

CRH-XHE2 49.4-110.4

"Roof top" water cooled heat pump



Dear Customer,

We congratulate you on choosing this product

For many years Clivet has been offering systems that provide maximum comfort, together with high reliability, efficiency, quality and safety.

The aim of the company is to offer advanced systems, that assure the best comfort, reduce energy consumption and the installation and maintenance cost for the life cycle of the system.

The purpose of this manual is to provide you with information that is useful from reception of the equipment, through installation, operational usage and finally disposal so that this advanced system offers the best solution.

Yours faithfully.

CLIVET Spa

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1 General description

1.1 Manual

The manual provides correct unit installation, use and maintenance.

Pay particular attention to:



Warning, identifies particularly important operations or information.



Prohibited operations that must not be carried out, that compromise the operating of the unit or may cause damage to persons or things.

- It is advisable to read it carefully so you will save time during operations.
- Follow the written indications so you will not cause damages to things and injuries people.

1.2 Preliminaries

Only qualified personnel can operate on the unit, as required by the regulation in force.

1.3 Risk situations



The unit has been designed and created to prevent injuries to people.

During designing it is not possible to plane and operate on all risk situation.

Read carefully "Residual risk" section where all situation which may cause damages to things and injuries to people are reported.

Installation, starting, maintenance and repair required specific knowledge; if they are carried out by inexperienced personnel, they may cause damages to things and injuries people.

1.4 Intended use

Use the unit only:

- civil air-conditioning
- keep to the limits foreseen in the technical schedule and in this manual

The manufacturer accepts no responsibility if the equipment is used for any purpose other than the intended use.

1.5 Installation

Outdoor installation



The positioning, hydraulic system, refrigerating, electrics and the ducting of the air must be determined by the system designer in accordance with local regulations in force.

Follow local safety regulations.

Verify that the electrical line characteristics are in compliance with data quotes on the unit serial number label.

1.6 Maintenance

Plan periodic inspection and maintenance in order to avoid or reduce repairing costs.



Turn the unit off before any operation.

1.7 Modification



All unit modifications will end the warranty coverage and the manufacturer responsibility.

1.8 Breakdown/Malfuction

Disable the unit immediately in case of breakdown or malfunction.

Contact a certified service agent.

Use original spares parts only.

Using the unit in case of breakdown or malfunction:

- voids the warranty
- it may compromise the safety of the unit
- may increase time and repair costs

1.9 User training



The installer has to train the user on:

- Start-up/shutdown
- Set points change
- Standby mode
- Maintenance
- What to do / what not to do in case of breakdown

1.10 Data update

Continual product improvements may imply manual data changes.

Visit manufacturer web site for updated data.

1.11 Indications for the User



Keep this manual with the wiring diagram in an accessible place for the operator.

Note the unit data label so you can provide them to the assistance centre in case of intervention (see "Unit identification" section).

Provide a unit notebook that allows any interventions carried out on the unit to be noted and tracked making it easier to suitably note the various interventions and aids the search for any breakdowns.

In case of breakdown or malfunction:

- Immediately deactivate the unit
- Contact a service centre authorized by the manufacturer



The installer must train the user, particularly on:

- Start-up/shutdown
- Set points change
- Standby mode
- Maintenance
- What to do / what not to do in case of breakdown

1.12 Unit identification

The serial number label is positioned on the unit and allows to identify all the unit features.



The matriculation plate must never be removed.

The matriculation plate shows the indications foreseen by the standards, in particular:

- unit type
- serial number (12 characters)
- year of manufacture
- wiring diagram number
- electrical data
- manufacturer logo and address

1.13 Serial number

It identifies uniquely each unit.

Must be quoted when ordering spare parts.

1.14 Assistance request

Note data from the serial number label and write them in the chart on side, so you will find them easily when needed.

Series
Size
Serial number
Year of manufacture
Electrical wiring diagram

2 Reception



You have to check before accepting the delivery:

- That the unit hasn't been damaged during transport
- That the materials delivered correspond with that indicated on the transport document comparing the data with the identification label positioned on the packaging.

In case of damage or anomaly:

- Write down on the transport document the damage you found and quote this sentence: "Conditional acceptance clear evidence of deficiencies/damages during transport"
- Contact by fax and registered mail with advice of receipt to supplier and the carrier.



Any disputes must be made within 8 days from the date of the delivery. Complaints after this period are invalid.

2.1 Storage

Observe external packaging instructions.

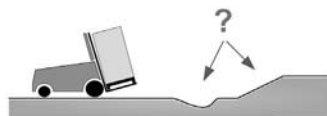
2.2 Handling

1. Verify unit weight and handling equipment lifting capacity.
2. Identify critical points during handling (disconnected routes, flights, steps, doors).
3. Suitably protect the unit to prevent damage.
4. lifting brackets
5. Lifting with balance
6. Lifting with spacer bar
7. Align the barycenter to the lifting point
8. Use all the lifting brackets (see the dimensional section)
9. Gradually bring the lifting belts under tension, making sure they are positioned correctly.
10. Before starting the handling, make sure that the unit is stable.

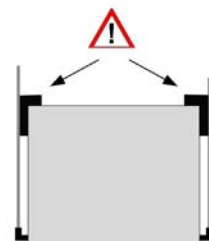
1



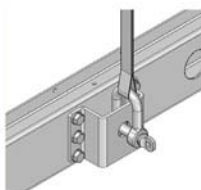
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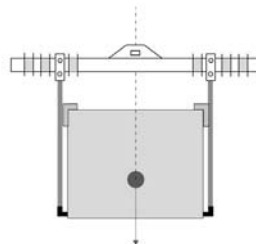
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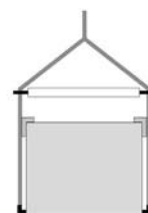
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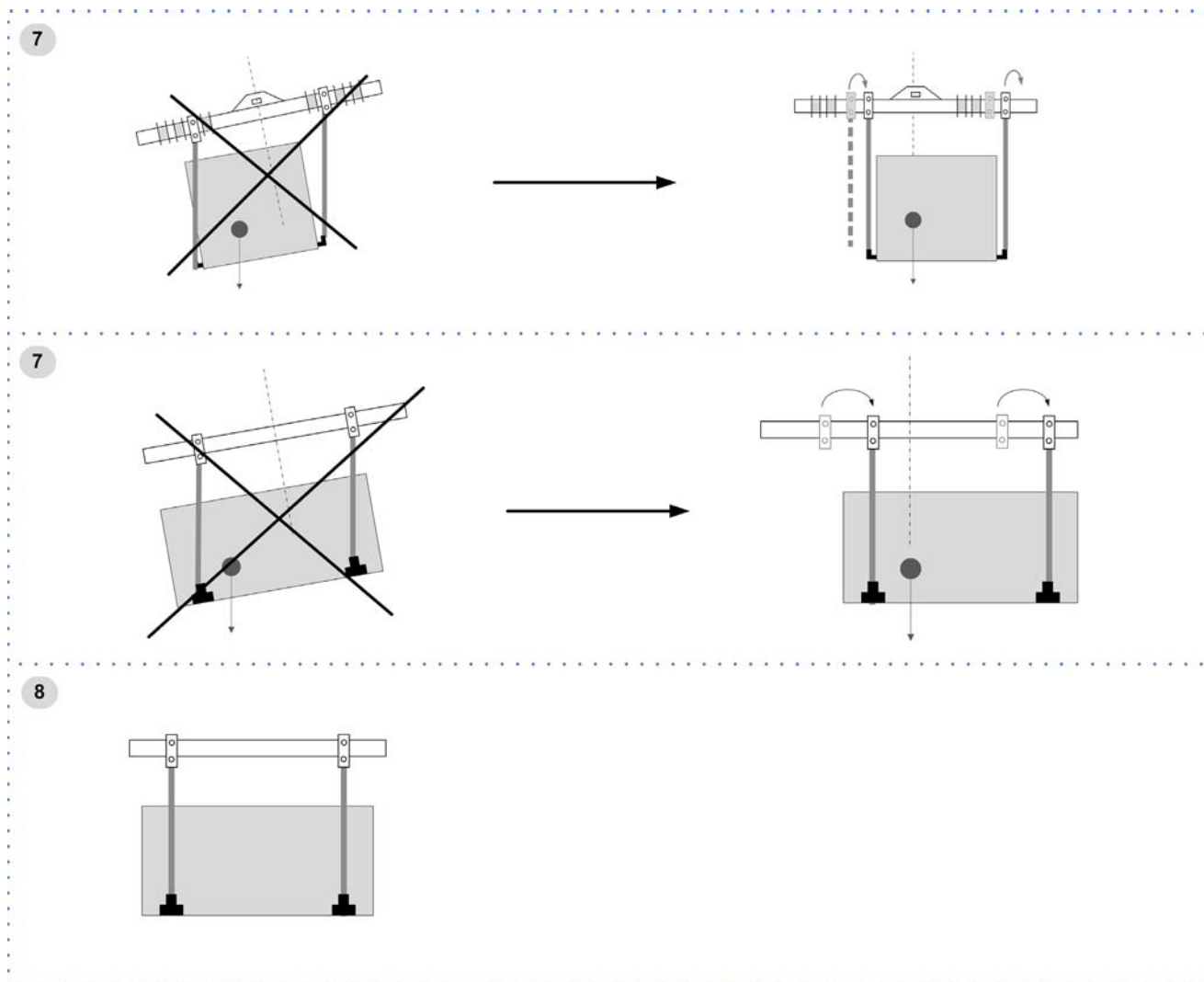


5



6



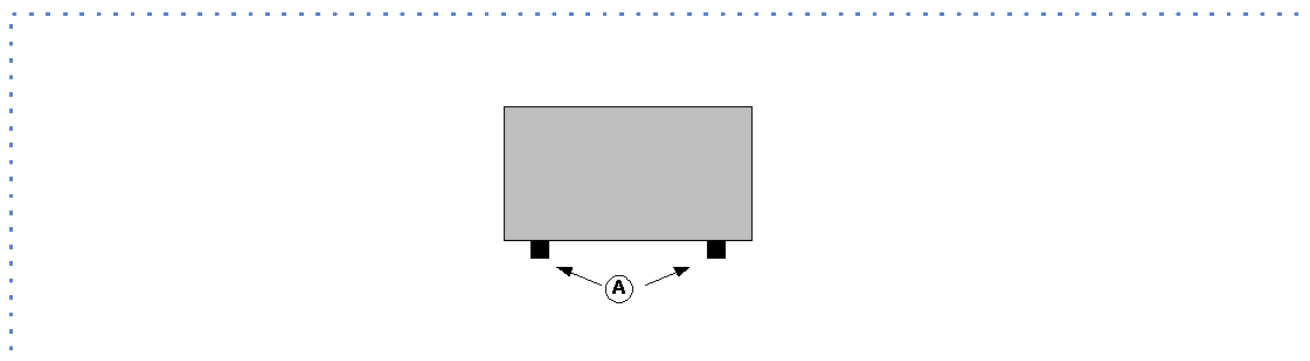


2.3 Packaging removing

Be careful not to damage the unit.

Cut-off valves installed at inlet and outlet (both on the water technique circuit as well as that of the hot domestic water) allow maintenance operations without having to empty the system.

Recycle and dispose of the packaging material in conformity with local regulations.



A Supports for handling: remove after the handling.

3 Positioning

During positioning consider these elements:

- Technical spaces requested by the unit
- Electrical connections
- Water connections
- Spaces for air exhaust and intake

3.1 Functional spaces

Functional spaces are designed to:

- guarantee good unit operation
- carry out maintenance operations
- protect authorized operators and exposed people

Respect all functional spaces indicated in the DIMENSIONS section.

Double all functional spaces if two or more unit are aligned.

3.2 Positioning



Units are designed to be installed:

- EXTERNAL
- in fixed positions

Limit vibration transmission:

- use anti-vibration devices or neoprene strips on the unit support points
- install flexible joints on the hydraulic connections
- install flexible joints on the hydraulic connections

Choose the installation place according to the following criteria:

- Customer approval
- safe accessible position
- technical spaces requested by the unit
- spaces for the air intake/exhaust
- max. distance allowed by the electrical connections
- install the unit raised from the ground
- verify unit weight and bearing point capacity
- verify that all bearing points are aligned and leveled
- condensate water draining
- consider the maximum possible snow level
- Avoid installations in places subject to flooding

Protect the unit with suitable fence in order to avoid access to unauthorised personnel (children, vandals, etc.)

A correct circulation of the air is mandatory to guarantee the good unit operating.

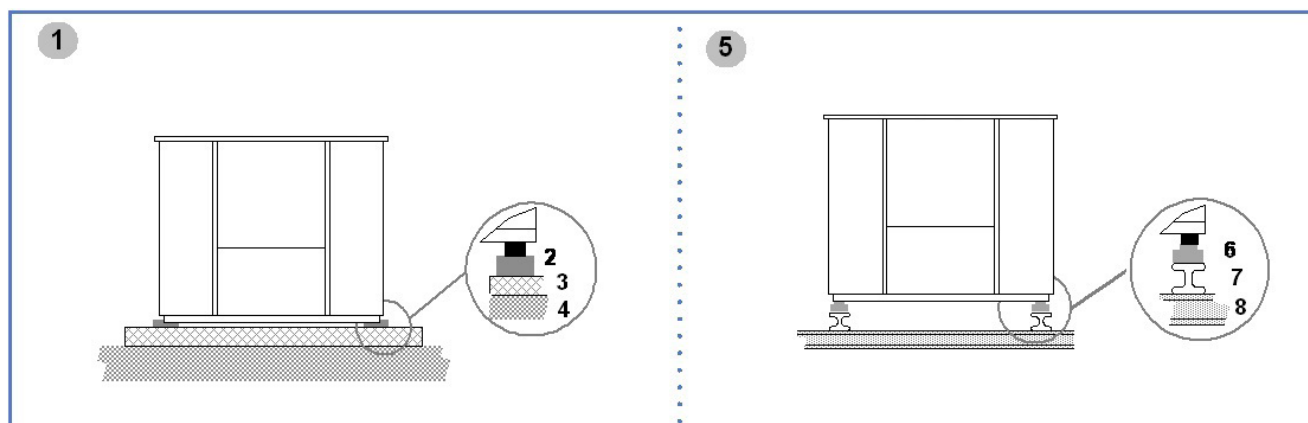


Avoid therefore:

- obstacles to the airflow
- difficulty of exchange
- leaves or other foreign bodies that can obstruct the ext. dampers
- heat or pollution sources close to the unit (chimneys, extractors etc..)
- stratification (cold air that stagnates at the bottom)
- recirculation (expelled air that is sucked in again)
- incorrect positioning, close to very high walls, attics or in angles that could give rise to stratification or recirculation phenomenons



Avoid the accumulation of snow and ice in front of the exhaust air outlet



- 1 Positioning on concrete floor
- 2 2 cm thick neoprene strips
- 3 concrete floor
- 4 insulation

- 5 Positioning on steel structure
- 6 antivibration mounts
- 7 steel structure
- 8 steel structure

3.3 Safety valve gas side

The installer is responsible for evaluating the opportunity of installing drain tubes, in conformity with the local regulations in force (EN 378).

3.4 Electronic filter

For details see:
10 Accessories p. 54

4 Water connections

4.1 Water quality

Water features

- confirming to local regulations
- total hardness < 14°fr
- within the limits indicated by table

The water quality must be checked by qualified personnel.

Water with inadequate characteristics can cause:

- pressure drop increase
- reduces energy efficiency
- increased corrosion potential

Acceptable water quality values:

PH	7,5 ÷ 9,0	
SO ₄ ²⁻	< 100	ppm
HCO ₃ ⁻ /SO ₄ ²⁻	> 1	
Total Hardness	4,5 ÷ 8,5	dH
Cl ⁻	< 50	ppm
PO ₄ ³⁻	< 2,0	ppm
NH ₃	< 0,5	ppm

Free Chlorine	< 0,5	ppm
Fe ₃ ⁺	< 0,5	ppm
Mn ⁺⁺	< 0,05	ppm
CO ₂	< 50	ppm
H ₂ S	< 50	ppb
Temperature	< 65	°C
Oxygen content	< 0,1	ppm

Provide a water treatment system if values fall outside the limits.



The warranty does not cover damages caused by limestone formations, deposits and impurities from the water supply and / or failure from failed system clearing to clean system.

4.2 Risk of freezing

If the unit or the relative water connections are subject to temperatures close to 0°C:

- mix water with glycol, or
- safeguard the pipes with heating cables placed under the insulation, or
- empty the system in cases of long non-use

4.3 Anti-freeze solution

The use of an anti-freeze solution results in an increase in pressure drop.



Make sure that the glycol type utilized is inhibited (not corrosive) and compatible with the water circuit components.



Do not use different glycol mixture (i.e. ethylene with propylene).

4.4 Water flow-rate

The project water-flow must be:

- inside the exchanger operating limits (see the TECHNICAL INFORMATION section)
- guarantee, also with variable system conditions (for example in systems where some circuits are bypassed in particular situations).

4.5 Water filter



It must be installed immediately in the water input of the unit, in a position that is easily accessible for cleaning.



The filter never should be removed, this operation invalidates the guaranty.

4.6 Condensate drain

The condensate must be disposed in order to avoid damages to people and things.

- Unit discharge fitting: the connection must not transmit mechanical stresses and must be performed taking care not to damage the unit discharge fitting.
- Provide a siphon that, eliminating the negative pressure caused by the fan, prevents the air intake from the discharge duct.
- The ducting must have a min. slope of 3% to allow the runoff.
- Anchor the ducting with an adequate number of supports.
- Insulate the duct and the siphon to avoid the condensate drippings.
- Connect the condensate discharge to a sewerage drainage network.



DO NOT use white water or drainage networks to avoid the aspiration of odours in the case of evaporation of water contained in the siphon.



Check at the end of the work, the regular condensate runoff pouring some water in the tray.

4.7 Operation sequence

Close all vent valves in the high points of the unit hydraulic circuit

Close all drain valves in the low points of the unit hydraulic circuit:

- Heat exchangers
 - Pumps
 - collectors
1. Carefully wash the system with clean water: fill and drain the system several times.
 2. Apply additives to prevent corrosion, fouling, formation of mud and algae.
 3. Fill the plant
 4. Execute leakage test.
 5. Isolate the pipes to avoid heat dispersions and formation of condensate.
 6. Leave various point of service free (wells, vent-holes etc).



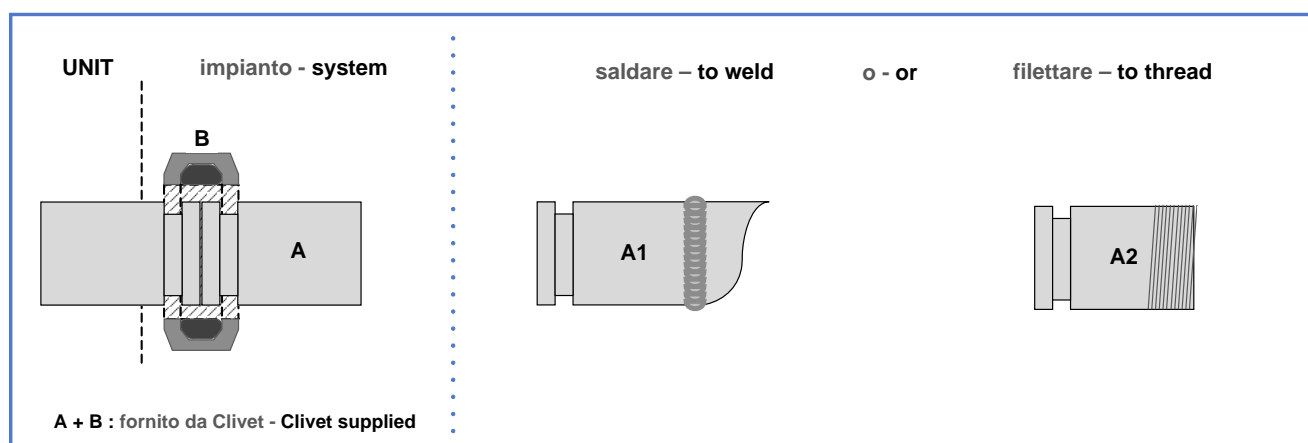
Neglecting the washing will lead to several filter cleaning interventions and at worst cases can cause damages to the exchangers and the other parts.

4.8 Humidifier

For details see:

10 Accessories p. 54

4.9 Hydraulic connections



Retirer le joint de connexion avant de souder le tuyau de l'installation.



The rubber gasket might be irreparably damaged.

5 Aeraulic connections

The dimensioning and correct execution of the aeraulic connections are fundamental to guarantee good unit operation and adequate level of silence in the room.

When designing and manufacturing the ducting, consider LOAD LOSSES, AIR FLOW AND SPEED that must be consistent with the unit features.



Particularly consider that load losses higher than the unit useful prevalence, lead to reduction in flow rate, with consequent unit blocks.

- the weight of the channels must not burden on the connection flanges
- place anti-vibration joints between channels and unit
- connection to the flanges and between the various sections of the channels must guarantee air seal, avoiding dispersions penalising the overall efficiency of the system
- limit the load losses by optimising the path, the type and number of bends and junctions
- use wide bends evaluating the opportunity of equipping them with deflectors (in particular with high air speed or bends with reduced radius)

5.1 Treated air channelling

The internal surface of the channel must be smooth, enable its washing and must not contaminate the air.

Thermally isolate the channels and the flanges to avoid energy losses and forming of condensation.

DIFFUSERS INLETS GRILLES

A correct diffusion of the air in the room is determining for the level of comfort.



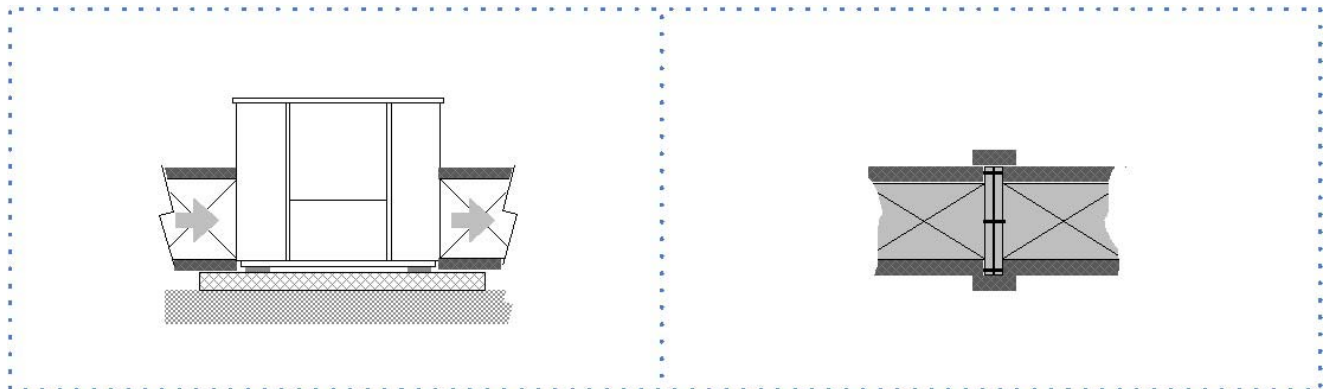
When choosing and positioning the grilles, inlets and diffusers, avoid:

- excessive air speed
- forming of stagnant and stratification areas
- cold air delivery in room
- forming of localised currents (also due to uneven distribution of air)
- excessive room temperature variations, vertically and horizontally
- short circuits of the supply air towards the return air



For sound comfort, consider that:

- the air diffusers must be chosen verifying the sound power generated at nominal flow rate conditions
- the cut-off to diffusers must be carried out with flexible elements
- the return grilles must be widely dimensioned



Thermally isolate the channels and the flanges to avoid energy losses and forming of condensation.

6 Electrical connections

The characteristics of the electrical lines must be determined by qualified electrical personnel able to design electrical installations; moreover, the lines must be in conformity with regulations in force.

The protection devices of the unit power line must be able to stop all short circuit current, the value must be determined in accordance with system features.

The power cables and the protection cable section must be defined in accordance with the characteristics of the protections adopted.

All electrical operations should be performed by trained personnel having the necessary qualifications required by the regulations in force and being informed about the risks relevant to these activities.

Operate in compliance with safety regulations in force.

6.1 Electrical data



The serial number label reports the unit specific electrical data, included any electrical accessories.

The electrical data indicated in the technical bulletin and in the manual refer to the standard unit, accessories excluded.

The matriculation plate shows the indications foreseen by the standards, in particular:

- Voltage
- F.L.A.: full load ampere, absorbed current at maximum admitted conditions
- F.L.I.: full load input, full load power input at max. admissible condition
- Electrical wiring diagram Nr.

6.2 Connections

1. Refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).
2. Verify that the electrical supply has characteristics conforming to the data shown on the serial number label.
3. Before starting work, ensure the unit is isolated, unable to be turned on and a safety sign used.
4. Ensure correct earth connection.
5. Ensure cables are suitably protected.
6. Before powering up the unit, make sure that all the protections that were removed during the electrical connection work have been restored.

6.3 Signals / data lines

Do not exceed the maximum power allowed, which varies, according to the type of signal.

Lay the cables far from power cables or cables having a different tension and that are able to emit electromagnetic disturbances.

Do not lay the cable near devices which can generate electromagnetic interferences.

Do not lay the cables parallel to other cables, cable crossings are possible, only if laid at 90°.

Connect the screen to the ground, only if there aren't disturbances.

Guarantee the continuity of the screen during the entire extension of the cable.

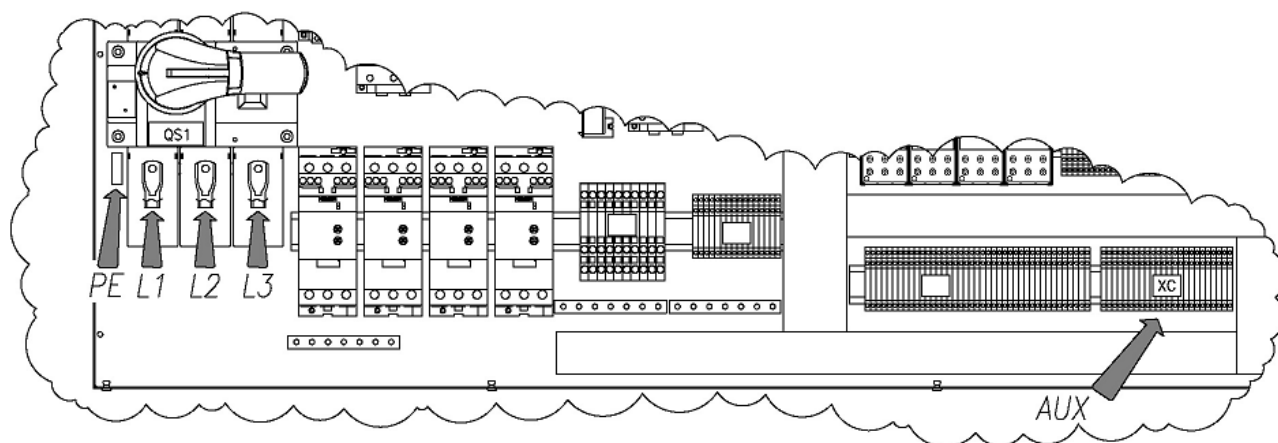
Respect impedance, capacity and attenuation indications.

6.4 Power input

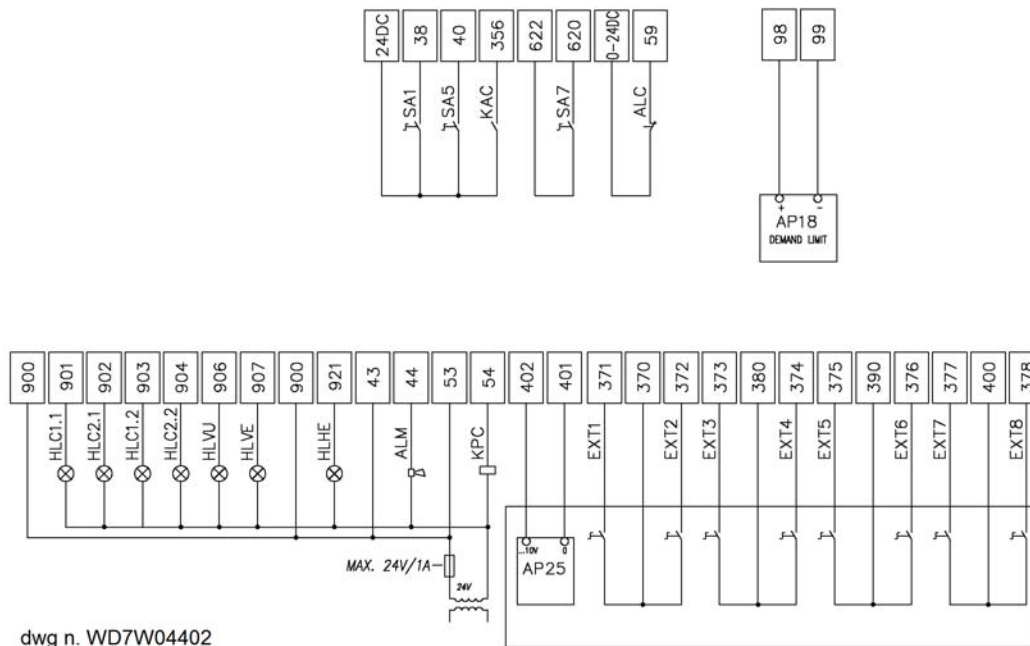
Fix the cables: if vacated may be subject to tearing.



The cable must not touch the compressor and the refrigerant piping (they reach high temperatures).



6.5 Connections performer by customer



ALC	contatto pulito da impianto di segnalazione allarme antincendio free contact from signalling system of fire alarm contact libre de installation de signalisation alarme d'incendie Schließerkontakt aus der Signalisierungsanlage der Feuerschutzalarm contacto libre de instalación de señalización alarma antincendio
HLVU	lampada segnalazione stato ventilatore di mandata indicating light of the supply fan status lampe de signalisation de l'état ventilateur de refoulement Signallampe des Zustandes des Druckventilators lámpara indicadora estado ventilador de impulsión
ALM	segnalazione blocco cumulativo cumulative fault signal signalisation alarmé Sammelstörungsmeldung señalización bloqueo cumulativo
AP18	demand-limit demand-limit demand-limit demand-limit
SA1	selettore on/off remoto remote on/off selector sélecteur ON/OFF déporté Fernwahlschalter Ein/Aus selector on/off remoto
HLC1.1.. ..HLC2.2	lampada di segnalazione stato compressore compressor status signal lamp lampe de signalisation état compresseur Signallampe Verdichtierzustand lámpara de señalización estado compresor
SA5	ingresso configurabile settable input entrée configurable konfigurierbares Eingabe entrada configurable

HLHE	lampada di segnalazione stato funzionamento pompa di calore warning light of the heat pump operating status lampe de signalisation état fonctionnement pompe à chaleur Anzeigelampe Betriebszustand der Wärmepumpe lámpara indicadora estado funcionamiento bomba de calor
AP25	Modulo estrazione modulante con segnale 0-10V Modulating extraction module with 0-10V signal Module d'extraction modulante avec signal 0-10V Modulierender Auslassmodul mit 0-10V Signal Módulo extracción moduladora con señal 0-10V
EXT1.. ...EXT8	contatto pulito estrattore ambiente ambient extractor potential-free contact contact libre extracteur ambiant potentialfreier Kontakt des Raumabzug contacto libre extractor ambiente
SA7	selettore abilitazione allo scarico manuale umidificatore enabling selector to the humidifier manual discharge sélecteur validation à la décharge manuelle humidificateur Freigabewähler auf den manuellen Ablauf des Befeuchters selector habilitación a la descarga manual humidificador
HLF	lampada segnalazione nessun allarme in corso sensore fumo indicating light of no alarm in progress smoke sensor lampe de signalisation aucune alarme en cours capteur fumée Signallampe keinen Alarm im Laufe Rauchsensor lámpara indicadora ninguna alarma en curso sensor humo
HLE	lampada segnalazione stato ventilatore di ripresa e/o espulsione indicating light of the return and/or supply fan status lampe de signalisation état ventilateur d'aspiration et/ou refoulement Signallampe des Saug und/oder Ablauventilatorstatus lámpara indicadora estado ventilador d'aspiración y/o impulsión
KPC	comando pompa/circolatore della batteria integrativa pump/circulating pump control of the integration coil commande pompe/pompe de circulation de la batterie supplémentaire Pumpe/Zirkulationspumpe-Steuerung der Zusatzbatterie mando bomba/bomba de circulación de la batería complementaria
KAC	modulo controllo remotizzato "on/off" serranda aria esterna on/off remote control module of the fresh air damper module contrôle à distance on/off du rideau air neuf ernststeuermodul "on/off" der Außenluftklappe módulo de control a distancia "on/off" de la compuerta aire exterior

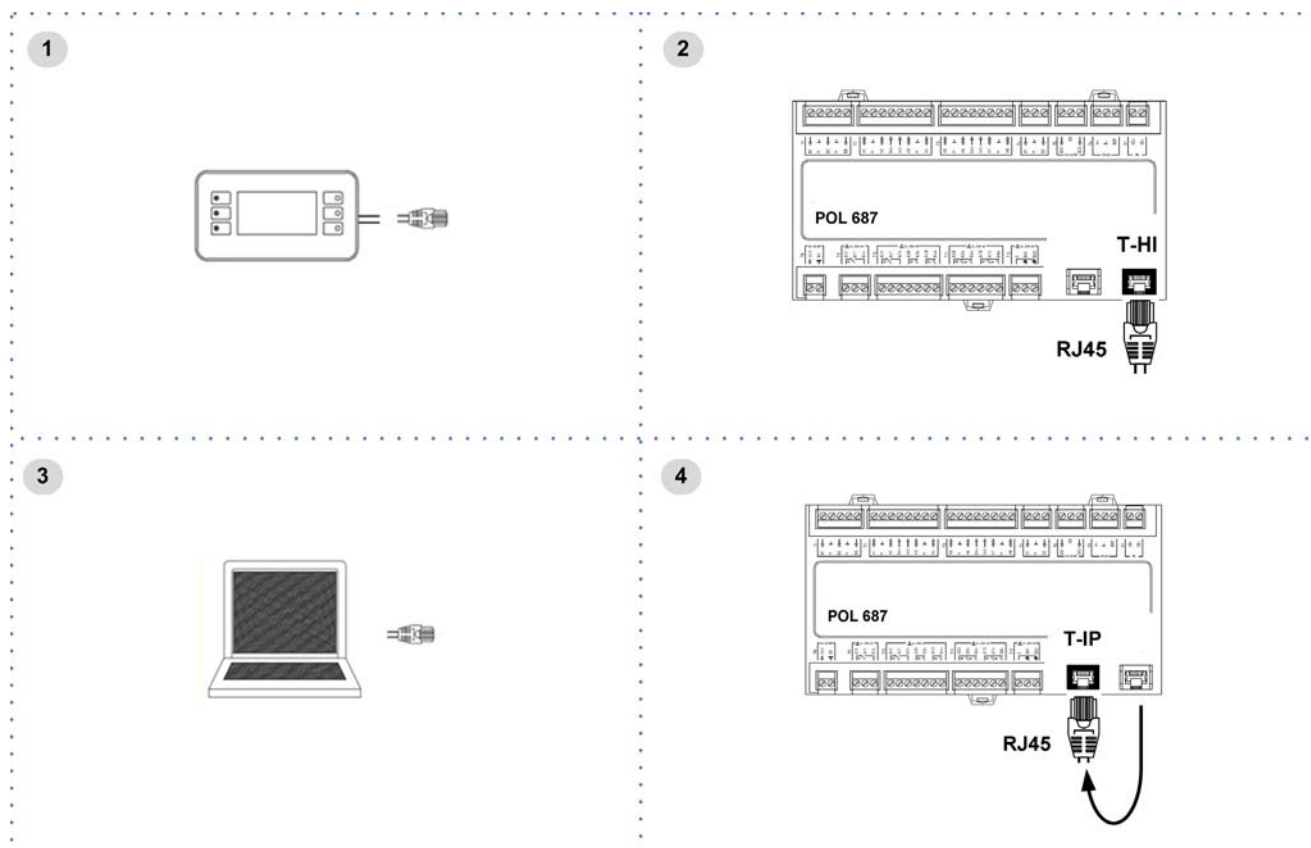
6.6 SA5 input

Settable input

P0056 ModeFanClean

0 None	not used	not used
1 Mode	0 = cool, 1 = heat	change HEAT - COOL mode
2 Fan	0 = no cmd, 1 = fan	fan only
3 Clean	0 = off, 1 = on	clean

6.7 Computer connection



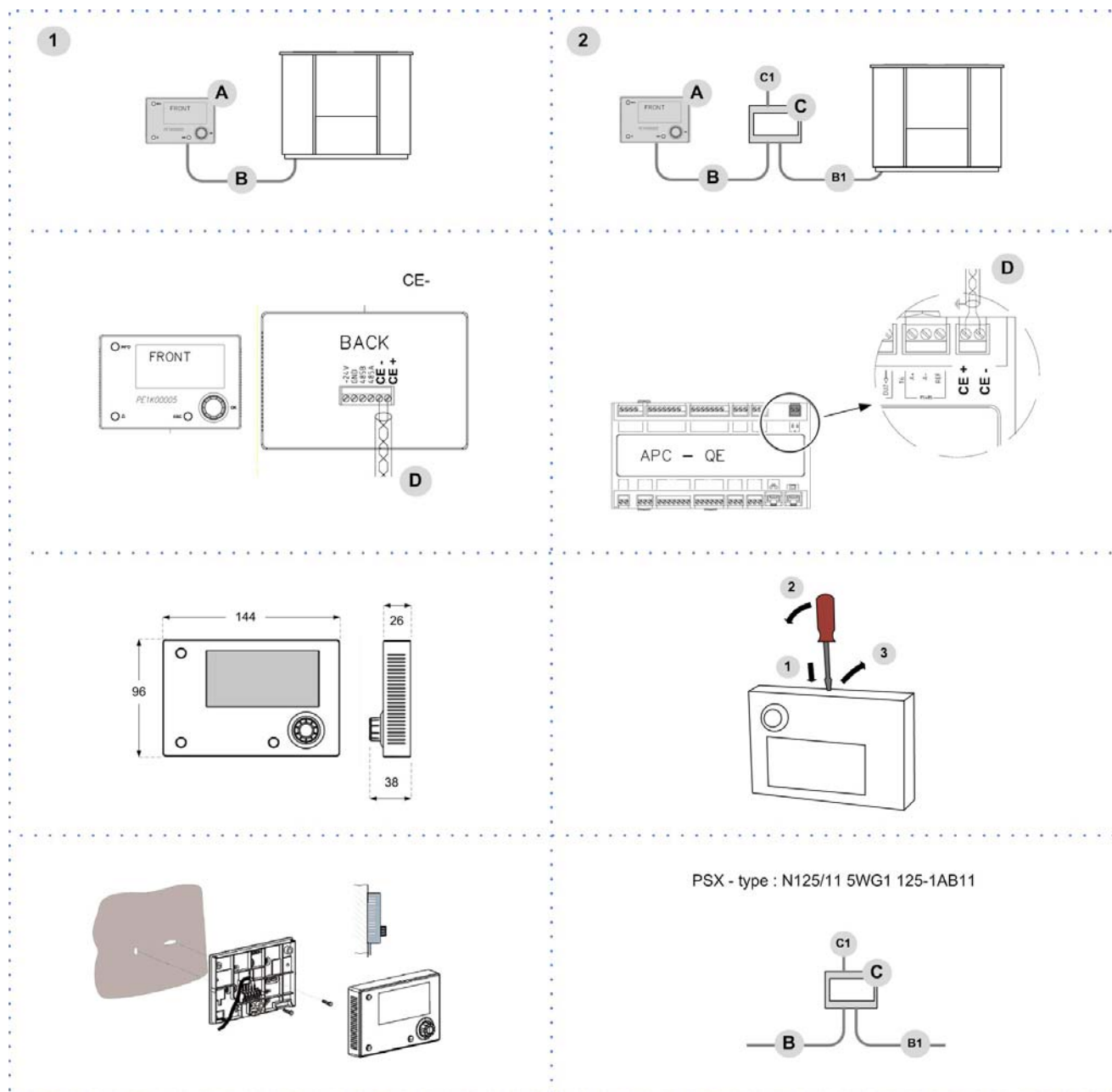
1. Service keypad
2. RJ45: standard connection
3. P.C.-not supplied
4. P.C. connection, shift RJ45 from T-HI to T-IP

Configure P.C.

1. connect P.C. and main module with LAN cable
2. check in the taskbar that the connection is active
3. open Control Panel and select Network and sharing center
4. select Modify board setting
5. select Local area connection (LAN)
6. select Internet protocol version 4 (TCP) IPV4 and enter Property
7. set the IP address 192.168.1.100
8. set Subnet mask as 255.255.255.0
9. confirm (OK)
10. enter Start (Windows button)
11. write the command cmd and enter/do it
12. write and run the command Ping 192.168.1.42
13. the message, connection is OK, will appear when successful
14. enter the browser (Chrome, Firefox ecc)
15. write and run the command http://192.168.1.42
16. Userid = WEB
17. Password = SBTAdmin!

6.8 Remote control

Option

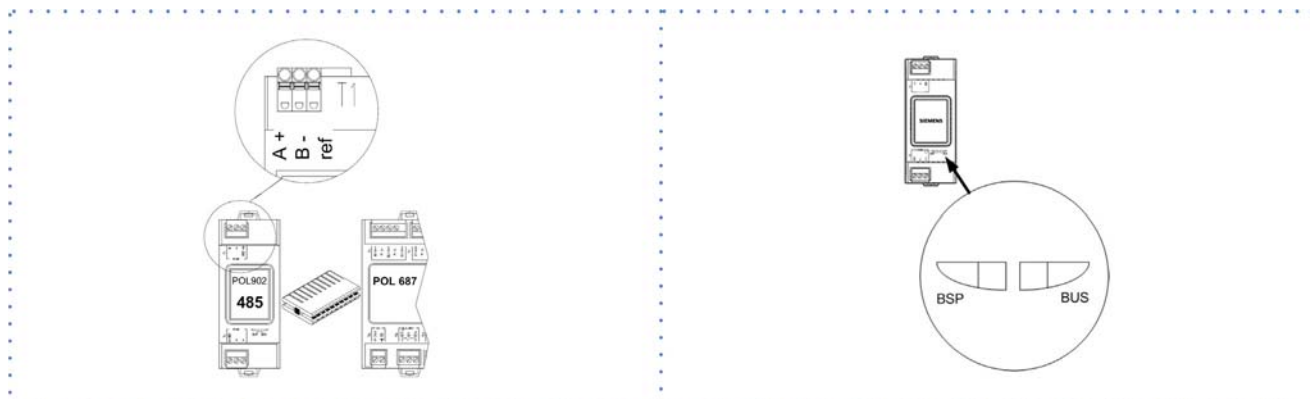


- | | |
|---|-----------------------|
| 1 | Distance up to 350 mt |
| 2 | Distance up to 700 mt |

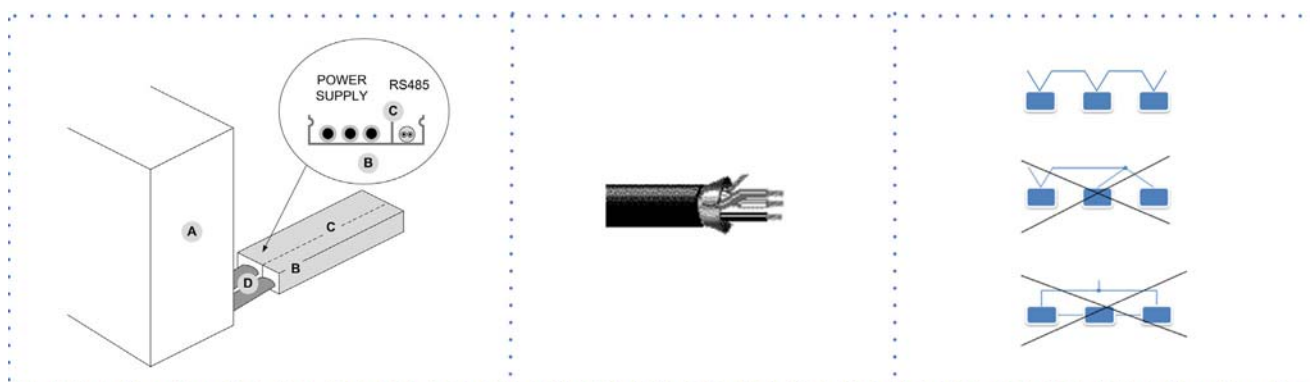
- | | |
|--------|---|
| A | User interface |
| B = B1 | KNX bus, max 350 mt
twisted pair with shield, ø 0,8 mm
EIB/KNX cable marking recommende |
| C | PSX - Mains power supply unit
pwer supply unit N125/11 SWG1 125-1AB11 |
| C1 | AC 120...230V, 50...60Hz |
| D | KNX bus, max 350 mt |

6.9 Modbus - RS485

Option



LED BSP	communication with AP1 module	LED BUS	communication with Modbus
green	communication ok	green	communication ok
yellow	software ok but communication with AP1 down	yellow	startup / channel not communicating
red	flashing: software error fixed: hardware error	red	communication down



- A. Unit
- B. Metal conduit
- C. Metal septums
- D. Metal-lined sheath (sleeve)

Modbus / LonWorks / Cable requirements

Couple of conductors twisted and shielded

Section of conductor 0,22mm²...0,35mm²

Rated power between conductors < 50 pF/m

Nominal impedance 120 Ω

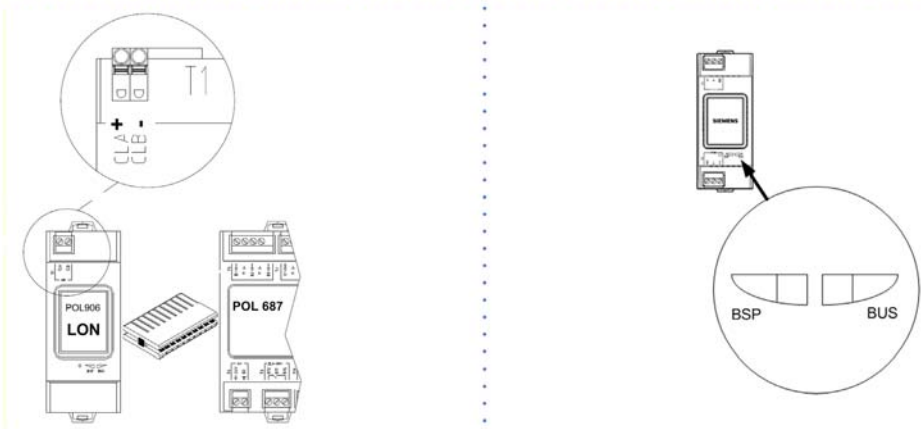
Recommended cable BELDEN 3106A

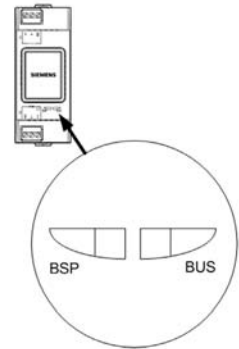
- Every RS485 serial line must be set up using the 'In/Out' bus system.
- Other types of networks are not allowed, such as Star or Ring networks.
- The difference in potential between the earth of the two RS485 devices that the cable shielding needs to be connected to must be lower than 7 V
- There must be suitable arresters to protect the serial lines from the effects of atmospheric discharges
- A 120 ohm resistance must be located on the end of the serial line. Alternatively, when the last serial board is equipped with an internal terminator, it must be enabled using the specific jumper, dip switch or link.
- The cable must have insulation features and non-flame propagation in accordance with applicable regulations.
- The RS485 serial line must be kept as far away as possible from sources of electromagnetic interference.

6.10 LonWorks

Option

LonWorks





LONWORK CABLE TYPE
Echelon allows three cable types for channel type TP/FT-10, including the Category 5 network cable used commonly in building automation and control (TIA 568A Cat-5).

CAT-5 SPECIFICATIONS
Unshielded cable, twisted pair with at least 18 beats per meter:

- Cross-sectional area Min. \varnothing 0.5mm, AWG24, 0.22mm²
- Impedance 100 +/- 15% @ f > 1 MHz
- Operating capacity between two wires of a pair < 46 nF/km
- Capacity pair to ground, asymmetric. < 3.3 nF/km
- DC loop resistance < 168 Ω

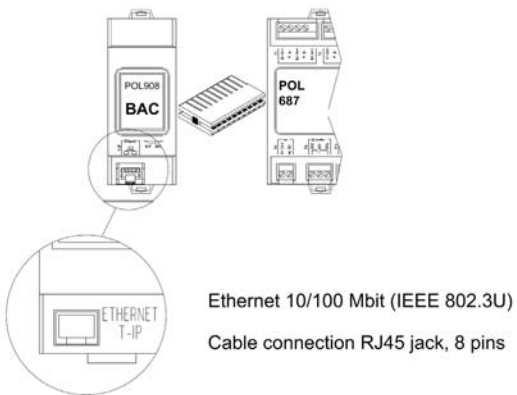
LED BSP	communication with AP1 module
green	communication ok
yellow	software ok but communication with AP1 down
red	flashing: software error
	fixed: hardware error

LED BUS	communication with LonWorks
green	ready for communication
yellow	startup
red	flashing: communicating not possible
	communication down

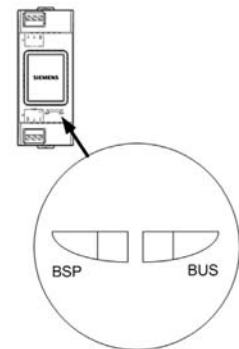
6.11 BACnet IP

Option

BACnet



Ethernet 10/100 Mbit (IEEE 802.3U)
Cable connection RJ45 jack, 8 pins



LED BSP	communication with AP1 module
green	communication ok
yellow	software ok but communication with AP1 down
red	flashing: software error
	fixed: hardware error

LED BUS	communication with BACnet
green	ready for communication
yellow	startup
red	BACnet server down
	restart after 3 sec

7 Start-up

7.1 General description

The indicated operations should be done by qualified technician with specific training on the product.

Upon request, the service centres performing the start-up.

The electrical, water connections and the other system works are by the installer.

Agree upon in advance the start-up data with the service centre.

Before checking, please verify the following:

- the unit should be installed properly and in conformity with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no tension is present



After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.



Before accessing check with a multimeter that there are no residual stresses.

7.2 Preliminary checks

For details refer to the different manual sections.

Unit OFF power supply

1. safety access
2. functional spaces
3. structure integrity
4. fans run freely
5. unit on vibration isolators
6. air filters present and clean
7. completed aeraulic system
8. unit input water filter + shut-off valves for cleaning
9. vibration isolators on water connections
10. minimum system water content
11. cleaned system
12. loaded system + possible glycol solution + corrosion inhibitor
13. system under pressure
14. vented system
15. refrigerant circuit visual check
16. earthing connection
17. power supply features
18. electrical connections provided by the customer

7.3 Start-up sequence

For details refer to the different manual sections.

Unit ON power supply

1. compressor crankcase heaters operating at least since 8 hours
2. off-load voltage measure
3. phase sequence check
4. shut-off valve refrigerant circuit open
5. load voltage measure and absorptions
6. liquid sight glass check (no bubbles)
7. check all fan operating
8. air flow rate measurement
9. supply, return and outdoor air temperature measurement
10. water source temperature measurement
11. measure super-heating and sub-cooling
12. check no anomalous vibrations are present
13. climatic curve personalization
14. climatic curve personalization
15. scheduling personalization
16. fire alarm configuration *
17. complete and available unit documentation

7.4 Refrigeration circuit

1. Check carefully the refrigerating circuit: the presence of oil stains can mean leakage caused by transportation, movements or other).
2. Verify that the refrigerating circuit is in pressure: Using the unit manometers, if present, or service manometers.
3. Make sure that all the service outlets are closed with proper caps; if caps are not present a leak of refrigerant can be possible.
4. Open the valves of the refrigerant circuit, if there are any.

7.5 Water circuit

1. Before realizing the unit connection make sure that the hydraulic system has been cleaned up and the cleaning water has been drained.
2. Check that the water circuit has been filled and pressurized.
3. Check that the shut-off valves in the circuit are in the "OPEN" position.
4. Check that there isn't air in the circuit, if required, evacuate it using the air bleed valve placed in the system high points.
5. When using antifreeze solutions, make sure the glycol percentage is suitable for the type of use envisaged.



Neglecting the washing will lead to several filter cleaning interventions and at worst cases can cause damages to the exchangers and the other parts.

Weight of glycol (%)	10	20	30	40
Freezing temperature (°C)	-3.9	-8.9	-15.6	-23.4
Safety temperature (°C)	+1	-4	-10	-19

7.6 Electric Circuit



Verify that the unit is connected to the ground plant.

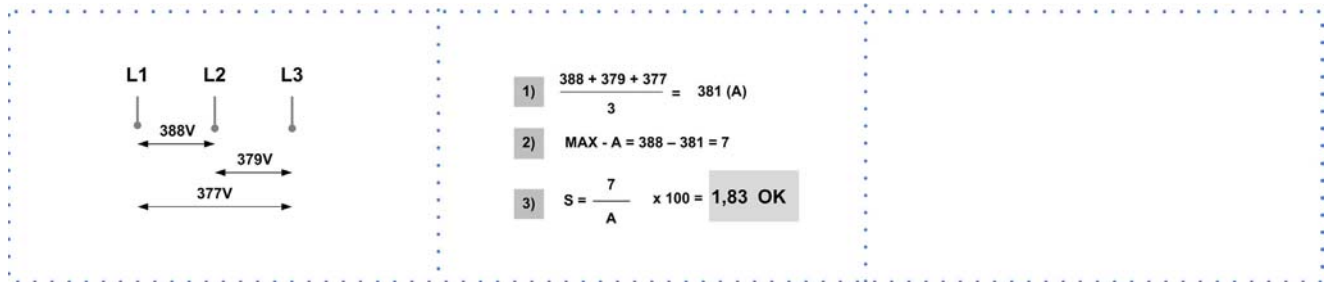
Check the conductors are tightened as: the vibrations caused by handling and transport might cause these to come loose.

Connect the unit by closing the sectioning device, but leave it on OFF.

Check the voltage and line frequency values which must be within the limits: 400/3/50 +/- 10%

Check and adjust the phase balance as necessary: it must be lower than 2%

Example



Working outside of these limits can cause irreversible damages and voids the warranty.

7.7 Compressor crankcase heaters

Connect the oil resistances on the compressor crankcase at least 8 hours before the compressor is to be started:

- at the first unit start-up
 - after each prolonged period of inactivity
1. Connect the heaters: sectioning device on 1 / ON
 2. To make sure that heaters are working, check the power input.
 3. At start-up the compressor crank-case temperature on the lower side must be higher at least of 10°C than the outside temperature.



Do not start the compressor with the crankcase oil below operating temperature.

7.8 Voltages

Check that the air and water temperatures are within in the operating limits.

Start-up the unit.

With unit operating in stable conditions, check:

- Voltage
- Total absorption of the unit
- Absorption of the single electric loads

7.9 Scroll compressor

The Scroll compressors have only one rotation direction.

In the event it is reversed, the compressor is not immediately damaged, but increases its noise.
 After a few minutes, the compressor blocks due to intervention of the thermal protection.
 In this case, disconnect power supply and invert 2 phases on the machine power supply.
 Avoid the compressor working for a long time with contrary rotation: more than 2-3 of these anomalous start-ups can damage it.
 To ensure the rotation direction is correct, measure the condensation and suction pressure.
 The pressures must significantly differ: upon start-up, the suction pressure decreases whereas the condensation one, increases.

7.10 Remote controls

Check that the remote controls (ON-OFF etc) are connected and, if necessary, enabled with the respective parameters as indicated in the "electrical connections" section.

Check that probes and optional components are connected and enabled with the respective parameters ("electrical connections" section and following pages).

7.11 Air flow setting

The real unit flow is according to the aeraulic system features.

⚠ Before checking, make sure that the system has been completed in all its parts (shunts, dampers, grilles, diffusers etc.).

⚠ Check the doors and windows of the serviced room are closed.

⚠ Calibration must be carried out with unit all in recirculation.

The unit is in full recirculation during the first 20 minutes from start-up.

Set the flow rate:

P0274 SfFanSpeedOut

7.12 Air flow management

Standard mode

The air flow supply remains constant in all heat load conditions and operation modes.

ECO mode

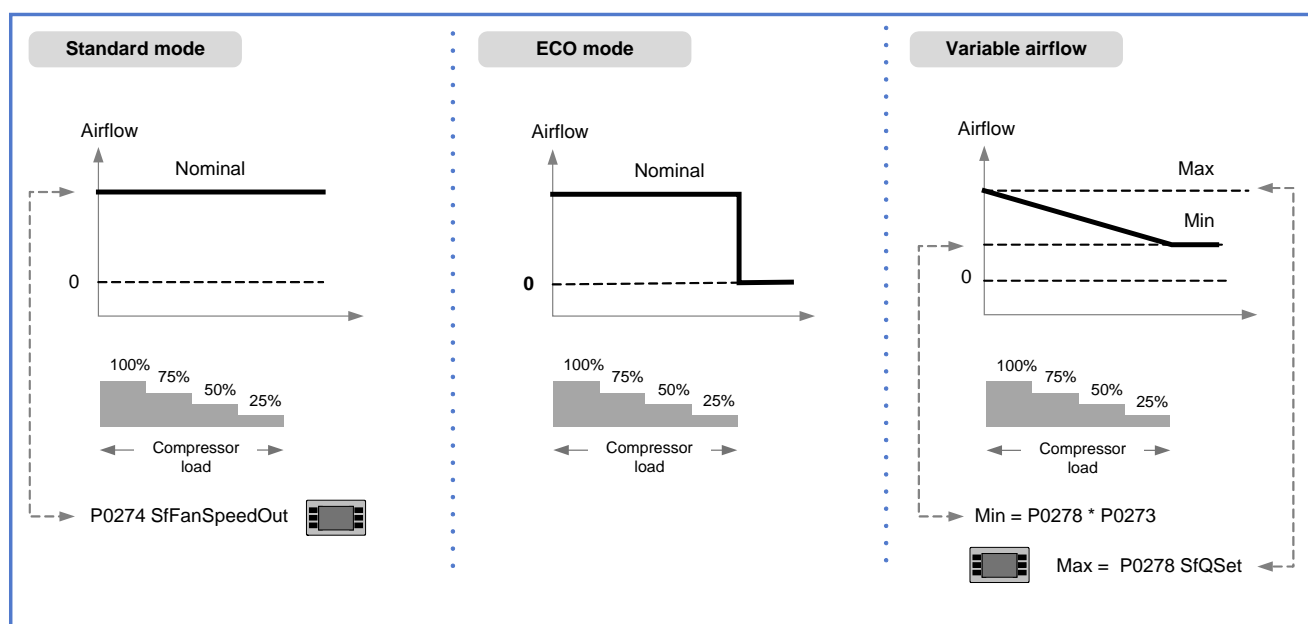
The air flow supply remains constant at varied heat loads and is shutdown when setpoint is fulfilled.

Variable airflow

Option

The air flow supply varies depending on the heat load, up to a minimum value compatible with the distribution system and the chosen air diffusion.

The ventilation remains active even when the setpoint is fulfilled.



7.13 ECO mode

The air flow supply remains constant at varied heat loads and is shutdown when setpoint is fulfilled.

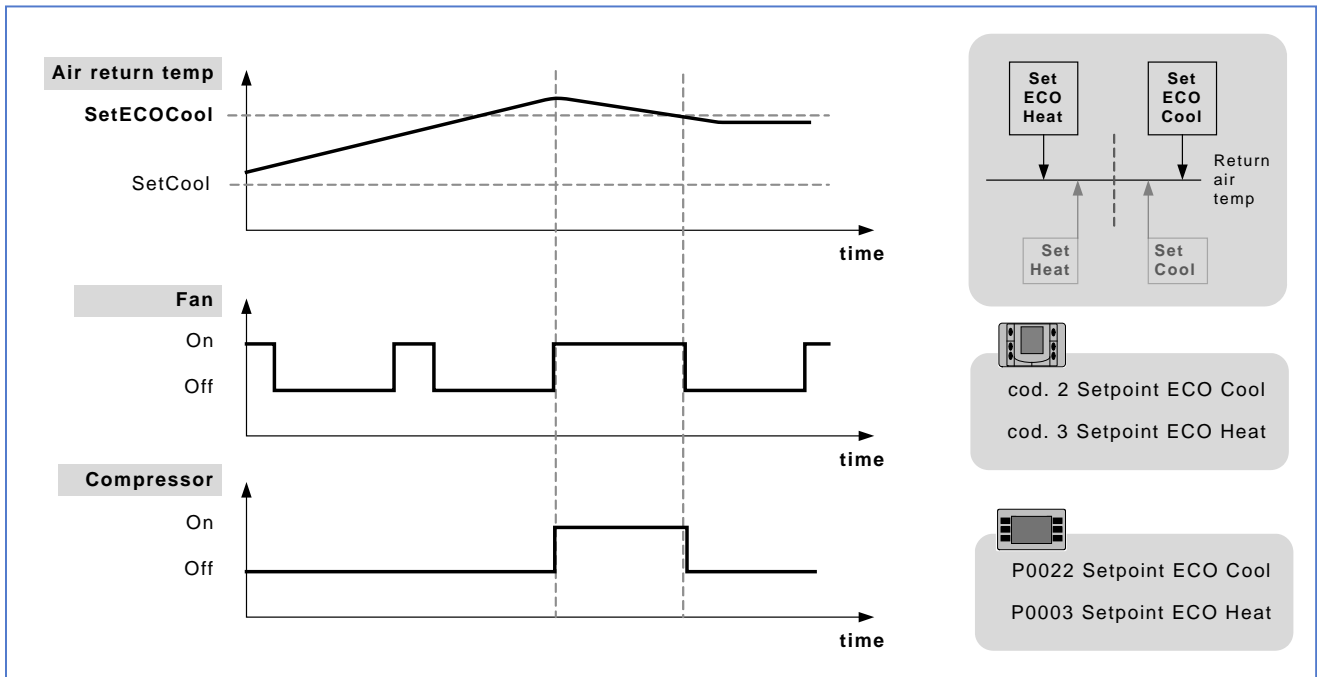
To further increase the energy savings in this condition, it is also possible to set less demanding operation setpoints for the unit in respect to the standard mode.

This function is indicated for the thermal maintenance of the served area in case it is temporarily not used, which can for example occur at night.

The ECO mode can be activated:

- On/Off button
- Automatically by means supervision system

Example in cooling mode:

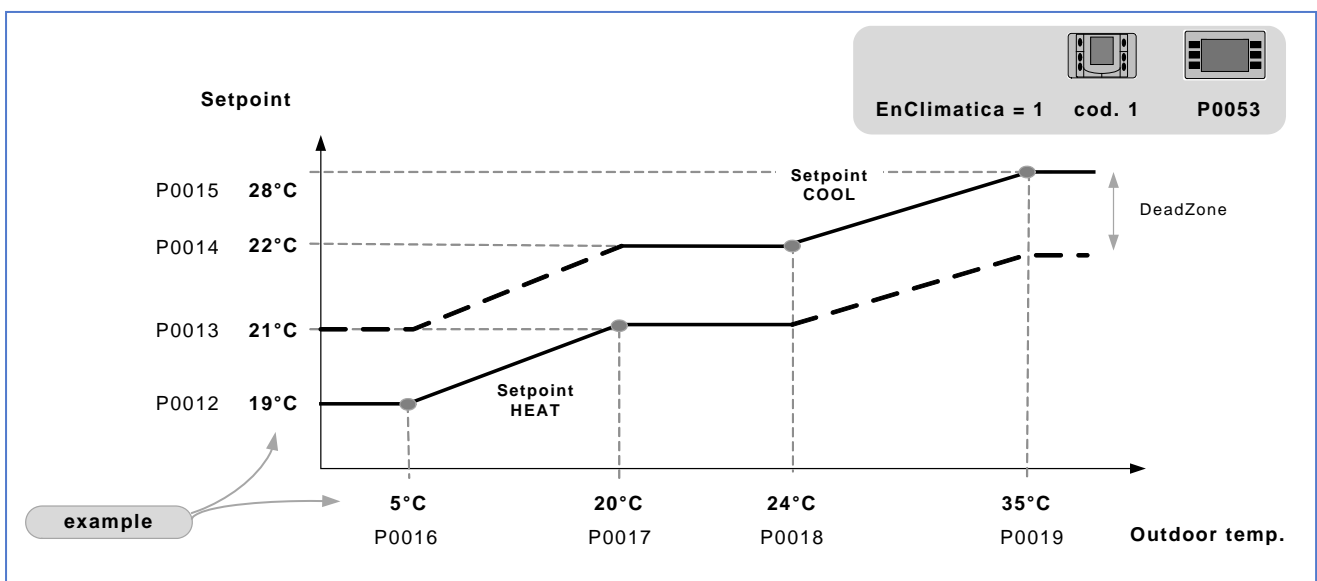


7.14 Set-point automatic compensation

The set changes automatically according to the outside temperature.

Even the operating mode changes automatically according to the outside temperature.

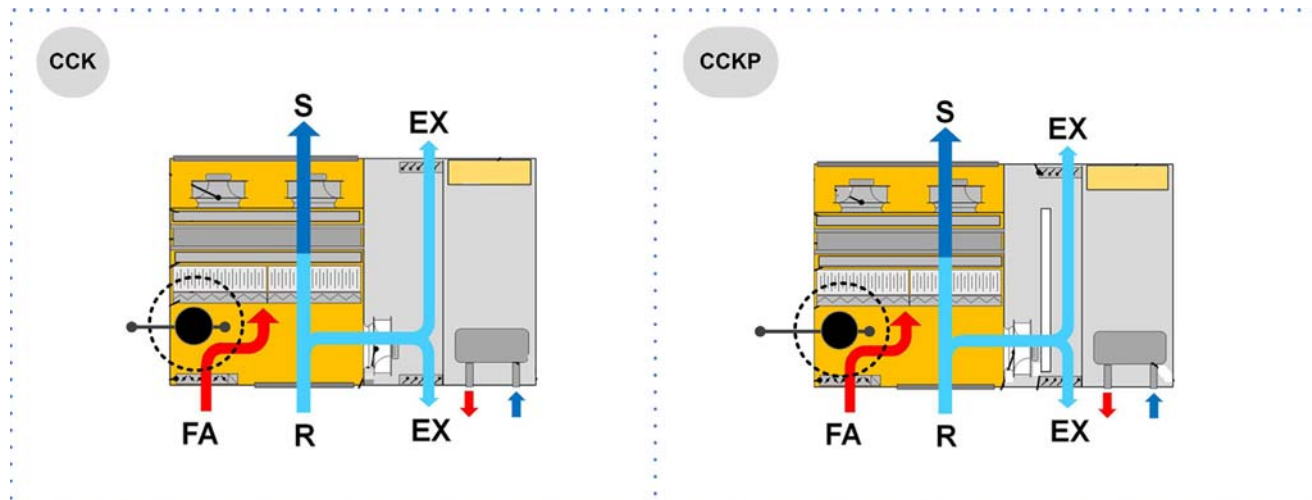
The variation is defined by the climatic curve.



7.15 Ambient pressure control

The ambient pressure control device compares the return pressure with the external pressure and compensates any variations by acting on the outdoor air damper.

This way, the unit maintains the relevant ambient pressure desired by the user, who can choose between the overpressure, depression or equal-pressure.

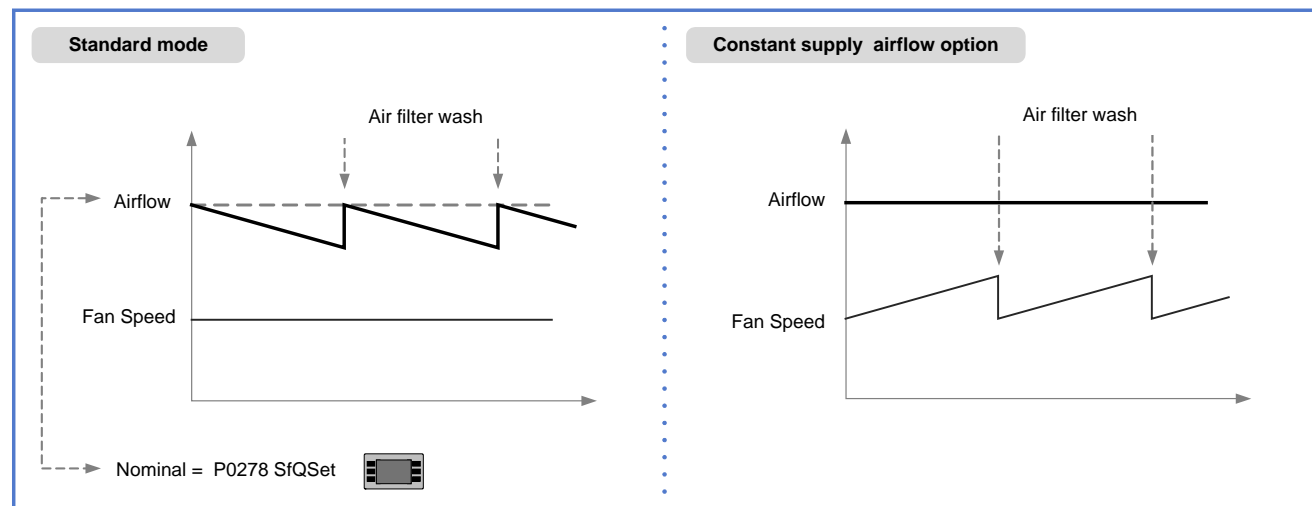


Room pressure calibration

1. check the doors and windows of the serviced room are closed
2. calibration must be carried out with unit all in recirculation
3. show on the display the status: PDiffEsterna differential pressure outdoor-return
4. wait for the pressure value to stabilise and take note of the value
5. to maintain the room in neutral pressure, memorise the detected value in P0334 SetPAmb
6. to maintain the room in overpressure, memorise a higher value respect to that detected
7. to maintain the room in depression, memorise a lower value

7.16 Constant supply airflow

Option



The real unit flow is according to the aeraulic system features.

- ⚠ Before checking, make sure that the system has been completed in all its parts (shunts, dampers, grilles, diffusers etc.).
 - ⚠ Check the doors and windows of the serviced room are closed.
 - ⚠ Calibration must be carried out with unit all in recirculation.
- The unit is in full recirculation during the first 20 minutes from start-up.
- Set the flow rate:
P0278 SfQSet (l/s)

7.17 Fire alarm: configuration

The unit is able to manage the signal coming from a fire detection system or fire control unit installed built-in, activating one of the logics illustrated, which can be set by parameter.

P0094 TypeFireMode

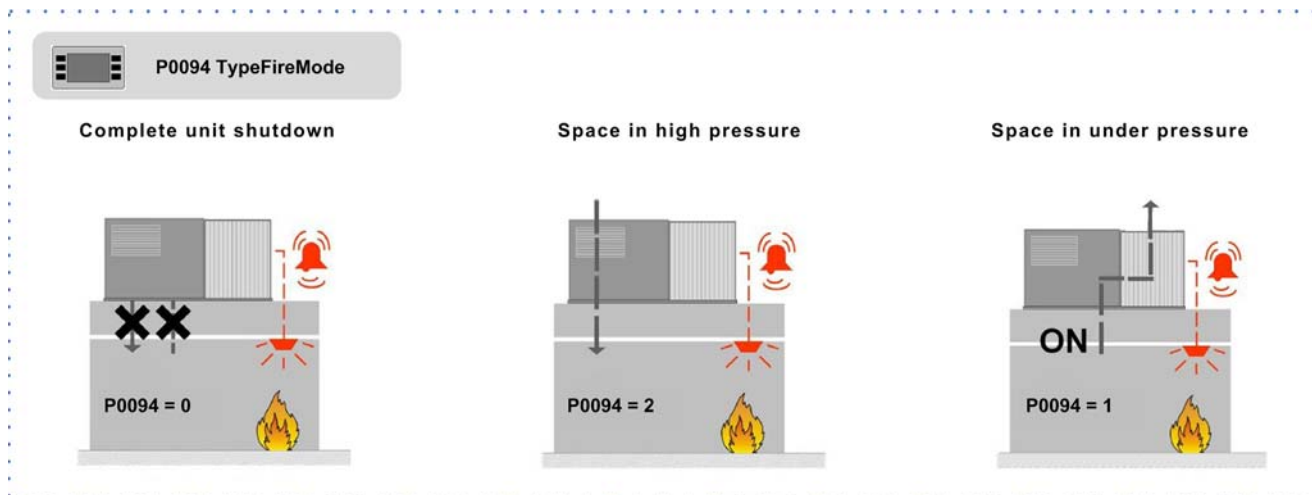
In the presence of alarm signal, the compressors are Always switched off; moreover, the remote on-off is disabled together with the switch on/off control from keypad.



The unit cannot be used as smoke extractor.



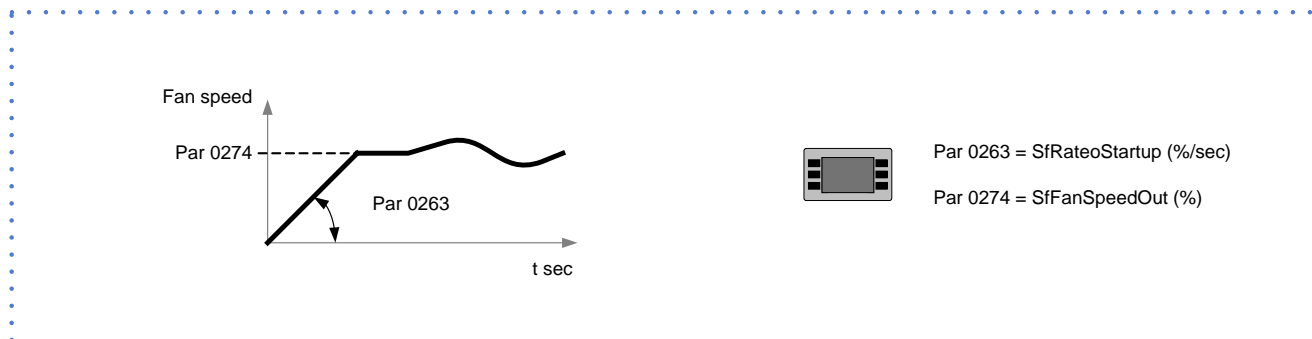
Any fire detection devices built-in the unit must be considered as an auxiliary safety system, and, accordingly, must not be a replacement for any fire detection devices in the room.



7.18 Textile channels

Option

The operation allows to set the start-up ramp of the supply fan



7.19 Application for low outdoor temperature

Option indicated for very cold climates, where the outside temperature can be between -10 and -30°C.

The option includes self-regulating heaters with thermostats that can protect the electrical panel from freezing to make sure it operates correctly.



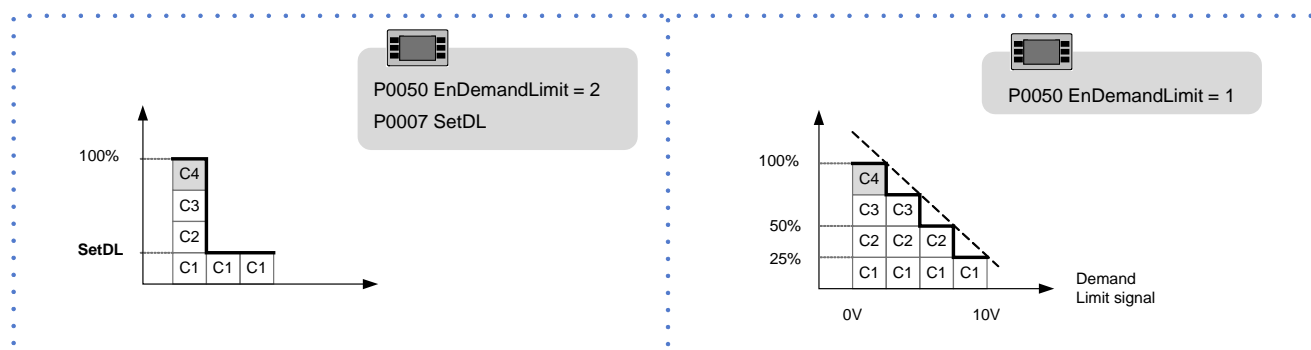
The accessory is also active with unit OFF; the unit must remain powered.



- A. heaters with thermostats
- B. damper
- C. motorised actuator

7.20 Demand limit

- ⚠ Menu accessible only after having entered the password.
 - ⚠ Access reserved only to specifically trained personnel.
 - ⚠ The parameter modification can cause irreversible damages.
- It is possible to limit the absorbed electric power with an external signal 0-10 Vcc.
The higher the signal is, the lower the number of compressors available to meet the thermal need.
- If only P0050: EnDemandLimit = 1
Path: Main menu / Unit parameters / Unit options / Demand limit



7.21 Start-up report

Identifying the operating objective conditions is useful to control the unit over time.

With unit at steady state, i.e. in stable and close-to-work conditions, identify the following data:

- total voltages and absorptions with unit at full load
- absorptions of the different electric loads (compressors, fans, pumps etc)
- temperatures and flows of the different fluids (water, air) both in input and in output from the unit
- temperature and pressures on the characteristic points of the refrigerating circuit (compressor discharge, liquid, intake)

The measurements must be kept and made available during maintenance interventions.

7.22 2014/68/UE PED directive

DIRECTIVE 2014/68/UE PED gives instructions for installers, users and maintenance technicians as well.

Refer to local regulations; briefly and as an example, see the following:

Compulsory verification of the first installation:

- only for units assembled on the installer's building site (for ex. Condensing circuit + direct expansion unit)

Certification of setting in service:

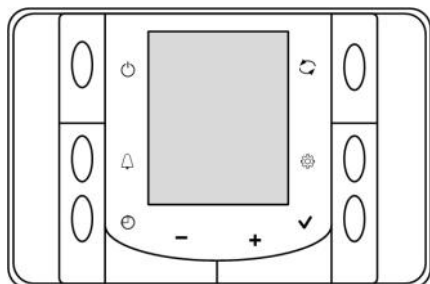
- for all the units

Periodical verifications:









- to be executed with the frequency indicated by the Manufacturer (see the "maintenance inspections" paragraph)

8 Control












Keypad



Keys and function

	change of status: OFF, ON, ECO, FAN
	ALARMS menu access (if available)
	set TIME and DATE set SCHEDULER (prolonged pressure)
	to browse through the menus to set values
	to browse through the menus to set values
	access to the STATUS menu to confirm your selection
	to access the PARAMETERS menu (password) KEYPAD LOCK menu (password)
	HEAT - COOL mode change CLEAN function (prolonged pressure)

Symbols

 <p>ON / OFF OFF status. On the top field of the thermostat, the temperature and OFF indication are alternated every 2 seconds. When the status is OFF, changes to the SETPOINT and schedule are blocked.</p>	 <p>Humidifier / Dehumidifier mode The Humidifier mode is active If flashing, it means the Dehumidifier mode is active</p>
 <p>Automatic Mode: The temperature setpoint is in automatic mode. The user cannot change the setpoint value.</p>	 <p>Recirculation mode: The machine is in recirculation mode</p>
 <p>ECO mode: The machine is in economy mode.</p>	 <p>Compressor ON: At least one compressor is active</p>
 <p>HEAT mode * : The machine is in heat mode.</p>	
 <p>COOL mode: The machine is in cool mode.</p>	 <p>Alarm: There is at least one alarm Press the "alarm" key to view it</p>
 <p>Defrosting Mode: The machine is defrosting.</p>	 <p>Scheduling Mode: The scheduling is active.</p>

Operational modes

MANUAL

The choice between HEATING or COOLING mode is manually carried out from keyboard, room thermostat or remote selector (see ELECTRIC CONNECTIONS chapter).

AUTOMATIC

The choice between HEATING or COOLING mode automatically happens from electronic module depending on the room temperature, detected by the probe in unit return . With temperatures above the cold set, the unit cools the room, with temperatures below the hot set, it heats.

ECO

In this operational mode the minor consumption compared to comfort is privileged:

the ECO-COOL set is higher than the COOLING set

the ECO-HEAT set is lower than the HEATING set

In this mode, the fan periodically activates to verify the room temperature and decide whether to activate or not the available resources to satisfy the set.

It can be activated from keyboard with MODE menu, using the time slots or from supervisor.

FAN

Ventilation only; all the resources devoted to thermoregulation are disabled (compressors, electric heaters, humidifier, etc).

Setpoint

MANUAL TEMPERATURE SETPOINT

The room setpoint can be MANUALLY modified from keyboard at parameter n. 01 ManSet = xx °C .

Starting from this value, the module determines 2 setpoint:

COOLING = manset + dead area/2 = xx +1°C

HEATING = manset - dead area/2 = xx -1°C

AUTOMATIC TEMPERATURE SETPOINT

The setpoint can also AUTOMATICALLY adjust to the outdoor temperature and some parameters variations (modifiable from after-sales assistance centres)

The choice between MANUAL or AUTOMATIC setpoint happens by modifying the parameter

53 En climatica =

0 manual operation

0 automatic operation

HUMIDITY SETPOINT

Only for unit with enthalpy control option.

In heating, the thermoregulator will activate the humidifier by modulating the power in order to humidify the room until reaching the set at parameter 5 SptUrHeat set.

In cooling, the thermoregulator will force compressors operation in order to dehumidify the room until reaching of the set at parameter 4 SptUrCool set.

In parallel, the thermoregulator will activate the post-heating.

SET POINT CO2

Only for units with CO2 / CO2+VOC probe option.

It is possible to manage the air renewal in room based on the CO2 concentration.

The outdoor air in room relation happens by privileging the thermoregulation requirements, therefore, only if :

- in HEATING
the temperature is higher than the set hot - 2 °C
- in COOLING
the temperature is below the setcold – 2°C
- the outdoor temperature is above 16 °C

8.1 PARAMETERS MENU

press



16.3 C°
17:00



the access by password is reserved to qualified personnel, the parameters changes can cause malfunctions.

enter password (0047)



COD

confirm



scroll the parameters



P0
030.0

enable the parameter change
PO starts flashing



change the value of the parameter



P0
032.0

confirm the new value



select

to enable the new value and exit



ESC

when the time is displayed
it is possible to carry out other
operations



MANUAL SET POINT

To change the **manset** manual
temperature Setpoint:
press



16.3 C°
17:00

The unit:
must be On
En Climate must be = 0

keyboard code	Mnemonic	Description
0	SetUrCool	Relative humidity setpoint in Cool mode
1	SetURHeat	Relative Humidity setpoint in Heat mode
2	SetEcoCool	Temperature setpoint in cool economy mode
3	SetEcoHeat	Temperature setpoint in heat economy mode
4	SetCO2	Air quality setpoint
5	EnClimatic	Enables setpoint from climate area
6	Control priority	Start-up/mode change controls priority ([0] keyboard [1] BMS)
7	EnModeAuto	Enables automatic mode change in relation to the return temperature
8	EnScheduler	Enables / disabling scheduler: 0 = disabled, 1 = enabled (P0061 service keypad)

8.2 STATA MENU

Press



16.3 C°
17:00

scroll the statuses



50
011.6

exit



wait for 3 sec

16.3 C°
:

when the time is displayed
it is possible to carry out other
operations

16.3 C°
17:00

Keyboard index	STATUS
0	SupplyTemp._B2:AI-687
1	OutdoorTemp._B3:AI-687
2	RH% Return_X1:AI-955
3	RH% External_X2:AI-955
4	QualityAir_X2:AI-687
5	Nr. active compressors
6	ActVclnt
7	%Cmd ExternalDamper_X7:AO-687
8	PowerHum

Example of status codification:

Supply temperature

Supply temp_B2:AI-687

B2 = electronic module connector code

AI = type of input/output: AI=Analogic input, DI= digital input, AO=analogic output, DO=digital output

687 = electronic module: 687=control unit, 985=compressor, 994=EEV driver,

8.3 DATE AND HOUR

Press



16.3 C°
17:00

HOUR digits start flashing

edit



17:00

confirm

MINUTE digits start flashing

edit



17:00

confirm

HOUR - MINUTE digits start flashing

choose format

24h / am - pm



17:00

set

year, month, day



16.3 C°
17:00

main menu



8.4 BUTTON LOCK

Press for 4 sec.



16.3 C°
17:00

enter password

confirm



COD

example:

T0 = "-" key

ON = active key

see codes-key table

T0
ON

scroll the keys



T1
OFF

select the key

(ALL starts flashing)



ALL
OFF

set active-ON / disabled-OFF

example:

ALL = OFF

all keys disabled



select to confirm



ESC

exit

16.3 C°
17:00

Key-code table

n. key	key	n. key	key
T0		T5	
T1		T6	
T2		T7	
T3		ALL	All keys
T4			

8.5 TO VISUALIZE ALARM IN PROGRESS



Before resetting an alarm identify and remove its cause.
Repeated resets can cause irreversible damage.

press

only if the ALARM symbol is flashing



ee

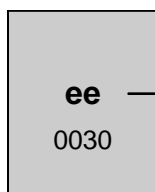
type of alarm (see table)

0

generic alarm (1 circuit1 alarm, etc.)

030

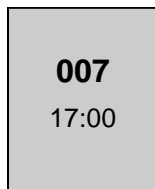
progressive alarm number



Type of alarm

Code	Type	Restore
ee	Electric	Automatic
eE	Electric	From Auto to manual*
EE	Electric	Manual
ii	Idraulic	Automatic
il	Idraulic	From Auto to manual*
II	Idraulic	Manual
ff	Refrigerator	Automatic
fF	Refrigerator	From Auto to manual*
FF	Refrigerator	Manual
aa	Aeraulic	Automatic
aA	Aeraulica	From Auto to manual*
AA	Aeraulica	Manual

press

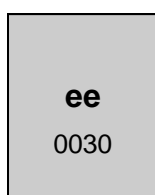


7

days since the alarm was triggered

17:00

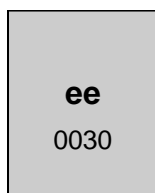
alarm time



previous menu



scroll the alarms



exit without alarms RESET



exit with alarms RESET:
scroll and select RES

* After "n" times the alarm has been triggered, it is necessary to conduct a manual reset.

The code of the circuit 2 alarms is **2nn**:

example:

fF113:DI High pressure = circuit 1

fF213:DI High pressure = circuit 2

8.6 SCHEDULER

Enable scheduler (8.1 menu parametres)

It is possible to set up to 7 schedules (1 for every day of the week)

It is possible to set up to 6 status changes for each day (On, Off, Fan).

In the days not included in the schedule, the unit maintains the most recent status defined in the schedule.

Example:

- Sunday scheduled, 23h unit in OFF mode
- Monday not scheduled (-), the unit remains in - (OFF)

Scheduling example:

Time	Event	1 Monday	2 Tuesday	3 Wedne- sday	4 Thursday	5 Friday	6 Saturday	7 Sunday
05:30	1	- (OFF)	FAN	- (OFF)	FAN	FAN	FAN	- (OFF)
08:00	2	FAN	ON	FAN	ON	ON	ON	FAN
13:00	3	FAN	ON	FAN	ON	ON	ON	FAN
15:00	4	FAN	ON	FAN	ON	ON	ON	FAN
18:00	5	FAN	ON	FAN	ON	ON	ON	FAN
21:00	6	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Scheduling customer:

Time	Event	1 Monday	2 Tuesday	3 Wedne- sday	4 Thursday	5 Friday	6 Saturday	7 Sunday
05:30	1							
08:00	2							
13:00	3							
15:00	4							
18:00	5							
21:00	6							

Sequence of operations:

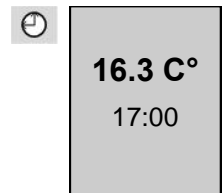
1. Set weekly scheduling (see table example)
2. define days with the same scheduling
(ex. days 2 = 4 = 5 = 6)
3. select days 2,4,5,6
4. set event 1 (event time, state Off - On - Fan)
5. set event 2,3, ecc..
6. select days 1,3,7
7. set event 1,2,3, ecc..

The most recent schedule saved overrides the existing one. For instance, if a day is included in two different schedules, the most recent one saved prevails.

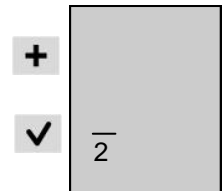
Scheduling days 2,4,5,6

Scheduling the 1st day, also the other days of the week are automatically scheduled.

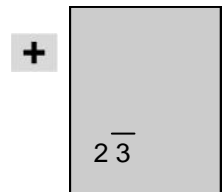
Press 2 sec
(only if the unit is not OFF)



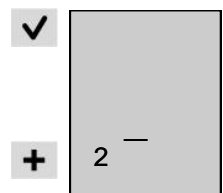
day 1 starts flashing
to go to day 2 press



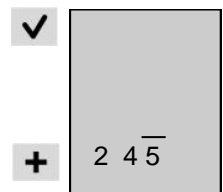
to schedule day 2 press
(2 stays steady = day 2 scheduled)



to exclude day 3 press

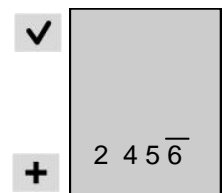


to schedule day 4 press
(4 starts flashing)



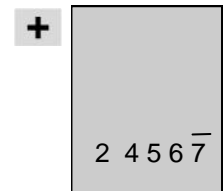
press

to schedule day 5 press
(5 starts flashing)



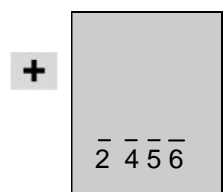
press

to schedule day 6 press
(6 starts flashing)



press

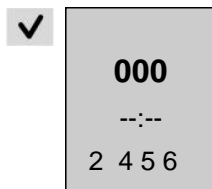
to exclude day 7 press



to confirm selected days press

2 4 5 6 starts flashing

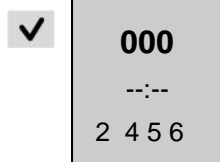
press

**Set event 1**

example: Tuesday 05:30 FAN

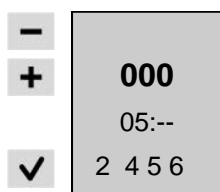
press

-- starts flashing

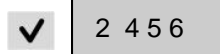


set

- event time

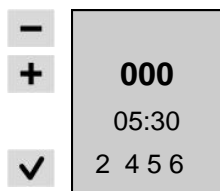


press

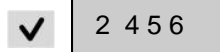


set

- event minutes

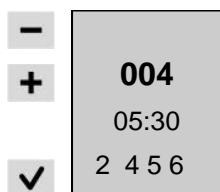


press

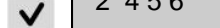


iset

- desired mode

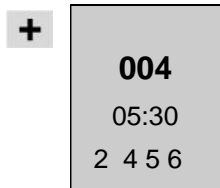
0 = null, 1 = OFF, 2 = ECO,
3 = ON, 4 = Fan

press

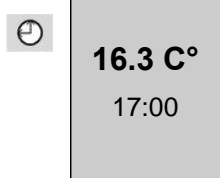
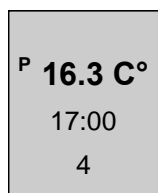


Press

to set other the events 2,3,4,5,6

Repeat from (**Set event 1**)

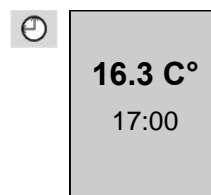
press 2 times to exit

**P** flashing, active scheduling**Scheduling days 1,3,7**

Scheduling the 1st day, also the other days of the week are automatically scheduled.

Press 2 sec

(only if the unit is not OFF)



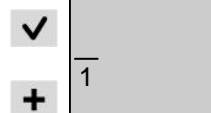
day 1 starts flashing

to schedule day 1 press

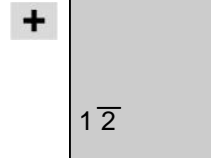
(1 stays steady = day 1 scheduled)

to go to day 2 press

(2 starts flashing)

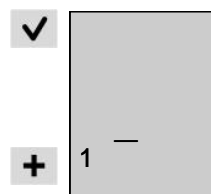


to exclude day 2 press



to schedule day 3 press

(3 starts flashing)

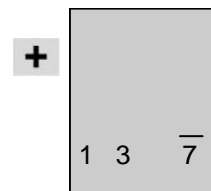


press



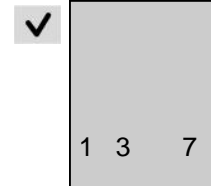
to exclude days 4,5,6

press

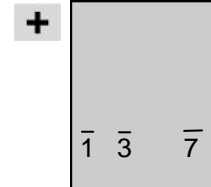


to schedule day 7 press

(7 starts flashing)

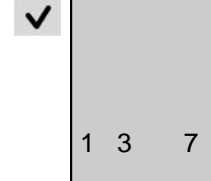


to confirm selected days press



1 3 7 starts flashing

press



press



000

--:--

1 3 7

Set event 1

example: Monday 05:30 FAN

press

-- starts flashing



000

--:--

1 3 7

set

- event time



000

05:--

1 3 7

press



set

- event minutes



000

05:30

1 3 7

press



iset

- desired mode

0 = null, 1 = OFF, 2 = ECO,
3 = ON, 4 = Fan



001

05:30

1 3 7

press



Press

to set other the events 2,3,4,5,6



001

05:30

1 3 7

Ripeat from (Set event 1)

press 2 times to exit



16.3 C°

17:00

P flashing, active scheduling

P 16.3 C°

17:00

4

Modify scheduling

Example:

- day 5
- change events 3 and 4
- from ON to OFF

Time	Event	1 Monday	2 Tuesday	3 Wedne- sday	4 Thursday	5 Friday	6 Saturday	7 Sunday
05:30	1	(OFF)	FAN	(OFF)	FAN	FAN	FAN	(OFF)
08:00	2	FAN	ON	FAN	ON	ON	ON	FAN
13:00	3	FAN	ON	FAN	ON	OFF	ON	FAN
15:00	4	FAN	ON	FAN	ON	OFF	ON	FAN
18:00	5	FAN	ON	FAN	ON	ON	ON	FAN
21:00	6	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Press 2 sec



16.3 C°

17:00

press

to schedule day 5 press



5

press

(5 stays steady)



press to exclude the other days



5 starts flashing

press



5

press 3 times (= event 3)



003

13:00

5

press 3 times

starts flashing 003 (= ON)



003

13:00

5

select mode 002 (=OFF)



002

13:00

5

confirm



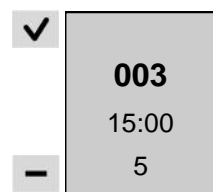
press



press 4 times (= event 4)



press 3 times
starts flashing 003 (= ON)



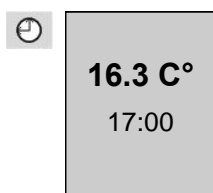
select mode 002 (=OFF)



confirm



press 2 times to exit



8.7 SERVICE KEYPAD

Function keys

- Main menu
- Alarm display
- Exit
Previous level
Keyboard settings
- Up
Increases value
- Down
Decreases value
- Confirm
Password

8.8 DISPLAY MEANING

ActualSetPoint	temperature setting	2	installed compressors
T.In air	Return temperature	3	1 - 0 Compressors ON
T.Out air	Supply temperature		example : circuit 1 = 1 compr. On
ActualState	On / off / eco / pmp On		circuit 2 = 0 compr. On
ActualMode	Cool : cooling	50%	required power
	Heat : heating		

8.9 COMMON OPERATIONS

ON, OFF, ECO	 	main menu → cmd local status → scegliere OFF - ON - ECO - PUMP ON
change MODE	 	main menu → cmd local mode → select COOL - HEAT
change SETPOINT	 	main menu → unit parameters → setpoint

8.10 MAIN MENU

Select



Main index	
Cmd Local state	On
Cmd Local mode	Cool
Unit stata	
Unit parameters	
Scheduler	

Select



Main index	
Cmd Local state	On
Cmd Local mode	Cool
Unit stata	
Unit parameters	
Scheduler	

Confirm



Cmd Local state	OFF
	ECO
	ON
	Fan
Cmd Local mode	Cool
	Heat
Unit Stata	General
	Central
	Expansion
	Thermoregulator
	Stata C1
	Circuit 1 *
	Thermostatic
	Bac
	Lon
Parameters Unit	SetPoint
	Unit Option
Scheduler	Scheduler

Unit Stata → **page 49**

Input, output functioning variables.

See next pages tables

* Circuits number depend on unit's series .

The menu is repeated for each refrigerant circuit (circuit: circuit1, circuit2,.....;thermostatic: circuit1, circuit2,....)

Setpoint Menu

P0001:	ManSet	Manual temperature Setpoint
P0002:	SetEcoCool	Temperature setpoint in cool economy mode
P0003:	SetEcoHeat	Temperature setpoint in heat economy mode
P0004:	SetUrCool	Relative humidity setpoint in Cool mode
P0005:	SetURHeat	Relative Humidity setpoint in Heat mode
P0006:	SetCO2	Air quality setpoint

Unit Option Menu

P0053:	EnClimate	Enables setpoint from climate area
P0054:	Control priority	Start-up/mode change controls priority ([0] keyboard [1] BMS)
P0058:	EnModeAuto	Enables automatic mode change in relation to the return temperature


8.11 SCHEDULER

It is possible to set 6 events (Off, Eco, On, Recirculating) for each week day.


Scheduler must be enabled:


display : actual value = On

pag **xy** : unit parameters service-maintenance, P0500=1


Select 


Main index	
Cmd Local state	On
Cmd Local mode	Cool
Unit stata	
Unit parameters	
System Objects	
<u>Schedulatore</u>	

Confirm 


Select 

Main index	
Actual value	On
<u>01 : Monday</u>	Off
01 : Tuesday	Off
01 : Wednesday	Off
01 : Thursday	Off
01 : Friday	Off


Confirm 


Select 

d01 : Monday	
Scheduled day	Active
Time 1	00:00
Value 1	ECO
Time 2	5:00
Value 2	ON
Time 3	17:00
Value 3	ECO
Time 4	20:00
Value 4	OFF


Confirm 

Setting


Exit 

Select 


d01 : Monday	
Scheduled day	Active
Time 1	xx:yy
Value 1	Eco
Time 2	
Value 2	
Time 3	
Value 3	

Confirm 

Setting

Exit 

8.12 KEYBOARD SETTINGS

Press 3 sec 

Select 

Confirm 

exit : 

To exit :

Select 

Confirm 

HMI settings

local connection

HMI settings

V9.08 B0024
 Backlight color Blue
 Backlight turn off time 0
 Contrast 60
 Brightness 100
 Firmware Update No

HMI settings

local connection

8.13 TO VISUALIZE ALARM IN PROGRESS



Before resetting an alarm identify and remove its cause.
Repeated resets can cause irreversible damage.

Press



alarm log detail

+ eE001 : Monitore fase : Fault

1 Critico (A)

14.02.2012 11.30.10

Press



alarm list

Reset Passivo 1

+ eE001 : Monitore fase : Fault

Press



alarm log

Reset Passivo 10

+ eE001 : Monitore fase : Fault

- EE003 : Guasto P1 Util : Ok

+ EE003 : Guasto P1 Util : Fault

Press



- eE001 : Monitore fase : Fault = active alarm
- - EE003 : Guasto P1 Util : Ok = resetted alarm

RESET ALARM

Press



alarm log detail

+ eE001 : Monitore fase : Fault

1 Critico (A)

14.02.2012 11.30.10

Press



alarm list

Reset Passivo 1

+ eE001 : Monitore fase : Fault

Press



Slide



alarm log

Reset Passivo 10

+ eE001 : Monitore fase : Fault

- EE003 : Guasto P1 Util : Ok

+ EE003 : Guasto P1 Util : Fault

.....

Press 3 sec.



Enter password:
Maintenance
Developer

Password

Password

0 - - -

Confirm



Press



Select



Confirm



alarm list

Reset Passivo 1

+ eE001 : Monitore fase : Fault

Select



Confirm



Passivo

Attivo

Select



alarm list

Reset Passivo 0

Exit:

Press 3 sec.



Select



Confirm



password management

Log off

Cambia PSS user

Cambia PSS service

Cambia PSS manufacturer

ALARM LOG RESET

Press



alarm log

Reset **Passivo 10**

+ eE001 : Monitore fase : Fault

- EE003 : Guasto P1 Util : Ok

+ EE003 : Guasto P1 Util : Fault

.....

Press 3 sec.



10.02.2012	10:15:30
SetPointAttuale	8.5°C
T.InH2OUtilizzo	10.5°C
T.OutH2OUtilizzo	12.5°C
StatoAttuale	ON
ModoAttuale	Cool
12	1 1 100%

Press 3 sec.



Password

Password

0 - - -

Select



password management

Log off

Cambia PSS utente

Cambia PSS service

Cambia PSS costruttore

Insert password:
Maintenance
Manufacturer

Confirm



Confirm



Press



alarm log

Reset **Passivo 10**

+ eE001 : Monitore fase : Fault

- EE003 : Guasto P1 Util : Ok

+ EE003 : Guasto P1 Util : Fault

.....

Select



Alarm cnf

AlarmSnapshot 0

Lista allarmi :

Ordinamento 1 Ora

Ordinamento 2 Ora

Ordine decrescente Passive

Storico allarmi :

Reset

Confirm



Select



Execute

Confirm



Select



Allarmi cnf

AlarmSnapshot 0

Lista allarmi :

Ordinamento 1 Ora

Ordinamento 2 Ora

Ordine decrescente Passive

Storico allarmi :

Reset

8.14 MAIN MENÙ - INSTALLER USE

Press 3 sec.



Password

Password
0 - - -

insert maintenance password



Main index

Cmd Local state	On
Cmd Local mode	Cool
Unit stata	
Unit parameters	
Scheduler	

Select



Main index

Cmd Local state	On
Cmd Local mode	Cool
Unit stata	
<u>Unit parameters</u>	
System Objects	
Scheduler	

Confirm



Unit Stata

Circuit stata

Circuit 1 stata

Circuit 1 I/O stata

Thermostatic stata

General stata

Central POL687-IO

Expansion POL955 - I/O

Thermoregulator

exFlow option

Unit parameters

SetPoint

Unit setting

circuit setting

Circuit C1

Thermostatic C1

Unit option

Thermoregulator

Integrations

Compressor

Correction SH

Source

Ventilation

Supply fan

Return fan

Circuit alarms

Defrost - not used

Humidity control

Recovery renewal

Reset usure

Sensor settings

Serial communication

8.15 ALLARMS - TAB 1

ID	Description	Reset
AA003	Fire	M
aa004	Dirty filters	A
aa008	Supply air flow	A
eE001	Phase monitor	A/M
EE002	Compartment opening	M
EE005	Electrostatic Filters	A
ee006	POL955 Board Offline	A
eE007	Supply fan protections	A/M
eE009	Return, exhaust fan protections	A/M
EE010	Additions high temp.	M
EE011	Addition heater	M
ee020	POL822 keyboard offline	A
ee027	Return temperature probe	A
ee028	Delivery temperature probe	A
ee029	Outside temperature local probe	A
ee030	Deman Limit input	A
ee031	Relative return humidity probe	A
ee032	Outside relative Humidity probe	A
ee033	Air Quality probe	A
ee035	Supply fan Pdiff. Probe	A
ee036	External fan Pdiff. probe	A
ee037	Return fan Pdiff. probe	A
ee038	Coil antifreeze probe	A
ee039	Supply pressure probe	A
ee040	Signal from humidifier board	A
ee041	Alarm from humidifier board	A
ee042	Alarm from humidifier board	A
ee043	Humidifier board offline	A
ee044	POL925 (1) board offline	A
ee045	POL925 (1) board offline	A
ee046	Ambient pressure probe failure	A
ee101	Circuit 1 module disconnection on ProcessBus	A
ee102	Thermostatic valve driver timeout	A
ee104	Thermostatic valve block	A
EE106	Comp 1 Protec.	M
EE107	Comp 2 Protec.	M
EE108	Comp 3 Protec.	M
EE118	Source Protec.	M
ee122	Discharge temperature C1 probe	A
ee123	Discharge temperature C2 probe	A
ee124	Discharge temperature C3 probe	A
ee125	Source 1 Temp. probe	A
ee126	Source 2 Temp. probe	A
ee127	Suction Temp. probe	A

ALLARMS - TAB 2

ID	Description	Reset
ee128	Discharge Pression probe	A
ee129	Suction Pression probe	A
Ee137	timeout	
Ee201 - 237	Ee201 circuit 2 fault = ee 101 circuit 1 fault etc	A
ee202	driver 1 module disconnection on ProcessBus	A
ee204	thermostatic valve block	A
ff105	Overheating below minimum limit	A
fF109	DI Low Pressure	A/M
ff110	Cool Low pressure Pre-alarm	A
ff111	Low Heat Pressure pre-alarm	A
fF112	AI Low Pressure	A/M
fF113	DI High Pressure	A/M
ff114	High pressure pre-alarm	A
fF115	AI High Pressure	A/M
ff116	Max. Press. rat. pre-alarm	A
fF117	Min Press. Rat. pre-alarm	A/M
FF119	Max Press. Rat. alarm	M
FF134	Empty circuit alarm	M
FF136	Defrost not manageable due to activated Demand Limit	M
Ff205 - 234	ff205 circuit 2 fault = ff 105 circuit 1 fault etc	A
il012	Addition antifreeze	A
il120	Source flow	A
Il121	Source frost	M
il220	Source flow	M
Il221	Source frost	M

Type of alarm

A automatic reset

M manual reset

A/M automatic reset , after N alarm → manual reset

STATA - TAB 1

MENU	ID	Short description	Description
1 Main Page	-	Machine status	Current unit status [0]:Off, [1]:ECO, [2]:ON, [3]:FAN
1 Main Page	-	Machine mode	Current unit mode [0]:COOL, [1]:HEAT
1 Main Page	-	Current setpoint	Current unit setpoint
1 Main Page	-	No. of steps used	Number of compressors currently activated
10 Main Index	-	Clean	Clean control from HMI
3001 Central POL687 - IO	-	IntakeTemp._B1:AI-687	Return temperature detected by the main board's analogue input
3001 Central POL687 - IO	-	OutdoorTemp._B3:AI-687	Outside temperature
3001 Central POL687 - IO	-	SupplyTemp._B2:AI-687	Supply temperature
3001 Central POL687 - IO	-	%Cmd RicioDamper_X1:AO-687	Recirculation damper opening control percentage
3001 Central POL687 - IO	-	QualityAir_X2:AI-687	Air quality value from analogical input
3001 Central POL687 - IO	-	SupplyPDiff_X3:AI-687	Supply fan differential pressure to calculate air flow rate
3001 Central POL687 - IO	-	ExternalPDiff_X4:AI-687	Return external differential pressure to examine pressure drops on the return channel and, if necessary, adjust the external damper
3001 Central POL687 - IO	-	ON-OFFRem_DU1:DI-687	On/off digital input status (open OFF, closed ON)
3001 Central POL687 - IO	-	Heat/CoolRem_DU2:DI-687	Digital input status for mode change (open COOL, closed HEAT)
3001 Central POL687 - IO	-	PhaseControl_D1:DI-687	Phase monitor alarm input status (open ALARM)
3001 Central POL687 - IO	-	Ovl SupplyFan_DL1:DI-687	Supply fan thermal digital input status (open ALARM)
3001 Central POL687 - IO	-	Ovl RipEspFan_DL2:DI-687	Return/exhaust fan thermal digital input status (open ALARM)
3001 Central POL687 - IO	-	Diff. Filters_D2:DI-687	Supply air filters differential input status (open INSUFFICIENT FLOW)
3001 Central POL687 - IO	-	Fire Alarm_X8:DI-687	Fire alarm input status (open ALARM)
3001 Central POL687 - IO	-	%Cmd Supply Fan_X5:AO-687	Modulating supply fan control percentage
3001 Central POL687 - IO	-	%Cmd ExternalDamper_X7:AO-687	External damper opening control percentage
3001 Central POL687 - IO	-	%Cmd EjectionDamper_X6:AO-687	Exhaust damper opening control percentage
3001 Central POL687 - IO	-	Cmd CumAlarm_Q2:DO-687	Alarm cumulative control status
3001 Central POL687 - IO	-	Cmd EjectionDamper_Q5:DO-687	Exhaust damper/fan control status
3001 Central POL687 - IO	-	Cmd Humidifier_Q6:DO-687	Humidifier control status
3001 Central POL687 - IO	-	Cmd SupplyFan_Q3:DO-687	Supply fan control status
3001 Central POL687 - IO	-	Cmd ReturnFan_Q4:DO-687	Return fan control status
3001 Central POL687 - IO	-	Cmd ModeUnit_Q1:DO-687	Unit mode control status (open COOL, closed HEAT)
3001 Central POL687 - IO	-	AntifreezeHeater_Q8	Control status of the antifreeze heaters for source side water exchangers
3002 Expansion POL955 - IO	-	ReturnPDiff_X4:AI-955	Return fan differential pressure to calculate air flow rate
3002 Expansion POL955 - IO	-	Freeze Addition_X3:AI-955	Water coil output temperature for additions' antifreeze function
3002 Expansion POL955 - IO	-	RH% outdoor_X2:AI-955	Outside relative humidity value
3002 Expansion POL955 - IO	-	Supply Pressure_X5:AI-955	Absolute pressure status on supply channel
3002 Expansion POL955 - IO	-	RH% Return_X1:AI-955	Relative return humidity value
3002 Expansion POL955 - IO	-	HT Addition_X6:DI-955	Additions' high temperature alarm input status
3002 Expansion POL955 - IO	-	Ovl Addition_X7:DI-955	Addition protections alarm input status
3002 Expansion POL955 - IO	-	Supply Flux_X8:DI-955	Supply air flow switch status
3002 Expansion POL955 - IO	-	%Cmd Addition_Y2:AO-955	Integration element control percentage
3002 Expansion POL955 - IO	-	%Cmd Return Fan_Y1:AO-955	Return fan control percentage
3002 Expansion POL955 - IO	-	Cmd Addition Pump_Q1:DO-955	Additions' pump control for water coil
3002 Expansion POL955 - IO	-	Cmd Addition 1_Q2:DO-955	Addition 1 control

STATA - TAB 2

MENU	ID	Short description	Description
3002 Expansion POL955 - IO	-	Cmd Addition 2_Q2:DO-955	Addition 2 control
3002 Expansion POL955 - IO	-	Cmd Addition 3_Q2:DO-955	Addition 3 control
3003 Thermoregulator	1	Startup phase	Start-up phase
3003 Thermoregulator	2	Time to end startup	Start-up end timer
3003 Thermoregulator	3	Info to compressor	Information on the compressors
3003 Thermoregulator	4	Info to freecooling/heatingFCHMsg	Freecooling/heating information
3003 Thermoregulator	5	Maximum power available for freecooling/heating	Maximum power available for freecooling
3003 Thermoregulator	6	Info to addition	Information on the additions
3003 Thermoregulator	7	Thermoreg. total request	Thermoreg. total request
3003 Thermoregulator	8	Thermoreg. compressor request	Thermoreg. compressor request
3003 Thermoregulator	9	Thermoreg. freecooling/heating request	Thermoreg. freecooling/heating request
3003 Thermoregulator	10	Thermoreg. addition request	Thermoreg. addition request
3003 Thermoregulator	11	Actual compressor limit for supply T	Power limit of the compressors for supply temp.:
3003 Thermoregulator	12	Actual fch limit for supply T	Freecooling/heating power limit for supply temp.:
3003 Thermoregulator	13	Actual addition limit for supply T	Power limit of the additions for supply temp.:
3003 Thermoregulator	14	Thermo req. compressor	Reg. requested for the compressors
3003 Thermoregulator	15	Thermo req. Fch	Reg. requested for freecooling/heating
3003 Thermoregulator	16	Fch state	Freecooling/heating status
3003 Thermoregulator	17	Actual request for addition	Reg. requested for the additions
3003 Thermoregulator	18	Addition state	Additions' status
3003 Thermoregulator	19	CntDwn start regulation	Countdown to start regulation
3003 Thermoregulator	20	CntDwn stop fan	Countdown to stop fans
3003 Thermoregulator	21	Wait insert step	Minimum waiting time to enable power
3003 Thermoregulator	22	Wait release step	Minimum waiting time to release power
3003 Thermoregulator	23	Enth. outdoor	External air enthalpy
3003 Thermoregulator	24	Enth. Return	Return air enthalpy
3003 Thermoregulator	25	US outdoor	External air specific humidity
3003 Thermoregulator	26	US return	Return air specific humidity
3003 Thermoregulator	27	Renoval available	Renewal availability
3003 Thermoregulator	28	CO2BMS	CO2 value passed BY BMS
3003 Thermoregulator	29	Modulation external damper for CO2	External damper modulation for CO2
3003 Thermoregulator	30	Correction external damper for Pdiff	External damper adjustment for diff. pressure
3003 Thermoregulator	31	Power Humidifier	Humidifier power
3003 Thermoregulator	32	Humidifier command	Humidifier control
3003 Thermoregulator	33	H2O valve command	Adiabatic humidifier control
3003 Thermoregulator	34	Power dehumidification	Post-heating power
3003 Thermoregulator	35	Valve postheat state	Post-heating valve status
3003 Thermoregulator	36	CPYCylHr	Cylinder hours CPY humidifier
3003 Thermoregulator	37	CPYHr	Operating hours CPY humidifier
3003 Thermoregulator	38	CPYStage	CPY humidifier operating stage
3003 Thermoregulator	39	CPYStatus	CPY humidifier operating status

STATA - TAB 3

MENU	ID	Short description	Description
3003 Thermoregulator	40	CPYCurrent	CPY humidifier absorbed current
3003 Thermoregulator	41	CPYIstSteam	CPY humidifier output
3003 Thermoregulator	42	Supply Q Air	Supply air flow rate
3003 Thermoregulator	43	Return Q Air	Return air flow rate
3003 Thermoregulator	44	Supply temp. ctrl low power	Supply temperature control activation status for low capacities
3003 Thermoregulator	45	Max mod. damper low power	Maximum renewal for supply limit
3003 Thermoregulator	46	SetActPAmbExt	Current external/return pressure setpoint
3003 Thermoregulator	47	PressRoomExFlow	Status of the ambient pressure detector – ExFlow opt.
3003 Thermoregulator	48	Nr Extractor Run ExFlow	Number of active extractors – ExFlow option
3003 Thermoregulator	49	ExFlow Modulation	External damper modulation associated with ExFlow opt.
3101 Circuit C1 Stata	1100	CMP1 starts	Compressor 1 start-ups
3101 Circuit C1 Stata	1101	CMP2 starts	Compressor 2 start-ups
3101 Circuit C1 Stata	1102	CMP3 starts	Compressor 3 start-ups
3101 Circuit C1 Stata	1104	Source starts	Source motor start-ups
3101 Circuit C1 Stata	1105	Hours Comp.1	Compressor 1 hours
3101 Circuit C1 Stata	1106	Hours Comp.2	Compressor 2 hours
3101 Circuit C1 Stata	1107	Hours Comp.3	Compressor 3 hours
3101 Circuit C1 Stata	1108	HoursScrew	Screw compressor hours
3101 Circuit C1 Stata	1109	HoursSource	Source motor hours
3101 Circuit C1 Stata	1110	Total steps	Total amount of active steps on the circuit
3101 Circuit C1 Stata	1111	Comp.1 status	0=Free 1=Active 2=Timed 3=Not enabled
3101 Circuit C1 Stata	1112	Comp.2 status	0=Free 1=Active 2=Timed 3=Not enabled
3101 Circuit C1 Stata	1113	Comp.3 status	0=Free 1=Active 2=Timed 3=Not enabled
3101 Circuit C1 Stata	1114	Current cap.	Capacity currently employed on the circuit
3101 Circuit C1 Stata	1115	Requested cap.	Capacity requested on the circuit
3101 Circuit C1 Stata	1116	Pressure ratio	Compression ratio status (1+Hp/1+LP)
3101 Circuit C1 Stata	1117	FANPreAlarm	Status of the maximum ventilation pre-alarm in progress 0=Off 1=On
3101 Circuit C1 Stata	1118	Defrost delay	Current value of the countdown towards the cycle inversion due to defrosting. (defrosting starts when the value reaches zero)
3101 Circuit C1 Stata	1119	Defrost status	Indicates the defrosting status 0=DfrOff (Cycle inversion phase for defrosting phase NOT active) 1=DfrON (Cycle inversion phase for defrosting phase ACTIVE)
3101 Circuit C1 Stata	1120	HWErr	0=Off 1=On_Hardware error of the POL94U module that does not preclude the possibility of moving the valve or closing it. Possible causes: anomalous voltage values in the valve motor
3101 Circuit C1 Stata	1121	BlckingHWErr	0=Off 1=On_Hardware error of the POL94U module that prevents the electronic valve from moving. Possible causes: UPS not available, wrong POL94U Bios, HW POL94U Error, Disconnected EEV Motor, calibration error associated with configuration parameters.
3101 Circuit C1 Stata	1122	FailSafeSta	0=Off 1=On_Active block status
3101 Circuit C1 Stata	1123	UPSNotAval	0=Off 1=On_UPS failure
3101 Circuit C1 Stata	1124	CircWarning	Status associated with minor alarm on the circuit
3101 Circuit C1 Stata	1125	CircBlock	Status associated with circuit block alarm
3101 Circuit C1 Stata	1126	ThTempDischarge	Theoretical discharge temperature
3102 Circuit C1 -IO Stata	-	T.DischargeC1_B1:AI-985	Compressor 1 discharge temperature

STATA - TAB 4

MENU	ID	Short description	Description
3102 Circuit C1 -IO Stata	-	T.DischargeC2_B2:AI-985	Compressor 2 discharge temperature
3102 Circuit C1 -IO Stata	-	T.DischargeC3_X2:AI-985	Compressor 3 discharge temperature
3102 Circuit C1 -IO Stata	-	T.Source1_B3:AI-985	Source 1 temperature (for machines with reversible air source on gas = Probe 1 on the source coil. For machines with water source = Source input probe)
3102 Circuit C1 -IO Stata	-	T.Source2_X1:AI-985	Source 2 temperature (for machines with reversible air source on gas = Probe 2 on the source coil. For machines with water source = Source output probe)
3102 Circuit C1 -IO Stata	-	T.Suction_X2:AI-94U	Intake temperature
3102 Circuit C1 -IO Stata	-	DemandLimit_X2:AI-985	Analogue input for demand limit function
3102 Circuit C1 -IO Stata	-	P.Discharge_X3:AI-985	High pressure transducer
3102 Circuit C1 -IO Stata	-	P.Suction_X1:AI-94U	Low pressure transducer
3102 Circuit C1 -IO Stata	-	Ovl Cmp1_D1:DI-985	0=Fault 1=OK Status of the thermal protection contact of compressor 1
3102 Circuit C1 -IO Stata	-	Ovl Cmp2_D2:DI-985	0=Fault 1=OK Status of the thermal protection contact of compressor 2
3102 Circuit C1 -IO Stata	-	Ovl Cmp3_D3:DI-985	0=Fault 1=OK Status of the thermal protection contact of compressor 3
3102 Circuit C1 -IO Stata	-	SourceFlow_X4:DI-985	0=Fault 1=OK Status of the source flow contact (Active only on machines with water source)
3102 Circuit C1 -IO Stata	-	LP_X7:DI-985	0=Fault 1=OK Status of the low-pressure pressure switch contact
3102 Circuit C1 -IO Stata	-	Cmptrmnt opening_DL1:DI-985	0=Fault 1=OK Status of the machine compartments opening contact
3102 Circuit C1 -IO Stata	-	HP_X8:DI-985	0=Fault 1=OK Status of the high-pressure pressure switch contact
3102 Circuit C1 -IO Stata	-	Ovl Source_DL2:DI-985	0=Fault 1=OK Status of the thermal protection contact of the source motors
3102 Circuit C1 -IO Stata	-	ElectFilter_X5:DI-985	0=Fault 1=OK Status of the electrostatic filters' protection contact
3102 Circuit C1 -IO Stata	-	%Cmd Source_X6:AO-985	Percentage value of the status of the control signal of the modulating source motor_X6:AO-985
3102 Circuit C1 -IO Stata	-	Cmd Cmp1_Q2:DO-985	0=Off 1=On_Status of compressor 1 control_Q2:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Cmp2_Q3:DO-985	0=Off 1=On_Status of compressor 2 control_Q3:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Cmp3_Q4:DO-985	0=Off 1=On_Status of compressor 3 control_Q4:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Sorg_Q1:DO-985	0=Off 1=On_Status of source motor control_Q1:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Inj.Cmp1_Q5:DO-985	0=Off 1=On_Status of the compressor 1 liquid injection valve_Q5:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Inj.Cmp2_Q7:DO-985	0=Off 1=On_Status of compressor 2 liquid injection valve_Q7:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Inj.Cmp3_Q8:DO-985	0=Off 1=On_Status of compressor 3 liquid injection valve_Q8:DO-985
3102 Circuit C1 -IO Stata	-	Cmd YV4 vie_Q6:DO-985	0=Off 1=On_Status of control of the cycle inversion valve_Q6:DO-985
3102 Circuit C1 -IO Stata	-	Cmd Digital_DO2:DO-985	0=Off 1=On_Status of button valve control for PWM compressors_DO2:DO-985
3200 Thermostatic C1 Stata	1200	SHSpOp	Operating overheating setpoint net with SH and MET adjustments
3200 Thermostatic C1 Stata	1201	AlCalSuctSprHtP	Current overheating value calculated
3200 Thermostatic C1 Stata	1202	ECVState	0 = Idle 1 = ECValarm 2 = FailSafe 3 = Referencing 4 = Positioning 5 = Positioned 6 = ECVWaiting 7 = FastClosing
3200 Thermostatic C1 Stata	1203	EEVSH_Limiter	Maximum valve opening determined by the minimum SH control function
3200 Thermostatic C1 Stata	1204	EEVLET_Limiter	Status of the minimum LET intake temperature control

STATATA - TAB 5

MENU	ID	Short description	Description
3200 Thermostatic C1 Stata	1205	EEVMode	0=Idle (motor off) 1=Init (valve initialised when completely closed) 2=Manual (valve controlled in manual mode) 3=Control (the valve conducts adjustments to control SH)
3200 Thermostatic C1 Stata	1206	Prepos	Positioning % required for thermostatics
3200 Thermostatic C1 Stata	1207	ECVSetPos	Opening percentage of the valve when EEVMod = Manual
3200 Thermostatic C1 Stata	1208	ECVMode	0 = Idle 1 = Init 2 = Position 3 = FastClose
3200 Thermostatic C1 Stata	1209	SHPIDOut	% value of the PID output to adjust the valve
3200 Thermostatic C1 Stata	1210	EEVStatus	0 - Closed (Ready) 1 - StartUpPositioning 2 - StartUpPositioned 3 - SuperHeat 4 - Prepositioning 5 - MET 6 - LET 7 - Closing 8 - PumpDown 9 - DangAlarm 10 - PumpDownStartUp 11 - ECVAlarm 12 - MinSHLmtr 13 - WaitValveClose 255 - Warning
3200 Thermostatic C1 Stata	1211	SetPosSteps	Control of the number of steps the valve must reach to adjust overheating
3200 Thermostatic C1 Stata	1212	SetPos%	Opening % control of the valve to adjust overheating
3200 Thermostatic C1 Stata	1213	Pol94xCommOK	0=NotOK 1=OK_Connection status of the POL94U module on processbus
3200 Thermostatic C1 Stata	1214	ActPos%	% value of the current status of the EEV valve
3200 Thermostatic C1 Stata	1215	ActPosSteps	Current number of steps of the EEV valve
3200 Thermostatic C1 Stata	1216	ECVMode	0 = Idle 1 = Init 2 = Position 3 = FastClose.
3200 Thermostatic C1 Stata	1217	ECVState	0 = Idle 1 = ECVAlarm 2 = FailSafe 3 = Referencing 4 = Positioning 5 = Positioned 6 = ECVWaiting 7 = FastClosing
Circuit 2 stata : 2100 circuit 2 = 1100 circuit 1			

MENU	ID	Short description	Description
4300 ModBus	750	ModBusBios	Bios version of the ModBus RTU expansion module
4301 BacNet	700	BacnetIPModul	Relative status with the Bacnet module 0=Absent 1 = Present
4301 BacNet	701	BacnetIPState	0=Null 1=Init 2=OK
4301 BacNet	702	BacnetCnf	0=NotOK 1=OK (se Current IP = Set IP, Current MASK = Set MASK, Current DHCP= Set DHCP allora OK)
4301 BacNet	703	BacNetBios	Versione bios del modulo espansione BacNet
4302 LonWorks	800	LonID	Universal identification status of the Lon device
4302 LonWorks	801	LonState	Status of the Lon node
4302 LonWorks	802	LonBios	Versione bios del modulo espansione LonWorks
3004 Expansion POL925 - IO	-	Input 1 X4 - DIPOL687	ExFlow option input 1 status
3004 Expansion POL925 - IO	-	Input 2 DI1 - DIPOL926 (1)	ExFlow option input 2 status
3004 Expansion POL925 - IO	-	Input 3 DI2 - DIPOL926 (1)	ExFlow option input 3 status
3004 Expansion POL925 - IO	-	Input 4 DI3 - DIPOL926 (1)	ExFlow option input 4 status
3004 Expansion POL925 - IO	-	Input 5 DI4 - DIPOL926 (1)	ExFlow option input 5 status
3004 Expansion POL925 - IO	-	Input 6 DI1 - DIPOL926 (2)	ExFlow option input 6 status
3004 Expansion POL925 - IO	-	Input 7 DI2 - DIPOL926 (2)	ExFlow option input 7 status
3004 Expansion POL925 - IO	-	Input 8 DI3 - DIPOL925 (2)	ExFlow option input 8 status
3004 Expansion POL925 - IO	-	Input 9 DI4 - DIPOL925 (2)	ExFlow option input 9 status

9 Maintenance

9.1 General description

Maintenance must be done by authorized centres or by qualified personnel.

The maintenance allows to:

- maintain the unit efficiency
- increase the life span of the equipment
- assemble information and data to understand the state of the unit efficiency and avoid possible damages

Before checking, please verify the following:

- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no tension is present



After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.



Before accessing check with a multimeter that there are no residual stresses.

9.2 Inspections frequency

Perform an inspection every 6 months minimum.

The frequency, however, depends on the use.



In the event of frequent use it is recommended to plan inspections at shorter intervals:

- frequent use (continuous or very intermittent use, near the operating limits, etc)
- critical use (service necessary)

√	intervention frequency (months)	1	6	12
1	presence corrosion			X
2	panel fixing			X
3	fan fixing		X	
4	coil cleaning		X	
5	bowl cleaning + sanitisation		X	
6	outflow test		X	
7	air filters cleaning / inspection	X		
8	check of the fixing and the insulation of the power lead			X
9	check of the earthing cable			X
10	electric panel cleaning			X
11	capacity contactor status			X
12	terminal closing, cable insulation integrity			X
13	voltage and phase unbalancing (no load and on-load)		X	
14	absorptions of the single electrical loads		X	
15	test of the compressor crankcase heaters		X	
16	Checking for leaks			*
17	survey of the refrigerant circuit operating parameters		X	
18	safety valve			*
19	protective device test: pressure switches, thermostats, flow switches etc..		X	
20	control system test: setpoint, climatic compensations, capacity stepping, water / air flow-rate variations		X	
21	control device test: alarm signalling, thermometers, probes, pressure gauges etc..		X	

* Refer to the local regulations; and ensure correct adherence. Companies and technicians that effect interventions of installation, maintenance/repairs, leak control and recovery must be CERTIFIED as expected by the local regulations. The leak control must be effected with annual renewal.

9.3 Unit booklet

It's advisable to create a unit booklet to take notes of the unit interventions.

In this way it will be easier to adequately note the various interventions and aid any troubleshooting.

Report on the booklet:

- date
- intervention description
- carried out measures etc.

9.4 Standby mode

If a long period of inactivity is foreseen:

- turn off the power
- avoid the risk of frost (empty the system or add glycol)

Turn off the power to avoid electrical risks or damages by lightning strikes.



With lower temperatures keep heaters turned on in of the electrical panel (option).

It's recommended that the re-start after the stopping period is performed by a qualified technician, especially after seasonal stops or seasonal switching.

When restarting, refer to what is indicated in the "start-up" section.

Schedule technical assistance in advance to avoid hitches and to guarantee that the system can be used when required.

9.5 Outdoor air coil



Contact with the exchanger fins can cause cuts: wear protective gloves to perform the above described operations.

The finned surfaces of the cooling coils and, in particular, the condense collection bowls constitute places where microorganisms and moulds greatly flourish.

It is very important to foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

9.6 Condensation collection basin

Dirt or scale can give rise to clogging.

Also, microorganisms and mould can flourish in the bowl.

It is very important to foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

Once cleaning is completed, pour water inside the bowl to check the regular outflow.

9.7 G4 Folded air filters

It is very important for the air treatment coil to offer maximum thermal exchange: the unit must always work with clean and installed filters.

Cleaning and replacement of filters are very important from an hygienic-sanitary point of view.



Operation with clogged filters leads to a reduction in the air flow rate with malfunctionings and block, up to possible breaks in the unit.

The frequency with which the filters must be checked depends on the quality of the air, the unit operation hours, the dustiness and crowding of rooms.



Frequency can indicatively vary from WEEKLY to MONTHLY.



It is advised to start with frequent checks, subsequently adjusting frequency to degree of detected dirt.

1. Remove the closing panels
2. Delicately remove the filter avoiding dirtying the area below
3. Wash the filtering jacket in warm water with common detergent
4. Accurately rinse in running water avoiding spilling in the room
5. Dry the filter
6. Insert it back in its seat
7. Remount the closing panels

Old filters, washing wastewater and residues must be disposed of according to the current standards.

9.8 High efficiency air filter

Accessory

For details see:

10 Accessories p. 54

9.9 Water side exchanger

It is very important for the exchanger to be able to provide the maximum thermal exchange, therefore it is essential for the inner surfaces to be clean of dirt and incrustations.

Periodically check the difference between the temperature of the supply water and the condensation temperature: if the difference is greater than 8°C–10°C it is advisable to clean the exchanger.

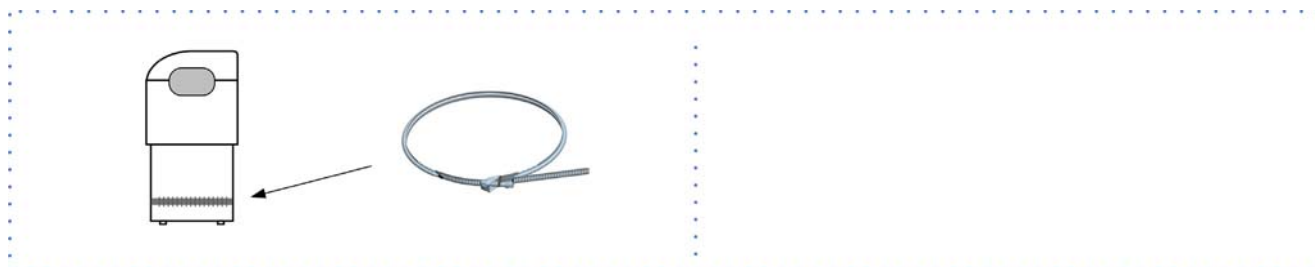
The clearing must be effected:

- with circulation opposite to the usual one
- with a speed at least 1,5 times higher than the nominal one
- with an appropriate product moderately acid (95% water + 5% phosphoric acid)
- after the cleaning rinse with water to inhibit the action of any residual product

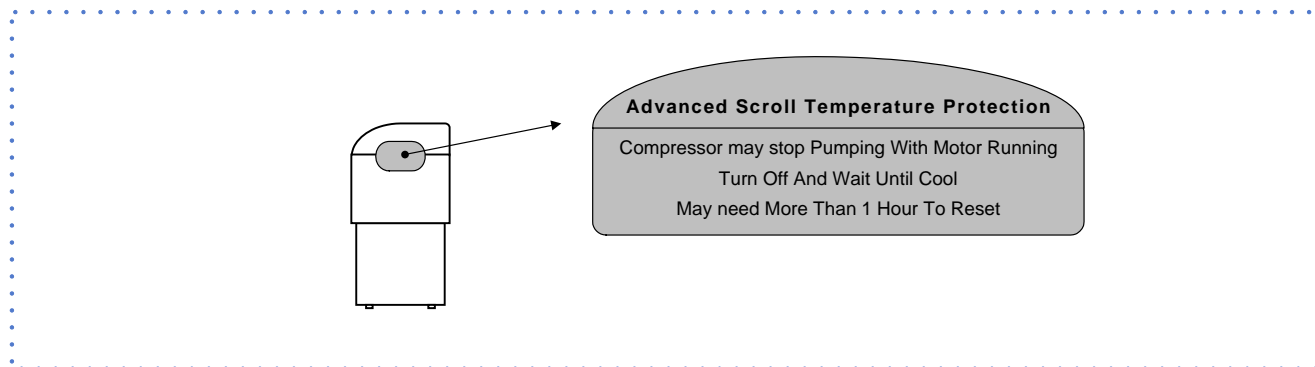
9.10 crankcase heater

Check:

- closure
- Operation



9.11 Copeland scroll compressor



9.12 Electric heaters

Accessory

Check:

- cleaning state
- fastening
- presence of corrosion

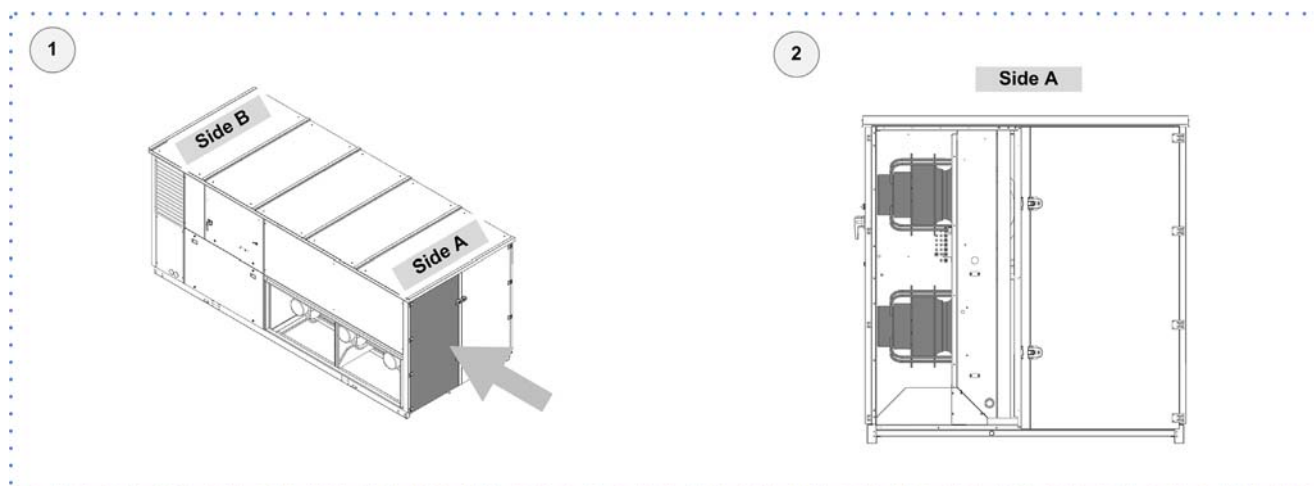
9.13 Humidifier

Accessory

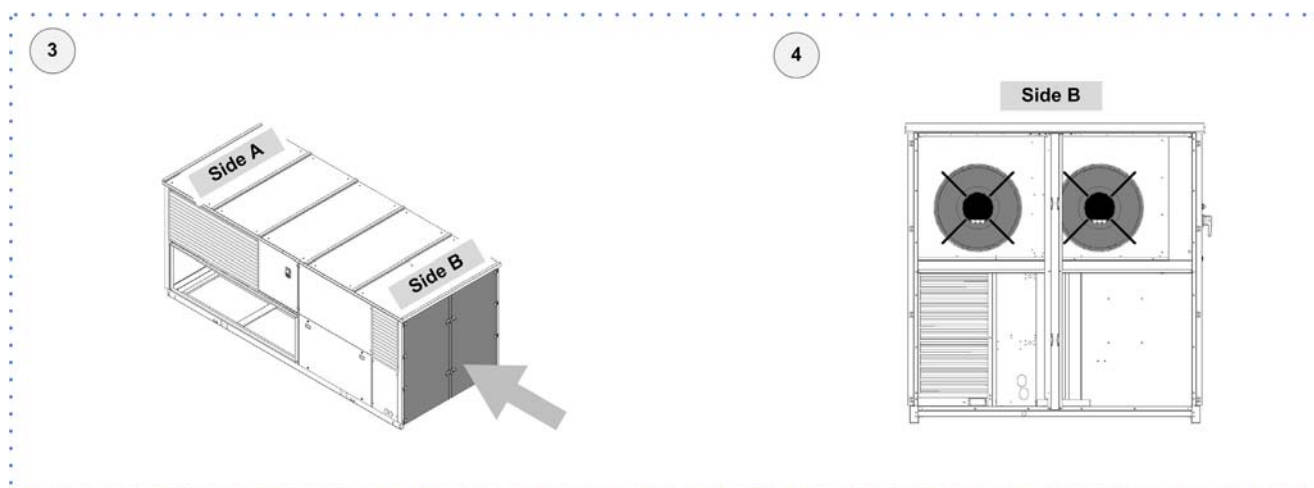
For details see:

10 Accessories p. 54

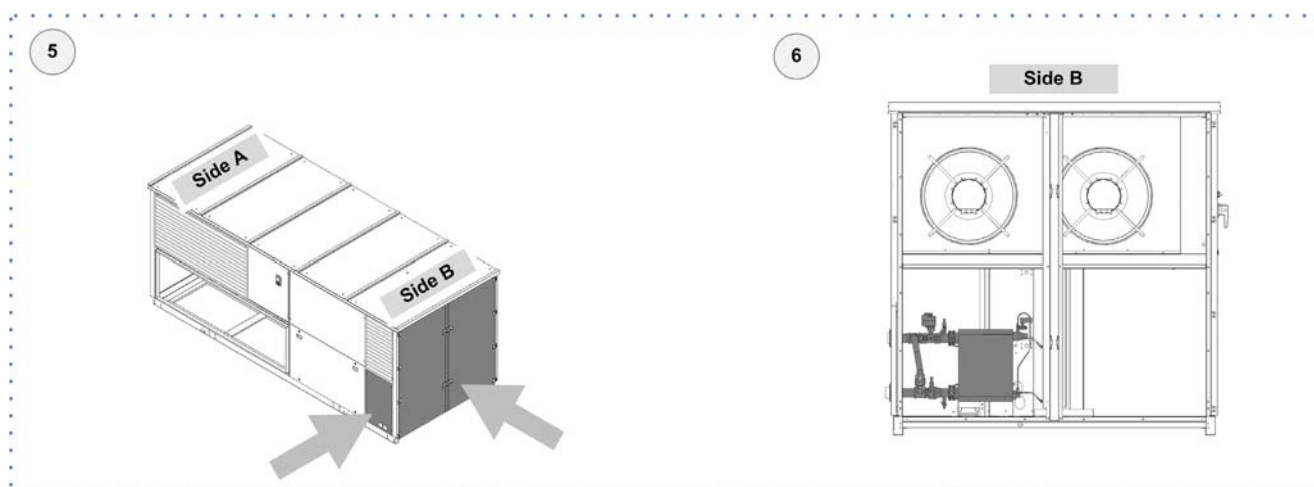
9.14 Supply fan: how to access



9.15 Exhaust fan: how to access



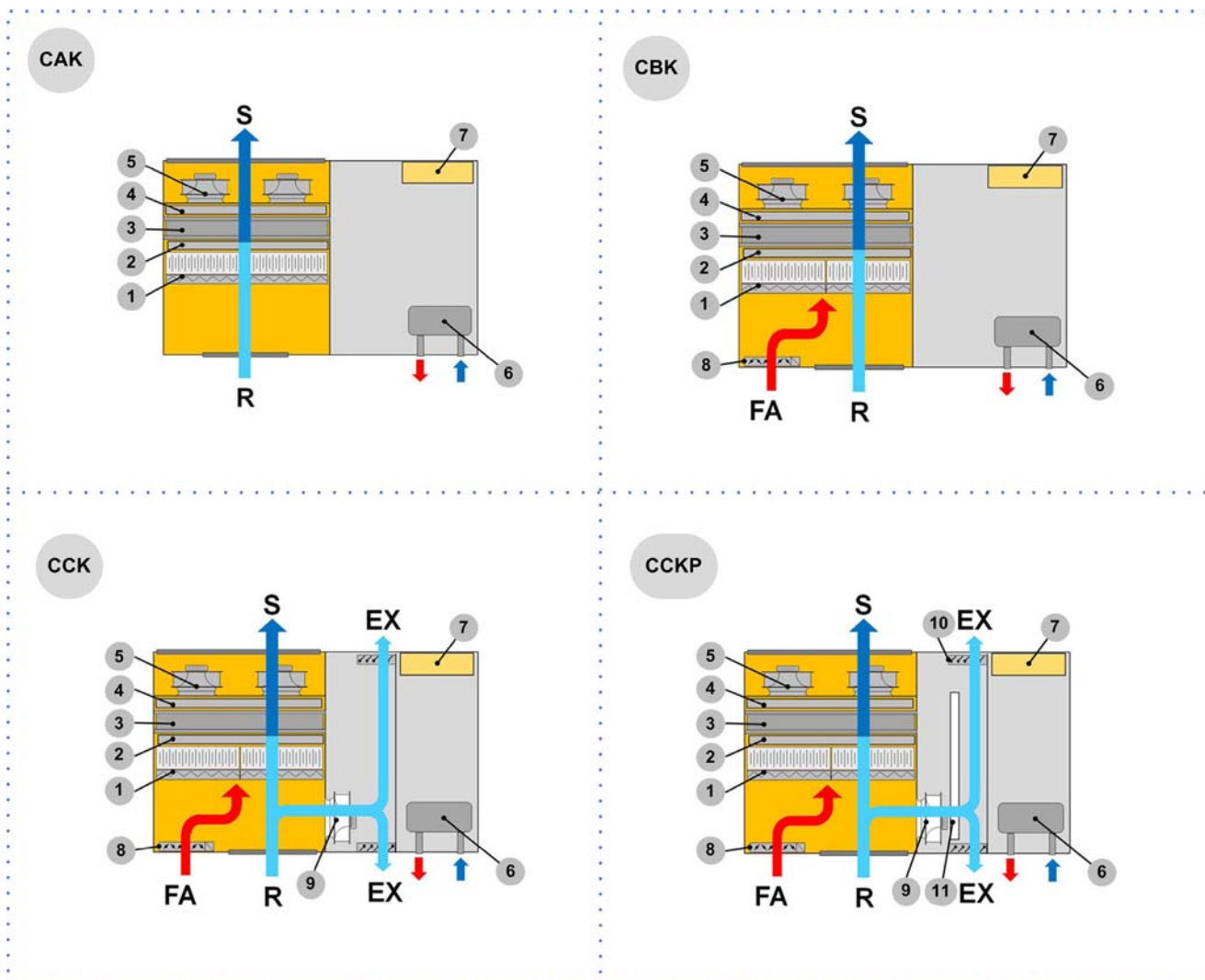
9.16 Water circuit: how to access



10 Accessories

10.1 Configurations

- CAK Configuration with single fan section for full recirculation
 CBK Configuration with single fan section for recirculation and fresh air
 CCK Configuration with double fan section for recirculation, fresh air, exhaust and Free-Cooling
 CCKP Configuration with double fan section with fresh air, exhaust and THOR thermodynamic recovery



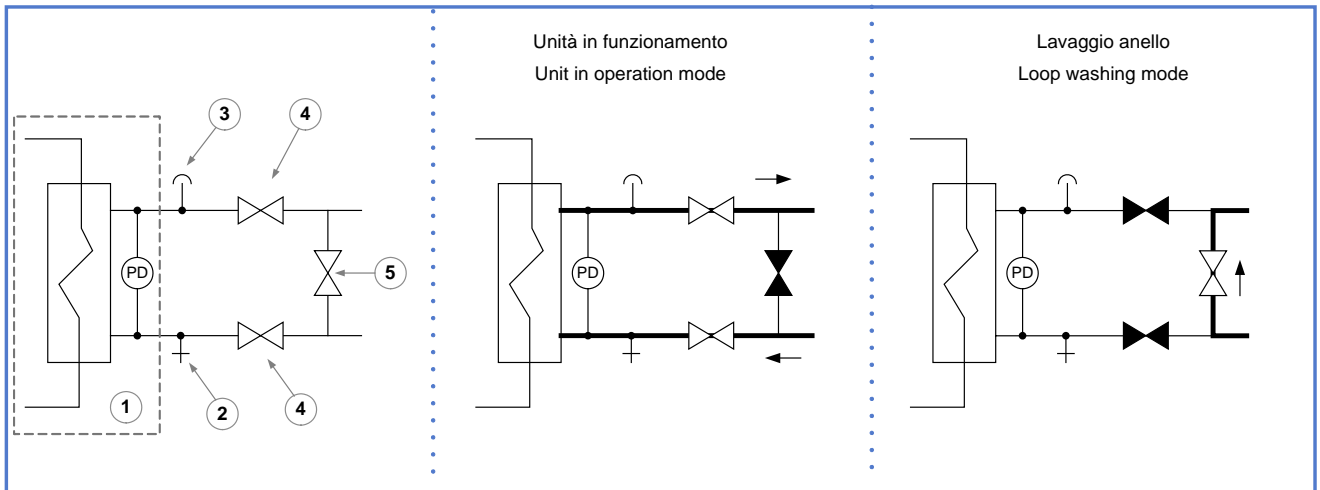
1. G4 efficiency filters + H10 equivalent electronic filters
2. Hot water exchanger or electric heaters
3. Handling exchanger
4. Hot gas reheating exchanger
5. Return + supply fan section
6. Source side exchanger

R Return air
 S Supply air

7. Electrical panel
8. Renewal air damper
9. Exhaust fan
10. Overpressure damper
11. Thermodynamic recovery exchanger, THOR

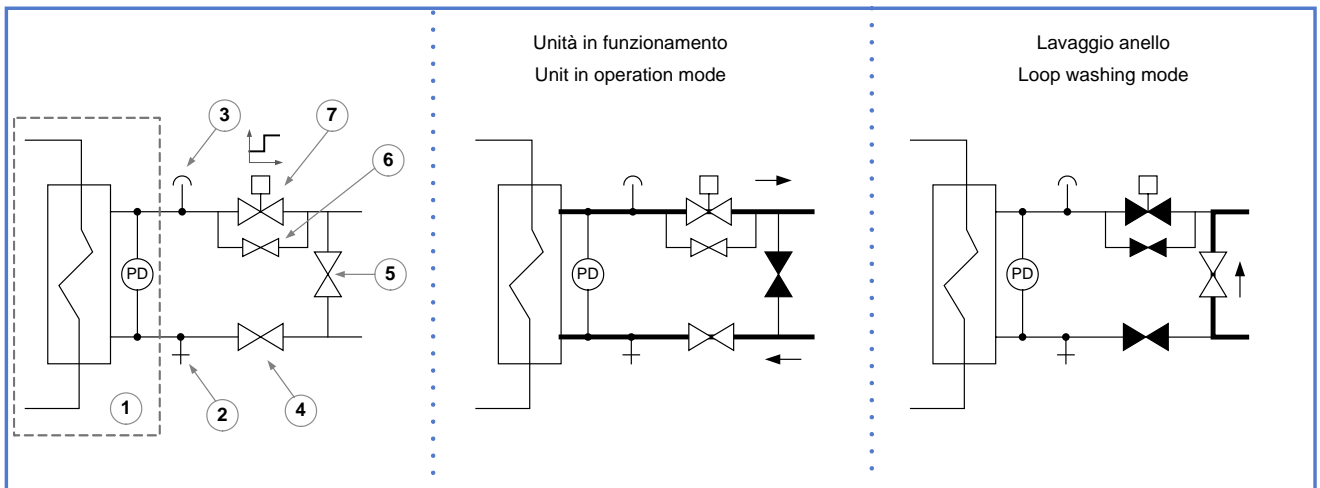
FA Fresh air
 EX Exhaust air

10.2 Hydraulic pipework arrangement for loop with constant flow-rate



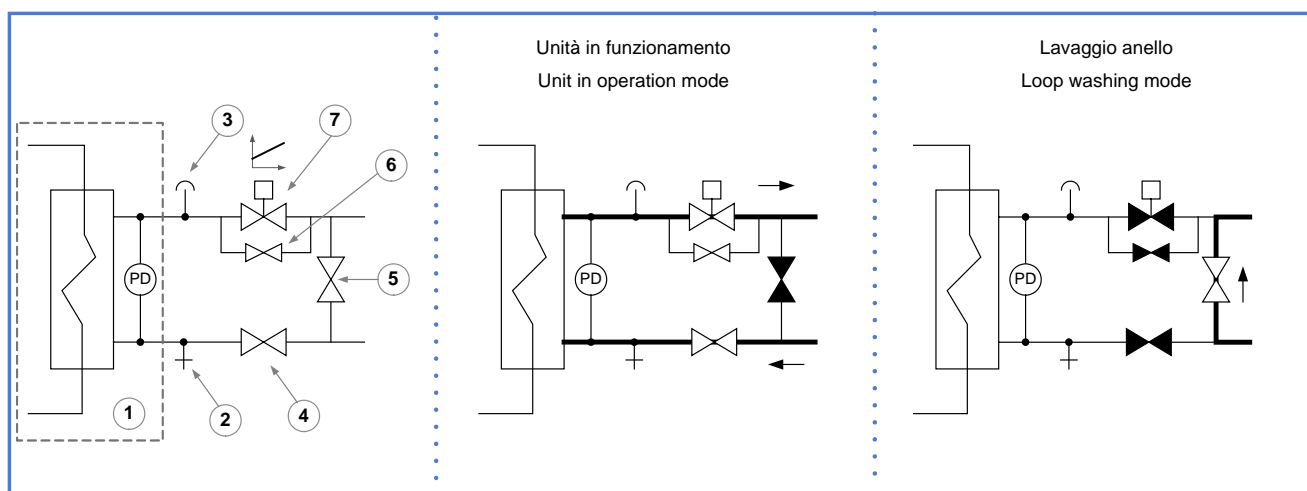
1. plate heat exchanger complete with water side differential pressure switch
2. drainage valve
3. vent valve
4. two-way manually activated valves
5. manually activated two-way valve for loop wash by-pass

10.3 Hydraulic pipework arrangement for loop with variable flow-rate



1. plate heat exchanger complete with water side differential pressure switch
2. drainage valve
3. vent valve
4. two-way manually activated valves
5. manually activated two-way valve for loop wash by-pass
6. anti-freeze by-pass with manual shut-off valve
7. two-way motorize ON/OFF valve

10.4 Hydraulic pipework arrangement for system with disposable water



1. plate heat exchanger complete with water side differential pressure switch
2. drainage valve
3. vent valve
4. two-way manually activated valves
5. manually activated two-way valve for loop wash by-pass
6. anti-freeze by-pass with manual shut-off valve
7. two-way modulating motorized valve

10.5 Heater humidifier

Start-up

Check the water supply pressure is not higher than 3 bar.

Open the flow rate measuring device/regulator and adjust it on 50% of the value in the table.

Wait 10/15 minutes so the heater soaks and starts.

Adjust the water flow rate by choosing whether to give greater importance to comfort or containment of the water consumption.

With an EXCESSIVE flow rate, it is possible for the water to flow in the channels or overflow from the bowl.

With INSUFFICIENT flow rate there is no humidifier action.

The heater is correctly wet if a veil of water shows on the external surface (with fan still).

Maintenance

The duration in time and absence of faults require constant cleaning which periodicity depends on different factors:

concentration of dust in the air, water hardness, type of operation, etc..

When cleaning comply with the following prescriptions:

1. Close the water shut-off shutter
2. Remove the evaporating heater
3. Remove the casing panel corresponding to the humidifier
4. Remove the water distributor
5. Remove the evaporating heater
6. Was evaporating heater: the evaporating heater can be washed with water against lime deposits, but must be replaced if the deposits are of limescale type
7. Clean the spraying pipe, found on the alveolar distributor, with metal brush and steel points for the small holes
8. Check the water connection pipe is in good conditions, without holes or cuts that may cause water to leak
9. Wash inside the tank and the various components
10. Remount the evaporating heaters. ATTENTION: The evaporating heaters have a pre-set position to respect the air and water direction, that must be in counter-current. The incorrect position jeopardises the good operation and can cause flowing of the water downstream
11. Upon dehumidifier re-start, check operation again

10.6 Immersed electrode humidifier

SUPPLY WATER

The humidifier must be supplied with mains water having the following features:

- pressure between 0.1 and 0.8 Mpa (1 – 8 bar)
- temperature between 1 and 40°C

Do not use:

- water treated with softeners: it can corrode the electrodes and form foam with possible faults/malfunctionings
- pit, industrial or potentially polluted (chemically or bacteriologically) water
- disinfectants or anti-corrosive substances mixed with water, as potentially irritating

Supplying the humidifier with water treated with reverse osmosis filtering system gives the following advantages:

- reduces limescale deposits
- reduces energy consumptions
- reduces maintenance costs
- increases humidifier duration

Check that the filter guarantees a water flow rate higher than the flow rate of the installed humidifier.

DRAINAGE WATER

It can reach a temperature of 100°C

It contains the same substances of the supply water but in higher concentration.

As it is not toxic, it can be disposed of with white waters.

Limit values for the supply water with medium-high conductivity in an immersed electrode humidifier					Limit values for the supply water with medium-low conductivity in an immersed electrode Humidifier				
			min	max				min	max
Hydrogen ions	pH		7	8,5	Hydrogen ions	pH		7	8,5
Specific conductivity at 20°C		μS/cm	300	1250	Specific conductivity at 20°C		μS/cm	125	500
Total dissolved solids	TDS	mg/l	(1)	(1)	Total dissolved solids	TDS	mg/l	(1)	(1)
Dry residue at 180°C	R ₁₈₀	mg/l	(1)	(1)	Dry residue at 180°C	R ₁₈₀	mg/l	(1)	(1)
Total hardness	TH	mg/l CaCO ₃	100 (2)	400	Total hardness	TH	mg/l CaCO ₃	50 (2)	250
Temporary hardness		mg/l CaCO ₃	60 (3)	300	Temporary hardness		mg/l CaCO ₃	30 (3)	150
Iron + Manganese		mg/l Fe+Mn	0	0,2	Iron + Manganese		mg/l Fe+Mn	0	0,2
Chlorides		ppm Cl	0	30	Chlorides		ppm Cl	0	20
Silica		mg/l SiO ₂	0	20	Silica		mg/l SiO ₂	0	20
Residual chlorine		mg/l Cl	0	0,2	Residual chlorine		mg/l Cl	0	0,2
Calcium sulphate		mg/l CaSO ₄	0	100	Calcium sulphate		mg/l CaSO ₄	0	60
Metallic impurities		mg/l	0	0	Metallic impurities		mg/l	0	0
Solvents, diluents, soaps, lubricants		mg/l	0	0	Solvents, diluents, soaps, lubricants		mg/l	0	0

(1) Values depending on specific conductivity; in general: TDS $\approx 0.95 \cdot \sigma_{20}$, R₁₈₀ $\approx 0.65 \cdot \sigma_{20}$
 (2) not lower than 200% of the chloride content in mg/l of Cl
 (3) not lower than 300% of the chloride content in mg/l of Cl

Periodical checks

Do not use solvents or detergents to clean the plastic components.

For descaling use a vinegar or acetic acid solution at 20%, subsequently rinsing with water.

15 days	Cylinder: not over 300 hours of work checking operation, general state, no leaks
90 days	Cylinder: not over 1000 hours of work checking operation, general state, no leaks, any replacement
1 year	Cylinder: not over 2500 hours of work (disposable cylinders) Load solenoid valve replacement: disconnect electric power supply, dismantle valve, clean the filter Drain solenoid valve: disconnect electric power supply, remove reel and dismantle valve body and any impurity and rinse The power supply bowl, piping: check they are free and without impurities
5 years	Cylinder: not over 10000 hours of work (inspectional cylinders) replacement

Humidifier cylinder drainage

Cylinder must be drained in these situations:

- cleaning of the cylinder
- emptying of the cylinder to avoid ice forming
- replacement of the cylinder

The manual drainage is carried out by means of selector SA7: see ELECTRIC CONNECTIONS chapter.

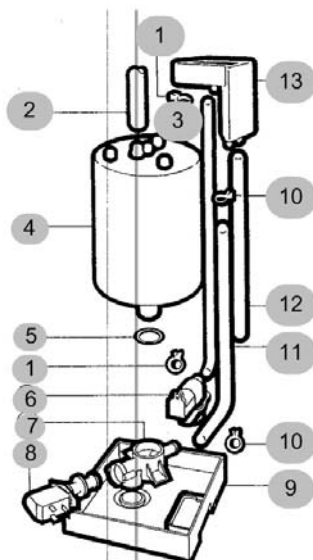
Replacement of the cylinder

To remove the cylinder:

- completely drain the water
- interrupt power supply voltage of humidifier by means of the unit isolator
- remove the vapour pipe from the cylinder
- disconnect the electric connections of the electrodes and remove the pins from the high level electrodes
- loosen the ring nut to remove the pipe unions and the filter (when filter is outside the cylinder)
- lift the cylinder to remove it

Before mounting it:

- the filter body does not require replacing, wash it with water and remount it on the new cylinder, using the new gasket provided with the latter
- check the seal gasket between the cylinder and the drain unit
- remount the cylinder repeating the operations in reverse order



10.7 Electronic filters

The most common contaminants for which the filter is designed, are: air pollution by PM10, PM 2,5 and PM1

Contaminants that can be filtered:

- dry smokes
- powder (up to 0,3 microns)
- smoke electrostatically charged



Contaminants that can NOT be filtered:

- water vapors also in low concentration
- oil vapors
- large amounts of dust
- metal shavings, iron filing dusts and waste generally
- Gas



Absolutely to avoid:

- metal dusts also fine
- fumes produced by combustion of organic and not materials (wood, coal, gasoline, etc.)

MATERIALS NECESSARY FOR MAINTENANCE

- Plastic or steel tank (750x750x310 mm) with settling bottom
- Acid detergent B01212 (code CLIVET C6460316)
- Protective gloves and goggles
- Graduated jug
- Pump for manual or pneumatic spraying



Do not use aluminum tanks or galvanized

Foresee a stainless steel frame that keeps the filters lifted from the tank base to have a settling bottom for the muds.

The electronic adjustment is integrated in the filter; maintenance can be carried out without removing it.

Remove the pre-filter by lifting it of about 1 cm and remove it as shown in figure.

1. Position the filter to be washed on a support to facilitate work.
2. Prepare a tank with a solution of B01212 detergent and water at 1÷20.
3. Immerse the filter in this solution.
4. Ensure the solution covers the entire filter.
5. A slight chemical reaction is noticed within 2÷3 minutes with the development of foam. Wait 3 or 4 minutes.
6. Rinse the filter with a jet of water or using a low-pressure water jet machine.
7. Leave the electrostatic cells to dry in a hot room or directly in the sun for a few hours. Keep the cells lifted from the ground using two metal or wooden laths.
8. Check the ionisation wires before remounting the filter.

The cleaner can be used to clean about 20 filters.

Can be recovered and placed in plastic containers closed; the air oxidizes the cleaner and reduces its effectiveness.

IONISATION WIRES

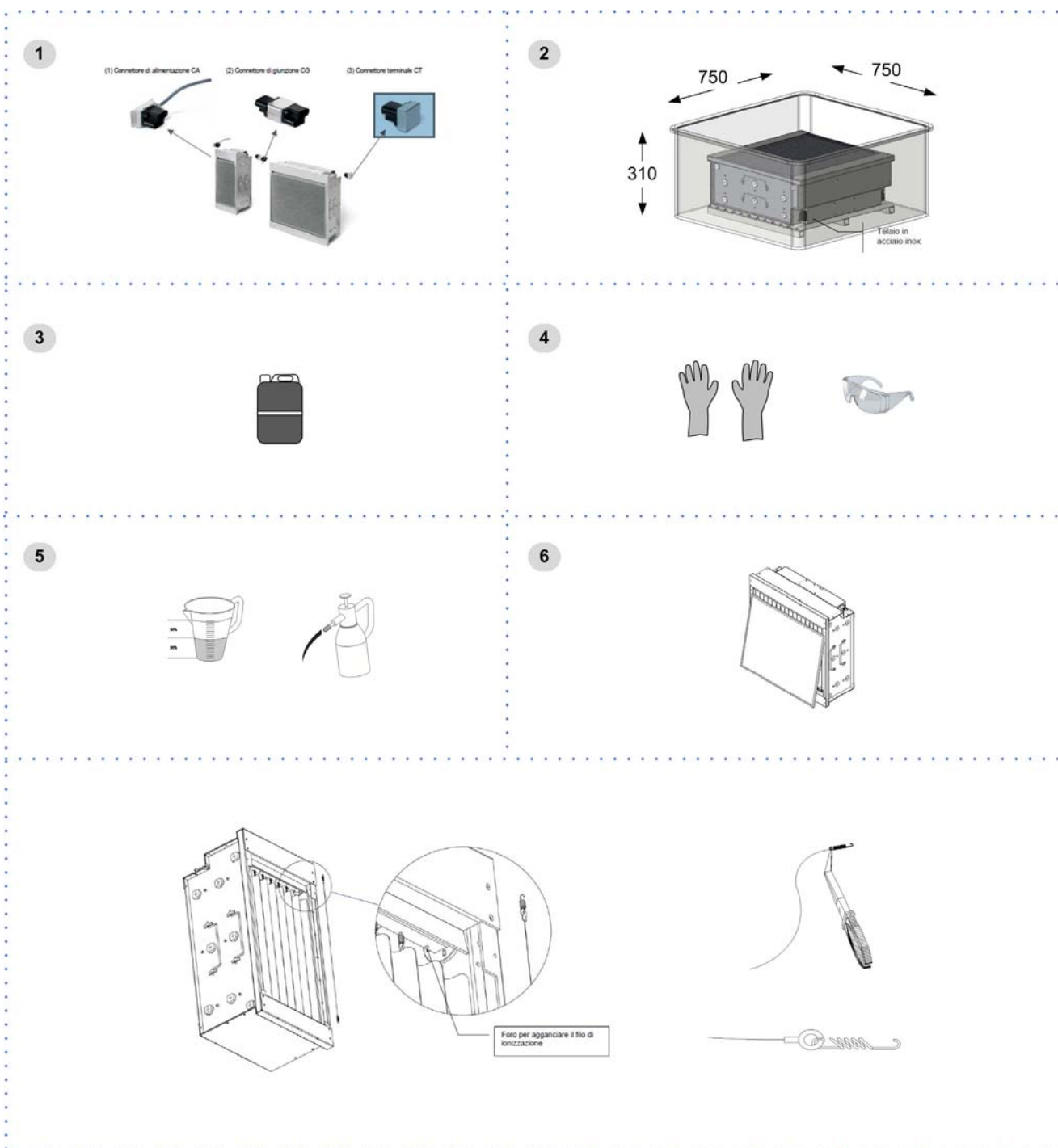
The impurities can determine oxidation or scaling on the wires, which can be removed using a cloth soaked in alcohol or an abrasive scourer with very fine grain.

Due to the high voltage powering them, the ionisation wires are subject to wear.

To foresee a yearly replacement OF ALL WIRES avoids unexpected breaks.

In case of break:

1. remove all wire pieces present in the cell and remove the springs stretching the wire
2. hook the spring to the wire eyelet
3. grip the ionisation wire with curved beaks pliers
4. hook the top of the spring with the open eyelet to the wire stretcher rod of the electrostatic cell
5. keeping the ionisation wire stretched, with the other hand hook it to the other wire stretching rod, always by means of the curved beaks pliers



10.8 F7 Highly efficient filters

Accessory

The pocket filters are not renewable, once dirty they must be replaced

1. Open the access panel
2. Delicately remove the filter avoiding dirtying the area below
3. Insert the new filters
4. Close the panel
5. Dispose of the old filters sending them to specialised recycling or collection centres (keep to the standards in force)

11 Decommissioning

11.1 Disconnecting

Only authorised personnel must disconnect the unit.

Avoid leak or spills into the environment.

Before disconnecting the unit, the following must be recovered, if present:

- refrigerant gas
- anti-freeze solutions in the water circuit

Awaiting dismantling and disposal, the unit can also be stored outdoors, if the electrical, cooling and water circuits of the unit have 100% integrity and are isolated, bad weather and rapid change in temperature will not result in any environmental impact.

11.2 Dismantling and disposal

The unit must always be sent to authorised centres for dismantling and disposal.

When dismantling the unit, the fan, the motor and the coil, if operating, may be recovered by the specialist centres for reuse.

All the materials must be recovered or disposed of in compliance with the corresponding national standards in force.

For further information on the decommissioning of the unit, contact the manufacturer.

11.3 Directive EC RAEE

The units covered by the legislation in question are marked with the symbol on the side.

With the aim of protecting the environment, all of our units are produced in compliance with Directive EC on waste electrical and electronic equipment (RAEE).

The potential effects on the environment and on human health due to the presence of hazardous substances are shown in the use and maintenance manual in the section on residual risks.

Information in addition to that indicated below, if required, can be obtained from the manufacturer/distributor/importer, who are responsible for the collection/handling of waste originating from equipment covered by EC-RAEE. This information is also available from the retailer who sold this appliance or from the local authorities who handle waste.

Directive EC-RAEE requires disposal and recycling of electrical and electronic equipment as described therein to be handled through appropriate collection, in suitable centres, separate from collection for the disposal of mixed urban waste.

The user must not dispose of the unit at the end of its life cycle as urban waste, it must instead be handed over to appropriate collection centres as set forth by current standards or as instructed by the distributor.



12 Residual risks

General description

In this section the most common situations are indicated, as these cannot be controlled by the manufacturer and could be a source of risk situations for people or things.

Danger zone

This is an area in which only an authorised operator may work.

The danger zone is the area inside the unit which is accessible only with the deliberate removal of protections or parts thereof.

Handling

The handling operations, if implemented without all of the protection necessary and without due caution, may cause the drop or the tipping of the unit with the consequent damage, even serious, to persons, things or the unit itself.

Handle the unit following the instructions provided in the present manual regarding the packaging and in compliance with the local regulations in force. Should the refrigerant leak please refer to the refrigerant "Safety sheet".

Installation

The incorrect installation of the unit could cause water leaks, condensate accumulation, leaking of the refrigerant, electric shock, poor operation or damage to the unit itself.

Check that the installation has been implemented by qualified technical personnel only and that the instructions contained in the present manual and the local regulations in force have been adhered to.

The installation of the unit in a place where even infrequent leaks of inflammable gas and the accumulation of this gas in the area surrounding the area occur could cause explosions or fires.

Carefully check the positioning of the unit.

The installation of the unit in a place unsuited to support its weight and/or guarantee adequate anchorage may result in consequent damage to things, people or the unit itself.

Carefully check the positioning and the anchoring of the unit.

Easy access to the unit by children, unauthorised persons or animals may be the source of accidents, some serious.

Install the unit in areas which are only accessible to authorised person and/or provide protection against intrusion into the danger zone.

General risks

Smell of burning, smoke or other signals of serious anomalies may indicate a situation which could cause damage to people, things or the unit itself.

Electrically isolate the unit (yellow-red isolator).

Contact the authorised service centre to identify and resolve the problem at the source of the anomaly.

Accidental contact with exchange batteries, compressors, air delivery tubes or other components may cause injuries and/or burns.

Always wear suitable clothing including protective gloves to work inside the danger zone.

Maintenance and repair operations carried out by non-qualified personnel may cause damage to persons, things or the unit itself.

Always contact the qualified assistance centre.

Failing to close the unit panels or failure to check the correct tightening of all of the panelling fixing screws may cause damage to persons, things or the unit itself.

Periodically check that all of the panels are correctly closed and fixed.

If there is a fire the temperature of the refrigerant could reach values that increase the pressure to beyond the safety valve with the consequent possible projection of the refrigerant itself or explosion of the circuit parts that remain isolated by the closure of the tap.

Do not remain in the vicinity of the safety valve and never leave the refrigerating system taps closed.

Electric parts

An incomplete attachment line to the electric network or with incorrectly sized cables and/or unsuitable protective devices can cause electric shocks, intoxication, damage to the unit or fires.

Carry out all of the work on the electric system referring to the electric layout and the present manual ensuring the use of a system thereto dedicated.

An incorrect fixing of the electric components cover may lead to the entry of dust, water etc inside and may consequently electric shocks, damage to the unit or fires.

Always fix the unit cover properly.

When the metallic mass of the unit is under voltage and is not correctly connected to the earthing system it may be as source of electric shock and electrocution.

Always pay particular attention to the implementation of the earthing system connections.

Contact with parts under voltage accessible inside the unit after the removal of the guards can cause electric shocks, burns and electrocution.

Open and padlock the general isolator prior to removing the guards and signal work in progress with the appropriate sign.

Contact with parts that could be under voltage due to the start up of the unit may cause electric shocks, burns and electrocution.

When voltage is necessary for the circuit open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

Moving parts

Contact with the transmissions or with the fan aspiration can cause injuries.

Prior to entering the inside of the unit open the isolator situated on the connection line of the unit itself, padlock and display the appropriate warning sign.

Contact with the fans can cause injury.

Prior to removing the protective grill or the fans, open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

Refrigerant

The intervention of the safety valve and the consequent expulsion of the gas refrigerant may cause injuries and intoxication.

Always wear suitable clothing including protective gloves and eyeglasses for operations inside the danger zone.

Should the refrigerant leak please refer to the refrigerant "Safety sheet".

Contact between open flames or heat sources with the refrigerant or the heating of the gas circuit under pressure (e.g. during welding operations) may cause explosions or fires.

Do not place any heat source inside the danger zone.

The maintenance or repair interventions which include welding must be carried out with the system off.

Hydraulic parts

Defects in tubing, the attachments or the removal parts may cause a leak or water projection with the consequent damages to people, things or shortcircuit the unit.

13 Technical information

STANDARD AIRFLOW

General technical data

Size				49.4	54.4	60.4	70.4	80.4	90.4	100.4	110.4
Cooling											
Cooling capacity	CAK	1	kW	175,0	187,0	215,6	255,4	283,2	338,4	366,4	392,5
Sensible capacity		1	kW	123,8	133,5	142,6	162,6	186,2	239,2	258,2	277,0
Compressor power input		1	kW	30,8	33,1	39,9	45,4	52,4	61,7	66,3	72,1
EER		1	-	5,68	5,65	5,40	5,63	5,40	5,48	5,53	5,44
Water flow-rate			l/s	9,83	10,51	12,21	14,37	16,04	19,12	20,67	22,20
Pressure drop water side			-	33,64	38,23	43,77	38,48	47,34	52,21	40,98	39,73
Cooling capacity	CBK / CCK	2	kW	183,1	195,6	225,8	267,7	296,7	354,5	383,9	411,6
Sensible capacity		2	kW	127,0	136,7	146,7	167,6	191,7	246,6	266,0	284,3
Compressor power input		2	kW	30,9	33,3	40,1	45,6	52,7	62,1	66,8	72,7
EER		2	-	5,93	5,87	5,63	5,87	5,63	5,71	5,75	5,66
Water flow-rate			l/s	10,23	10,94	12,70	14,97	16,69	19,90	21,53	23,14
Pressure drop water side			-	36,26	41,2	47,17	41,57	51,08	56,37	44,28	42,99
Cooling capacity	CCKP	3	kW	183,1	195,6	225,8	267,7	296,7	354,5	383,9	411,6
Sensible capacity		3	kW	127,0	136,7	146,7	167,6	191,7	246,6	266,0	284,3
Compressor power input		3	kW	30,9	33,3	40,1	45,6	52,7	62,1	66,8	72,7
EER		3	-	5,93	5,87	5,63	5,87	5,63	5,71	5,75	5,66
Water flow-rate			l/s	9,28	7,11	11,54	13,67	15,16	18,11	19,58	21,06
Pressure drop water side			-	30,14	33,96	39,36	35,04	42,58	47,15	36,98	35,94
Heating											
Heating capacity	CAK	1	kW	186,3	200,2	223,1	259,3	297,2	359,4	386,0	422,5
ompressor power input		1	kW	38,0	41,0	48,1	53,2	60,5	66,8	75,0	82,6
COP		1	-	4,90	4,88	4,64	4,87	4,91	5,38	5,15	5,12
Heating capacity	CBK	2	kW	191,8	206,1	230,5	267,5	305,9	367,3	396,7	435,5
ompressor power input		2	kW	35,2	37,9	44,5	49,2	55,9	62,5	69,3	76,2
COP		2	-	5,45	5,44	5,18	5,44	5,47	5,88	5,72	5,72
Heating capacity	CCK	3	kW	191,8	206,1	230,5	267,5	305,9	367,3	396,7	435,5
ompressor power input		3	kW	35,2	37,9	44,5	49,2	55,9	62,5	69,3	76,2
COP		3	-	5,45	5,44	5,18	5,44	5,47	5,88	5,72	5,72
Heating capacity	CCKP	3	kW	191,8	206,1	230,5	267,5	305,9	367,3	396,7	435,5
ompressor power input		3	kW	35,2	37,9	44,5	49,2	55,9	62,5	69,3	76,2
COP		3	kW	5,45	5,44	5,18	5,44	5,47	5,88	5,72	5,72
Compressor											
Type of compressors		4		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
No. of compressors			Nr	4	4	4	4	4	4	4	4
Std Capacity control steps			Nr	6	6	4	6	6	6	6	6
Refrigeration circuits			Nr	2	2	2	2	2	2	2	2

Performances in cooling: Indoor air temp. 27°C/19°C W.B. Outdoor air 35°C D.B./24°C W.B. EER referred only to compressors, water entering/leaving temperature 30/35°C

Performance in Heating: Indoor air temp. 20°C D.B./12°C W.B. Outdoor air 7°C/6°C W.B. COP referred only to compressors, water entering/leaving temperature 15/10°C

1. Performance refers to operation at full re-circulation
2. Performance with 30% of outdoor air
3. Performance with 30% of outdoor air including the energy recovery on the exhaust air
4. SCROLL = scroll compressor
5. RAD = radial fan electronically controlled
6. Net outside static pressure to win the outlet and intake onboard pressure drops
7. Configuration with double fan section for recirculation, fresh air, exhaust, thermodynamic recovery (CCK) and configuration with double fan section with fresh air and THOR thermodynamic recovery (CCKP)

Size				49.4	54.4	60.4	70.4	80.4	90.4	100.4	110.4
Air Handling Section Fans (Supply)											
Type of supply fan		5		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
No. of supply fans			Nr	3	3	4	4	4	6	6	6
Fan diameter			mm	560	560	560	560	560	560	560	560
Supply airflow			l/s	7222	8056	9167	10278	12222	14167	15556	16667
Supply airflow			m³/h	26000	29000	33000	37000	44000	51000	56000	60000
Installed unit power			kW	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9
Max. static pressure supply fan		6	Pa	630,0	540,0	660,0	570,0	360,0	620,0	540,0	460,0
High static pressure air handling section fans (OPTIONAL)											
Type of supply fan				RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
Number of supply fans			Nr	3	3	4	4	4	6	6	6
Fan diameter			mm	500	500	500	500	500	500	500	500
Supply airflow			l/s	7222	8056	9167	10278	12222	14167	15556	16667
Supply airflow			m³/h	26000	29000	33000	37000	44000	51000	56000	60000
Installed unit power			kW	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max. static pressure supply fan		6	Pa	1140	1080	1140	1140	900	1140	1140	1020
Fans (Exhaust) (only CCK, CCKP-THOR configuration)											
Type of fans		5		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
No. of fans		7		2	2	2	2	2	2	2	2
Fan diameter		7	mm	500	500	630	630	630	630	630	630
Installed unit power		7	kW	2,6	2,6	2,7	2,7	2,7	2,7	2,7	2,7
Connections											
Condensate drain		-	mm	30	30	30	30	30	30	30	30
Power supply											
Standard power supply		-	V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50

Performances in cooling: Indoor air temp. 27°C/19°C W.B. Outdoor air 35°C D.B./24°C W.B. EER referred only to compressors, water entering/leaving temperature 30/35°C

Performance in Heating: Indoor air temp. 20°C D.B./12°C W.B. Outdoor air 7°C/6°C W.B. COP referred only to compressors, water entering/leaving temperature 15/10°C

1. Performance refers to operation at full re-circulation
2. Performance with 30% of outdoor air
3. Performance with 30% of outdoor air including the energy recovery on the exhaust air
4. SCROLL = scroll compressor
5. RAD = radial fan electronically controlled
6. Net outside static pressure to win the outlet and intake onboard pressure drops
7. Configuration with double fan section for recirculation, fresh air, exhaust, thermodynamic recovery (CCK) and configuration with double fan section with fresh air and THOR thermodynamic recovery (CCKP)

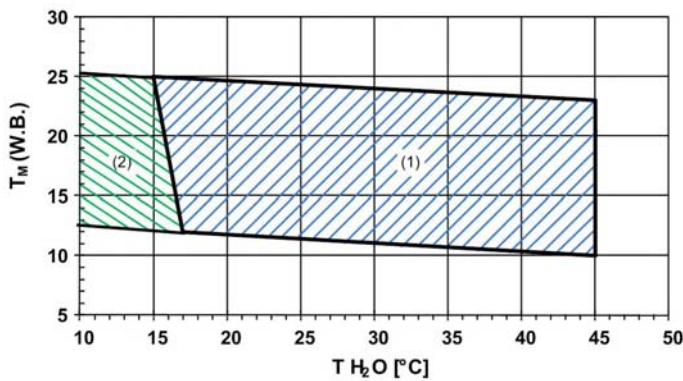
Sound levels

Size	Sound power level (dB)								Sound power level	Sound pressure level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
49.4	74	81	80	82	82	80	77	77	87	67
54.4	76	83	83	84	84	82	79	80	88	69
60.4	74	81	80	82	82	81	78	77	88	67
70.4	76	84	83	85	84	85	79	80	90	70
80.4	78	85	85	86	87	87	82	81	92	72
90.4	76	83	83	85	86	86	81	79	92	71
100.4	78	85	85	87	88	88	82	81	93	73
110.4	80	87	86	88	89	89	84	83	94	74

The sound levels are referred to unit operating at full load in nominal conditions. The sound pressure level is referred at a distance of 1 m. from the ducted unit surface operating in free field conditions. External static pressure 50 Pa. (standard UNI EN ISO 9614-2)

Please note that when the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general), the sound levels may undergo substantial variations.

Operating range (Cooling)



The limits are meant as an indication and they have been calculated by considering:

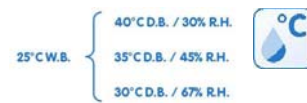
- general and non specific sizes,
- standard airflow,
- non-critical positioning and correct use of the unit,
- difference between inlet / outlet water temperature = 5°C

To verify the operating range of the operating units with percentages of outdoor air, always calculate the T_m mixing temperature at the internal heat exchanger input.

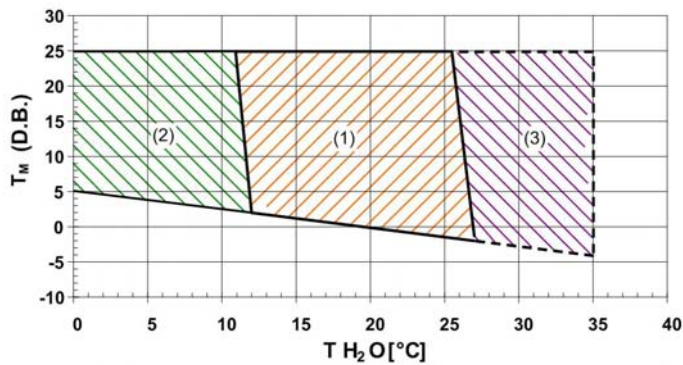
T_m = entering internal exchanger air temperature
Attention! Temperature measured with wet bulb (W.B.=WET BULB)

TH20 = water loop temperature (°C) (plate exchanger input)

1. Standard operating range
2. Unit operating range with pumping unit for installation with disposable water (optional)



Operating range (Heating)



The limits are meant as an indication and they have been calculated by considering:

- general and non specific sizes,
- standard airflow,
- non-critical positioning and correct use of the unit,
- operating at full load
- difference between inlet / outlet water temperature = 5°C

To verify the operating range of the operating units with percentages of outdoor air, always calculate the T_m mixing temperature at the internal heat exchanger input.

T_m = entering internal exchanger air temperature
Attention! Temperature measured with dry bulb (D.B.=DRY BULB)

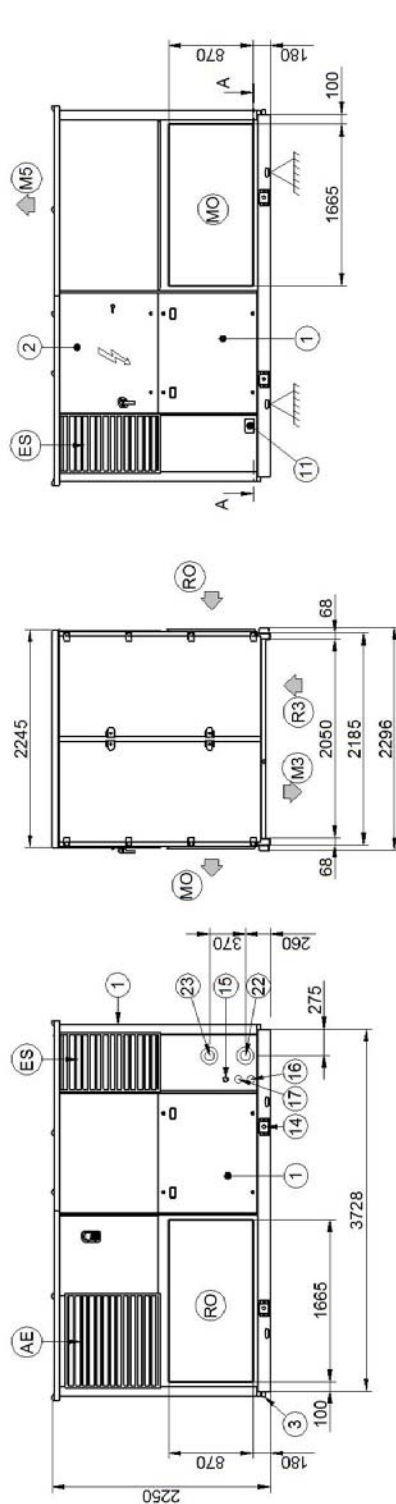
TH20 = water loop temperature (°C) (plate exchanger input)

1. Operating range at full load
2. Operating range for water glycol system (to prevent frost)
3. Unit operating range with pumping unit for installation with disposable water (optional)

Dimensional drawings

Size 49.4 - 54.4 - CAK,CBK, CCK and CCKP configurations

DAA7W49.4_CAK-CBK-CCK-CCKP_0
Date: 18/02/2016



1. Compressor compartment and panel for exchanger inspection

2. Electrical panel

3. Condensate drain

4. Functional clearances

5. G4 air filters (Standard)

6. F7 filters / electrostatic filters (Optional)

7. H2O heating coil / Rec. from food refrigeration/Heating elements (Optional)

8. Internal exchanger

9. Re-heating coil (Optional)

10. Electric fan (Supply - return)

11. Power input

12. Outdoor air damper (CBK,CCK and CCKP config.)

13. Access for inspection of coils, filters, heating elements

14. Lifting brackets (removable)

15. Humidifier connections

16. H2O heating coil input Ø 1"1/2 / Input of rec. from food refrigeration coil Ø 2" (Optional)

17. H2O heating coil output Ø 1"1/2 / Output of rec. from food refrigeration coil Ø 2" (Optional)

18. Exhaust electric fan (CCK and CCKP config.)

19. Exhaust air recovery coil (CCKP config.)

20. Exhaust air dampers (CCK and CCKP config.)

21. Plate exchanger

22. Plate exchanger water input 3"

23. Plate exchanger water output 3"

(R0) Horizontal air return

(R3) Floor air return (Optional)

(M0) Horizontal air supply

(M3) Downward airflow (Optional)

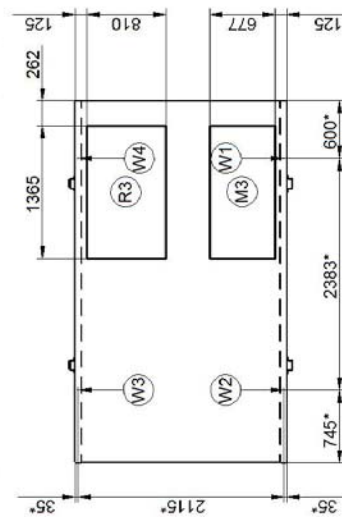
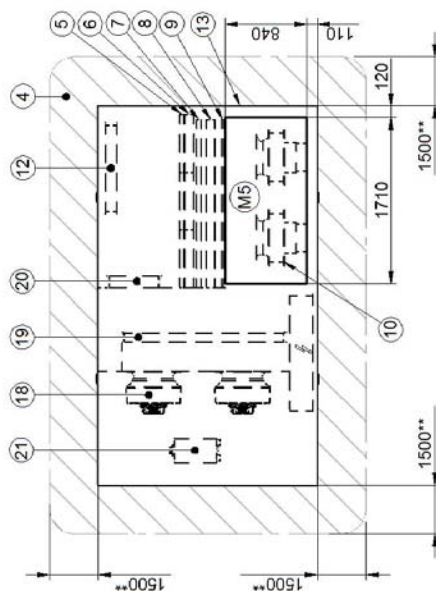
(M5) Upward airflow (Optional)

(AE) Outdoor air return (CBK,CCK and CCKP config.)

(ES) Air exhaust (CCK and CCKP config.)

(**) Suggested clearance

(*) Vibration mounts position

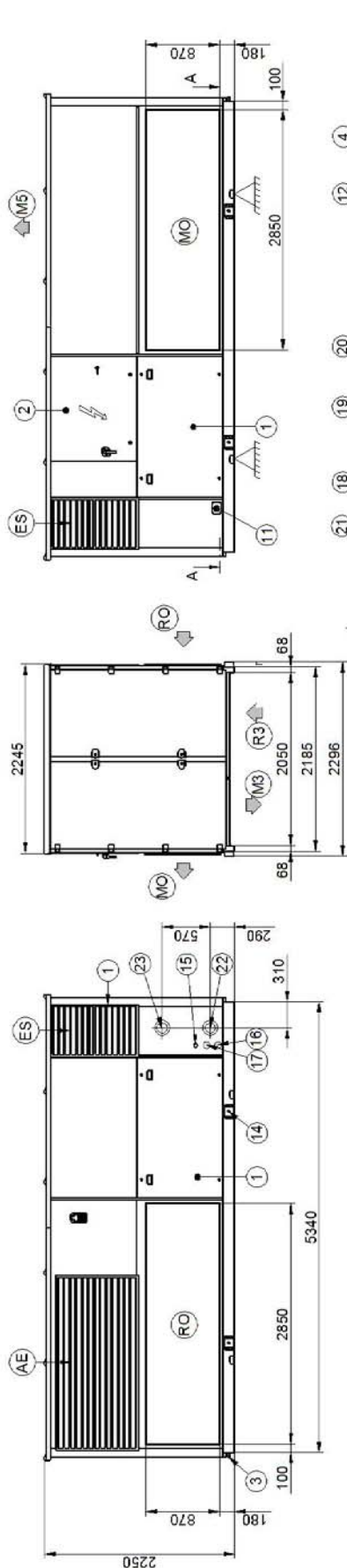


Sez. A-A

Size	49.4	49.4	49.4	54.4	54.4	54.4
Configuration	CAK/CBK	CCK	CCKP	CAK/CBK	CCK	CCKP
W1 supporting point	kg	561	588	612	648	698
W2 Supporting point	kg	551	582	610	635	695
W3 Supporting point	kg	463	490	514	535	586
W4 Supporting point	kg	484	507	527	558	601
Operating weight	kg	2080	2188	2284	2397	2601
Shipping weight	kg	2059	2167	2263	2376	2580

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 90.4 - 100.4 - 110.4 - CAK,CBK, CCK and CCKP configurations

DAA7W90.4_CAK-CBK-CCK-CCKP_0
Date: 18/02/2016

1. Compressor compartment and panel for exchange inspection

2. Electrical panel

3. Condensate drain

4. Functional clearances

5. G4 air filters (Standard)

6. F7 filters / electrostatic filters (Optional)

7. H2O heating coil / Rec. from food refrigeration/Heating elements (Optional)

8. Internal exchanger

9. Re-heating coil (Optional)

10. Electric fan (Supply - return)

11. Power input

12. Outdoor air damper (CBK, CCK and CCKP config.)

13. Access for inspection of coils, filters, heating elements

14. Lifting brackets (removable)

15. Humidifier connections

16. H2O heating coil input Ø 2" / Input of rec. from food refrigeration coil Ø 2" 1/2 (Optional)

17. H2O heating coil output Ø 2" / Output of rec. from food refrigeration coil Ø 2" 1/2 (Optional)

18. Exhaust electric fan (CCK and CCKP config.)

19. Exhaust air recovery coil (CCKP config.)

20. Exhaust air dampers (CCK and CCKP config.)

21. Plate exchanger

22. Plate exchanger water input 4"

23. Plate exchanger water output 4"

(RO) Horizontal air return

(R3) Floor air return (Optional)

(M0) Horizontal air supply

(M3) Downward airflow (Optional)

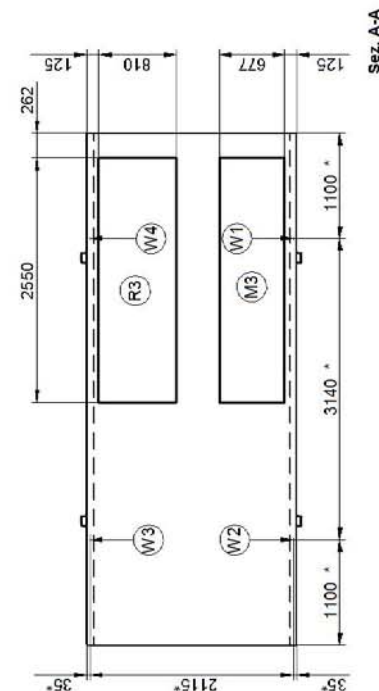
(M5) Upward airflow (Optional)

(AE) Outdoor air return (CBK, CCK and CCKP config.)

(ES) Air exhaust (CCK and CCKP config.)

(**) Suggested clearance

(*) Vibration mounts position



Size	90.4	90.4	90.4	100.4	100.4	100.4	110.4	110.4	110.4
Configuration	CAK/CBK	CCK	CCKP	CAK/CBK	CCK	CCKP	CAK/CBK	CCK	CCKP
W1 supporting point	kg	875	907	946	931	962	1002	1103	1143
W2 Supporting point	kg	859	896	943	913	951	999	1052	1137
W3 Supporting point	kg	722	754	795	768	801	841	885	958
W4 Supporting point	kg	754	781	816	803	829	863	924	983
Operating weight	kg	3245	3373	3535	3461	3589	3751	3987	4275
Shipping weight	kg	3210	3338	3500	3415	3543	3705	3933	4221

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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