a contact separation of at least 3 mm in all poles.

Recycling



This device uses R-410A refrigerant, before final disposal or performing maintenance operations, carefully collect the fluid of that unit. Never reject in the environment, only use a compatible recovery equipment. Please observe the national regulations and procedures to protect the environment

1- PRESENTATION AND OPERATION

This device is a mobile air conditioner for cooling demountable structures such as tents with a cooling capacity from 7 kW to 34 kW, depending of the model.

When the relative humidity of the air inlet is high, the air can be cooled below its dew point and humidity is then condensed to water. This process requires a certain amount of latent cooling but allows a dehumidification process, which is an important factor in comfort for the user.

The operating range is between 20 and 45 ° C and is controlled by the HP / LP pressure. The drop in air temperature depends on the conditions of entry (humidity).

The device are made with two compartment, isolated from each other. Its operation is based on a cooling circuit broken down by two groups motorcycle fans.

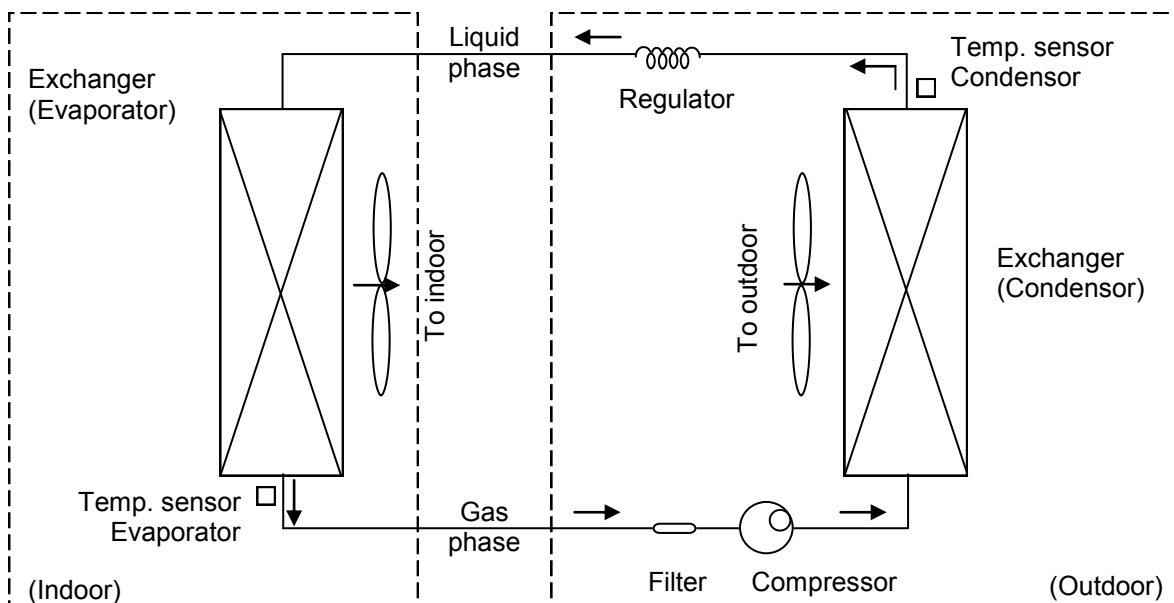
The side of the device on which connect the ducts contain the evaporator. The fan sucks the warm indoor air, cool this air through the exchanger and return it cold in the tent.

The opposite side contain the condenser. The fan draws in ambient outside air, it cross through the exchanger and returns it outward.

The cooling system is filled with refrigerant R410a. This circuit is completely waterproof and allows the unit to operate in areas with a maximum ambient temperature of +45 ° C.

At high ambient temperatures (above 45 ° C), the cooling of the condenser air flow is too low and a high pressure stops the HP switch. The pressure switches HP / BP will reset automatically after a few minutes.

At an ambient temperature below 20 ° C, moisture in the airflow can form ice on the evaporator. To avoid this, the pressure switch cuts the low pressure in the system. If the ambient temperature is too low, the BP activation causes frequent starting and stopping of the compressor. This process can damage the compressor and should be avoided by always using the product within the specified temperature range. See "Specifications".



Compressor: Used to circulate the fluid in the cooling circuit

Filter: Absorbs moisture and impurities in the cooling circuit

Condenser: Sends the heat generated in the tent or room outwards

Regulator: Sends the amount of liquid that is right in the evaporator

Evaporator: Absorbs heat of the tent or room by cooling the air circulating

High pressure switch / BP: To ensure that the compressor does not work at a temperature too low or too high

2 GENERAL RULES FOR INSTALLATION

The installation configuration is an important factor in improving the performance and reliability of the air conditioner. There are different ways to place the devices, here we give you some important recommendations.

2-1 Ducts

CAUTION: The ducts used are the same diameter as the connections of units. The junction between the different lengths must be be watertight. The total length of the circuit should not exceed 6 meters per circuit (return and supply). For longer length, please contact us.

Always use the least possible sheath. In general, think that every air duct 3m isolated changes the temperature inside the pipe by 5 ° C.

The sheaths result in a loss that's why we must always put straight, Fig.1. In case of deviation, avoiding significant bends (bends > 45 °), Fig.2, prefer them large curves, fig.3.

Fig.1

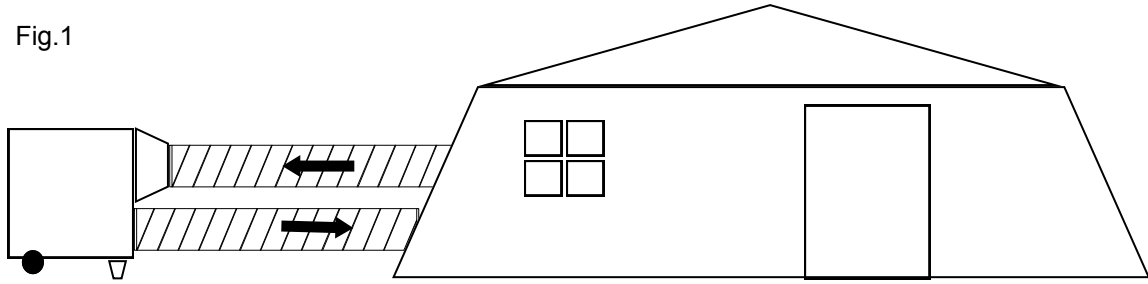


Fig.2

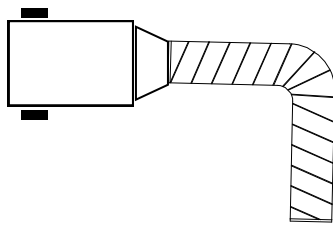
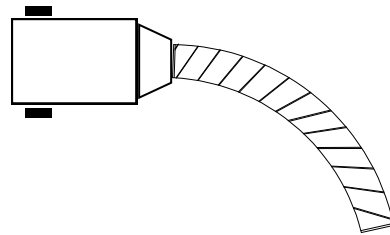


Fig.3



Place the air distribution duct cooled as close to the ceiling, the cold air will descend slowly to the ground and will be returned to the air conditioner through the air duct placed at the lowest, Fig.1.

2-2 Effect of the sun

The heating, due to solar effect reduces the efficiency of the air conditioner, heat builds up in the ducts and in the tents it's greenhouse effect. We recommend installing a sunshade to cover the air conditioning, ducts and the tent. It also becomes more effective if using panels/insulated coatings in the tent.

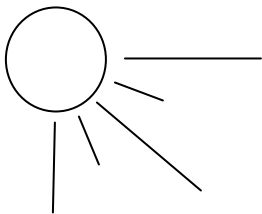
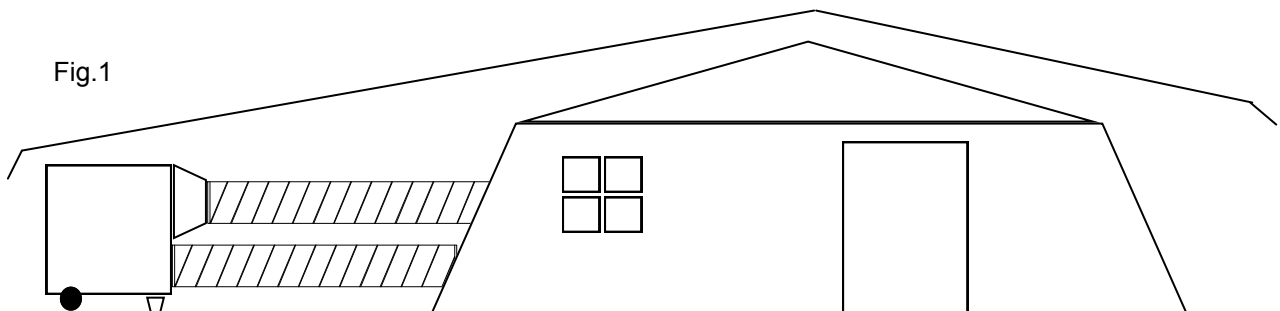


Fig.1



2-3 Airflow

To cool the air effectively, the air sent to the air conditioner must be the lowest possible. If the ambient temperature is lower than outside temperature, it is more efficient to re-circulate the air from the tent. To do this, connect the insulated ducts for blowing and sucking of air, between the tent and the air conditioner, fig.4.

If the temperature inside the tent is higher than the outside temperature, it may be advantageous to use the device without air intake duct, fig.5. Attention in this case you risk introducing dust or increase pressure in the tent.

Fig.4

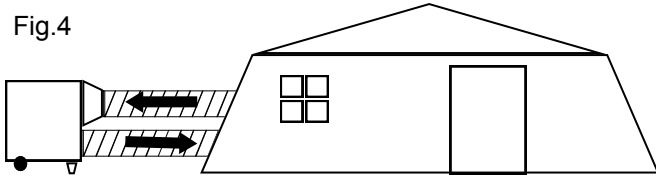
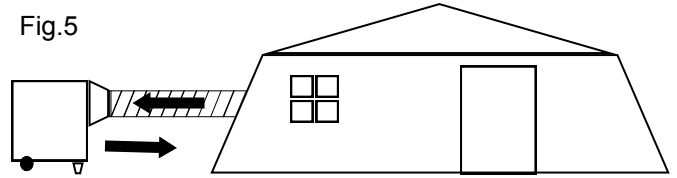


Fig.5



2-4 Various

- Keep doors and openings of the tent/room closed when using the air conditioner.
- Avoid all heat generating sources in the air conditioned room.
- Do not cover, fig.6, or obstruct the rear of the air conditioner, fig.7. Keep a free and clear area for a good air circulation allowing the correct operation of the conditioner, fig.8 & 9.
- If the air does not circulate well, the unit switches to safety. Poor repeated use causes irreversible damage.

Fig.6

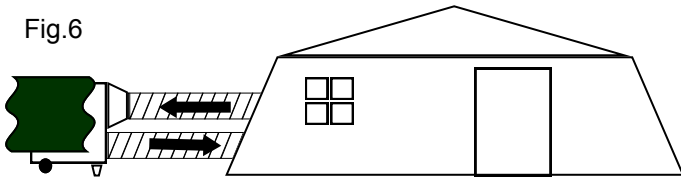


Fig.7

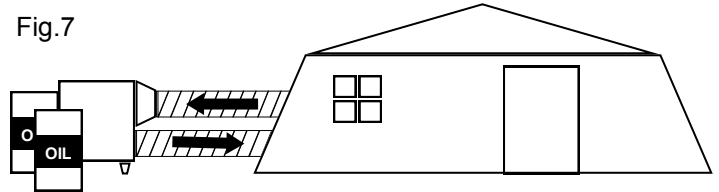


Fig.8

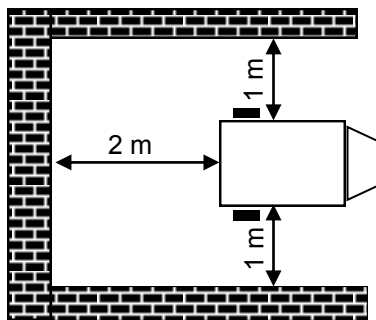
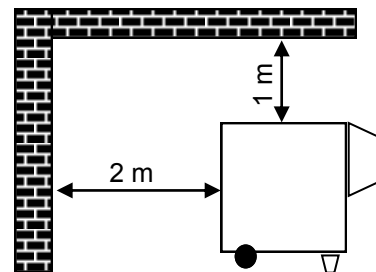


Fig.9



- Always ensure that the exhaust ducts, fig.10, or air intake, fig.11, is not blocked or obstructed even partially. If the air circulation is prevented the unit switches to safety. Poor repeated use causes irreversible damage.

Fig.10

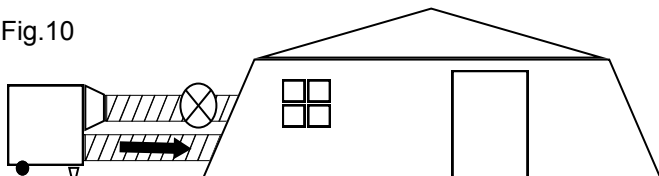
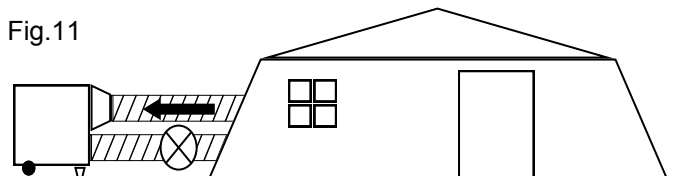


Fig.11



- Accumulation of water produced by condensation, fig.12, disrupt the use of the air conditioner, so we recommend that you raise the unit on a pallet for example, or to evacuate the condensate to a remote area of the air conditioner.

Fig.12



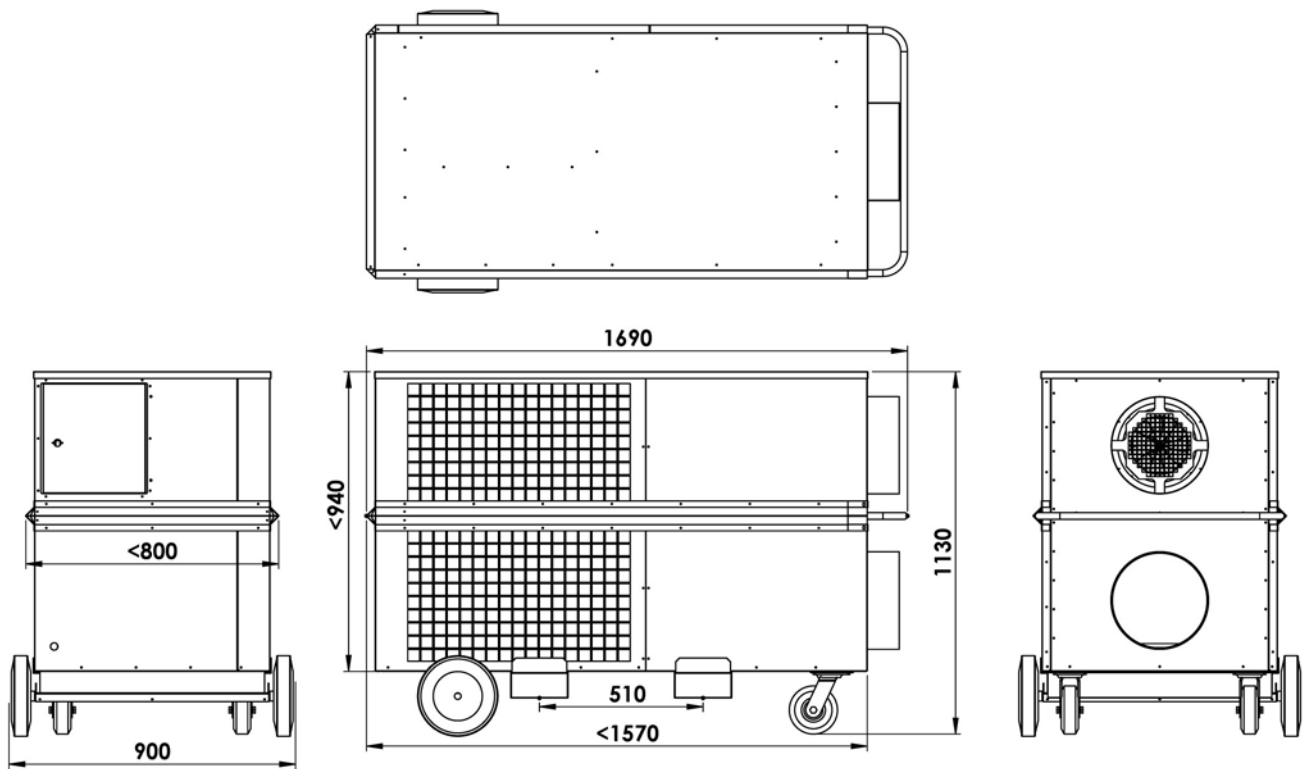
CARACTÉRISTIQUES TECHNIQUES / TECHNICAL SPECIFICATIONS

Nominal ton			2,2	4,8	4,8	9,5
Model			C8	C17	CR17	CR34
Capacity Cooling mode*	Cooling Capacity	Btu/h	28 000	58 000	58 000	111 000
		W	8 200	17 000	17 000	32 800
Capacity Heating mode*	Heating Capacity	Btu/h	-	-	58 000	111 000
		W	-	-	20 000	32 800
Electrical data	Power supply	V-PH-Hz	230-1-50	380-3-50	380-3-50	380-3-50
	Rated power Input	W	3 300	5 500	5 500	13 000
Performance	Air Circulation (High speed)	m3/h	1 500	4 500	4 500	7000
	Indoor external static pressure	Pa	100	100	100	100
Indoor Coil	Number of rows		3	3	3	3
	Fin spacing	mm	2,3	2,3	2,3	2
		inch	3/32	3/32	3/32	3/32
	Special		Grooved Tube	Grooved Tube	Grooved Tube	Grooved Tube
			Louvered fins	Louvered fins	Louvered fins	Louvered fins
			hydrophilic aluminum fins	hydrophilic aluminum fins	hydrophilic aluminum fins	hydrophilic aluminum fins
	Tube diameter	mm	Φ9.54	Φ9.54	Φ9.54	Φ9.54
		inch	3/8	3/8	3/8	3/8
Indoor fan	Type		Centrifugal Blower	Centrifugal Blower	Centrifugal Blower	Centrifugal Blower
	No. used		1	1	1	2
	Diameter	mm	Φ280mm	Φ355mm	Φ355mm	Φ355mm
		inch	11	14	14	14
	Drive type		DIRECT	DIRECT	DIRECT	DIRECT
	No. motors		1	1	1	2
	Motor output	W	240	315	315	315
	Motor rpm	r/min	2600	1780	1780	1 780
Compressor	Type		Rotary	Scroll	Scroll	Scroll
	Quantity		1	1	1	1
	Model		PA331X3CS	C-SBP205H38	C-SBP205H38	C-SCP400H38
			-	-	-	-
	Brand		GMCC	PANASONIC	PANASONIC	PANASONIC
	Capacity	Btu/hr	28 000	58 000	58 000	111 000
	Input	W	3 300	5 500	5 500	11 000
	Rated current(RLA)	A	13	10,3	10,3	20
Outdoor Coil	Refrigerant oil charge	TYPE - mL	ESTER OIL VG74 · 1100	FV 68S - 1600	FV 68S - 1600	'
	Number of rows		2	2	2	2
	Fin spacing	mm	1,8	1,8	1,8	2
		inch	0,0709	0,0709	0,0709	0,0709
	Special		Grooved Tube	Grooved Tube	Grooved Tube	Grooved Tube
			Louvered fins	Louvered fins	Louvered fins	Louvered fins
			hydrophilic aluminum fins	hydrophilic aluminum fins	hydrophilic aluminum fins	hydrophilic aluminum fins
	Tube diameter	mm	Φ9.54	Φ9.54	Φ9.54	
		inch	3/8	3/8	3/8	3/8
Outdoor Fan	Type		Axial	Axial	Axial	Axial
	No. used		1	1	1	1
	Diameter	mm	Φ450	Φ630	Φ630	Φ800
		inch	17,8	24,8	24,8	32
	Drive type		Direct	Direct	Direct	Direct
	No. motors		1	1	1	1
	Motor model		ATE804S	ATE808S	ATE808S	ATE810AP
	Motor output	W	420	520	520	1 250
Refrigerant	Motor rpm	r/min	1350	900	900	700
	Type		R410A	R410A	R410A	R410A
	Refrigerant volume	kg	2,1	3,6	3,6	7,2
	Refrigerant Control		EEVX	EEVX	EEVX	EEVX
Dimensions(W×H×D)		mm	900x1150x1700	1200x1400x1800	1200x1400x1800	1200x2050x2250
		inch	35x45x67	47x55x71	47x55x71	47x81x88
Net Weight		kg	200	305	305	600
		lbs	386	672	672	1 322

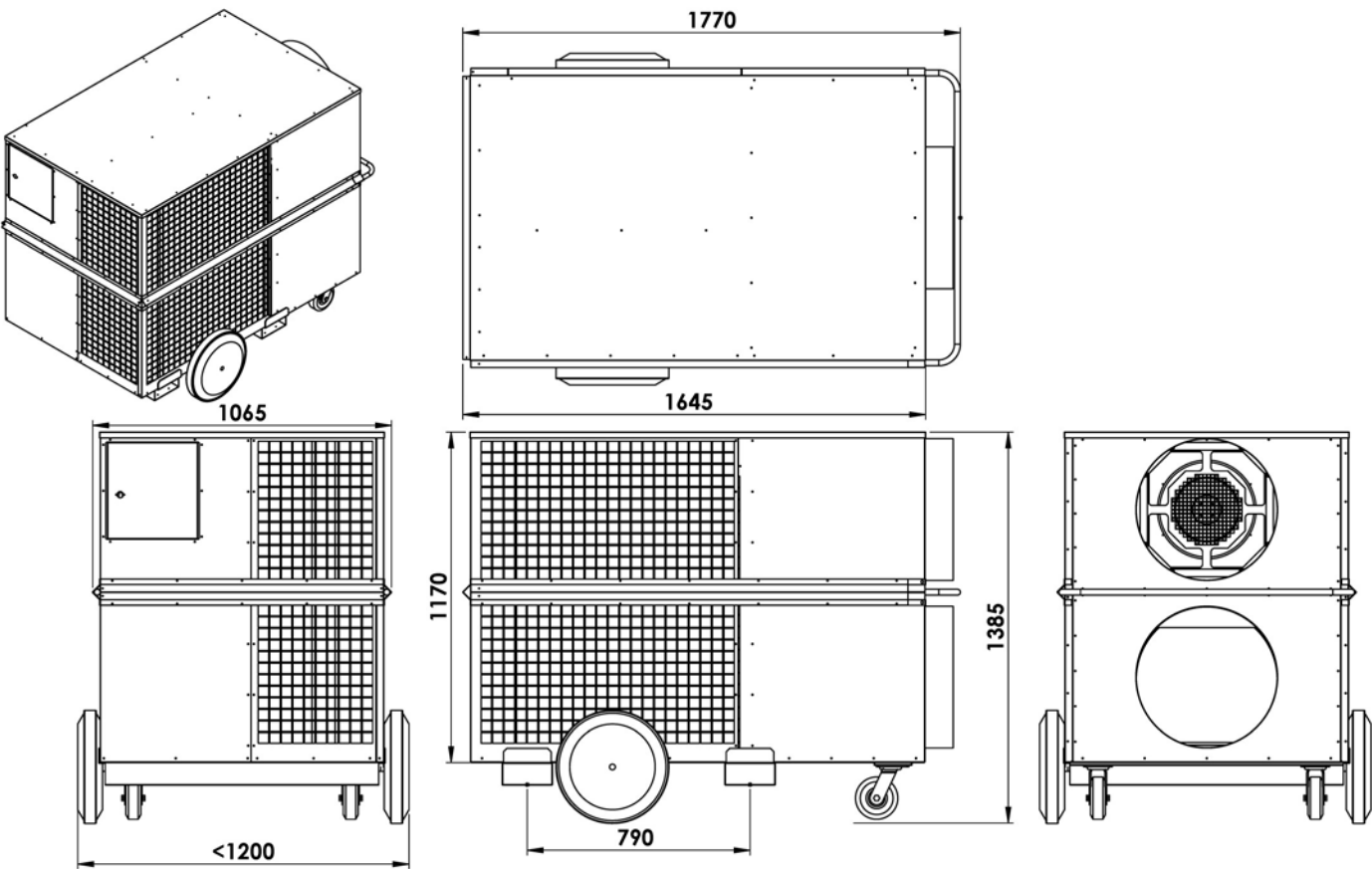
* The cooling capacity can change considerably depending on the humidity and air temperature.

** Optional EC Axial fan for cooling from 10°C instead of 20°C ambient temperature.

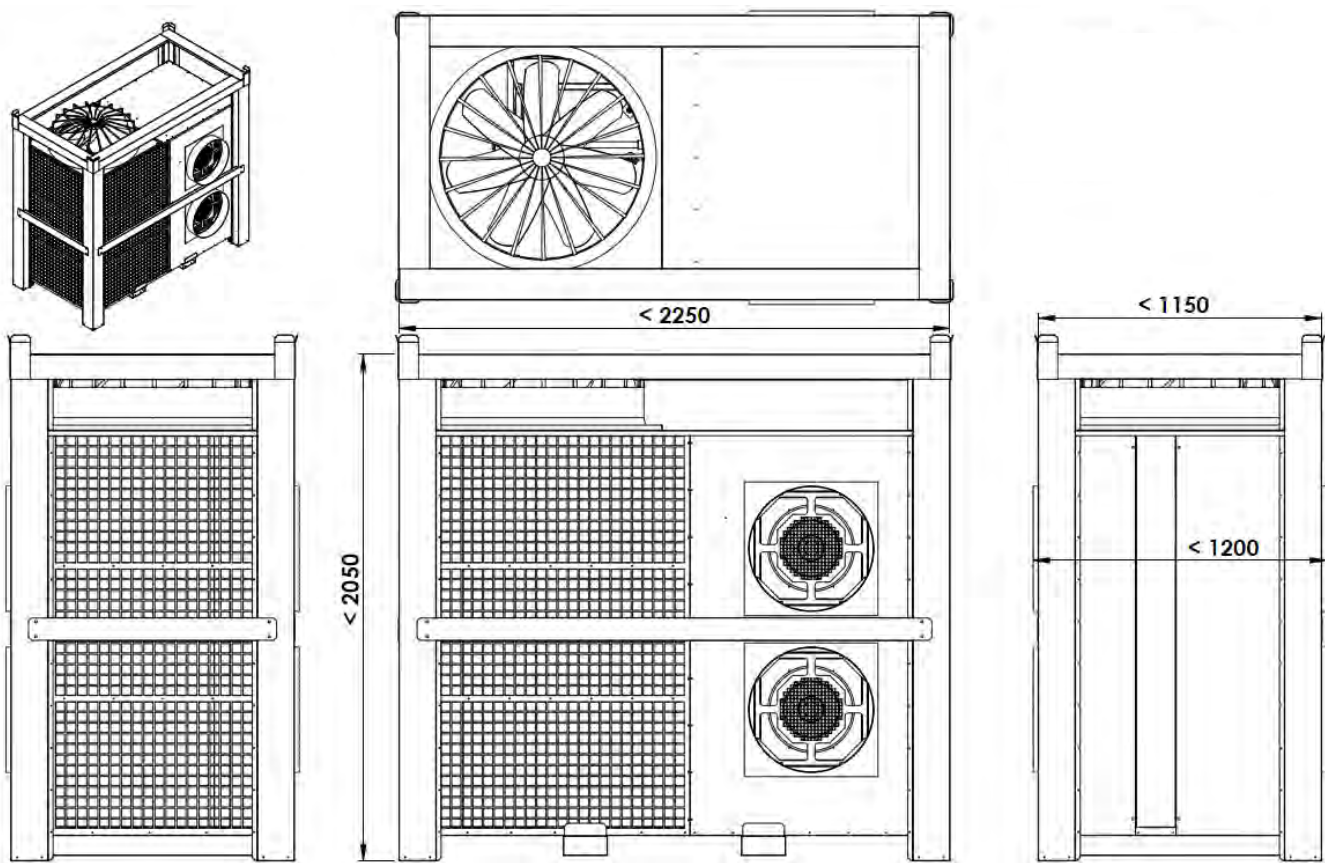
Dimensions C8



Dimensions C17 & CR17

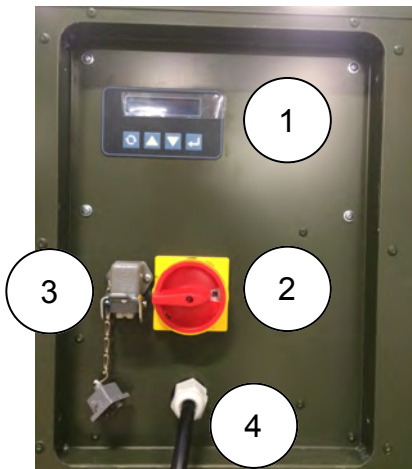


Dimensions CR34



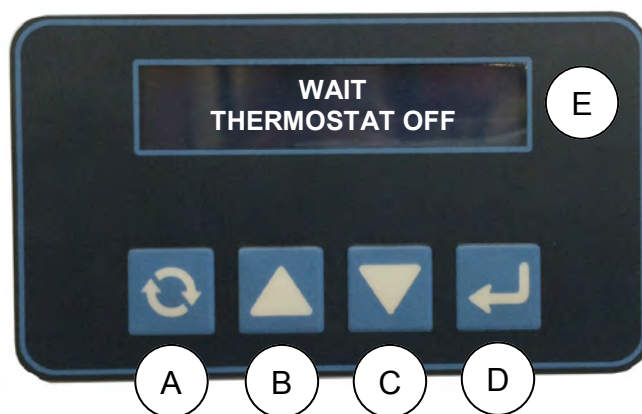
CONTROL BOARD

The devices are equipped with a control panel with touch screen (1) of one general switch (2) and a socket for connecting the room thermostat (3). The main power supply is connected to the cable gland (4).



Control panel functions:

- View the status of the room thermostat, compressor and safety.
- Security Management High pressure
- Security Management Low pressure
- Security Management sub-cooling
- Security Management overheating
- Safety temperature management
- Controlling the cooling unit from room thermostat
- Viewing cooling unit values



- A- Reset default
- B- Page scrolling up
- C- Page scrolling down
- D- Valid
- E- Idle display shows the status of the thermostat and the A/C unit.

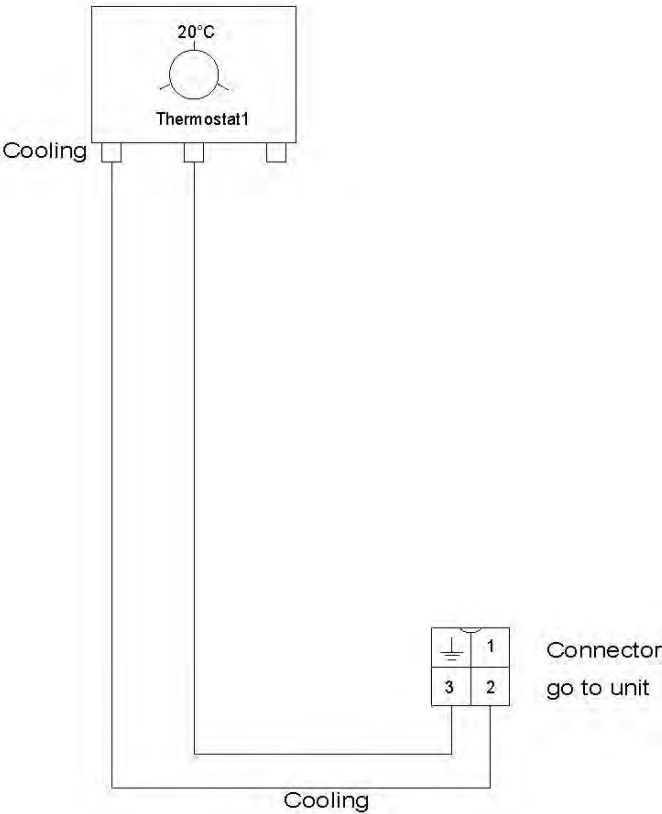
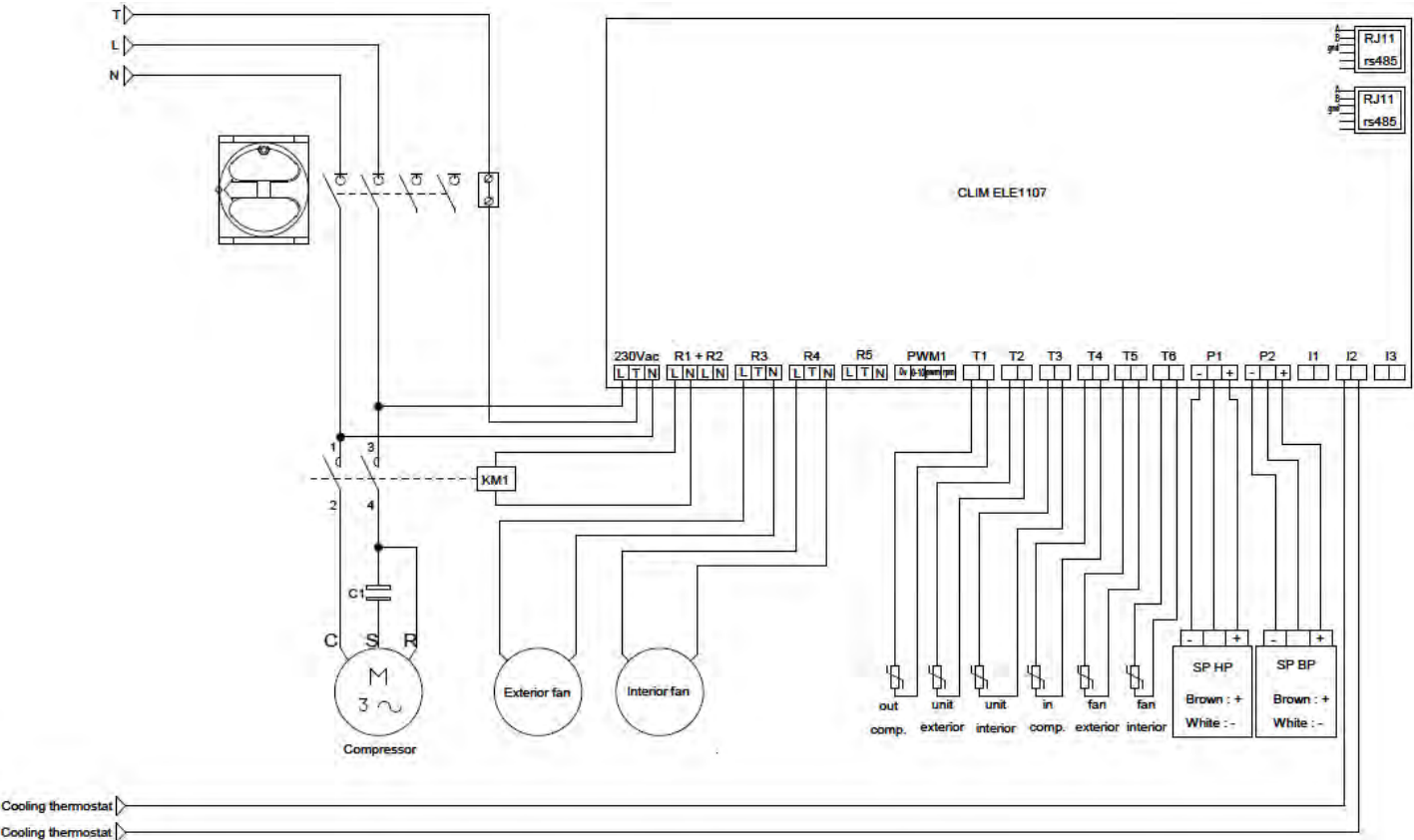
MENU	DESCRIPTION
COMPRESSOR ON HEATING	Everything is running fine, shown after 20s of inactivity on the touchpad
COMPRESSOR ON COOLING	Everything is running fine, shown after 20s of inactivity on the touchpad
COMPRESSOR ON DEFROST	Unit is in defrost mode, shown after 20s of inactivity on the touchpad Unit goes in defrost when heating and THP-TBP>55°C and Toudoor <9°C for 60 sec
HP 27,5/46,5/50/3,5	Shows High Pressure, Temperature of condensation (relative to pressure of refrigerant), temperature of liquid on the outlet of the condenser, subcooling value
BP 7,2/-1/3/4	Shows Low Pressure, Temperature of evaporation (relative to pressure of refrigerant), temperature of gas on the outlet of the evaporator, superheating value
P.HP 27,5 bar	Shows High Pressure value
P.BP 7,2 bar	Shows Low Pressure value
P.HP 27,5 bar	Show High Pressure value
T.out Comp 50°C	Show discharge temperature of compressor
T.out Cond 50°C	Show value of the liquid refrigerant right on the outlet of the condenser
T.out Evap -3°C	Show value of the gas refrigerant right on the outlet of the evaporator
SUBCOOLING 4°C	Show the value of the subcooling, that is equal to Temperature of condensation minus liquid temperature on the outlet of the condenser, ensure that expansion valve has 100% liquid refrigerant
SUPERHEATING 3,5°C	Show the value of the superheating, that is equal to Temperature of evaporation minus gas temperature on the outlet of the evaporator, ensures the suction of the compressor is 100% gaseous
INPUT AIR 25°C	Shows temperature of air on the inlet of the indoor coil (return air from room)
OUTDOOR AIR 30°C	Show temperature of outdoor air, sensor is placed on the grill of the axial fan of the outside heat exchanger.
COOLING 15H	Shows how long the unit has been running on cooling mode, if the unit is capable of doing it
HEATING 10H	Shows how long the unit has been running on heating mode, if the unit is capable of doing it
POS. VALVE 54%	Shows current position of the EEV (Electronic expansion valve)
SPEED FAN 100%	Not in use right now
EER 4,85	Shows current EER in COOLING mode
P 17,0KW	Shows output power based on extrapolation (for information use only)
COP 3,85	Shows current COP in HEATING mode
P 17,0KW	Shows output power based on extrapolation (for information use only)

TROUBLESHOOTING

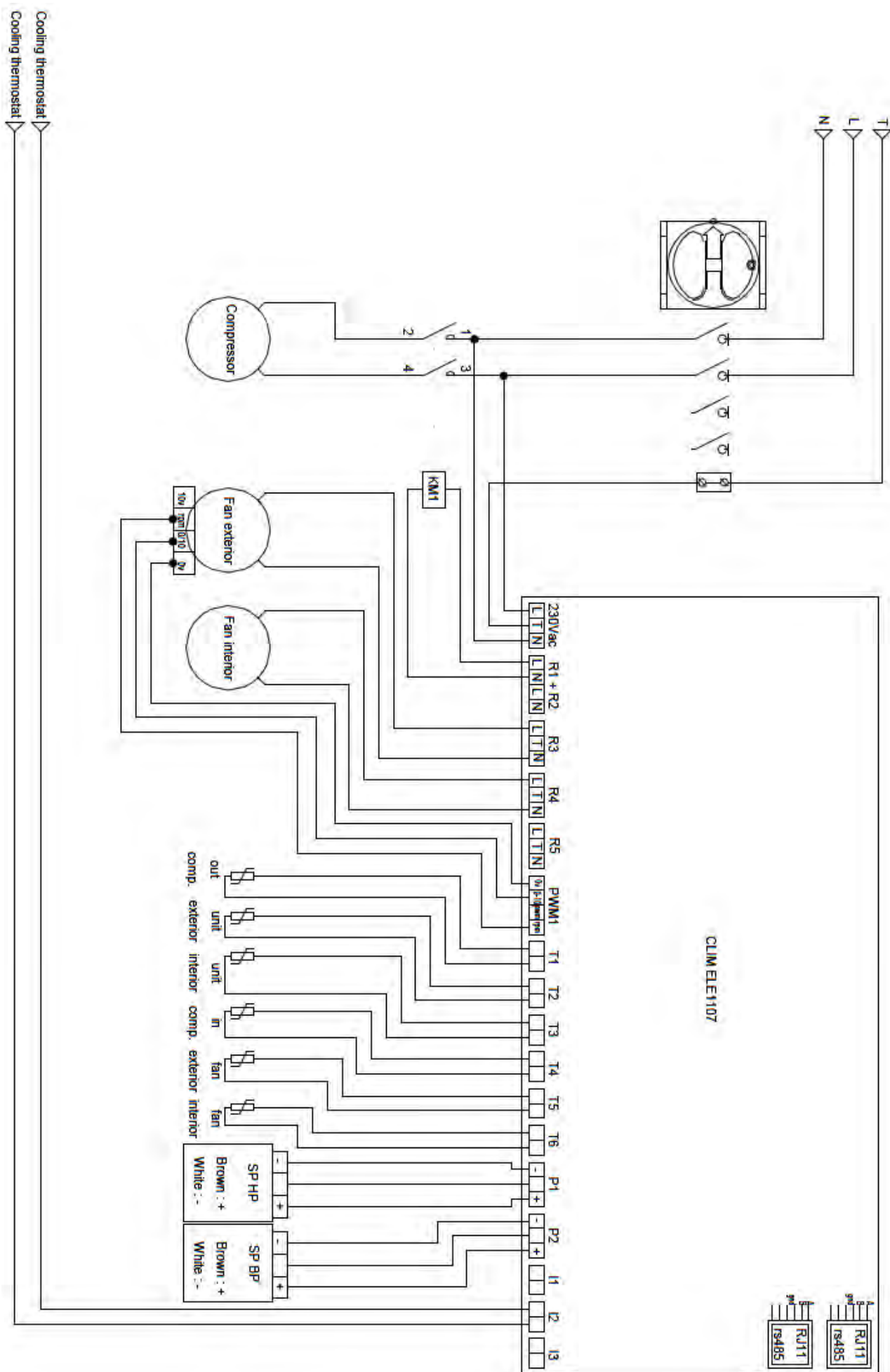
#1	WAIT TEMPO START 360 SEC	Unit is waiting to finish its safety time after a cycle It is caused by restarting the unit too early, thermostat trigger, and after a unit reset
#2	WAIT REGULATION OFF	Thermostat is OFF or not in demand in either cooling or heating mode
#3	OUTDOOR TOO LOW TEMPERATURE	Outdoor temperature is too low for the compressor to run in cooling mode : Min temperature to start 20°C, cut at 18°C (start 10°C for EC axial version) Outdoor temperature is too low for the compressor to run in heating mode : Min tempe-
#4	PHASE REVERSAL	For three phases compressor, phases are not well connected Reconnect the phase in the right order
#5	SENSOR PHP / ERROR	Reconnect the sensor, check the high pressure sensor
#6	SENSOR PBP / ERROR	Reconnect the sensor, check the low pressure sensor
#7	SENSOR T1 / ERROR	Reconnect the compressor output temperature sensor, check the sensor Check wire, replace the wire or check the sensor, replace the sensor
#8	SENSOR T2 / ERROR	Reconnect the temperature sensor right on the liquid side of the outdoor heat exchanger , check the sensor Check wire, replace the wire or check the sensor, replace the sensor
#9	SENSOR T3 / ERROR	Reconnect the temperature sensor right on the liquid side of the indoor heat exchanger , check the sensor Check wire, replace the wire or check the sensor, replace the sensor
#10	SENSOR T4 / ERROR	Reconnect the temperature sensor right on the gas side of the indoor heat exchanger, return to compressor , check the sensor Check wire, replace the wire or check the sensor, replace the sensor
#11	SENSOR T5 / ERROR	Reconnect the outdoor temperature sensor, check the sensor Check wire, replace the wire or check the sensor, replace the sensor
#12	DEFAULT HP PRESS RESET	Temperature High pressure too high > 36 bar Need to press reset (round arrow)
#13	DEFAULT BP PRESS RESET	Temperature Low Pressure too low < 3,8 bar Need to press reset (round arrow)
#14	DEFAULT THP PRESS RESET	Temperature of discharge is too high >100°C Need to press reset (round arrow)

SCHEMA ELECTRIQUE / ELECTRICAL WIRING

C8 (Cooling only) :

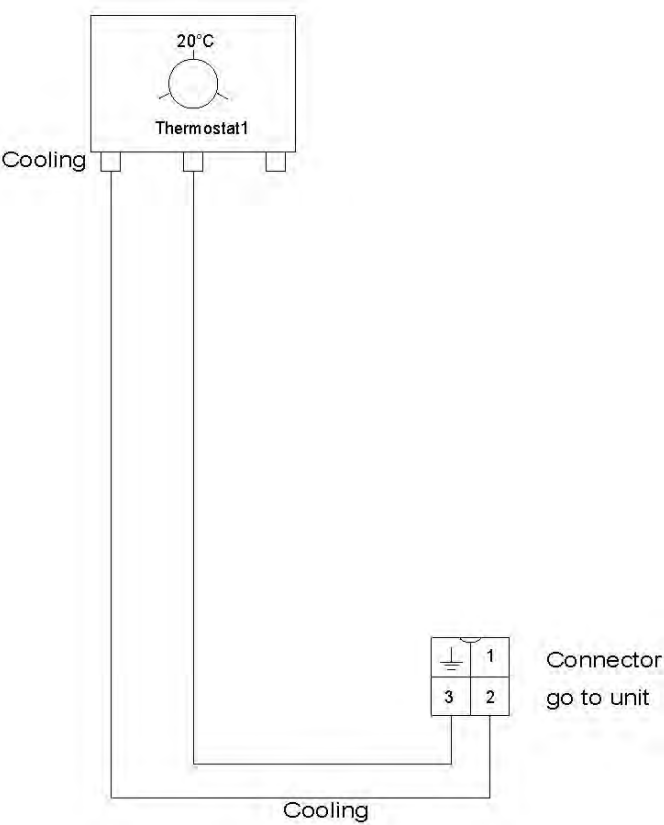
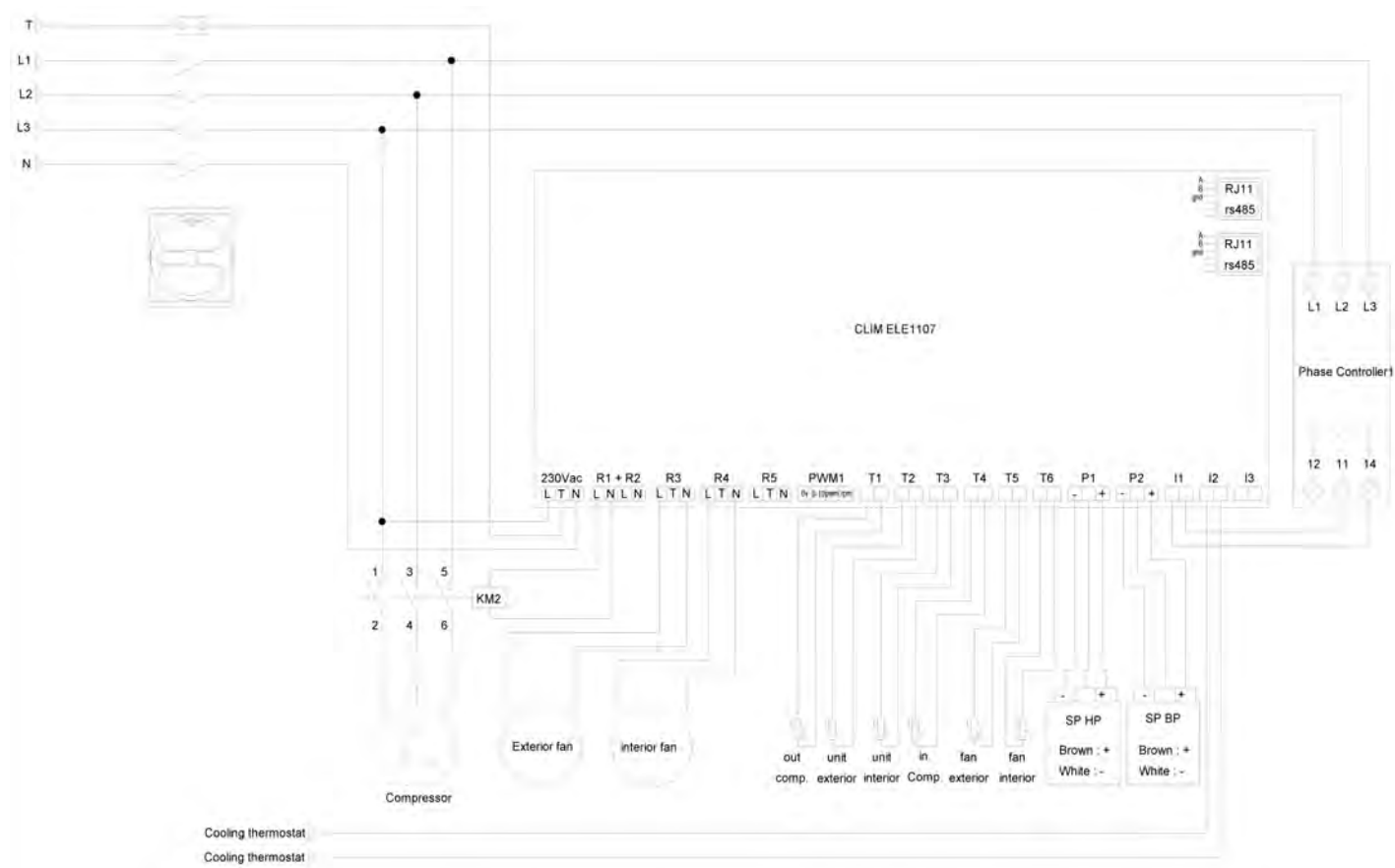


C8 (Cooling only) EC AXIAL FAN VERSION:



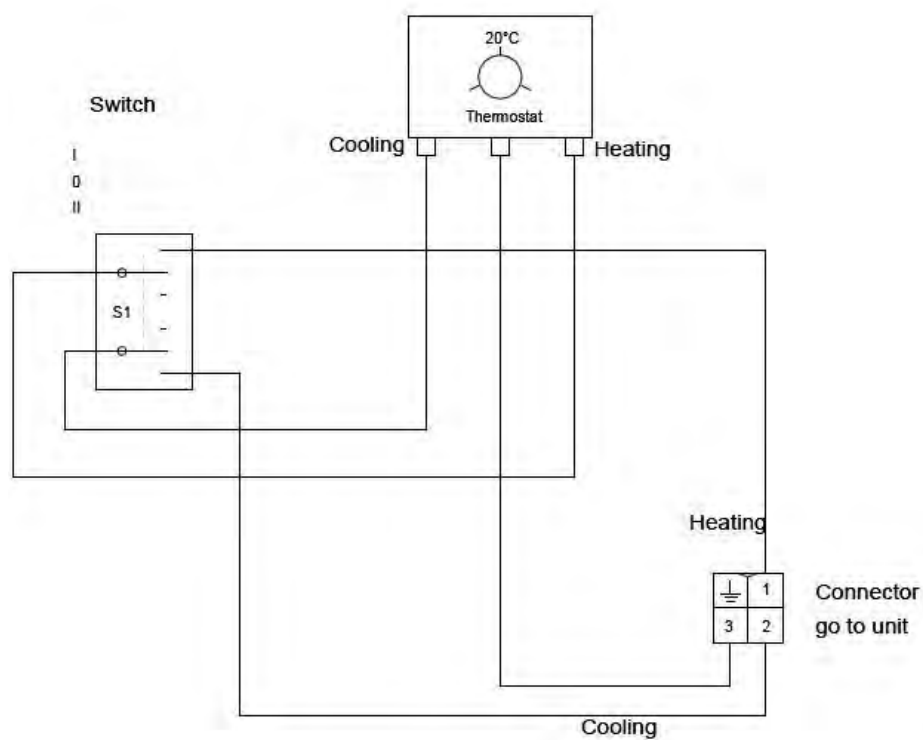
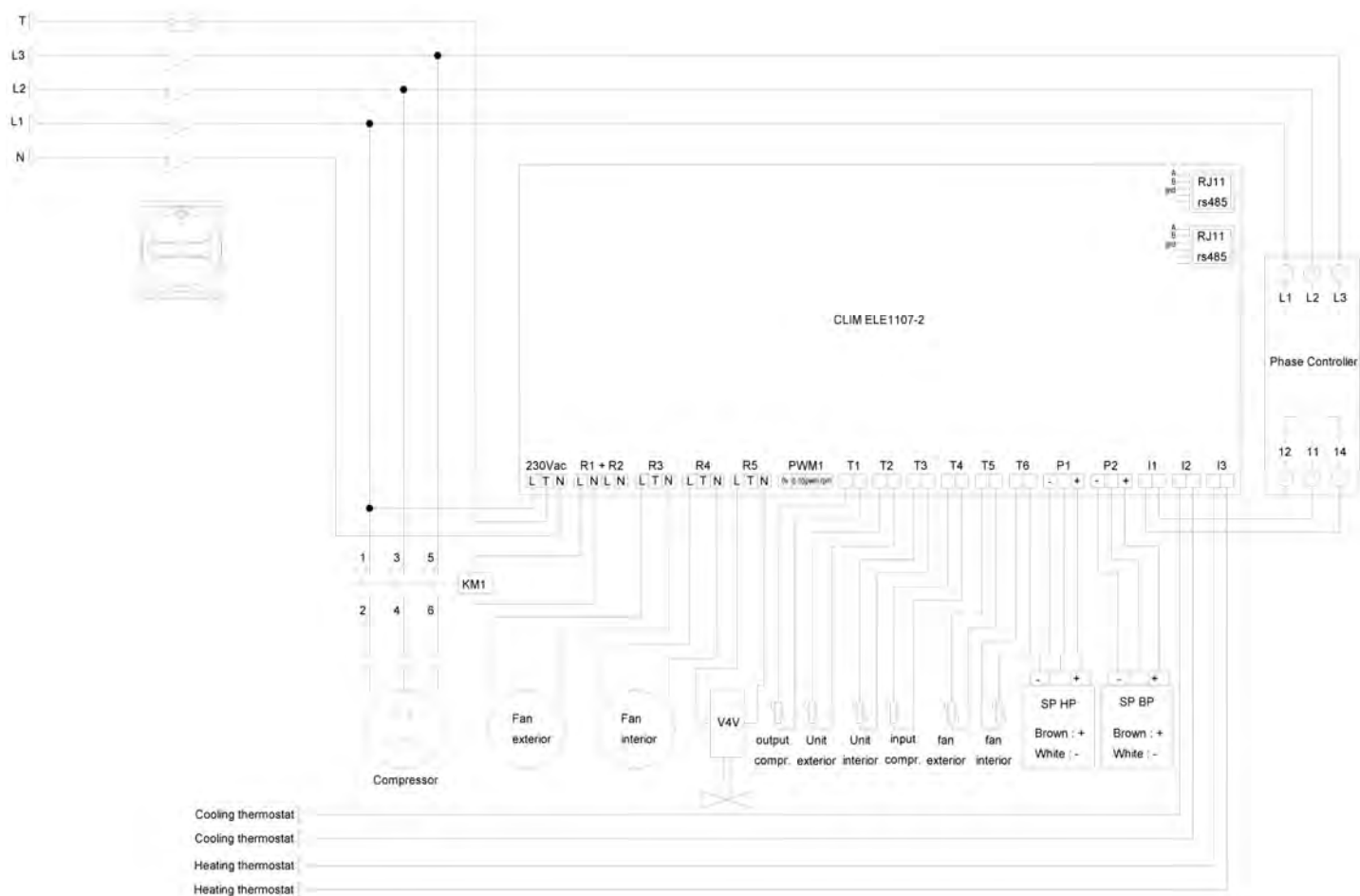
SCHEMA ELECTRIQUE / ELECTRICAL WIRING

C17 (Cooling only) :



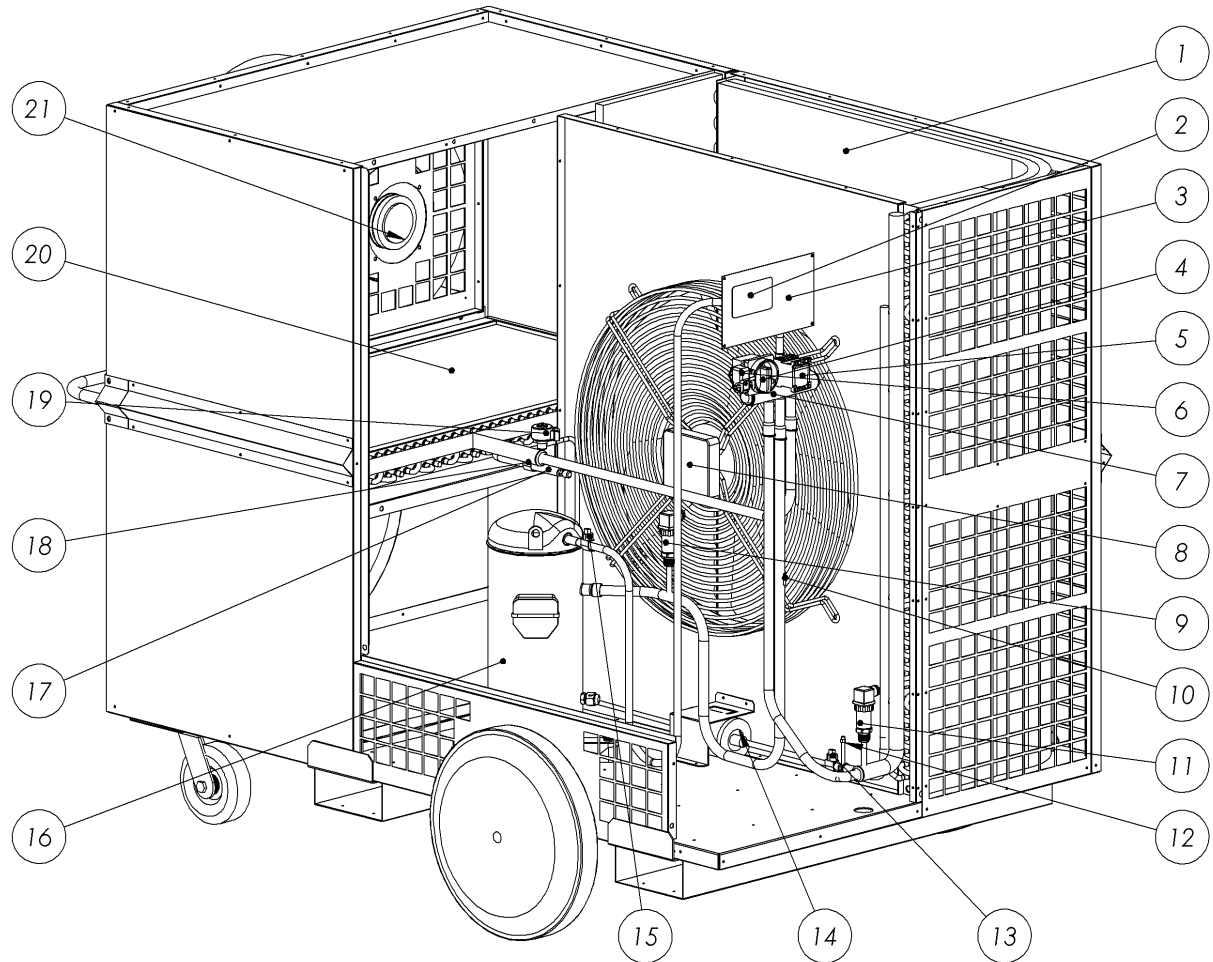
SCHEMA ELECTRIQUE / ELECTRICAL WIRING

CR17 (Cooling and heating) :



CR17 (Cooling and heating) :

COMPONENTS:



LIST OF COMPONENTS	
	Item
1	OUTDOOR HEAT EXCHANGER
2	TOUCHPAD PCB
3	PCB
4	SAFETY SWITCH
5	CONTACTOR
6	THERMOSTAT IN
7	FOUR WAY VALVE
8	OUTDOOR AXIAL FAN
9	LOW PRESSURE TRANSDUCER
10	SUCTION SIDE TEMPERATURE SENSOR
11	HIGH PRESSURE TRANSDUCER
12	SCHRADRE VALVE HIGH SIDE
13	OUTDOOR HEAT EXCHANGER TEMPERATURE SENSOR
14	FILTER
15	OUT COMPRESSOR TEMPERATURE SENSOR
16	COMPRESSOR
17	SCHRADRE VALVE LOW SIDE
18	INDOOR HEAT EXCHANGER TEMPERATURE SENSOR
19	ELECTRONIC EXPANSION VALVE
20	INDOOR HEAT EXCHANGER
21	INDOOR CENTRIFUGAL FAN