CPAN-XHE^3

Size1-Size6

MANUAL

FOR INSTALLATION,
USE AND MAINTENANCE

M05G50L12-09 04/2022

R-410A

Dear Customer,

We congratulate you on choosing these product

Clivet has been working for years to offer systems able to assure the maximum comfort for a long time with highly-reliable, efficient, high-quality and safe solutions.
The target of the company is to offer advanced systems, that assure the best comfort and reduce energy consumption as well as the installation and maintenance costs for the entire life-cycle of the system.

With this manual, we want to give you information that are useful for all phases: from reception, installation and use to disposal - so that such an advanced system can provide the best performances during installation and use.

Best regards and have a good read.

CLIVET Spa

INDICE

SAFETY CONSIDERATIONS

Manual

The manual provides correct unit installation, use and maintenance.

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.

Preliminaries

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

Risk situations

The unit has been designed and created to prevent injures 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.

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.

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.

Maintenance

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

Turn the unit off before any operation.

Pay particular attention to:

⇒ warnings / prohibitions / danger indicating particularly important operations or information, operations that cannot be done, which compromise the functionality of the unit or which may cause damage to things or persons.

Modification

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

Breakdown/Malfunction

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
- it may increase time and repair costs

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.

Data update

Continual product improvements may imply manual data changes.

Visit manufacturer web site for updated data.

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

Unit identification

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

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
- type of refrigerant
- refrigerant charge
- manufacturer logo and address

The matriculation plate must never be removed.

It contains fluorinated greenhouse gases.

Serial number

It identifies uniquely each unit.

Must be quoted when ordering spare parts.

Refrigerant

It contains fluorinated greenhouse gases

Type of refrigerant: R410A

Assistance request

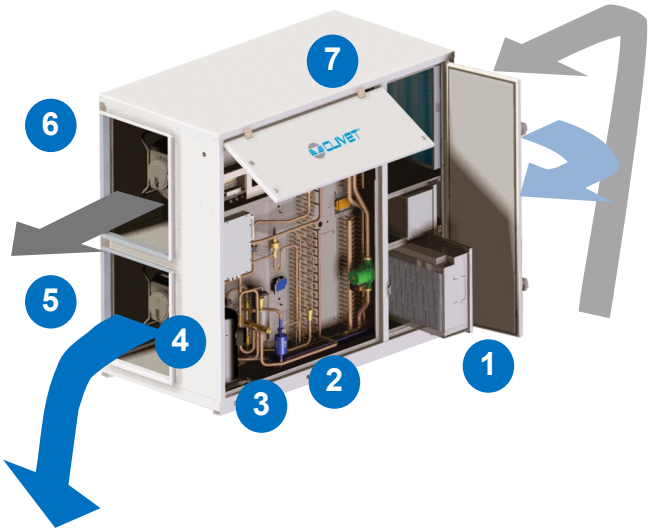
Note data from the serial number label and write them in the chart on side, so you will find them easily when needed.

Series
Size
Serial number
Year of manufacture
Number of electrical wiring diagram

PRINCIPAL COMPONENTS

Example referred on Size 2

1 Electronic filters
2 Outdoor air exchanger
3 Hot gas re-heating coil with capacity modulation
4 Capacity modulating compressors
5 Variable air flow fan on supply air
6 Variable air flow fan on exhaust air
7 Exhaust air exchanger



Filters nomenclature according to EN ISO 16890		
1° filtering stage - standard	G4	ISO 16890 Coarse 60%
2° filtering stage - option	F7	ISO 16890 ePM1 55%
2° filtering stage - standard	FIFD (electronic filters)	ISO 16890 ePM1 90%

RECEPTION

Saftey

Operate in compliance with safety regulations in force.

For detailed information (dimensions, weight, technical characteristics etc.) please refer to the TECHNICAL INFORMATION section.

Use single protection devices: gloves, glasses etc.

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"
- wontact by fax and registered mail with advice of receipt to supplier and the carrier.

NOTE

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

Storage

Respect the indications on the outside of the pack.

In particolar:

⇒ *minimum ambient temperature -15°C*
(possible components damages)

⇒ *maximum ambient temperature +49°C*
(possible safety valve opening)

⇒ *maximum relative humidity 95%*
(possible damages to electrical components

NOTE

⇒ *The unit may not be tilted more than 15° during transport.*

NOTE

Removal of packaging

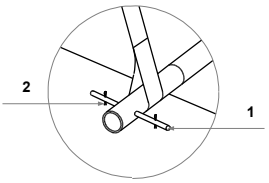
Be careful not to damage the unit.

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

Size1, size2

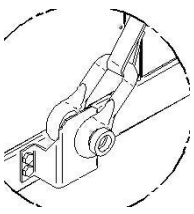
lifting holes

insert safety pins (1) and split pins (2)



Size3....size6

lifting bracket



Handling

Caution

⇒ *Check that all handling equipment complies with local safety regulations (cran, forklifts, ropes, hooks, etc.).*

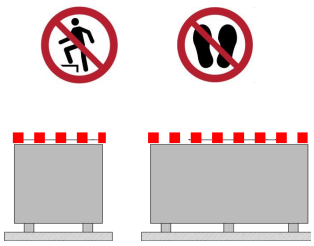
⇒ *Provide personnel with personal protective equipment suitable for the situation, such as helmet, gloves, accident-prevention shoes, etc.*

⇒ *Observe all safety procedures in order to guarantee the safety of the personnel present and the of material.*

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 with balance
5 Lifting with spacer bar
6 Align the barycenter to the lifting point

- Gradually bring the lifting belts under tension, making sure they are positioned correctly.
- Before starting the handling, make sure that the unit is stable.

Do not get on the unit



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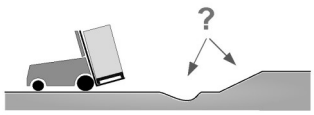

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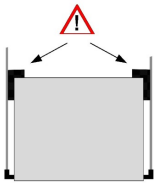

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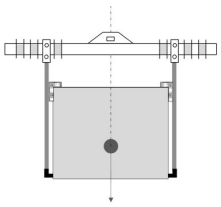

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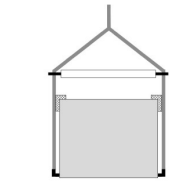

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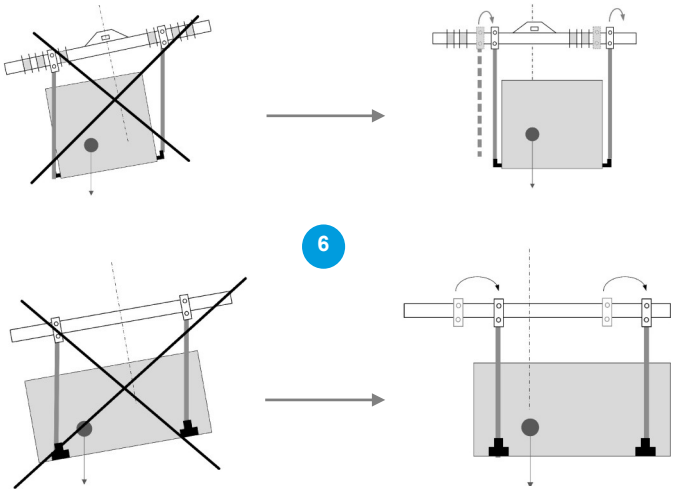


SELECTING THE INSTALLATION SITE

Positioning

⇒ *Installation must be in accordance with local regulations. If they do not exist, follow EN378 .*

During positioning consider these elements:

- customer approval
- unit weight and bearing point capacity
- safe accessible position
- functional spaces
- spaces for the air intake/exhaust
- electrical connections
- max. distance allowed by the electrical connections
- water connections

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 TECHNICAL INFORMATION section.*

Positioning

Units are designed to be installed:

- OUTDOORS
- INDOORS (OPTION)
- in permanent position.

⇒ *Put the unit in a position where any leaking gas cannot enter buildings or stagnate in closed areas. In the latter case, observe the rules for machinery rooms (ventilation, leak detection, etc.).*

Installation standards:

- install the unit raised from the ground
- bearing points aligned and leveled
- discharged condensation water must not cause harm/danger to people and property
- the accumulation of snow must not cause clogging of the coils
- avoid installations in places subject to flooding

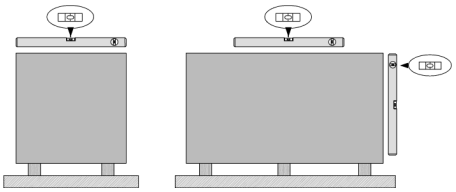
Limit vibration transmission:

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

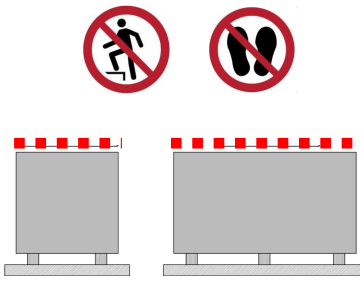
Protect the unit with suitable fence in order to avoid access to unauthorised personnel (children, vandals, etc.)

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

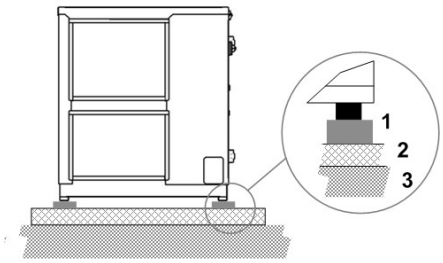
The unit must be level.



Do not get on the unit

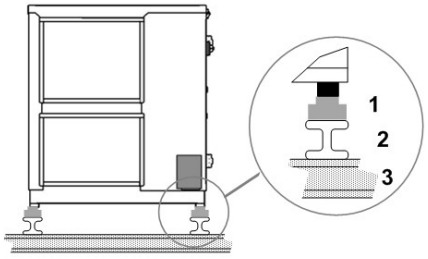


Concrete floor



1 2 cm thick neoprene strips
2 concrete floor
3 floor

Steel structure



1 anti-vibration devices
2 steel structure
3 steel structure

Avoid therefore:

- obstacles to the airflow
- exchange difficulties
- leaves or other foreign bodies that can obstruct the exchange batteries
- winds that hinder or favour the airflow
- 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)
- positioning below the level of the threshold, close to very high walls, attics or in angles that could give rise to stratification or recirculation phenomenons.

Ignoring the previous indications could:

- energy efficiency decrease
- alarm lockout due to HIGH PRESSURE (in summer) or LOW PRESSURE (in winter)

Indoor installation set-up

Option

1 Rain-proof protection
2 Safety and anti-intrusion for small animals grille
3 Rain drain
4 Condensate drain

Pressure relief valve gas side

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

If ducted, the valves must be sized according to EN13136 .

Only if electronic filter is present

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*

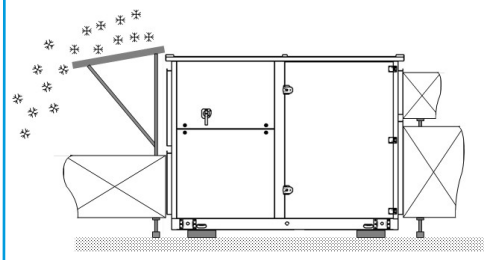
⇒ *Gas*

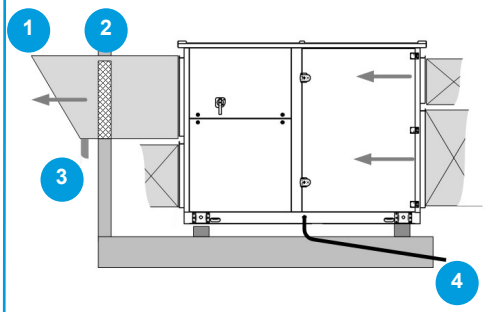
Absolutely to avoid:

⇒ *metal dusts also fine*

⇒ *fumes produced by combustion of organic and not materials (wood, coal, gasoline, etc.)*

Avoid snow and ice accumulating in front of the exhaust air ejection.





Steam humidification module

Option

Immersed electrode steam humidification module

Requires the presence of a hydraulic circuit and drain on board the unit by the customer care.

Centralised steam humidification module

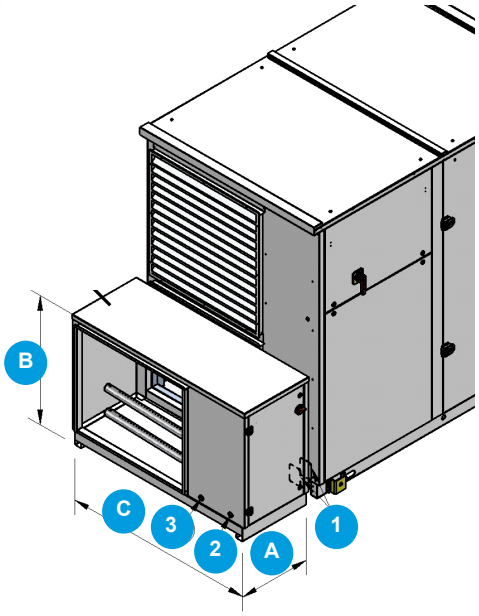
A shut-off valve in the unit's steam input line is to be provided (responsibility of the customer).

Install the steam line in a position higher to the unit.

If the available steam supply exceeds the pressure operating range indicated, the required de-pressurization must take place outside the unit (responsibility of the customer).

Operating pressure: 1 bar

⇒ *Risk of freezing*



1 Power input
2 Steam inlet / Water inlet
3 Condensate discharge

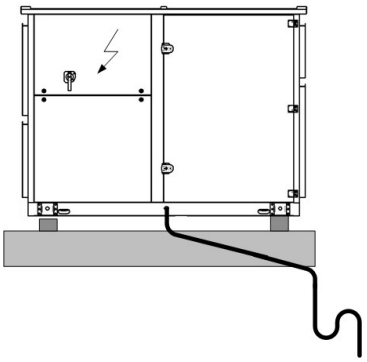
Size		1	2	3	4	5	6
A	mm	640	640	760	760	760	760
B	mm	800	800	835	1060	1060	1060
C	mm	905	905	1630	1630	1920	2225

WATER CONNECTIONS

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 connection between the attachment and the siphon must be hermetically sealed (A)
- The piping must have adequate slope to allow out flow.
- Anchor the ducting with an adequate number of supports.. Otherwise are generated duct failures and air locks that prevent the runoff.
- 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.

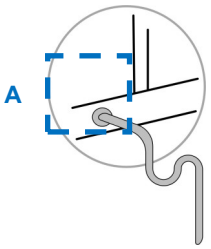


Siphon height calculation

T = 2P

S = T/2

P is the pressure determined by the fan in correspondence of the condense collection bowl (approx. 1 mm = 9.81 Pa)

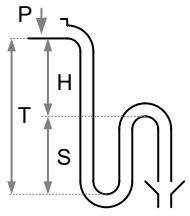


Example :

P = 300 Pa = 30 mm

T = 2P = 60 mm

S = T/2 = 30 mm



Risk of freezing

Prevent the risk of freeze if the unit, drain or plumbing connections can be subject to temperatures close to 0°C.

- isolate the piping
- protect the piping with heating cables laid underneath the insulation

Immersed electrode humidifier

Option

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.

Limit values for the supply water

Respect the limits indicated in the table

No relation can be demonstrated between water hardness and conductivity.

Limit values for the supply water	conductivity		medium-low		medium-high	
			min	**max**	**min**	**max**
Hydrogen ions	pH		7	8,5	7	8,5
Specific conductivity at 20°C		µS/cm	125	500	300	1250
Total dissolved solids	TDS	mg/l	(1)	(1)	(1)	(1)
Dry residue at 180°C	R_{180}	mg/l	(1)	(1)	(1)	(1)
Total hardness	TH	mg/l $CaCO_3$	50 (2)	250	100 (2)	400
Temporary hardness		mg/l $CaCO_3$	30 (3)	150	60 (3)	300
Iron + Manganese		mg/l Fe+Mn	0	0,2	0	0,2
Chlorides		ppm Cl	0	20	0	30
Silica		mg/l SIO_2	0	20	0	20
Residual chlorine		mg/l Cl^-	0	0,2	0	0,2
Calcium sulphate		mg/l $CaSO_4$	0	60	0	100
Metallic impurities		mg/l	0	0	0	0
Solvents, diluents, soaps, lubricants		mg/l	0	0	0	0

(1) Values depending on specific conductivity; in general:

$$TDS \cong 0{,}93 * \sigma_{20;}\ R_{180} \cong 0{,}65 * \sigma_{20}$$

(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-

Drainage water

It can reach a temperature of 100°C.

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

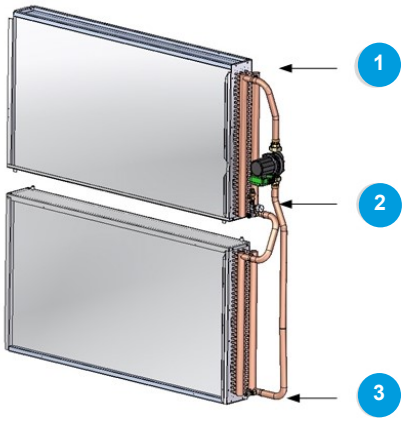
As it is not toxic, it can be disposed of with white waters.

Hydronic recovery

Option

The device is shipped filled with water and glycol.

1 vent
2 filling glycol
3 water filling tap



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)

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.

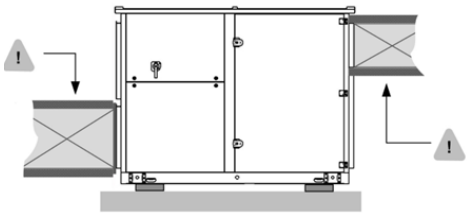
When choosing and positioning the grilles, inlets and diffusers, avoid:

- 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

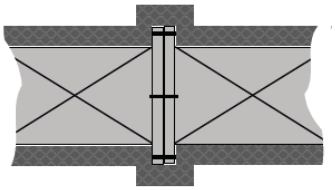
For sound comfort, consider that:

- 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

Isolate the channels



Isolate the flanges

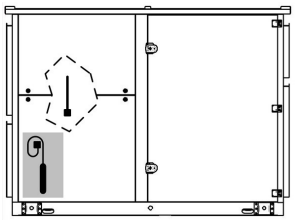


Remote supply air sensor

Standard su size 3, 4, 5, 6

1 Probe kit position
2 Probe cable outlet
3 Install as far away as possible

1



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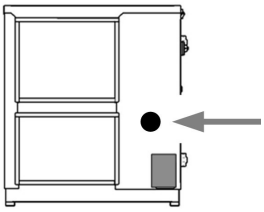

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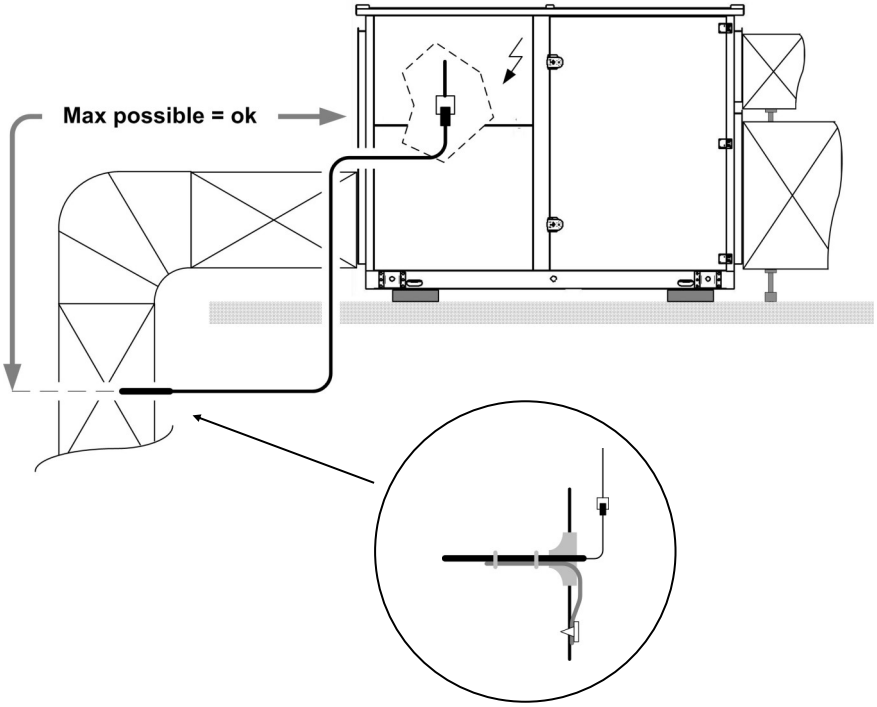
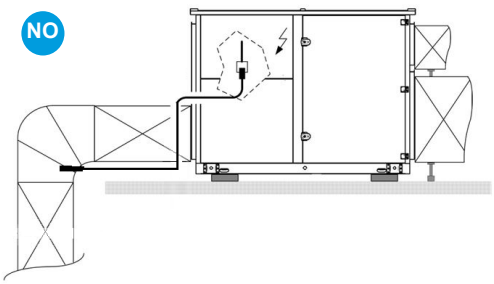
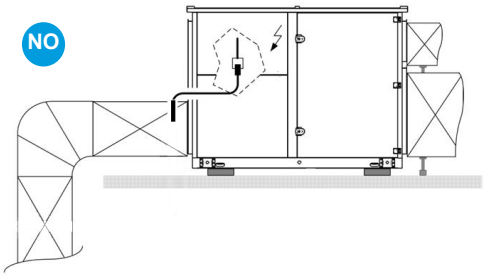






ELECTRICAL CONNECTIONS

The characteristics of the electrical lines must be determined by specialized 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 the presumed short circuit current, whose value must be determined in function of 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 requirements by the regulations in force and being informed about the risks relevant to these activities.

Operate in compliance with safety regulations in force.

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.

Refer to the electrical data report on the serial number label:

- Tensione
- 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

Connections

refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).

verify that the network has characteristics conforming to the data shown on the serial number label.

Before starting work, verify that the sectioning device at the start of the unit power line is open, blocked and equipped with cartel warning.

Primarily you have to realize the earthing connection.

Shelter the cables using adequate measure fairleads.

Before power the unit, make sure that all the protections that were removed during the electrical connection work have been restored.

Power supply network requirements

1 The short circuit capacity of the line must be less than 15 kA
2 The units can only be connected to TN, TT distribution systems
3 Voltage 400-3-50 +/-10%
4 Phase unbalance < 2%
5 Harmonic distortion less than 12% (THDv<12%)
6 Voltage interruptions lasting no longer than 3ms and with at least 1 s between each one
7 Voltage dips not exceeding 20% of the RMS value, lasting no longer than a single period (50Hz) and with at least 1 s between each dip.
8 Earth cable as specified in the table:

Cross-section of the line conductors (mm^2)	Minimum cross-section of the protective conductor (PE) (mm^2)
$S \leq 16$	S
$16 < S \leq 35$	16
$S > 35$	S/2

Signals / data lines

Do not overpass 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.

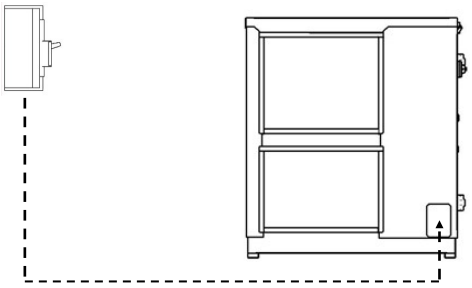
Guarantee the continuity of the screen during the entire extension of the cable.

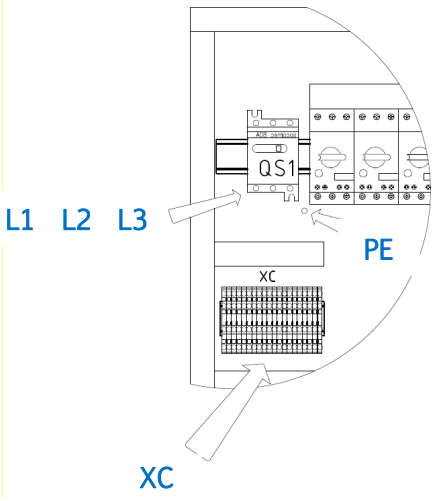
Respect impendency, capacity and attenuation indications.

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 temparatures).



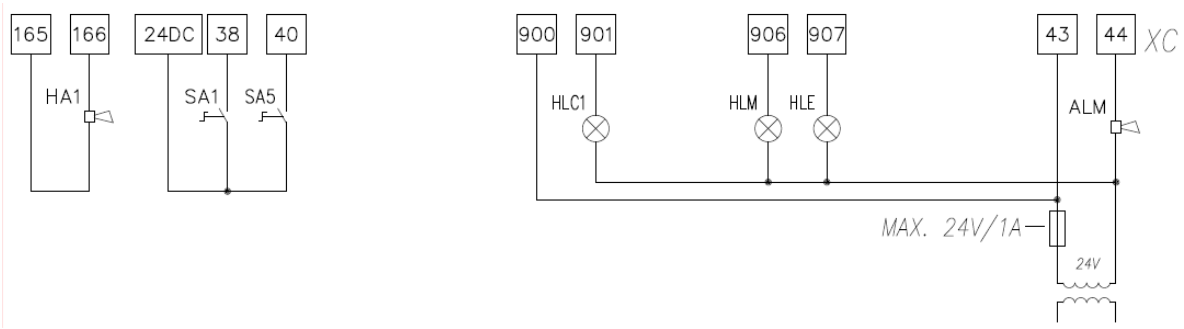


QS1 main isolator

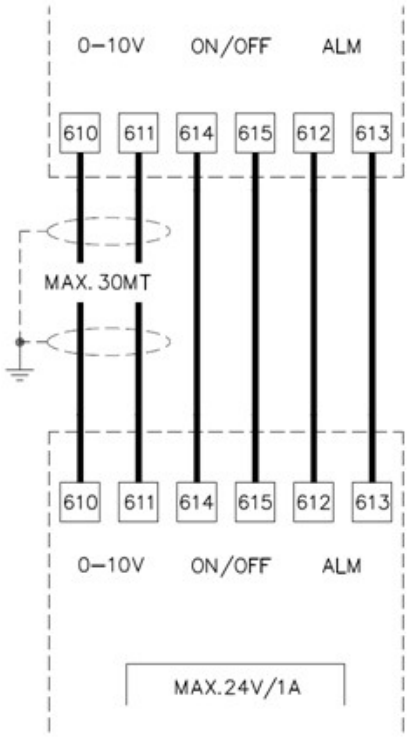
XC Customer connections terminal box

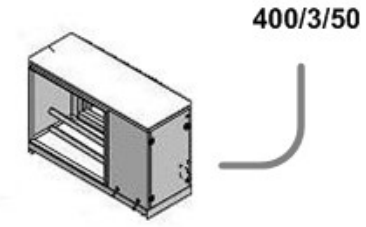
Connections performed by costumer - XC

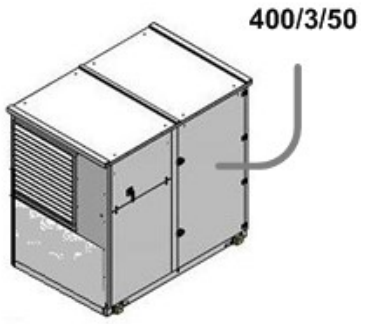
SA1 remote ON-OFF selector
SA5 dehumidification set enabling selector *
HA1 fire alarm
* It must be enabled and set up by personnel trained and authorised by Clivet



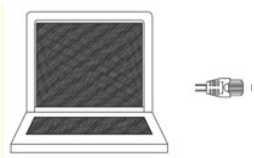
Steam humidification module - option



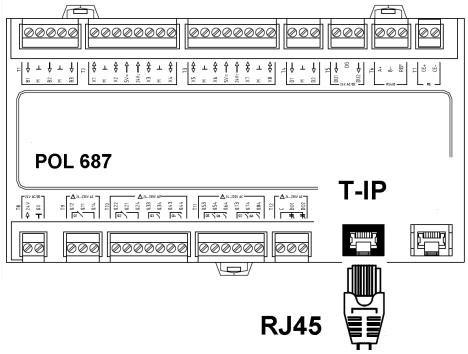




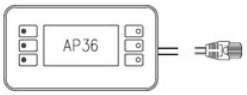
P.C. - not supplied



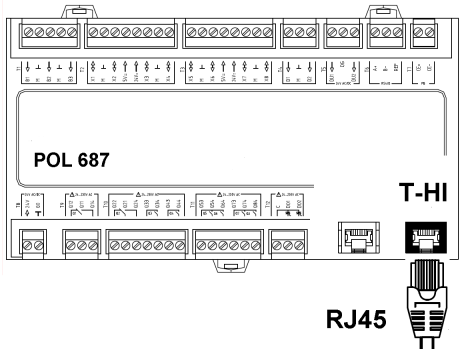
RJ45 : standard connection



Optional keypad



Shift RJ45 from T-IP to T-HI



P.C. configuration

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 (TPC) 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 if will appear dawn an answer string, the connection is ok

14 enter the browser (Crhome, Firefox ecc)

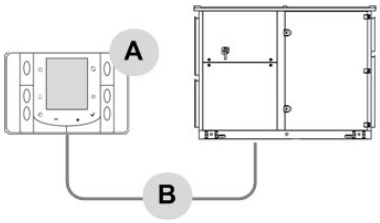
15 Write and run the command **http:/192.168.1.42**

16 Userid = **WEB**

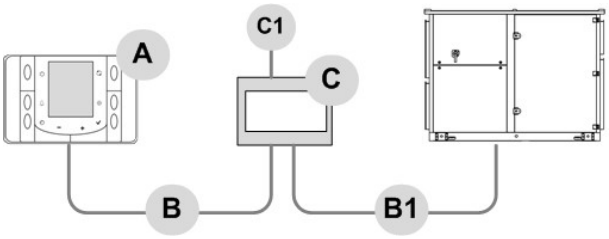
17 Password = **SBTAdmin!**

Remote control with user interface

Distance up to 350 mt



Distance up to 700 mt



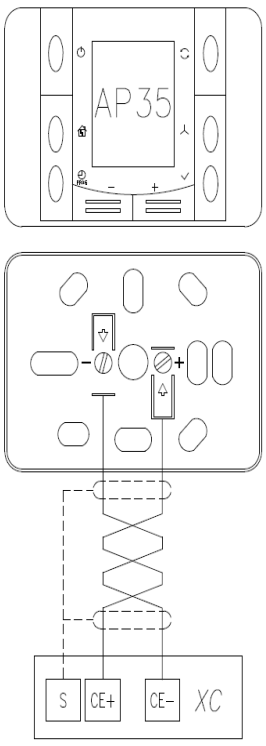
A user interface

B = B1 KNX bus, max 350 mt
twisted pair with shield, Ø 0,8 mm
EIB/KNX cable marking recommended

C power supply unit N125/11 5WG1 125-1AB11

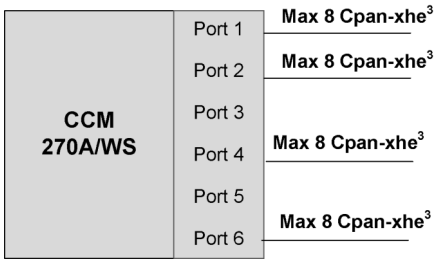
C1 AC 120...230 V, 50...60 Hz

Connections



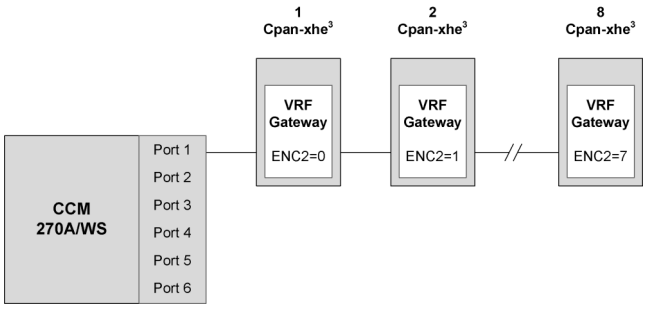
VRF gateway

The CCM-270A/WS controller has 6 ports; one port can be connected to 8 systems, VRF or CPAN-XHE3, therefore max 48 CPAN-XHE3.



ENC2: from 0 to 7

address of the units connected to the same port, max 8

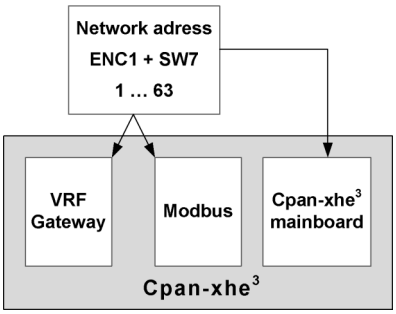


ENC1 + SW7: from 1 to 63

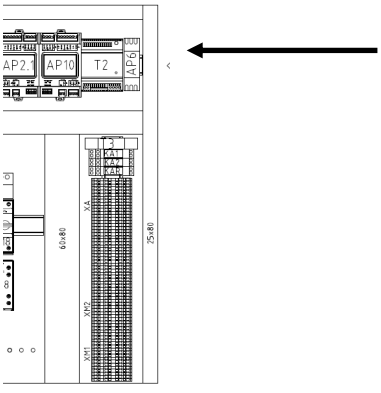
address of the Modbus network

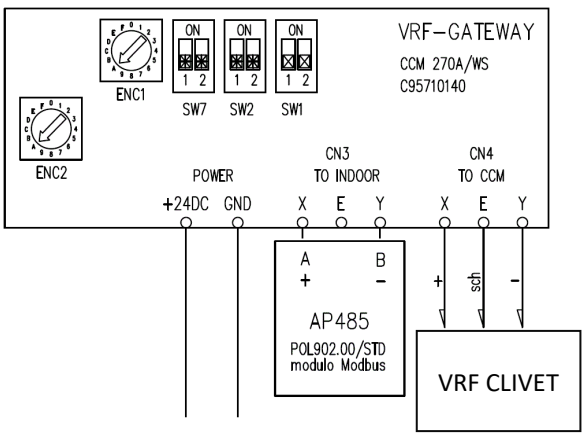
It must be the same with which the unit is addressed on the Modbus network.

- Settings on CPAN-XHE3:
- Baudrate = 9600
- Parity = none
- Stop bit = 1
- Address = 1 ~ 63

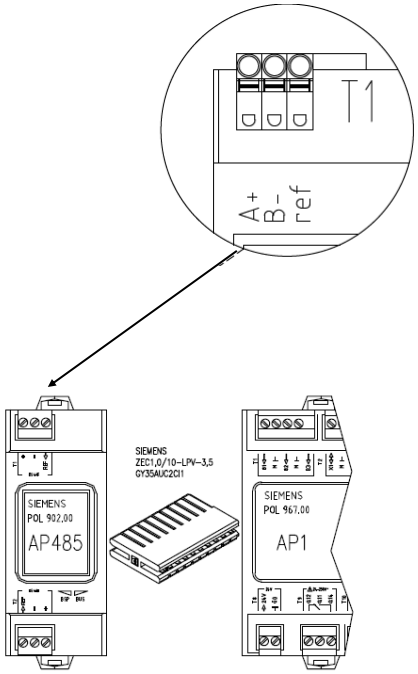


CPAN address	ENC1	SW7 - 1	SW7 - 2
1 .. 15	1 .. F	OFF	OFF
16 .. 31	1 .. F	ON	OFF
32 .. 47	1 .. F	OFF	ON
48 .. 63	1 .. F	ON	ON

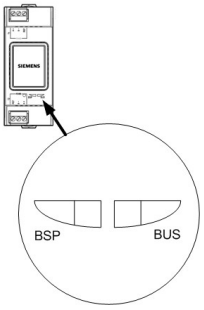




MODBUS - RS485



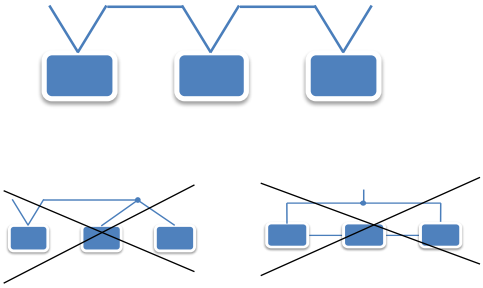
LED BSP	**communication with AP1 module**
green	communication ok
yellow	software ok but communication with AP1 down
red	flashing : software error
	fixed : hardware error
LED BUS	**communication with MODBUS**
green	communication ok
yellow	startup / channel not communicating
red	communication down



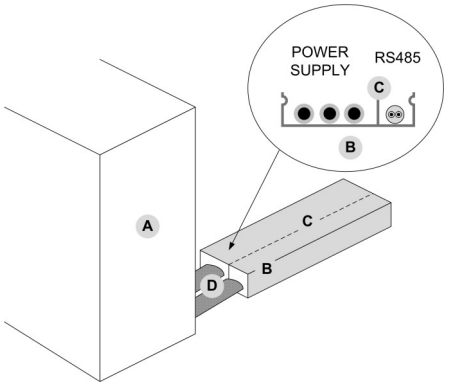
Cable MODBUS, requirements

Couple of conductors twisted and shielded
Section of conductor 0.22mm^2…0,35mm^2
Nominal capacity between conductors < 50 pF/m
nominal impedance 120 Ω
Recommended cable BELDEN 3106A

- Ogni linea seriale RS485 deve essere realizzata con sistema bus di tipo 'Entra/Esci'. Non sono ammesse tipologie diverse.

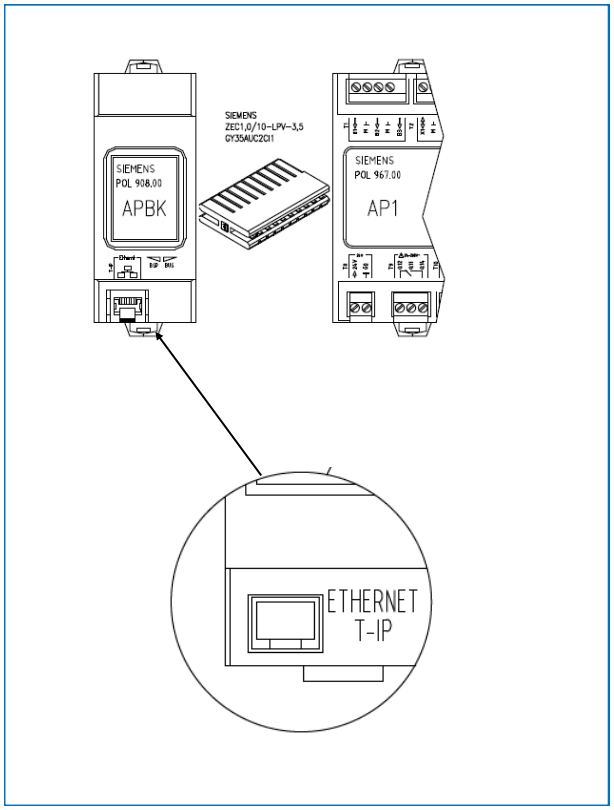


- Every RS485 serial line must be set up using the 'In/ Out' bus system. Other types of networks are not allowed, such as Star or Ring networks
- The difference in potential between the earth of the two RS485 devices that the cable shielding needs to be connected to must be lower than 7 V
- Suitable arresters must be set up to protect the serial lines from the effects of the 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

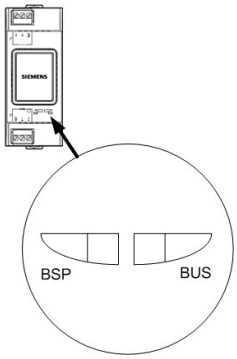


A unit
B metal conduit
C metal septums
D metal-lined sheath (sleeve)

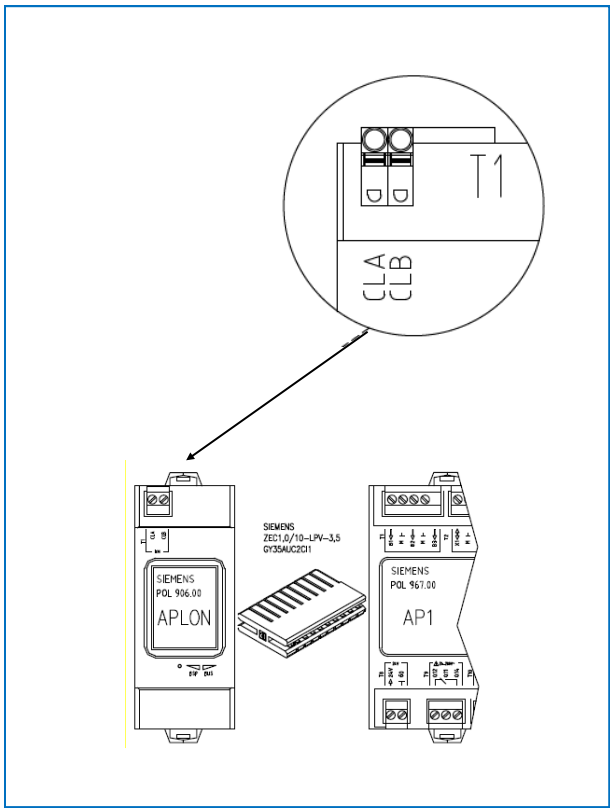
BACNET



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.



LONWORK



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 LONWORK**
green	communication ok
yellow	startup
	flashing: communicating not possible
red	communication down

LONWORK CABLE TYPES

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. □ 0.5mm, AWG24, 0.22mm²

Impedance 100 Ω +/- 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

START-UP

The indicated operations must be carried out by qualified technicians and specifically trained on the product.

Upon request, the after-sales assistance centres execute start-up.

The electric, hydraulic connections and the other work of the system are the responsibility of the installer.

Agree the start-up date with the after-sales assistance centre with sufficient advance

Before starting any check, verify that :

- the unit is perfectly installed and in compliance with that reported in this manual
- the electric power supply line of the unit is isolated at start-up
- the isolation device of the line is open, blocked and equipped with relative signal.
- 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.*

Preliminary checks

For details refer to the various chapters in the manual.

Unit OFF power supply

1 safe access
2 integrity of structure
3 functional spaces
4 fresh air intake: grille free
5 air expulsion: grille free
6 unit on anti-vibration devices
7 condensate drain
8 air filters present and clean
9 steam humidification module connections (option)
10 cooling circuit visual control
11 earth connection
12 power supply features
13 electric connections by customer

Preliminary checks

For details refer to the various chapters in the manual.

unit ON power supply

1 compressor carter heaters ON from at least 8 hours
2 vacuum voltage measurement
3 phases sequence control
4 shut-off valve refrigerant circuit open (if present)
5 unit ON
6 load voltage measurement and absorptions
7 fans operation check
8 set type reg.
9 set air flow rate
10 temperature set-point customisation
11 humidity set-point customisation
12 treated air flow rate measurement
13 supply, return and outdoor air temperature measurement
14 subcooling and overheating measurement
15 no anomalous vibrations check
16 fire alarm configuration *
17 heater humidifier calibration test*
18 complete and available unit documentation

* only if present

Cooling circuit

1 Visually check the cooling circuit: any oil stains can be symptom of leaks (caused by, for example, transport, handling or other).
2 Check the cooling circuit is pressurised: use the machine pressure gauges, if present, or service pressure gauges.
3 Check all service sockets are closed with relative plugs; their absence may determine coolant leaks
4 Shut-off valve refrigerant circuit open (if present)

Water circuit

Only with humidifier options - Hot water coil

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.

NOTE

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

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.

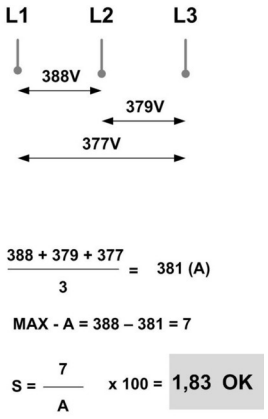
Connect the unit by closing the sectioning device, but leave it on OFF.

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%

NOTE

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



Compressor crankcase heaters

Power the compressor oil heating resistors for at least 8 hours before starting the compressor itself:

- upon unit commissioning
- after every prolonged stop period with unit not powered

1 Power the resistors by closing the unit isolator.
2 Check electric absorption of the resistors to be sure they are working.
3 Execute start only if the temperature of the compressor casing on the lower side is at least 10°C higher than the outdoor temperature.
4 Do not start the compressor with carter oil not in temperatureTensioni

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

Scroll compressors (size 2, 3, 4, 5, 6)

The Scroll compressors have only one direction of rotation.

In the event that the direction is reversed, the compressor will not be damaged, but its noisiness will increase and pumping will be negatively affected.

After a few minutes, the compressor will stop because of the activation of the thermal protection.

In this event, cut the power and reverse the 2 phases on the machine power.

Prevent the compressor from working with in reverse rotation: more than 2-3 anomalous starts up can damage it.

Make sure the direction of rotation is correct, measure the condensation and suction pressure.

Pressure must clearly differ: at the start, the suction pressure decreases whilst the condensation pressure increases.

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).

Operation type setting

1 Define operation type
   - maximum capacity available (MC)
   - constant supply control (CS)
   - high air flow (HA)
2 set air flow setpoint
3 set temperature setpoint
4 set humidity setpoint
5 confirm setting

Maximum capacity available (MC)

In this operating mode, the supply air temperature (T_SA) can vary in accordance with the temperature of the air extracted from the room (T_RA) and their deviation from the set value.

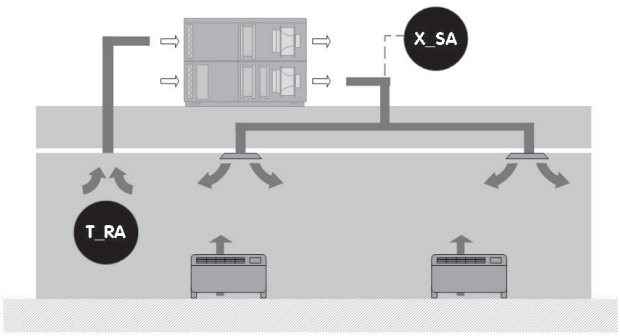
Therefore, there is feedback from the room.

In cooling operation, the absolute reference humidity value is that of the supply air (dehumidification).

This control is provided as standard and is prioritary.

In heating operation, the absolute reference humidity value is that of the extracted air from the ambient.

In this case, a humidifier (optional) is necessary to allow control.



Type of adjustment

Main index \ Parameter machine \ Plant config

- set P0001 TypeReg = MC

Air flow rate

The air flow rate control depends on the device connected to the X2 input

Constant air flow rate, X2 input not used:

- set P0032 X2Config = None (Main index \ Parameter machine \ configure machine)
- set rated air flow rate P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)

Variable air flow rate, CO2 probe connected to the X2 input:

- set P0032 X2Config = CO2 (Main index \ Parameter machine \ configure machine)
- set air flow rate with quality NOT met: P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)
- set air flow rate with quality met: P0004SetQAirCO2Ok (P0004<P0002) (Main index \ Parameter machine \ Plant config)

Constant supply pressure, pressure detector connected to the X2 input:

- set P0032 X2Config = SupplyP (Main index \ Parameter machine \ configure machine)
- set the supply pressure setpoint: P0003 SetPSupplyPlant (Main index \ Parameter machine \ Plant config)

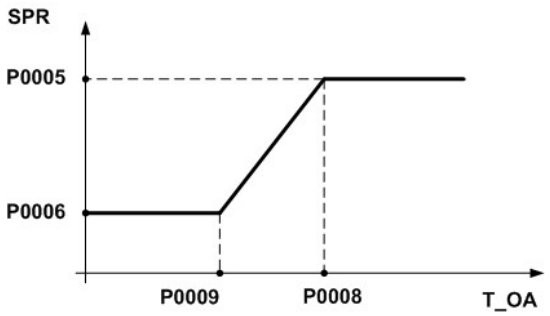
Temperature setpoint

To reset the alarm ee090 System Configuration, at the end of the unit set-up, carry out the operation indicated below.

Set the values related to the SPR return air setpoint in relation to the T_OA external temperature:

(Main index \ Parameter machine \ plant config)

- P0005 SetCool
- P0006 SetHeat
- P0008 MC_TExtCool
- P0009 MC_TExtHeat

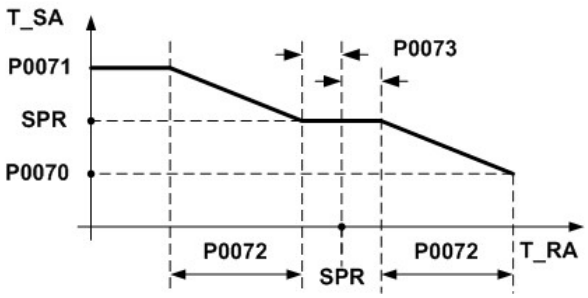


The T_SA supply setpoint is calculated in relation to the SPR return setpoint.

Set the values related to the T_SA supply air setpoint in relation to the T_RA return temperature:

Main index \ Parameter machine \ Thermoregulator

- P0070 LimMinSupplyT
- P0071 LimMaxSupplyT
- P0072 MC_BandPr
- P0073 MC_DeadBand



Humidity setpoint

Main index \ Parameter machine \ Plant config

- set the specific supply humidity setpoint in cooling mode: P0019 SetXSA
- set the specific return humidity setpoint in heating mode: P0020 SetXSR

Confirm configuration

Main index \ Parameter machine \ Plant config

- set P0023 ConfirmConf = Yes

Constant supply control (CS)

In this operating mode the external air is treated based on the supply conditions set in accordance with one of the following two criteria:

- with two fixed seasonal setpoints, for operation in cooling and heating mode
- with two dynamic seasonal setpoints, in which the supply temperature is offset automatically in accordance with the external dry bulb temperature T_OA, with climatic regulation.

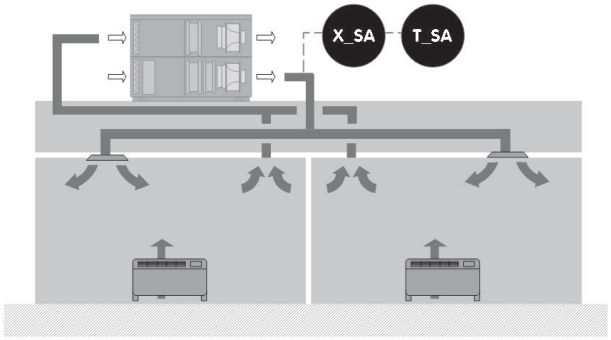
There is no feedback from the room.

In cooling operation, the absolute reference humidity value is that of the supply air (dehumidification).

This control is provided as standard and is prioritary.

In heating operation, the absolute reference humidity value is that of the extracted air from the ambient.

In this case, a humidifier (optional) is necessary to allow control.



Type of adjustment

Main index \ Parameter machine \ Plant config

- set P0001 TypeReg = CS

Air flow rate

The air flow rate control depends on the device connected to the X2 input

Constant air flow rate, X2 input not used:

- set P0032 X2Config = None (Main index \ Parameter machine \ configure machine)
- set rated air flow rate P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)

Variable air flow rate, CO2 probe connected to the X2 input:

- set P0032 X2Config = CO2 (Main index \ Parameter machine \ configure machine)
- set air flow rate with quality NOT met: P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)
- set air flow rate with quality met: P0004SetQAirCO2Ok (P0004<P0002) (Main index \ Parameter machine \ Plant config)

Constant supply pressure, pressure detector connected to the X2 input:

- set P0032 X2Config = SupplyP (Main index \ Parameter machine \ configure machine)
- set the supply pressure setpoint: P0003 SetPSupplyPlant (Main index \ Parameter machine \ Plant config)

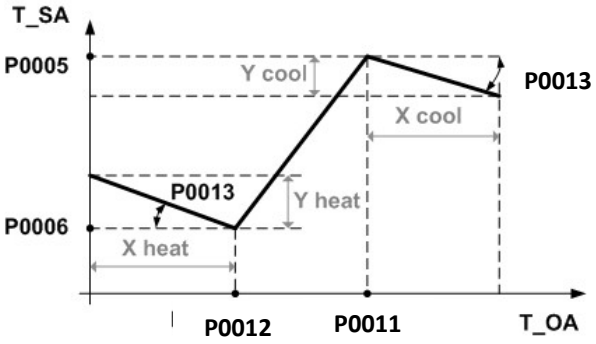
Temperature setpoint

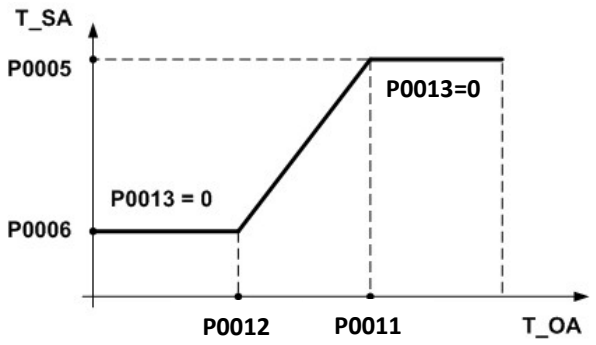
To reset the alarm ee090 System Configuration, at the end of the unit set-up, carry out the operation indicated below

Set the values related to the T_SA supply air setpoint in relation to the T_OA external temperature:

(Main index \ Parameter machine \ plant config)

- P0005 SetCool
- P0006 SetHeat
- P0011 CS_TExtCool
- P0012 CS_TExtHeat
- P0013 CS_GainCool (Ycool/Xcool)
- P0014 CS_GainHeat (Yheat/Xheat)





Humidity setpoint

Main index \ Parameter machine \ Plant config

- set the specific supply humidity setpoint in cooling mode: P0019 SetXSA
- set the specific return humidity setpoint in heating mode: P0020 SetXSR

Confirm configuration

Main index \ Parameter machine \ Plant config

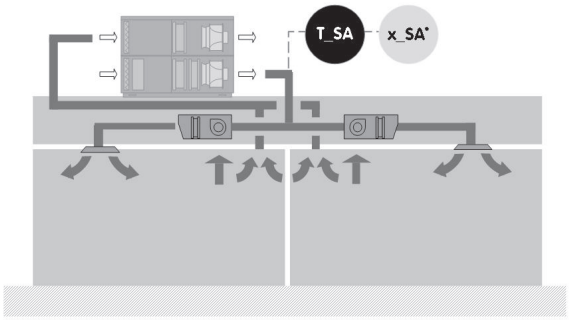
- set P0023 ConfirmConf = Yes

High air flow (HA)

In this operating mode the external air T_OA is treated until it reaches the value of the supply air temperature T_SA, according to a predefined adjustment diagram (graph xx).

There is no feedback from the room.

The humidity control of the supply air is running only in heating mode.



x_Sa* with humidifier only

Type of adjustment

Main index \ Parameter machine \ Plant config

- set P0001 TypeReg = HA

Air flow rate

The air flow rate control depends on the device connected to the X2 input

Constant air flow rate, X2 input not used:

- set P0032 X2Config = None (Main index \ Parameter machine \ configure machine)
- set rated air flow rate P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)

Variable air flow rate, CO2 probe connected to the X2 input:

- set P0032 X2Config = CO2 (Main index \ Parameter machine \ configure machine)
- set air flow rate with quality NOT met: P0002 SetQAirPlant (Main index \ Parameter machine \ Plant config)
- set air flow rate with quality met: P0004SetQAirCO2Ok (P0004<P0002) (Main index \ Parameter machine \ Plant config)

Constant supply pressure, pressure detector connected to the X2 input:

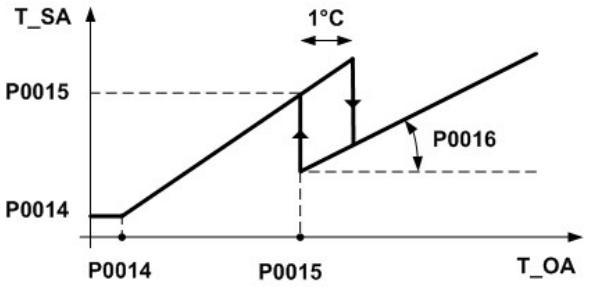
- set P0032 X2Config = SupplyP (Main index \ Parameter machine \ configure machine)
- set the supply pressure setpoint: P0003 SetPSupplyPlant (Main index \ Parameter machine \ Plant config)

Temperature setpoint

Set the values related to the T_SA supply setpoint in relation to the T_OA external temperature:

(Main index \ Parameter machine \ Plant config)

- P0014 HA_SetHeat
- P0015 HA_TExtLg
- P0016 HA_GainExtLg (Yt_sa/Xt_oa)



Humidity setpoint

Main index \ Parameter machine \ Plant config

- set the specific return humidity setpoint in heating mode: P0020 SetXSR

Confirm configuration

Main index \ Parameter machine \ Plant config

- set P0023 ConfirmConf = Yes

Start-up report

dentifying 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.

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:

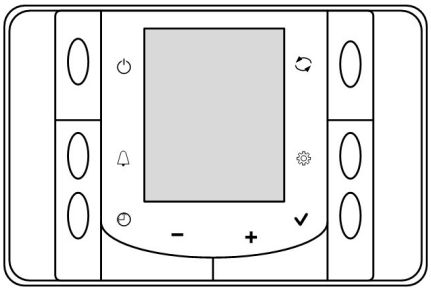
- for all the units

Periodical verifications:

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

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)

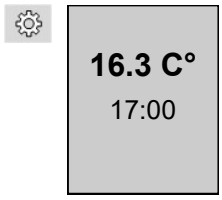
Symbols

	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.
	Defrosting Mode: The machine is defrosting.
	Scheduling Mode: The scheduling is active.
	Humidifier / Dehumidifier mode The Humidifier mode is active If flashing, it means the Dehumidifier mode is active
	Compressor ON: At least one compressor is active
	Alarm: There is at least one alarm Press the "alarm" key to view it

PARAMETERS MENU

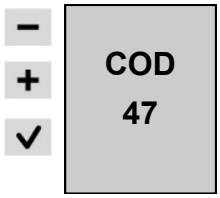
The access by password is reserved to qualified personnel, the parameters changes can cause malfunctions.

Press



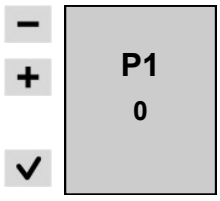
enter password (47)

confirm



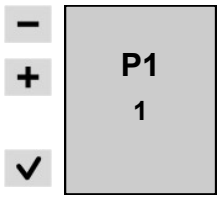
scroll the parameters

enable the parameter change
P1 starts flashing



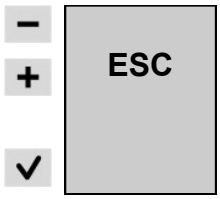
change the value of the parameter

confirm the new value



select
to enable the new value and exit

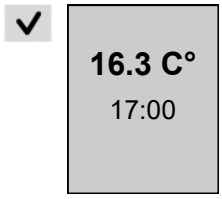
when the time is displayed
it is possible to carry out other operations



code	Short description	Description
0	PriorityCmd	Priority commands On/change mode (0=keyboard, 1=BMS)
1	Enscheduler	Enable schedular (0=disable, 1=enable)

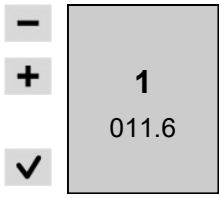
STATA MENU

Press

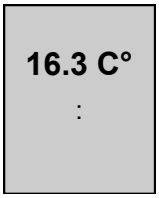


scroll the statuses

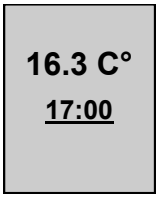
exit



wait for 3 sec



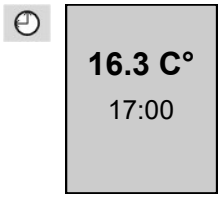
when the time is displayed
it is possible to carry out other operations



Code	Description
0	Operating return temperature
1	Outdoor temperature
2	Supply temperature
3	Return specific humidity
4	Outdoor specific humidity
5	Supply specific humidity
6	Air quality (option)
7	Active compressors number
8	Compressors fuctioning mode: 0= off; 1=cool; 2=heat
9	Active cooling capacity
10	Active cooling capacity circuit 1
11	Active cooling capacity circuit 2 (only size 3, 4, 5, 6)
12	Capacity control circuit1 status: 0=off; 1=on
13	Postheating valve circuit 1 opening
14	Postheating valve circuit 2 status (only size 3, 4, 5, 6): 0=off, 1=on

DATE AND HOUR

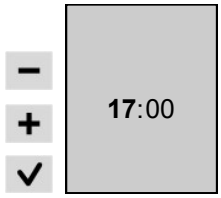
Press



HOUR digits start flashing

edit

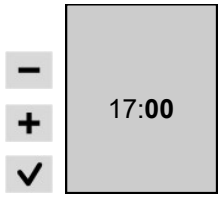
confirm



MINUTE digits start flashing

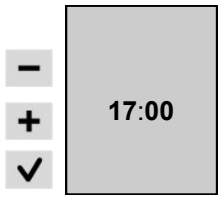
edit

confirm



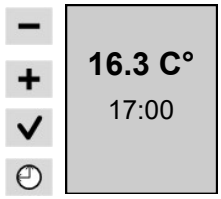
HOUR - MINUTE digits start flashing

choose format
24h / am - pm



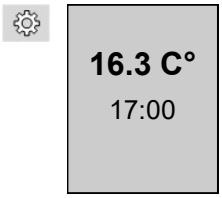
set
year, month, day

main menu

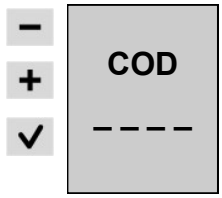


BUTTON LOCK

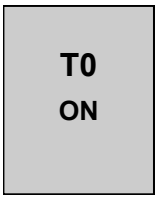
Press for 4 sec.



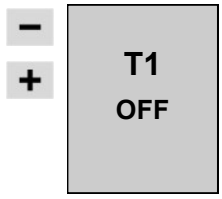
enter password
confirm



example:
T0 = "-" key
ON = active key
see codes-key table

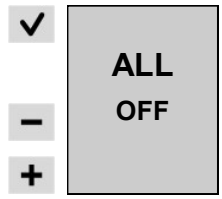


scroll the keys



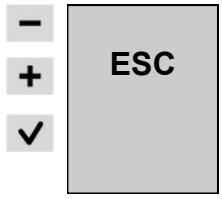
select the key
(ALL starts flashing)

set active-ON / disabled-OFF
example:
ALL = OFF
all keys disabled

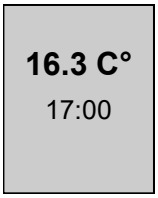


select to confirm

exit



Key-code table			
n. key	key	n. key	key
T0	−	T5	
T1	+	T6	
T2		T7	✓
T3		ALL	All keys
T4			



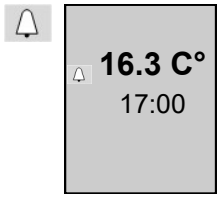
To visualize alarm in progress

Caution

⇒ *Before resetting an alarm identify and remove its cause.*

⇒ *Repeated resets can cause irreversible damage.*

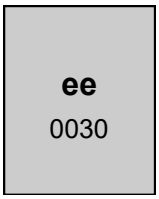
press
only if the ALARM symbol is flashing



ee type of alarm (see table)

0 generic alarm (1 circuit1 alarm, etc.)

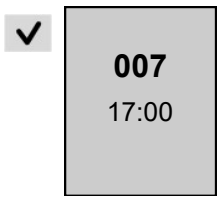
030 progressive alarm number



press

7 days since the alarm was triggered

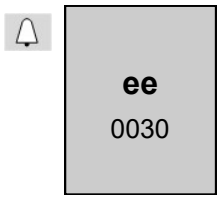
17:00 alarm time



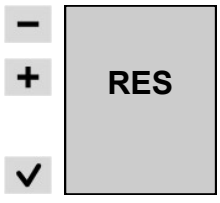
previous menu

scroll the alarms

exit without alarms RESET



exit with alarms RESET:
scroll and select RES



SCHEDULER

Caution

⇒ *Enable scheduler (see: 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, 21h 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:

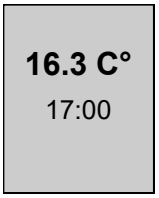
1. Set weekly scheduling (see table example)
2. define days with the same scheduling (ex. days 2 = 4 = 5 = 6)
3. select days 2,4,5,6
4. set event 1 (event time, state Off - On - Fan)
5. set event 2,3, ecc..
6. select days 1,3,7
7. set event 1,2,3, ecc..

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

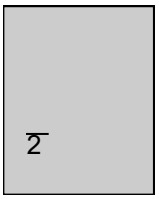
Scheduling the 1st day, also the other days of the week are automatically scheduled.

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

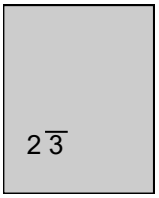


day 1 starts flashing
to go to day 2 press +

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

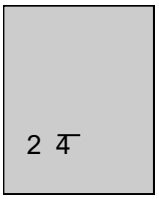


to exclude day 3 press +



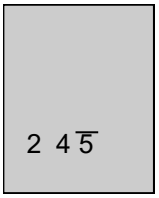
to schedule day 4 press ✓
(4 starts flashing)

press +



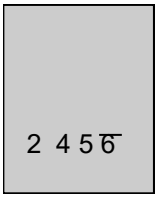
to schedule day 5 press ✓
(5 starts flashing)

press +



to schedule day 6 press ✓
(6 starts flashing)

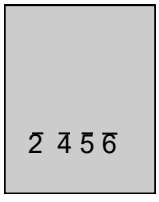
press +



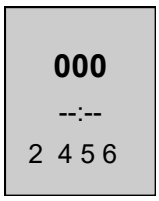
to exclude day 7 press +

to confirm selected days press +

~~2~~ 4 ~~5~~ 6 ~~-~~ starts flashing



press

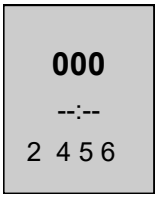


Set event 1

example: Tuesday 05:30 FAN

press

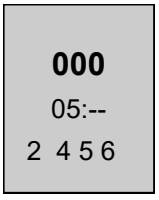
-- starts flashing



set

- event time

press



set

- eventt minutes

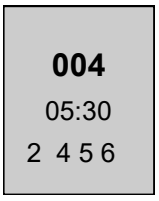
press

iset

- desired mode

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

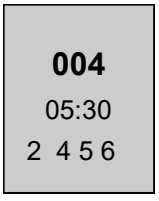
press



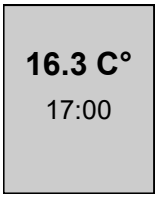
Press

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

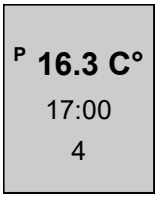
Ripeat from **(Set event 1)**



press 2 times to exit



P flashing, active scheduling

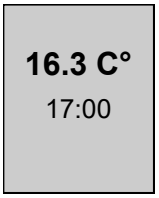


Scheduling days 1,3,7

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

Press 2 sec

(only if the unit is not OFF)



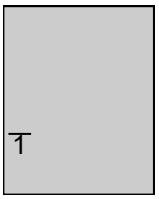
day 1 starts flashing

to schedule day 1 press

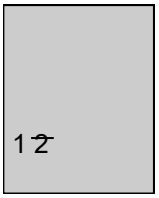
(1 stays steady = day 1 scheduled)

to go to day 2 press

(2 starts flashing)



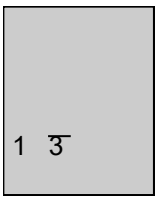
to exclude day 2 press



to schedule day 3 press

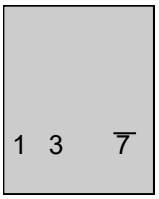
(3 starts flashing)

press



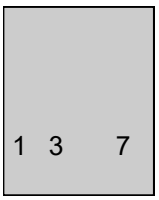
to exclude days 4,5,6

press



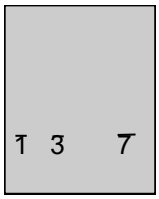
to schedule day 7 press

(7 starts flashing)

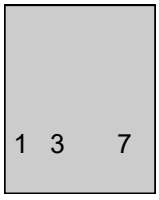


to confirm selected days press

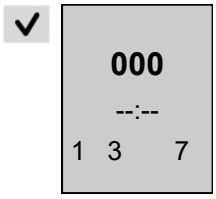
1 3 7 starts flashing



press



press

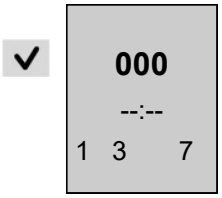


Set event 1

example: Monday 05:30 FAN

press

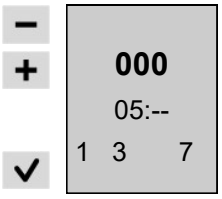
-- starts flashing



set

- event time

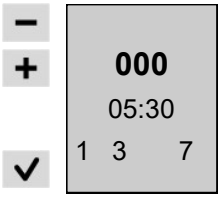
press



set

- eventt minutes

press

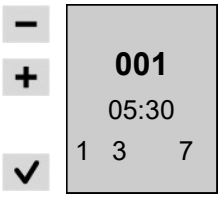


iset

- desired mode

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

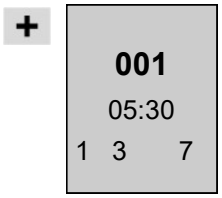
press



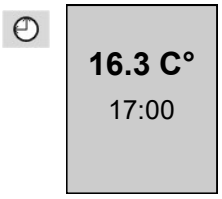
Press

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

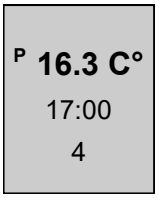
Ripeat from **(Set event 1)**



press 2 times to exit



P flashing, active scheduling



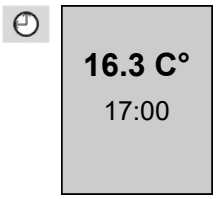
Modify scheduling

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

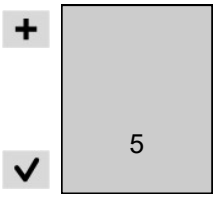


press

to schedule day 5 press

press

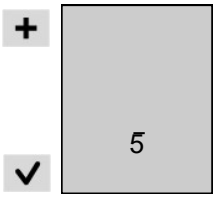
(5 stays steady)



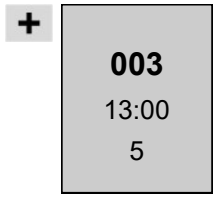
press to exclude the other days

5 starts flashing

press



press 3 times (= event 3)

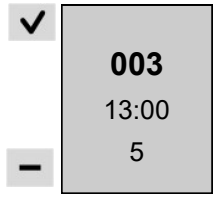


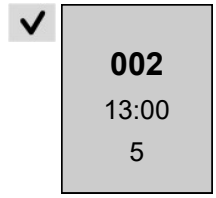
press 3 times

starts flashing 003 (= ON)

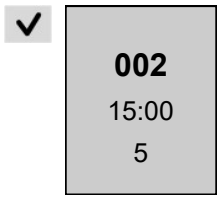
select mode 002 (=OFF)

confirm

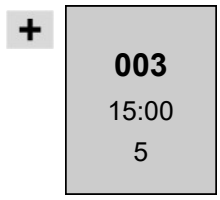




press



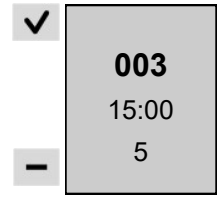
press 4 times (= event 4)

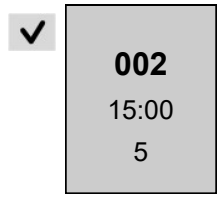


press 3 times
starts flashing 003 (= ON)

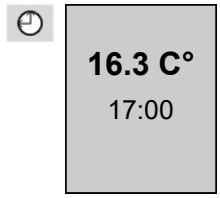
select mode 002 (=OFF)

confirm

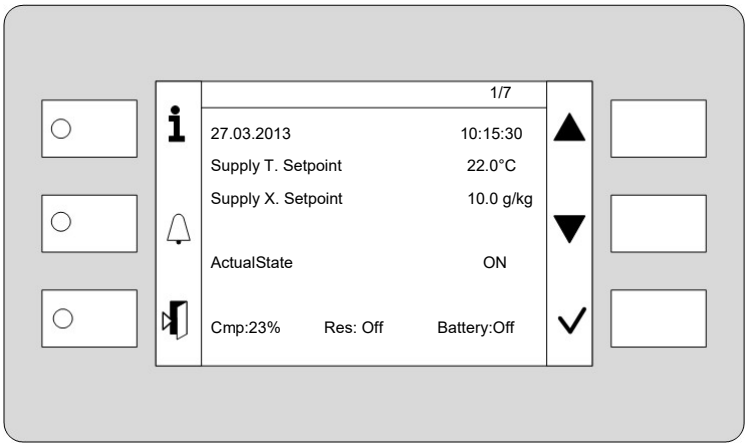




press 2 times to exit



SERVICE KEYPAD



Function keys

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

DISPLAY MEANING

Supply T. Setpoint Supply temperature current set-point
Supply X Setpoint Specific supply humidity current set-point
ActualState OFF / ON /FAN
Cmp Percentage of used cooling capacity
Res State resistances
Battery State Hydronic recovery

COMMON OPERATIONS

switch the unit to ON, OFF, FAN		main menu → cmd local status → select OFF - ON - ECO - FAN
change SETPOINT		main menu → unit parameters → setpoint

SCHEDULER

Enable scheduler(par 61 Enscheduler **)**

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

Select

Confirm

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

Select

Confirm

Main index	
Actual value	On
01 : Monday	**Off**
02 : Tuesday	Off
03 : Wednesday	Off
04 : Thursday	Off
05 : Friday	Off
06 : Saturday	Off
07 : Sunday	Off

Select

Confirm

Setting

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

Select

Confirm

Setting

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

KEYBOARD SETTINGS

Press 3 sec

Select

Confirm

HMI settings
local connection

exit :

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

To exit :

Select

Confirm

HMI settings
local connection

To Visualize alarm in progress

Caution

⇒ *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 Passive 1

+ eE001 : Monitore fase : Fault

Press 

Press 

alarm log

Reset Passivo 10

+ eE001 : Monitore fase : Fault

- EE003 : Guasto P1 Util : Ok
+ EE003 : Guasto P1 Util : Fault

- 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 Passive 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 Passive 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
Change PSS user
Change PSS service
Change 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. 

Insert password:
Maintenance
Manufacturer

Confirm 

Password
Password
0 - - -

Press 

alarm log
Reset **Passivo 10**
+ eE001 : Monitore fase : Fault
- EE003 : Guasto P1 Util : Ok
+ EE003 : Guasto P1 Util : Fault
……...

Select 

Confirm 

Alarm cnf
AlarmSnapshot 0
Lista allarmi :
Ordinamento 1 Ora
Ordinamento 2 Ora
Ordine descrescente Passive
Storico allarmi :
Reset

Select 

Confirm 

Execute

Select 

Allarmi cnf
AlarmSnapshot 0
Lista allarmi :
Ordinamento 1 Ora
Ordinamento 2 Ora
Ordine descrescente Passive
Storico allarmi :
Reset

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%

Select 

Confirm 

password management
Log off
Change PSS utente
Change PSS service
Change PSS costruttore

Alarms encoding		
Code	**Type**	**Reset**
eE	Electrical	From Auto to Man
EE	Electrical	Manual
ee	Electrical	Automatic
iI	Hydraulics	From Auto to Man
II	Hydraulics	Manual
ii	Hydraulics	Automatic

Alarms encoding		
Code	**Type**	**Reset**
fF	refr. circuit	From Auto to Man
FF	refr. circuit	Manual
ff	refr. circuit	Automatic
aA	Air	From Auto to Man
AA	Air	Manual
aa	Air	Automatic

From Auto to Man: automatic reset , after N alarm → manual reset

ALARMS - Tab 1		
Code	**Short description**	**description**
AA003	Fire	Units on alert for fire alarm in progress
aa004	DirtyFilter	Air dirty filter
eE001	Phase monitor	Fault on the network power supply
ee0000	Only on POL822	Generic error not coded in the HMI For further details, connect the laptop or the POL871 to the APC (only for Clivet authorized technicians)
EE002	Opening Vain	Access compartments open
EE005	Electrical Filter	Electrical Filter fault
ee006	PlantConfig	Absence of a configuration of the type of unit operation upon starting
eE007	SupplyFan	Intervention of the protections of air supply fan
eE009	Exhaust Fan	Intervention of the protections of return / exaust fan
EE010	High Temp. Integration	Protection of maximum temperature on the auxiliary heater
EE011	Ovl Integration	Intervention of the protection of the auxiliary heater
ee020	Offline thermostat.	User POL822 interface module not responding
ee027	ReturnTemp	Return temperature probe fault
ee028	SupplyTemp	Supply temperature probe fault
ee029	AirExtTemp	External air temperature probe fault
ee030	RHSupply	Supply RH probe fault
ee031	RHReturn	Return RH probe fault
ee032	RHOutdoor	Outdoor air RH probe fault
ee033	QualityAir	Room air quality probe fault
ee035	SupplyPDiff	Differential pressure trasducer supply fan fault
ee037	ExhaustPDiff	Differential pressure trasducer exaust fan fault
ee039	PSupply	Pressure trasducer suply fan fault
ee044	Humidifier alarm	Humidifier board disconnected
ee050	H2O plant temp	Plant water temperature probe fault
ee051	H2O freeze temp	Heating water coil temperature probe fault
ee052	Recover temp	Recovery temperature probe fault
ee059	PostRiscMod HwError	Post-heating control board fault
ee060	PostRiscMod BlkError	Post-heating control board fault

ALARMS - Tab 2		
Code	**Short description**	**description**
ee061	PostRiscMod FailSaveState	Post-heating control board fault
ee062	PostRiscMod UpsNotAv	Post-heating UPS board fault
ee063	PostRiscMod PBTime	Post-heating control board not responding
ee064	Pump recover	Recovery pump fault
ee065	PostRiscMod HW-FailSaveState	Post-heating control board fault
ee068	ExhaustPDiff 2nd	Differential pressure trasducer exaust 2nd fan fault
ee069	Exhaust Fan 2nd	Intervention of the protections of return / exaust 2nd fan
ee090	SafeMode	SafeMode
ee101	TimeOutModCirc	Circuit board not responding
ee102	TimeOutDriver	Expansion valve module not responding
ee104	EEVBlockedOut	Expansion valve blocked
EE106	Comp 1 protections	C1 compressor protection intervention
EE107	Comp 2 protections	C2 compressor protection intervention
EE108	Comp 3 protections	C3 compressor protection intervention
ee122	Discharge temp. C1	Refrigerant discharge temperature probe fault - C1
ee125	Source 1 temp.	Source side coil temperature probe fault
ee126	DFR temperature	Defrost temperature probe fault
ee127	Suction temperature	Refrigerant suction temperature probe fault
ee128	Discharge pressure	High pressure probe fault
ee129	Suction pressure	Low pressure probe fault
ee201	Timoeout comm. Module circuit	Control circuit board not responding
ee202	Timeout comm. Driver	Expansion valve control board not responding
ee204	EEV blocked	Expansion valve blocked
EE206	Comp 1 protections	C1 compressor protection intervention
EE207	Comp 2 protections	C2 compressor protection intervention
EE208	Comp 3 protections	C3 compressor protection intervention
ee222	Discharge temp. C2	Refrigerant supply temperature probe fault - C2
ee226	DFR temperature	Defrost temperature probe fault
ee227	Suction temperature	Refrigerant suction temperature probe fault - C2
ee228	Discharge pressure	High pressure probe fault
ee229	Suction pressure	Low pressure probe fault
ff055	Room condition Heat mode	Heat mode - room temperature too low (outside operating limits).
ff056	Outdoor condition Heat mode	Heat mode - outdoor temperature too low (outside operating limits).
ff057	Room condition Cool mode	Cool mode - room temperature too high (outside operating limits)
ff058	Outdoor condition Cool mode	Cool mode - Outdoor temperature too high (outside operating limits)
ff066	Freeze Extrapower	Freeze Extrapower
FF067	Gas Alarm	Gas Alarm
ff105	Min overheating	Overheating too low
fF109	Low pressure from DI	low pressure, digital input
fF112	Low pressure from AI	low pressure alarm, analogic input
fF113	High pressure from DI	high pressure, digital input
fF115	High pressure from AI	high pressure, analogic input

ALARMS - Tab 3		
Code	**Short description**	**description**
FF134	VacuumCirc	vacuum circuit (refrigerant)
FF137	Alarm Inverter 1 on Circuit 1	compressor 1 inverter alarm
FF138	Alarm missing comunication inv1 - C1	Missing comunication compressor 1 inverter
FF139	Timeout comunication inv1 - C1	Missing comunication compressor 1 inverter
FF140	Alarm Inverter 2 on Circuit 1	compressor 2 inverter alarm
FF141	Alarm missing comunication inv2 - C1	Missing comunication compressor 2 inverter
FF142	Timeout comunication inv2 - C1	Missing comunication compressor 2 inverter
FF143	Alarm Inverter 3 on Circuit 1	compressor 3 inverter alarm
FF144	Alarm missing comunication inv3 - C1	Missing comunication compressor 3 inverter
FF145	Timeout comunication inv3 - C1	Missing comunication compressor 3 inverter
FF147	Alarm Envelop Comp1 - C1	Compressor 1 outside operating limits
FF148	Alarm Envelop Comp2 - C1	Compressor 2 outside operating limits
FF149	Alarm Envelop Comp3 - C1	Compressor 3 outside operating limits
ff205	Min overheating	Overheating too low
fF209	Low pressure from DI	low pressure, digital input
fF212	Low pressure from AI	low pressure alarm, analogic input
fF213	High pressure from DI	high pressure, digital input
fF215	High pressure from AI	high pressure, analogic input
FF234	VacuumCirc	vacuum circuit (refrigerant)
FF237	Alarm Inverter 1 on Circuit 2	compressor 1 inverter alarm - circuit 2
FF238	Alarm missing comunication inv1 - C2	Missing comunication compressor 1 inverter - circuit 2
FF239	Timeout comunication inv1 - C2	Missing comunication compressor 1 inverter - circuit 2
FF240	Alarm Inverter 2 on Circuit 2	compressor 2 inverter alarm - circuit 2
FF241	Alarm missing comunication inv2 - C2	Missing comunication compressor 2 inverter - circuit 2
FF242	Timeout comunication inv2 - C2	Missing comunication compressor 2 inverter - circuit 2
FF243	Alarm Inverter 3 on Circuit 2	compressor 3 inverter alarm - circuit 2
FF244	Alarm missing comunication inv3 - C2	Missing comunication compressor 3 inverter - circuit 2
FF245	Timeout comunication inv3 - C2	Missing comunication compressor 3 inverter - circuit 2
FF247	Alarm Envelop Comp1 - C2	Compressor 1 outside operating limits
FF248	Alarm Envelop Comp2 - C2	Compressor 2 outside operating limits
FF249	Alarm Envelop Comp3 - C2	Compressor 3 outside operating limits

MAINTENANCE

Saftey

Operate in compliance with safety regulations in force.

Use single protection devices: gloves, glasses etc.

Generality

Maintenance must be carried out authorised after-sales assistance centres or by specialised personnel.

Maintenance allows:

- maintaining the unit efficient
- reduce deterioration speed to which each equipment is subject in time
- collect information and data to understand the efficiency state of the unit and prevent possible faults

WARNING

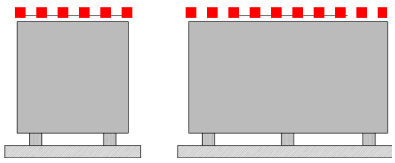
⇒ *Before checking, please verify the following:*

⇒ *the electrical power supply line should be isolated at the beginning*

⇒ *the line isolator device is open, locked and equipped with the suitable warning sign*

⇒ *make sure no tension is present*

⇒ *After switching the power off, 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.*

Frequency of interventions

Perform an inspection every 6 months.

However, frequency depends on the type of use.

Pan inspections at close intervals in the event of:

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

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.

Recommended periodical checks sheet

	intervention frequency (months)	1	6	12
1	presence corrosion			X
2	panel fixing			X
3	fans fixing		X	
4	coil cleaning		X	
5	bowl cleaning + sanitisation		X	
6	outflow test		X	
7	air filters cleaning/inspection	X		
8	air flow rate measurement			X
9	channelling: anti-vibration devices and fastenings check			X
10	power supply cable isolation and fastening check			X
11	earth cable check			X
12	electric control board cleaning			X
13	power remote controls state			X
14	clamps closure, cables isolation integrity			X
15	phases unbalancing and power supply voltage (vacuum and loaded)		X	
16	absorption of the individual electric loads		X	
17	compressors carter heaters test		X	
18	leaks control *			*
19	cooling circuit work parameters detection		X	
20	Saftey valve *			*
21	protective equipment test: safety valves, pressure switches, thermostats, flow meters, etc.		X	
22	protective equipment test: setpoint, climatic compensations, power slicing, air flow rate variations		X	
23	control devices test: alarms signal, thermometers, probes, pressure gauges, etc.		X	
24	electrical heaters check - option			X
25	water coil check - option			X
26	check humidifier - option			

NOTE

⇒ **Refer to the local regulations. Companies and technicians performing installation, maintenance/repair, leak control and recovery operations must be CERTIFIED as set out by the local regulations.*

Structure

Check the state of the parts constituting the structure.

Treat those parts of the unit subject to oxidation, with paints act at eliminating or reducing the oxidation phenomena.

Check fastening of the unit external panelling.

Bad fastening give rise to anomalous noises and vibrations.

Outdoor air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

The coil must allow maximum thermal exchange, therefore, the surface must be clear from dirt and scaling.

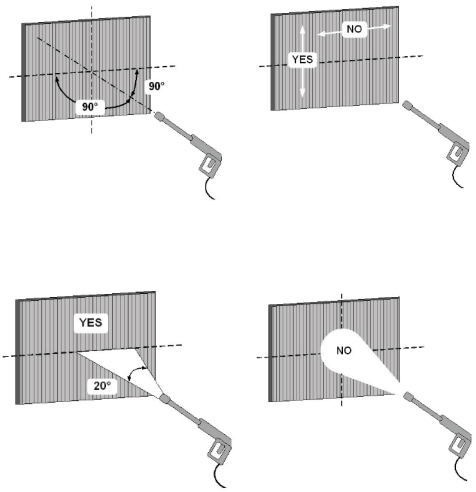
Clean the air inlet side.

Use a soft brush or aspirator or pressurised air jet or high-pressure water jet machine.

Keep the direction parallel to the flow of the flaps to avoid damages.

Check the aluminium flaps have not been damaged or folded, on the contrary contact an authorised after-sales assistance centre to "comb" the coil for excellent air flow.

Keep the direction parallel to the flow of the flaps to avoid damages.



Indoor air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

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.

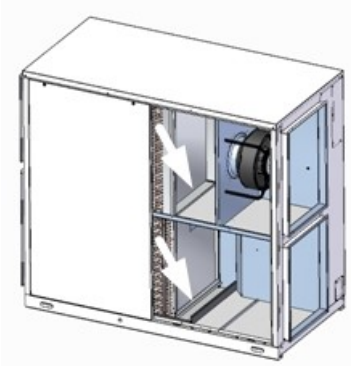
Condensate collection bowl

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.



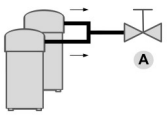
Compressor supply line shut-off valve (A)

Only if present

Do not remove the seal

Remove only if authorized by the manufacturer.

Please contact the maker for informations.



Compressor crankcase heaters

Check :

- closing
- operation

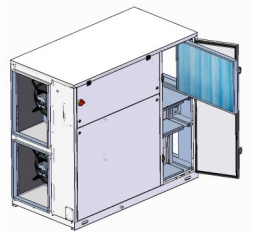
G4 (ISO 16890 Coarse 60%) folded air filters

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.

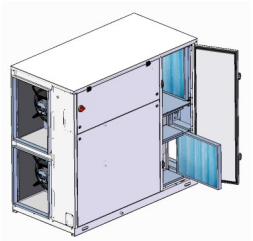
Operation with clogged filters leads to a reduction in the air flow rate with malfunctionings and block, up to possible breaks in the unit.

The frequency with which the filters must be checked depends on the quality of the outdoor 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



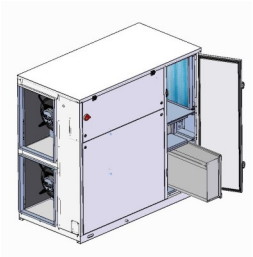
Old filters, washing wastewater and residues must be disposed of according to the current standards.

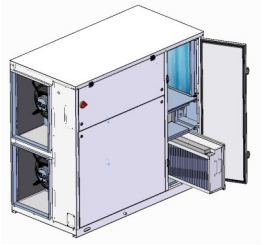
F7 (ISO 16890 and PM1 55%) filters

Option

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

1 aprire il open the access panel
2 delicately remove the filter avoiding dirtying the area below
3 insert the new filters, with the pockets vertically
4 close the panel
5 dispose of the old filters sending them to specialised recycling or collection centres (keep to the standards in force)





FES (ISO 16890 and PM1 90%) Electronic filters

Option

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

Materials necessary for maintenance

1 Acid detergent B01212 (code CLIVET C6460316);
2 Plastic or steel tank (750x750x310 mm) with settling bottom
3 Protective gloves and goggles;
4 Graduated jug;
5 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.

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 Immerse it for about 5-7 minutes. A slight chemical reaction is noticed within 2÷3 minutes with the development of foam indicating the occurred elimination of residues.
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

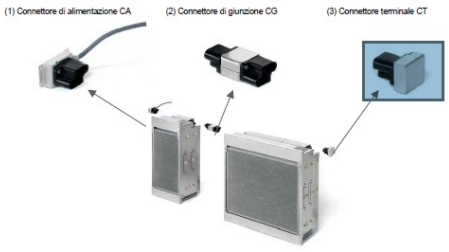
The impurities can determine oxidation or scaling on the wires, which can be removed using a cloth soaked in alcohol or an abrasive scourer with very fine grain.

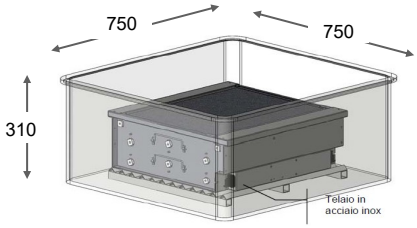
Due to the high voltage powering them, the ionisation wires are subject to wear.

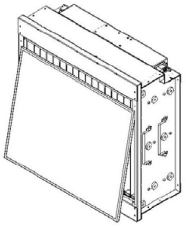
To foresee a yearly replacement OF ALL WIRES avoids unexpected breaks.

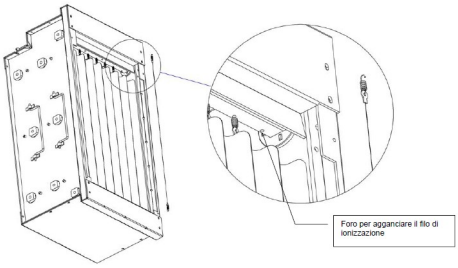
In case of break:

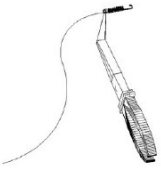
1 remove all wire pieces present in the cell and remove the springs stretching the wire;
2 hook the spring to the wire eyelet;
3 grip the ionisation wire with curved beaks pliers;
4 hook the top of the spring with the open eyelet to the wire stretcher rod of the electrostatic cell;
5 keeping the ionisation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











IFD Electronic filters (ISO 16890 and PM1 90%)

Option

Impurities can cause a decrease in filtration efficiency and also an increase in the load losses of the component which increase the power consumption of the supply fan. For this reason it is mandatory to clean the filter.

Below is the sequence to follow:

1 Remove the iFd filter cell from the aluminum frame
2 First use a soft brush or vacuum cleaner to clean the floating dust on the surface of the filter; then clean the module with water (you can directly put the module on the faucet for washing)
3 Then spray the kitchen cleanser evenly on the IFD filter and ensure that the front and back sides and the holes are sprayed with cleanser (But, strong acid and strong alkaline type cleanser is strictly prohibited)
4 Wait for 5~10 mins
5 Then, use a soft brush to remove the dust on the surface of the filter (be careful not to damage the module)
6 Finally, wash the IFD filter with clean water (if part of the IFD filter is not cleaned, it is recommended to repeat the above 1 -5 steps)
7 It is recommended to dry the filter cell in an open or dry place. Closed and / or humid places can prevent the filter from completely drying
The entire cell must dry completely before restoring the electrical connections on the machine.
Make sure the filter cell electrical connectors are completely dry before making the connections.
A connector that is still wet / damp can cause irreversible damage to the entire filter cell.

•

2

3

4

5

Immerged electrodes humidifier

Option

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

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.

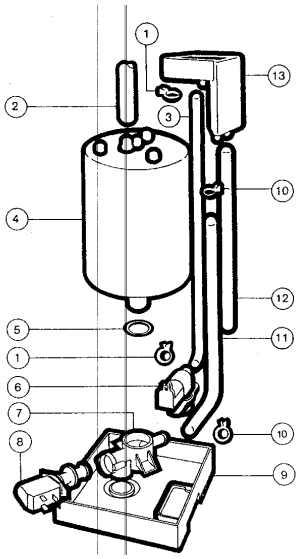
REPLACEMENT OF THE CYLINDER

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



1 pipe fixing spring
2 vapour pipe
3 load pipe
4 vapour cylinder
5 seal O-rings
6 load valve
7 valves support
8 drain valve
9 bottom tank
10 pipe fixing spring
11 load pipe
12 too full pipe
13 fill tank

Periodical checks	
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 drain solenoid valve filter: 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

Electric heaters

Option

Check:

- cleaning state
- fastening
- presence of corrosion

DECOMMISSIONING

Disconnection

WARNING

⇒ *Before performing any operation, read the warnings found in the Maintenance chapter.*

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 hydraulic circuit

Awaiting decommissioning and disposal, the unit can also be stored outdoors, as bad weather and rapid changes in temperature do not harm the environment provided that the electric, cooling and hydraulic circuits of the unit are intact and closed.

WEEE INFORMATION

The manufacturer is registered on the EEE National Register, in compliance with implementation of Directive 2012/19/EU and relevant national regulations on waste electrical and electronic equipment.

This Directive requires electrical and electronic equipment to be disposed of properly.

Equipment bearing the crossed-out wheelie bin mark must be disposed of separately at the end of its life cycle to prevent damage to human health and to the environment.

Electrical and electronic equipment must be disposed of together with all of its parts.

To dispose of “household” electrical and electronic equipment, the manufacturer recommends you contact an authorised dealer or an authorised ecological area.

“Professional” electrical and electronic equipment must be disposed of by authorised personnel through established waste disposal authorities around the country.

In this regard, here is the definition of household WEEE and professional WEEE:

WEEE from private households: WEEE originating from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Subject to the nature and quantity, where the waste from EEE was likely to have been by both a private household and users of other than private households, it will be classed as private household WEEE;

Professional WEEE: all WEEE which comes from users other than private households.

This equipment may contain:

refrigerant gas, the entire contents of which must be recovered in suitable containers by specialised personnel with the necessary qualifications;

- lubrication oil contained in compressors and in the cooling circuit to be collected;
- mixtures with antifreeze in the water circuit, the contents of which are to be collected;
- mechanical and electrical parts to be separated and disposed of as authorised.

When machine components to be replaced for maintenance purposes are removed or when the entire unit reaches the end of its life and needs to be removed from the installation, waste should be separated by its nature and disposed of by authorised personnel at existing collection centres.

RESIDUAL RISKS

General

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 necesssary 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 re-garding 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 inflam-mable 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 in-crease 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 refriger-ating 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 isolater situated on the con-nection 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.

Performances

SIZE			SIZE 1	SIZE 2	SIZE 3	SIZE 4	SIZE 5	SIZE 6
Operation with constant supply temperature								
Standard air flow								
Standard air flow		l/s	361	611	1278	2000	2638	3333
Standard air flow		m^3/h	1300	2200	4600	7200	9500	12000
Max external static pressure (supply)		Pa	630	630	630	600	420	630
Max external static pressure (extraction)		Pa	630	630	630	630	540	630
Cooling								
Total cooling capacity	1	kW	10,6	17,5	38,7	58,4	79,0	95,9
Re-heating capacity	1	kW	2,70	4,20	10,9	14,9	21,3	22,9
Compressor power input	1	kW	2,91	4,92	11,1	15,7	20,4	23,2
EER_C	1	-	4,57	4,41	4,47	4,67	4,91	5,12
Heating								
Heating capacity	2	kW	5,93	10,0	21,0	32,9	43,4	54,9
Compressor power input	2	kW	0,71	1,35	2,54	4,22	5,75	8,77
COP_C	2	-	8,38	7,45	8,28	7,80	7,55	6,26
Operation at the maximum available capacity								
Standard air flow								
Nominal air flow		l/s	361	611	1278	2000	2638	3333
Nominal air flow		m^3/h	1300	2200	4600	7200	9500	12000
Max external static pressure (supply)		Pa	630	630	630	600	420	630
Max external static pressure (extraction)		Pa	630	630	630	630	540	630
Cooling								
Total cooling capacity	3	kW	10,6	17,5	38,7	58,4	79.0	95.9
Compressor power input	3	kW	3,26	5,52	12,5	17,7	22,9	26.1
Additional available sensible capacity to space	3	kW	3,57	5,67	14,0	19.8	27.7	30.9
EER_C	3	-	3,25	3,18	3,10	3,31	3.45	3.68
Heating								
Heating capacity	4	kW	10,5	17,8	37,1	58,2	76,8	96,9
Compressor power input	4	kW	2,28	3,77	7,13	11,2	14,4	18,3
Additional available capacity to space	3	kW	4,41	7,47	15,6	24,4	32,3	40,7
COP_C	4	-	4,61	4,72	5,21	5,20	5,33	5,29
Operation with high airflow								
Higt air flow								
Nominal air flow		l/s	528	972	1944	2556	3194	3889
Nominal air flow		m^3/h	1900	3500	7000	9200	11500	14000
Max external static pressure (supply)		Pa	630	470	630	455	345	615
Max external static pressure (extraction)		Pa	630	530	630	535	400	630
Cooling								
Total cooling capacity	5	kW	9,20	18,2	31,9	45,1	62,0	80,6
Compressor power input	5	kW	1,56	3,38	4,46	6,97	13,8	17,8
EER_C	5	-	5,89	5,38	7,15	6,48	4,50	4,51
Heating								
Heating capacity	6	kW	6,00	11,1	22,1	29,1	36,3	44,2
Compressor power input	6	kW	0,54	1,31	2,48	3,11	3,40	5,44
COP_C	6	-	11,10	8,46	8,91	9,36	10,7	8,14

DB = dry bulb
WB = wet bulb
EER_C = Thermodynamic efficiency of the system in cooling mode
COP_C = Thermodynamic efficiency of the system in heating mode

1. Outdoor air temperature: 35°C D.B./ 24°C W.B.. Extracted air temperature 26°C D.B.. Supply air humidity ratio: 11g/kg. Supply air temperature 24°C D.B.
2. Outdoor air temperature 7°C D.B./ 6.0°C W.B.. External air temperature 20°C D.B. / 12°C W.B.. Supply air temperature 20°C D.B.
3. Outdoor air temperature 35°C D.B./ 24°C W.B.. Extracted air temperature: 26°C D.B.. Supply air humidity ratio: 11g/kg
4. Outdoor air: 7°C D.B./ 6.0°C W.B.. Extracted air temperature: 20°C D.B. / 12°C W.B.. Supply air temperature: 30°C D.B.
5. Outdoor air temperature 35°C D.B./ 24°C W.B.. Extracted air temperature 26°C D.B.. Supply air temperature 22°C D.B.
6. Outdoor air temperature: 7°C D.B./ 6.0°C W.B.. Extracted air temperature: 20°C D.B. / 12°C W.B.. Supply air temperature: 16°C D.B.

General technical data

Construction

SIZE			SIZE 1	SIZE 2	SIZE 3	SIZE 4	SIZE 5	SIZE 6
Compressor								
Type of compressors			ROT	Scroll	Scroll	Scroll	Scroll	Scroll
No. of compressors		Nr	1	1	2	2	3	3
Std Capacity control steps		Nr	20-100%	20-100%	10-100%	10-100%	8-100%	8-100%
Refrigeration circuits		Nr	1	1	2	2	2	2
Refrigerant charge	7	kg	4.3	5.6	19	24	28	37.5
Air Handling Section Fans (Supply)								
Type of supply fan			RAD	RAD	RAD	RAD	RAD	RAD
Number of supply fans		Nr	1	1	1	1	1	2
Fan diameter		mm	310	355	500	630	630	500
Minimum air flow		l/s	278	444	917	1444	2083	2639
Minimum air flow		m^3/h	1000	1600	3300	5200	7500	9500
Maximum air flow		l/s	528	972	1944	2556	3194	3889
Maximum air flow		m^3/h	1900	3500	7000	9200	11500	14000
Installed unit power		kW	0,80	0,90	2,70	2,80	2,80	2,70
Max. static pressure supply fan	8	Pa	630	630	630	580	420	630
Fans (Exhaust)								
Type of exhaust fan			RAD	RAD	RAD	RAD	RAD	RAD
Number of exhaust fans		Nr	1	1	1	1	1	2
Fan diameter		mm	310	355	500	630	630	500
Exhaust air flow		l/s	361	611	1278	2000	2638	3333
Installed unit power		kW	0,80	0,90	2,70	2,80	2,80	2,70
Max. exhaust static pressure	8	Pa	630	630	630	630	520	630
Connections								
Condensate discharge			3/4" GAS	3/4" GAS	1" GAS	1" GAS	1" GAS	1" GAS
Power supply								
Standard power supply		V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Dimensions								
A - Length		mm	1895	1895	2465	2465	2465	2465
B - Width		mm	950	950	1735	1735	2025	2330
C - Height		mm	1025	1625	1810	2260	2260	2260
Standard unit weights								
Shipping weight		kg	320	450	1070	1285	1450	1670
Operating weight		kg	320	450	1070	1285	1450	1670

ROT = Rotary compressor
SCROLL = Scroll compressor
RAD = Radial fan

7. Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the unit label.
8. Data referred to the standard flow rate

Sound levels - ST

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit operating in open field.
Static pressure 50 Pa (UNI EN ISO 9614-2)
For the standard air supply the total sound power levels for the diverse values of available static pressure are shown.
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.

Minimum air flow(50 Pa)

Size	Sound power level								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
SIZE 1	54	52	56	59	68	69	62	70	58	74
SIZE 2	55	53	57	60	69	70	63	71	59	75
SIZE 3	60	58	61	64	72	73	66	74	61	78
SIZE 4	66	68	66	66	71	72	66	73	59	78
SIZE 5	67	69	67	67	72	73	67	74	60	79
SIZE 6	69	68	70	73	75	74	69	74	62	80

Standard air flow (50 Pa)

Size	Sound power level								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
SIZE 1	59	60	65	69	72	72	63	69	60	77
SIZE 2	60	61	66	70	73	73	65	70	61	77
SIZE 3	66	65	67	70	73	74	67	74	61	79
SIZE 4	67	69	67	67	72	73	67	74	60	79
SIZE 5	74	75	75	74	75	74	69	74	62	80
SIZE 6	74	75	77	79	78	76	71	73	64	83

(100, 200, 300 Pa)

Size	Sound power level		
	Available static pressure (Pa)		
	100	200	300
SIZE 1	77	77	78
SIZE 2	78	78	79
SIZE 3	80	80	81
SIZE 4	80	80	81
SIZE 5	83	84	84
SIZE 6	85	85	86

Maximum air flow (50 Pa)

Size	Sound power level								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
SIZE 1	65	69	75	77	77	73	65	68	64	81
SIZE 2	66	70	76	78	78	74	66	69	65	82
SIZE 3	74	75	77	79	78	77	72	74	66	83
SIZE 4	77	78	77	76	77	77	71	75	64	83
SIZE 5	78	80	79	78	77	76	71	74	64	83
SIZE 6	77	78	80	82	81	79	74	75	67	86

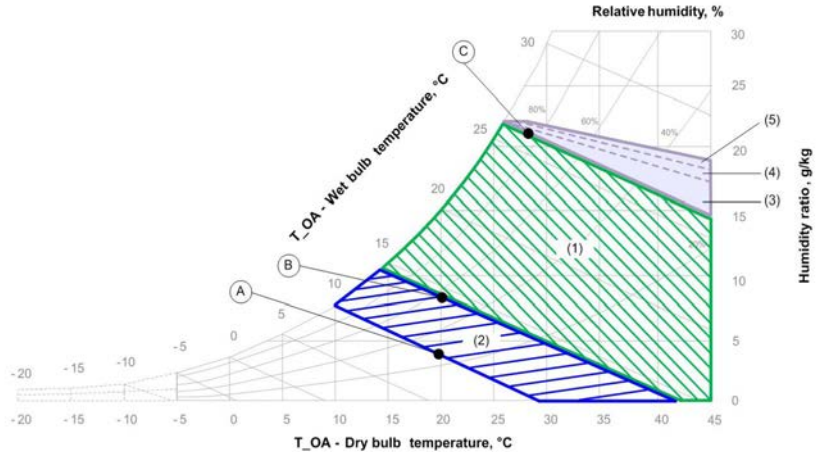
Operation with constant supply temperature
T_OA = 35/24°C
T_RA = 26°C
T_SA = 24°C
X_SA = 11g/kg
T_OA = Outdoor air temperature at Dry/Wet bulb [°C]
T_OA = Exhaust air temperature at Dry bulb [°C]
T_SA = Dry bulb supply air temperature [°C]
X_SA = Supply air humidity ratio [g/kg]

Operating range

Cooling

The limits are indicative and take into consideration:
- general and non specific sizes
- unit correctly installed and serviced

OUTDOOR AIR



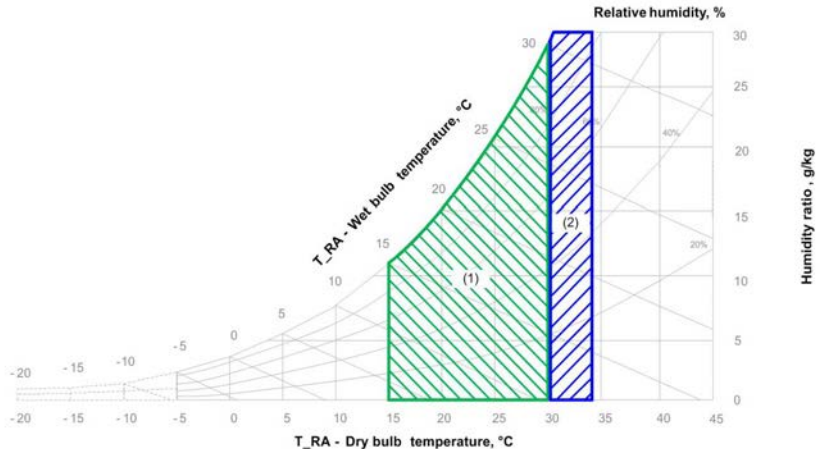
1. Normal operating range
2. Operating range with capacity modulation
3. With option RECH - “Hydronic recovery device”, with T_RA = 26° D.B.
4. With option RECH - “Hydronic recovery device”, with T_RA = 24° D.B.
5. With option RECH - “Hydronic recovery device”, with

T_RA = 22° D.B.
T_OA = outdoor air temperature
T_RA = extracted air temperature
DB = dry bulb
WB = wet bulb

Outdoor air temperature limit at wet bulb

			T_OA (W.B)
A		°C	10
B		°C	14
C		°C	26

EXTRACTED AIR



1. Normal operating range
2. Operating range with capacity modulation

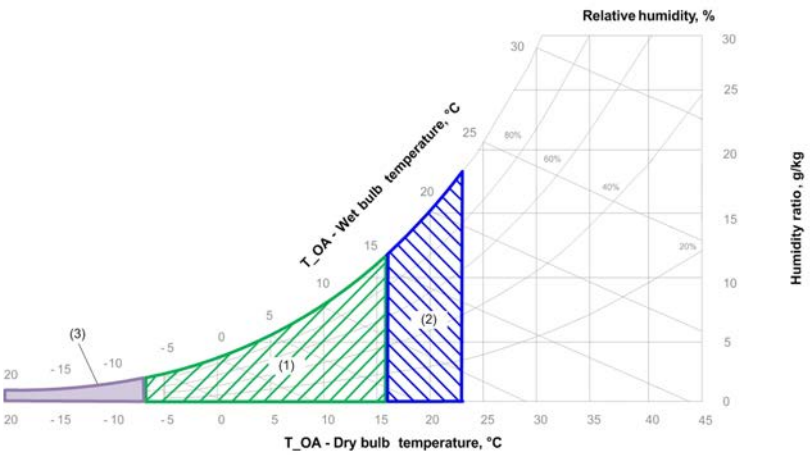
T_RA = Extracted air temperature
DB = Dry bulb
WB = Wet bulb

Operating range

Heating

The limits are indicative and take into consideration:
- general and non specific sizes
- unit correctly installed and serviced

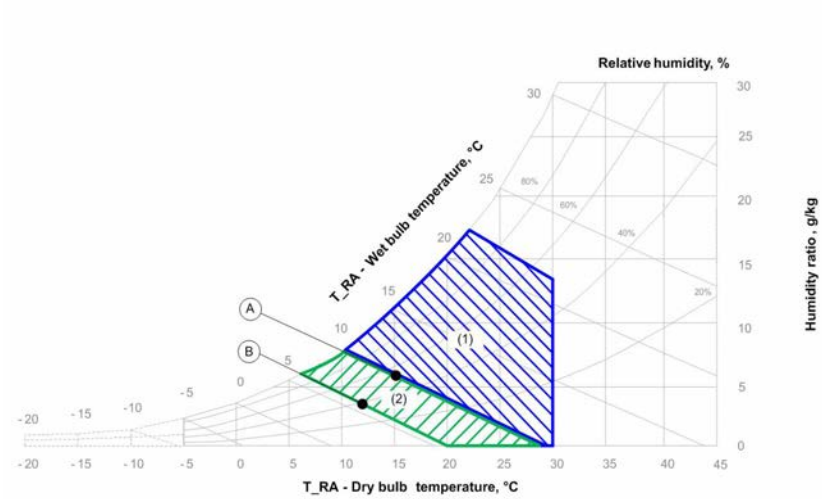
OUTDOOR AIR



1. Normal operating range
2. Operating range with capacity modulation
3. With “RECH - Hydronic recovery device”

T_OA = Outdoor air temperature
DB = Dry bulb
WB = Wet bulb

EXTRACTED AIR



1. Normal operating range
2. Operation in which they could be defrost cycles

T_RA = Extracted air temperature
DB = Dry bulb
WB = Wet bulb

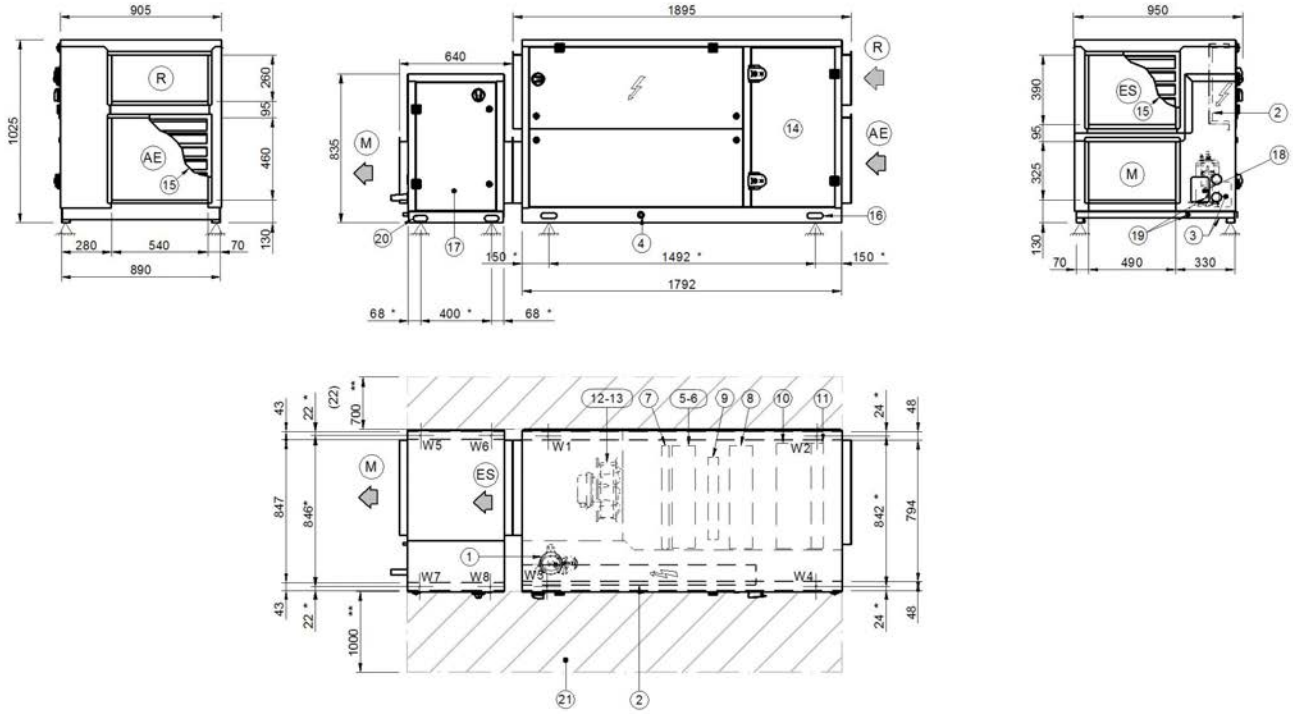
Extracted air temperature limit at wet bulb

		T_OA (W.B)
A	°C	10,2
B	°C	6,0

⚠ Failure to comply with the lower limit of wet bulb temperature can cause the unit to stop.

SIZE 1

DAA5Gsize1_MHSEX_0
Data: 07/07/2016



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 3/4" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting holes
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan

((R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 1
W1 Supporting Point		kg	78
W2 Supporting Point		kg	82
W3 Supporting Point		kg	82
W4 Supporting Point		kg	78
Shipping weight		kg	320

HUMIDIFIER WEIGHT DISTRIBUTION

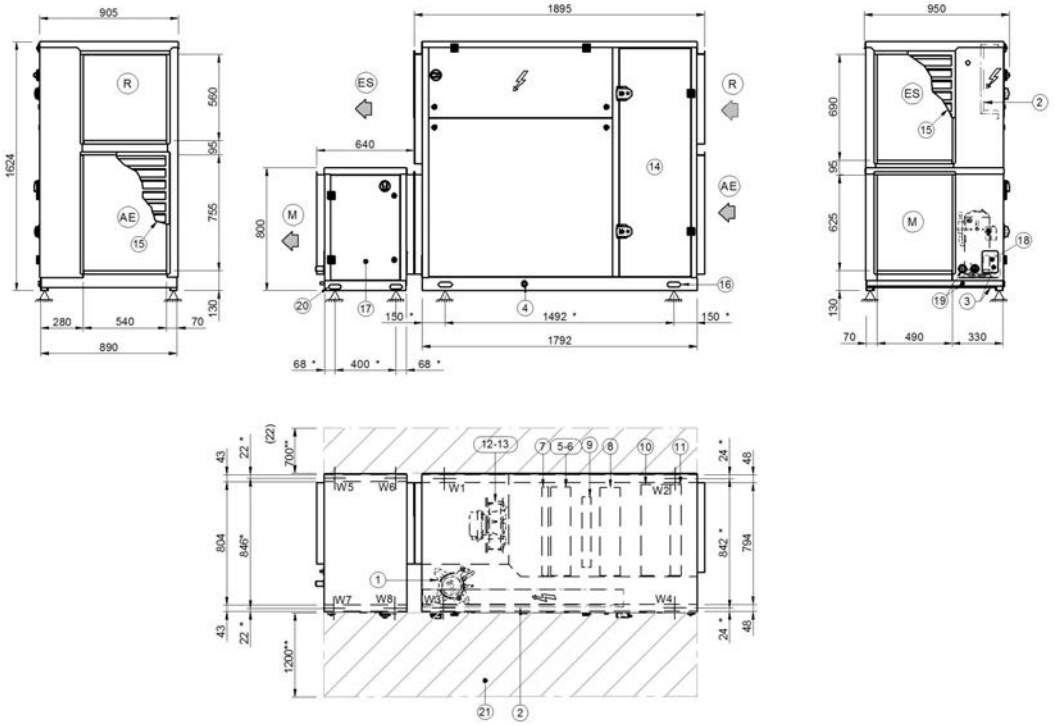
SIZE			SIZE 1
W5 Supporting Point		kg	9
W6 Supporting Point		kg	9
W7 Supporting Point		kg	16
W8 Supporting Point		kg	16
Operation weightt		kg	56
Shipping weight		kg	50

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

Dimensional drawings

SIZE 2

DAA5Gsize2_MHSEX_0
Data: 08/07/2016



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 3/4" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting holes
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan substitution from the roof

(R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 2
W1 Supporting Point		kg	110
W2 Supporting Point		kg	115
W3 Supporting Point		kg	116
W4 Supporting Point		kg	109
Shipping weight		kg	450

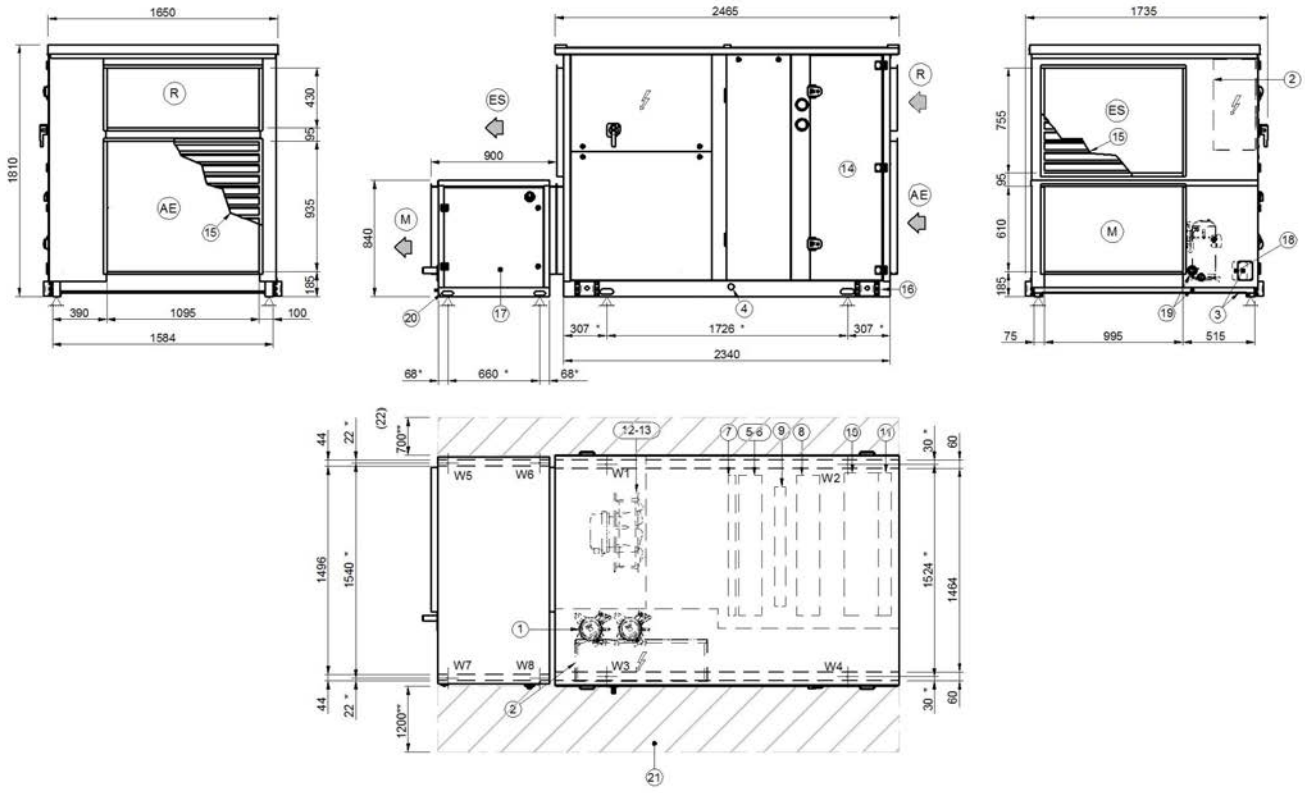
HUMIDIFIER WEIGHT DISTRIBUTION

SIZE			SIZE 2
W5 Supporting Point		kg	13
W6 Supporting Point		kg	13
W7 Supporting Point		kg	20
W8 Supporting Point		kg	20
Operation weightt		kg	77
Shipping weight		kg	66

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

SIZE 3

DAA5Gsize3_MHSEX_0
Data: 08/07/2016



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 1" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting brackets (removable)
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan substitution from the roof

(R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 3
W1 Supporting Point		kg	259
W2 Supporting Point		kg	273
W3 Supporting Point		kg	289
W4 Supporting Point		kg	249
Shipping weight		kg	1070

HUMIDIFIER WEIGHT DISTRIBUTION

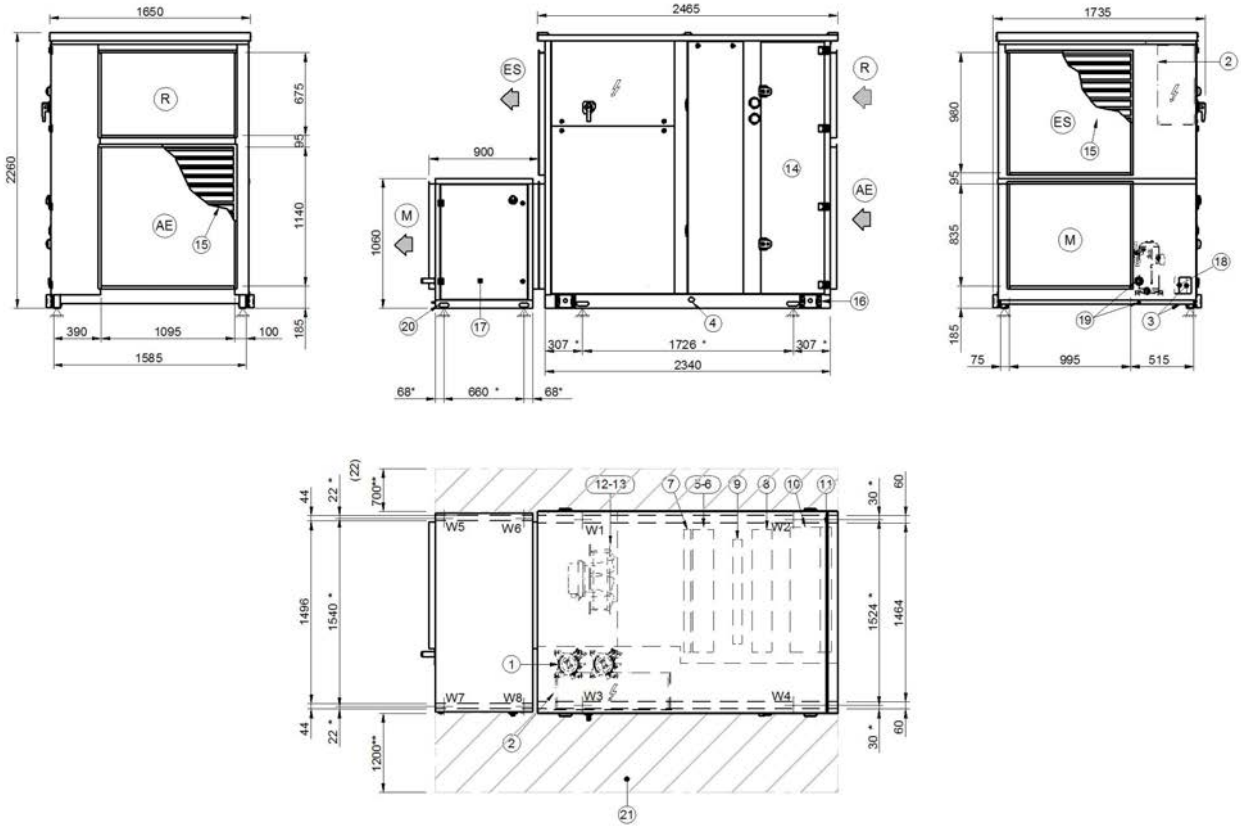
SIZE			SIZE 3
W5 Supporting Point		kg	20
W6 Supporting Point		kg	20
W7 Supporting Point		kg	35
W8 Supporting Point		kg	35
Operation weightt		kg	142
Shipping weight		kg	110

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

Dimensional drawings

SIZE 4

DAA5Gsize4_MHSEX_0



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 1" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting brackets (removable)
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan substitution from the roof

(R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 4
W1 Supporting Point		kg	312
W2 Supporting Point		kg	328
W3 Supporting Point		kg	347
W4 Supporting Point		kg	299
Shipping weight		kg	1285

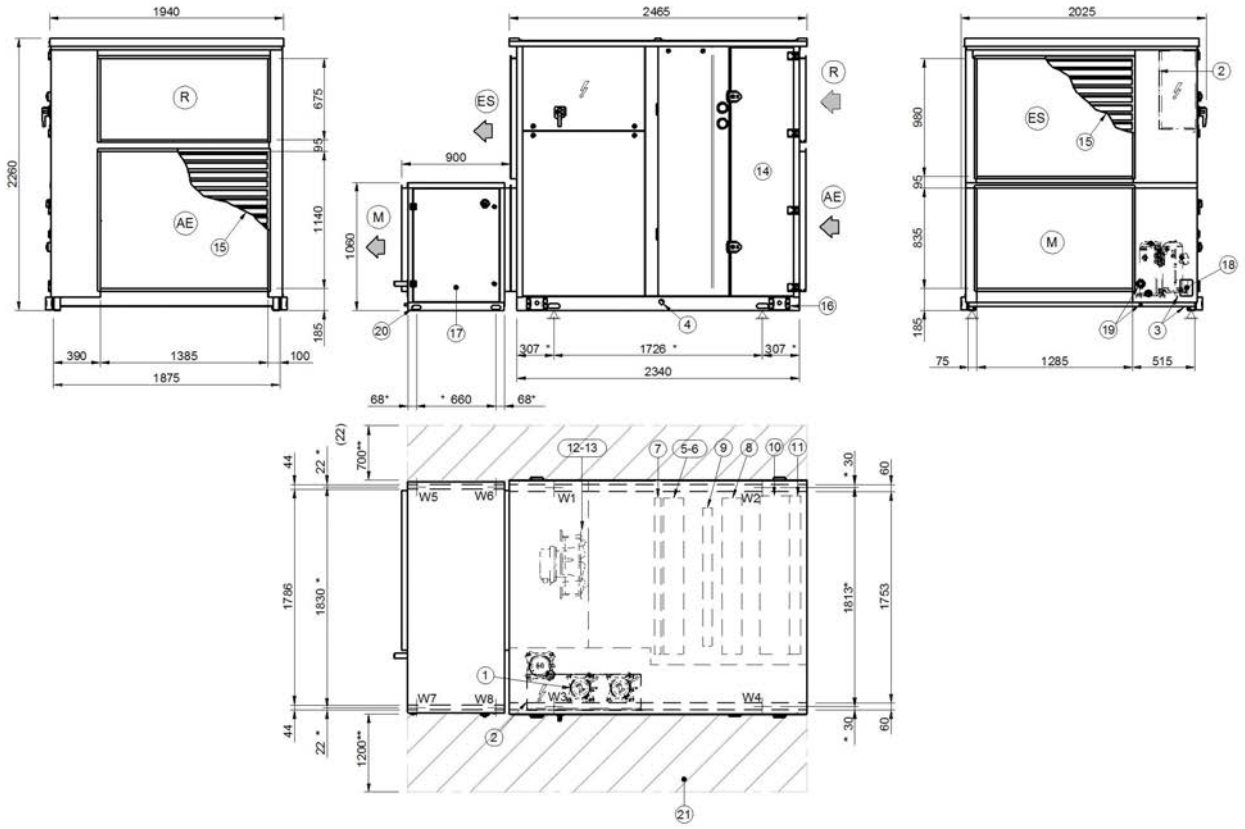
HUMIDIFIER WEIGHT DISTRIBUTION

SIZE			SIZE 4
W5 Supporting Point		kg	23
W6 Supporting Point		kg	23
W7 Supporting Point		kg	40
W8 Supporting Point		kg	40
Operation weightt		kg	158
Shipping weight		kg	126

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

SIZE 5

DAA5Gsize5_MHSEX_0
Data: 11/07/2016



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 1" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting brackets (removable)
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan substitution from the roof

(R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 5
W1 Supporting Point		kg	348
W2 Supporting Point		kg	370
W3 Supporting Point		kg	399
W4 Supporting Point		kg	334
Shipping weight		kg	1450

HUMIDIFIER WEIGHT DISTRIBUTION

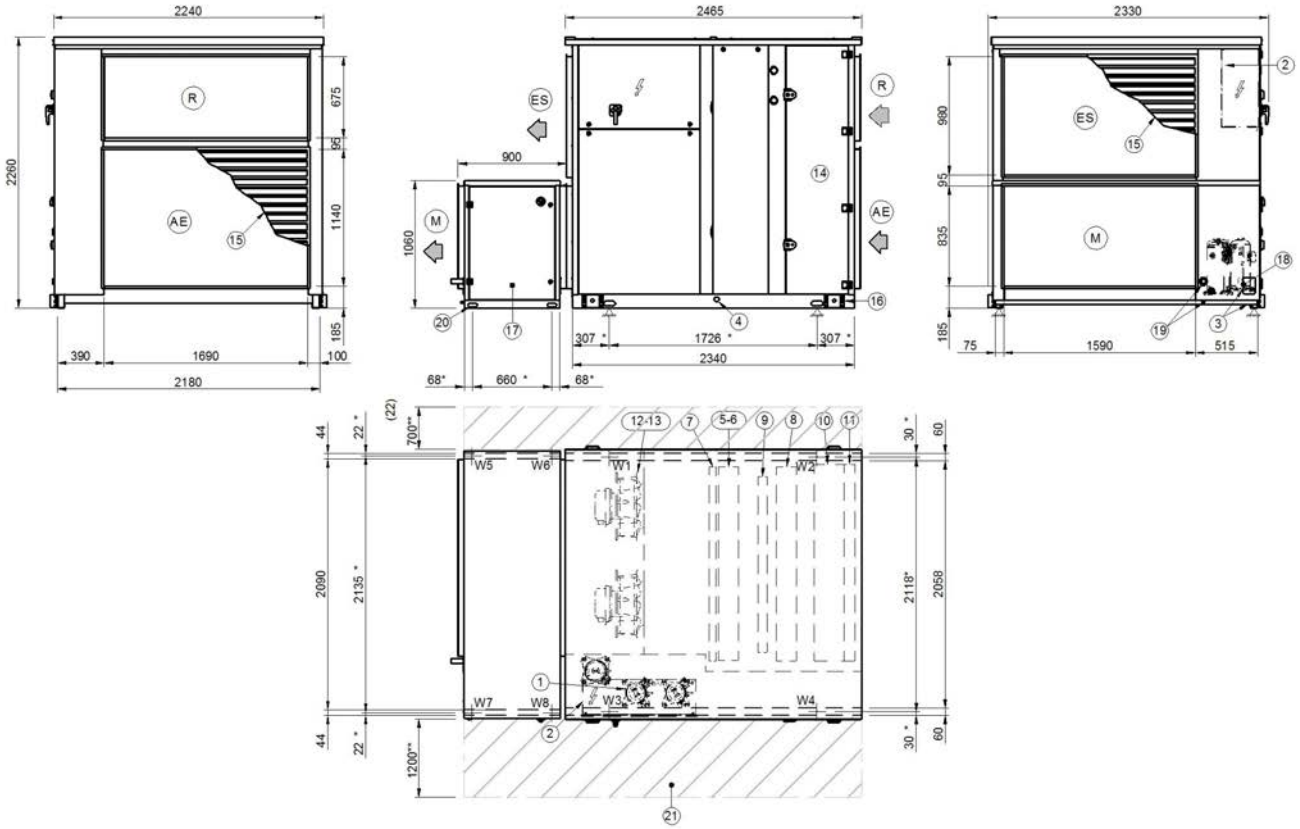
SIZE			SIZE 5
W5 Supporting Point		kg	27
W6 Supporting Point		kg	27
W7 Supporting Point		kg	43
W8 Supporting Point		kg	43
Operation weightt		kg	172
Shipping weight		kg	140

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

Dimensional drawings

SIZE 6

DAA5Gsize6_MHSEX_0
Data: 11/07/2016



1. Inverter compressor
2. Electrical panel
3. Power input
4. Condensation drain pipe Ø 1" GAS
5. Treatment coil (below)
6. Exhaust coil (above)
7. Post-heating coil
8. Hydronic recovery (Optional)
9. Electrical heaters
10. Electronic filters (standard) / F7 filters (optional)
11. Class G4 air filters
12. Supply electric fan (below)
13. Exhaust electric fan (above)
14. Filter maintenance access
15. Grid for outdoor installation (Optional)
16. Lifting brackets (removable)
17. Humidifier (optional) to be connected to the unit during the installation
18. Humidifier connections
19. Humidifier condensate drain
20. Humidifier lifting holes
21. Functional clearances
22. If unit leaned against the wall provide a space for the electric fan substitution from the roof

(R) Air return
(M) Air supply
(AE) Outdoor air intake
(ES) Exhaust air
(*) Vibration mounts position
(**) Suggested clearance

WEIGHT DISTRIBUTION

SIZE			SIZE 6
W1 Supporting Point		kg	401
W2 Supporting Point		kg	426
W3 Supporting Point		kg	459
W4 Supporting Point		kg	384
Shipping weight		kg	1670

HUMIDIFIER WEIGHT DISTRIBUTION

SIZE			SIZE 6
W5 Supporting Point		kg	30
W6 Supporting Point		kg	30
W7 Supporting Point		kg	46
W8 Supporting Point		kg	46
Operation weightt		kg	184
Shipping weight		kg	152

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

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