

ELFODuct MP

New generation horizontal and vertical built-in water-source ductable terminal for medium and large system

ELFODuct MP 15-71



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1 General description

1.1 Manual

The manual provides correct unit installation, use and maintenance.

Pay particular attention to:



Warning, identifies particularly important operations or information.



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

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

1.2 Preliminaries

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

1.3 Risk situations



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

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

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

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

1.4 Intended use

Use the unit only:

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

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

1.5 Installation



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

Follow local safety regulations.

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

1.6 Maintenance

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



Turn the unit off before any operation.

1.7 Modification



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

1.8 Breakdown/Malfuction



Disable the unit immediately in case of breakdown or malfunction.

Contact a certified service agent.

Use original spares parts only.



Using the unit in case of breakdown or malfunction:

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

1.9 User training



The installer has to train the user on:

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

1.10 Data update

Continual product improvements may imply manual data changes.

Visit manufacturer web site for updated data.

1.11 Indications for the User



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

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

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

In case of breakdown or malfunction:

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



The installer must train the user, particularly on:

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

1.12 Unit identification

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



The matriculation plate must never be removed.

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

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

1.13 Serial number

It identifies uniquely each unit.

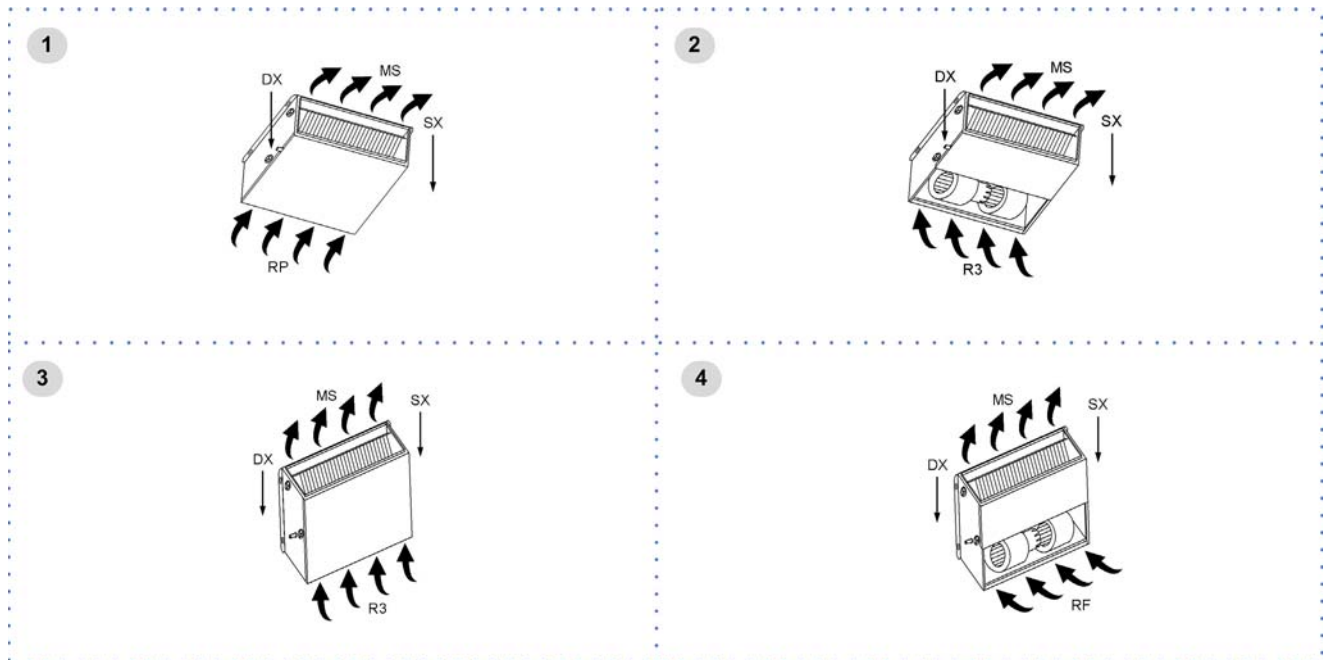
Must be quoted when ordering spare parts.

1.14 Assistance request

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

Series
Size
Serial number
Year of manufacture
Electrical wiring diagram

2 Unit description



- | | | | |
|---|---------------------|-----------------|----------|
| 1 | Built-in horizontal | rear intake | Standard |
| 2 | Built-in horizontal | Floor air inlet | |
| 3 | Built-in vertical | Floor air inlet | Standard |
| 4 | Built-in vertical | Front air inlet | |

DX Water fittings to the right

SX Water fittings to the left

MS Standard supply

References for position of fittings: right and left defined by standing in the airflow (with the air blowing on your back).

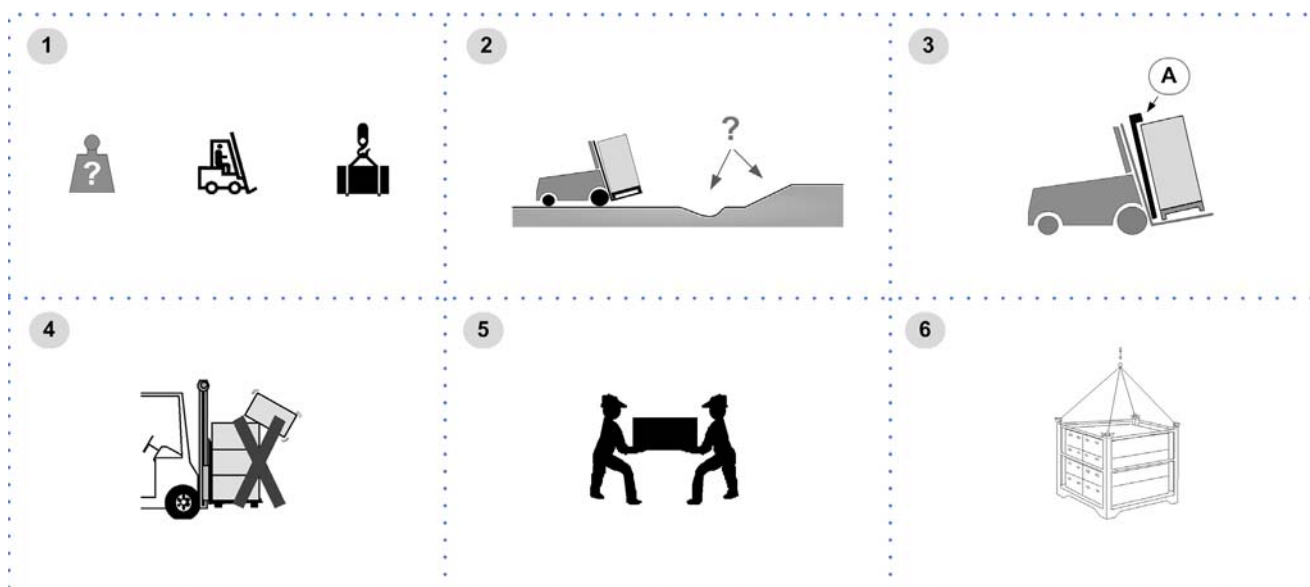
3 Reception

3.1 Storage

Observe external packaging instructions.

3.2 Handling

1. Verify unit weight and handling equipment lifting capacity.
2. Identify critical points during handling (disconnected routes, flights, steps, doors).
3. Suitably protect the unit to prevent damage.
4. Do not leave the packages loose
5. Do not move the units alone
6. For several units, use a suitable container

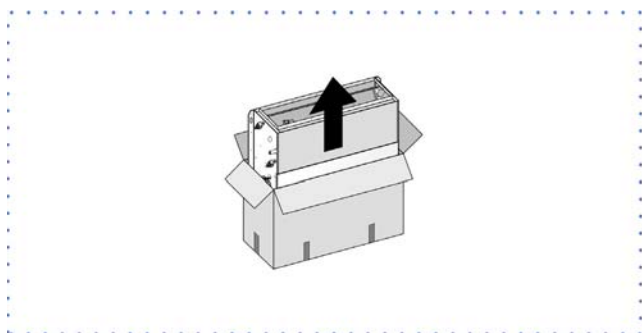


3.3 Packaging removing

Be careful not to damage the unit.

Keep packing material out of children's reach it may be dangerous.

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



4 Positioning

During positioning consider these elements:

- Technical spaces requested by the unit
- Electrical connections
- Water connections
- Aeraulic connections

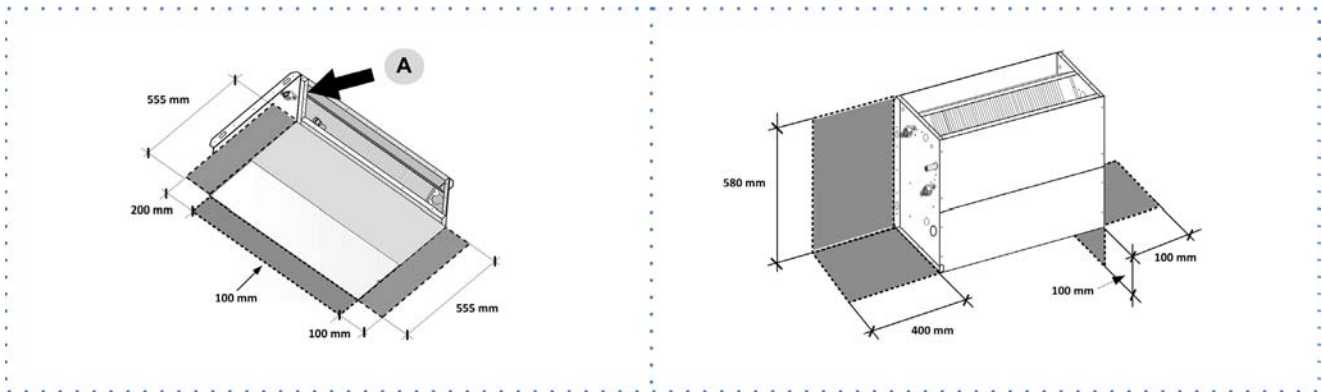
4.1 Functional spaces

Functional spaces are designed to:

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

Respect all functional spaces.

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



A. Water fitting

Water fittings o right (Standard)

Option

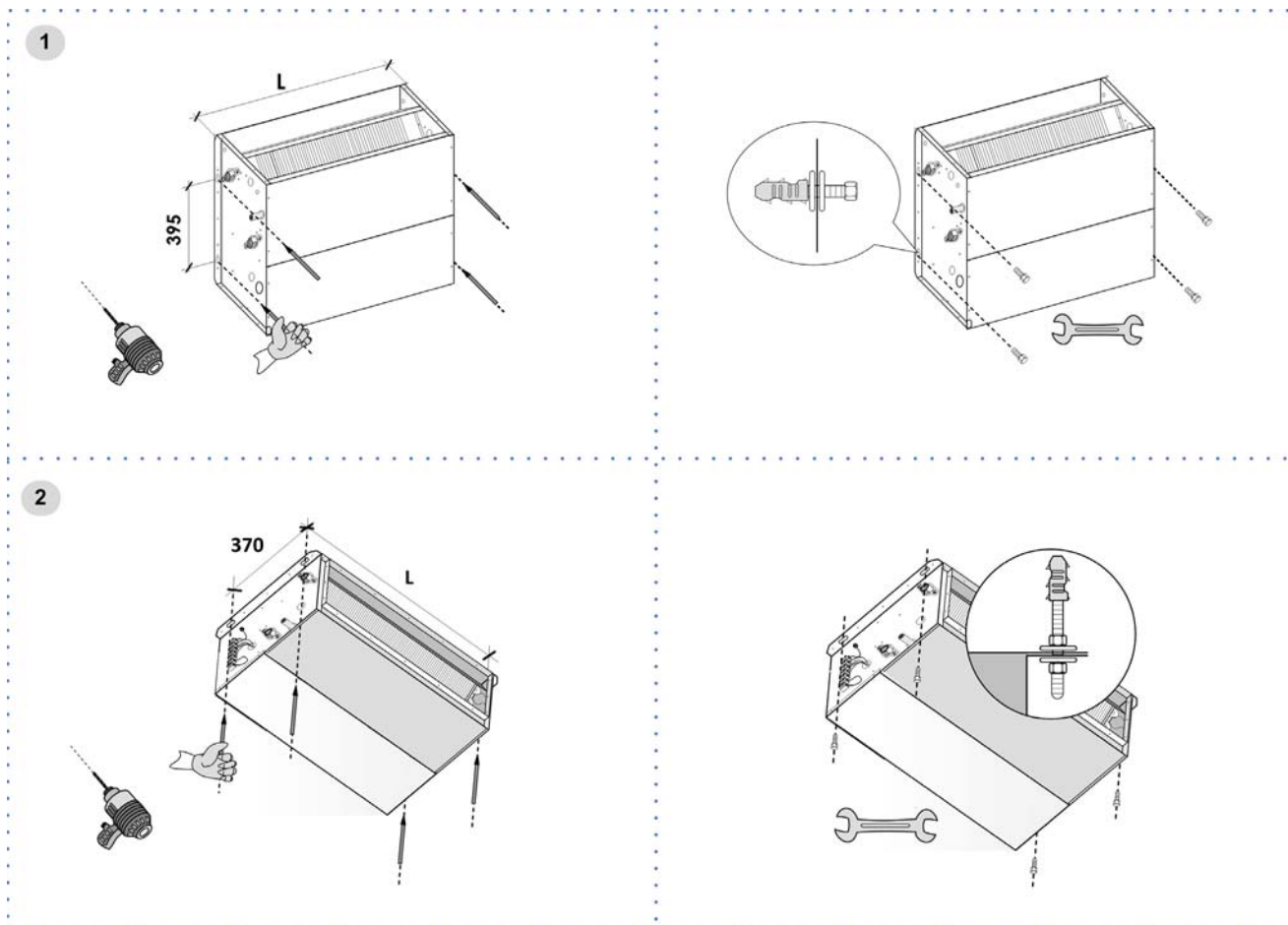
Water fittings o the left

- ⚠ Plan in the false ceiling (or in the floor) the openings indicated in the functional clearances to allow the access to the unit for the maintenance operations
- ⚠ Ceiling positioning: let free the projection to the ground of the unit and of the functional clearances to allow the access with ladders or other means

4.2 Positioning

- ⚠ Units are designed to be installed:
 - INTERNAL
 - in fi ed positions
 - ⊘ The unit can not be installed outdoor or in a room / compartment where the temperature can drop below 0°C.
- Limit vibration transmission:
- use antivibration devices on unit bearing points
 - install fl xible joints on the hydraulic connections
- Choose the installation place according to the following criteria:
- Customer approval
 - safe accessible position
 - technical spaces requested by the unit
 - spaces for the air intake/exhaust
 - The device prevents any impurity in the water circuit to dirt the heat exchanger.
 - verify unit weight and bearing point capacity
 - verify that all bearing points are aligned and leveled
 - install the unit raised from the ground
 - max. distance allowed by the electrical connections
 - Floor positioning: install the unit raised from the ground

- ⊘ Avoid therefore:
- obstacles to the airflow
 - stratification (cold air that stagnates at the bottom)
 - recirculation (expelled air that is sucked in again)
1. Vertical uncased installation
 2. Horizontal uncased installation



GR	15-25	31-51	61-71
L mm	846	1246	1646

4.3 Wall room thermostat

- ⚠ The choice of the installation location is essential for comfort and energy consumption. The thermostat should be placed:
- in a room with medium temperature and humidity conditions, representative of the other rooms
 - at a height of 150 cm
 - preferably on an internal wall
- ⊘ Positions to avoid:
- next to heat sources
 - points exposed to direct sunlight
 - in a position with air rejected from outlets or diffuser
 - behind curtains or pieces of furniture
 - near windows and doors to the outside
 - on walls crossed by fireplaces or heating ducts
 - on external walls

5 Water connections

5.1 Components

Selection and installation of system components must be carry out by installer.

Cut-off alves

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

Thermometers et manometers

- installed at entry and exit of the main elements facilitate inspection and maintenance

An air bleed valve

- installed in all of the highest points of the system allowing the venting of the circuits air

Drainage taps

- installed in the lowest points of the system to allow bleeding

expansion vessel

- it keeps a correct system pressure when the water temperature changes
- it must be dimensioned as a function of water content

Supports

- the hydraulic pipes weight mustn't burden on the unit connections

5.2 Operation sequence



In the tightening operations always use the wrench and backup wrench.

The hydraulic connections have to be realized with pipes with higher diameter (minimum limit equal) of the unit's hydraulic connections!

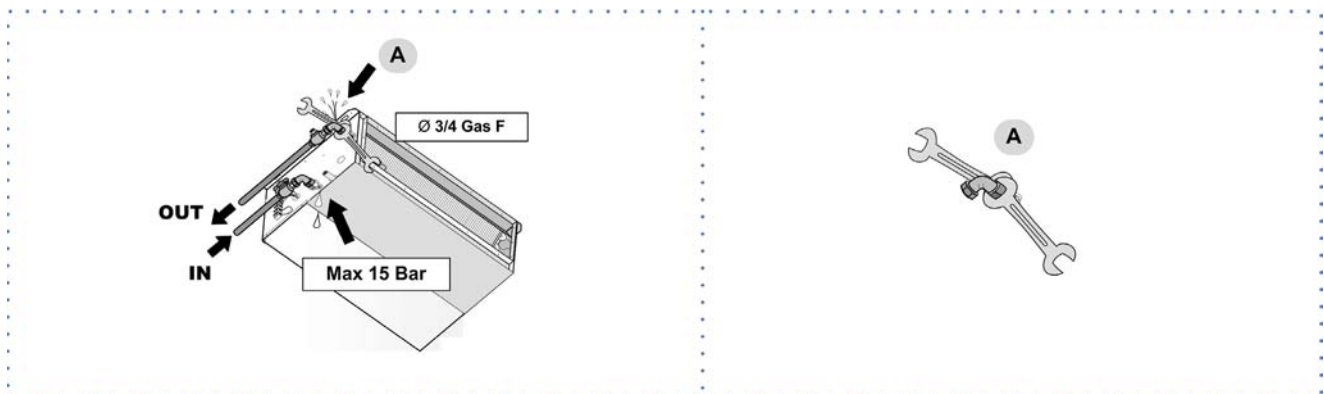
Before connecting the unit, carefully wash the system by filling it and emptying it several times with clean water.

Execute leakage test before isolate the pipes.

Isolate the pipes to avoid heat dispersions and formation of condensate.

Leave various point of service free (wells, vent-holes etc..)

Vent the unit



5.3 Condensate drain

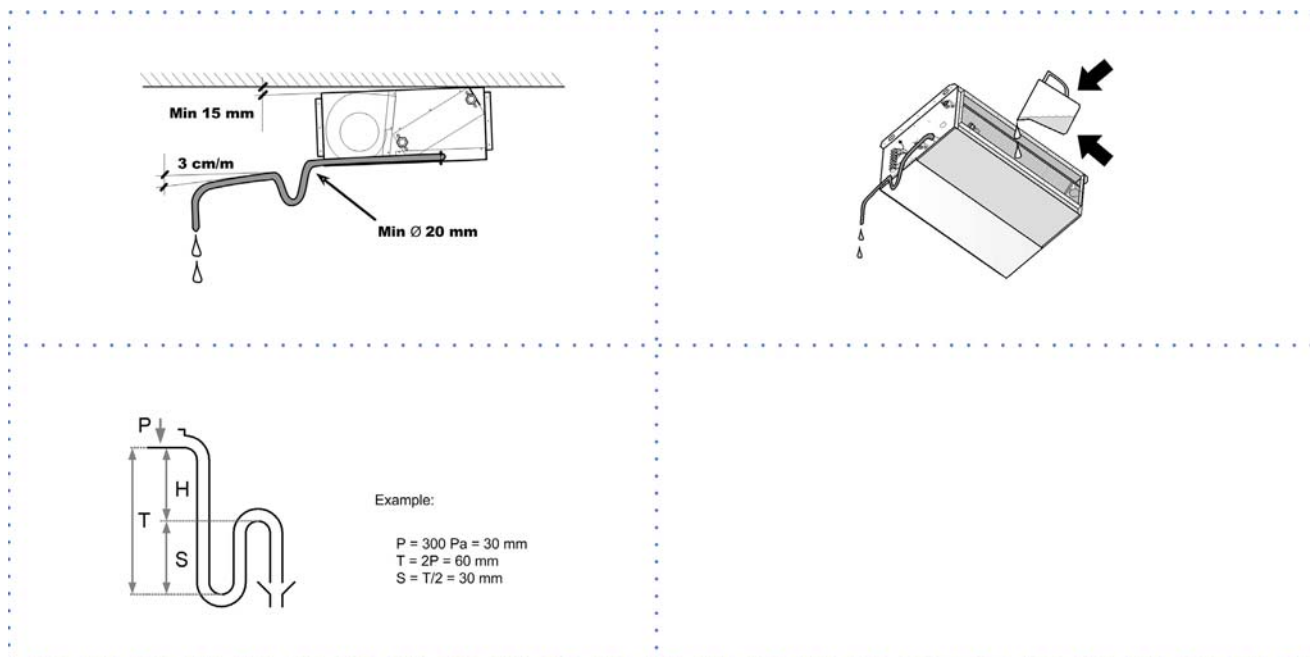


The condensate must be disposed in order to avoid damages to people and things.

- Unit discharge fitting: the connection must not transmit mechanical stresses and must be performed taking care not to damage the unit discharge fitting .
- Provide a siphon that, eliminating the negative pressure caused by the fan, prevents the air intake from the discharge duct.
- The ducting must have a min. slope of 3% to allow the runoff.
- Anchor the ducting with an adequate number of supports.
- 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.
- The connection must not be hermetic, so as to allow the venting and avoid possible liquid returns.



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)

5.4 Risk of freezing

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

For example:

- safeguard the pipes with heating cables placed under the insulation, or
- insulate the pipes
- perform the installation draining if unused for long periods
- provide the antifreeze resistance in case of rigorous temperatures

5.5 Fixture rotation

→ p. 49

6 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 channels, 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 flange
- 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
- the ducts should not be tilted towards unit to avoid the condensate and water return
- 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)

6.1 Treated air channelling

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

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

DIFFUSERS INLETS GRILLES

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



When choosing and positioning the grilles, inlets and diffuser, 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

7 Electrical connections

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

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

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

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

Operate in compliance with safety regulations in force.

7.1 Electrical data



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

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

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

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



If the DHW module is present, consider the electric resistance absorption in the power supply line dimensioning.

7.2 Connections

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

7.3 Signals / data lines

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

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

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

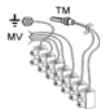
Do not lay the cables parallel to other cables, cable crossings are possible, only if laid at 90°.

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

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

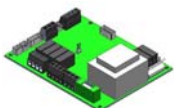
Respect impedance, capacity and attenuation indications.

7.4 Terminal board



HIDE2X - Remote control with E/I +3V +on/off for wall installation	☒ 31
HIDE3X - Plurifunctional remote control for wall installation	☒ 31
HIDE4X - Plurifunctional room control for 0-10V valves	☒ 31

7.5 Clivet Talk Terminal Space



HIDE2X - HID-T2 electronic room control	☒ 32
HIDE3X - HID-T3 electronic room control	☒ 32
HIDE4X - HID-T4 flush-mounted electronic room control	☒ 33

7.6 Mini-network

Mini-network	☒ 45
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8 Start-up

8.1 General description

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

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

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

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

Before checking, please verify the following:

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

8.2 Preliminary checks

For details refer to the different manual sections.

Unit OFF power supply

1. safety access
2. functional spaces
3. air flow: correct return and supply (no bypass, no stratification)
4. structure integrity
5. fans run freely
6. unit on vibration isolators
7. air filters present and clean
8. completed aerodynamic system
9. earthing connection
10. power supply features
11. electrical connections provided by the customer

8.3 Start-up sequence

For details refer to the different manual sections.

Unit ON power supply

1. off-load voltage measure
2. unit ON
3. load voltage measure and absorptions
4. check all fan operating
5. air flow rate measurement
6. measure return and supply water temperature
7. check no anomalous vibrations are present
8. complete and available unit documentation

8.4 Water circuit

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

8.5 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.

Controllare i valori di tensione e frequenza di rete, che devono essere entro i limiti:

- 230/1/50 +/-10%

8.6 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

8.7 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).

8.8 Start-up report

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

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

- total voltages and absorptions with unit at full load
- absorptions of the different electric loads (compressors, fans, pumps etc)
- temperatures and fl ws of the different fluids (ater, 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.

9 Maintenance

9.1 General description

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

The maintenance allows to:

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

Before checking, please verify the following:

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

9.2 Inspections frequency

Perform an inspection every 6 months minimum.

The frequency, however, depends on the use.



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

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

9.3 Unit booklet

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

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

Report on the booklet:

- date
- type of intervention effected
- intervention description
- carried out measures etc.

9.4 Standby mode

If a long period of inactivity is foreseen:

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

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

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

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

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

9.5 Control check list

√		intervention frequency (months)	1	6	12
1	presence corrosion				X
2	panel fixing				X
3	fan fixing			X	
4	coil cleaning			X	
5	bowl cleaning + sanitisation			X	
6	outflow test			X	
7	air filters cleaning / inspection		X		
8	air flow rate measurement				X
9	channelling: anti-vibration devices and fastenings check				X
10	check of the fixing and the insulation of the power lead				X
11	check of the earthing cable				X
12	electric panel cleaning				X
13	terminal closing, cable insulation integrity				X
14	power supply voltage (vacuum and loaded)			X	
15	absorptions of the single electrical loads			X	
16	protective device test: pressure switches, thermostats, flow switches etc..			X	
17	control system test: setpoint, climatic compensations, capacity stepping, water / air flow-rate variations			X	
18	control device test: alarm signalling, thermometers, probes, pressure gauges etc..			X	
19	electrical heaters check - option				X
20	water coil check - option				X

9.6 Coil

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

It is extremely important that the battery gives the maximum thermal exchange; therefore, its surface must be cleaned from dust and deposits.

Remove all impurities from the surface.

Using an air pressure gun, clean the aluminum surface of the battery; be careful to direct the air in the opposite direction of the fan air movement.

Hold the gun parallel to the fins to avoid damages.

As an alternative, vacuum cleaner can be used to suck impurities from the air input side.



Verify that the aluminum fins are not bent or damaged, in the event of damages contact the authorized assistance center and get the fins straightened in order to restore the initial condition for an optimal air flow.

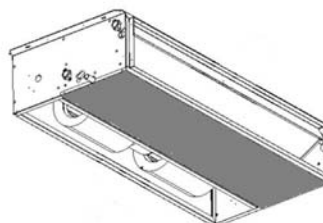
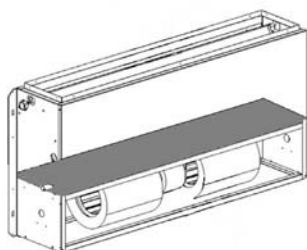
9.7 Condensation collection basin

Dirt or scale can give rise to clogging.

Also, microorganisms and mould can flourish in the bowl.

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

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



9.8 Electric heaters

Accessory

Check:

- cleaning state
- fastening
- presence of corrosion

9.9 Air filter

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 a hygienic-sanitary point of view.

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

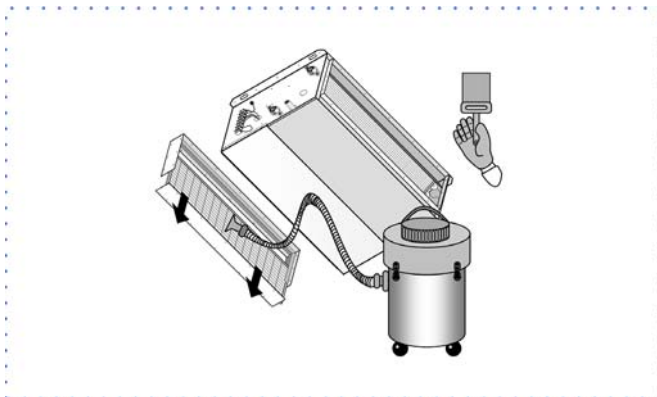
The frequency with which the filters must be checked depends on the quality of the air, the unit operation hours, the dustiness and crowding of rooms.

Frequency can indicatively vary from WEEKLY to MONTHLY.


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

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

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



9.10 Anomalies - Remedies

 The interventions must be carried out by a qualified installer or by a specialised service centre.

Effect	Cause	Remedy
Feeble air discharge	Wrong speed setting on the control panel Obstructed air filter Obstruction of the airflow (inlet and/or outlet) Air distribution system load loss has been underestimated Sense of rotation inverted	Select the right speed on the control panel Clean the air filter Remove the obstruction Increase fan speed Check wiring diagram and electrical connections
Excessive air flow	Air distribution system pressure drop has been overestimated	Reduce fan rotation speed and/or create pressure drop in ducting
Insufficient static pressure	Rotation speed too low Sense of rotation inverted	Increase fan speed Check wiring diagram and electrical connections
Excessive noise	Excessive air flow Metal components damaged Rotation parts off balance	Reduce air flow Check state of components and replace damaged parts Balance fan impeller
The motor/fan does not work	Current lack With water low temperature thermostat "TM" has tripped because the temperature has dropped below 40°C (in winter mode) Make sure that Make sure that	Control the power supply Control the boiler The electrical power is on - Switches and/or thermostats are on the right working position No objects obstruct the fan rotation
The unit does not heat up as before	Hot water supply lack Wrong setting on control panel Make sure that Make sure that Make sure that	Control the boiler and the hot water pump See control panel settings The air filter and the coil are clean Air did not enter in the water circuit, check it using provided air vent valve The installation is well balanced - The boiler is functioning - The hot water pump is functioning
The unit does not cool up as before	Chilled water supply lack Wrong setting on control panel Make sure that Make sure that Make sure that	Control the chiller and the chilled water pump See control panel settings The air filter and the coil are clean Air did not enter in the water circuit, check it using provided air vent valve The installation is well balanced - The chiller is functioning - The chilled water pump is functioning
Water entrainment	Siphon is clogged No siphon	Clean siphon Fit a siphon
Condensate on the external structure of the unit	Temperature and humidity limit conditions (indicated in the Technical Bulletin - operating limits) have been reached Condensate water draining problems When the requested environment temperature is reached the fan stops while chilled water is still circulating in the coil	Raise the water temperature over the minimum limits mentioned in the Technical Bulletin Check the drain pan and the drain pipe Provide a regulation where water supply is stopped when environment temperature is reached (fan stop) - (3 way valve - 2 way valve - pump OFF - Chiller OFF, etc.)

10 Decommissioning

10.1 Disconnecting

Only authorised personnel must disconnect the unit.

Avoid leak or spills into the environment.

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

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

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

10.2 Dismantling and disposal

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

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

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

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

10.3 Directive EC RAEE

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

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

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

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

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

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



11 Residual risks

General description

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

Danger zone

This is an area in which only an authorised operator may work. The danger zone is the area inside the unit which is accessible only with the deliberate removal of protections or parts thereof.

Handling

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

Handle the unit following the instructions provided in the present manual regarding the packaging and in compliance with the local regulations in force.

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

Installation

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

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

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

Carefully check the positioning of the unit.

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

Carefully check the positioning and the anchoring of the unit.

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

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

General risks

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

Electrically isolate the unit (yellow-red isolator).

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

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

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

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

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

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

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

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

Electric parts

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

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

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

Always fix the unit cover properly.

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

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

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

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

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

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

Moving parts

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

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

Contact with the fans can cause injury.

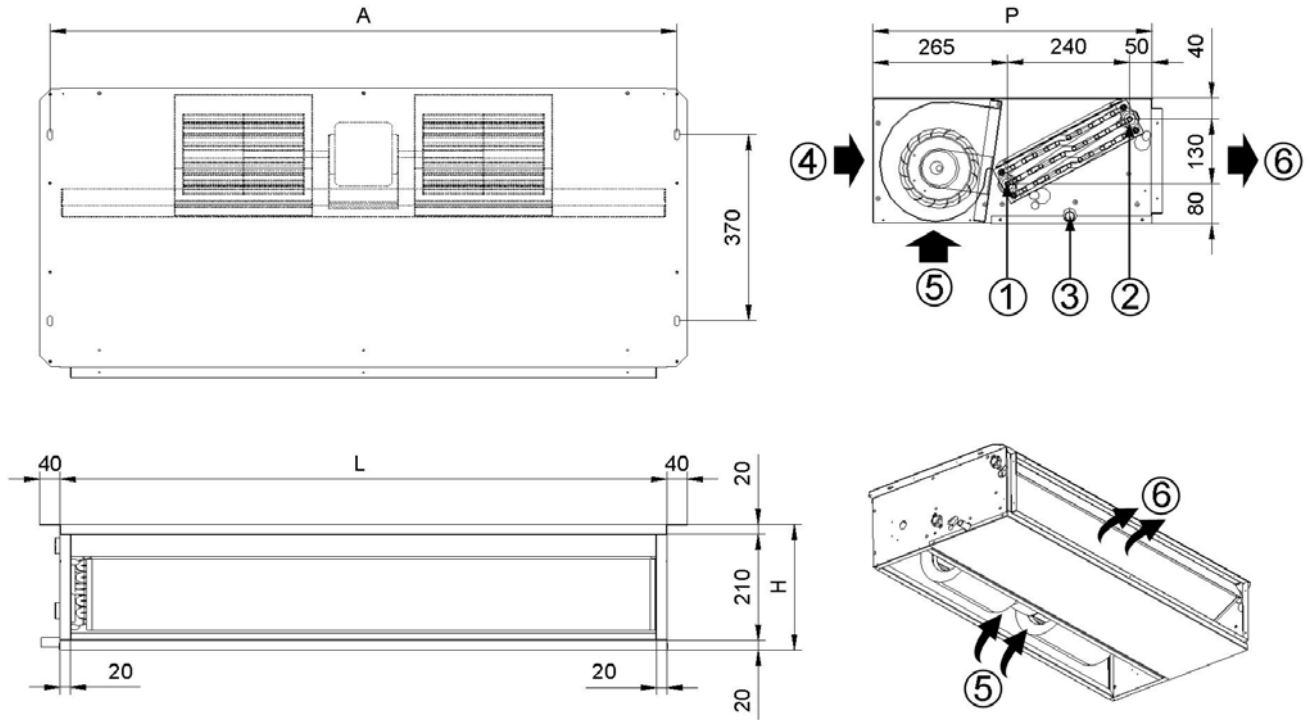
Prior to removing the protective grill or the fans, open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

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.

12 Dimensional drawings

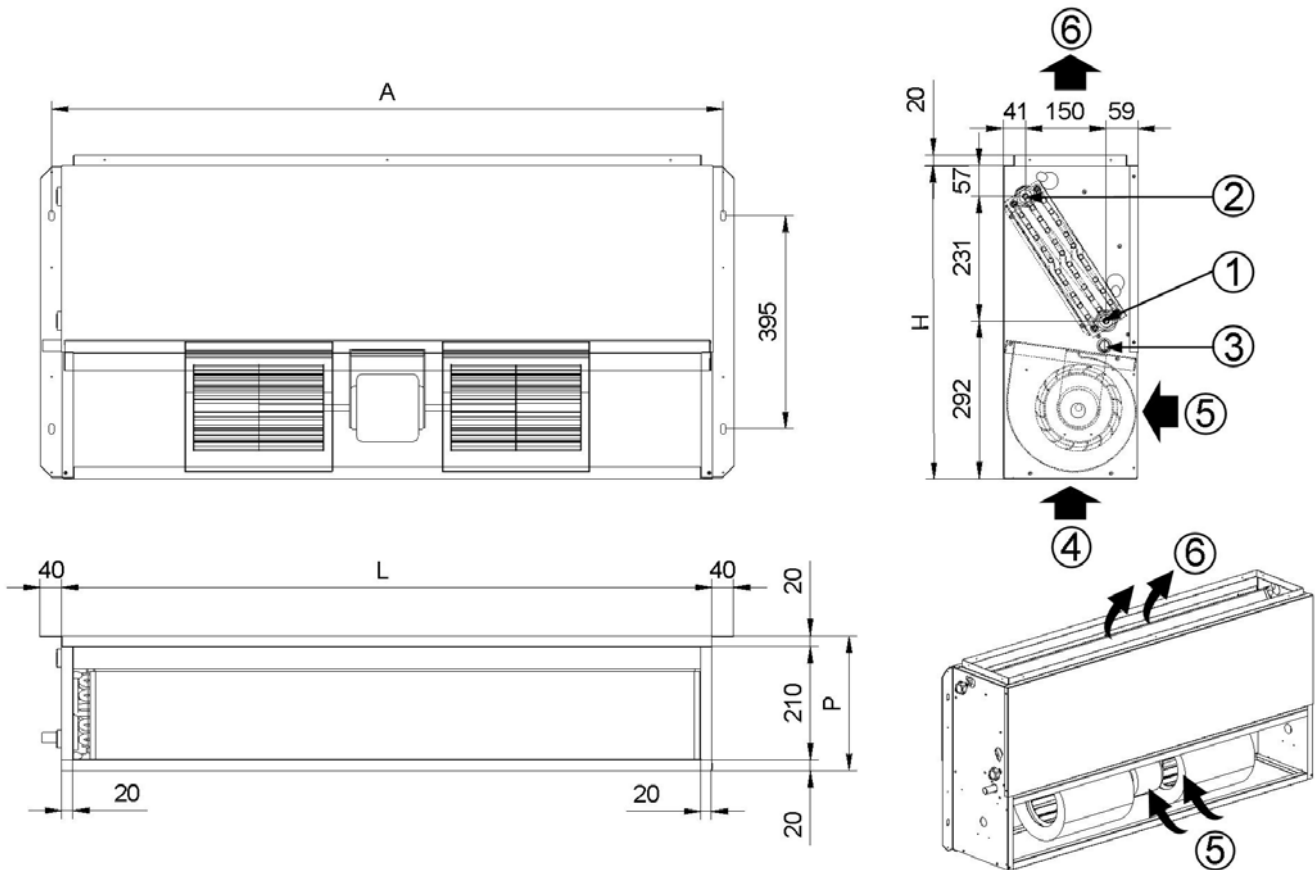
12.1 Horizontal unit concealed - 2 pipe system



1. Water inlet 3/4" F
2. Water outlet 3/4" F
3. Condensation drainage Ø 20 mm
4. Standard air intake (RP)
5. Floor air inlet (R3)
6. Standard supply

CC2-INH									
Size		15	21	25	31	41	51	61	71
A - Length	mm	800	800	800	1200	1200	1200	1600	1600
B - Width	mm	555	555	555	555	555	555	555	555
C - Height	mm	250	250	250	250	250	250	250	250
G	mm	846	846	846	1246	1246	1246	1646	1646
Shipping weight	kg	37	38	40	51	53	56	68	71
Operating weight	kg	34	35	37	48	50	53	65	68

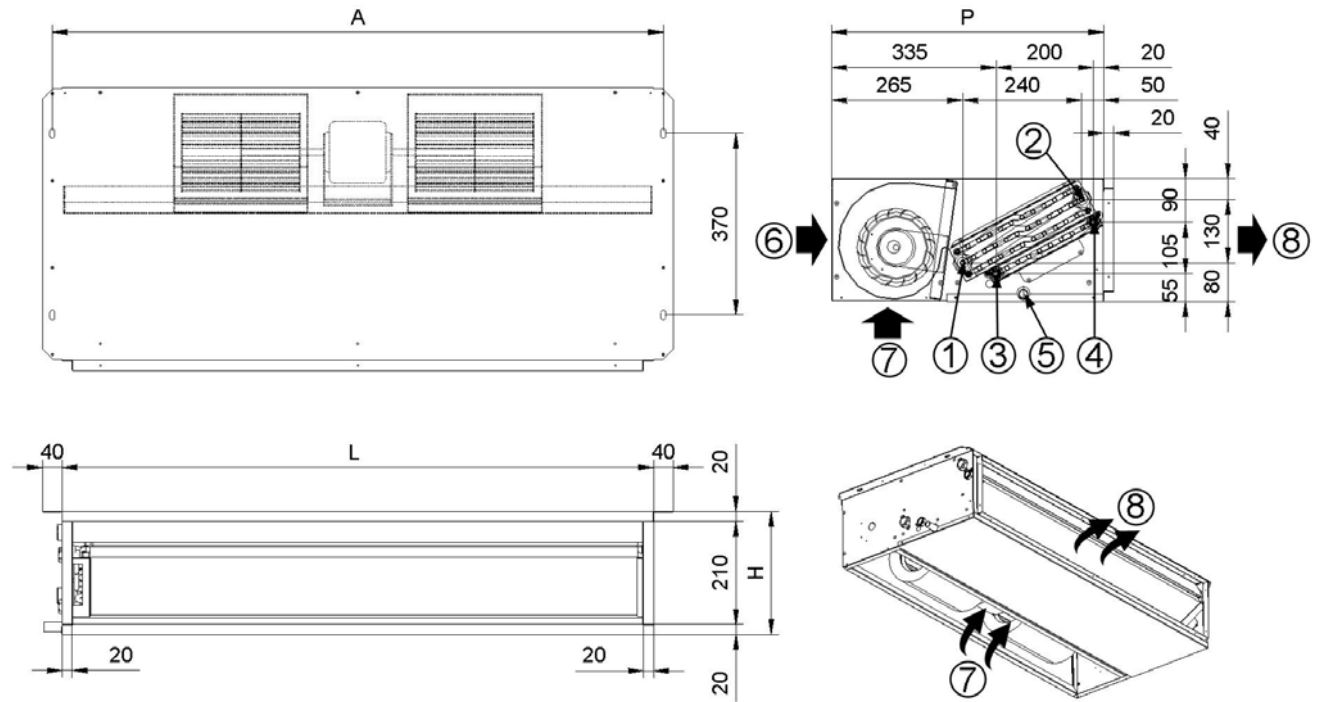
12.2 Vertical unit concealed - 2 pipe system



1. Water inlet 3/4"F
2. Water outlet 3/4"F
3. Condensation drainage Ø 20 mm
4. Standard air intake (RP)
5. Floor air inlet (R3)
6. Standard supply

CC2-INV									
Size		15	21	25	31	41	51	61	71
A - Length	mm	800	800	800	1200	1200	1200	1600	1600
B - Width	mm	250	250	250	250	250	250	250	250
C - Height	mm	580	580	580	580	580	580	580	580
G	mm	846	846	846	1246	1246	1246	1646	1646
Shipping weight	kg	37	38	40	51	53	56	68	71
Operating weight	kg	34	35	37	48	50	53	65	68

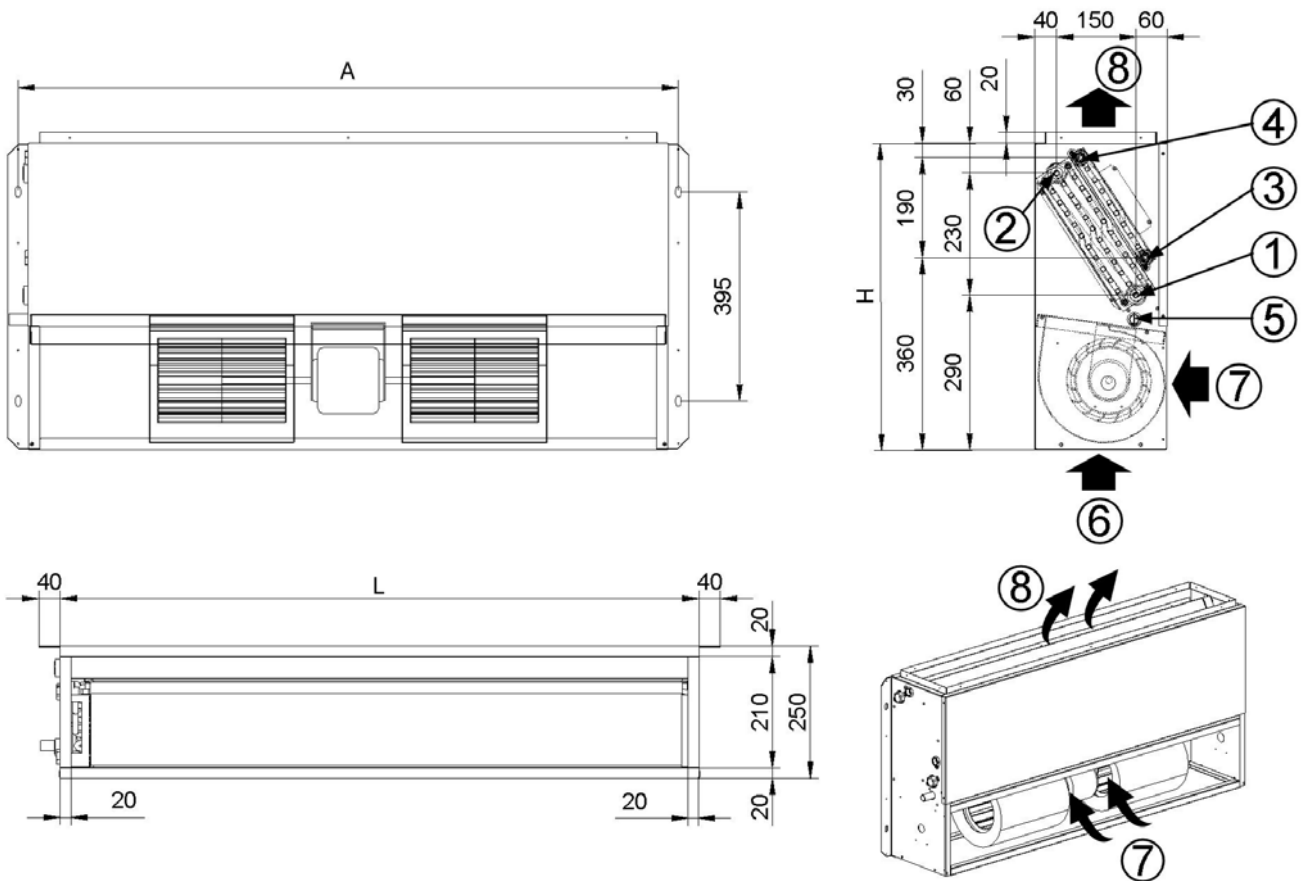
12.3 Horizontal unit concealed - 4 pipe system



1. Water inlet 3/4"F
2. Water outlet 3/4"F
3. additional coil water inlet (4 pipe system) 1/2"F
4. additional coil water outlet (4 pipe system) 1/2"F
5. Condensation drainage Ø 20 mm
6. Standard air intake (RP)
7. Floor air inlet (R3)
8. Standard supply

CC4-INH								
Size			15	21	31	41	51	61
A - Length		mm	800	800	1200	1200	1600	1600
B - Width		mm	555	555	555	555	555	555
C - Height		mm	250	250	250	250	250	250
G		mm	846	846	1246	1246	1646	1646
Shipping weight		kg	39	40	54	56	70	42
Operating weight		kg	36	37	51	53	67	69

12.4 Vertical unit concealed - 4 pipe system



1. Water inlet 3/4"F
2. Water outlet 3/4"F
3. additional coil water inlet (4 pipe system)1/2"F
4. additional coil water outlet (4 pipe system)1/2"F
5. Condensation drainage Ø 20 mm
6. Standard air intake (RP)
7. Floor air inlet (R3)
8. Standard supply

CC4-INV								
Size			15	21	31	41	51	61
A - Length		mm	800	800	1200	1200	1600	1600
B - Width		mm	250	250	250	250	250	250
C - Height		mm	580	580	580	580	580	580
G		mm	846	846	1246	1246	1646	1646
Shipping weight		kg	39	40	54	56	70	42
Operating weight		kg	36	37	51	53	67	69

13 Technical information

13.1 2 pipe system

Size			15	21	25	31	41	51	61	71
Cooling										
Cooling capacity	1	kW	6.01	7.48	8.59	10.3	12.9	15.0	17.2	20.2
Sensible capacity	1	kW	4.57	5.56	6.16	8.10	9.95	11.1	13.3	14.9
Total power input	1	kW	0.16	0.16	0.16	0.31	0.31	0.31	0.46	0.46
Heating										
Heating capacity	2	kW	7.82	9.47	10.0	13.9	17.2	18.3	23.1	24.6
Internal exchanger										
Number of rows		No	3	3	4	3	3	4	3	4
Water content		l	1.90	2.00	2.70	2.90	3.00	4.00	4.00	5.30
Water flow-rate	1	l/s	0.29	0.36	0.41	0.49	0.62	0.72	0.82	0.97
Pressure drop	1	kPa	29	38	32	21	33	25	23	22
Air Handling Section Fans (Supply)										
Type of supply fan	3		CFG	CFG	CFG	CFG	CFG	CFG	CFG	CFG
Number of supply fans		No	1	1	1	2	2	2	3	3
Supply airflow	4	l/s	306	333	319	583	639	611	861	819
Supply airflow	4	m ³ /h	1.100	1.200	1.150	2.100	2.300	2.200	3.100	2.950
Max. static pressure supply fan		Pa	145	150	150	135	140	140	135	135
CONNECTIONS										
Water fittings			3/4" F	3/4" F	3/4" F	3/4" F	3/4" F	3/4" F	3/4" F	3/4" F
Condensate drain	5	∅	20	20	20	20	20	20	20	20
Power supply										
Standard power supply		V	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Noise Levels										
Sound pressure level (1 m)	6	dB(A)	53	54	54	60	61	61	59	59
Sound power in the duct	6	dB(A)	64	65	65	71	72	72	70	70

- Indoor air temperature at 27°C D.B./19°C W.B., Water temperature in / out 7°C / 12°C. Air flow at maximum speed (ESP = 0Pa)
- Indoor air temperature at 20°C. Water inlet temperature = 50°C. Air flow at maximum speed (ESP = 0Pa)
- CFG = AC centrifugal fan
- Air flow at maximum speed (ESP = 0Pa)

- Intended as an external diameter
- The sound levels refer to ceiling units without false ceiling, with nominal air flow, fan supply 220V, at maximum speed. Sound pressure levels referred to 1 m. from unit external surface.

13.2 Operating range

Size			15	21	25	31	41	51	61	71
Heating										
Max inlet water temperature		[°C]	100	100	100	100	100	100	100	100
Min. entering water temperature		[°C]	3	3	3	3	3	3	3	3
Max. inlet air temperature (D.B.)		[°C]	40	40	40	40	40	40	40	40
Min entering air temperature (D.B.)		[°C]	2	2	2	2	2	2	2	2
Cooling										
Max entering air temperature (WB)		[°C]	40	40	40	40	40	40	40	40
Min inlet air temperature (W.B.)		[°C]	2	2	2	2	2	2	2	2
Maximum water side pressure		bar	15	15	15	15	15	15	15	15

13.3 Sound levels

Minimum speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	51	55	59	54	53	51	43	38	58	47
21	52	56	60	55	54	52	44	39	59	48
25	52	56	60	55	54	52	44	39	59	48
31	59	62	65	62	60	58	51	49	65	54
41	60	63	66	63	61	58	52	50	66	55
51	60	63	66	63	61	58	52	50	66	55
61	60	61	62	60	58	55	48	40	63	52
71	60	61	62	60	58	55	48	41	63	52

Medium speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	59	62	65	60	63	57	51	48	64	53
21	60	63	66	61	60	58	52	49	65	54
25	60	63	66	61	60	58	52	49	65	54
31	63	67	71	67	65	63	58	56	71	60
41	64	68	72	68	66	63	58	57	72	61
51	64	68	72	68	66	63	58	57	72	61
61	66	68	70	67	65	62	57	53	70	59
71	66	68	70	67	65	62	57	53	70	59

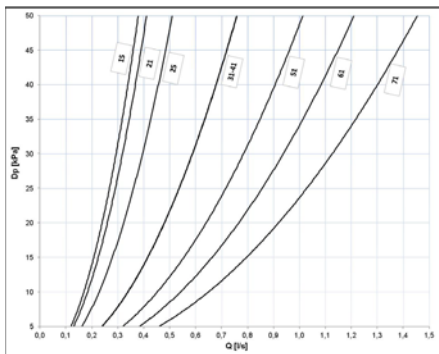
Max speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	61	66	71	65	64	61	57	54	69	58
21	62	67	72	66	65	62	58	55	70	59
25	62	67	72	66	65	62	58	55	70	59
31	65	69	73	69	67	65	60	58	73	62
41	66	70	74	70	68	65	60	59	74	63
51	66	70	74	70	68	65	60	59	74	63
61	69	71	73	70	68	65	60	57	73	62
71	69	71	73	70	68	65	60	57	73	62

The sound levels refer to ceiling units without false ceiling, fan supply 220V.

The sound pressure level refers to a distance of 1m from the outer surface of the unit operating in an open field.

13.4 Exchanger pressure drops



Q = water flow
Dp = pressure drop

13.5 4-pipe system

Size			15	21	31	41	51	61
Cooling								
Cooling capacity	1	kW	5.83	7.22	9.96	12.4	13.2	16.6
Sensible capacity	1	kW	4.42	5.35	7.83	9.53	10.4	12.8
Total power input	1	kW	0.16	0.16	0.31	0.31	0.46	0.46
Heating								
Heating capacity	2	kW	6.61	6.97	11.6	12.2	15.5	16.4
Total power input		kW	0.16	0.16	0.31	0.31	0.46	0.46
Internal exchanger								
Number of rows		No	3 + 1	3 + 1	3 + 1	3 + 1	3 + 1	3 + 1
Water content		l	1,9 + 0,6	2,0 + 0,6	2,9 + 0,9	3,0 + 0,9	3,9 + 1,2	4,0 + 1,2
Water flow-rate	1	l/s	0.28	0.35	0.48	0.59	0.63	0.79
Pressure drop	1	kPa	27	35	20	30	13	21
Air Handling Section Fans (Supply)								
Type of supply fan	3		CFG	CFG	CFG	CFG	CFG	CFG
Number of supply fans		No	1	1	2	2	3	3
Supply airflow	4	l/s	292	317	556	603	742	814
Supply airflow	4	m ³ /h	1.050	1.140	2.000	2.170	2.670	2.930
Max. static pressure supply fan		Pa	145	150	135	140	130	135
CONNECTIONS								
Water fittings			3/4" F	3/4" F	3/4" F	3/4" F	3/4" F	3/4" F
Water fittings			1/2" F	1/2" F	1/2" F	1/2" F	1/2" F	1/2" F
Condensate drain	5	Ø	20	20	20	20	20	20
Power supply								
Standard power supply		V	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Noise Levels								
Sound pressure level (1 m)	6	dB(A)	53	54	60	61	58	59
Sound power in the duct	6	dB(A)	64	65	71	72	69	70

- Indoor air temperature at 27°C D.B./19°C W.B., Water temperature in / out 7°C / 12°C. Air flow at maximum speed (ESP = 0Pa)
- Indoor air temperature at 20°C. Water temperature inlet/outlet = 70°C / 60°C. Air flow at maximum speed - Free outlet unit (ESP = 0Pa)
- CFG = AC centrifugal fan

- Air flow at maximum speed (ESP = 0Pa)
- Intended as an external diameter
- The sound levels refer to ceiling units without false ceiling, with nominal air flow, fan supply 220V, at maximum speed. Sound pressure levels referred to 1 m. from unit external surface.

13.6 Operating range

Size			15	21	31	41	51	61
Heating								
Max inlet water temperature		[°C]	100	100	100	100	100	100
Min. entering water temperature		[°C]	3	3	3	3	3	3
Max. inlet air temperature (D.B.)		[°C]	40	40	40	40	40	40
Min entering air temperature (D.B.)		[°C]	2	2	2	2	2	2
Cooling								
Max. inlet air temperature (D.B.)		[°C]	40	40	40	40	40	40
Min entering air temperature (D.B.)		[°C]	2	2	2	2	2	2
Maximum water side pressure		bar	15	15	15	15	15	15

13.7 Sound levels

Minimum speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	51	55	59	54	53	51	43	38	58	47
21	52	56	60	55	54	52	44	39	59	48
25	52	56	60	55	54	52	44	39	59	48
31	59	62	65	62	60	58	51	49	65	54
41	60	63	66	63	61	58	52	50	66	55
51	60	63	66	63	61	58	52	50	66	55
61	60	61	62	60	58	55	48	40	63	52
71	60	61	62	60	58	55	48	41	63	52

Medium speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	59	62	65	60	63	57	51	48	64	53
21	60	63	66	61	60	58	52	49	65	54
25	60	63	66	61	60	58	52	49	65	54
31	63	67	71	67	65	63	58	56	71	60
41	64	68	72	68	66	63	58	57	72	61
51	64	68	72	68	66	63	58	57	72	61
61	66	68	70	67	65	62	57	53	70	59
71	66	68	70	67	65	62	57	53	70	59

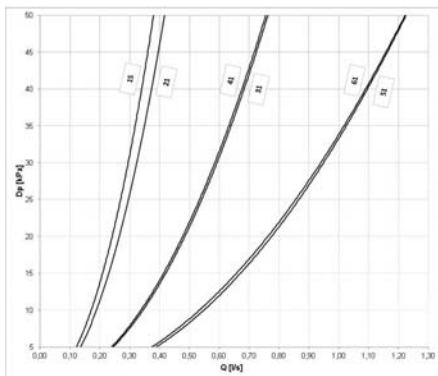
Max speed

Size	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
15	61	66	71	65	64	61	57	54	69	58
21	62	67	72	66	65	62	58	55	70	59
25	62	67	72	66	65	62	58	55	70	59
31	65	69	73	69	67	65	60	58	73	62
41	66	70	74	70	68	65	60	59	74	63
51	66	70	74	70	68	65	60	59	74	63
61	69	71	73	70	68	65	60	57	73	62
71	69	71	73	70	68	65	60	57	73	62

The sound levels refer to ceiling units without false ceiling, fan supply 220V.

The sound pressure level refers to a distance of 1m from the outer surface of the unit operating in an open field.

13.8 Exchanger pressure drops



Q = water flow
Dp = pressure drop

14 Accessories

Configurations	
CC4	Coil configuration for 4-pipe system
Air side features	
R3	Floor air inlet
RP	rear intake
RF	Front air inlet
SFCF	Air filter section (ductable) with EU3 flat air filter (Eurovent 4/5)
SFHEX	Air filter section (ductable) with EU5 air filter (Eurovent 4/5)
FAPS	EU3 flat air filter (Eurovent 4/5) not ductable
CUFMX	Air outlet casing with bird-proof grill
CUFAX	Air intake casing with bird-proof grill and EU3 air filter (Eurovent 4/5)
PCCMAX	Section with spigots "Ø" with variable diameter and internal insulation for both air intake / supply outlets
P90MAX	90° section for both air intake / supply outlets
VEC	High efficiency EC fan
SILMAX	Labyrinth noise level attenuator section for both air intake / supply outlets
MCRX	Mixing and recirculating chamber
PMAX	Straight section for both air intake / supply outlets
PGFMAX	Anti-vibration section for both air intake / supply outlets
Water circuit	
3V2	Three-way valve kit for 2-pipe type "on/off" system
3V4	Three-way valve kit for 4-pipe system type "on/off"
10V2	0-10V 3-way valve kit for 2-pipe system
10V4	0-10V 3 way valve kit for 4-pipe system
2V2	ON/OFF 2 way valve kit for 2-pipe system
2V4	ON/OFF 2 way valve kit for 4-pipe system
BRV	Auxiliary condensate collection pan (vertical installation)
BRO	Auxiliary drain pan in galvanized steel with thermal insulation
Electric Circuit	
CTSP1	CLIVET TALK TERMINAL SPACE electronics with RS485 Modbus serial port
CPVM	Control additional card of 0-10V valve
TRM	Terminal block with minimum water temperature clickson
TRP	Terminal block with closing cover IP40
TRMP	Terminal block with closing cover IP40 and minimum water temperature clickson
HIDE2X	Remote control with E/I +3V +on/off for wall installation
HIDE3X	Plurifunctional remote control for wall installation
HIDE4X	Plurifunctional room control for 0-10V valves
HIDT2X	HID-T2 electronic room control
HIDT3X	HID-T3 electronic room control
HIDTI2X	HID-TI2 Flush-mounted electronic room control
DCPX	Control device for more units with a single room control.
EH230X	Heating section with electrical heaters 230V with safety thermostat
EH400X	Heating section with electrical heaters 400V with safety thermostat
PTABX	Remote probe for room air temperature for electromechanical thermostats.

X - When the letter X is placed at the end, this means that the accessory is supplied separately. If there is no X in the code, the accessory is mounted in the factory.

15 Accessories - Electrical connections

15.1 HIDE2X - Remote control with E/I +3V +on/off for wall installation

Electromechanical room thermostat for wall installation

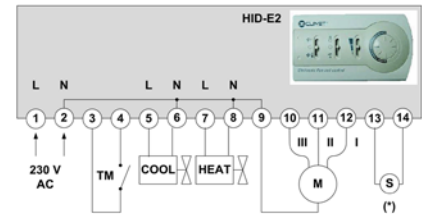
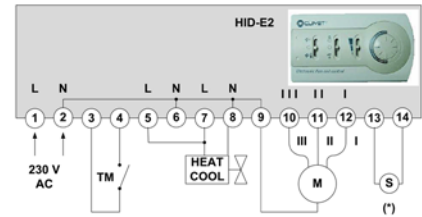
It allows:

- setting the desired temperature (10-30°C)
- selection of the 3 speeds (MIN - MED - MAX)
- ON/OFF
- manual Summer / Winter change
- continuous or thermostat-based ventilation
- control of on/off water valve

It can be connected to the remote air probe (PTABX)

The hot water minimum temperature Clickson can be connected.

Dimensions: 184x82x27 mm



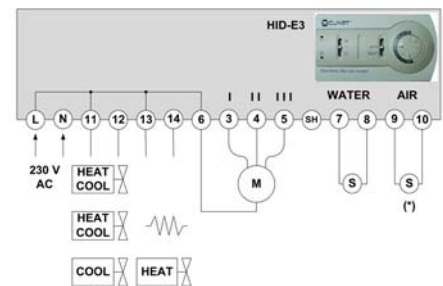
15.2 HIDE3X - Plurifunctional remote control for wall installation

Electromechanical room thermostat for wall installation

It allows:

- automatic fan speed adjustment (MIN - MED - MAX)
- silent operation (minimum fan speed)
- ON/OFF
- ambient temperature adjustment via the control knob: the knob's central position corresponds to the comfort condition (20°C in heating mode, 24°C in cooling mode). The temperature can be changed by +/- 5°C in relation to the comfort condition by turning the knob
- automatic selection of the Summer/Winter season: the heating or cooling mode is selected automatically by detecting the water temperature supplied to the fan-coil (water temperature below 17°C=operation in cooling mode, water temperature above 21°C=operation in heating mode)
- Hot Start function: in heating mode the fan does not start until the thermal coil is not hot enough
- de-stratification cycle
- dirty filter warning
- minimum water temperature probe

Dimensions: 184x82x27 mm



15.3 HIDE4X - Plurifunctional room control for 0-10V valves

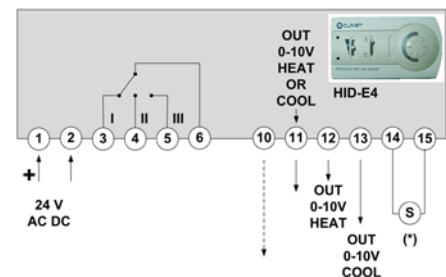
electro-mechanical room thermostat HID-E4 for wall mounting with proportional outlets for 2 or 4 pipe systems

It allows:

- Power supply 24V
- setting the desired temperature (10-30°C)
- manual Summer / Winter change
- fan speed selection (MIN - MED - MAX)
- control 0-10 V coil valves for hot/cold water for thermostat-controlled 2 or 4 pipe systems with adjustable working range and neutral zone (respectively 1-5°C and 1-4°C)

Set up for connection of remote air probe (PTABX).

Dimensions: 184x82x27 mm



15.4 HIDT2X - HID-T2 electronic room control



The HID-T2 room thermostat makes it possible to interface with the regulation module of units equipped with CLIVET TALK TERMINAL SPACE or (CTS) electronics and to manage one or more thermostat units.

The room thermostat allows to carry out the functions below:

- setting of the desired temperature
- selection of the 3 speeds (MIN - MED - MAX) either manually or automatically
- ON/OFF
- change summer/winter automatically, manually or remote with digital input
- select operation in economy mode
- set the unit's operating parameters
- control of external air shutter and control of motorized air outlet grille
- management of diagnostics with specific code for type of error

Dimensions: 123x86x27 mm

The thermostat is connected to the unit via a shielded twisted-pair cable at a maximum distance of 15m.

15.5 HIDT3X - HID-T3 electronic room control



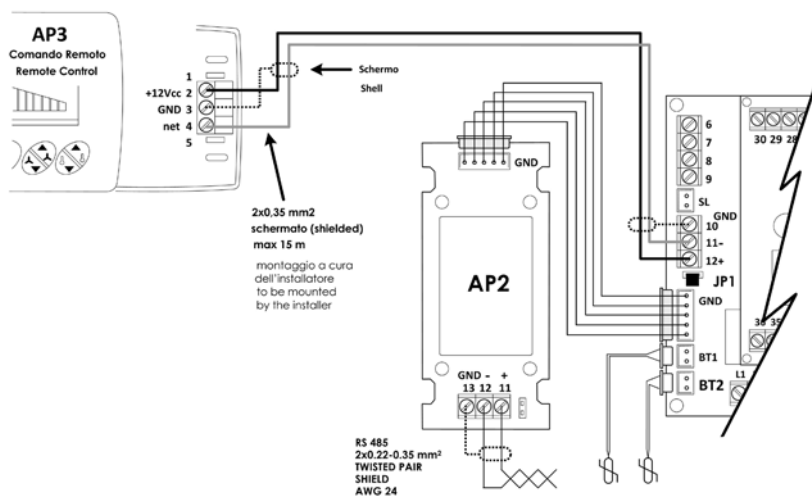
The HID-T3 room climate control makes it possible to interface with the regulation module of units equipped with Clivet Talk Terminal Space electronics (CTS) and to manage one or more thermostat units.

The room thermostat allows to carry out the functions below:

- setting of the desired temperature
- selection of the 3 speeds (MIN - MED - MAX) either manually or automatically
- ON/OFF
- change summer/winter automatically, manually or remote with digital input
- select operation in economy mode
- set the unit's operating parameters
- control of external air shutter and control of motorized air outlet grille
- humidity probe management
- humidity display
- management of diagnostics with specific code for type of error

Dimensions: 123x86x27 mm

The thermostat is connected to the unit via a shielded twisted-pair cable at a maximum distance of 15m.



4-pipe systems:

position the BT2 sensor upstream of the hot water valve.

15.6 HIDTI2X - HID-TI2 flush-mounted electronic room control



The HID-TI2 room climate control makes it possible to interface with the regulation module of units equipped with Clivet Talk Terminal Space electronics (CTS) and to manage one or more units.

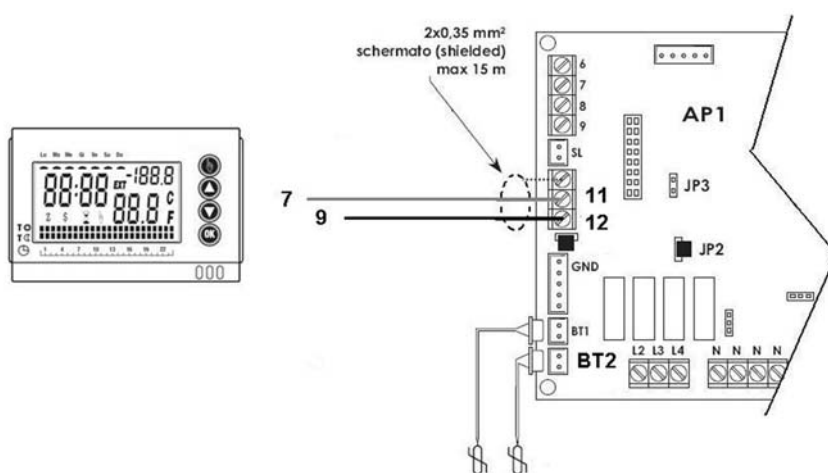
The room thermostat allows to carry out the functions below:

- setting of the desired temperature
- selection of the 3 speeds (MIN - MED - MAX) either manually or automatically
- ON/OFF
- change summer/winter automatically, manually or remote with digital input
- select operation in economy mode
- set the unit's operating parameters
- Setting of ventilation-only mode
- control of external air shutter and control of motorized air outlet grille
- management of diagnostics with specific code for type of error

Dimensions: 123x86x27 mm

The thermostat is connected to the unit via a shielded twisted-pair cable at a maximum distance of 15m.

The supplied fixing hangs allow mounting the thermostat to the plastic boxes (not supplied) normally used in the houses.



4-pipe systems:

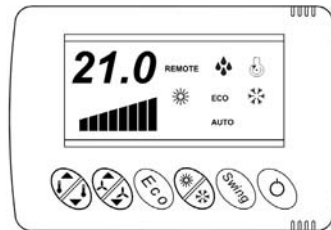
position the BT2 sensor upstream of the hot water valve.

16 Accessories - Control

16.1 Wall room thermostat

HIDT2X - HID-T2 electronic room control

HIDT3X - HID-T3 electronic room control



16.2 Display

21.1	Set Point		visible with unit in COOLING
REMOTE	visible if unit managed by NET (if present)		visible with unit in HEATING
ECO	visible in ECO mode		Ventilation status
AUTO	visible if the cooling/heating choice is AUTOMATIC		Not used

16.3 Local or remote management

The unit can be managed locally from the thermostat or remotely through the use of a RS485 serial line with MODBUS protocol.

16.4 On

The unit can be switching on/off:

- by thermostat
- by digital input (set by parameter)
- by net (set by parameter)

16.5 Operation

The unit has 2 set-points: one for heating and one for cooling. The first one is automatically kept lower than the second one with a difference of at least 1°C.

The regulation module compares ambient temperature with the set-point and tries to keep it as close as possible to it.

Therefore, it varies the fan speed, the water capacity or both of them according to the configuration.

The unit operating is enabled only if the water temperature:

- in WINTER is higher than 30°C
- in SUMMER is lower than 20°C

16.6 Automatic mode

The modules automatically commute in cooling or heating mode.

The switching occurs according to the entering water temperature (2-pipe unit) or return air (4-pipe unit).

Set the P31 parameter = 1

16.7 Manual mode

You choose manually if activating cooling mode or heating mode using the relevant keys.

Set the P31 parameter= 0

16.8 ECO

Economic operation, it prefers saving energy more than comfort

- in cooling mode the setECO is higher than the standard set
- in heating mode, it is lower
- the deviation value is defined by P10 OffsetEco

16.9 Manual fan

Fan speed is set manually.

However, the unit regulates the environment temperature according to the AUTO, MANUAL or ECO modes.

16.10 Silenced ventilation

The maximum speed is self-limited to raise the amount of silence (for example, during night operation).

16.11 Change of automatic mode – 2-pipe unit

In this mode, a neutral zone is foreseen when the unit is positioned in a CHANGE OVER status for a time sufficient to probe water temperature.

The status is displayed by a "CO" flashin .

After that time, if water temperature is out of limit, the H2O alarm is signalled.

Water temperature is detected (therefore, the cooling/heating modes are defined) only if power is demanded.

In this operation type, COOLING and HEATING sets are activated simultaneously; when one of the set is bypassed, water temperature is detected and the mode is defined .

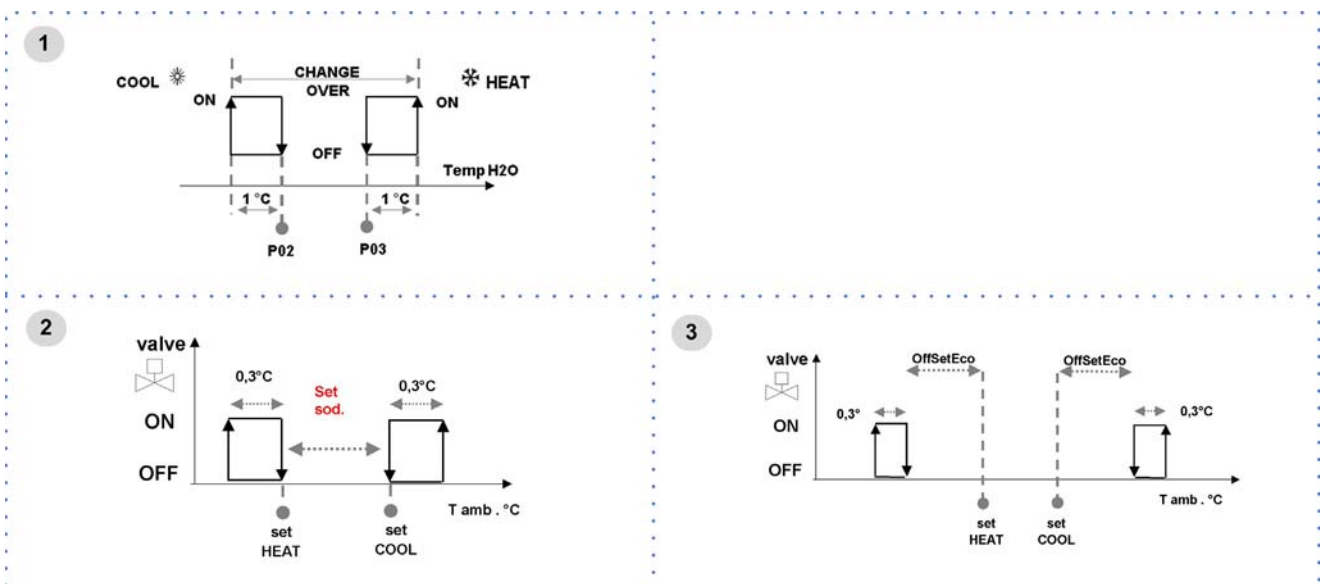
The set that is the opposite to the actual one is determined internally by the regulator by a constant that is defined ZoneChangeOver.

With unit in COOLING

- set heating (opposite) = current set – ZonaChangeOver









With unit in HEATING

- set cooling (opposite) = current set + ZonaChangeOver



1. Automatic mode change
2. Valve in the automatic mode
3. Valve in the automatic mode in eco mode

<p>Switch the thermostat on Press and hold the ON OFF key for 4 seconds If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing)</p>	
<p>Activate / deactivate the ANTI-TAMPERING LOCK Press and hold ECO + SWING keys for 5 seconds The lock is shown by three horizontal bars when any key is pressed If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing)</p>	

<p>Modify the set-point Pressing on the arrows raises or lowers set-point of the actual operation (heating, ECO heat., cooling, ECO cool.). The difference between the two set-points can not be less than 1°C and this value is automatically maintained. If, for example, the unit is in cooling mode and the summer set point is decreased up to the winter set value, the winter set value is also decreased. If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing).</p>	
<p>Display the ambient temperature Press and hold both arrows of the SET key, and the ambient temperature will be displayed alternated to the "ta" writing.</p>	
<p>Display room humidity ONLY FOR HID-T3 THERMOSTAT WITH UR PROBE Press and hold both arrows of the SET key, and the ambient temperature will be displayed alternating with the letters "ta". Press and hold the Set key again to see the humidity value alternating with the letters "ur".</p>	
<p>Switch from the HEATING mode to the COOLING mode and vice versa If the unit is in manual mode, the switching is performed by the relevant key (cooling; heating). If "AUTO" is displayed, the switch from one mode to another is managed automatically from the unit and, if this key is pressed, no change occurs. If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing).</p>	
<p>Switch the unit to ECO mode Press the ECO key. Repeat the operation to restore the standard operation. The ECO summer set point is higher than the SUMMER set point; the ECO winter set point is lower than the WINTER set point. If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing).</p>	
<p>Switch the unit to MANUAL VENTILATION AUTOMATIC ventilation: the fan speed is self-adjusted according to ambient temperature pressing one of the two arrow keys, the automatic ventilation is deactivated. MANUAL ventilation: speed is increased or decreased by the user in manual ventilation, the bar corresponding to the active speed is flashing To restore the AUTOMATIC ventilation: increase to maximum speed another pressure of the key will make all 8 bars flash if no action is performed, the unit returns to automatic ventilation If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing)</p>	
<p>Open / close the air supply damper (if present)</p>	
<p>SILENT Pressing briefly the ON/OFF key and the silence mode is activated. Press the ON-OFF key again to deactivate it. When silent mode is activated, the thermostat display shows the letters "SIL". When the Set-changing keys are pressed, the first pressing displays the actual set instead of SIL. After 10 sec. time-out, SIL is visualized if no keys that modify the set-point are pressed. If the function is managed remotely via ModBus, no modification is possible (the word REMOTE starts flashing).</p>	

16.12 Alarms visible by the display

Before resetting an alarm identify and remove its cause.

Repeated resets can cause irreversible damage.

The ALARMS show a potentially dangerous situation for the unit.

Before resetting an alarm, identify and eliminate the cause of the stop; a repeated reset can cause irreversible damage.

In the event of doubt, ask for an authorized assistance centre.

The table refers to all the variables that are managed by the electronic system.

According to the unit configuration and its accessories, few alarms might not be significant.

RES	active resistance alarm
FES	active electrostatic filter alarm
BT1	air probe fault alarm
BT2	water probe fault alarm
BT3	fresh air probe fault alarm
H20	water temperature alarm not fit
SLF	active level sensor alarm
CO	mode change in progress (for the automatic mode); is not an alarm
EHH	lack of communication/wrong thermostat connection
SYS	fault internal to the control module
ERR	configuration error

16.13 Parameters

Access to parameters

For the standard use, the access to parameters is not necessary.

The following operations are necessary for calibrations and configurations, they are expressly addressed to the authorized assistance centres or qualified technicians.

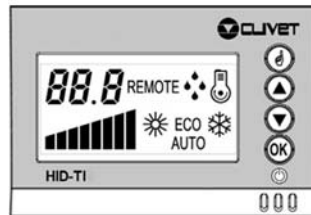
Switch on and off the thermostat with the ON-OFF key and wait until the display shows the set-point	
within 5 seconds, press the SWING and ON-OFF keys simultaneously until the P01 code appears	+ in 5 sec.
use the "UP" and "DOWN" keys to scroll along the parameters	
the new parameter value is memorized with the ECO key	
decrease or increase the parameter value	
the value of the parameter to be modified is displayed with the ECO key	
simultaneously press the SWING and ON-OFF keys to exit until the set-point appears	+

16.14 List of the parameters accessible by the thermostat

Par	Description	range	UM	Def.
P01	BandaLavoro: Working band	0 ÷ 15.0	°C	2.0
P02	MaxH2Ocool: Water max. temperature for cooling operating	0 ÷ 30.0	°C	20.0
P03	MinH2OHeat: Water min. temperature for heating operating	0 ÷ 40.0	°C	30.0
P05	TimeOnPeriodical Defines the duration of the OFF phase of the periodical	0 ÷ 999	min	2
P06	TempoOffPeriodica Defines the duration of the OFF phase of the periodical	0 ÷ 999	min	5
P10	OffsetEco	0 ÷ 4.0	°C	3.0
P11	SetUrHeat: Heat UR set point	30 ÷ 70	%	50
P12	BandUrHeat: Intervention band of the heat humidifier	0 ÷ 10	%	5
P21	FanOffCool: Fan status at "cooling" thermoregulator, satisfied 0: stop, 1: continuous, 2: periodical	0...2	num.	2
P22	FanOffHeat: Fan status at "heating" thermoregulator, satisfied 0: stop, 1: continuous, 2: periodical	0...2	num	0
P31	ModoAuto: It enables the automatic saison change 0: Manual, 1: Auto	0...1	flag	0
P41	BT1 probe calibration	-9.9+10.0	°C	0.0
P42	BT2 probe calibration	-9.9+10.0	°C	0.0
P43	Thermostat temp. probe calibration	-9.9+10.0	°C	0.0
P44	Thermostat UR probe calibration	-9.9+10.0	%UR	
S01	TESToperativa		°C	
S02	TH2Ooperativa		°C	
S03	TARIAoperativa		°C	
S04	URoperativa		Hr%	
S05	ActualMode	bitmap		
S06	CurrentSetpoint		°C	
S07	Current humidity Set		Hr%	
S08	Errors	bitmap		
S09	Active humidifcation		flag	
S10	Active dehumidification		flag	
S11	FanStatus: 0: off, 1: on	0...1	flag	
S12	Actual fan: 0-7 if motor 0-10 V 0-3 if 3 speed motor 0-1 if single-speed motor	0...7	num.	

16.15 HIDTI2X - HID-TI2 flush-mounted electronic room control

Accessory



16.16 Keys

	1	operating mode selection		3	decrease the selected field
	2	increase the selected field	OK	4	ON – OFF \ confirm

16.17 Display

REMOTE	Management by ELFO CONTROL		Ventilation status
ECO	Enabled ECO Setpoint		Active humidification
AUTO	Unit automatically chooses to cool or heat		Unit in HEATING
BAT	Unloaded battery		Unit in COOLING
BLC	Keypad lock		Active compressor

16.18 General description

The room thermostat HID-TI2/TI3 (hereafter HID) is a device for recessed installation for the remote control of the unit to which it is connected. It is therefore not a MODBUS network thermostat.

It possible to set:

- desired humidity / temperature
- the desired type of ventilation
- a series of advanced functions for the unit to which it is connected
- display any error codes that correspond to alarms sent by the adjustment unit
- in the HID-TI control there is also a temperature sensor that can be used as a remote sensor for the unit to which it is connected

16.19 Operating modes

“Normal” operation, HID-TI connected to CLIVET-BUS:

- the HID thermostat shows the operating status of the unit to which it is connected
- periodically measure the temperature/humidity in the room where it is installed
- it is possible to use only the 4 front keys (user programming)

“Nolink” operation, HID-TI not connected to CLIVET-BUS:

- the thermostat is powered by auxiliary power (a battery must be present)
- it is possible to access hidden keys for installer use
- it is a temporary mode that allows “advanced programming” of the unit

16.20 Initial reset

Insert the battery (auxiliary power supply) and then press the power on key [A].

16.34 Advanced programming p. 42

All display segments will come on for about 3 seconds, then the display will show the firmware revision of the device.

If the HID device is not connected to CLIVETBUS within one minute, it will go off.

During this time, you can only use the hidden buttons for use by the installer.

You can also use the HID device without a battery, the initial reset is carried out simply upon connection with the CLIVETBUS.

After the initial reset, upon connection to the CLIVETBUS, the device goes into normal operating mode.

16.21 User programming

User programming makes it possible to:

- choose the operating mode of the unit (heating, cooling, eco, fan)
- set the adjustment set point
- manage the fan speed manually or automatically
- enable/disable the floating shutter of the air supply (swing)
- display ambient temperature
- power on/off the adjustment unit
- activate/de-activate silenced mode

16.22 Start-up/shutdown






To power on/off the adjustment unit, press and hold the [4] key.

Off status is indicated on the display by the message OFF.

16.23 Selection of mode of operation

If you press for about 3 seconds on the key [1] the display will show the symbols that define current operating mode.

If you press the key [1] you can select the desired operating mode in the following cyclical sequence.

Heating	☒	Heating Economic	☒	Cooling	☒	Cooling Economic	☒	Ventilation
		ECO 				 ECO		

When you press the key [4] you confirm the displayed mode; the symbols will flash during setting of the mode, and then normal operation resumes.

During programming of the operating mode, if no key is pressed for about 10 seconds, you will go back to normal operation, without modifying the operating mode.

16.24 Modification of adjustment set point

In normal operation, for operating modes that include it, you can modify the adjustment set point using the keys [2] and [3] respectively to increase/decrease in steps of 0.1°.

16.25 Management of fan speed

16.26 Ventilation mode

VENTILATION MODE, no adjustments are made to the temperature you can change fan speed using keys [2] and [3].

16.27 Modes: heating, economical heating, cooling, and economical cooling

- press briefly on the key [1]: the display will show the message "Fan" and the bar of the fans
- use the keys [2] and [3] select the desired speed
- go back to normal operation by pressing the key OK

During fan speed modification, if no key is pressed for about 10 seconds, normal operation will resume, preserving any modifications that have been made.

When setting fan speed, you will go from AUTOMATIC (where the speed of the fans is controlled automatically based on ambient temperature) to MANUAL operation where the user sets the speed.

To go back to automatic fan operation, repeatedly press the key [2] until the entire bar is flashing.

16.28 Manual status of the fans is indicated by a flashing bar

The setting of fan speeds is not cyclical.

16.29 Silenced mode

To activate/de-activate silenced mode briefly press the key [4].

Silenced mode is indicated on the display by the message SIL.

16.30 Display of ambient temperature

You can display the ambient temperature as measured by the probe on the thermostat or the one on the unit.

From normal operating status:

- press briefly on key [1]: the display will show the message Fan and the bar of the fans
- press key [1] again: the display will show only the message tA

press the key [4] to confirm the selection: the message tA will flash on the display, followed by a return to normal operation in which the message tA will alternate with the ambient temperature for a few seconds.

You can also go back to normal operation by pressing, instead of the key [4] the key [1] or you can wait about 10 seconds without pressing any key.

16.31 Swing mode - control of air supply floating shutter

In normal operating status, you can activate/deactivate the Swing function by simultaneously pressing the keys [1] and [2].

There is no indication on the display for the activation/deactivation of this function.

16.32 Battery check

Each time it is powered on, and whenever it is disconnected from the CLIVETBUS, the device performs a check of the battery charge, which is the source of auxiliary power.

If the battery is nearly dead, the message BAT will appear.

The instrument also works even without an auxiliary power supply. In this case, only the functions related to the front keypad are accessible.

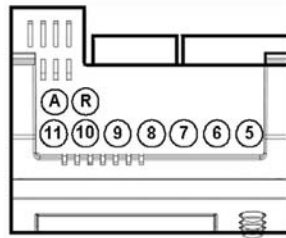
16.33 Signalling of alarms and malfunctions

Any alarms generated by the terminal unit are displayed by the following codes:

RES	active resistance alarm
FES	active electrostatic filter alarm
BT1	air probe fault alarm
BT2	water probe fault alarm
BT3	fresh air probe fault alarm
H20	water temperature alarm not fit
SLF	active level sensor alarm
CO	mode change in progress (for the automatic mode); is not an alarm
EHH	lack of communication/wrong thermostat connection
SYS	fault internal to the control module
ERR	configuration error
EUR	fault humidity probe

The alarm "EHH" is shown about 30 seconds after communication problems between the device and the adjustment unit.

16.34 Advanced programming



Hidden buttons for use by installer: accessible by extracting the thermostat from its housing.

A	thermostat starting (*)	8	it hides the dirty filters
R	thermostat reset (*)	9	self-addressing
5	Not used	10	access to the configuration parameters
6	Not used	11	keypad lock/unlock
7	reset of the fan fonct. hours		

(*) keys accessible only with a tool

16.35 Cooling

The ventilation is activated if:

- $T_{H2O} < P02 \text{ MaxH2oCool (1)}$
- $T_{H2O} < T_{\text{ambiente}}$

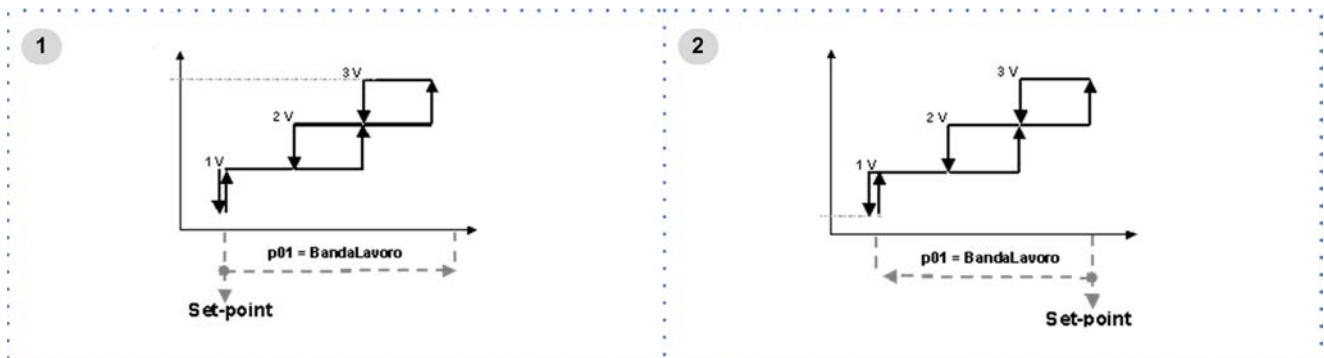
(1) if the temperature is out of these limits when the delay time is finished, the H2O alarm is activated.

16.36 Heating

The ventilation is activated if:

- $T_{H2O} > P03 \text{ MinH2Oheat (1)}$

(1) if the temperature is out of these limits when the delay time is finished, the H2O alarm is activated.



1. Cooling
2. Heating

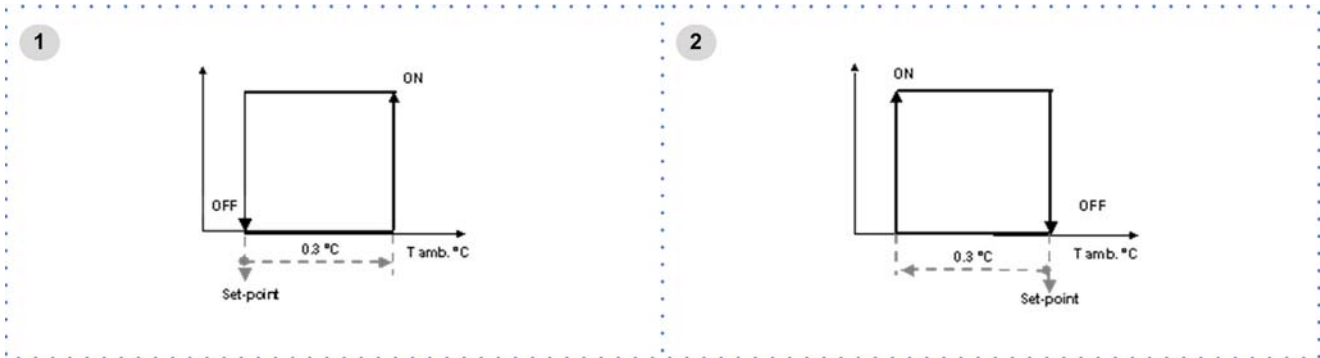
16.37 Ventilation

The fan speed is proportional to the difference respect the set point:

- in summer max. speed with temperature higher than set
- in winter max. speed with temperature lower than set

16.38 Water valve

The system can control 2 ON-OFF valves, one for heat and the other for cold; they are connected to the basic module.
The valve is opened when the thermo-regulator asks for power.



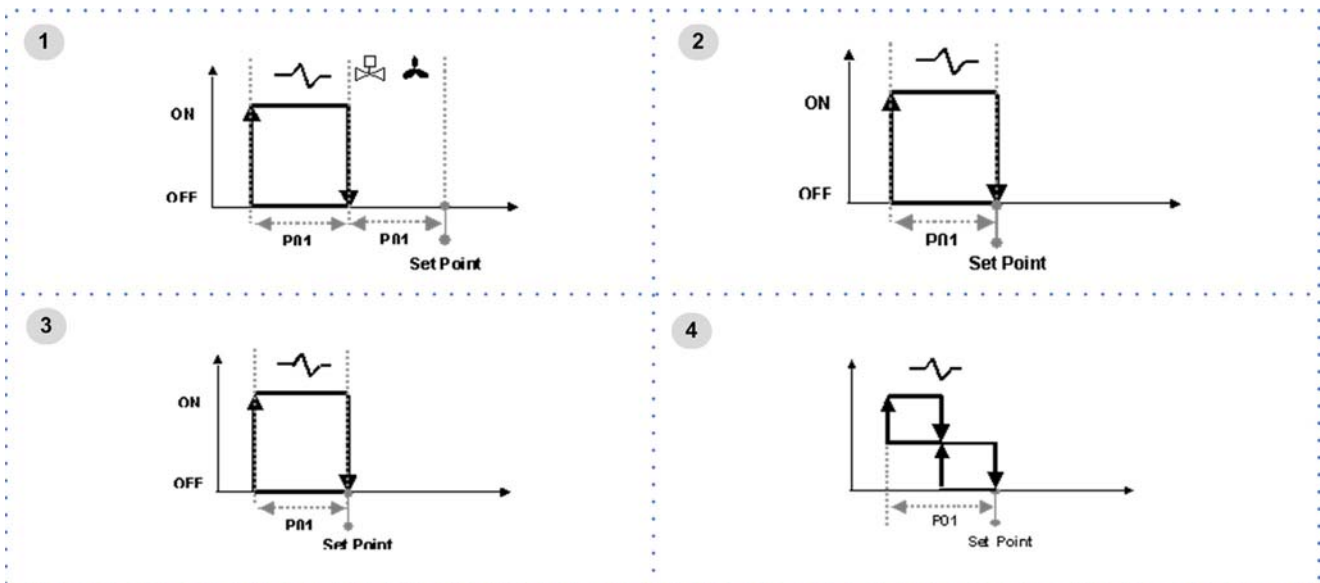
1. Cooling
2. Heating

16.39 Electric heaters

The electric resistance operating mode is defined by the following parameters:

P27 **ModeRes** = 0 integration element (ventilation forced at max.)
1 main element (manual or automatic ventilation)

P53 **OutResType** = 1 Single-phase
2 Two-phase
3 0 – 10 volt



1. Integration
2. Main element (*)
3. Single-phase
4. Two-phase

The water valve is opened when thermo-regulation is demanded:

if the probe detects hot water, the resistors automatically become an integration body.

On the contrary, if after TimeValve is over, water temperature is not suitable, the valve closes, the H2O alarm is not activated and the resistors are activated.

As soon as the probe detects that water temperature > MinH2oHeat, resistors become integration bodies and the valve opens.

In this mode, the water temperature alarm is not managed.

16.40 Outdoor air damper

By using the proper dedicated output, it is possible to activate a damper or a fan to allow new air to enter the room.

16.41 Dehumidification

The dehumidification control is managed by the network, which is an upwards system that uses one or more terminal units to dehumidify. When the DeumiOn network variable is switched on 1, the unit is forced into cooling mode, even when the temperature set is met (100% opened valve and minimum ventilation speed).

This occurs to meet the humidity conditions decided by the network (detecting the relevant humidity by a room thermostat).

The dehumidification process shown by the display is stopped when the following occurs:

- the DeumiOn variable is 0 (humidity conditions are met)
- Temperature is below the LowLimit, value; therefore, the process can start again only if ambient temperature > set-point Temp and if there is still a demand

The dehumidification process can not start if:

- the operation mode is the Heating mode
- the unit is OFF

16.42 Keypad lock

Used to disable functions related to the pressing of user keys.

Take the thermostat out of its housing, and press the key [11]:

- the display will show the message bLC
- put thermostat back in place

The message bLC will flash until the procedure is complete (a few seconds).

From this moment on, pressing any key will not have any effect, and will instead cause the display to momentarily show the message bLC.

To go back to a normal situation, release the keypad lock and repeat the operation.

For further details on advanced programming see instructions provided with the room thermostat.

17 Mini-network

The mini-network can manage up to 9 units from a unique room thermostat, provided that they all have the same control system (CTS).

The unit to which the thermostat is connected is the Master unit and acts as the user's interface.

The slave units repeat the settings of the master unit (mode, status, ventilation, set-point etc.)

TO REALIZE A MININETWORK

- the units must be equipped with the same type of electronics (all rooms or all spaces).
- the units must be equipped with a serial card.
- Decide the master and set P40=1, on the slave units P40 switches to 0 (default).
- Connect the thermostat, if any, to the master.
- Connect the units to each other with the BUS typology and follow the RS 485 indications.
- set P33=1, P34=1, P35=0 (the two last are default values) on all the units.

RS 485 SERIAL LINE

General indications

CLIVET SPA is not responsible for any malfunctioning due to the inobservance of the recommendations of this chapter; moreover, it will not perform any set-ups of the plant (or the warranty conditions will not be valid any longer) until all the above-mentioned conditions are activated.

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SERIAL CONVERTER

The terminal units must be networked by a serial converter.

it is necessary to address the RS-485 MODULE by S3, S4, S5 ; allowed and valid addresses from 1 to 127

S5 - it sets the address hundreds :

ON = 100, OFF = 0

S3 - it sets the address dozens

S4 - it sets the address units

S1 - 485 terminator : ON = termination YES

S2 - line polarizer

Inside the 485 network must be polarized only one board, usually is polarized the master, i.e. the PC;

in this case S2 = OFF = polarization NO

If more cards are polarized, faults occur

J1 - RS 485 serial

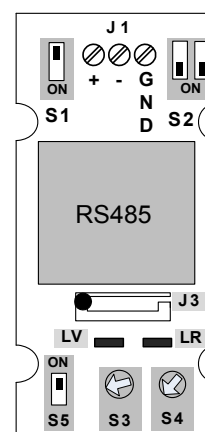
J3 - TTL serial

LV = green led : ok

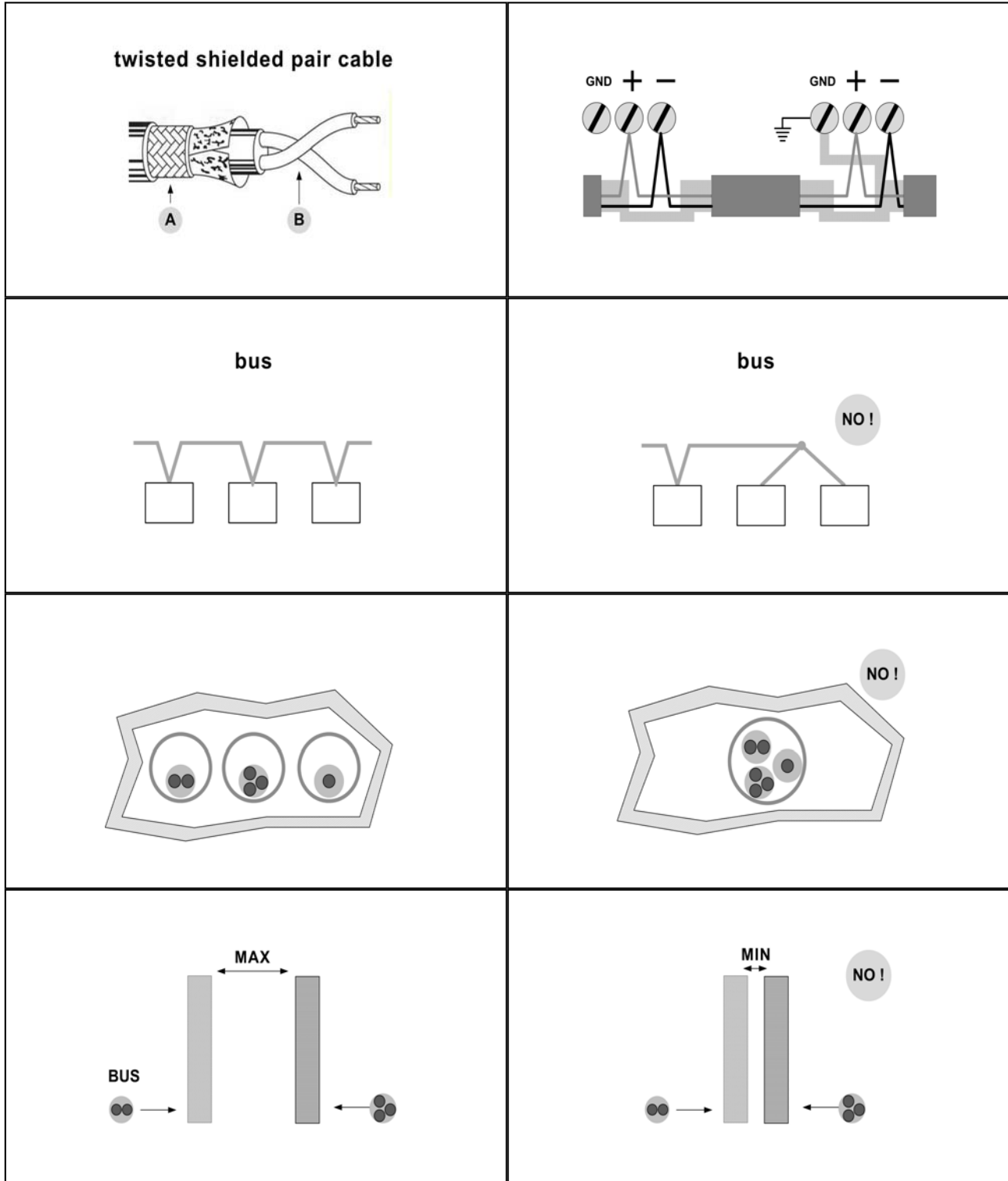
LR = red led quick flashing:

wrong address

faulty module



BUS RS485



SHIELDED CABLE

- 50-metre spool (optional CBSX)
- Pair of twisted and shielded conductors
- Conductor section 0,22 mm²...0.35mm²
- Nominal capacity between conductors < 50 pf/m
- Typical impedance 120 Ω
- Use a suitable cable to RS485 network

SERIAL LINE

- Maximum number of components: 40
- Maximum length of every single serial line 1000 m
- Difference in potential between the "earth" of the two RS485 devices: lower than 7 v
- Provide guards to protect against electrostatic discharges of atmospheric origin
- Complete last network component.

INSTALLATION OF THE SERIAL LINE

- Performed by trained and qualified personnel in data communication networks
- Performed up to standard
- Separated from other cables, especially from power cables or supplied with different voltages
- Far from cables or devices that can affect electromagnetically.

Serial terminations

The termination is necessary to prevent or attenuate the interferences on the signal.

Perform it by inserting a 120 ohm resistor on the end line, connected parallelly, or by S1 on the serial card on the unit at the end of the line.

Thermostat for terminal units

The thermostats of the terminal units type are not a part of the network. Therefore, they must be connected directly to the terminal unit itself, follow the instructions in the electrical diagram provided.

Until the serial line is active, the units with no thermostat will operate by reading the temperature via the intake probe. However, it will not be possible to take any actions or make any modifications.

CONFIGURATION AND OPERATING

The mini-network is made up of a Master unit (P40=1) typically connected to a thermostat and 1 or more slave units (P40=0).

The slave units operate, as when they are under supervision; therefore, they follow the flag register logic. Also, the network disconnection management (master does not speak) is the same.

All slave units must have a P33 Index parameter different than zero (the address does not need to be different). The Master unit has no constraint on the Index parameter value.

All units must have congruent communication parameters (Baudrate and parity).

CONTROL

The controls from the Master units by the thermostat are sent to the other slave units of the network.

If the master unit is configured to use an inlet probe, even the slave units will use their probe; if the master unit is configured to use the value detected by the thermostat, the value will be passed along the network to the slave units. Each slave unit will operate always with its own water probe.

If the keyboard is present on the slave units, it will have the function of displaying and no control will be active.

if the master unit is equipped with a thermostat and a keyboard, the keyboard will be used only as a displayer.

CHANGE TO AUTOMATIC MODE

The change of mode is decided by the Master unit, both in 2 or 4 tubes using the stand-alone criteria.

The slave units can be kept configured for the change in non automatic mode; the master unit will decide the mode and will transmit it to the slave units as a network value priority on the local one.

The slave units that wait to know the new mode from the master unit remain in the previous mode, particularly in the two following cases:

- master unit with under process change-over.
- master unit in water alarm.

Alarms

The alarm displayed on the thermostat is relevant only to the master unit; if the unit is stopped for an alarm (for example out of range), the slave unit operation is not compromised.

The slave units will display their alarm if they are equipped with a keyboard.

Stata and parameters

The status and the parameters displayed by the thermostat are relevant to the Master unit.

The slave units will display their status and parameters only if they are equipped with a keyboard.

DIGITAL INPUTS

The digital inputs can be configured only for the following :

- ON-OFF the event will concern the relevant unit or all the network in the event of the master
- ALARM only the unit relevant to the alarm will be concerned

NETWORK INTERRUPTION, MASTER FAILURE

When the network is not present, the units operate in stand-alone mode with the settings on the local setting register; if the auto mode has been set locally, when the units are in stand-alone , they will automatically decide the mode provided and always that they are equipped with an air probe.

OPERATIONS DETAILS AS MASTER UNIT DETAILS

The network master unit broadcasts all controls. The network master unit does not ask information to the slave units (no polling).

The network master unit sends the start up and then, once a minute, sends the setting of the flag register with the following information:

parametro		note
EnSetpointRete		
EnModoRete		
EnSetUrRete	1	only for Space
EnStatoRete		
EnFanRete		
EnSondaUmiditaRete	1	only for Space
EnSondaAriaRete		If the master uses as control probe the probe on board
	1	if the master unit uses the thermostat probe (therefore, the master acts as a repeater of this value)
EnSondaAcquaRete		
EnSondaExtRete		only Space

The network master unit broadcasts the following information relevant to the supervisor's area to all slave units every second:

Bitmap Remote Mode
 UrRemota (only Space, repetition of the thermostat UR probe)
 SetHeatRemoto
 SetCoolRemoto
 Remote air temperature (if EnSondaAriaRete=1)
 FanRete

Ind. Modbus	Par	Description	range	UM	def	notes
1032		Index: Switch address	0...127	Num	0	
1033		BaudRate 0=4800 1:9600 2:19200	0 ... 1	flag	1	
1034		Parity (0=no, 1=ODD, 2=Even)	0 ...1	flag	0	
1039		Master: Enabling to mininetwork master unit (only for Room and Space)	0...1	num	0	0: Slave 1: Mininetwork Master

Baudrate	Parity	Databit	Stopbit	Read function	Write function
4800 - 9600	none - even - odd	8	1	03, 04	06, 16

WE DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE MACHINEDICHIARIAMO SOTTO LA NOSTRA SOLA RESPONSABILITÀ CHE LA MACCHINA
WIR ERKLÄREN EIGENVERANTWORTLICH, DASS DIE MASCHINE
NOUS DÉCLARONS SOUS NOTRE SEULE RESPONSABILITÉ QUE LA MACHINE
EL FABRICANTE DECLARA BAJO SU EXCLUSIVA RESPONSABILIDAD QUE LA MÁQUINACATEGORY **HYDRONIC TERMINAL UNITS - cool & heat**CATEGORIA **TERMINALI AD ACQUA - freddo & caldo**KATEGORIE **WASSERGEKÜHLTE INNENEINHEITEN - Kühlen & Heizen**CATEGORIE **UNITÉS TERMINALES À EAU - froid & chaud**CATEGORIA **TERMINALES DE AGUA - frío & calor**

TYPE / TIPO / TYP / TYPE / TIPO

ELFODUCT MP 15 - 71

- COMPLIES WITH THE FOLLOWING EC DIRECTIVES, INCLUDING THE MOST RECENT AMENDMENTS, AND THE RELEVANT NATIONAL HARMONISATION LEGISLATION CURRENTLY IN FORCE:
 - RISULTA IN CONFORMITÀ CON QUANTO PREVISTO DALLE SEGUENTI DIRETTIVE CE, COMPRESSE LE ULTIME MODIFICHE, E CON LA RELATIVA LEGISLAZIONE NAZIONALE DI RECEPIMENTO:
 - DEN IN DEN FOLGENDEN EG-RICHTLINIEN VORGESEHENEN VORSCHRIFTEN, EINSCHLIEßLICH DER LETZTEN ÄNDERUNGEN, SOWIE DEN ANGEWANDTEN LANDESGESETZEN ENTSPRICHT:
 - EST CONFORME AUX DIRECTIVES CE SUIVANTES, Y COMPRIS LES DERNIÈRES MODIFICATIONS, ET À LA LÉGISLATION NATIONALE D'ACCUEIL CORRESPONDANTE:
 - ES CONFORME A LAS SIGUIENTES DIRECTIVAS CE, INCLUIDAS LAS ÚLTIMAS MODIFICACIONES, Y A LA RELATIVA LEGISLACIÓN NACIONAL DE RECEPCIÓN:
- 2006/42/EC** **machinery directive**
direttiva macchine
Maschinenrichtlinie
directive sur les machines
directiva máquinas
- 2014/30/UE** **electromagnetic compatibility**
compatibilità elettromagnetica
Elektromagnetische Verträglichkeit
compatibilité électromagnétique
compatibilidad electromagnética
- 2014/68/UE** **see Art.4.3 or Art.1.2.f.i**
come da Art.4.3 o Art.1.2.f.i
gemäß Art. 4.3 oder Art. 1.2.f.i
comme indique dans l'Art. 4.3 ou l'Art. 1.2.f.i
según Art. 4.3 o Art. 1.2.f.i

-Unit manufactured and tested according to the followings

Standards:

-Unità costruita e collaudata in conformità alle seguenti Normative:

-Unité construite et testée en conformité avec les Réglementations suivantes

-Unidad construida y probada de acuerdo con las siguientes Normativas

-Gebautes und geprüftes Gerät nach folgenden Normen

- EN/55014/1 (+A1) (+A2) – EN/55014/2 (+A1) (+A2) –

- EN/61000/3/2 (+A1) (+A2) – EN/61000/3/3 – EN/60555/2 –

- EN/60204/1 – EN/62233

- EN/60335/1 (+A1) (+A11) (+A12) (+A13) (+A14) (+A15) –

- EN/60335/2/40 (+A11) (+A12) (+A1) (+A2) (+A13)

e loro emendamenti.

- UNI/EN/ISO/12100-1:2005 (ex EN/292/1) – UNI/EN/ISO/12100-

2:2005 (ex EN/292/2) – UNI/EN/ISO/13857:2008 (ex EN/294)

-Responsible to constitute the technical file is the company n° 00708410253 and registered at the Chamber of Commerce of Belluno Italy

-Responsabile a costituire il fascicolo tecnico è la società n° 00708410253 registrata presso la Camera di Commercio di Belluno Italia

-Verantwortliche für die technischen Unterlagen zusammenstellen n° 00708410253 ist das Unternehmen bei der Handelskammer von Belluno Italien registriert

-Responsable pour compiler le dossier technique est la société n° 00708410253 enregistrée à la Chambre de Commerce de Belluno en Italie

-Encargado de elaborar el expediente técnico es la empresa n° 00708410253 registrada en la Cámara de Comercio de Belluno Italia

NAME / NOME / VORNAME / PRÉNOM / NOMBRE

BRUNO

SURNAME / COGNOME / ZUNAME / NOM / APELLIDOS

BELLO

FELTRE, 19/07/2016

COMPANY POSITION / POSIZIONE / BETRIEBSPOSITION / FONCTION / CARGO

PRESIDENTE C.C.A.

REVERSING THE HYDRAULIC CONNECTIONS

Compulsory for vertical units only:

Place the electric cables on the opposite side to that of the definitive hydraulic connections.

If the terminal board is mounted (or electric board or electronic cards), remove it and mount on the opposite side .

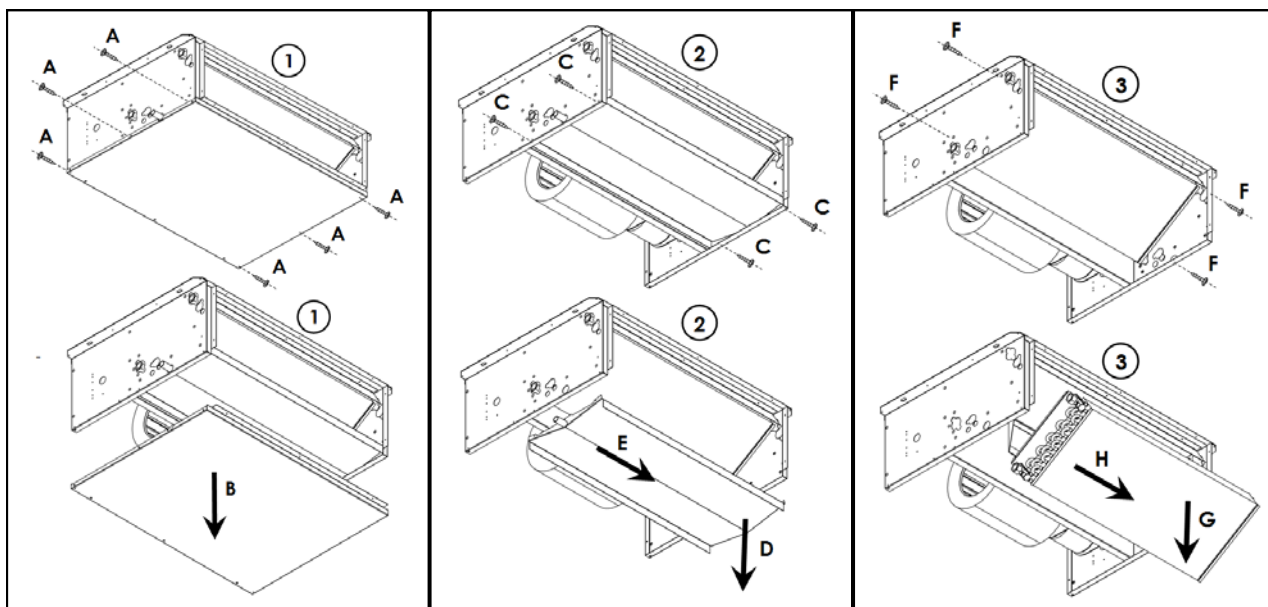
Reinstall the component retracing the procedure used for the disassembly.

Reinstall the component on the opposite side, accordingly (in mirrored and symmetrical way) to the original one.

- 1 Unscrew the 6 \varnothing 3.9x9.5 screws "A" (3 left side + 3 right side).
Remove the panel, moving it in the direction of the arrow "B".

- 2 Unscrew the 4 \varnothing 3.9x9.5 screws "C" (2 left side + 2 right side).
Slightly incline the main drain pan towards the arrow "D" and move it away from the left-hand shoulder in the direction of the arrow "E".

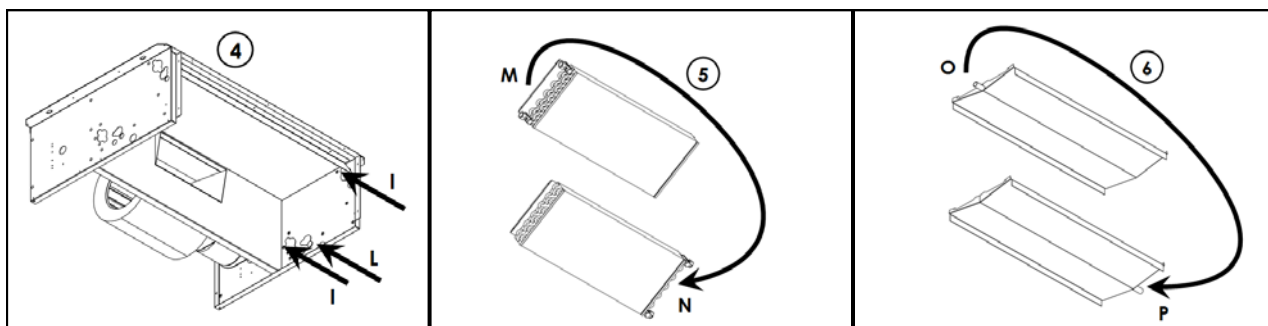
- 3 Unscrew the 4 \varnothing 3.9x9.5 screws "F" supporting the coil from the shoulders (2 left side + 2 right side).
Slightly incline the coil towards the arrow "G" and move it away from the left-hand shoulder in the direction of the arrow "H".



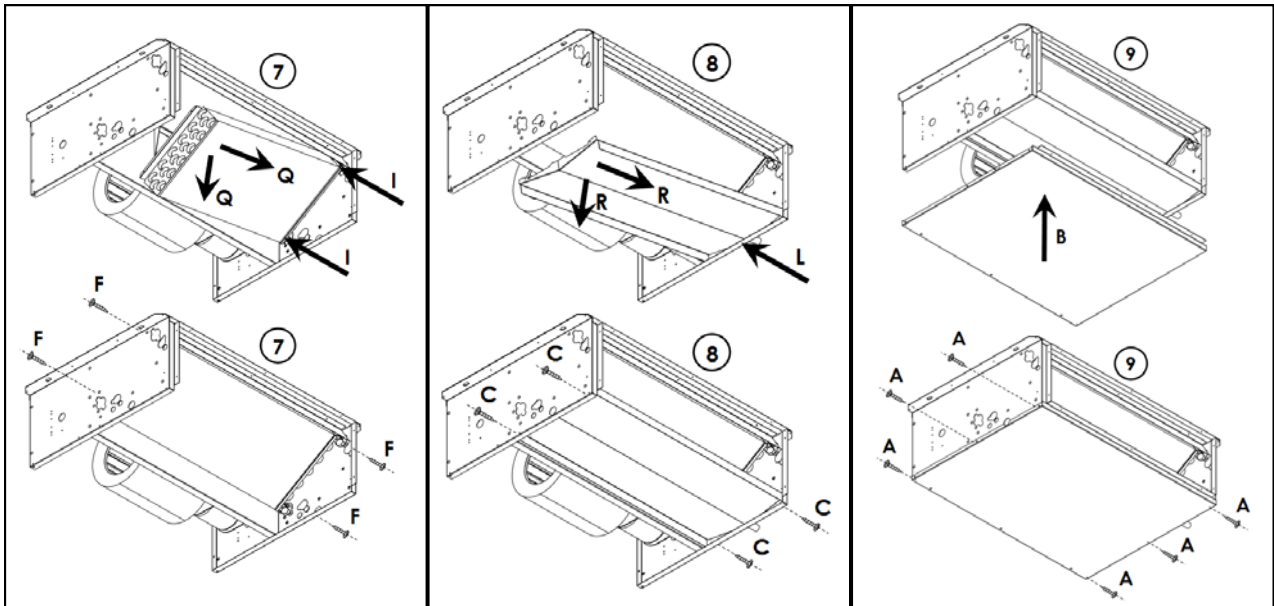
- 4 Open the 2 pre-punched holes arranged on the opposite shoulder and corresponding to the coil hydraulic connections "I".
Open the pre-punched hole arranged on the opposite shoulder and corresponding to the drain pipe "L".

- 5 Reverse the direction of the coil from pos. "M" to pos. "N" (rotation 180°).

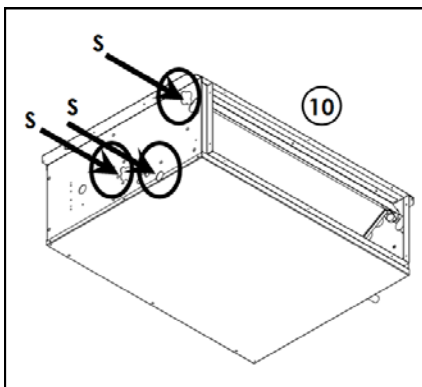
- 6 Reverse the direction of the drain pan from pos. "O" to pos. "P" (rotation 180°).



- 7 Insert the coil, inclined as shown in "Q", and fit the hydraulic connections into the new holes "I" (created in the point no.4).
Tighten the 4 Ø 3.9x9.5 screws "F" in the aligned shoulder-coil bracket holes (2 left side + 2 right side).
Note: opposite operation of point no.3; re-use the same screws.
- 8 Insert the drain pan, inclined as shown in "R", and fit the drain pipe into the new hole "L" (created in the point no.4).
Tighten the 4 Ø 3.9x9.5 screws "C" in the aligned shoulder-coil bracket holes (2 left side + 2 right side).
Note: opposite operation of point no.2; re-use the same screws.
- 9 Put back the panel "B".
Tighten the 6 Ø 3.9x9.5 screws "A" (3 left side + 3 right side).
Note: opposite operation of point no.1; re-use the same screws.



- 10 Close the open holes in the left-hand shoulder "S" with closed-cell insulating tape.



Reversing the main coil from left to right

To reverse the coil, follow the above instructions but starting from the left-hand shoulder and not the right-hand one.

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