KITA

AIR - WATER version

Installation and maintenance manual

TEMPLARI

THE HEAT PUMP

Sommario

1 Introduction

This guide wants to give every information necessary to the installation and the correct funtioning of the heat pump **KITA Templari®**, from its put in action during its whole life cycle . The document is divided in chapters, in each of them there are general information and mode of the operations to be performed.

1.1 General warnings

- The choice and the use of the unit to serve the conditioning system have to be made by a competent staff according to the current regulations in place so to completely satisfy the requests of the system.
- The installation, the put in action and the maintenance have to be made by a competent staff able to evaluate the possible presence of risk factors or malfunction of the machine.
- The unit is supplied complete with all the options and the operations directly by the constructor, every manumission of the fridge part or the software aren't allowed. Any manumissions will make fall the operations of the machine and constructor's responsibility.
- Periodic inspections and a proper manintenance of the heat pump **KITA Templari®**, can avoid damages to the unit and possible costs for repairs.
- **The warranty expires in case of installation not complying the specifications.**
- Keep this guide with the necessary diagrams in places easily accessible.
- In case of malfunction verify the error code on the control panel, if necessary contact the installer; if necessary require original spare parts.

- On the label of the heat pump **KITA Templari®** you can find all the information in relation to current regulations of labeling, in particular you can find:
  - Power to the machine in tension e frequency;
  - Thermal power in heating and cooling schemes;
  - Maximum power absorption;
  - Sound power level;
  - Refrigerant used.

1.2 Recommended equipment

- Set of star and shear e screwdrivers;
- Nippers;
- Scissors;
- Set of wrenches or pipe wrench;
- Ladder;
- Hydraulic material for thread gasket;
- Electric equipment for connections;
- Protective gloves;
- Tester and current clamp;

1.3 Series description

The series of the heat pumps **KITA Templari®** presents monoblock water heat engines for the production of heating and cooling thermal energy and the production of domestic hot water with the best technologies in the market.
The heat pump **KITA Templari®** is a series of machines full-inverter that is with high performance components and widely dimensioned to privilege the efficiency of the machine. One more particularity is the implementation of EVI technology (Enhanced Vapour Injection) in models KITA L, L42 and L66, that broaden the field of work and the power output to the heat pump. The use of the gas R410A permits to reach high performances and a low environmental impact. The presence of two electronic valves, reversing valve, pressure transducers and temperature sensors ensure, through the software integrated in the electronic board as microprocessor, the full functionality and reliability of the machine in the different operationg regimes. The control of the machine is done through a remote control that permits to monitor the operation of the machine and change the temperature set of the water produced and the mode of operation (summer/winter).

2 Read carefully before use

2.1 Important information

⚠ WARNINGS!

The practice and the maintenance of the heat pump **KITA Templari®**, are subject to legal systems of the countries where it is used. According to the quantity of cooling fluid it is necessary to check e annotate the hermetic seal of the heat pump at regular intervals resorting to a qualified staff.

- During the transport it is possible to tilt the heat pump no more than 45° (in each direction).
- The safety for the transport has to be removed before of the put in action.

- The aspiration and unloading zone mustn't be reduced or covered.
- Respect specific building regulations of each countries.
- For the installation near the wall you have to consider degli influences due to building physiscs factors. In the area of unload of the fan there must be no windows or doors.
- With the installation near the wall the air flow in the aspiration and unloading zone can give a greater deposit of impurity. The colder outside air has to go out so to not increase the heat loss of bordering heated rooms.
- the dirt trap, not included but supplied on demand of the customer, must be assembly on the heating return upstream of the heat pump.
- The istallation in niches or inner courtyards isn't allowed, because the cooled air accumulates on the ground and in case of prolonged operation it would be aspirated back by the heat pump.
- The freezing limit can change following the climatic region. Respect the regulations in force for the countries concerned.
- Respect the right-handed rotation field: in case of incorrect wiring the start of the heat pump is hindered. The programmer of the heat pump shows the relevant warning indication (to correct the wiring).
- The operation of the heat pump with too low temperature system can cause its total block. After a prolonged power cut you have to use the method of put in action described below.
- Clean at regular intervals the dirt trap.
- Before opening the device cut off power to all the electrical circuits.
- Works on the heat pump can be done only by authorized and competent people of the customer care.

2.2 Proper use

The heat pump **KITA Templari®** is homologate just for the use providede by the manufacturer. A different use moving away from the provided one is considered not-compliant. The proper use also includes the respect of the information included in the relevant informative. It's forbidden to make changes or transformations to the device.

2.3 Rules and law provided

This heat pump is destined, according to the article 1, chapter 2 k) of Directive CE 2006/42/CE (Machines Directive), to the use in domestic and for this reason it is subject to the requirements of the Directive 2014/35/UE (Low power Directive). In this way it is arranged to be used by inexperienced people to heat shops, offices and similar work environments, farms, hotels, small hotels and similar or other residential buildings.

In the planning and realization of the heat pump all the correspondant CE directives and DIN and VDE regulations are be respected (see Dichiarazione di conformità CE).

The electrical connection of the heat pump **KITA Templari®** has to be made following the current rules VDE, EN e CEI. Furthermore the connection conditions of network operators of supply have to be respected.

Concerning the heating system connection you have to follow current provisions.

People, in particular kids, who on the base of physical, sensory or mental abilities, or for inexperience or incompetence aren't able to use the device in safety, must't use the device without a responsible person's supervision or guide.

Make sure kids don't play with the device.

2.4 Energy saving

Using the heat pump **KITA Templari®** you contribute to the respect of the environment. Condition for a energi saving operation mode is the correct disposition of heat sources and of the system for the utilization of thermal energy.

Very important for the effciency of a heat pump is to keep the difference of temperature between the heating water and the heat source as low as possible. For this reason we strongly recommend an accurate sizing of the heat source and of the heating system. A difference of temperature higher than a degree Kelvin (a °C) causes an increase of energy consumption of 2,5 % about. It is necessary to be careful, during the heating system sizing, how special users are considered, as for example hot water production, and and how they are sized for low temperatures. An underfloor heating (surface heating) is the ideal to use a heat pump thanks to flow temperatures (from 30 °C to 40 °C).

During the operation it is important that impurities aren't accumulated in the heat exchangers, because the make increase the difference of temperature, worsening then the coefficient of performance.

3 Intended use of the heat pump

3.1 Fields of work and safety devices

The heat pump **KITA Templari®** is enable to work at outdoor temperature between -22°C (for the version S and M) and -32°C (for the version L) and +46°C.
The machine allows following operations fields relating to the temperatures of the water produced:

- Heating: mimimum temperature 10°C, maximum temperature 55°C
- Production of domestic hot water: minimum temperature 35°C, maximum temperature 55°C
- Cooling: minimum temperature 7°C, maximum temperature 40°C.

The **KITA Templari®** heat pump is equipped with a safety pressure switch, which interrupts the operation of the machine when a pressure of 4.05 MPa (40.5 bar) is reached.
The product is equipped with a volume flow sensor (flow meter). The flowmeter ensures that the machine stops when the water flow rate falls below the minimum threshold of 35-40% of the rated flow.
The following table shows the minimum flow and the resulting error threshold for each heat pump model:

Model	Flow meter	Min. required flow rate	
		[l/min]	[l/h]
HR Mono/3Phase	DN20	25	1500

⚠ WARNINGS!

Before of performing maintenance works on the machine make sure to unplug the machine from the power supply.

- During the summer operation an antifreezing protection prevents the freezing of the water in the system.
- Heat pump **KITA Templari®** is provided of a sonde that controls the compressor discharge temperature. The computer of the machine ensures that the discharge temperature doesn't exceed the maximum allowed value.

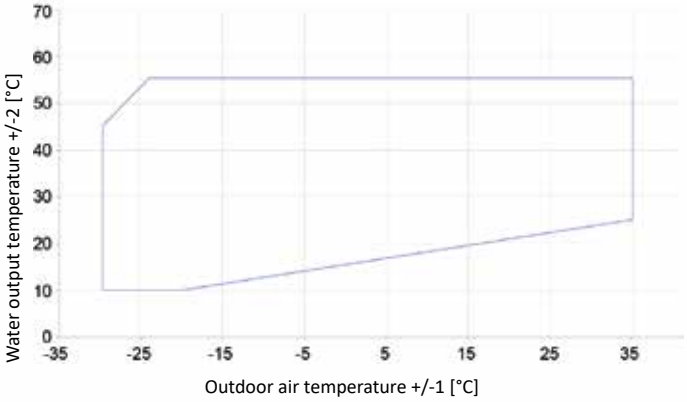
i NOTE!

The device isn't suitable to be used with a frequency converter.

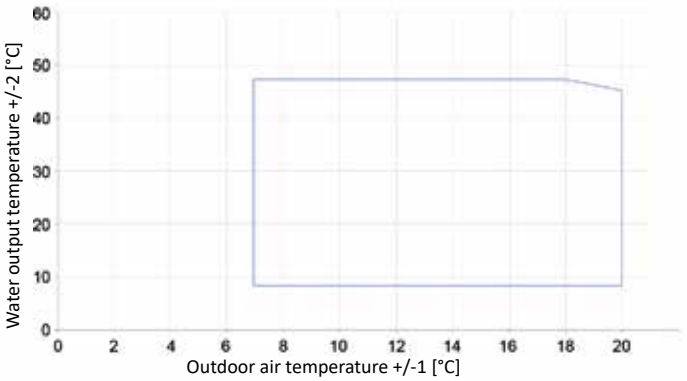
If the machine is powered off (unplugged from the network) for long periods, don't stop oil heating procedure starting when the machine is powered again. This procedure serves to prevent compressor breakage.

3.2 Allowed operating zone

Heat pump



Chiller



3.3 System structure with heat pump

The system with heat pump includes following components:

- Heat pump **KITA Templari®**;
- Control command of heat pump;
- Optional hydraulic components, that can be required to the manufacturer: a heating resistor for the condensate drain, una a three-way valve for the combined system and domestic hot water management, mesh filter, switching relé operating with boiler integration.

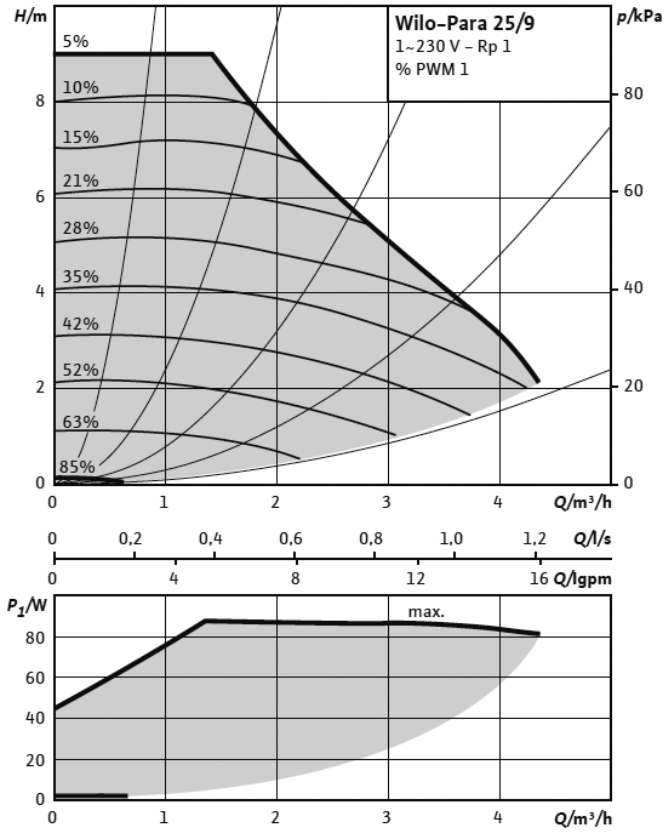
The control of machine functions is totally done by command.

3.4 Components

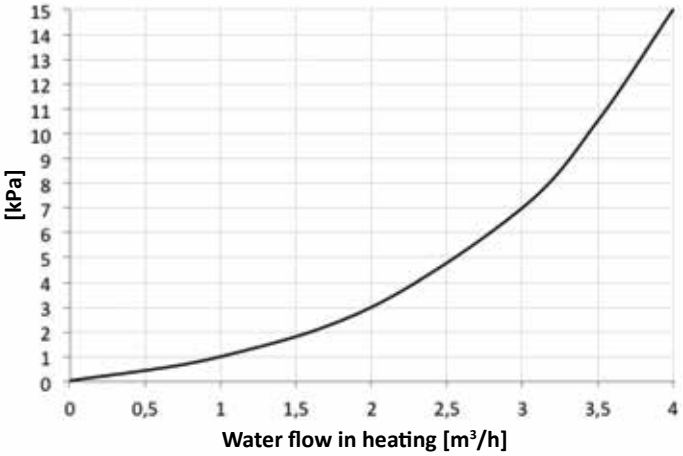
KITA HR 10 - HR 12, HR 14 e HR 14 Cold: circulator Wilo Para 25/9 iPWM

Model	Wilo Para 25/9 iPWM
Voltage - supply frequency	1-230-V 50/60Hz
Energy efficiency index (EEI)	≤0,21
Maximum power	87 W
Maximum current absorption	0,7 A
Maximum head	9,0 m
Minimum pressure input	0,5 bar
Producible water temperature	From -10°C to 95°C

Characteristic curves of the Circulator



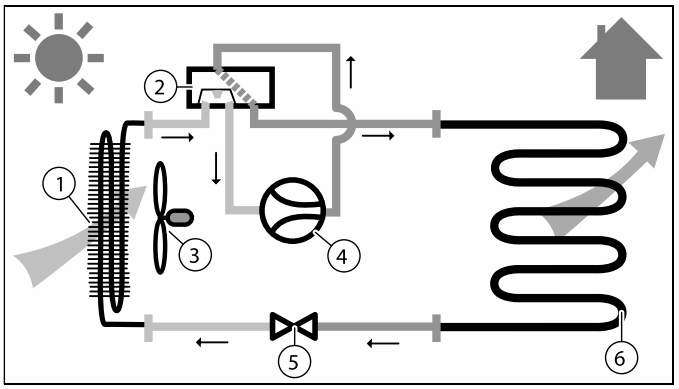
Pressure drop in the plate heat exchanger



3.5 Mode of operation

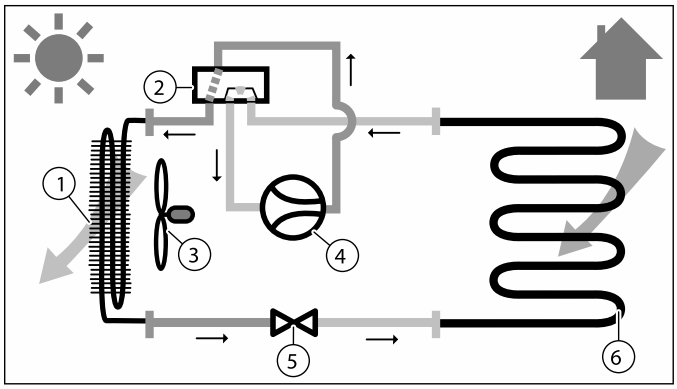
The heat pump can work in two ways, achievable through the switching of the 4-way valve: as shown below, these modes are heating and cooling/defrosting.
It's also posssible to enter a special management module DHW (domestic hot water) composed by relè, temperature sensors and 3-way valves. Thanks to that the pump can manage the DHW both in summer and in winter as a priority.

Heating mode



1	Evaporator	5	Electronic expansion valve
2	4-way valve	6	Plate heat exchanger
3	Fan		
4	Compressor		

Cooling and defrosting mode



1	Evaporator	5	Electronic expansion valve
2	4-way valve	6	Plate heat exchanger
3	Fan		
4	Compressor		

4 Equipment of supply

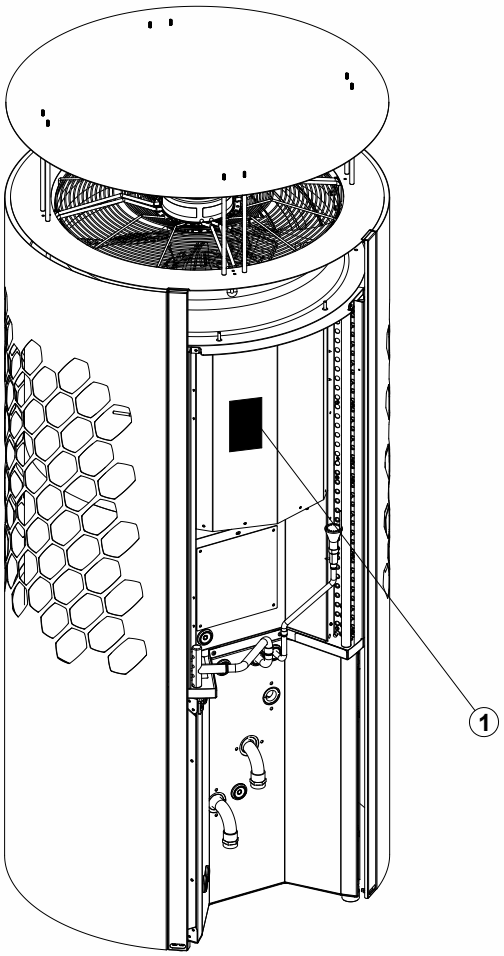
4.1 Main unit

The heat pump **KITA Templari®** is supplied in two units and it is composed by the components showed in figure 1.

4.2 Model name and registration number

Model name and registration number are on the plater (1) figure 1.

figure 1



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Wärmepumpe / Heat pump/Chiller / Pompa di calore

Model / Model / Modello	**KITA HR 14**
Baujahr / time of production / Anno di fabbricazione	**2020**
Wärmeleistung / Heating Capacity / Potenza nominale a pieno regime in riscaldamento	**14,30 kW**
Kühlleistung / Cooling Capacity / Potenza nominale a pieno regime in raffreddamento	**16,23 kW**
Anschluss-Spannung / Supply / Alimentazione	**400V-3ph / 50Hz**
Maximaler Laststrom / Maximum Input Current / Massima corrente assorbita	**10 A cosØ 0,9**
Gewicht / Weight / Peso netto	**220 kg**
DGRL Kategorie / PED Category / Categoria PED	**I**
R410a Kältemittelmenge / Refrigerant Charge R410A / Refrigerante R410a	**6,5 kg**
CO2-Äquivalent / CO2 equivalents / CO2 equivalente	**13.572 Kg**
Maximal zulässigen Druck / Max pressure permissible / Pressione massima ammissibile	**Ps: 39 barg**
Kompressortyp / Compressor type / Tipo compressore	**Inj**

Hinweis: die Wärmeleistung wurde in Standardkonditionen geprüft, mit trockene/nasse Testspitze 7 (6)°C, Wassertemperatur in/out 30/35°C. Die Kühlleistung wurde in Standardkonditionen geprüft, mit trockene Testspitze 35°C, Wassertemperatur in/out 18/23°C. Leistungswerte nach den Norm EN14511.

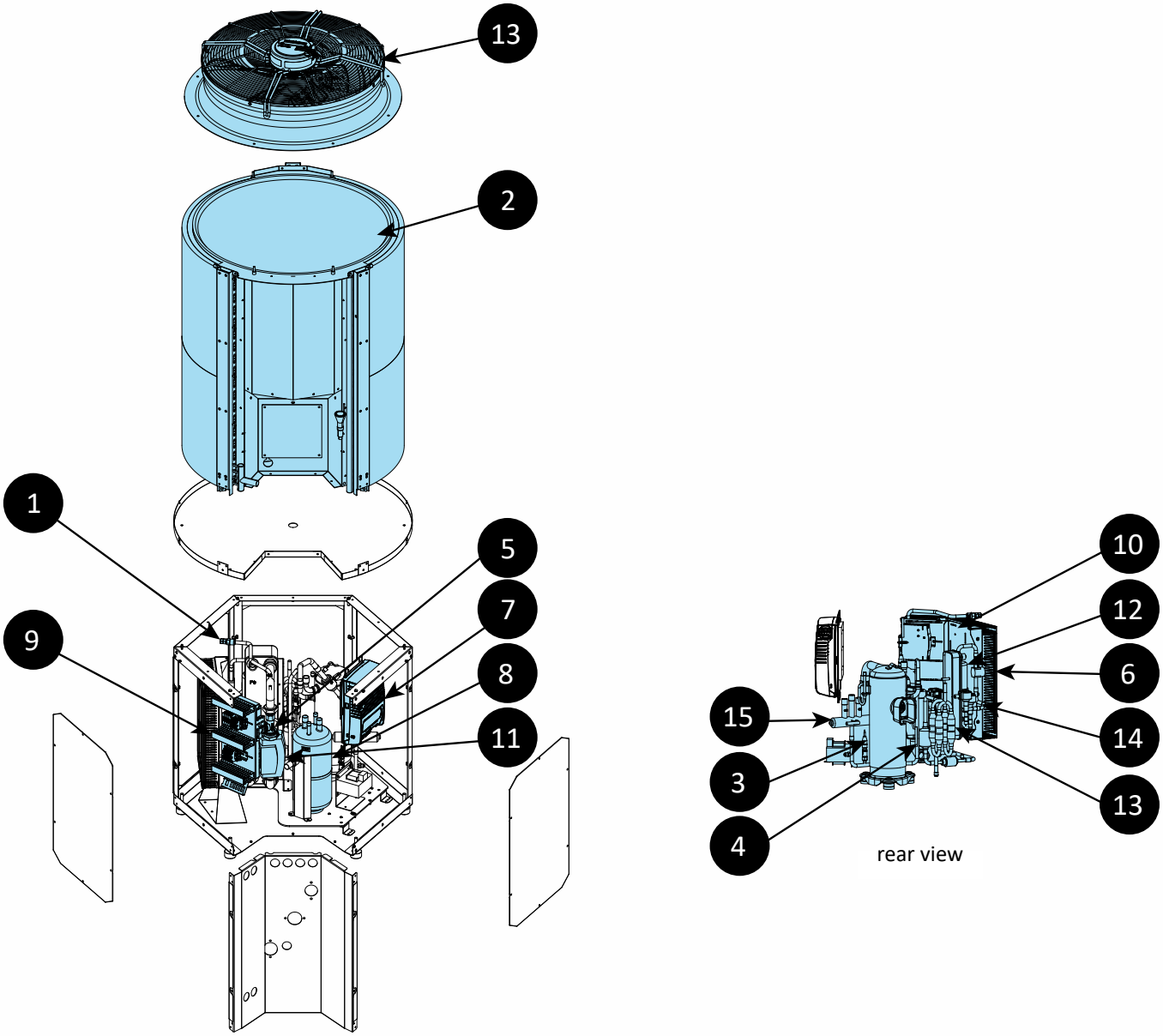
Nota: Heating capacity tested in standard condition of temperature: external 7/6°C dry/wet bulb and 30/35°C water inlet/outlet temperature Cooling capacity tested in standard condition of temperature: external 35°C dry bulb and 18/23°C inlet/outlet water temperature Tests in accompliace with EN14511.

Nota: La capacità di riscaldamento è stata testata in un ambiente standard con temperatura di test di bulbo secco/bagnato 7 (6)°C temperatura dell'acqua in/out 30/35°C. La capacità di raffrescamento è stata testata in un ambiente standard con temperatura di test di bulbo secco 35°C temperatura dell'acqua in/out 18/23°C. Valori di potenza resa in accordo con norma EN14511.

S.N. K001672 CE

figure 2

4.3 Components scheme of external device of the heat pump KITA HR Templari®



1	RELEASE VALVES	9	ELECTRIC BOARD
2	EVAPORATOR	10	PLATE HEAT EXCHANGER
3	COMPRESSOR	11	CIRCULATION PUMP
4	FILTER	12	ECONOMIZER
5	FLOWMETER	13	CHECK VALVES
6	LIQUID INDICATOR	14	ELECTRONIC EXPANSION VALVE
7	INVERTER	15	4-WAY VALVE
8	LIQUID RECEIVER	16	FAN

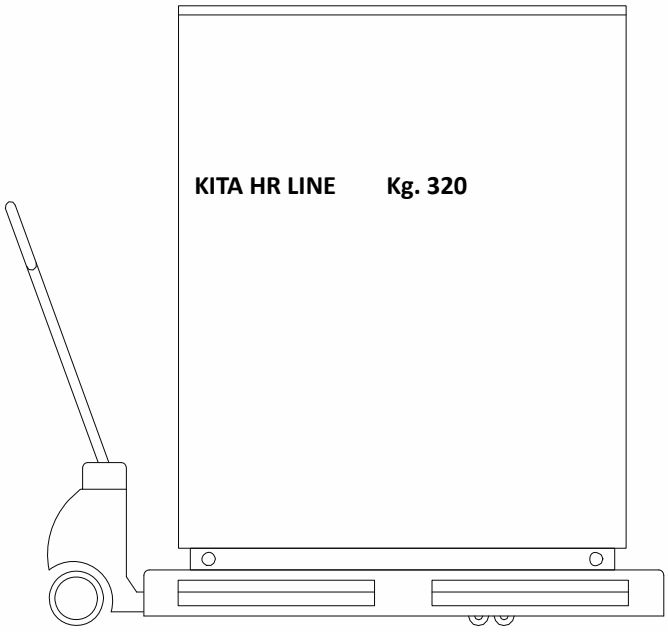
The image is intended only to indicate the main internal components. The actual product may looks different.

5 Trasport

⚠ WARNINGS!

Regardless of the type of transport, must never be inclined more than 45°. Contrary you can have anomalies in the refrigerant circuit in the next operation. In severe cases this may have as a consequence a failure inside.

The transport to the final place of installation should be done on a pallelt. The heat pump **KITA Templari®** can be transported using a forklift.



- Protect the sidewalls of the product coming into contact with the forklift to prevent scratches and damages.
- Lift the product only from the back and from the side of the fittings.
- The lifting of excessive weights can cause spinal injuries, for example.
- Consider the weight of the product shown in the technical data.
- In the transport of heavy loads, comply with the instructions and the provisions in force.

6 Assembly and installation

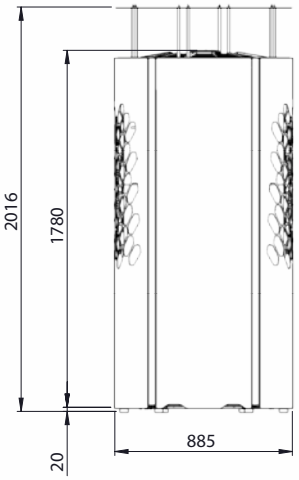
6.1 Optional components on demand

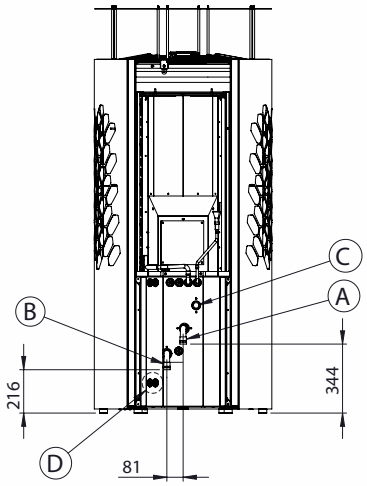
- Circulator for hydraulic system;
- Antivibration for ground mounting support;
- Y filter;
- Antivibration for piping.

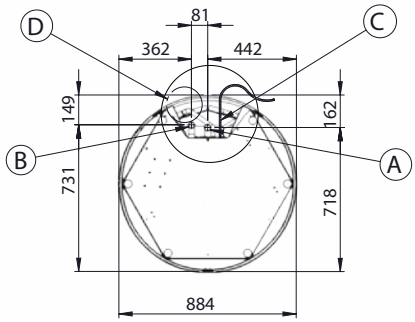
6.2 Measures of the device

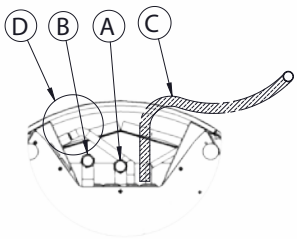
KITA HR LINE

WITH BRACKETS



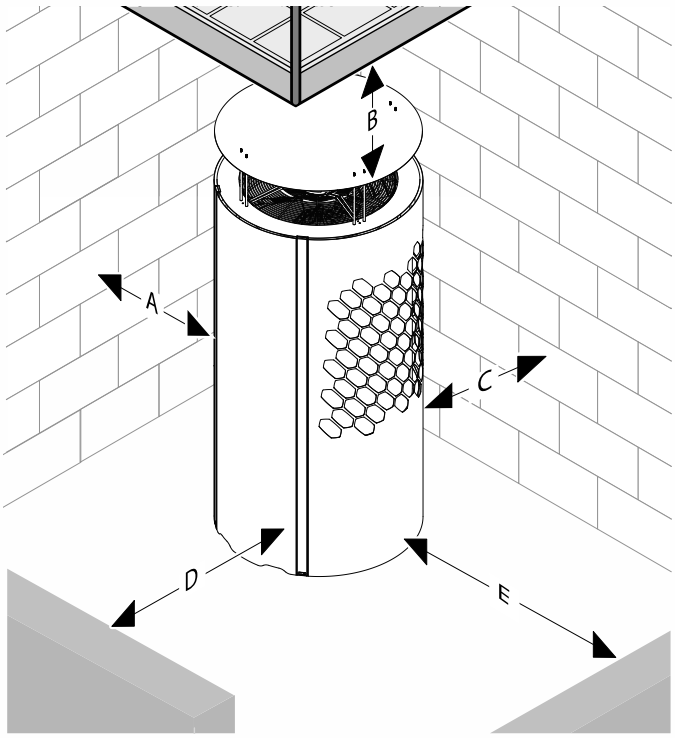






A: water inlet connection: Ø 1”
B: water outlet connection: Ø 1”
C: condensate drain
D: electrical wiring

6.3 Free spaces for the assembly



Distance	Measures in millimeters
A	>800
B	>300
C	>800
D	>800
E	>800

Respect the minimum distances mentioned above to ensure a sufficient air flow and facilitate maintenance works.

- Verify there is asufficient space for the installation of the hydraulic piping.
- If the product is installed in areas prone to heavy snowfalls, verify the snow doesn't accumulate around the product and the minimum distances mentioned above are respected. If these conditions can't be satisfied, install then an additional heat generator in the heating circuit.

6.4 Choice of installation place

- Observe all the rules in force.
- Install the product outside the building.
- Don't install the product:
  - near a heat source,
  - near flammable substances,
  - near ventilation opening of contiguous buildings,
  - Below deciduous trees.
- For the installation of the product observe:
  - prevailing winds,
  - noise of the fan and the compressor,
  - optical impression on the environment
- Avoid place where on the air outlet of the product there is the effect of strong winds.
- Don't orient the fan towards the near windows.
- If necessary, install noise-protection system.
- Install the product on one of the following supports:
  - Concrete pavement,
  - T steal beem
  - Concrete block.
- Don't expose the product to dusty and corrosive air (e.g. near rough roads).
- Don't install the product near wells of air discharge.
- Prepare the laying of electrical cables.
- In places where there are snowfalls, install the heat pump at least 25 cm from the ground to avoid clogging at the inlet and drain zone.

6.5 Assembly of the heat pump

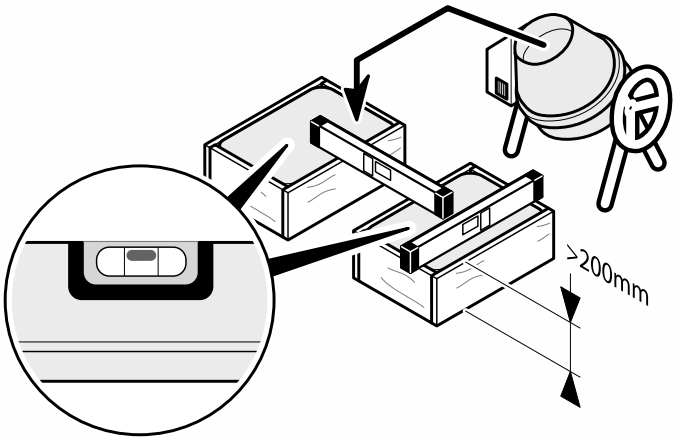
1. Before installing the product, observe the safety warnings content in this manual and service manuals.
2. Assembly the product on steel beams, blocks of concrete or with the help of a wall holder (accessory).
3. Verify that under the product water doesn't accumulate non si accumuli.
4. Verify that the floor in front of the product can well absorb water to avoid ice formation.

6.6 Preparation of the condensate drain

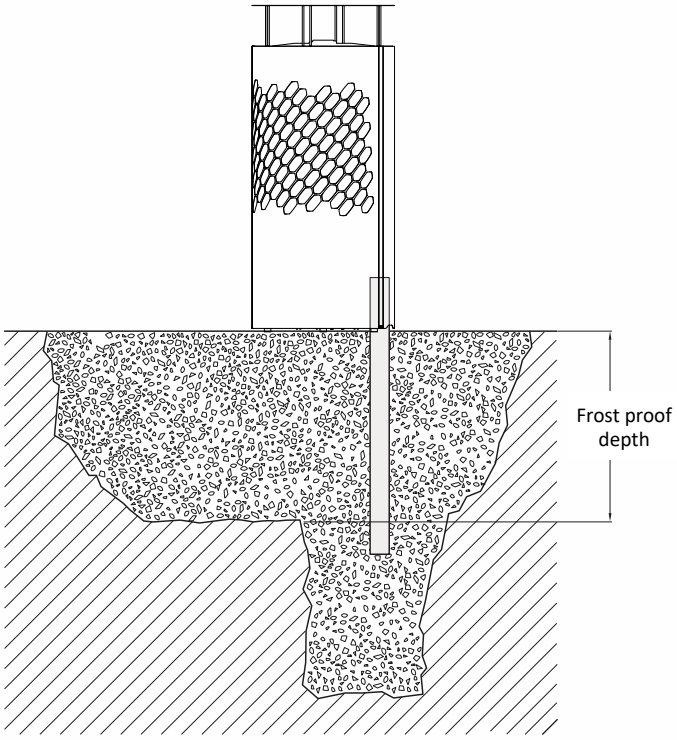
The condensate is discharged in a centralized way from the back of the heat pump **KITA Templari®**.
Prepare the condensate drain through a drain pipe or a gravel bed.

⚠ WARNINGS!

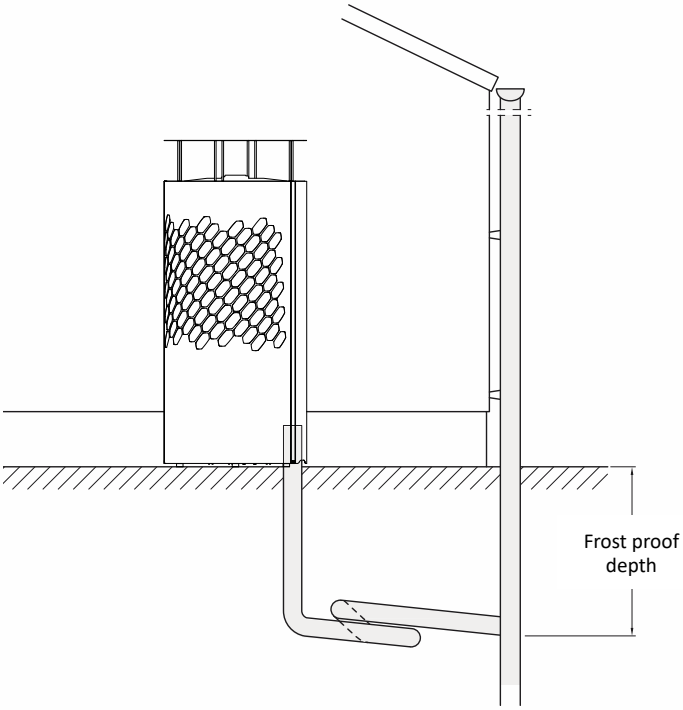
The condensate frozen on the avenues can cause falls. Verify that the condensate doesn't flow on the avenues and can't freeze on them.



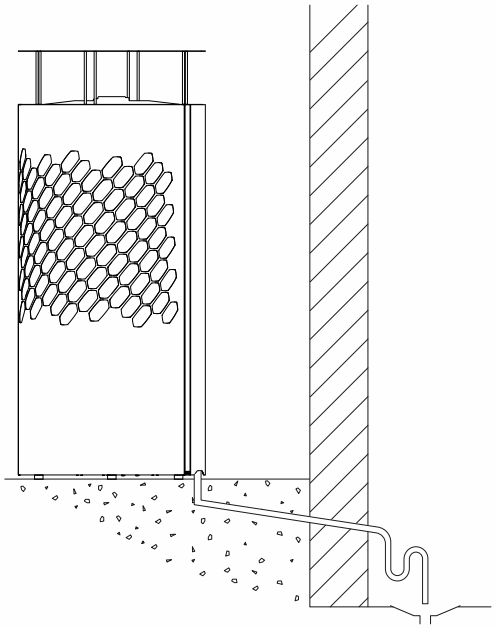
- *Preparation of the base for condensate drain*



- *Example 1 condensate drain (it is advisable inter the condensate drain pipe to avoid ice if you don't buy the optional **heating element for the condensate drain**).*



- *Example 2 condensate drain*



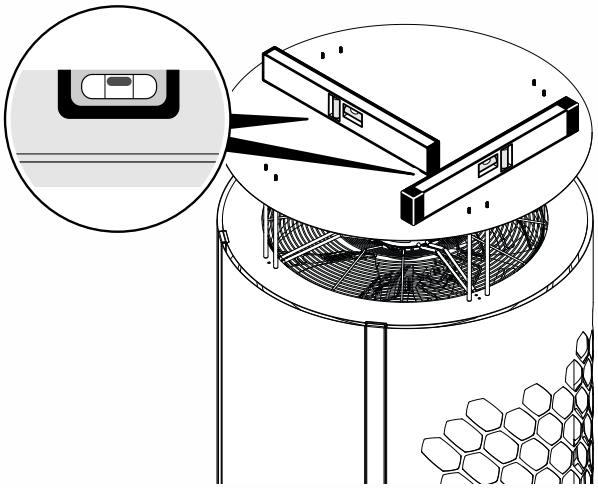
- *Example 3 condensate drain with condensate drain element*

The condensation water accumulated during the operation must be carried away without it can freeze. To ensure the correct outflow the heat pump must be in a horizontal position. The condensation water pipe must have a minimum diametre of 18mm and must flow in the drain channel without it can freeze. Don't discharge the condensate directly into purification basins and moats. The aggressive fumes and the condensation pipe, if it isn't protected against frost, can cause irreparable damages to the evaporator.

In places where there are snowfalls, install the heat pump at least 25 cm from the floor to avoid clogging in the suction and condensate drain area.

6.7 Alignment of the heat pump KITA Templari®

Put horizontally the heat pump **KITA Templari®** so that the condensate can flow. The product must be installed with amortized feet, purchased separately. The amortized feet increase the height of the product, facilitating the flow of condensate and reducing vibrations.



6.8 Probe installation

All probe used for the operation of the plant must be installed properly in the appropriate wells using a suitable thermal paste.

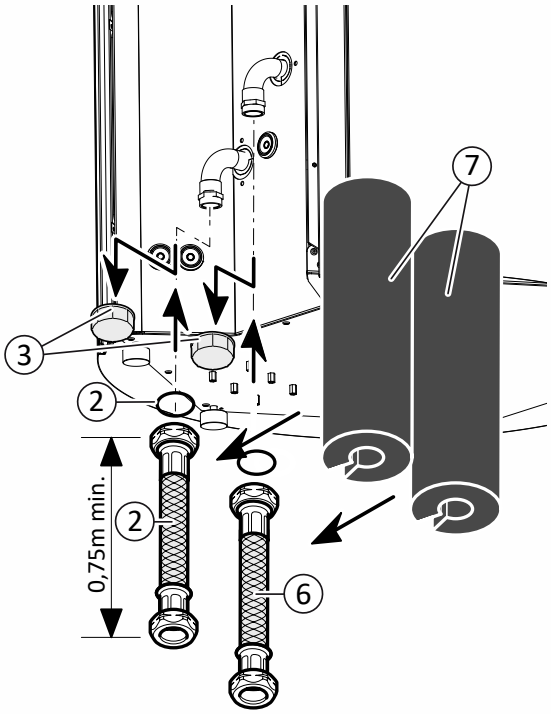
⚠ WARNINGS!

Installing the probes not in a proper way will voids the warranty.

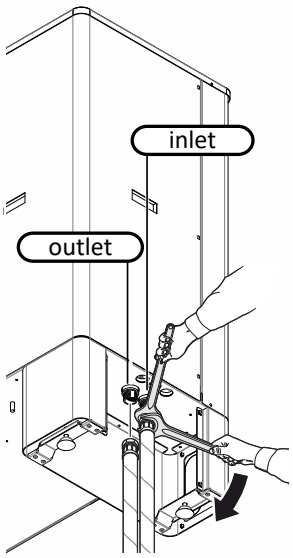
7 Hydraulic connections

7.1 Equipment control

1 Insulate wires (even underground) between product and heating system con un isolamento resistente ai raggi UV e alle alte temperature.
2 To avoid the transmission of vibrations on adjacent buildings, use connection lines to product with a lenght of at least 0,75 m.
3 If the product isn't installed in the hightest point of heating circuit, install then in a suitable point some additional vent valves.
4 Remove the covers (3) from the hydraulic fittings of the circuit.
5 Install in the return of the heating circuit, between two shut-off valves, an anti-dirty filter to clean at regular intervals.
6 Install a fexible pipe (1) e (6) (to be made on site) with a gasket and a closing valve in the discharge fittings and the riturn of the heating circuit of the heat pump.
7 Control the connection seal.



1 Flexible connection tube in the return of the heating to the building (in place)
2 Gasket
3 Cover
4 Junction (Ø 1") return of the heating to the building
5 Junction (Ø 1") heating supply to the heat pump
6 Flexible connection pipe in the heating supply towards the heat pump (in place)
7 Insulation (in place)



⚠ WARNINGS!

If you use glycole, collect it on the safety valve to avoid the pollution of the environment.

The welding residues, slivers, hemp, stucco, rust, dirt
and similar coming from the pipelines can stand in the product causing anomalies.

Rince thoroughtly the heat system bifore of connecting the product to remove possible residues!
Obligatory Y filter, contrary the warranty will expire.

Operarate according to the rules in force, make sure the unit sia is stably balances before of doing any operations and always adopt sempre protection systems. The positioning indications shown below are necessary for the correct operation of the machine, the maintenance and the operator protection near the unit.

7.2 Particular Components

The installer has to make the choice and the installation of the necessary components of the system, here below are listed useful devices for the operation of the machine:

- Shut-off valves at the entrance and exit of the circuit allow maintenance operations senza without draining the system;
- Safety valve hydraulic side
- Thermometers and pressure gauges at the entrance and exit of the main components ensure a better monitoring and facilitate the maintenance;
- Vent valves in the hightest points of the system ensure the air vent from the circuit;
- Drain cocks in the bottom of the system to facilitate the emptying;
- Expansion vessel to keep the correct water pressure compensating thermal expansions, has to be sized considering water total volumes in the system;
- The installation of a Y filter is necessary.

⚠ WARNINGS!

Install hydraulic system side a safety valve.

7.3 Installation of hydraulic part

- Thorough washing of the system with clean water filling and emptying it many times. This operation allows to riduce the number of maintenances and avoid damages to exchangers and other components;
- Test of possible losses in the circuit;
- Insulate all the pipelines to reduce heat losses and avoid the formation of condensation;
- Free up the service points like wells vents etc...;
- Verify that the quality of the water is suitable, contrary: performance penalty, higher loading losses, possible damages.

If there is the risk of water freezing in the system take the following preventive measures:

- Always powered machine for frost protection;
- Mix water with ethylene glycol or propylene glycol considering that the pressure losses increse and you have to verufy the compatibility of all the hydraulic parts of all these compounds;
- In case of long stops completely empty the system opening all the cocks and pay attention to avoid water stagnation points.

7.4 Choice of the system scheme

Make reference to the schemes shown in the following pages for the realization of the hydraulic system according to your needs and adapting it to the installation context.

⚠ WARNINGS!

The buffer, if on outlet pipe, must always comply with a minimum quantity of liters according to the heat pump KITA used:
KITA S 200 Liters
KITA M 300 Liters
KITA L 500 Liters
KITA Li Plus 800 Liters

⚠ WARNINGS!

If you have a pressure drop of more than 7 meters it is mandatory to use an increased circulator.

Probe B2, when used, must always be placed in a buffer mounted on outlet pipe, never inlet.

⚠ WARNINGS!

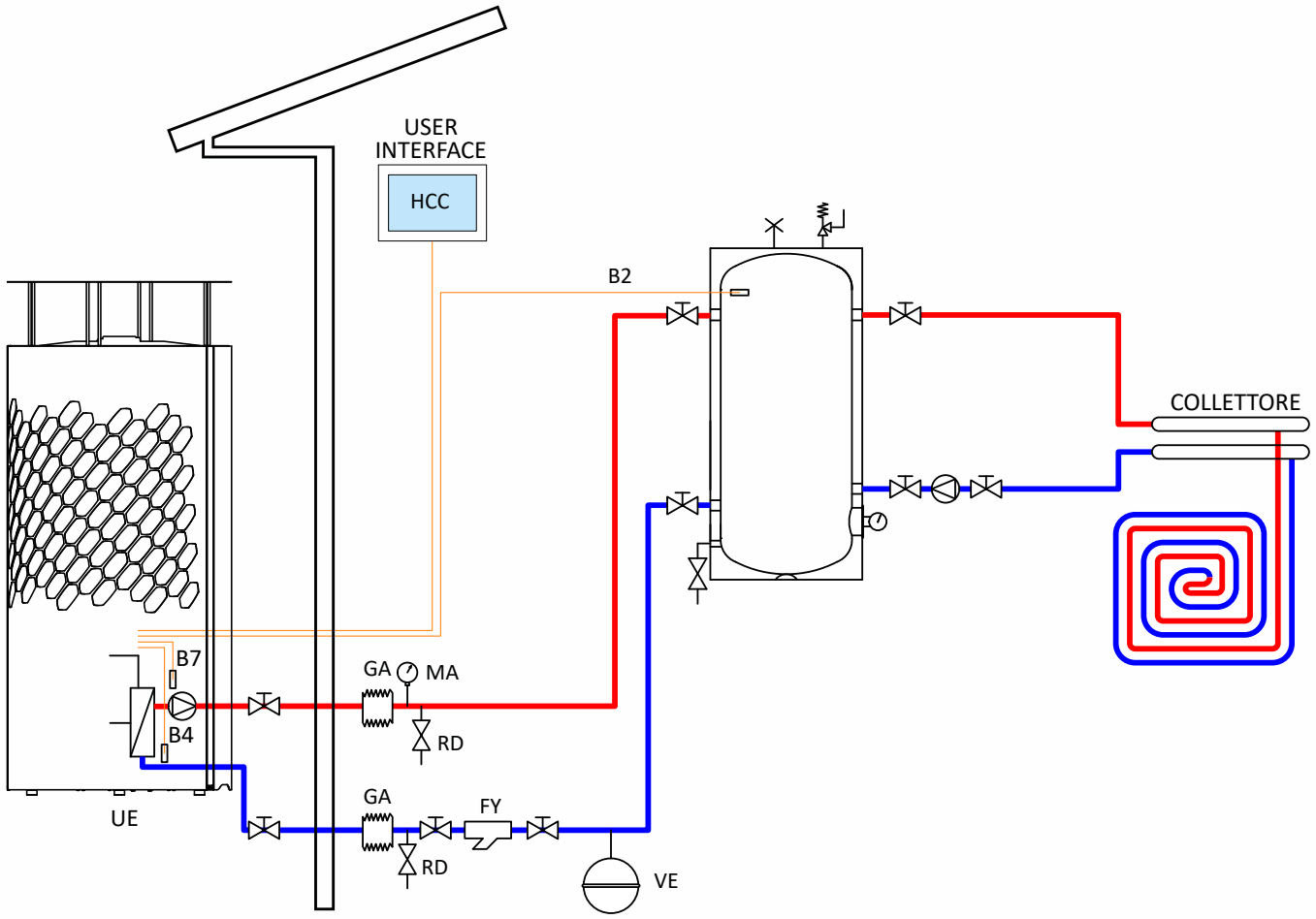
The following diagrams are purely an example and Templars s.r.l. will not be responsible for any reason for the plant made at home. The plant shall be designed and manufactured exclusively by qualified personnel.

7.5 Diagram 1: cooling/heating system with buffer tank

GA Anti-vibration joint
MA Manometer
RD Drin tap
3W 3 way valve
VE Expansion vessel
FY Y-filter
UE External unit
VB Bypass valve

SIGNAL CABLES
OUT
IN
DHW
DW

B2 Buffer tank temperature probe
B3 DHW temperature probe
B4 Outlet temperature probe
B7 Inlet temperature probe



⚠ WARNINGS!

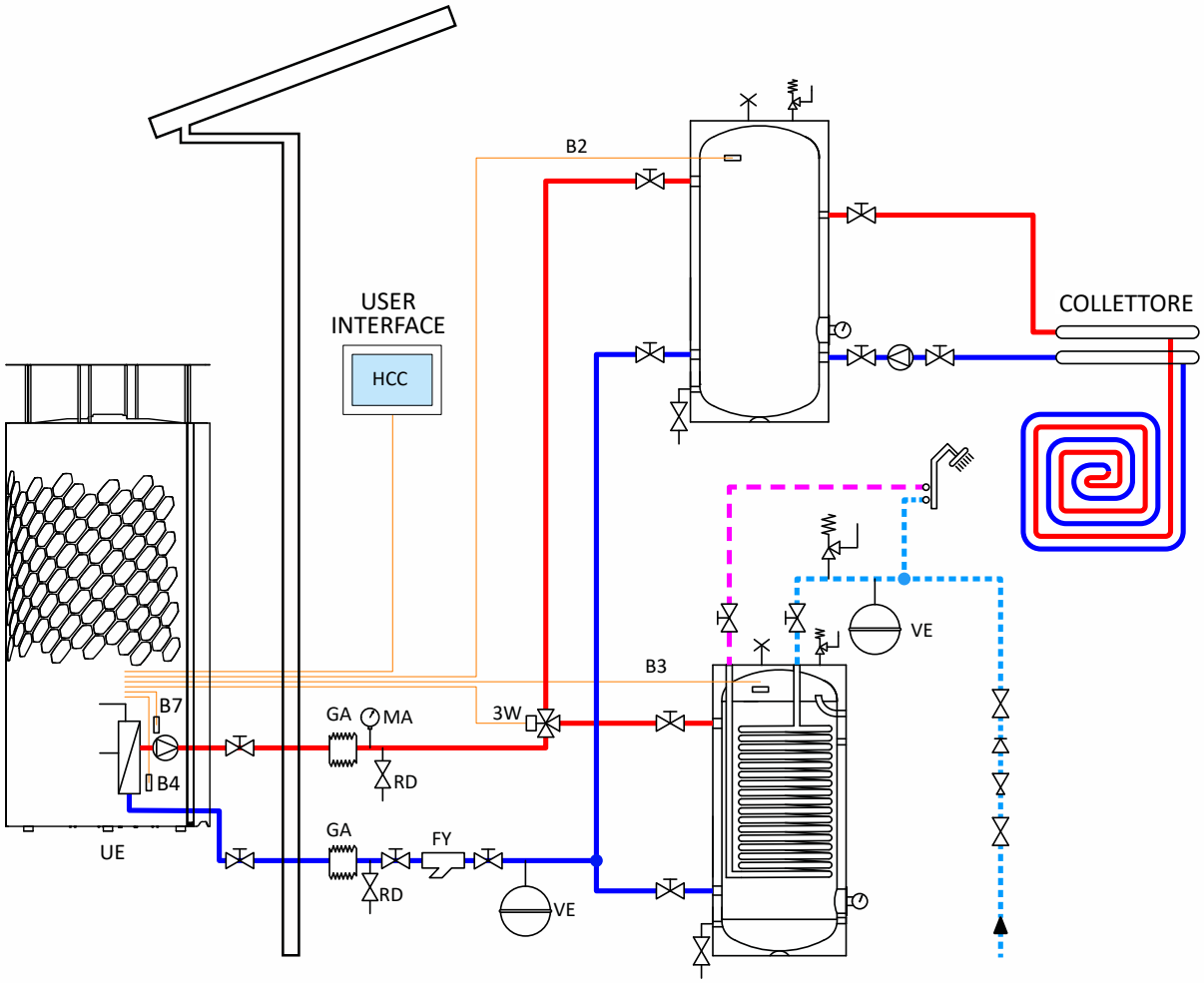
The buffer tank must comply with a minimum quantity of 300 litres

7.6 Diagram 2: cooling/heating system with buffer tank and technical water buffer tank with coil for instant DHW production

GA	Anti-vibration joint
MA	Manometer
RD	Drin tap
3W	3 way valve
VE	Expansion vessel
FY	Y-filter
UE	External unit
VB	Bypass valve

	SIGNAL CABLES
	OUT
	IN
	DHW
	DW

B2	Buffer tank temperature probe
B3	DHW temperature probe
B4	Outlet temperature probe
B7	Inlet temperature probe



⚠ WARNINGS!

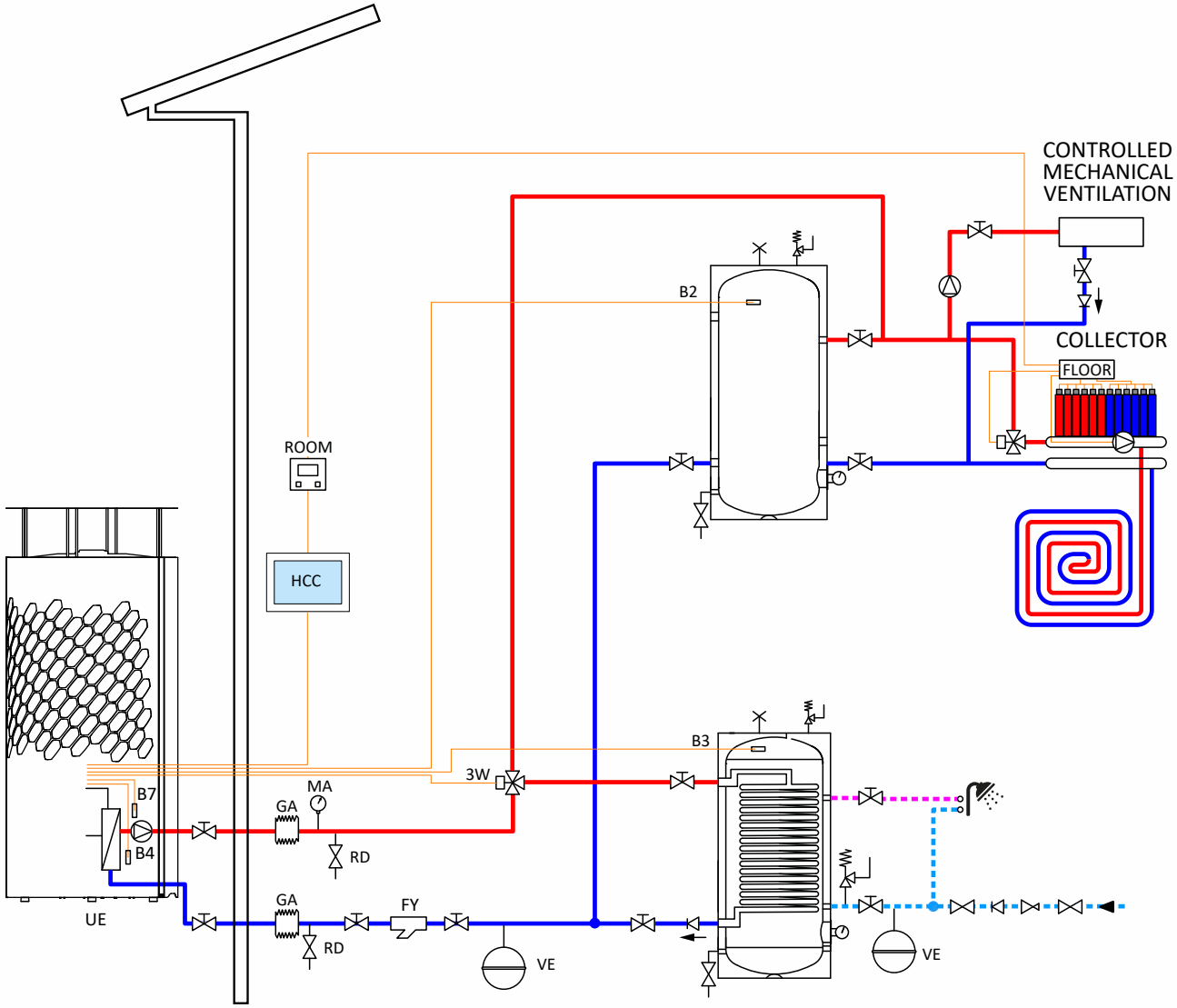
The buffer tank must comply with a minimum quantity of 300 litres

7.7 Diagram 3: “T” cooling/heating system with buffer tank, DHW storage tank and Controlled Mechanical Ventilation

GA	Anti-vibration joint
MA	Manometer
RD	Drin tap
3W	3 way valve
VE	Expansion vessel
FY	Y-filter
UE	External unit
VB	Bypass valve

	SIGNAL CABLES
	OUT
	IN
	DHW
	DW

B2	Buffer tank temperature probe
B3	DHW temperature probe
B4	Outlet temperature probe
B7	Inlet temperature probe



⚠ WARNINGS!

The buffer tank must comply with a minimum quantity of 300 litres

8 Maintenance and cleaning

A periodic maintenance is necessary first of all to keep a correct and efficient operation of the heat pump, in order to reduce wear and deterioration of components.
The frequency of interventions is decided by the user, and mainly it depends from two factors:

- The mode of use: we suggest a maintenance once a year if the machine works in one mode (heat/chiller pump), or every six months if the machine is used with both of operation modes.
- The place of installation: if the installation is in places particularly subject to pollution or to the presence of particulate that could block the battery, we suggest to perform an appropriate monitoring of work condition of the battery and, if necessary, provide to a more frequent maintenance.

⚠ WARNINGS!

Turn off power of the machine before of any operation of maintenance to avoid dangerous accidents due to the activation of some operation logics of the machine.

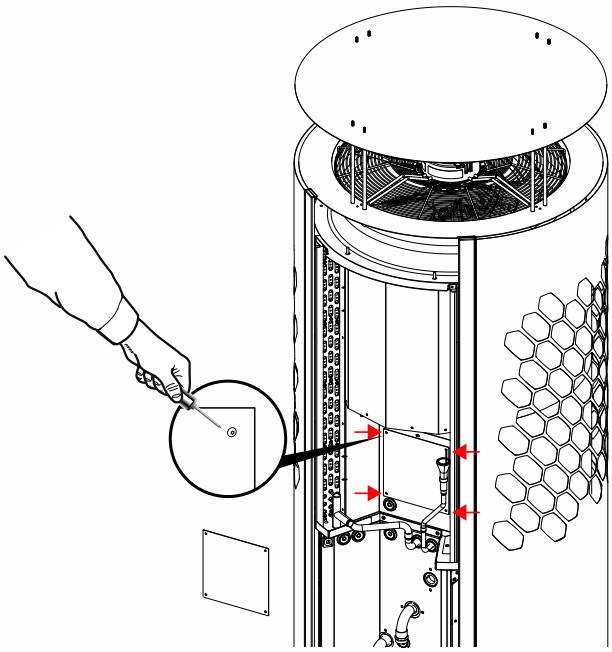
8.1 Cleaning of the battery

During the operation of the machine it is possible that the coil filled is partially clogged for the presence of leaves or various kind of encrustations, causing a malfunction of the heat pump too. It is possible then to clean the battery with a jet of air under pression in a direction parallel to that of wings, we also suggest to remove possible deposits in the battery compartment:

- Clean the front surface
- Remove the top panel according to the picture

⚠ WARNINGS!

Avoid the contact with the wings of the battery since it can cause stab wounds.
Avoid to bend the wings of the battery since it reduces the performances of the machine. If the wings are bent, contact the appropriate authorized service center.



8.2 Cleaning of the condensate drain

Make sure that the condensate drainpipe is in the correct position and no clogged, to allow the correct drain of the condensate depositing on the battery during the operation in the heat pump.

8.3 Cleaning of hydraulic system side

To clean the filter lead to atmospheric pressure the hydraulic circuit in correspondance of the impurities collector, remove the filter unscrewing the seat to clean it.
For the assembly follow the same steps in reverse order and make sure that the monitoring of the filter is correct and that the screw is tight.

Recommended values on the water

Parameters	Reference values
PH	6-8
Electrical conductivity	Less than 220 mV/cm (25°)
Chloro ions	Less than 50 ppm
Sulfuric acid ions	Less than 50 ppm
Total Iron	Less than 0,3 ppm
Alkalinity M	Less than 50 ppm
Total hardness	Less than 50 ppm (5°F)
Sulfur ions	None
Ammonia ions	None
Silicon ons	Less than 30 ppm

9 Electrical connections

9.1 General information

- Before of starting any operations equip yourselves with the safety devices, make sure that the unit is in stable equilibrium and there aren't close elements in tension.
- The power line has to be equipped with protection systems able to stop the short-circuit current tenendo considering the features of the machine.
- Make reference to the electric scheme of the unit.
- As first connection realize the earthing.
- Before of powering the unit, all the protections of the line have to be enabled.

9.2 Laying operations

- Lay the cables at a certain distance with respect to lines with different voltage or to systems that can create electromagnetic interference.
- Avoid parallel laying with other cables, it is allowed only 90° layout.
- Pass the power cords and control network cable of the machine through the special holes (position 22) see the dimensions of the machine.

9.3 Supply

Connect the supply of the machine to the internal terminal block according to the scheme shown below. The cable routing occurs throught the special holes as shown in the previous schemes.

APPROXIMATE section of cables and internal protection:

Electrical details

MODEL	Power supply	Power at A-20 /W55	COP at A-20/W55	Electrical consumption A-20/W55 (kW)	INVERTER (A)	Thermal braker magnetic switch	Electrical differential switch (mA)	Cable section: 2mm (for a line with a total lenght up to 5 meters)
KITA HR 10	230V/1ph	4,83	2,09	2,31	18	16A	30mA	3x4
KITA HR 12		6,01	1,79	3,36		20A		
KITA HR 14		7,4	1,84	4,02		25A		
KITA HR 10	400V/3ph	4,83	2,09	2,31		16A		5x4
KITA HR 12		6,01	1,79	3,36		16A		
KITA HR 14		7,4	1,84	4,02		20A		
KITA HR 14 Cold		11,5	1,52	7,57		20A		

⚠ WARNINGS!

The cable section of supply has to be considered approximate and relevant to the last section of the line towards the machine that has to be as short as possible. The external protections, the laying and the section of the cables of the supply line mentioned have to be dimensioned and made by an authorized staff and according to technical standards of the relevant national rules.

9.4 Probes and remote panel

Temperature probes B2 (heating/cooling) and B3 (Domestic) have to be connected with a multicore cable 1,5 mmq shielded following the shortest route and far from power cables. Particular attention has to be paid in junctions dato since possible parasitic resistances affect the control card readings. The remote panel cable (6 wires ethernet cable) can be laid together the probes cable with the same precautions.

⚠ WARNINGS!

We suggest to use a ferrite toroid to protect the remote panel from possible external disturbances.

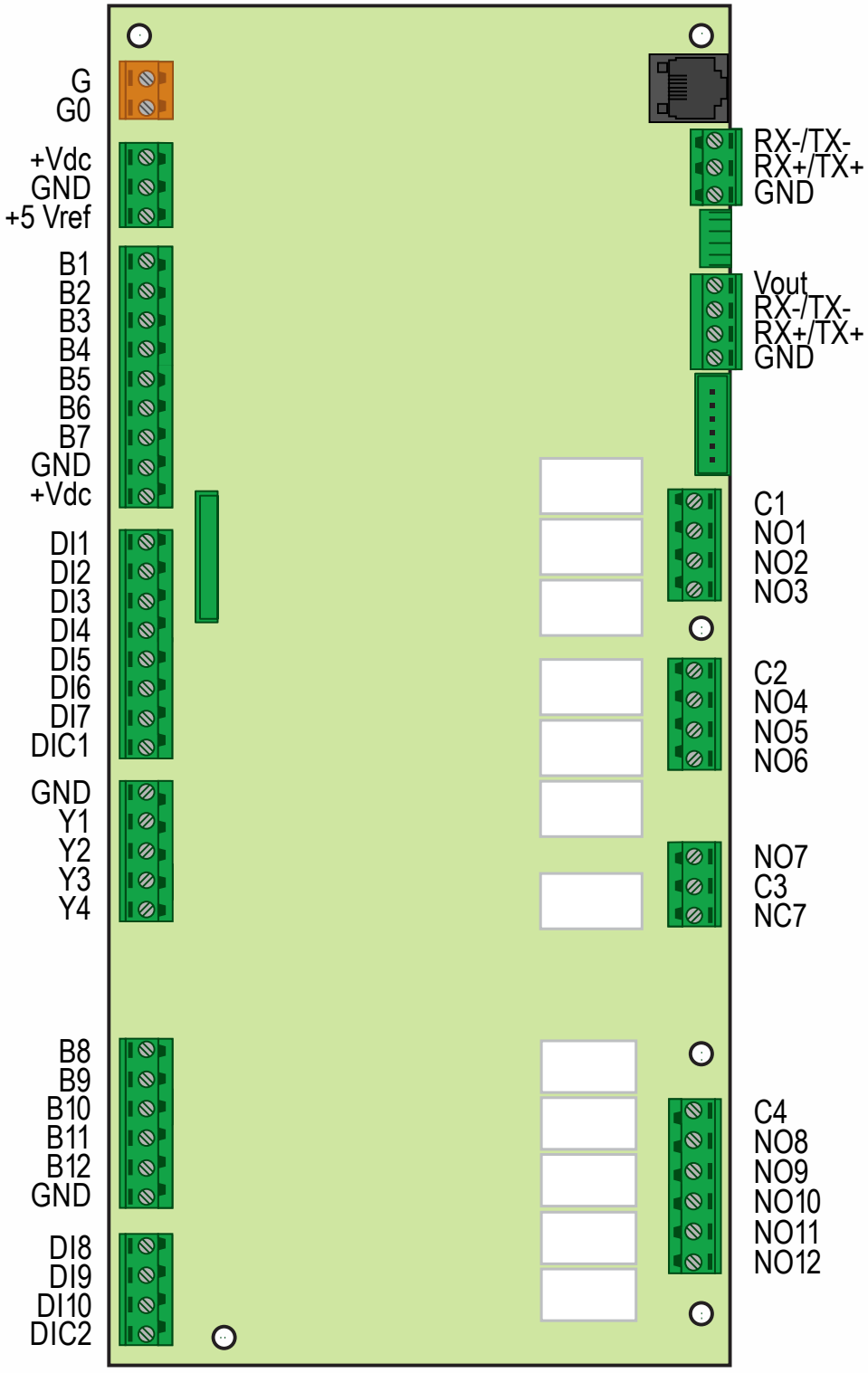
In the case of a flowmeter (KITA Energy) is present consult the wiring diagrams in the paragraphs 10.5, 10.6, 10.7 (B5 = clamp 37).

10 Terminal wiring

10.1 Terminal wiring outdoor unit

The following scheme is valid for all Kita Split model:

Version 1 - No optional accessories



The B2 and B3 probe must be connected to the prewired cable provided with the heat pump.

Connector description

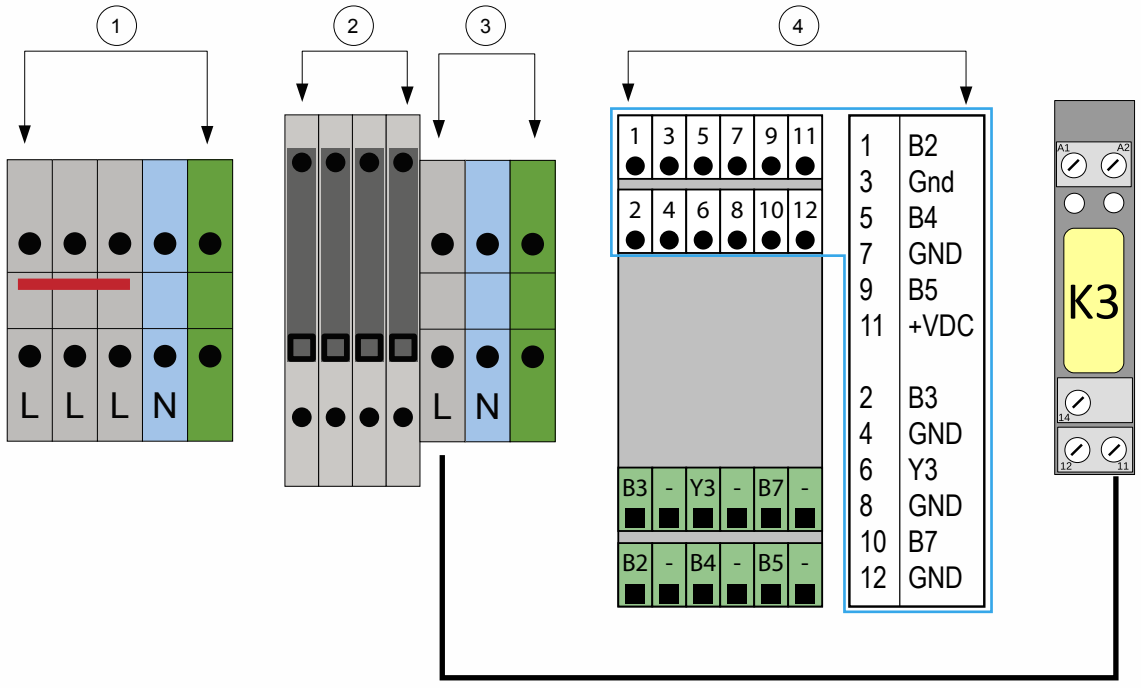
B1	Subcooling
B2	Radiant probe
B3	Domestic probe
B4	Return probe
B5	Flow meter
B6	Head compressor probe
B7	Flow probe
B8	External temperature probe
B9	Drain probe
B10	Suction probe
B11	High pressure transducer
B12	Low pressure transducer
DI1	Summer-winter switch
DI2	Thermal sensor
DI3	High pressure switch
DI4	/
DI5	Disable plant
DI6	Photovoltaic inverter overproduction contact
DI7	System auxiliary heater security
DI8	Remote on-off
DI9	Switch modbus controller
DI10	Flow switch
Y1	/
Y2	Internal fan KITA Air
Y3	PWM circulator
Y4	External fan KITA Air
NO1	Integration
NO2	Defrost
NO3	Air-air or air-water indicator
NO4	Circulation pump
NO5	Condensate drain heating
NO6	Plant integration demand
NO7	General alarm
NO8	DHW integration demand
NO9	3-way valve
NO10	4-way valve
NO11	Oil heating
NO12	Desuperheater

Version 2 - A relè to manage DHW or auxiliary integration.

If you want to manage a 3-way valve for the domestic management or for the ignition of an electric resistance / boiler, the terminal presents the relé K3 suitable for this management.

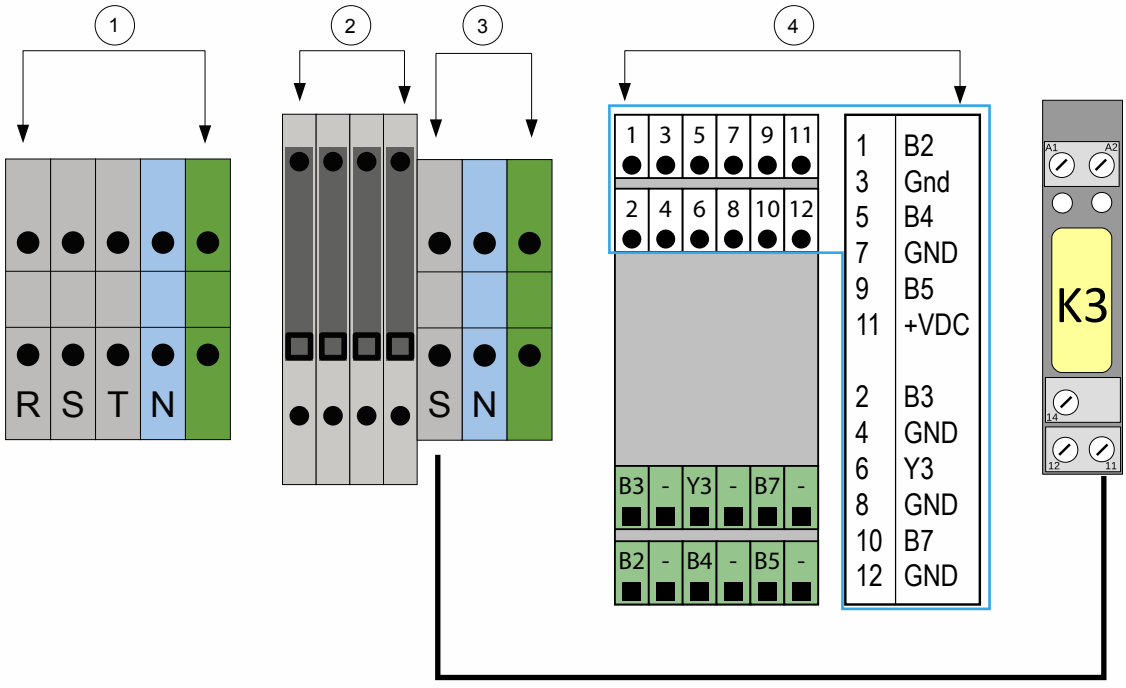
For standard connections make reference to the table mentioned in version 1. Here below is shown the table with the contacts for the connection of the relé K3

Single-phase model version 2

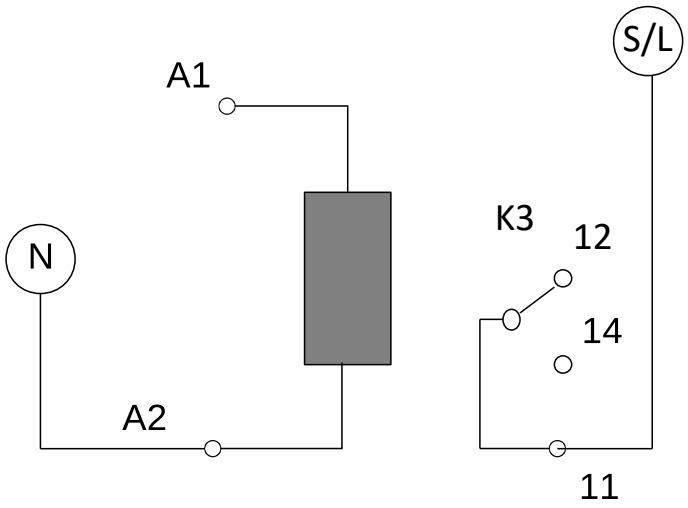


1 Power: power terminal
2 Auxiliary fuses 4 A
3 Power: Phase, Neutral and Ground for internal split
4 Sensor terminal block (the symbol - indicates GND)

Three-phase model version 2



1 Power: power terminal
2 Auxiliary fuses 4 A
3 Power: Phase, Neutral and Ground for internal split
4 Sensor terminal block (the symbol - indicates GND)



A1 K3 NO6 µPC
A2 K3 Neutral external unit
11 K3 S/L Phase* external unit

*S 3-phase version, L monophase version

Relè K3	INTEGRATION MANAGEMENT
A1	Relay coil to NO6 uPC contact
A2	Relay coil to Neutral external unit
14	Normally open contact (NO)
12	Normally closed contact (NC)
11	Common contact (C)

3-way integration connections

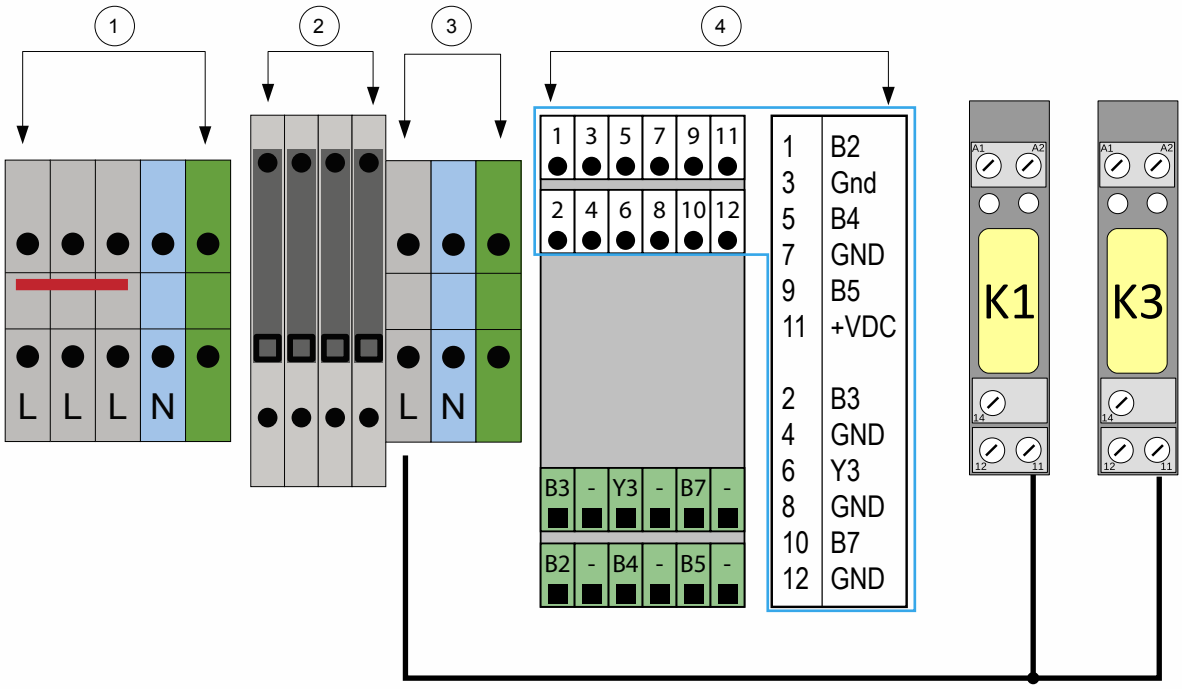
INTEGRATION CLEAN CONTACT		EXTERNAL UNIT K3 RELAY
N/O Contact	———	14
Common contact	———	11
N/C Contact	———	12

Version 3 - Two relay, to manage DHW and auxiliary integration

If you want to manage a 3-way valve for domestic management and in the same time the ignition of an electrical resistance / boiler, the terminal presents two relès: K1 for the management of DHW and K3 for the auxiliary integration.

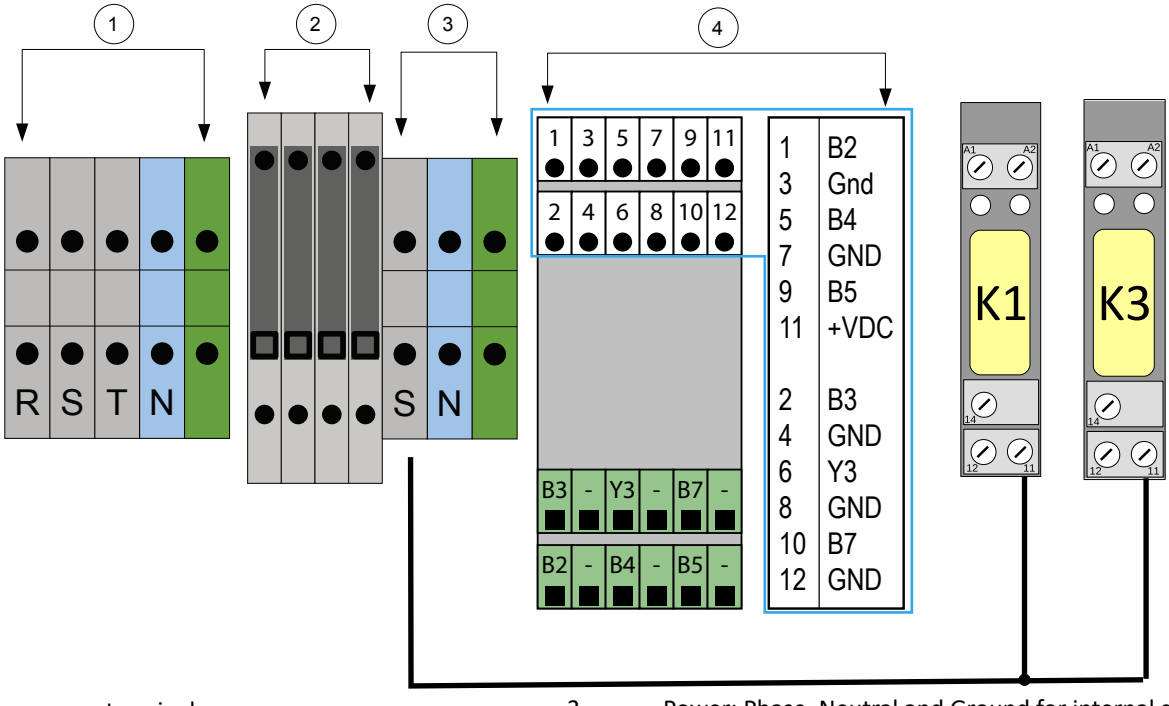
Make reference to the table in paragraph 12.2 of the complete manual for standard connections.
Here below is shown the table with the contacts for the connection of relès K1 and K3.

Single-phase model version 3

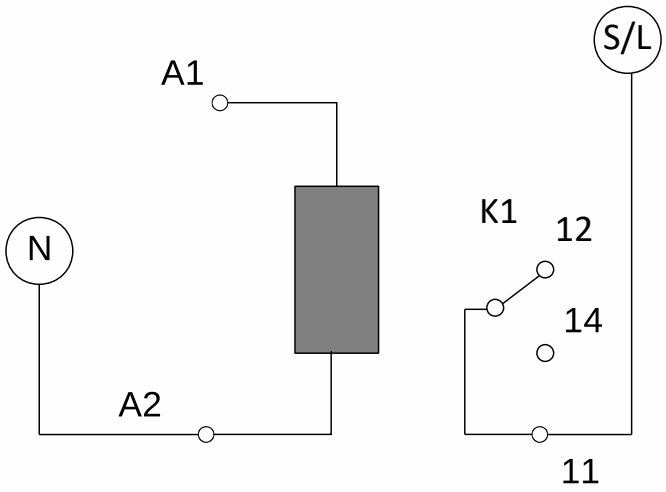


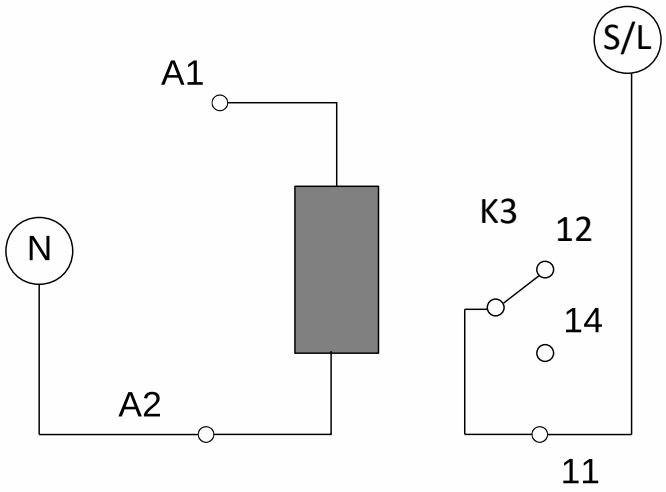
1 Power: power terminal
2 Auxiliary fuses 4 A
3 Power: Phase, Neutral and Ground for internal split
4 Sensor terminal block (the symbol - indicates GND)

Three-phase model version 3



1 Power: power terminal
2 Auxiliary fuses 4 A
3 Power: Phase, Neutral and Ground for internal split
4 Sensor terminal block (the symbol - indicates GND)





A1 K1 NO9 µPC
A2 K1 Neutral external unit
11 K1 S/L Phase* external unit

*S 3-phase version, L monophase version

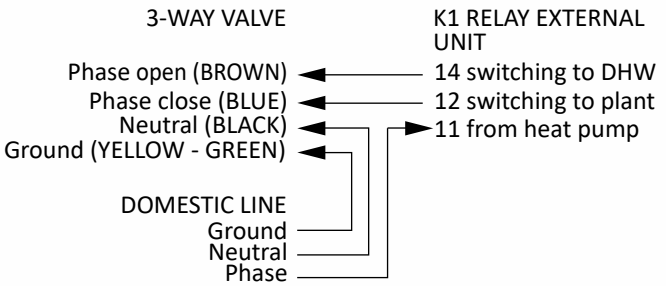
A1 K3 NO6 µPC
A2 K3 Neutral external unit
11 K3 S/L Phase* external unit

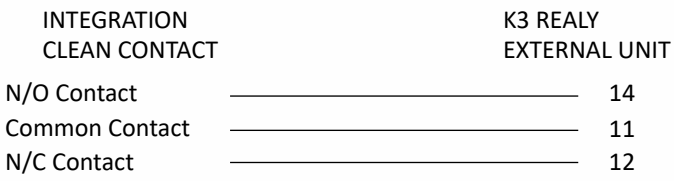
*S 3-phase version, L monophase version

K1 Relay	DHW MANAGEMENT
A1	Relay coil to NO9 uPC contact
A2	Relay coil to Neutral external unit
14	Normally open contact (NO)
12	Normally closed contact (NC)
11	Common contact (C)

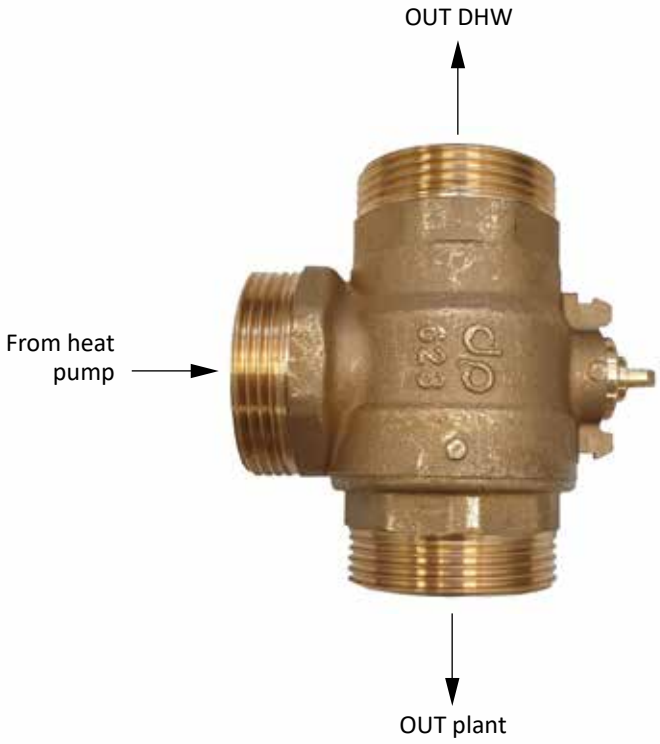
Relè K3	INTEGRATION MANAGEMENT
A1	Relay coil to NO6 uPC contact
A2	Relay coil to Neutral external unit
14	Normally open contact (NO)
12	Normally closed contact (NC)
11	Common contact (C)

10.2 Connection 3-way valve



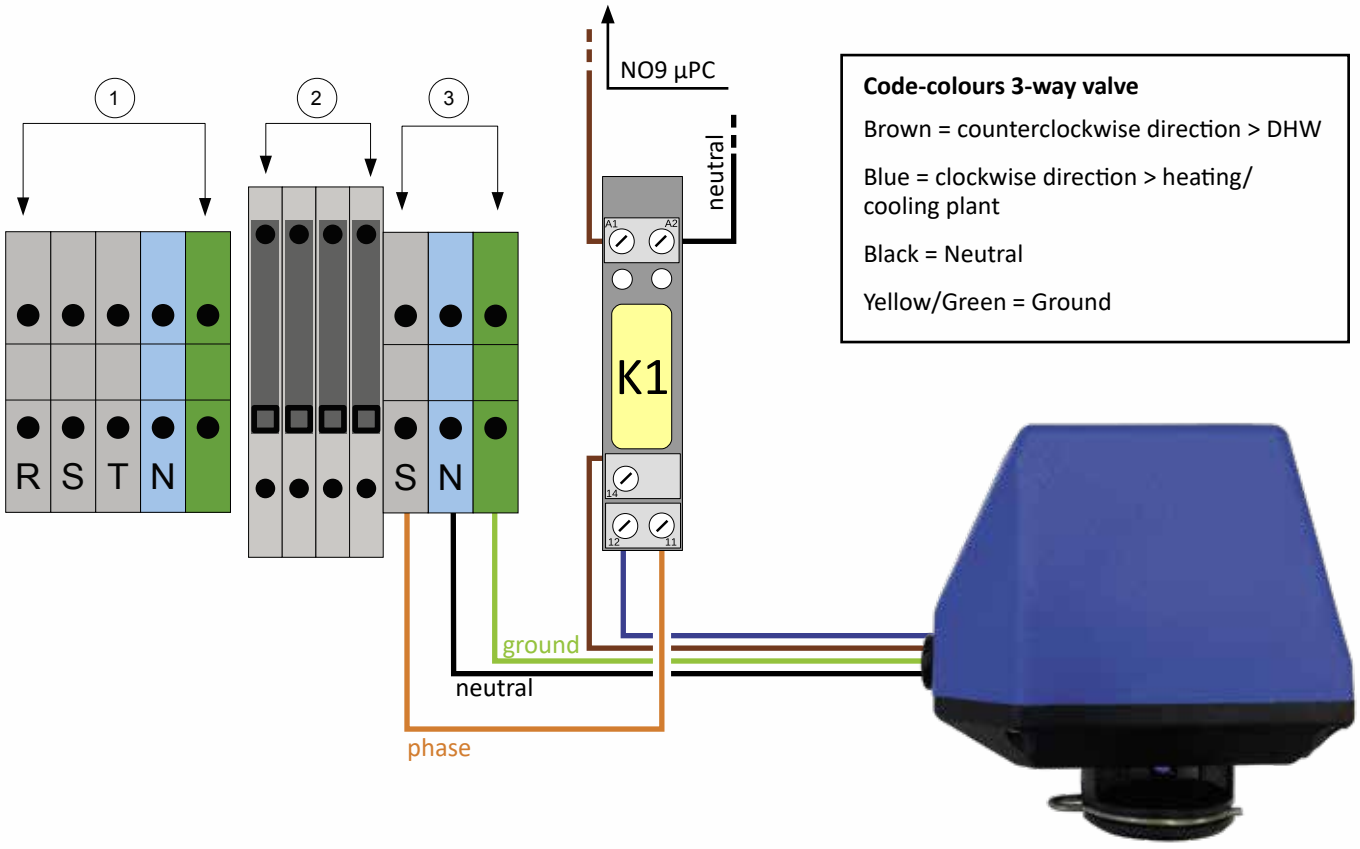


3 way:	
Brown = Phase open	Blu = Phase close
Black = Neutral	Y/G = Ground



Connection 3-way valve

Three-phase model



Code-colours 3-way valve

Brown = counterclockwise direction > DHW

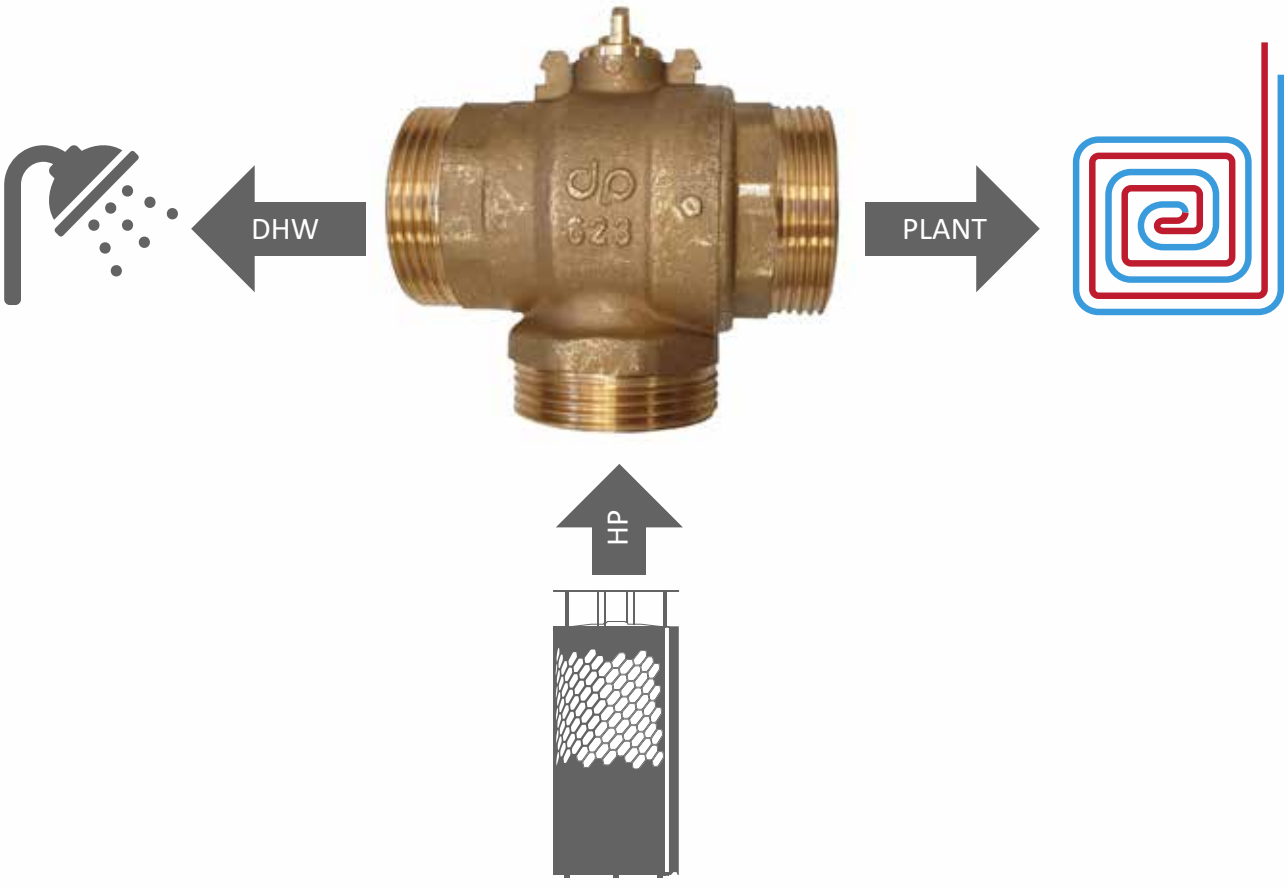
Blue = clockwise direction > heating/ cooling plant

Black = Neutral

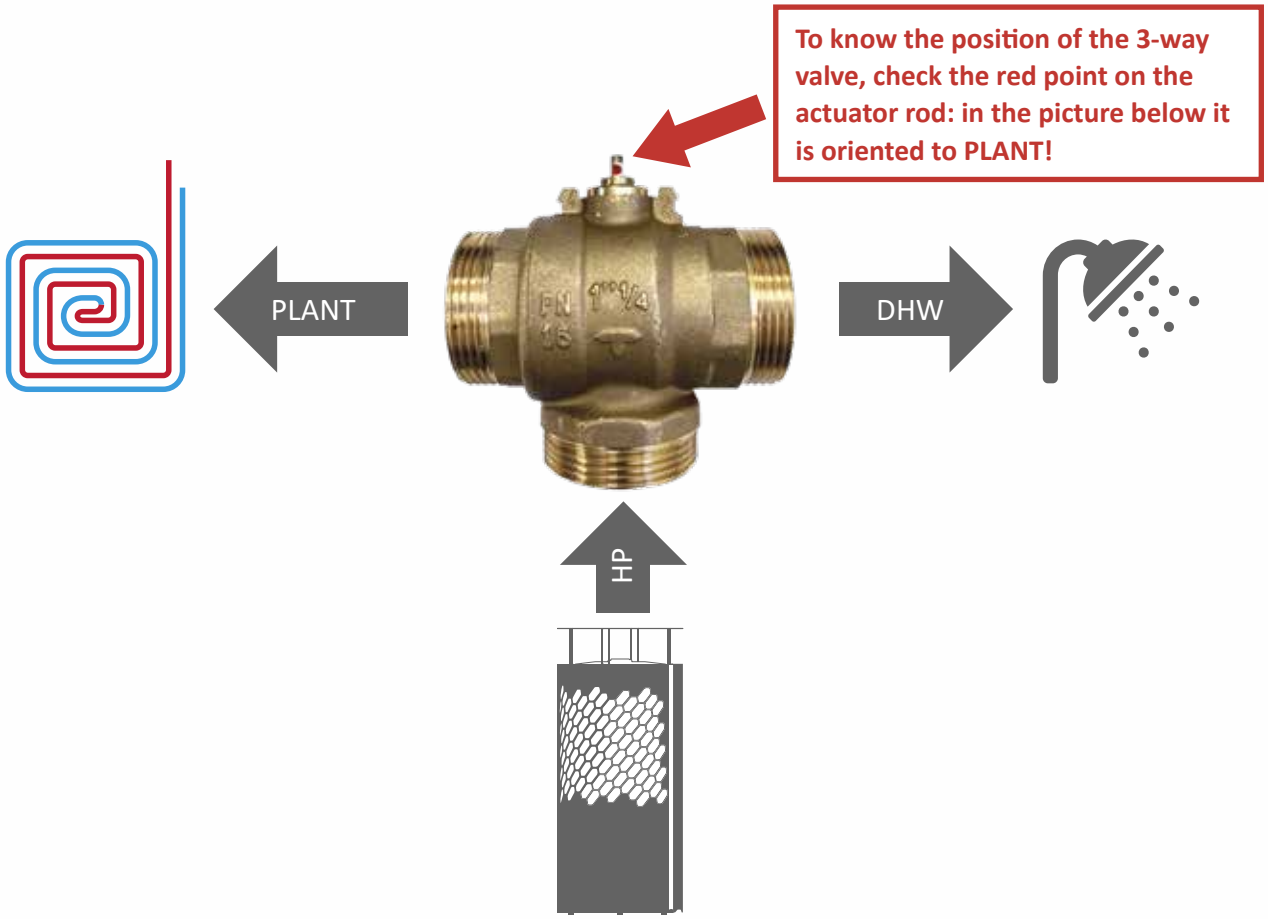
Yellow/Green = Ground

1	Power: power terminal	3	Power: Phase, Neutral and Ground for internal split
2	Auxiliary fuses 4 A	4	Sensor terminal block (the symbol - indicates GND)

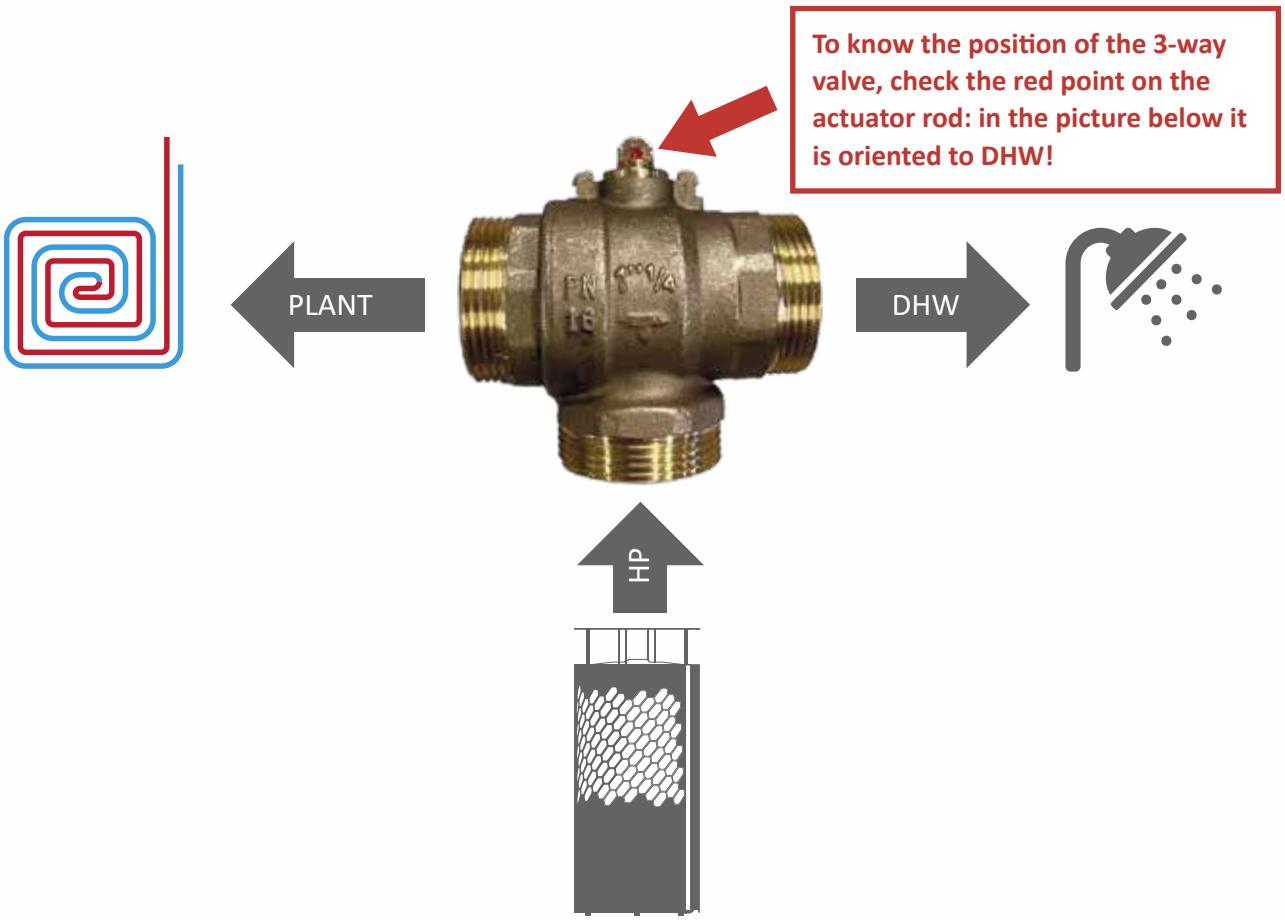
3-way valve connection



3-way valve connection



3-way valve connection



10.3 Plant Aware Function

Available from software version 13.69.001 of 07/10/2020

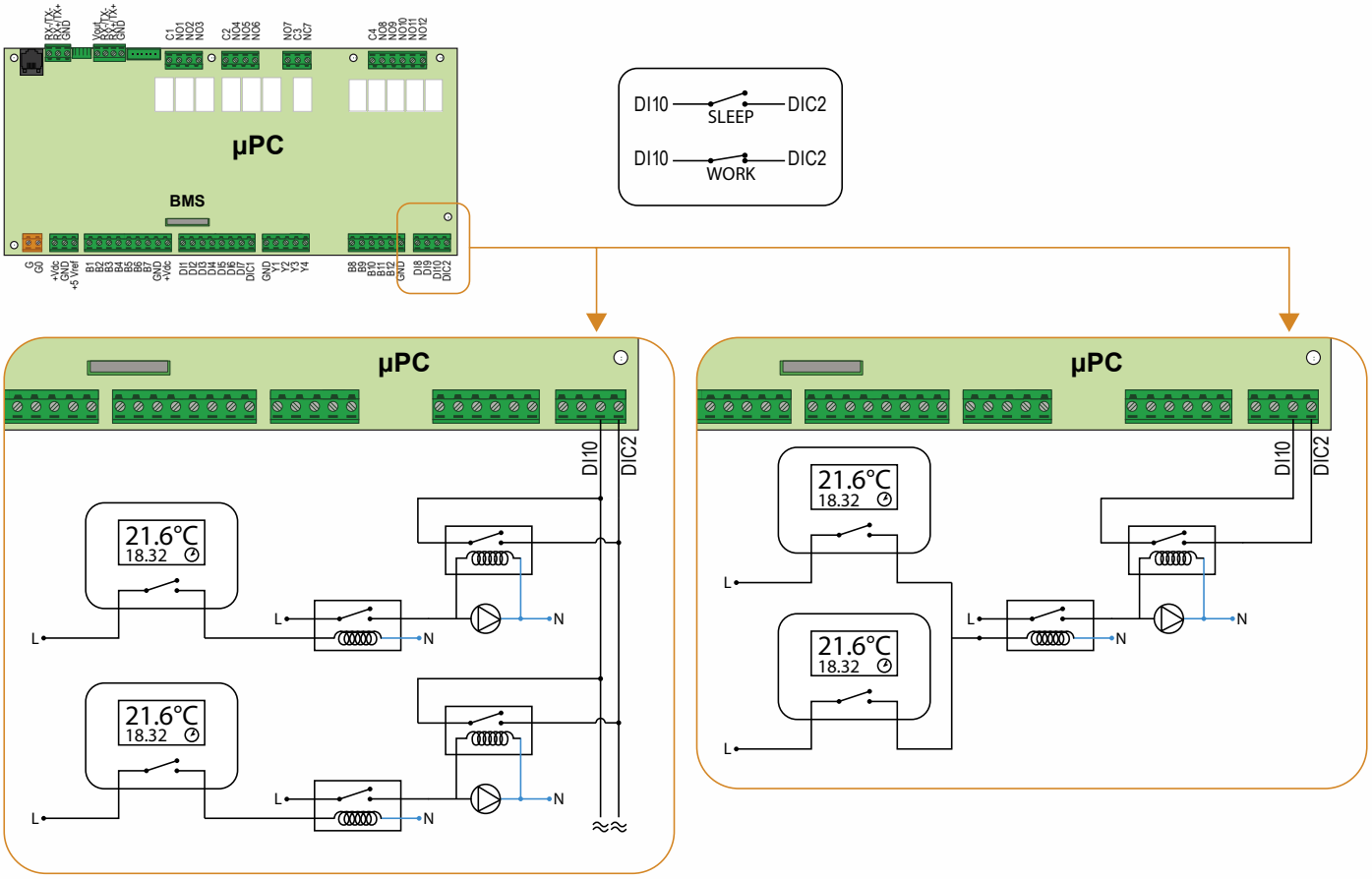
The Plant Aware function (PA) modifies the hysteresis for the start of the machine in comparison to the heat pump setpoint according to the input (opening\closing) of the contact ID10.
This function is only available for heat pumps equipped with flow meter; it works through the digital input ID10 used for the flow switch in the models equipped from the factory with the flow switch.
If the contact is closed, the heat pump works to reach the setpoint according to the standard hysteresis
If the contact is open, the heat pump goes to “sleep” mode and the hysteresis automatically modified in order to start 10 degrees below the setpoint. The main purpose of this function is avoiding unnecessary heating\cooling of the puffer tank.

PGD1
The function can be enabled and disabled with the PGD1 panel from the mask Gfc65.

K-Touch
In this case there aren’t any ROOM sensors or cMix boards.
The K-Touch Plant Aware system function overwrites and replaces the PA settings of the heat pump.
And therefore, if the panel enables the PA function, it won’t be possible to disable it from the PGD1.
The ID10 is the contact used to manage the PA function.

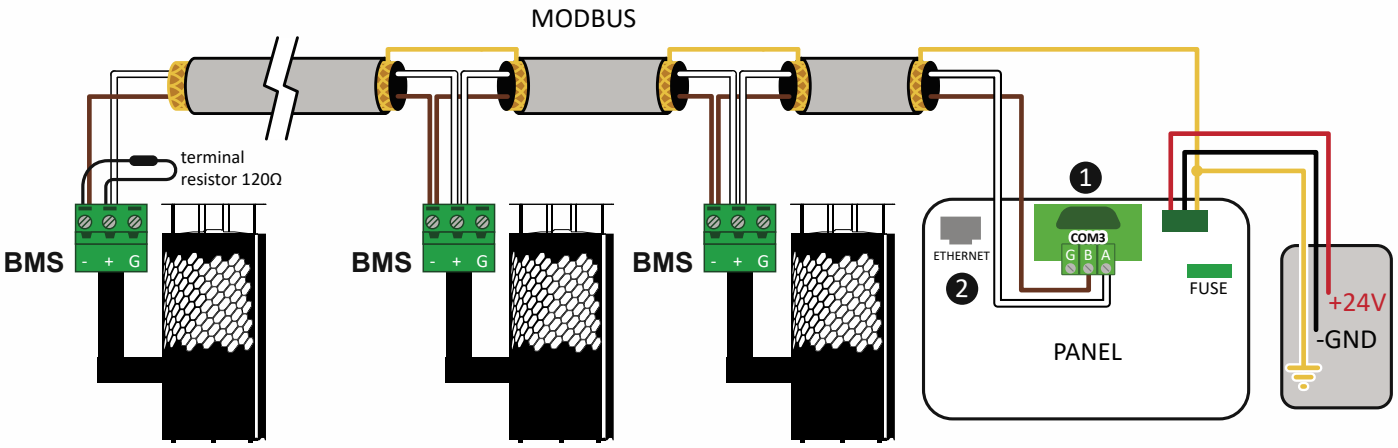
HCC
The PA function can be enabled using the HCC panel from the mask “More”.
In this case there is at least one ROOM sensor or a cMix board.
The HCC PA system function overwrites and replaces the PA settings of the heat pump.
If neither a ROOM sensor nor a cMix board are triggered and therefore there are no active contacts, the HCC
system enables the “SLEEP” mode, otherwise the heat pump will continue working as usual.
N.B. The ID10 contact will be disabled

Settings for service staff only
The ID10 contact closes when you get demand from at least one device or section of the circuit. (Logic OR of the water pumps activation).



10.4 Wiring pLAN net - “multi-KITA”

If more unit **KITA Templari®** are connected each other it is possible to make them interact by a pLAN “multi-KITA” logic; it is possible to connect 4 units in cascade at last.
It is necessary to connect the machines through a bipolar cable shielded according to the scheme below:



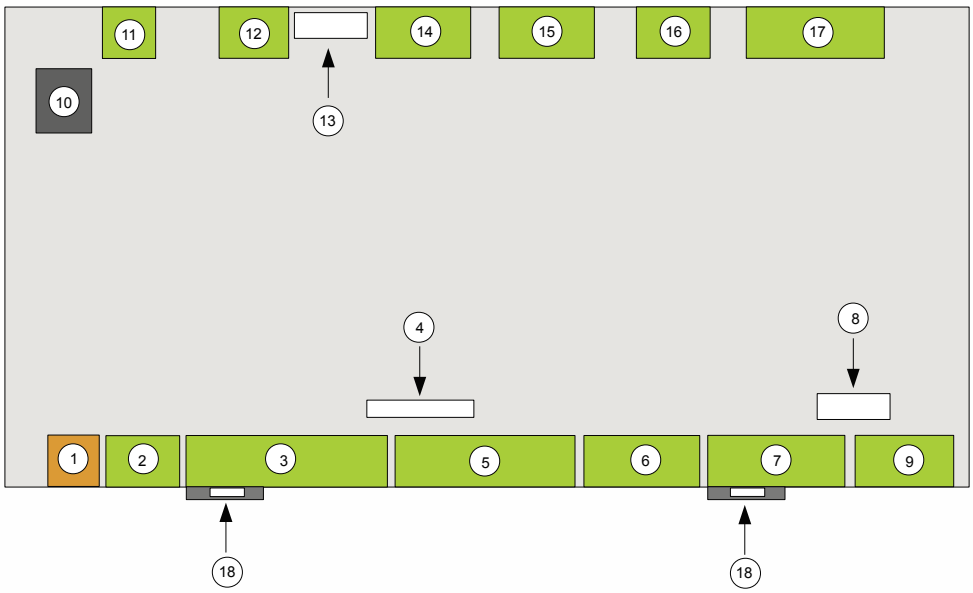
1 Communication port with the heat pump or to other devices. It always corresponds to the COM3 Port.

2 Ethernet cable for switch or router connection.

The wiring has to be made in the dedicated port on the board “P-LAN 2” (point 11 of the scheme in chapter 13.10).

11 Electronic board

KITA HR 10 - HR 12 - HR 14 - HR 14 Cold



1 Power 230 Vac
2 Sensor power
3 Analog inputs from B1 to B7
4 BMS port
5 Digital inputs from DI1 to DI7
6 Analog outputs from Y1 to Y4
7 Analog inputs from B8 to B12
8 Injection valve
9 Digital inputs from DI8 to DI12
10 P-Lan 1 Operator panel
11 P-Lan 2
12 RS485 Modbus port
13 Expansion valve
14 Block outputs C1 NO1 - NO3
15 Block outputs C2 NO4 - NO6
16 Block outputs C3 No7 - Nc7
17 Block outputs C4 NO8 - NO12
18 Bar hooks Din 35

11.1 Digital outputs

NO1	Integration
NO2	Defrost
NO3	Air-air or air-water indicator
NO4	Circulation pump
NO5	Condensate drain heating
NO6	Plant integration demand
NO7	General alarm
NO8	DHW integration demand
NO9	3-way valve
NO10	4-way valve
NO11	Oil heating
NO12	Desuperheater

11.2 Digital inputs

DI1	Summer-winter switch
DI2	Thermal sensor
DI3	High pressure switch
DI4	/
DI5	Disable plant
DI6	Photovoltaic inverter overproduction contact
DI7	System auxiliary heater security
DI8	Remote on-off
DI9	Switch modbus controller
DI10	Flow switch

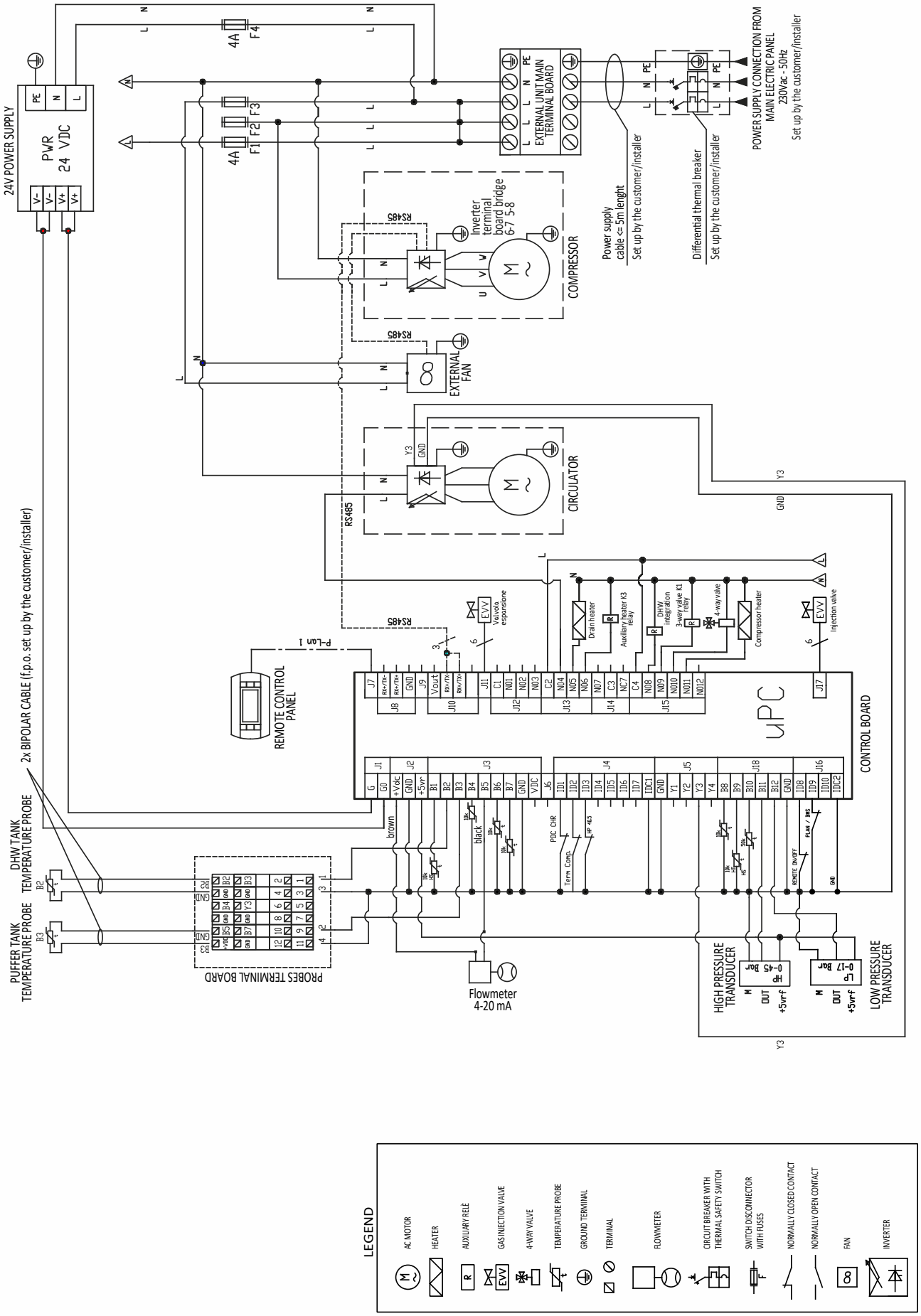
11.3 Analog outputs

Y1	/
Y2	Internal fan KITA Air
Y3	PWM circulator
Y4	External fan KITA Air

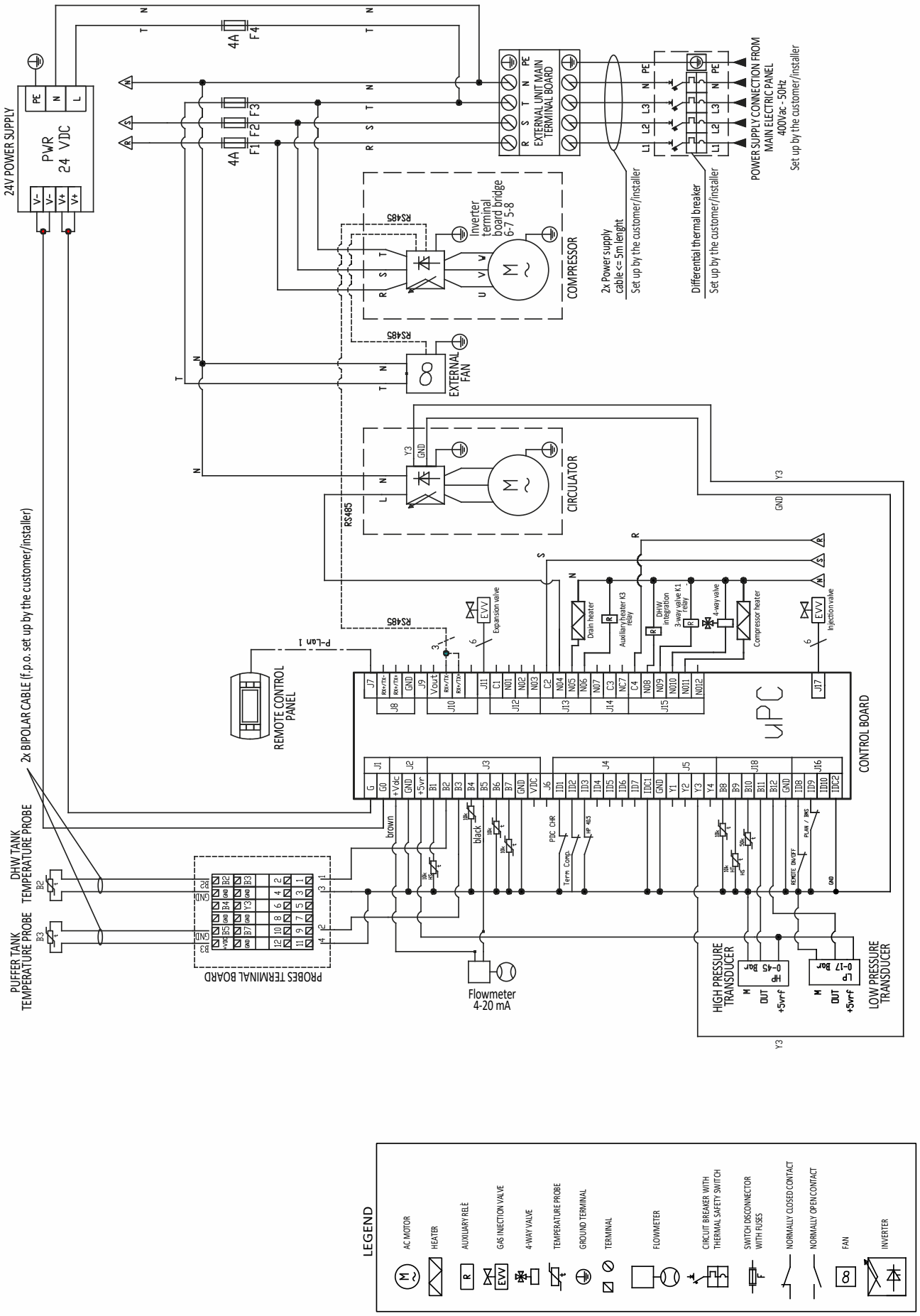
11.4 Analog inputs

B1	Subcooling
B2	Radiant probe
B3	Domestic probe
B4	Return probe
B5	Flow meter
B6	Head compressor probe
B7	Flow probe
B8	External temperature probe
B9	Drain probe
B10	Suction probe
B11	High pressure transducer
B12	Low pressure transducer

11.5 Wiring diagram KITA HR mono-phase

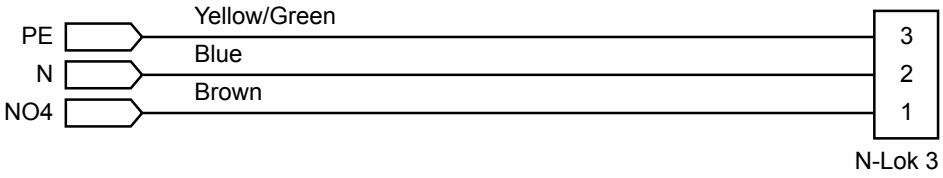


11.6 Wiring diagram KITA HR 3Ph

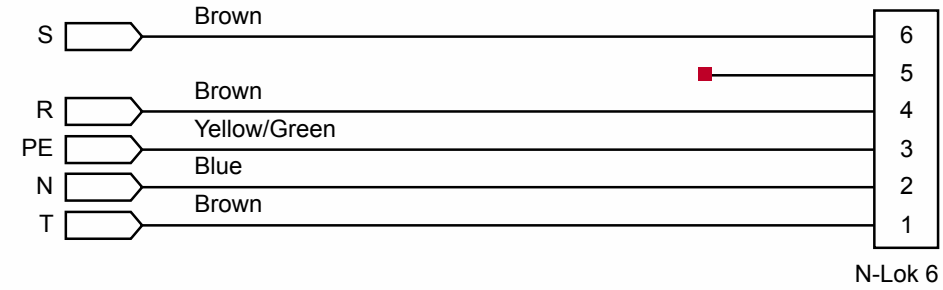


11.7 Internal wiring connection diagram

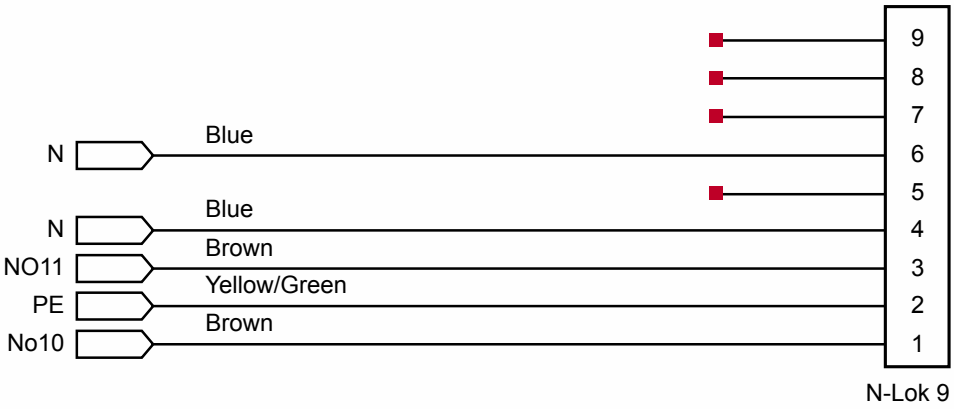
11.7.1 Circulation pump



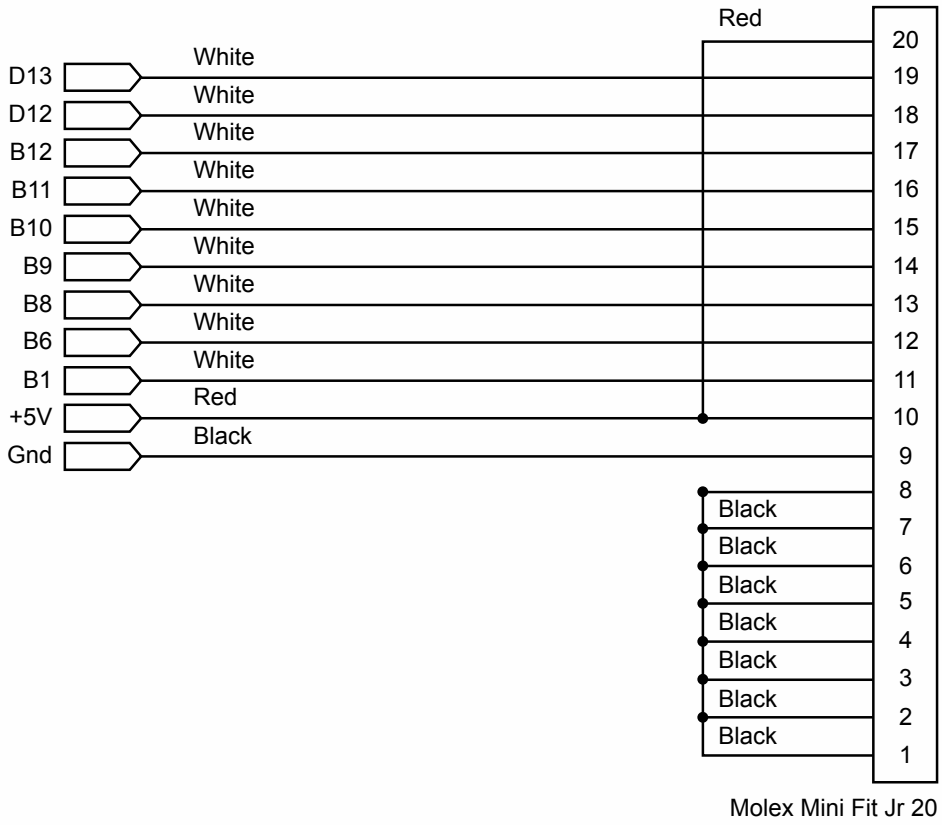
11.7.2 Fan



11.7.3 4-way valve and carter resistance wiring



11.7.4 Wiring probe



12 Initial operation

The start up of the system has to be made by a competent staff that received a specific training. After the correct hydraulic and electric installation of the heat pump (HP), as specified in previous pages, you have to proceed as following.

12.1 Preliminary checks

Make sure that power supply cables of HP have a suitable section as shown in the installer guide, on the base of the power used and the lenght of the cables and that siano stati inseriti suitable protection devices have been inserted. In the same way the signal cables have to have the features required.
Control that Y filter is correctly connected in the return pipe of HP so to avoid obstructions or malfunction of the heat plate exchanger.
After you checked the points mentioned above you can proceed with the ignition of the machine.

NOTE!

Pay attention after supplying the HP it will activate the authomatic function of oil heating (the duration depends from the necessary time to bring to temperature the oil contained in the compressor, then depending on the starting temperature).

12.2 Testing and startup

- Access to menù “Assistance”: PRG --> G. Assistance --> g. Manual management --> SERVICE PASSWORD

Flow check:

- Screen Gg01 N04: Pump primary, set up on manual function “MAN”.
  Verify the correct circulation of water in the circuit. If after 5 attempts of ignition the circulator doesn’t have the right flow, the red light turn on on the control panel, and it is necessary to check the effective opening of the hydraulic circuit (portcullis), the presence of air in the system or clogging in the Y filter and provide to remove them.

- Screen Gg01 N04: Pump primary, set up on authomatic function “AUT”

Vent valves , monoblock version.

Running of the compressor:
Every HP is tested in the company before the supply, but we suggest in any case to make a short running in, so not to solicitate overly the new compressor. In this regard we suggest to let in manual the rps compressor at a medium value (50-60 rps) for one/two hours at least.

- Access to menu “Assistance”: PRG --> G. Assistance --> g. Manual management --> SERVICE PASSWORD
- Screen Gg05 set up CH/HP in manual “MAN” and set up the rps (60). Now turn on the heat pump (Mode ON) and wait for some minutes until the compressor icon appears in the lower left.

WARNINGS!

During manual operation, probe B3 is ignored. If the functions setted in manual (MAN) during the running are not set back in automatic (AUTO) at the end, the heat pump will continue to

work until it causes a high pressure alarm.

Verify the proper operation:

- Access to menu "D. inputs/outputs" to control the different temperatures from sensors
- Screen D01: B1 it shows il valore of liquid sub-cooling in the heat pump, it has to stay in a range between 3 and 4, once achieved 35°C of water (see B7). If the hp is started up during the hot season, for the check of sub-cooling set up the fan speeds (Menu G. Assistance --> g. Manual management --> G. Assistance --> g. Manual management --> SERVICE PASSWORD --> Screen Gg02: set up "Speed Fan" in manual MAN and "Power required" at 5%. After checking the value of the B1 probe, reset the values as they were previously.
- Screen D02 and D04: control the sensor temperature B7 (water flow) and compare it with the sensor temperature B4 to see se if the circulator works with a correct deltaT (less than 8).
- Screen D06 and D04: control the B11 (condensation) with B7 (water flow): the difference between them has to be included between 1 and 2 grades for a proper operation. If the deltaT is more verify the presence of possible narrowing in the circuit.
- Screen D08: verify that the value SH (overheating) is included between 4 and 5
- Screen D15: verify, once set these conditions (B7 at 35°C and compressor at 60 rps and deltaT water <8 and SH between 4 and 5 and sub-cooling between 3 and 4) the drain overheating has to be about 20. During the normal operation, with free compressor, this value can reach 45K.
- Screen D16 (just available in the versions Kita-L, L42 and L66): control the proper operation of the injection valve, considering that over 12°C external the valve is off.
- Menu G. Assistance --> g. Manual management --> SERVICE PASSWORD --> Screen Gg06: activate a defrosting forced cycle, setting up "Start the defrost cycle" in YES (once ended the cycle the function automatically come back to AUT).
- Menu G. Assistance --> g. Manual management --> SERVICE PASSWORD --> Screen Gg01: "N09 Valv.3V ACS", set up in manual MAN, if the 3-way valve for domestic hot water management is installed, to test the proper operation.
- Restore all settings from manual MAN to automatic AUT.
- Verify during the domestic production, that the HP performs with priority respect to heating/cooling, that the difference of temperature between the sensors B7(water flow) and B3(domestic sensor that has to be placed in the upper part of the tank) mustsn't exceed 3 degrees.
- Verify that the working tensions and network frequencies are in the following ranges:
  230/1/50 -> valori ± 6%
  400/3/50 -> valori ± 6%

NOTE!

Some possible malfunctions can be intercepted at the start.
To extend the life of the heating pump it is a good habit to check the value of the sensor B11 (condensation) and subtract this value from B7 (water output). The delta T resulting, in case of proper operation, has to be between 1,5 e 2, depending on the thermal load of the heating pump and the water flow system side.
If the delta T is more than 5 then it is really probable that there is one of the following problems:

- air in the cooling circuit;
- air in the hydraulic circuit;
- low flow water side;
- faulty electronic valve (it works to close wrongly increasing the condensation value).

A high delta T could be the responsible of possible high pressure alarms; in particular during the production of high temperature water.

NOTE!

Other problem easily detectable is the steady opening of the electronic valve at 100%
possible reasons and solutions:

- lack of refrigerant gas in the cooling system; for this reason the electronic valve, to compensate the lack of gas, is open over the normal values.
- heat pump used in incorrect way. Example: installation of a heat pump undersized respect to the building that requires more power at rating levels. In this case for example the compressor works at 100% even with positive air temperatures; this fact requires an higher quantity of refrigerant than the project data. The heat pump Kita has to be sized to work at full speed just at minimum external temperatures. The electronic valves are optimized to work in the medium range of operation and for this reason oversized valves aren't installed, they would work too close causing instability in the system. Possible solutions:
  - control the proper operation of the valve
  - control that in the HP Kita there is the right quantity of gas
  - replace the heat pump if wrongly undersized resoect to the heating requirements of the building.

13 K-Touch Panel

13.1 Warnings

To be able to monitor the panel remotely using a VNC program, it is necessary that the house is equipped with internet access, and that the HCC Touch panel is physically connected via a network cable to the home router or switch.
The panel comes with the "Easy Access" function already activated, which lasts for the life of the panel. This function allows, using a specific client, to remotely access the panel using a PC or a Smartphone without further configuration, only by entering the user and password of the Easy Access account. Access credentials are provided by email to the customer at the time of activation. For this reason at the time of purchase it is necessary to provide a valid email address where you will receive all useful information.

13.2 Notes on the plant preparation for K-Touch panel

The K-Touch panel may only be supplied with power via the internal power supply of the machine, otherwise the guarantee expires.

MODBUS cable:	Templari HCC cable (similar Belden 3105A 2x22AWG shielded)
Power cable:	2x1 mmq
Power supply:	HCC POW 24Vdc, 2.5A

Prepare the electrical system for the passage of cable ducts by at least 16 mm in diameter for the passage of only MODBUS cable and power supply for sensors and devices.

Modbus connection

⚠ WARNING!

We recommend using the HCC CABLE data cable

The connections between the BMS board mounted on the machine and the K-Touch Panel must comply with the connections shown in Tab1 and Figure 1.
The K-Touch Panel can also be connected to the PLan network of the µPC as shown in Figure 6.

Connect the G (Ground) pole of the HCC Connect cable of the K-Touch Panel to the shield of the Modbus data network.
Connect the ground terminal of the power supply to the shield of the Modbus data network.
The shiels of the various cable sections, between the various devices that may be present, must be connected in series and NOT inserted in the G pole of each device, as in Figure2

BMS	Data cable	K-Touch Panel	HCC FLOOR e ROOM sensors
GND	shielding socket	shielding socket	
+	A	A	A
-	B	B	B

Tab1

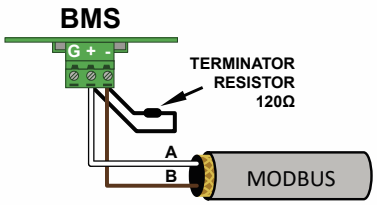


Figure 1

Installation Note:
In case there are more devices, MODBUS data cabling should ***not*** ever be done with direct branches that form Y or stars.
The connection between a device and the next must take place via "concatenated" connections, connecting in sequence the sensors and MODBUS devices. It is therefore convenient to prepare the fitting of cables for the passage of 2 MODBUS data cables; the first intended for the device in question and the second will be the return to connect the next device.
Each cable duct which ends on a sensor will then have at its inner 3 wirings:
2 MODBUS cables (one that comes inside plus one going out), plus one power supply consists of 2 wires 2x1
An exception is the 2-terminal devices (usually, the heat pump and the HCC panel) which instead will have a single MODBUS cable and one power supply.

- For Data cable less than 10 meters long, use only one 120 Ohm termination resistor, the one onboard the BMS or the one on the last chain peripheral.
- To use the HCC system remotely, via a VNC program, you must connect the RJ45 (LAN1) port on the back of the K-Touch Panel to a Router or Switch via an Ethernet cable.

⚠ WARNING!

The MODUS network ***must always terminate at the ends with a 120 Ω resistor, between terminals A and B***. Usually the network terminations are on the one hand the HCC panel and on the other the heat pump.

⚠ WARNING!

If the plant is designed to directly connected the heat pump to a floor system, such as underfloor heating, without intermediate systems, the absence of condensation is not guaranteed.

13.3 Connecting to the Kita heat pump

If you want to use the PGD1 remote control panel at the same time as the K-Touch Panel, you must use a **BMS** card, purchased separately.
If the BMS card is present, a 120Ω resistore must be installed at the both ends of MODBUS network. To enable the HCC to function properly, set the communication protocol to MODBUS RTU 485 via the PGD1 panel (mask Ge01).
Referring to the µPC, make sure you **DO NOT** have the terminal ID09 connected to GND as shown in Figure 5.
With this configuration you can simultaneously use the PGD1 control panel and the K-Touch Panel.

If the K-touch panel is the only display present and it is connected to the heat pump via the P-LAN port then it is necessary that the ID9 contact of the µPC board is connected to the Ground, as in figure 2.

13.4 System overview

This is an example of how to set up the plant.

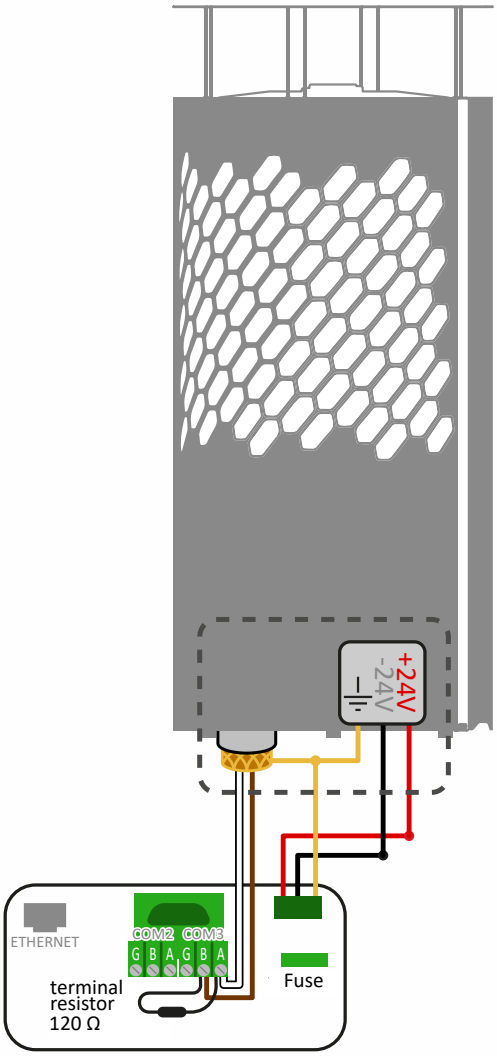
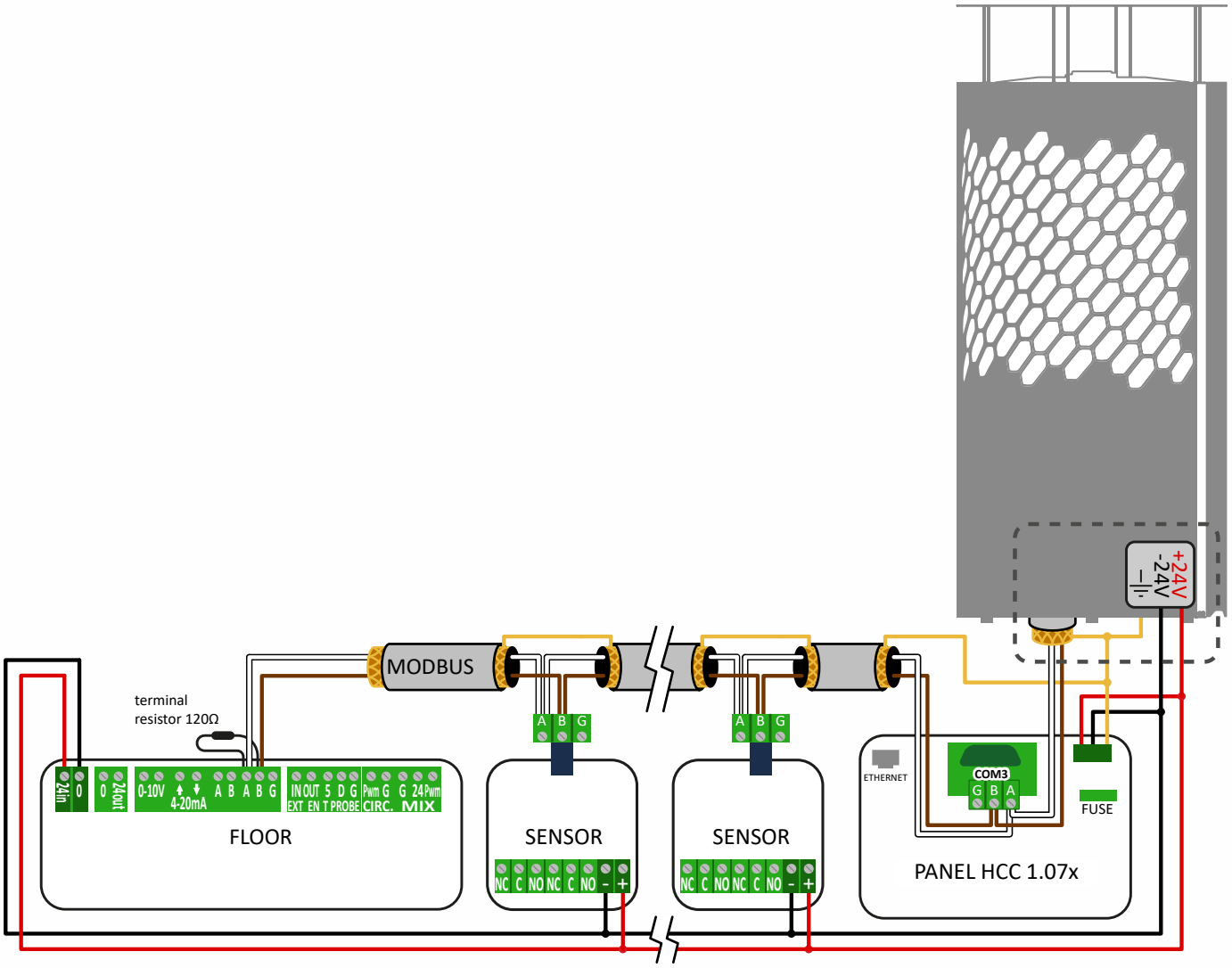
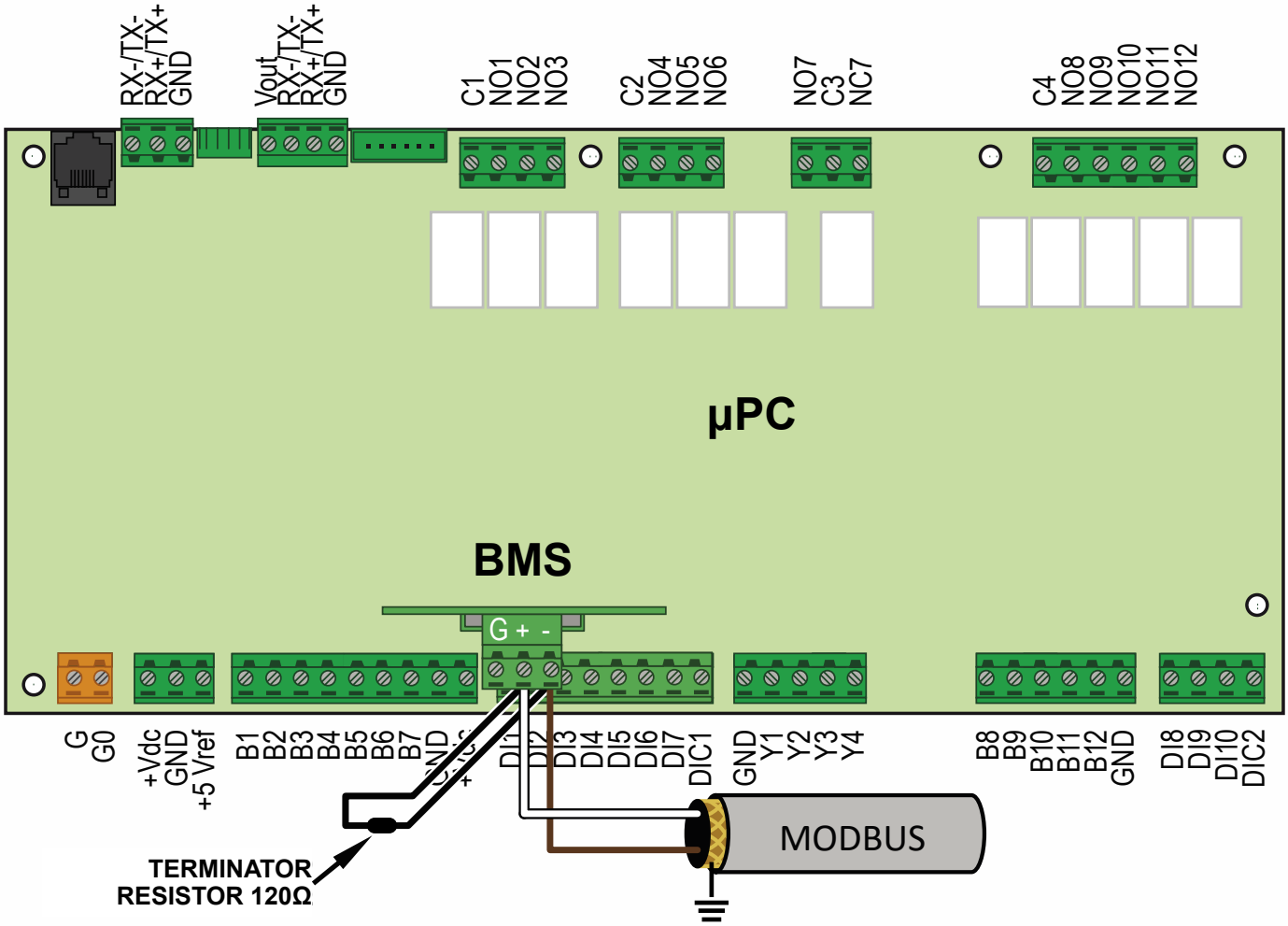


Figure 2

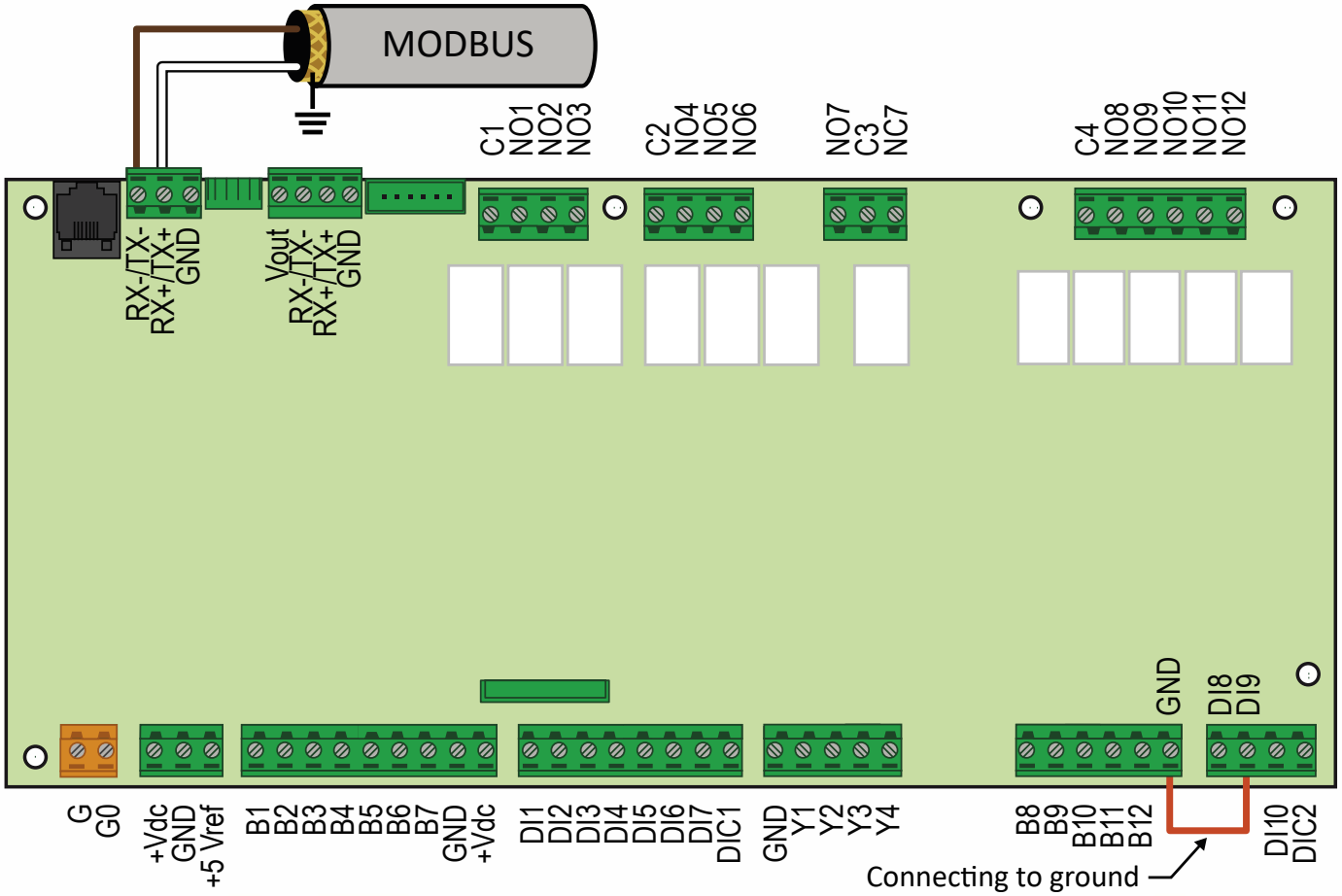
14 HCC connection



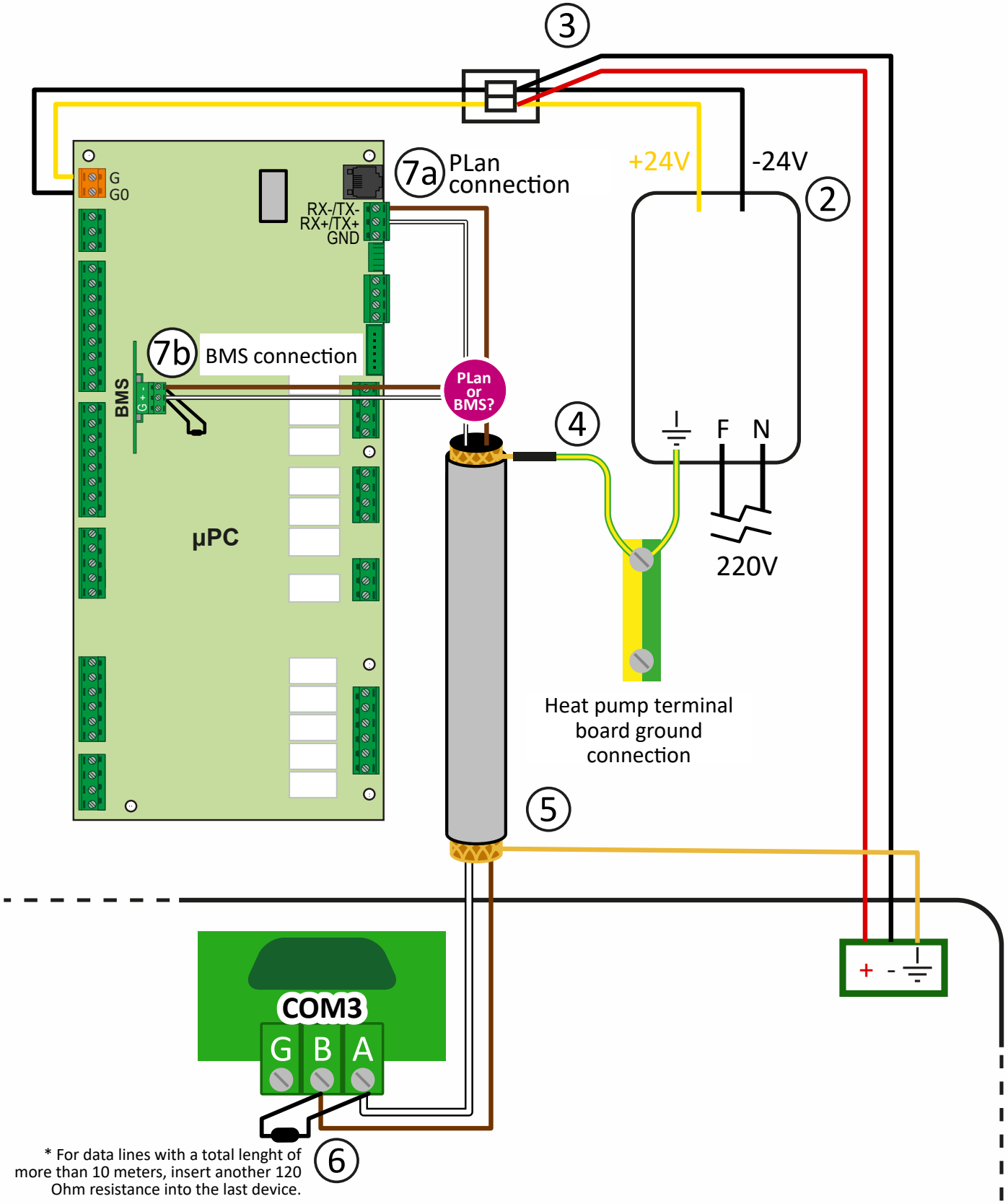
K-Touch panel connected via BMS



K-Touch Panel connected via P-LAN as the only display



14.1 Exploded view: Plan connection (7a) or BMS connection (7b)



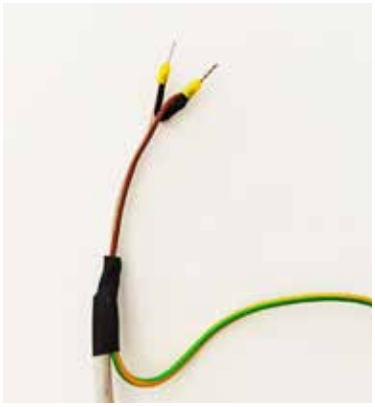
1. Panoramic
2. Power supply
3. Compact lever connector
4. Green/yellow shield ground connection
5. Shield
6. HCC touch panel connection
7a. µPC PLan connection
7b. µPC BMS connection

1 Panoramic

2 Power supply

3 compact lever connector

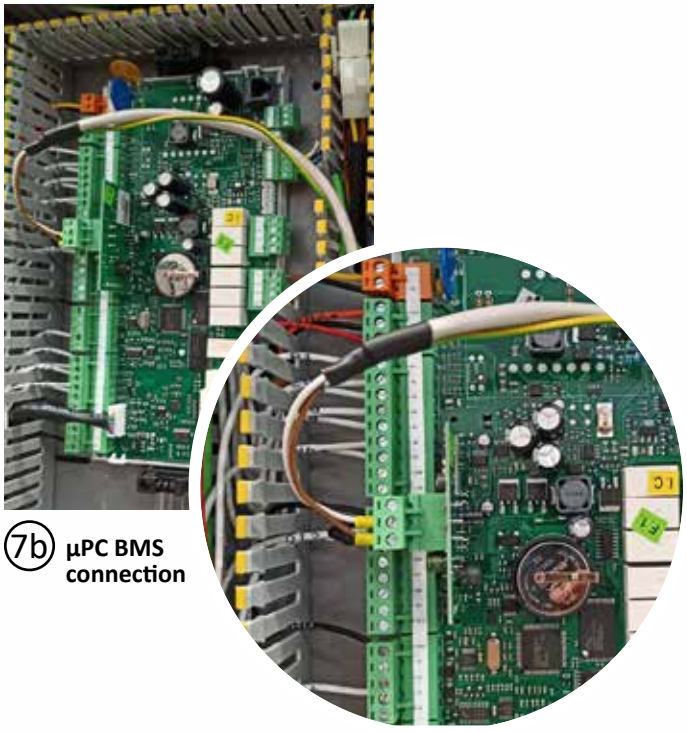
4 Green/yellow shield ground connection



5 Shield

6 HCC touch panel connection

7a **µPC PLan connection**



7b **µPC BMS connection**

Watch the video for the K-Touch connection to the heat pump.

15 Control terminal

In Kita Split the terminal is assembled on the front of the indoor unit. The terminal of the unit is serially connected by P-LAN line to the outdoor unit.
In the control software all the regulation necessary to grant the operation and the security of the machine have been implemented, and by the terminal you can monitor the function of the unit and set the parameters of operation preference (summer/winter setpoint...). Some example figures to use the command and the machine will be reported below.

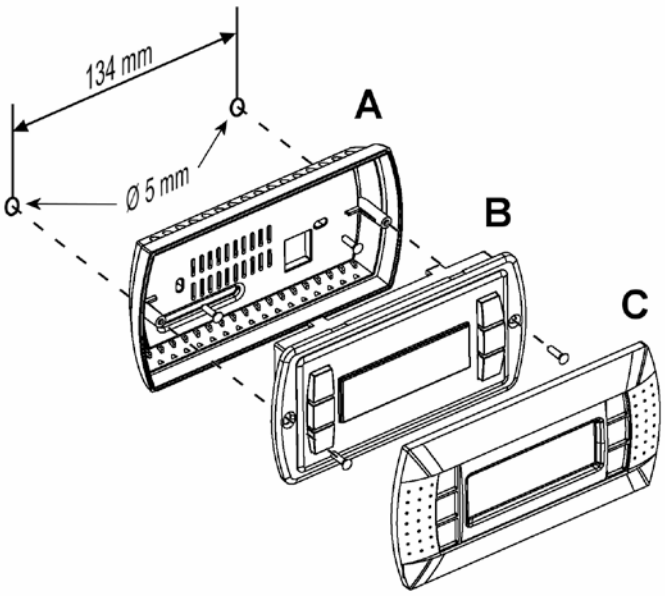
15.1 Fixing of the panel

The panel can be fixed:

- directly on the wall through the screws and the fischer supplied with the kit (optional version supplied on demand).

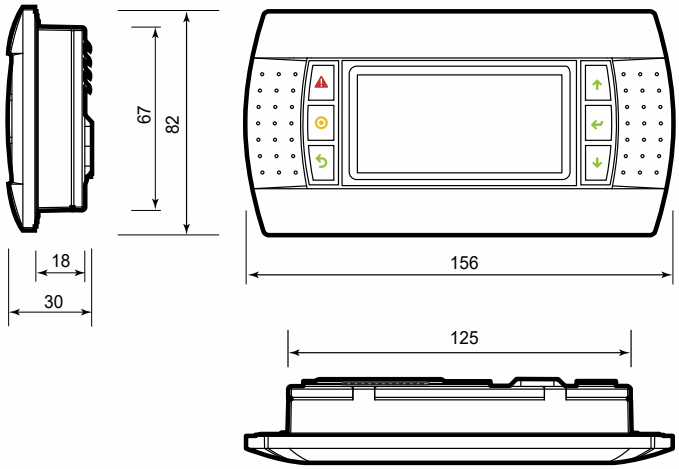
To fix the panel proceed as shown:

- fix the back box (A) to the standard box or to the wall (Fig. 2);
- connect the phone cable to the panel;
- fix the front (B) to the back box (A) by the screws supplied with the kit;
- instal the snapframe (C).

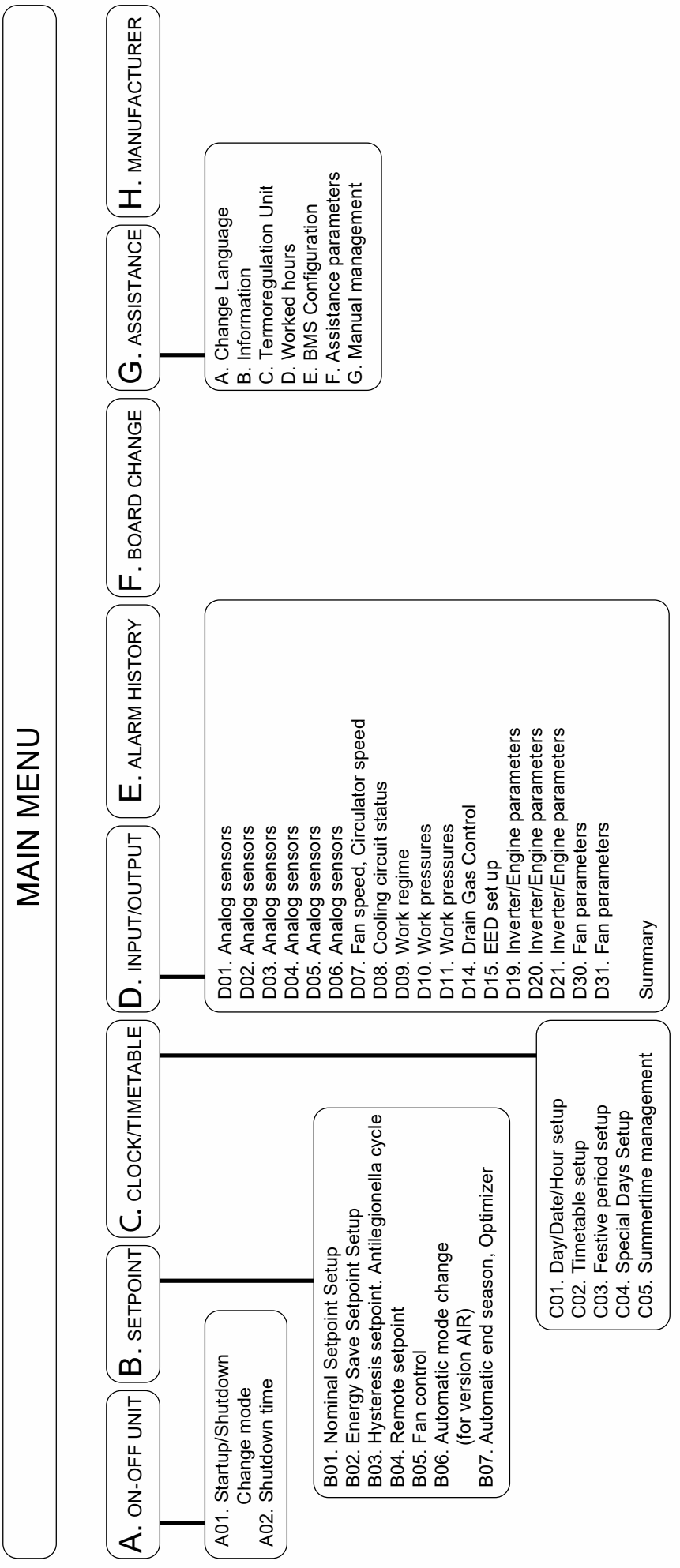


(Fig. 2)

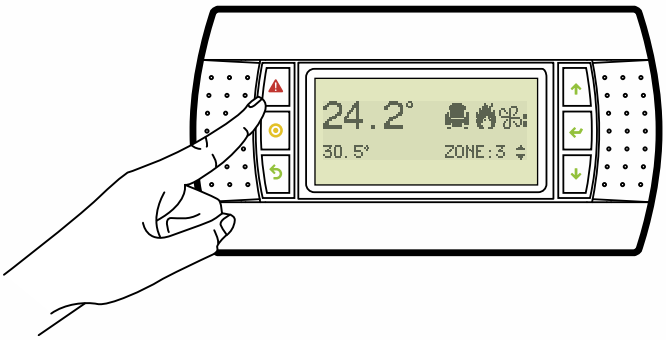
15.2 Measures of unit command



15.3 Menu overview

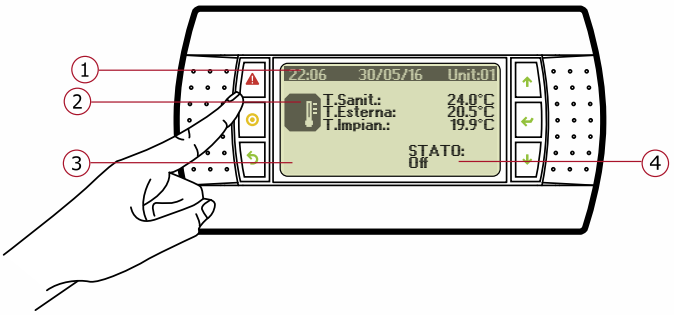


15.4 Terminal buttons



	-Alarm	Visualize the list of the active alarms.
		It allows to enter in the main menu tree.
		Come back to the previous screen.
	-Up	It scrolls a list up or allows to increase the value visualized on the screen.
	-Down	It scrolls a list down or allows to decrease the value visualized on the screen.
	-Enter	Enter in the selected submenu or confirm the set value.

15.5 Display of the terminal



1 - indications about date, time and unit connected.
2 - main sizes and active request

	No active requests
	domestci hot water active request
	Hot water request from primary circuit
	Cold water request from primary circuit
	Total recover: request DHW + cold water from primary circuit

3 - Main active actuators

	It is activated at the same time compressor/s start up.
	It is activated if there is a request of heating of the domestic water
	It is activated when one of the pumps of the system is on, except for pumps solar collectors
	It is activated if the sola collectors are installed and active
	It is activated if the integration system of the unit (resistance or boiler) is working. If in the same time the icon “solar collectorsi” is active, just the last is displayed.
	It is activated when a defrosting is in progress, alternatively to the 2 icons shown above

4 - Condition of the unit
The conditions in which the unit can be are:

- OFF
- ON
- ENERGY S.
- AUTO-OFF
- AUTO-ON
- AUTO-E.S.
- Din-OFF
- BMS-OFF
- ALARM-OFF
- PROTECT
- BOILER AUTOMATIC MANAGEMENT IF REQUIRED

OFF
The machine is in standby: the antifreeze function stay active (attivation internal circulator and, if required from too cold external temperature, compressor activation) contrary it isn’t active the regulation according to the request of the system

ON
All the functions are active e la macchina regola seguendo la richiesta dell’impianto.

ENERGY S.
Tutte le funzioni sono attive and the machine set according to a setpoint “reduced” (settable from the screen B02, see here below). This condition permits an energy saving.

AUTO-OFF
The machine sets according to the set time tables (screen C02) and following the nominal setpoint (settable from the screen B01). The machine is in OFF.

AUTO-ON
The machine sets according to the set time tables (screen C02) and following the nominal setpoint (settable from the screen B01). The machine is in ON.

AUTO-E.S.
The machine sets according to the set time tables (screen C02) and following the setpoint of Energy Saving (settable from the screen B02).

Din-OFF
The machine is turned off by an input digital contact (if provided).

BMS-OFF
The machine is turned off by a supervisor BMS (if provided).

ALARM-OFF
The machine is in OFF because of an alarm.

PROTECT
Antifreeze function for cold external temperatures and too low temperature of the system: the compressor is active until reaching a system temperature of 40°C.

BOILER AUTOMATIC MANAGEMENT IF REQUIRED
The start up of the boiler is automatically managed by the control of the heat pump.

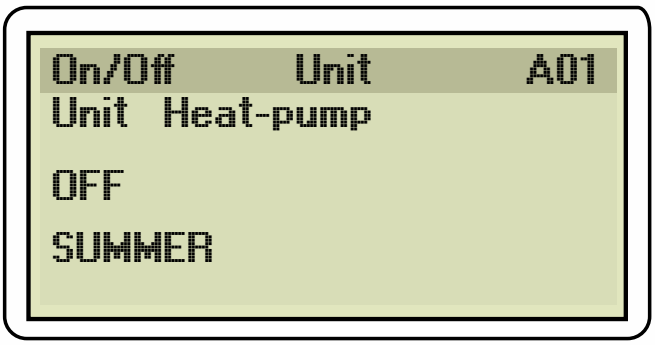
15.6 Main menu

To enter the menu press the button ***Prg*** .
Press the buttons ↑ and ↓ to navigate manus. At the end of operations, press ***Esc*** to come back to the main screen.

Here below the 8 menus:

A.		On-Off unit
B.		Setpoint
C.		Watch/Time table
D.		Inputs/Outputs
E.		Alarm history
F.		Board change
G.		Assistance
H.		Manufacturer

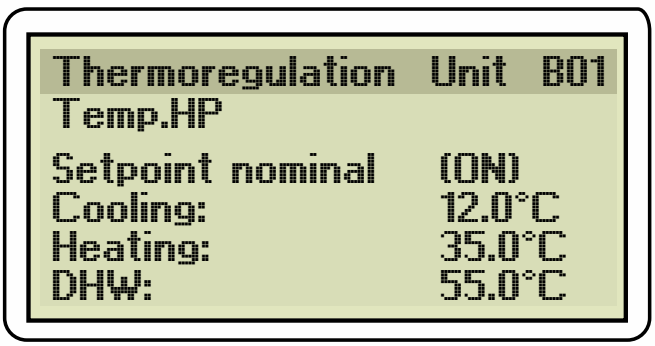
15.7 ON-OFF menu



Mask A01: it permits to set the condition and the operation mode. The state OFF set in this menu is always conditioned (ex. antifreeze operation).

MasK A02: It turns off without conditions the pump for a certain period of time. Expired the time the function A01 is rehabilitate.

15.8 SETPOINT menu



Mask B01: Variations of nominal setpoint.

Mask B02: Variations of Energy saving setpoint. We suggest the use of the Energy saving during the night or during long absences from home. To reduce the consumption of the unit we suggest to use the climatic curve instead of setting the Setpoint, because it permits a continuous flow.

Mask B03: it permits to activate the program of anti-legionella cycles. For the setpoint we suggest 70°C as per manufacturer data.

MasK B05: it permits the choice of fan operation mode. It is possible to chose between the following conditions:

- POWERFULL: it is the most efficient condition, that also involves the noisiness of the greater fan.
- NORMAL: it is the condition of operation set by the manufacturer, it permits a very good compromise between efficiency and noisiness.
- QUIET1 - QUIET2 - SILENT: in these conditions of operation the fan is slowed down respectively of 10, 15, 20 percentage points. Those conditions permit to work with a noisiness more and more reduced. We underline that setting this function the efficiency of the machine too is progressively reduced.

Mask B06: Only in AIR version. Automatic Mode Change to pass from cooling mode to heating mode defining a confort zone in which neither mode is active. To activate the function the difference between the cooling and heating setpoint has to be equal to Delta Confort. It also allows to set the operation mode of the internal fan. The internal fan can follow the request (compressor speed) low medium or high or control the condensation.

Mask B07: Authomatic Season End. You have to set the daily average temperature above which the heating function turns off and the daily average temperature below which the heating function turns on; if present the domestic function stay active.

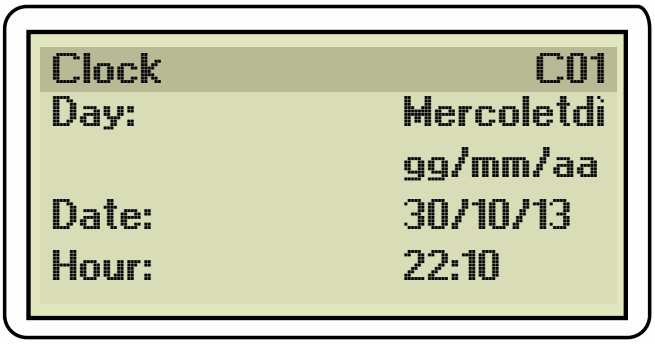
- **En. autoswitch:** activate and deactivate the function.
- **HP disable Ext. T.:** the daily average temperature above which the heating function turns off
- **HP enable Ext. T.:** the daily average temperature below which the heating function turns on.
- **Average Ext. T.:** the actual daily average temperature.

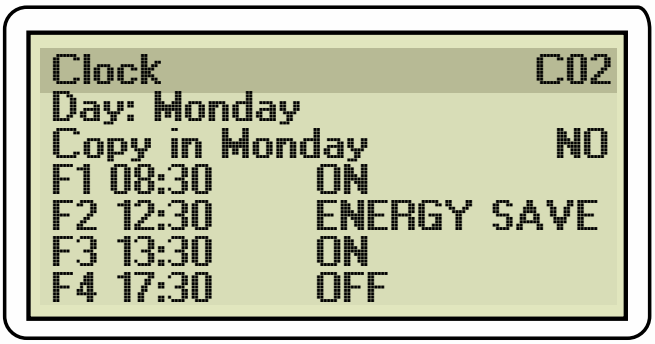
Mask B08: Optimizer management. The optimizer is an algorithm that allows to store energy using the thermal inertia of the building when the conditions are more favorable.

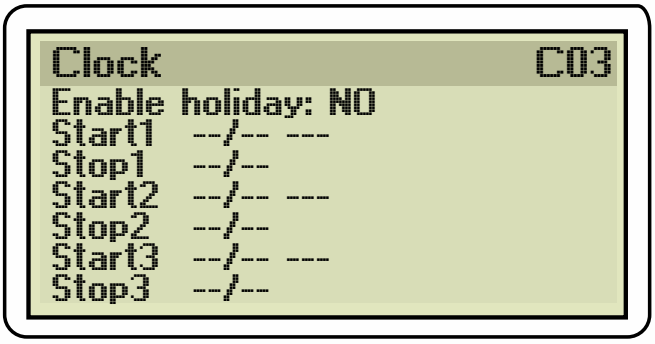
- **Active optimizer:** it activates or deactivates the function.
- **Final Setpoint :** it shows the reference value of the heat pump including the Delta Optimizer.
- **Delta Optimizer:** it shows the delta (positive or negative) due to optimization algorithm.
- **Influence:** it sets the minimum value (delta negative) and maximum (delta positive). This function is needed to limit the influence of optimizer if necessary.

Mask B09: it allows to set a hysteresis in shutdown. Once reached the Setpoint the machine, instead of turn off, continue operating at minimum until reaching this target on setpoint set up. If in the meanwhile the request increases again (ex. request from the domestic) the compressor come back to the operating regime required.

15.9 Clock/timetable menu







Mask C01: Date and time set up.

Mask C02: It allows to set up the timetables.
To have access to timetables change set up from menu ON-OFF the conditions OFF and AUTO.
Press the button ↵ to choose the day when you want to set the timetables.
Use the buttons ↑ and ↓ to change the value displayed.
Confirm with the button ↵ .
Press twice the button ↵ to shift to the timetable setup:

- F1: it means the timetable from 00:00 of the selected day, till the time set in F1.
- F2: it means the timetable from the time selected in F1 until the time set in F2.
- F3: it means the timetable from the time set in F2 until the time set in F3.
- F4: it means the timetable from the time set in F3 until the time set in F4.

After entering the time in the first time period, confirm with ↵ to set the wanted operation mode in the time period concerned (choose between ON - OFF- ENERGY SAVE).

Confirm the choice with ↵ and proceed con with the setting of the other timetables.
To set the timetables in the other days press ↵ and proceed as explained above.
Contrary it is possible to copy the setting in different days:
once entered in mask C02

- press the button ↵ to have access to the choice of the day you want to copy
- use then the buttons ↑ and ↓ to choose the day
- Confirm with the button ↵
- With the buttons ↑ and ↓ choose the day when you want to copy the timetables
- Confirm with ↵
- With the button ↓ choose YES and confirm with ↵

Mask C03: It allows to enable three periods with pre-set operation.

- Press ↵ and ↓ to enable/disable the period/s.
- Confirm with ↵ to access to the starting day of the particular period.
- Use the buttons ↑ and ↓ to choose the starting day
- Confirm the choice with ↵
- Chose the operation mode with the buttons ↑ and ↓
- Confirm with the button ↵
- Use the buttons ↑ and ↓ to choose the final day
- Confirm your choice with ↵
- Repeat the same action to set if necessary the remaining periods.

Press *Esc* to come back to menu.

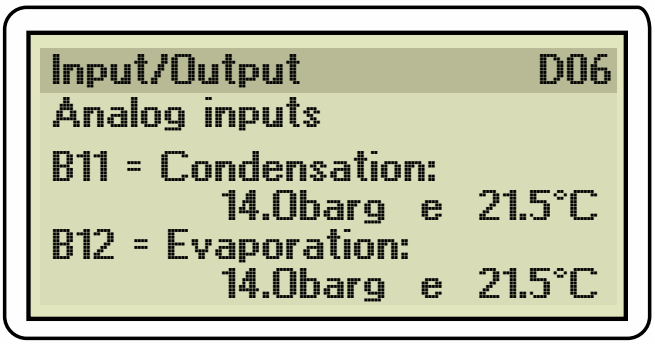
Mask C04: It permits to enable a pre-set operation for 6 different days maximum.

- Press ↵ and ↓ to enable/disable the special day/s
- Confirm with ↵ to enter the choice of the starting day of the particular period.
- Use the buttons ↑ and ↓ to choose the starting day
- Confirm the choice with ↵
- Choose the operation mode with the buttons ↑ and ↓
- Confirm with the button ↵
- Repeat the same actions to set if necessary the remaining particular days.

Press *Esc* to come back to the menu.

Mask C05: It enables the automatic transition from winter time to summertime. The parameters are at first set by the manufacturer.

15.10 Input/Output menu



Accessing to this menu it is possible to read a lot of values.
From the screen D01 to the screen D06 it is possible to read the following sensors:

B1: difference between primary flow temperature and return liquid temperature from the plate heat exchanger: it represents the SUBCOOLING in the heat pump operation (heating).
B2: temperature of the sensor to enter in the puffer of the system. If activated the function NoPuffer (from the menu Assistance) the sensor B2 is ignored.
B3: Domestic temperature sensor to enter in the top part of the domestic boiler. If only one tank is present working both on the system and on the domestic justa sensor has to be used.
B4: return temperature of the system.
B5: flow read by the flowmeter.
B6: compressor head temperature
B7: sensor of the flow temperature of the plate heat exchanger water/gas refrigerant.
B8: External air temperature.
B9: flow temperature of the compressor.
B10: suction temperature of the compressor.
B11: condensate pressure and relevant temperature.
B12: evaporation pressure and relevant temperature.

Mask D07: speed management of the fan and circulator.

Mask D08: view of the condition of the cooling circuit: percentage of electronic expansion valve opening, B10, B12.

Mask D09: view of working regime.
- Capacity required.
- Real capacity.
- Compressor speed.
- Waiting time ON: minimum time elapsing between a shutdown and the other, or time necessary to equalize the pressure of high and low to the right starting value.

Mask D10: it is show the working zone in the envelope and alarm count down “out of envelope”.

Mask D11: it dispays information about pressures.
- differece between pressure of high and low
- relation between pressure of high and low
- alarm count dow “delta P low“

Mask D14: shown the temperature of compressor drain and relevant condition and envelope zone.

Mask D15: overheating of compressor drain and relevant control type active.
- SSH = Suction Super Heating
- DSH = Discharge Super Heating

Mask D19: Parameters Inverter/Engine

Mask D20: Parameters Inverter/Engine

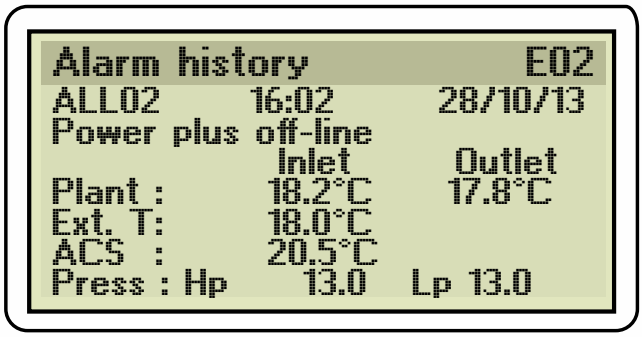
Mask D21: Parameters Inverter/Engine

Masks D30, D31: masks relevant to the external battery fan. You can find the rpm and instantaneous power absorbed.

Mask D32: it displays the performances.
- flow
- delta T (B7 - B4)
- electric power absorbed
- thermal power
- COP

Mask D33: summary of the unit parameters

15.11 Alarms history menu



In this menu it is possible to display the alarms due to a possible protection intervention. The alarm list is in the chapter 13.

15.12 Board change menu

The board change menu allows to display the other heat pump/s when they are connected in pLAN and the settings of electronic board/panel allow it.

15.13 Assistance menu

The Assistance menu presents a submenu structured as follows:

a. Language change
b. Information
c. Input / output assistance
d. Hours worked
e. Config. BMS
f. Param. Assistance
g. Manual management

A. LANGUAGE CHANGE
This menu allows the language change, if available.
Mask Ga01
Possible language: Italian, English, German e French.

B. INFORMATION*
This menu contains masks where there are relevant information to the software, to the control board, to the valves and the inverter, reserved to the technical assistance.

C. INPUT / OUTPUT ASSISTANCE
This menu contains masks of input and outout reserved to the technical assistance.

Gc16: it displays in steps and percentage the injection valve opening.
Gc17: inverter status.

Gc18: inverter status.
Gc22: inverter status.
Gc23: inverter status.
Gc24: digital inputs
Gc25: digital inputs
Gc26: digital inputs
Gc27: digital outputs
Gc29: digital outputs
Gc32: fan status

D. WORKED HOURS
This menu allows to monitor the working time

Mask Gd01: In this mask operation total hours of the heat pump are displayed.

Mask Gd02: In this mask it is displayed the number of defrost made by the machine during the operation in heat pump.

E . CONFIGURATION BMS
This menu allows to set the communication protocol of the port "BMS" of the electronic control. This menu is protected by a password. Only the authorized staff can enter it.

F . ASSISTANCE PARAMETER
This menu is protected by a password. Only the athorized staff can enter it.
a. Counter settings
b. Sensors calibration
c. Thermoregulation
d. default user / change password

a. COUNTER SETTINGS
Reserved to the authorized staff

b. SENSORS CALIBRATION
Gfb01: sensor calibration B1 and B2
Gfb02: sensor calibration B3 and B4
Gfb03: sensor calibration B5 and B6
Gfb04: sensor calibration B7 and B8
The position of B8 sensor may affect the operation of your heat pump, therefore only for sensor B8 it is possible to choose:
- **on board:** the sensor on board is set
- **remote**: remote sensor is set

Gfb05: sensor calibration B9 and B10
Gfb06: sensor calibration B11 and B12
Gfb07: offset S1, S2
Gfb08: offset S3, S4
Gfb09: enable and set sensor calibration B2 and B3

c. THERMOREGULATION
Mask Gfc01: it sets the presence of a puffer and the auxiliary integration.
- **puffer presence:** (yes - no)
- **system integration:** (none - boiler)
- **domestic integration:** (none - boiler)

Mask Gfc02: Configuration request integration parameters.
It allows to define the thresholds of auxiliary integration intervention (boiler / electric heater) to the heating based on the request (the ability to reach the set point in a given time interval) and on its proportional part.
It is defined the working condition to which the heat pump requires help from the integration, namely the condition of "crisis".
- **ON-Request:** it represents the request generated by PID of the reached water that activate the integration.
- **ON-Propor.:** it represents the distance from the set, in percentage, over that activate auxiliary integration.

For example: the percentage of the proportional band Hc06 as per factory default is set at 10. The 60% of 10 is 6°C . It represents the proportional enabling the integration of auxliary heating. Higher this value is it means the machine is far from set. If this value was low and the previous higher, the boiler could start even if it isn't necessary, for example if the machine stayed near the set (low proportional) for long time (high integral pushing), no reaching it. In qthis case the machine would be a little subsized but it could heat the water in any case, without a necessary intervention of the boiler.
The combination of the two previous parameters, then, identifies when the machine is really in crisis and needs integration. Happening both conditions the integration is active.
- **OFF-Propor.:** it's the percentage of the proportional band Hc06, that as defaut is set at 10, under that the integration shut down.
- **OFF-Diff.:** Degrees the integration has to produce more on Setpoint set on the heat pump.

Mask Gfc03: integration activation in case of need (heat pump in "crisis").
- **Setpoint act.:** external temperature value under that the boiler is enabled to start if the machine is considered in crisis (parameters in Gfc02)
- **Differential:** deltaT positive, that is the integration is enabled until the external temperature reaches a temperature equal to Setpoint+Differential.
- **Boiler activation delay:** verify previous conditions, the boiler is activated if they stay for the time set.

Mask Gfc04: integration activated according to the outside temperature.
In this case the integration started when the outside air temperature falls below the set value. Once activated the auxiliary source, it works in conjunction with a heat pump, unless it is not been set her to turn off.
Integration remains active until it reaches the set water setpoint, although the air temperature rises above the value set.
- **Setpoint act.:** external temperature value that enable the heating control, heating independent from other factors
- **Differential:** deltaT positive, that is the integration is enabled until the external temperature reaches a value equal to Setpoint+Differential.
- **Turn off compressors:** it allows to turn off the heat pump under the defined temperature in Setpoint act. : the integrated system totally replaces the heat pump.

Mask Gfc05: integration to HDW based on the external temperature.
- **Diff.on HWD:** value of external temperature over that the integration HWD system turns on, it stays on until the reaching of the set value in Diff.off HWD.

- **Diff.off HWD:** temperature threshold under that integration system for HWD turns off.
- **Delay ON:** activation delay of the integration once respected the conditions above.

Mask Gfc06: setting of the temperature curve.

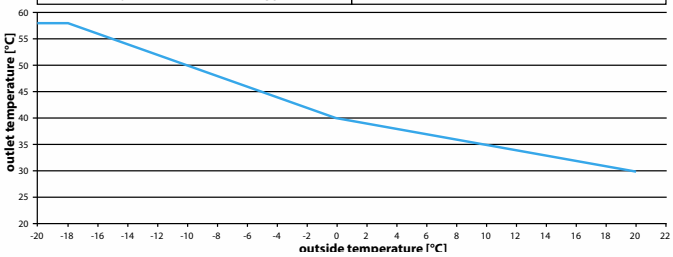
- **Regulation of temp. primary system:** the choice is between the wording "FIX POINT" and 3-POINTS CURVE:

FIX POINT: the machine adjusts according to the setpoint set, every temperature of the external air

3-POINTS CURVE: it is the setting suggested by us. It's impossible directly set the three temperature points external/set point temperature, the logic builds a broken line as the following figure:

Heating curve setting

outside temperature	outlet temperature	maximum oulet temperature	58
-10	50	minimum outlet temperature	25
0	40		
10	35		



It is also displayed the nominal active Set.
Changing the nominal Set from the menu SETPOINT (B01) the entire climate curve will have a translation positive or negative according to the Set. (for example, changing the nominal set from 35°C to 33°C the whole curve will lower 2°C in every working condition).

Mask Gfc07: riserved

Mask Gfc08: circulator management disabled puffer.

- **Delay OFF:** when the compressor stops, the circulator works for the number of seconds set
- **start delay:** time in minutes from the turning off of the compressor to the start up of the function;
- **Pump ON time:** circulator operation time;
- **Pump OFF time:** circulator stop time

Maschera Gfc15: reset antifreeze alarm.

- **Reset antifreeze alarm primary circuit:** it allows to establish if the rearming is manual or automatic.
- **Manual:** (default) the machine restarts only if the user resets resetta manually the alarm.
- Auto: the machine restarts automatically when the flow temperature is increased to the value Set_alarm_antifreeze + Diff._Activat

Mask Gfc16: circulator operation mode.

- **It actives pump primary circuit:** it is possible to choose "ON DEMAND" e "ON UNIT'".
  - **On demand:** the circulator just starts if required by the heat pump (that is when there is a request for the ignition of the compressor or to manage possible antifreeze alarm).
  - **On unit:** the circulator starts when the unit is ON.
- **Pump for antifreeze:** it enables the activation of the pump (circulator) for the function antifreeze winter.

Mask Gfc17: Setpoint on the system temperature for the activation of the antifreeze that activates the circulator.
Set antifreeze pump primary circuit: temperature set that activates the winter antifreeze protection. When the flow temperature (sensor B7) is lower than the value set hear, the circulation pump is activated to keep a continuous flow in the hydraulic lines.

- **Diff. Activat. antifreeze pump:** the pump, activated by the antifreeze protection, continues working until the flow temperature is equal to Set+Diff.

Mask Gfc18: Setpoint on the external temperature for antifreeze activation that activates the circulator.

- **Setpoint:** value of external temperature under that winter antifreeze function is activated. That is it starts the circulator for the recirculation of the water in the pipelines.
- **Diff.:** differential of temperature that, added to the setpoint, determine the temperature of the external air that blocks the winter antifreeze function when it is active.

- **Time ON** and **Time OFF** represent the cycle of activation and shut down of the heat pump during the function of winter antifreeze protection. Time ON and OFF are expressed in minutes

NB: the setpoint of these screens (17 and 18) depends on the type of installation. For example with air sensor B8 exposed to the sun an incorrect value coud be read and nullify the function. If the sensor is exposed to the sun we suggest to install a remote sensor and install it in a shady place.

Mask Gfc20: resetting set overheating reset .

- **Reset overheat. alarm primary circuit:** it permits to establish if the restting is manual or automatic.
  - **Manual:** (default) the machine restarts only if the user resets the alarm manually.
  - **Auto:** the machine restart automatically when the flow temperature is decreased to the value Set_alarm_overheat-Diff._Activat.

Mask Gfc21: selection for the setting of the mode (winter or summer) through user panel or remore external switch (digital).

- **Summer/Winter selec. Season from:** it is possible to choose between "KEYBOARD" (operator panel) or "IN. DIG. 1" . In this case you have to consider it isn't enough to manage the commutation summer/winter but also the production of the domestic hot water if the unit has also to produce DHW. About this see documents relevant to the function no puffer in the end of the manual.

Mask Gfc22:

- **Enable protection:** it allow to enable or not the function winter antifreeze protection that activates the compressors when the plate heat exchanger reaches a temperature too low.

If the previous parameter is active, also the following parameters become editable:

- **Unit ON:** flow water temperature value (sensor B7) that activates the function
- **Unit OFF:** flow water temperature value (sensor B7) that stops the protection function.

Mask Gfc23: enabling external reports

- **It enable warning reports on output NO7:** it allows to enable the digital output NO7, to whom it could be connected for example a notification led, when the machine is in alarm for minor causes.

Mask Gfc25: defrosting setting.

- **Fan consumtion:** fan consumption in W sized by the electronic and used to start the defrosting procedure.
- **Start up delay:** start up delay of the compressor after that it is allowed the defrosting start up. To avoid that the defrost starts just after the ignition of the compressor, situation where you can have the conditions of the defrost start up, due to the start up dynamics.
- **Fan delay:** waiting time before of starting the defrost
- **Defrost delay with temperature differencies:** Waiting time for the activation of the defrost for delta T.

Mask Gfc27: parameters defrost.

- **En oil defrost:** element that allows to enable the returno of the oil through defrost cycle. If enabled and if the unit required the return of the oil normal defrost procedure is activated with maximum settable speed with the following parameter “Defrost Speed”.
- **Low speed defrost:** if ate the moment of defrost start up the compressr had a lower speed than the Thershold the compressor speed during the defrost will be defrost speed.

Mask Gfc34: drip parameters.

- **Drip manag.:** it enables the operation of the fan before the inversion of the 4-way in output from the defrost cycle, that rotating at a high rpm promotes the disposal of the water drops still in the battery.
- **Fan Dripping Speed:** it is the speed where the fan is forced il ventilatore in this specific phase of the defrost process.
- **Fan reverse Dir:** it allows to enable or not the reversing of the rotation direction of the fan. If enabled, the dripping is made with a fan that turns in the opposite.

Mask Gfc37: defrost parameters.

- **Integration of the system during the defrosting.:** It enables the integration generator to the system (boiler or electric resistance).
- **Def. end max time exceeded:** it allows to choose between HISTORY and HISTORY+ALARM, that is to choose the registration/reporting mode of the event “the defrosting is finished because the maximum time is exceeded”.

Mask Gfc50: It allows to enable the condensate drain in fix or intermittent mode in base on the external temperature.

- **Res.drain cond.:** it enables the activation of the resistance for the condensate drain.

  • **ALWAYS ON (Set1):** in this condition, the resistance is always active under this parameter
  • **Set:** value of temperature reached that the resistance condensate drain is always active.
  • **Diff:** differential of temperature. When the xternal temperature is equal to Text= Set+Diff you go out form this function

  • **MODE ON-OFF (Set2):** in this condition the resistance is activated under the set, at time intervals as defined from the following parameters.
  • **Set:** value of temperature reached that the function is activated.
  • **Diff:** differential of temperature. When the external temperature is equal to Text= Set+Diff you go out from this function
  • **T.On:** time of on of the resistance in minutes.
  • **T.Off:** time of off of the rsistance in minutes.

Mask Gfc51: limitation in power consumption.

- **En.Watt limit rps:** Enabling of maximum allowed speed limitation to compressor for work of the effective consumption in watt.
- **Thr.:** maximum threshold reachable by the total consumption (compressor, fan, auxiliary, circulator, auxiliary…)
- **Band:** Band in which the value of instant consumption can swing, but always staying under the threshold set
- **Fan:** Consumtion value read by the fan. The reading is possible only thanks to the protocol od communication modbus (protocol to communicate) RS 485 (physic network constitued by a certain number of wires), it is set in one to read the effective consumption value
- **Pump:** Consumption value of the circulator. Now it is a constant value and equal to the maximum consumption.
- **Aux:** Consumption values of the auxiliaries. Set equal to 20 W costant.
- **Update time:** interval of time passed that you have the update, up or down, if all the conditions aloow it, the variable that contains the maximum speed allowed by the comporessor.
- **Update rps:** positive or negative increasing of the variable that contains the maximum speed available by the compressor.

Operation:

- ifThr is< the current consumption of the unit the limitation of the maximum rpm of the compressor starts decreasing of “Update rps” every “Update time”
- if the current consumtion is included between (Thr-Band) and Thr correction actions aren’t made
- if the current consumption is < than (Thr-Band) the compressor is free from binds (the maximum speed allowed can increase)

Mask Gfc55: it enables the control of the circulator in

PWM.

- **Enabling:** yes/no
- **Mode of use:**
  - **mode Delta T (B7-B4):** it tries to keep in automatic the delta set by the circulator slowing down or accelerating.
  - **RPS:** the circulator follows the rpm of the compressor following the below settable curve.
- **Setpoint:** the degrees you want to keep if the function is enabled in the mode Delta T

Mask Gfc56: it aloows to change the intervention threshold of defrosting.

- **Model:** fan model present in the heat pump.
- **Amp:** parameterization defrost.

d. DEFAULT USER / CHANGE PASSWORD

Mask Gfd01: it allows to change the password of the acces to assistance menu.

- **Cancel history alarms:** it cancels cmpletely the history of the alarms.
- **Insert a new password:** it allows to replace the password of the acces to the assistance menu

G . MANUAL MANAGEMENT

This menu is protected by a password. Only the authorized staff can have access.

Mask Gg01: It allows to force in manual (MAN) some digital outputs so to verify the correct electrical connections. Refers to the guide supplied with the unit for possible other digital outputs presents

- **N04 primary pump:** it allows to activate the circulator.
- **N05:** it allows to activate the condensate drain heater.
- **N09 DHW 3-way valve:** the 3-way valve for DHW production if present.

Mask Gg02: it allows to force the van at the wanted speed, selectable by required power.

- **Fans speed:** it activates the manual management of fans speed.
- **power required:** % active if manual management is enabled.

Mask Gg03: manual or automatic management of the expansion valve.

- **It enables valve manual position:** it enables the manual management.
- **Valve manual position:** if the manual management is activated, it shows the opening of the valve measured in steps.

USE VERY CAREFULLY, TO AVOID TO BREAK THE COMPRESSOR, CONTRARY THE WARRANTY WILL EXPIRE.

Mask Gg04: injection valve manual or automatic management.

- **It enables valve manual position:** it enables the manual management.
- **Manual valve position:** if the manual management is active, it shows the valve opening in steps.

Mask Gg05: manual or automatic management of the heat pump.

- **CH/HP Request:** it enables speed manual management of compressor for the heat pump in heating and cooling.
- **speed:** if the manual management is active, it shows the compressor speed for the heat pump
- **DHW Request:** it enables speed manual management of the compressor for DHW production.
- **speed:** if manual management is active, it shows the compressor speed for the DHW.

Mask Gg06: it enables the defrosting cycle.

- **It enables the defrosting cycle:** it enables a defrosting cycle.

Mask Gg07: management of oil recover

- **It enables oil forcing:** it enables a forcing in oil recover cycling.
- **En. manual PWM:** it allows to force circulator power.
- **PWM request:** it sets the speed needed by PWM in manual operation.

Mask Gg08: integration management.

- **N06 Plant Integr.:** auxiliary heater output (es. boiler).
- **N08 DHW Integr.:** auxiliary heater output for DHW (es. electric boiler).

Mask Gg09: only in AIR version. Management of winter fan.

- **Fan speed:** it enables the manual management of fan speed.
- **Power required:** % active if it is enabled in manual management.

Mask Gg10: this mask allows to manage screed dryer function.

- **Start cycle:** set the function ON or OFF.
- **Elapsed time:** It shows the elapsed time after the activation of the function.
- **Start temperature:** the starting temperature of the function.
- **Target temperature:** the traghet temperature of the function. The temperature increases linearly.
- **Raise hours:** the amount of hours the function must use to raise from starting temperature tu target temperature.
- **Stabilise hours:** the amount of hours the function must stay in target temperature.
- **Cool down:** the amount of hours the function must use to cool down from target temperature to start temperrature.

Mask Gg11: this mask allows to ignore the oil temperature control of the compressor.

Maschera Gg12 initialization: this mask is used to initialize the heat pump. The initialization erase all data previously saved in the heat pump.

16 Alarms

Alarm code	Displayed message	Reset	Delay	Relè	Action
ALA01	Sensor B1 broken or disconnected	Automatic	60 sec	yes	Stop the machine
ALA02	Sensor B2 broken or disconnected	Automatic	60 sec	yes	If present geothermal modulating pump it is set at the top speed
ALA03	SensorB3 broken or disconnected	Automatic	60 sec	yes	It stops the regulation of the domestic circuit
ALA04	Sensor B4 broken or disconnected	Automatic	60 sec	yes	Stop the machine
ALA05	Sensor B5 broken or disconnected	Automatic	60 sec	yes	Stop the pump of solar collector
ALA06	Sensor B6 broken or disconnected	Automatic	60 sec	yes	Stop the functions enabled by the external sensor
ALA07	Sensor B7 broken or disconnected	Automatic	60 sec	yes	Stop the machine
ALA08	Sensor B8 broken or disconnected	Automatic	60 sec	yes	Stop the pump of solar collector
ALA09	Sensor B9 broken or disconnected	Automatic	60 sec	yes	If compressor Siam it stops the compr.
ALA10	Sensor B10 broken or disconnected	Automatic	60 sec	yes	If present electronic expansion valve stop the machine
ALA11	Sensor B11 broken or disconnected	Automatic	60 sec	yes	Stop the machine
ALA12	Ssensor B12 broken or disconnected	Automatic	60 sec	yes	Stop the machine
ALB01	Position ID3 high pressure	Manual	Immediate	yes	Stop the machine
ALB02	High pressure compressor 1 from transducer	Manual	Immediate	yes	Stop the machine
ALB03	Low compressor/s pressure from transducer	Automatic (par. Hc05)	At starting: 40s (par. Hc03) at regime: 10s (par. Hc04)	yes	Stop the machine
ALC01	Position: ID2 Thermic compressor 1 or inverter alarm	Manual	Immediate	yes	If 1 comp. enabled: stop the machine If 2 comp. enabled: stop comp.1 (if comp. 2 available)
ALC02	Position: ID9 Thermic compressor 2	Manual	Immediate	yes	Stop comp.2 (if comp. 1 available)
ALC03	Envelope alarm 0: Max.rapp.compr. 1: Max.press.discharge 2: Current limit 3: Max.press.asp 4: Min.rapp.compr. 5: Min.diff.pressure. 6: Min.press.discharge 7: Min. press.asp. Compressor turned off for operation out envelope (just with compressor Siam)	Manual	60 sec (par. H1b14)	yes	Stop the compressor
ALC04	Alarms failed compressor ignition (just with compressor Siam)	After 5 times per hour it becomes manual	60 sec (par. H1b11)	yes	Stop the compressor
ALC05	Max.tdischarge time (just with compressor Siam)	After 3 times per hour it becomes manual	Immediate	yes	Stop the compressor
ALC06	Delta pressure < minimum required for compr. oil return (just with compressor Siam)	Automatic	120 sec (par. H1b12)	yes	Stop the compressor

Alarm Code	Displayed message	Reset	Delay	Relè	Action
ALP01	Position: ID1 Flowmeter water geothermal circ.	After 5 times per hours it becomes manual	At starting: 15s (par. Hc15) at regime: 5s (par. Hc16)	Yes	Stop the machine when the maximum time is reached
ALP02	Position : ID4 Thermal pumps	Manual	Immediate	Yes	Stop the machine
ALP03	Position: ID10 Flowmeter water primary circuit	After 5 times per hours it becomes manual	At starting: 15s (par. Hc12) at regime: 5s (par. Hc13)	Yes	Stop the machine when the maximum time is reached
ALP04	Position: ID5 Thermal solar pump circuit	Manual	Immediate	Enabled (Gfc01)	Stop the pump of the solar collector
ALR01	Position: ID7 Alarm boiler/ resistance integr. system	Automatic	Immediate	Enabled (Gfc02)	Stop boiler/resistance operation primary circuit integration
ALR02	Position: ID6 Thermal boiler/resistance DHW from digital input	Manual	Immediate	Settable (Gfc03)	Stop the boiler/resistance integration DHW
ALF01	Position: ID1 Thermal fan	Manual	Immediate		Stop the machine
ALT01	Threshold reached worked hors compressor 1	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT02	Threshold reached worked hors compressor 2	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT03	Threshold reached worked hors geothermal pump	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT04	Threshold reached worked hors primary circ.	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT05	Threshold reached worked hors DHW pump	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT07	Threshold reached worked hors solar pump	Manual	Immediate	Settable (Gfa01)	Just reporting
ALT08	Threshold reached worked hors internal battery fan	Manual	Immediate	Settable (Gfa01)	Just reporting
ALU01	Antifreeze geothermal exchanger	Manual (par. Gfc28)	Immediate	Yes	Stop the machine
ALU02	Antifreeze primary exchanger	Manual (par. Gfc32)	Immediate	Yes	Stop the machine
ALU03	Overheating system exchanger	Manual	Immediate	Yes	Stop the machine
ALW01	Reached threshold high domestic temperature	Automatic	60 sec	Enabled (Gfc01)	Just reporting
ALW02	Reached threshold of max domestic temperature to the solar collector	Automatic	60 sec	Yes	Just reporting
ALW03	Exceed max. time for defrosting end	Automatic	Immediate	Yes	Just reporting
ALD01	Alarm EEPROM	Manual	Immediate	Yes	Stop the machine
ALD02	Sensor EVD EVO broken or disconnected	Automatic	Immediate	Yes	Stop the machine
ALD03	Error engine EEV	Manual	Immediate	Yes	Stop the machine
ALD04	Low overheating (LowSH)	Manual	Immediate	Yes	Stop the machine
ALD05	Low suction temperature	Manual	Immediate	Yes	Stop the machine
ALD06	Low evaporation temperature (LOP)	Manual	Immediate	Yes	Stop the machine
ALD07	High evaporation temperature (MOP)	Manual	Immediate	Yes	Stop the machine
ALD08	High condensation temperature (HiTcond)	Manual	Immediate	Yes	Stop the machine
ALD09	Driver offline	Automatic	Immediate	Yes	Stop the machine
ALL01	Device Power+ n. 1 Offline	Automatic	30 sec	Yes	Stop the machine
ALL02	Alarms Power+ n.1 0: No error 1: Overcurrent 2: Engine overload 3: Overtension 4: Undertension 5: Overtemperature 6: Undertemperature 7: Overcurrent HW 8: Overtemp. engine 9: Reserved 10: Error Cpu 11: Param. default 12: Ondulation DC bus 13: timeout com.ser. 14: Error thermistor 15: Error Autotuning 16: Drive disabled 17: Missing motor phase 18: Failed fan 19: Stalling engine	Manual	Immediate	Yes	Stop the machine

The letter preceding the numeric digit has the following meaning

A	“AIN” Physic sensors failure uPC
B	“Boh”Alarms that block the circuit, High-Low pressure..
C	“Compressor” Thermal, envelope
D	“Driver” Electronic valve
E	“Expansion” Alarms uPCe
F	“Fan”
G	“Generic” generic alarms, broken clock, HW, Memory
H	“Humidifier”
I	“Fancoil” alarms comic from the hydronic network
M	“MP-BUS” / Belimo
O	“Offline” Offline supervisor, offline pLAN
P	“Pumps” Flowmeter pumps, thermal pumps
Q	“Quality”HACCP, Consumptions
R	“Remote” Various alarms from digital inputs
S	“Serial probe”
T	“Timing” Warning maintenance
U	“unit” Alarms blocking the units
V	“VFD” Alarms field inverter
W	“Warning” generic
X	Defrosting
Y	Climate

16.1 Alarms resolution

Alarm code	Cause	Solution proposed
ALB01	Condensation high pressure, the most of times this alarm is caused by the too high set of water produced both in heating and in DHW. Other more frequent reasons for this are: the wrong position of the regulation probles (B2 and B3) respect to the flow of the unit and the insufficient flow of the water to the plate heat condensator.	1) put the probes B2 and/or B3 at the same height respect to the flow accumulation input of the machine.
ALB02	Vedi ALB01	See ALB01
ALB03	The low pression from transducer can be connected to the internal dynamic of the machine. But it could also be a symptom of transducer malfunction or a refrigerant loss.	If the alarm is frequent 2/3 times consecutive in 4-6 hours survey the unit with a leak detector and contact the service.
ALC03	Alarm envelope, the compressor is gone out from his work field. In this case the reasons are several and listable.	We suggest at first to evaluate the use of the unit that can be incoherent with the working field of the unit, for example, operation DHW with external temperature too high. Please, refer to the section “operative zone allowed” of this guide.
ALC04	The compressor can’t create a minimum delta of pressure in a certain interval of time the reason can be the inertia of the system and the proximity between the temperature of air and water	If it happens occasionally it is a simple reporting non serious nature allowing the unit to continue to operate.
ALP03	Lack of flow in the hydraulic circuit, caused by the air present in the system, solid particles o excessive pressure losses	Vent the system of all the air present, regular cleaning of the system. Avoid excessive losses of pressure in the hydraulic circuit, in particular avoid restrictions of the system.
ALW03	Caused by air currents cooling the coil finned during the defrosting process	Study a different position of the machine or hinder the direct wind through the unit.
ALD04	Alarm that depends on the internal dynamics of the machine	Contact the assistance
ALD06	Alarm that depends on the internal dynamics of the machine	Survey the unit with a leak detector and contact the service
ALD07	Alarm that depends on the internal dynamics of the machine	Contact the service
ALL01	Lack of communication between inverter and electronic board caused by power surges and minor power current or by electromagnetic fields that trouble the network	Control the counter that supplies the machine to avoid to overload it, check the domestic line, avoid electromagnetic fields in the nearby
ALL02	Lack of communication between inverter and electronic board caused by power surges and high power current or by electromagnetic fields that trouble the net	Check the counter that supplies the machine to avoid the overload, ccheck the domestic line, avoid electromagnetic fields in the nearby. Then contact the service

16.2 Notifications

Notification	causes
Heat Transfer Limited	It occurs when the difference between the value of the B7 and B2 probes in the case of hrating operation, or the difference between B7 and B3 probes in the case of DHW production, is excessive.
Power limit temperature	It is activated if the heat pump is producing water less than 6 ° or more than 58 °. The compressor is moves to a minimum speed to avoid generating an error.
Irregular waterflaw	Since the heat pump was powered, at least once a probblema of flow occurred. After five of these notificatios, the next one is a flow error.

17 Declaration of Conformity

Dichiarazione di conformità UE
EU Declaration of Conformity
EU Konformitätserklärung

La sottoscritta
The undersigned
Die Firma

Templari Srl
Via Pitagora, 20/A – 35030 Rubano (PD) - Italy
P. IVA 04128520287

conferma che l'apparecchio qui di seguito indicato risponde alle seguenti direttive CE applicabili in materia. Ogni modifica dell'apparecchio rende la presente dichiarazione non valida.

hereby certifies that the following device complies with the applicable EU directives. This certification loses its validity if the device is modified.

erklärt in alleiniger Verantwortung, dass die nachfolgend erwähnte Produkte den angeführten EC – Normen entsprechen Bei jeglicher Veränderung au den Geräten erlischt die Gültigheit Dieser Konformitätserklärung

Denominazione: Pompe di calore
Designation: Heat Pump
Produkt: Wärmepumpe

Modello:
Type:
Typ:

Kita HR 10/HR 10 3Phase/HR 12 /HR 12 3Phase/HR 14/HR 14 3Phase/HR14 Cold 3Phase S / S 3Phase / S plus/ S plus 3Phase / Si / Si 3Phase / Si Cold / Si Cold 3Phase / Si Plus / Si Plus 3Phase / Si Plus Cold / Si Plus Cold 3Phase / Mi / Mi 3Phase / Mi Cold / Mi Cold 3Phase / Mi Plus / Mi Plus 3Phase / Mi Plus Cold / L33 / L42 / L66 / L Cold Li Plus / Air / Air Cold / Air Cold + Booster / Air Plus

Direttive UE
EU Directives
EU-Anforderungen

Direttiva attrezzature a pressione (PED) 2014/68/UE (PED);
Direttiva Macchine (MD) 2006/42/CE;
Direttiva Bassa Tensione (LVD) 2014/35/UE;
Direttiva Compatibilità Elettromagnetica (EMC) 2014/30/UE.

Norme applicate
Applied standards
Angewandte Norm

EN 55014-1:2006 +A1:2009;
EN55014-2:1997+A1:2001+A2:2008;
EN 61000-3-2:2006+A1, A2:2009;
EN 61000-4-2:2008;
EN 61000-4-4:2008;
EN 61000-4-5:2008.

Procedura di valutazione della conformità PED
PED Conformity assessment procedure
PED Konformitätsbewertungsverfahren

Categoria I, Modulo A – Controllo interno della produzione
Category I, Module A – Technical documentation and internal production control
Kategorie I, Modul A – Interne Fertigungskontrolle

La presente dichiarazione è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Firmato a nome e per conto del fabbricante
Signed in the name and on behalf of the manufacturer
Unterzeichnet für und im Namen des Herstellers

Rubano (PD), 26/05/2022

Ing. Gianluca Masiero

(Technical Director / *Direttore Tecnico*)

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How to connect
K-touch display to
the heat pump

Video guide
K-Touch

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THE HEAT PUMP

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