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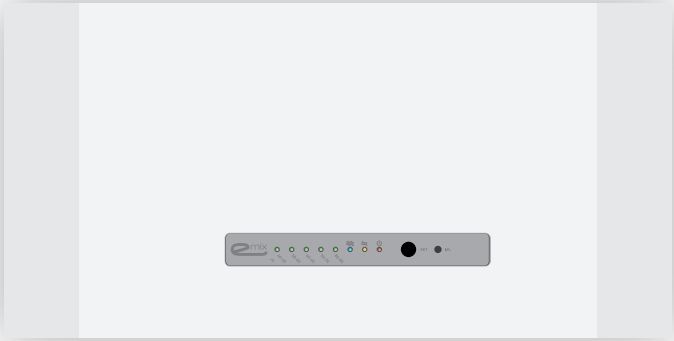
OPERATING AND INSTALLATION INSTRUCTIONS • ISTRUZIONI D'USO E D'INSTALLAZIONE
NOTICE D'UTILISATION ET D'INSTALLATION • BEDIENUNGS-UND INSTALLATIONSANLEITUNG
INSTRUCCIONES DE USO Y INSTALACION • INSTRUÇÕES DE USO E INSTALAÇÃO
ΟΔΗΓΙΕΣ ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΧΡΗΣΗΣ • ANVÄNDNINGS- OCH INSTALLATIONSHANDBOK
KÄYTTÖ- JA ASENNUSOHJEET



Emix V1

37.4163.371.02 07/2018

DECLARATION OF CONFORMITY

This product is marked CE as it satisfies Directives:

- Low voltage no. 2006/95/EC (Standard: EN 60335-1:2012 (incl. corr.:2014) + A11:2014, EN 60335-2-40:2003 + A11:2004 + A12:2005 + A1:2006 + A2:2009+ A13:2012, EN 62233:2008 - incl. corr.1:2008).
- Electromagnetic compatibility no. 2004/108/EC, 92/31 EEC and 93/68 EEC. (Standard: EN 55014-1:2006 + A1:2009 + A2:2011, EN 55014-2:1997 + A1:2001 + A2:2008, EN 61000-3-2:2014, EN 61000-3-3:2013, EN 61000-3-11:2000, EN 61000-3-12:2011)
- RoHS2 no.2011/65/EU.
- COMMISSION REGULATION (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks.
- COMMISSION DELEGATED REGULATION (EU) No 812/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of water heaters, hot water storage tanks and packages of water heater and solar device.

This declaration will become void in case of misuse and/or non observance though partial of manufacturer's installation and/or operating instructions.

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CONTENTS

REGULATION (EU) No. 517/2014 - F-GAS

The unit contains R410A, a fluorinated greenhouse gas with a global warming potential (GWP) of 2087.50. Do not release R410A into the atmosphere.

DOMESTIC HOT WATER SANITARY CIRCUIT

Emix is a device using directly tap water; it is fully compliant with the European current regulation 98/83/EC about legionella cycle and raw material in contact with tap water and it is equipped with a double wall plate heat exchanger that give you the max. safety between refrigerant and tap water.

OPERATING LIMITS

- Room temperature
  Max : 35°C
  Min. : 5°C
- Relative room humidity
  Max : 95 %
  Min. : 0 %

Power Supply:

230 V ~ 50 Hz

IMPORTANT!
Please read before installation
This system meets strict safety and operating standards.
For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

Recommendations
- The personnel responsible for receiving the unit must conduct a visual inspection in order to identify all damage to which the unit may have been subjected during transport: refrigerating circuit, electrical cabinet, chassis and cabinet.
- During installation, troubleshooting and maintenance operations, never use the pipes as a step: under the stress, the pipes may break and the refrigerant may cause serious burns.

For safe installation and trouble-free operation, you must:
- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical (and safety) codes.
- Pay close attention to all warning and caution notices given in this manual.
- Supply the unit with a dedicated electrical line.
- Make install the unit by qualified personnel.

WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help
These instructions are all you need for most installation sites and maintenance conditions.
If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

In case of improper installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS
- During installation, connect before the refrigerant and hydraulic system and then the wiring one; proceed in the reverse order when removing the units.

WARNING **When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
  Improper connections and inadequate grounding can cause accidental injury and death.
- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not use multi- core cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting
Be careful when picking up and moving the unit. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the unit can cut your fingers.
When installing
Make sure the wall is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

Properly insulate any tubing run inside a room to prevent “sweating”, which can cause dripping and water damage to walls and floors.

When connecting refrigerant tubing

- Keep all tubing runs as short as possible (max. 10m), accordingly to the allowable distances from the outdoor unit (see manual).
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Insulate the tubes with foamed polyethylene (min. thickness 8mm)

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When connecting hydraulic tubing

- Keep all tubing runs as short as possible.
- Insulate the tubing.
- Check carefully for leaks before starting the test run.

When servicing

- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testing the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

INSTALLATION LOCATION

- We recommend this appliance to be installed properly by qualified installation technicians in accordance with the installation instructions provided with the unit.

WARNING

- Do not install this appliance where there are fumes or flammable gases, or in an extremely humid space such as a green house.
- Do not install the unit where excessively high heat-generating appliances are placed.
- Do not install the unit where it could be wetted by drops of water (i.e. in laundries).
- Do not install the unit in rooms with high humidity and subjected to high steam production (in the bathroom, for example).
- Do not install the unit outside.
- Do not install the unit in rooms exposed to the risk of freezing.

IMPORTANT ! The room in which the product is installed must be equipped with floor drain sump, connected to sewer system.

AVOID

- Direct sunlight.
- Areas where leakage of flammable gas may be expected.
- Locations where large amounts of oil mist may occur (such as in kitchen or near factory equipment) because oil contamination can cause operation problems.
- To make holes in areas where electrical wiring or conduits are located.

IMPORTANT !

In the absence of the precautions described above, THE MANUFACTURER shall not be held responsible for any damage caused.

ELETRICAL REQUIREMENTS

- Before installation, check that the voltage of the electric supply in your home or office is the same as the voltage shown on the nameplate.
- All wiring must conform to the local electrical codes. Consult your dealer or a qualified electrician for details.
- The unit must be properly grounded with a ground (or earth) wire or through the supply wiring.
- Wiring must be done by a qualified electrician.
- The protections on the power outputs refer to the appliance connected to them.

ACCESSORIES SUPPLIED WITH THE UNIT

- 3/4” water filter to be installed upstream of tap water connection, if not already present in the system.
- Sensor of stratification (tank temperature).

ADDITIONAL MATERIAL REQUIRED FOR INSTALLATION (NOT SUPPLIED)

- Deoxidized annealed copper tube for refrigerant tubing connecting the units of the system, it has to be insulated with foamed polyethylene (min. thickness 8mm). See paragraph “REFRIGERANT CIRCUIT” for dimensions.
- Anti-freeze oil for flare connections (about 30g.).
- Electric wire: use insulated copper wires of size and length as shown at paragraph “ELECTRICAL CONNECTIONS”.
- Tubes for water (MINIMUM DIAMETER BETWEEN EMIX AND TANK: 20mm).
- If the water hardness exceeds the value of 20 ° F (1 ° F = 10mg of calcium carbonate per liter of water) the installation of a polyphosphate treatment system responding to current regulations (DPR 59/09 UNI 8065) is required.
- You must install a non-return valve, in accordance with standard IEC61770, on the cold water pipe before the junction between Emix and the accumulation system (check hydraulic diagrams).

In addition to this, It is warmly suggested:
- inlet and outlet service valves for Emix
- a pressure reducing valve
- other non-return valves
- a flow switch to be placed on the hot water draw to optimise the operation of the unit (see INSTALLATION INSTRUCTIONS - SECTION F).

Check hydraulic diagrams for all additional required material.

Tools required for installation (not supplied)

1.Standard screwdriver
2.Phillips head screwdriver
3.Knife or wire stripper
4.Tape measure
5.Level
6.Sabre saw or key hole saw
7.Hacksaw
8. Core bits ø 5
9.Teflon or hemp
10.Hammer
11.Drill
12.Tube cutter
13.Tube flaring tool
14.Torque wrench
15.Adjustable wrench
16.Reamer (for reburring)
17.Hex. key

RATING DATA

Power supply	230 V – 50 Hz
Minimum power input	4 W/0,05 A
Max power input without any electrical heater	100 W/0,66 A
Max power input with electrical heaters	3x1500 W
Water connection	3/4” G – 3/4” G
Refrigerant connection (R410A)	3/8” – 3/8”
Net weight	16,5 Kg
Dimensions (H/W/D)	272x527x285 mm

INTRODUCTION

Emix is an innovative indoor unit, able to provide domestic hot water from a thermodynamic source all year round, i.e. independently of the system's operating mode.

The purpose of Emix is to produce domestic hot water through storage, using the energy produced directly from the heat pump (therefore renewable energy) and providing the service at the same time as heating and cooling the environments.

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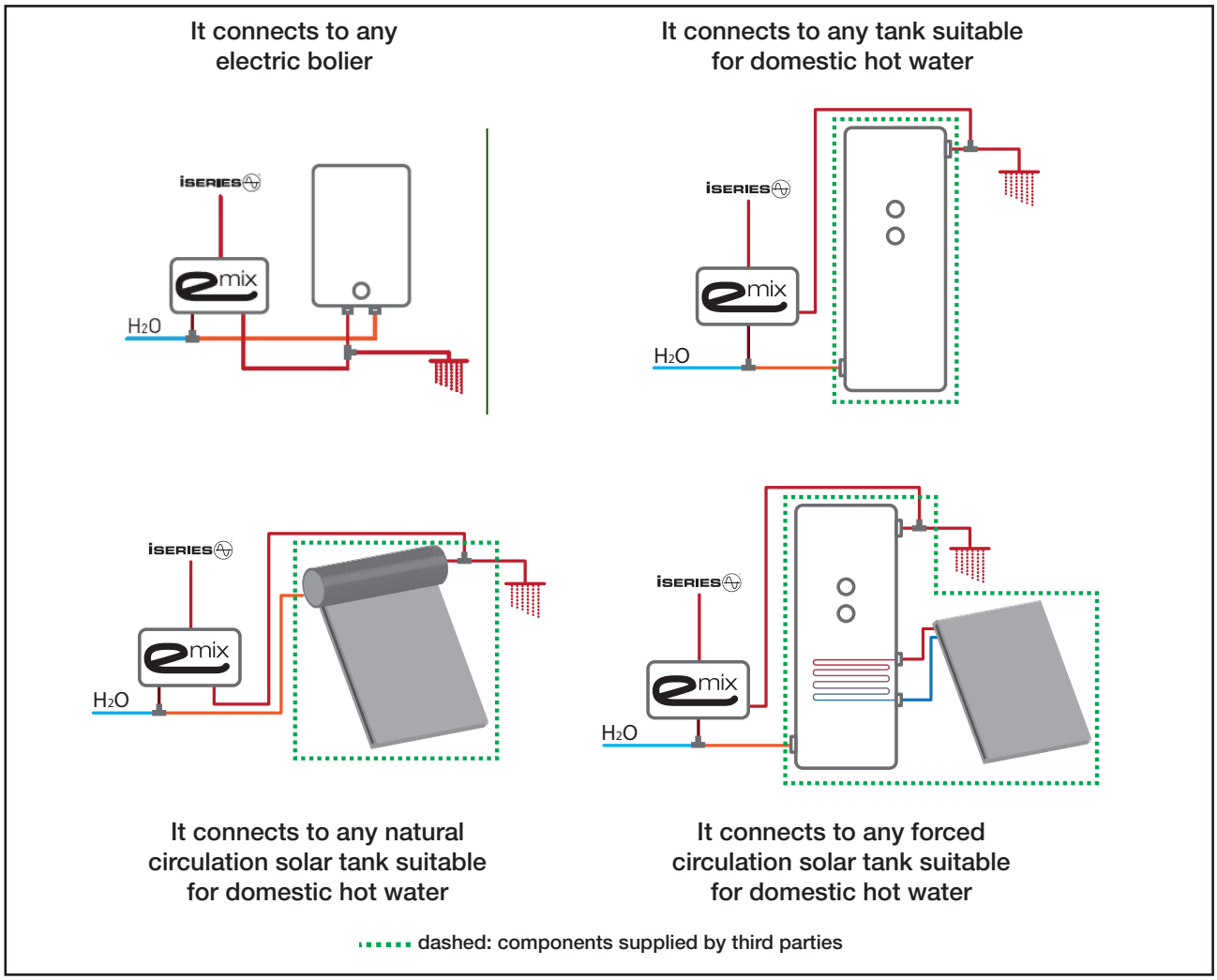
Application examples and operation description



Emix is connected to the proper EMIX port of the heat pump (except outdoor units G30 and G42 where it can be connected to a normal port, using the adapter from 3/8" to 1/4" for the liquid return flare, included with the outdoor unit). Please check "DHW only application" chapter for further information.

MODELS COMBINATION

Emix must be connected to a compatible outdoor unit.
For specific models see catalogue.(*)

(*) The models WITHOUT EMIX PORT can not support this new device for the production of domestic hot water.

This manual will use some models abbreviations of compatible outdoor units of the catalogue (Example G30 means AEI1G30EMX-GR9FI30).

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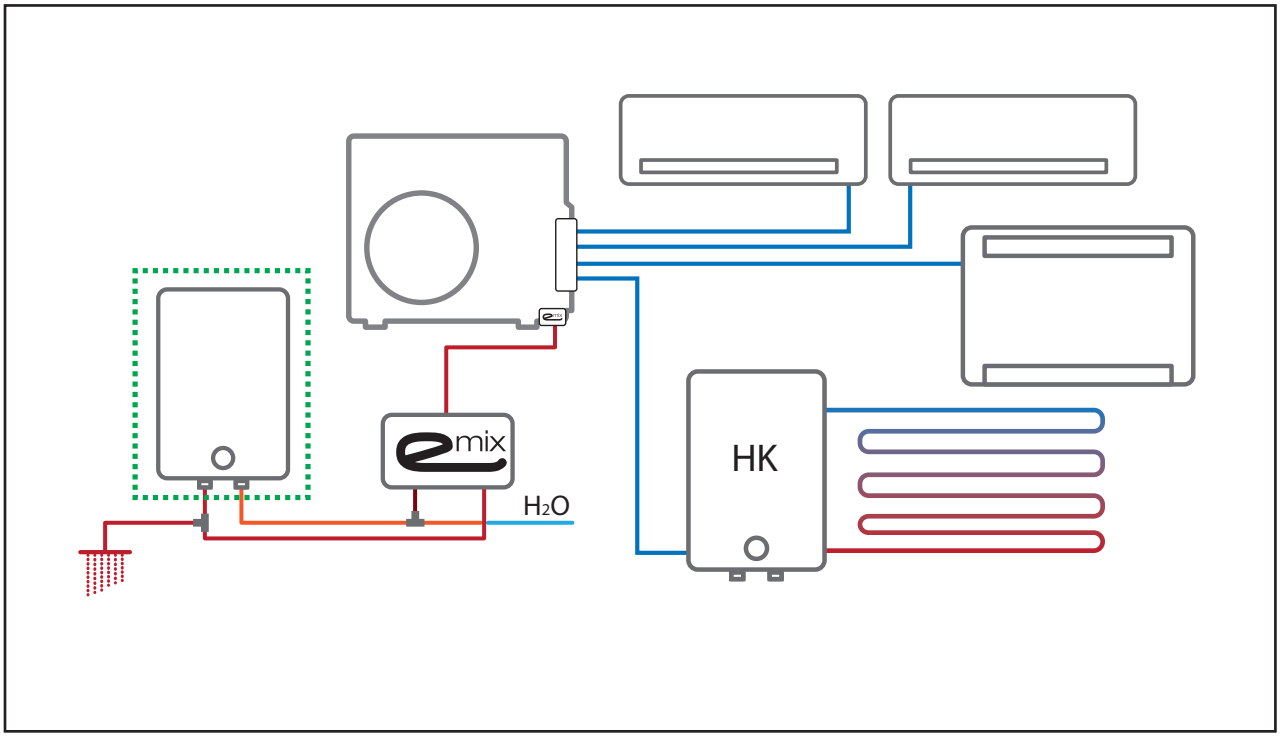
The following diagram illustrates the concept exposed above and shows a system configuration where three indoor direct expansion units, a hydrokit for a floor system and an Emix coexist, all connected to a G110.



Emix always works in heating mode even when the heat pump is working for cooling of the environments; during this operation mode, Emix is able to recover the heat which would otherwise be lost in the outdoor air, significantly increasing the energy efficiency of the entire system.

There are several possible configurations with Emix and the one represented in the previous figure is just one of many.

TUBING LENGTH AND ELEVATION DIFFERENCE LIMITS

Refrigerant Circuit

Emix is a component that may be connected with other indoor units at the same time by using the special connection for Emix and duly considering the length of the Emix pipe to be added to the total length set by the outdoor unit (we advise a specific insulation of the Emix pipes to guarantee the minimum dispersion of energy).

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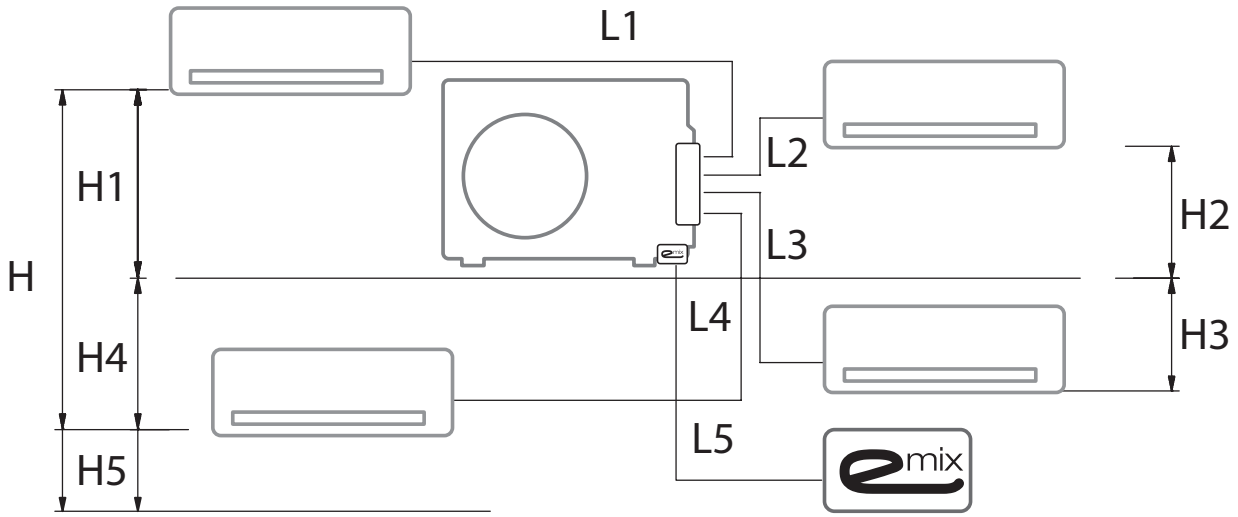


FOR TUBING LENGTH AND ELEVATION DIFFERENCE LIMIT SEE INSTALLATION INSTRUCTIONS OF OUTDOOR UNIT.
CONSIDER EMIX AS AN INDOOR UNIT OF THE SYSTEM.
FOR THE BEST PERFORMANCE, KEEP EMIX TUBING AS SHORT AS POSSIBLE (MAX. 10m).

Additional refrigerant charge for Emix line (if needed) is : 15 g/m for tubing 3/8” - 3/8” or 20g/m for tubing 1/2” - 1/2”.

Example n° 1

- Outdoor unit: G80
- Number of indoor units: 4 size A
- Total indoor unit tubing length: 30 meters
- Emix tubing length: 5 meters
- Total tubing length (including Emix): 35 meters

G80 limit (in application 4 units), without additional load, is 40 meters. The system is ok.

Example n° 2

- Outdoor unit: G80
- Number of indoor units: 4 size A
- Total indoor unit tubing length: 50 meters
- Emix tubing length: 7 meters
- Total tubing length (including Emix): 57 meters

G80 limit (in application 4 units), with additional load, is 65 meters. You have to add: 15 g/m x 17 m.

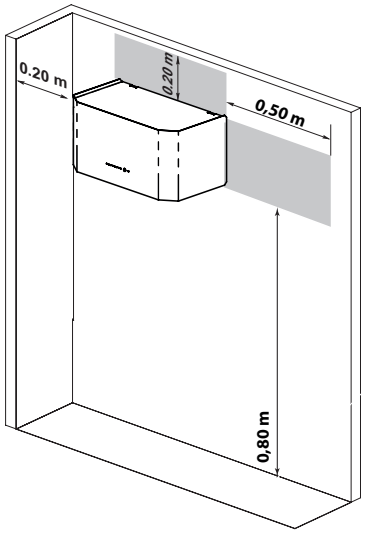
Water circuit

Emix is able to manage any third party tank, including electric boilers; this unique feature makes Emix an excellent solution not just for new systems but also to protect existing investments.
It is recommended not to install the unit too far away from the tank, trying to avoid too many curves of the water pipes.
The maximum limit for hydraulic connection is 10 m.

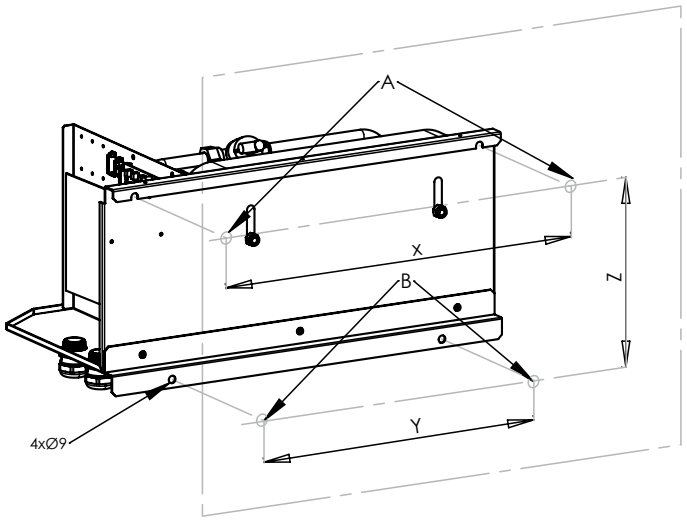
Emix has been designed to work with water pressures up to 10 bars.
Emix is compliant with the strictest European standards for the double insulation between the circulation of domestic water and the refrigerant.
For optimal installation, ensure a water pressure of 3 to 6 bar.

INSTALLATION INSTRUCTIONS

A MINIMUM OPERATION AND MAINTENANCE AREA.



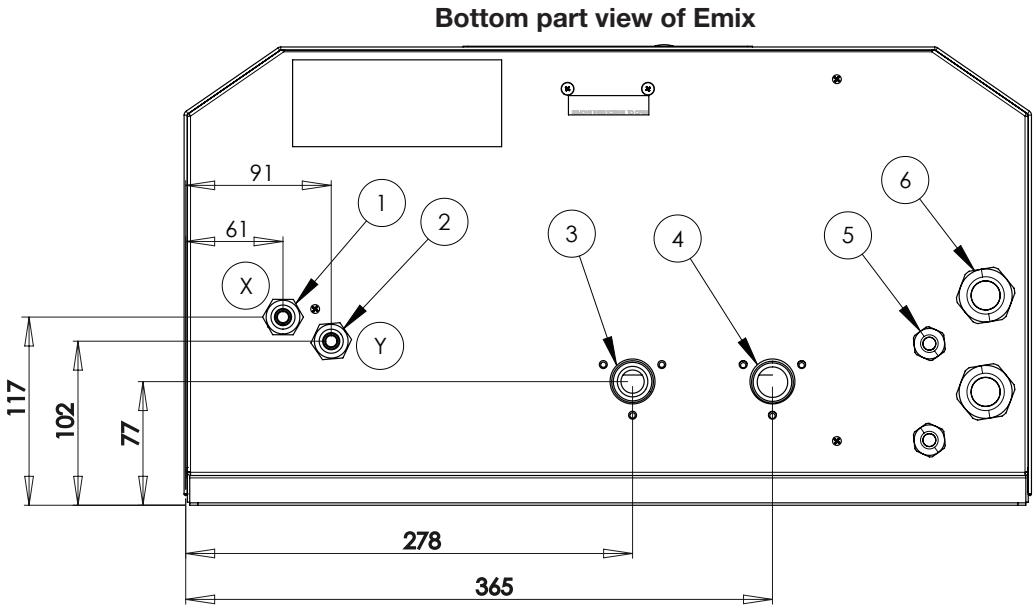
B REAR PANEL HOLES DISTANCES.



X (mm)	Y (mm)	Z (mm)
460	360	225

C HYDRAULIC AND REFRIGERANT CONNECTIONS ON EMIX

Bottom part view of Emix



1. refrigerant connection (R410A) from outdoor unit to Emix (X port). Flare dimension: 3/8”
2. refrigerant connection (R410A) from Emix to outdoor unit (Y port). Flare dimension: 3/8”
3. cold water connection tap (BLUE). Dimension: 3/4”
4. hot water connection tap (RED). Dimension: 3/4”
5. conduit for electrical connections (signal)
6. conduit for electrical connections (power)

Pay attention to respect the flow of refrigerant and of water as above indicated.

In case of wrong connection the system will not work properly.

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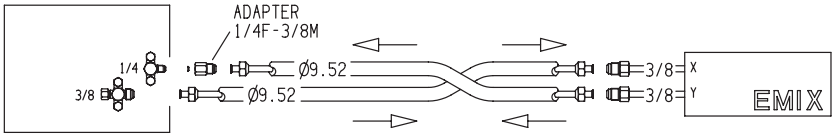
REFRIGERANT CONNECTION BETWEEN EMIX AND OUTDOOR UNIT

G30 / G42 ONLY DHW (SEE SECTION “ONLY DHW APPLICATION”)



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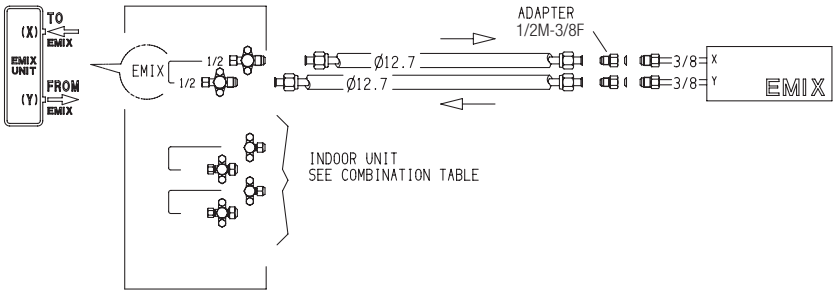
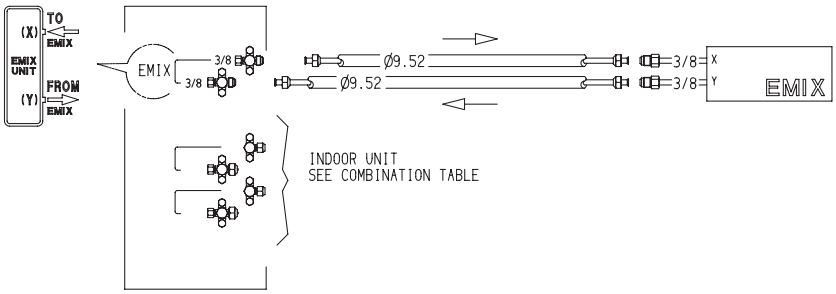
G140



OTHER OUTDOOR UNITS



- Close the valves on the port of outdoor unit.
- For applications “NOT ONLY DHW”: disconnect the bypass from the valves on the Emix port (take care of it in case of removal of Emix unit).
- Connect the refrigerant pipes of Emix to the outdoor unit (it is warmly suggested a strong insulation).

  Pay the max. attention to respect the sense of these connections, both if you are using Emix connected to the Emix port or the standard port of the outdoor unit.

  - connect the port (X) of outdoor unit to the port (X) of Emix
  - connect the port (Y) of outdoor unit to the port (Y) of Emix

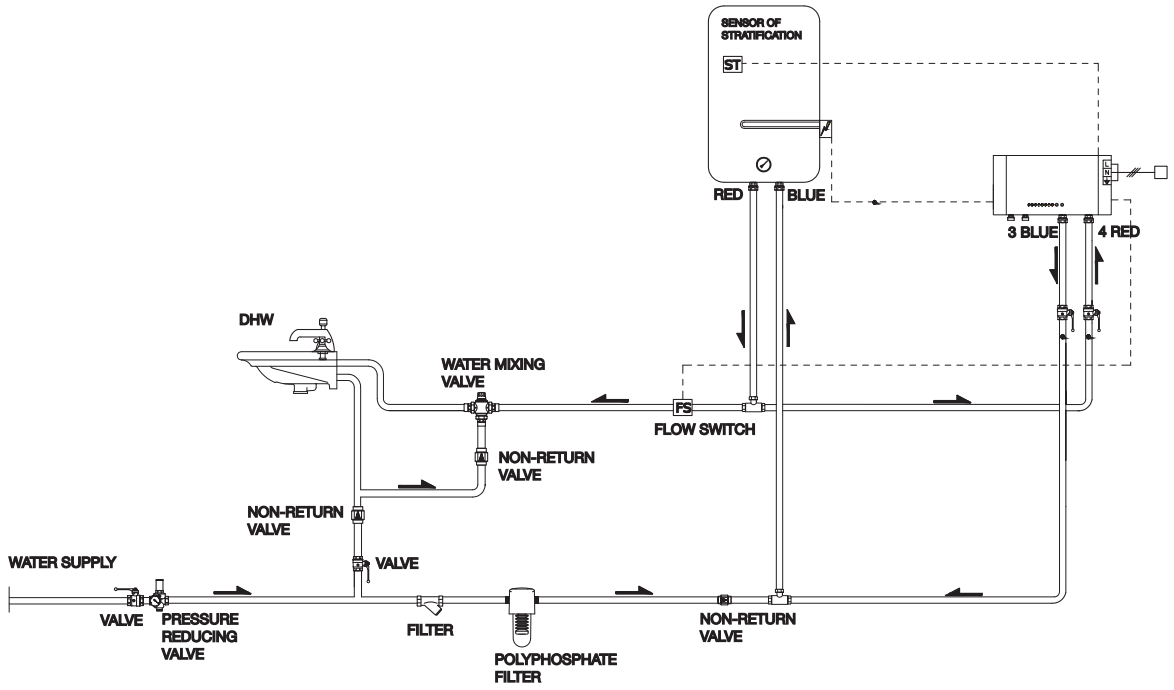
- In case Emix is connected to a normal port (example G30 / G42):

  - connect the gas pipe 3/8” of outdoor unit to the port (X) of Emix
  - connect the liquid pipe 1/4” of outdoor unit to the port (Y) of Emix

  Use the adapter indicated in the figure.

- Perform the vacuum procedure.
- Open the valves of the outdoor unit port where Emix is connected.

E HYDRAULIC CONNECTION BETWEEN EMIX AND TANK



- If possible, place the tank between Emix and hydraulic system.
- If possible, place Emix at a height lower than the tank.
- Water pipes' diameter should not be less than 20mm.
- Connect the water tank in parallel of the Emix unit (It is recommended to install service valves on the connections of the water circuit in order to make installation and maintenance operations easier):

  - connect the BLUE valve of the tank with the BLUE valve of Emix
  - connect the RED valve of the tank with the RED valve of Emix

- Connect the cold water inlet tap in parallel of the water port number 3 (BLUE).
- Connect the hot water tap in parallel of the water port number 4 (RED).
- Before closing the hydraulic circuit eliminate the air inside the Emix unit, purging it from the vent valves placed inside Emix circuit.

NOTE

Alternatively, in order to remove the air inside Emix, follow the steps below:

1. Connect completely the hydraulic system, except the cold water BLUE connection, and keep closed the two valves.
2. Pressurize the system.
3. Slightly open the cold water valve (BLUE), keeping closed the hot water valve (RED), and vent the air from the fitting.
4. When the air is completely out and the water starts coming out, close the cold water valve (BLUE).
5. Slightly open the hot water valve (RED), keeping closed the cold water valve (BLUE), and vent the air from the fitting.
6. When the air is completely out and the water starts coming out, close the hot water valve (RED).
7. Close the hydraulic BLUE side connection of Emix.
8. Open both valves.
9. Start the system.

NOTES

- Install the water filter supplied with Emix upstream the cold water circuit with circulation towards Emix (see arrow on the filter).
- Install the stratification sensor supplied with Emix (see section G).
- Install a softener (or polyphosphate treatment system) to avoid limestone.
- It is suggested also the installation of a pressure reducing valve (for pressions higher than 6 bar) and a vent valve (if necessary).
- If not already present, install a thermostatic valve for water mixing in the distribution circuit of the building.
- It is possible to install a flow switch (optional) to detect the DHW flow (see section F).
- Please always check system layouts.

F CONNECTION OF FLOW SWITCH ON DOMESTIC HOT WATER (OPTIONAL)

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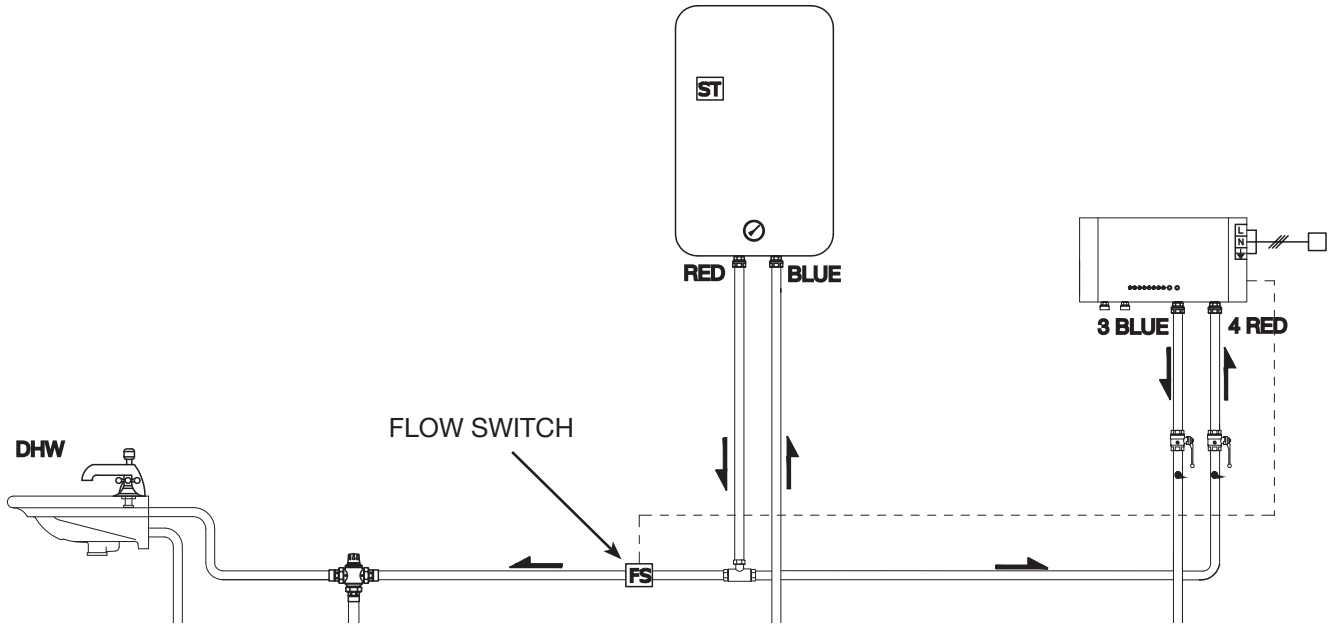
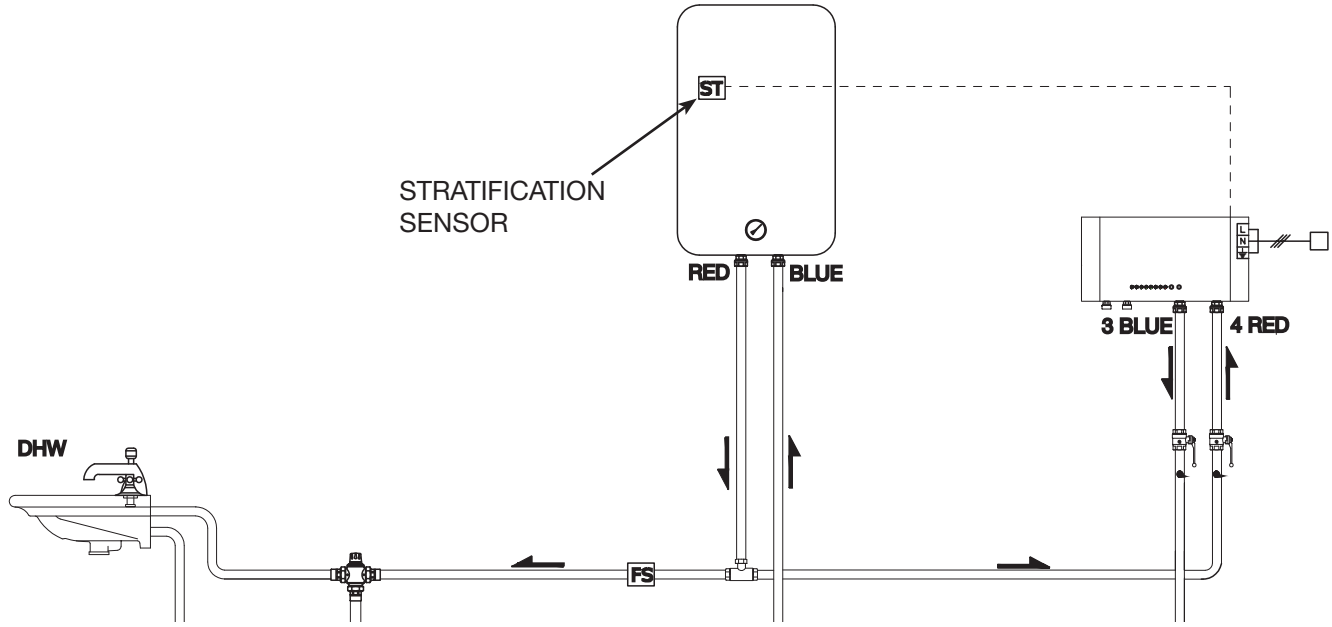


Place the flow switch on the domestic hot water tap as shown in figure.
Connect the flow switch to the terminal base (terminals FS).

FLOW SWITCH SPECIFICATIONS:
Diameter: 3/4”
Minimum flow rate: 1l/m

Convention: if there is flow (tapping) the switch must be closed (dry contact).

G CONNECTION OF STRATIFICATION SENSOR (OPTIONAL)



If possible, apply the provided stratification sensor by placing it under the insulation of the tank, on its surface so that it can detect the water temperature in the tank.
Install the sensor at 2/3 of the tank height.
Once installed, place again the tank insulation over the sensor.
Then connect the sensor to the terminal base (terminals ST) as shown in the figure with two wires of minimum section of 0.75mm^2.

ELECTRICAL CONNECTIONS

General

- The acceptable voltage variation is: ± 10% during operation.
- The electrical connection conduits must be fixed.
- Class 1 unit.

Power supply and signal wires' connection

To access the electrical panel, remove the front panel by removing the two screws on the bottom. When removing the panel, be careful to disconnect the display board cable.

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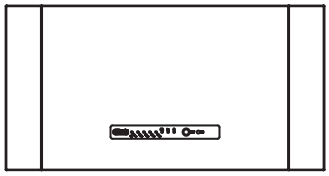
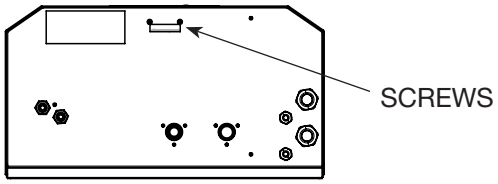
FRONT VIEW

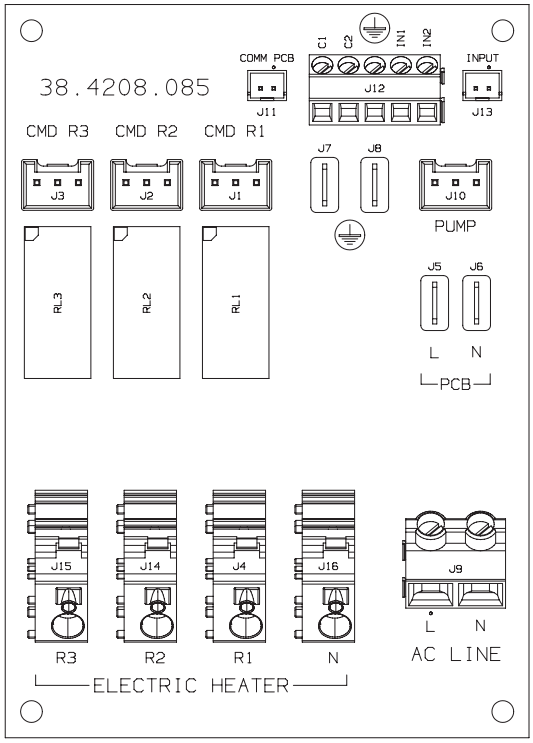


BOTTOM VIEW



Emix must always be connected to the electrical power supply in a separate manner compared to the connection of the outdoor unit, to which it is connected using only the bipolar shielded cable as all the other indoor units.

- The power supply must come from an isolation and electric protection device (not supplied) in accordance with existing regulations.
- The installation must be protected by a double-pole circuit-breaker (not included).



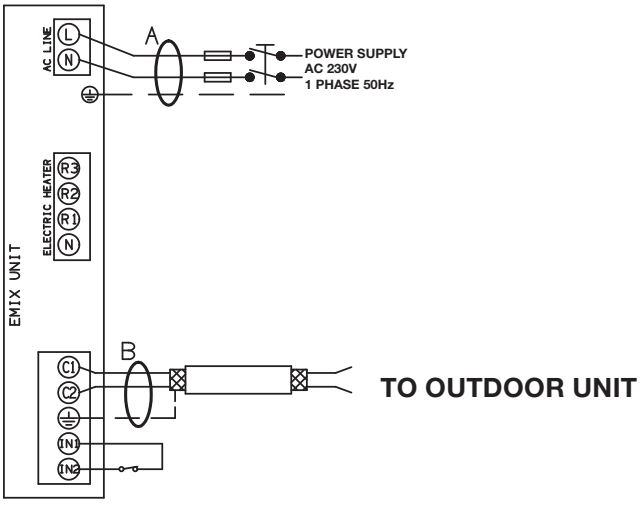
Connect the communication bipolar shielded cable between Emix and outdoor unit to the connection blocks C1 and C2 (terminal base J12) and the shield to the communication ground connection; take care about polarity between outdoor unit and Emix; In case of mistake you will see a communication error indication (all the LED flashing). SEE AUTO-DIAGNOSIS TABLE.

Connect the single-phase 230 V 50 Hz to terminals L / N and the earth wire to the terminal/s on the metal structure indicated by the symbol of the earth connection.

ELECTRICAL WIRING DIAGRAM WITH THE OUTDOOR UNIT

DELAYED FUSE

Main switch for disconnection from the supply line must have a contact separation in all poles that provides full disconnection under category III overvoltage conditions.



Connection of electrical heater elements

You must connect at least one electrical heater element of the tank to Emix.

Failure to connect at least one electrical heater element could affect the proper operation of the system; besides this, in case of failure of outdoor unit, the electrical heaters provide heating of the water.

Connect the Electrical Heaters of the external tank to the proper connection block (ELECTRICAL HEATER R1, R2, R3 and Neutral); Emix supports up to three Electrical elements of 1500 W each one; for connections to three-phase tanks, use R1,R2 and R3 as the command of an electrical panel with circuit breakers.

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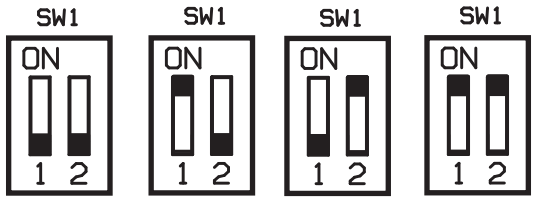
NOTE: Emix electrical consumption is very low (max. 100W) but in case electrical heater elements are connected, Emix has to support the flow of big amount of electrical energy; for that reason it is necessary to power Emix independently (phase, neutral and ground) from the outdoor unit.

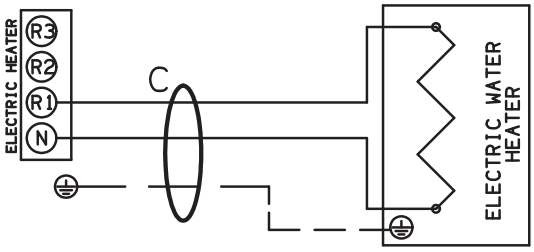


Factory setting to be modified | 1 element Max 1,5kW | 2 elements Max 1,5 +1,5kW | 3 elements Max 1,5 + 1,5 + 1,5kW

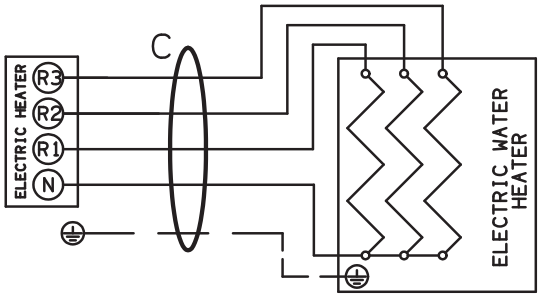
Back up electrical heaters' number setting

The setting of the switch SW1 determines the number of the connected electrical heater elements or the maximum number of electrical heater elements that you want to use. This operation is mandatory.

ELECTRICAL HEATERS WIRING DIAGRAM



1 connected element



More connected elements

LENGTH, SIZE OF WIRES AND DELAYED FUSE

A		B		C		
L (m)	S (mm^2)	L (m)	S (mm^2)	L (m)	S (mm^2)	
15	4	SEE OUT.UNIT	0,75	15	4	25 A

Supply power wire A / supply power wire for electrical heaters C:
Multipolar electric wire. Size and length of the suggested electric wire are showed on table. The wire must be Mod. H07RN-F (according to CEI 20-19 CENELEC HD 22). Make sure the length of the conductors between the fixing point and the terminals allows the straining of the conductors L, N before that of the grounding.

Connecting wire B (SHIELDED):

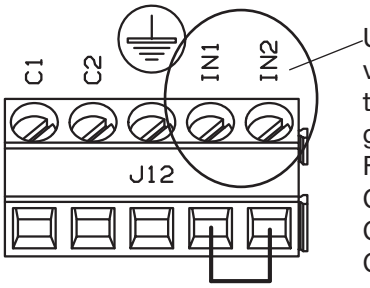
Bipolar electric shielded wire; size and length of the suggested electric wire are showed in the installation manual of outdoor unit (consider Emix as an indoor unit).
The wires have not to be lighter than Mod. H05VVC4V5-K (according to CEI 20-20 CENELEC HD21).

Connection and maintenance of the supply power wire

- The electrical connection of the unit is type Y.
- The installation of the wire must be done by qualified personnel.
- If the wire is damaged by the use, for the replacement, contact After Sale Service or qualified personnel.
- The cable glands must be tightened with the proper torque to ensure IPX1 protection and to prevent the wire from being pushed or pulled, causing dangerous situations (100N; 0.35Nm). The cable glands of the electrical resistances' outputs must be closed with appropriate caps.

Home Automation connections
Emix can be connected to a Home Automation system, according to the following instructions:

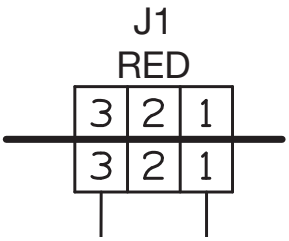
REMOTE CONTROL



Use terminals IN1 and IN2 for connection to an external input signal that is used to activate or deactivate Emix unit (dry contact, bridged at the factory); such as a solar controller that activates or deactivates Emix according to its heating requirements, or a digital programmer for service activation at different times.
For connection, remove the factory-installed jumper and connect the external controller.
Convention:
CONTACT OPEN: EMIX STANDBY
CONTACT CLOSED: EMIX OPERATING

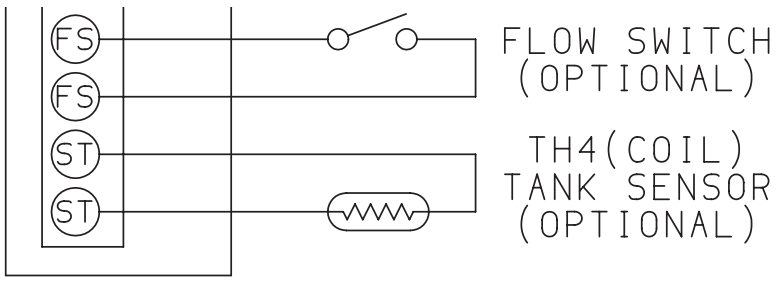
EG

REMOTE ALARM
Use terminal J1 to connect an external device (ex. bulb) that will be powered in case of error (230V, MAX. 3A).
To connect a remote alarm it is necessary to buy the HOME AUTOMATION KIT (code 387027132)



Flow switch connection on DHW (optional)
Connect the flow switch to the terminals FS).
SEE SECTION F

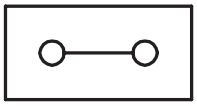
Stratification sensor connection (optional)
Connect the stratification sensor to the terminals ST).
SEE SECTION G



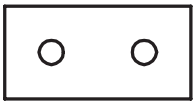
JUMPERS SETTING (CONTROL BOARD)

FACTORY SETTING

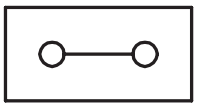
EG



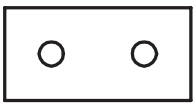
JP1



JP2



JP3



JP4

JP1= CLOSED

JP2= OPEN

JP3= CLOSED

JP4= OPEN

WARNING !
Power down the system before changing the settings.

JP1
Application type selection:
CLOSED: connect the unit to the special Emix port (when Emix is part of a system).
OPEN: Connect the unit to refrigerant port on the outdoor unit (if there is no Emix port) - see DHW application with outdoor unit G30 / G42.

JP2
Internal use. Do not change factory setting. If changed, the unit will not run properly.

JP3
Internal use. Do not change factory setting. If changed, the unit will not run properly.

JP4
Internal use. Do not change factory setting. If changed, the unit will not run properly.

SWITCHES SETTING (CONTROL BOARD)

WARNING !
Power down the system before changing the settings.

SW1: SETTING OF CONNECTED ELECTRICAL HEATERS' NUMBER

See section "**Connection of electrical heater elements**".

EG

SW2: SETTING OF TANK VOLUME

Set **SW2** in order to select the water volume of the tank connected to Emix:

OFF - OFF = 300 l

Factory setting

ON - OFF = 220 l

OFF - ON = 140 l

ON - ON = 80 l

NOTE

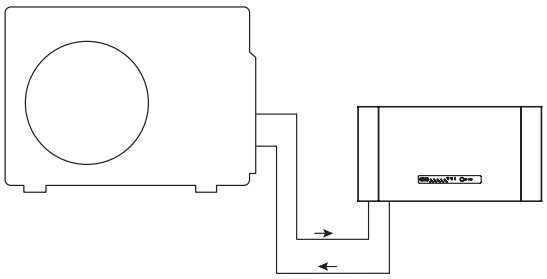
In the case of intermediate size, select the next higher volume.

EMIX CONNECTION - ONLY DHW APPLICATION - G30 / G42

Emix unit can be used with outdoor unit G30 and G42 in a specific configuration in order to create an heat pump system for DHW only production.

Only DHW application: G30 / G42 + Emix

Connect Emix unit to the only refrigerant port (G30) or to the refrigerant port A (G42) on the outdoor unit, using 1/4 ->3/8 adapter provided with outdoor unit.
The system will operate always in heating mode.
Remove JP1 from PCB of Emix unit before switching on the system unit.
In this application, you can not connect other indoor units to G42.



HOW TO CONNECT EMIX TO A SOLAR THERMAL SYSTEM

Emix could be connected to any type of thermal solar system, both natural and forced circulation.

In case of forced circulation solar system, by the water point of view, Emix must be connected to the solar tank exactly like any other tank in parallel to the cold and hot tap water (mixing valve); by the electric point of view Emix could be submitted to the solar control box if it has a dry contact to enable/disable Emix energy support to the water. In case the solar control box does not have any backup contact, Emix will run in parallel mode with the solar system and obviously will stop immediately the operation if the water is already hot by the sun. See section “Home Automation connections” for connection to an external input signal.

EG

In case of solar panel with natural circulation, the tank of the panel is equivalent to the normal tank connected to the Emix. Connect in parallel the cold and hot tap water is enough to make working together the solar panel and Emix, but take care about two important matters:

- elevation between Emix and solar tank cannot be more than the 7,5 meters, the max. elevation supported by the Emix water pump to work properly;

- higher temperature of water due by the sun in some geographical areas; if the water temperature exceeds 95°C is better to install a security system in temperature, in order to avoid over temperature of the Emix internal components. (check hydraulic layouts).

HOW TO DISCONNECT AND REMOVE EMIX UNIT

In case of Emix is connected to a normal indoor unit port (for example with G30 or G42) the unit must be disconnected exactly as any other air indoor unit. On the outdoor unit electrically disconnect the reversing valve to force the system in cooling.

In case of Emix is connected to the Emix port and by any reason it has to be disconnected and replaced, the installer has to do this procedure using a refrigerant recovery unit:

- close the valves of Emix port that connect Emix to outdoor unit;
- connect the refrigerant recovery unit to one of the two valves;
- recover the refrigerant inside the copper pipes and Emix unit;
- disconnect Emix;
- reconnect another Emix unit;
- make the vacuum;
- restore the refrigerant from recovery unit to the pipe and Emix unit;
- disconnect the recovery unit;
- re-open the valves of Emix port that connect Emix to outdoor unit.

In case of Emix is connected to the Emix port and by any reason it has to be removed definitively, the installer has to do this procedure using a refrigerant recovery unit:

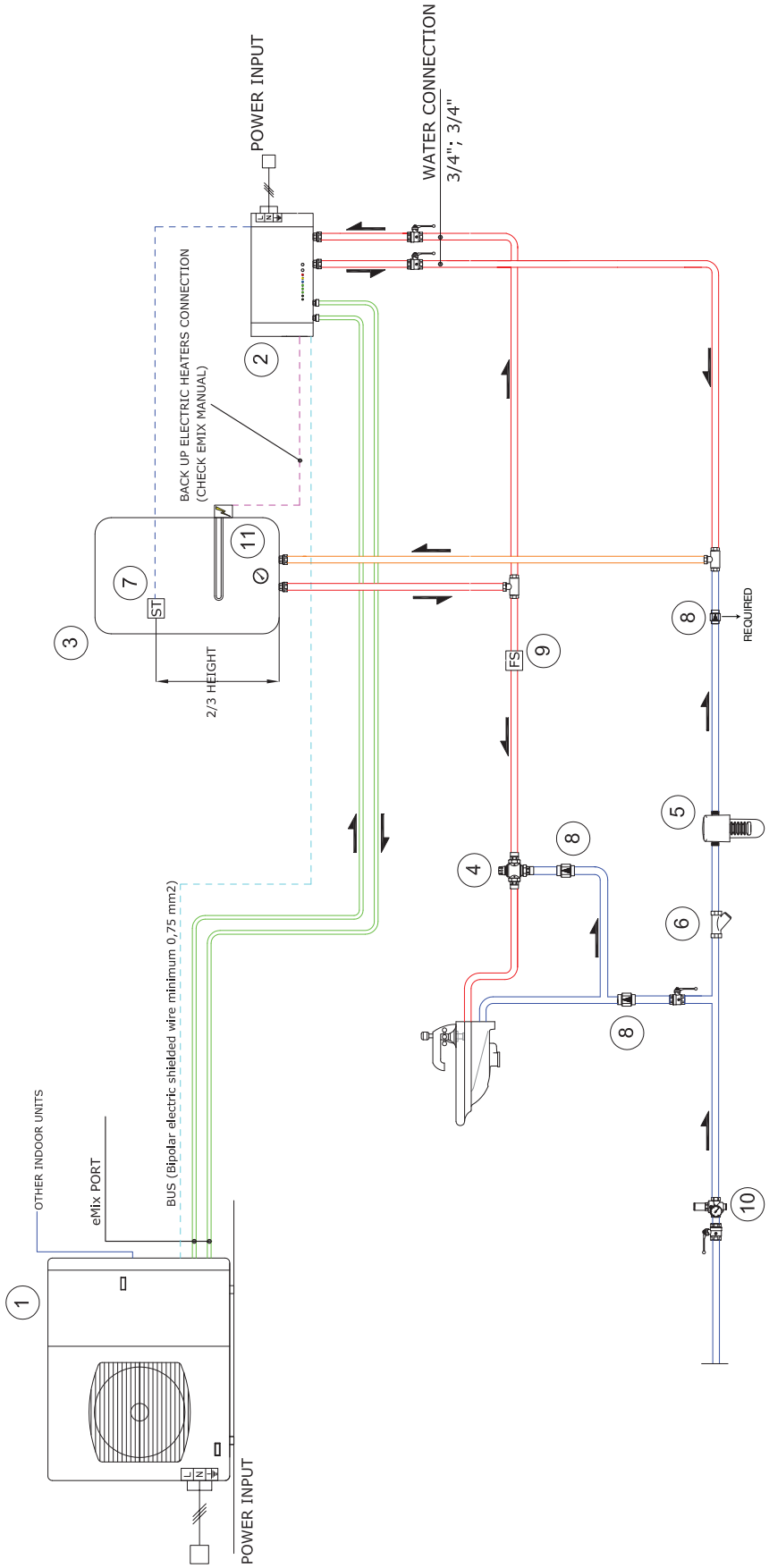
- close the valves of Emix port that connect Emix to outdoor unit;
- connect the refrigerant recovery unit to one of the two valves;
- recover the refrigerant inside the copper pipes and Emix unit;
- disconnect Emix;
- reconnect the bypass disconnected during the first installation;
- disconnect the recovery unit;
- make the vacuum on the bypass;
- re-open the valves of Emix port that connect Emix to outdoor unit;
- switch on the outdoor unit in cooling mode;
- recover the refrigerant inside the system connecting the recovery unit to one of the liquid valve of indoor units or to the pressure valve of the inlet tube;
- disconnect the recovery unit.

INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT IN ACCORDANCE WITH THE EUROPEAN DIRECTIVE 2012/19/EU

At the end of its working life this equipment must not be disposed of as an household waste.
It must be taken to special local community waste collection centres or to a dealer providing this service.
Disposing of an electrical and electronic equipment separately avoids possible negative effects on the environment and human health deriving from an inappropriate disposal and enables its components to be recovered and recycled to obtain significant savings in energy and resources.
In order to underline the duty to dispose of this equipment separately, the product is marked with a crossed-out dustbin.

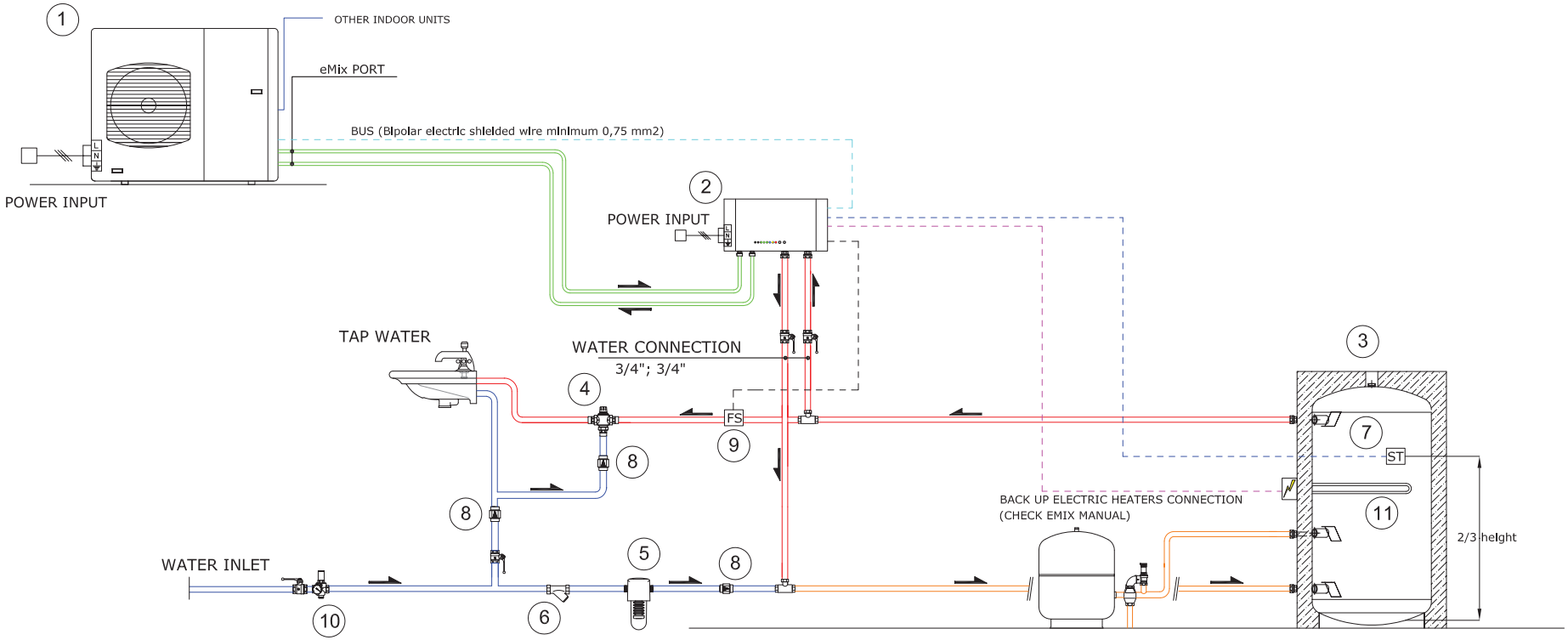
INDICATIVE HYDRAULIC LAYOUT - ELECTRIC BOILER CONNECTION

1 EMX outdoor unit
2 Emix unit
3 Electric boiler - To be installed higher than Emix unit (not supplied)
4 Mixing valve (not supplied)
5 Filters or softener (not supplied)
6 Mesh filter (supplied with Emix unit)
7 Stratification sensor (optional, supplied with Emix unit)
8 Non return valve (not supplied)
9 Flowswitch (optional, not supplied)
10 Pressure reducing valve (not supplied)
11 Back up electric heaters (max 3 x 1,5 kW)



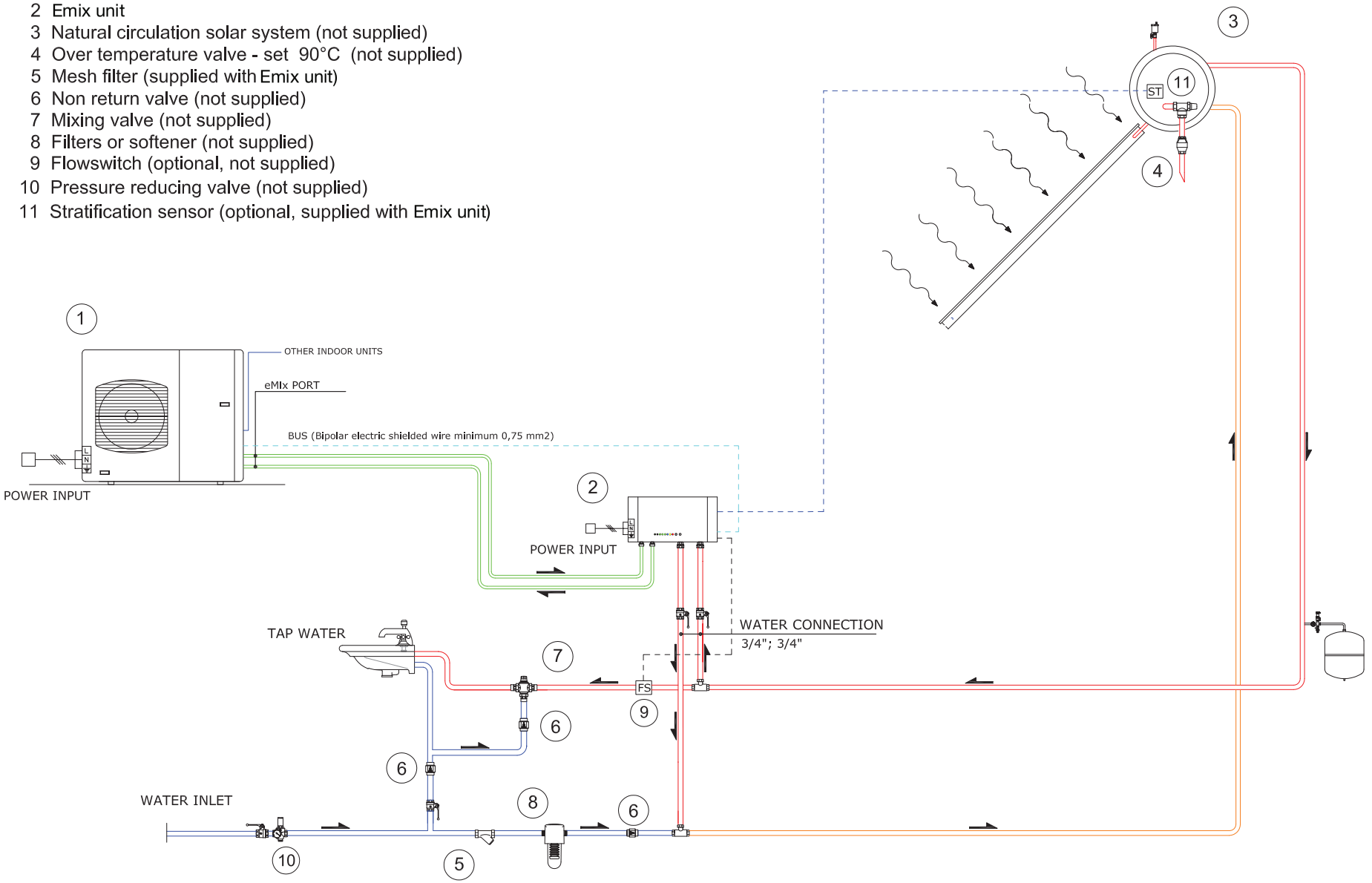
INDICATIVE HYDRAULIC LAYOUT - BUFFER TANK CONNECTION

1 EMX outdoor unit
2 Emix unit
3 DHW buffer tank (not supplied)
4 Mixing valve (not supplied)
5 Filters or softener (not supplied)
6 Mesh filter (supplied with Emix unit)
7 Stratification sensor (optional, supplied with Emix unit)
8 Non return valve (not supplied)
9 Flowswitch (optional, not supplied)
10 Pressure reducing valve (not supplied)
11 Back up electric heaters (max 3 x 1,5 kW)



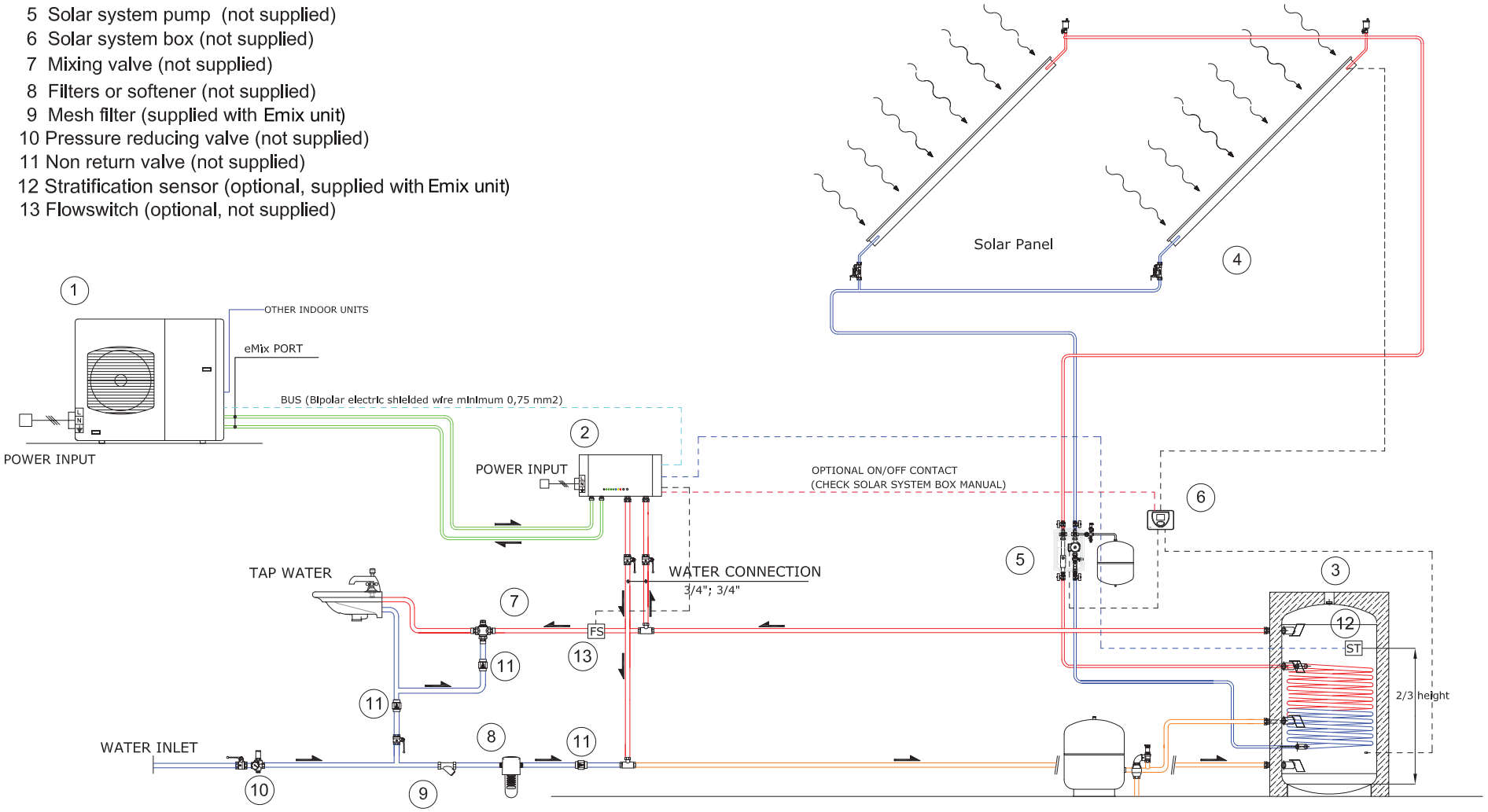
INDICATIVE HYDRAULIC LAYOUT - NATURAL CIRCULATION SOLAR SYSTEM INTEGRATION

1 EMX outdoor unit
2 Emix unit
3 Natural circulation solar system (not supplied)
4 Over temperature valve - set 90°C (not supplied)
5 Mesh filter (supplied with Emix unit)
6 Non return valve (not supplied)
7 Mixing valve (not supplied)
8 Filters or softener (not supplied)
9 Flowswitch (optional, not supplied)
10 Pressure reducing valve (not supplied)
11 Stratification sensor (optional, supplied with Emix unit)



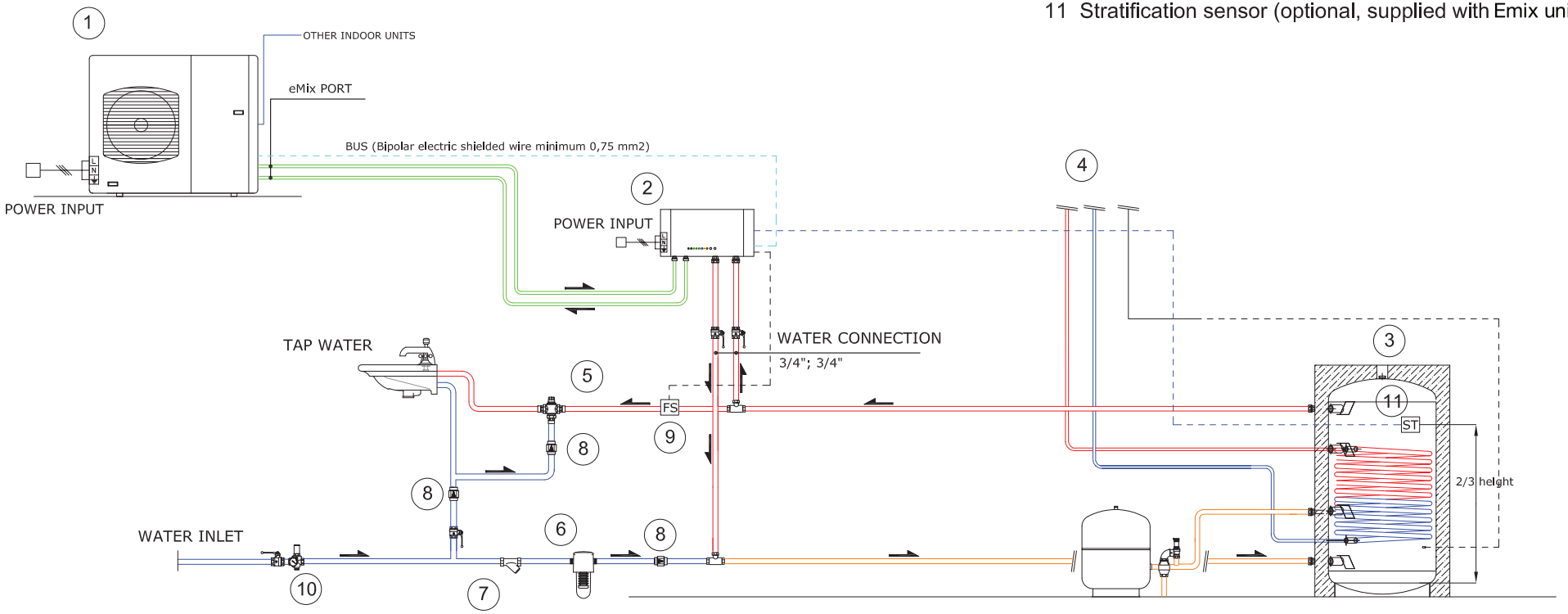
INDICATIVE HYDRAULIC LAYOUT - FORCED CIRCULATION SOLAR SYSTEM INTEGRATION

1 EMX outdoor unit
2 Emix unit
3 DHW buffer tank (not supplied)
4 Solar Panel (not supplied)
5 Solar system pump (not supplied)
6 Solar system box (not supplied)
7 Mixing valve (not supplied)
8 Filters or softener (not supplied)
9 Mesh filter (supplied with Emix unit)
10 Pressure reducing valve (not supplied)
11 Non return valve (not supplied)
12 Stratification sensor (optional, supplied with Emix unit)
13 Flowswitch (optional, not supplied)



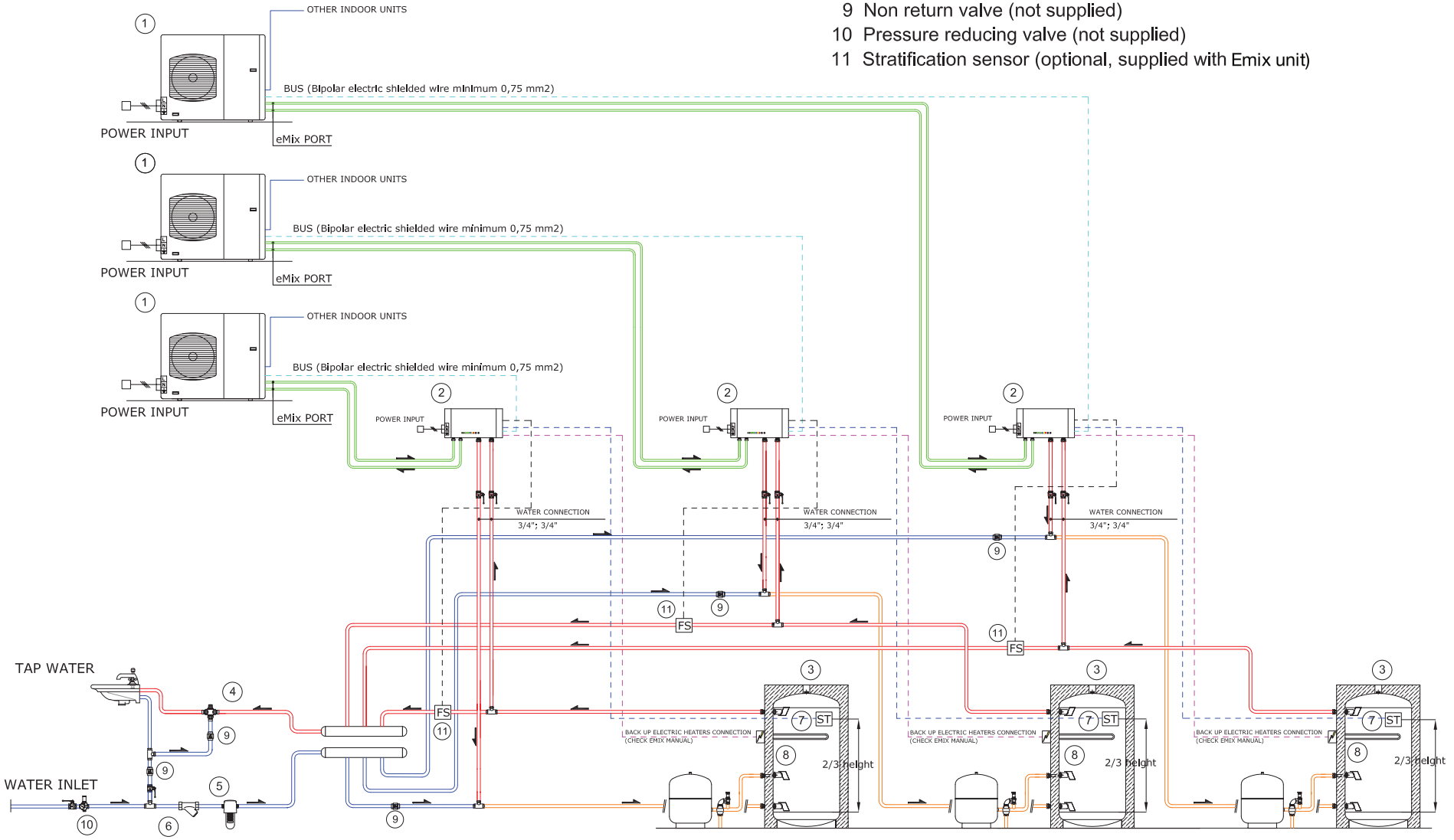
INDICATIVE HYDRAULIC LAYOUT - THIRD PARTIES INTEGRATION

1 EMX outdoor unit
2 Emix unit
3 DHW buffer tank (not supplied)
4 Third parties back up source (not supplied)
5 Mixing valve (not supplied)
6 Filters or softener (not supplied)
7 Mesh filter (supplied with Emix unit)
8 Non return valve (not supplied)
9 Flowswitch (optional, not supplied)
10 Pressure reducing valve (not supplied)
11 Stratification sensor (optional, supplied with Emix unit)



INDICATIVE HYDRAULIC LAYOUT - MULTIPLE CONNECTION

1 EMX outdoor unit
2 Emix unit
3 DHW buffer tank (not supplied)
4 Mixing valve (not supplied)
5 Filters or softener (not supplied)
6 Mesh filter (supplied with Emix unit)
7 Stratification sensor (optional, supplied with Emix unit)
8 Back up electric heaters (max 3 x 1,5 kW)
9 Non return valve (not supplied)
10 Pressure reducing valve (not supplied)
11 Stratification sensor (optional, supplied with Emix unit)



OPERATING INSTRUCTIONS

Safety instructions

- Read this booklet carefully before using this appliance. If you still have any difficulties or problems, consult your dealer for help.
- This appliance is designed to give you domestic hot water. Use this only for its intended purpose as described in this Instruction Manual.

WARNING

- Never use or store gasoline or other flammable vapour or liquid near the unit. It is very dangerous.
- Never install electrical equipment, which is not protected with IPX1 protection (protection against vertical water drop), under the unit.
- Never touch the units with wet hands.
- The manufacturer assumes no responsibilities if the safety regulations or local codes are not observed.

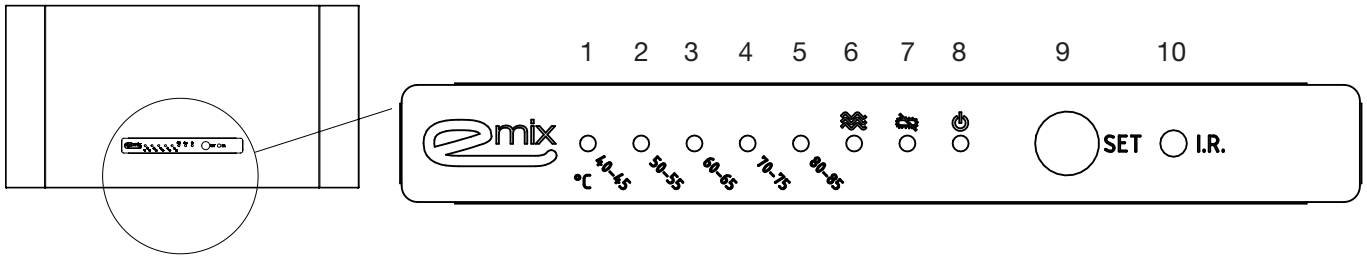
CAUTION

- Never use the power main switch to start or stop the air conditioner: always use the selector switch on the unit.
- Do not let children play with the appliance.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the air conditioner by a person responsible for their safety.

NOTE

If the unit hasn't been used for a long period, to warm up the system, the power mains must be turned on at least 1 hour before operation.

CONTROL PANEL



EG

The control panel is located on the front of Emix. From the left to the right we can see:

1...5: GREEN LED: they indicate the water temperature, both in the configuration menu (desired temperature) and in the operation menu (actual temperature).

6 BLUE LED: It indicates the activation of the electrical heaters.
Fixed: one or more activated heaters.
Flashing: BOOSTER mode selected.

7 YELLOW LED: it indicates the status of the antilegionella cycle.
Fixed: active cycle.
Flashing: active cycle, but not closed.

8 RED LED: it indicates that the unit is in stand by.

9 BUTTON for configuration of operation settings.

10 RECEIVER of infrared signal from the remote control (at the moment the use of the IR signal is reserved for factory procedures).

WATER TEMPERATURE OR DESIRED TEMPERATURE DISPLAY:

°C	LED 1	LED 2	LED 3	LED 4	LED 5
40	F	○	○	○	○
45	●	○	○	○	○
50	●	F	○	○	○
55	●	●	○	○	○
60	●	●	F	○	○
65	●	●	●	○	○
70	●	●	●	F	○
75	●	●	●	●	○
80	●	●	●	●	F
85	●	●	●	●	●

F Flashing LED

● LED ON

○ LED OFF

HOW TO USE EMIX

When Emix unit is correctly connected and electrically powered the RED LED is ON (stand by).

Power ON / OFF of Emix

To switch on Emix, push and hold BUTTON 9 for about 4 seconds until the RED LED turns off and the GREEN LEDs of water temperature light up. Emix unit is designed to be always ON.
To switch off Emix, push and hold BUTTON 9 for about 4 seconds until the GREEN LEDs turn off and only the RED LED stays on.
Once turned on, Emix unit displays the temperature inside the tank.
If you don't release BUTTON 9 immediately after the RED LED is turned on, after approximately other 2 seconds you will enter the configuration menu. See section **"EMIX CONFIGURATION"**.

Desired temperature setting (setpoint)

Press and quickly release repeatedly BUTTON 9 until the led corresponding to the desired temperature lights up (see table). After 5 seconds without any operation, Emix exits the desired temperature setting procedure and begins to display the water temperature in the tank.

EMIX CONFIGURATION

To enter the configuration menu, with Emix already on, press and hold the BUTTON 9 for about 7 seconds.
When only the RED LED lights up, keep BUTTON 9 pressed until the BLUE LED lights up. At this point release BUTTON 9.
After 5 seconds without any operation, Emix exits the configuration procedure and returns to the previous menu.

Booster mode setting

The use of electrical heating elements installed in a storage tank or in a electrical water heater allows you to heat the cold water faster, to reach the desired water temperature even in conditions of very low external temperatures or to heat the water even if the heat pump is switched off for maintenance.
When you activate the Booster mode, the software will automatically handle the electrical heaters.
If after 120‘ from start up of the system (the time counter starts when the Booster mode is set), the water setpoint is not reached, the first electrical element is automatically activated. The other elements, one by one, will be activated every 120‘ following the course of the water temperature, until reaching the setpoint.
To activate / deactivate the Booster mode, from the configuration menu, quickly press BUTTON 9 until the only BLUE LED is flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the setting.

NOTE

By default, the Booster mode is off.

Super Booster mode setting

When the Super Booster mode is activated, all the connected electrical heaters will be activated at the same time, together with the heat pump.
When the setpoint is reached, all electrical heaters are switched off and the Super Booster mode is automatically turned off.
To activate / deactivate the Super Booster mode, from the configuration menu, quickly press BUTTON 9 until the only RED LED is flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the setting.

NOTE

By default, the Super Booster mode is off.

Antilegionella cycle setting

To activate / deactivate the Antilegionella cycle, from the configuration menu, quickly press BUTTON 9 until the only YELLOW LED is flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the setting.

NOTE

By default, the Antilegionella cycle is on. It is highly recommended to keep it enabled.

For details on the operation of the Antilegionella cycle, see section “ANTILEGIONELLA CYCLE”.

Setpoint limit setting with Heat Pump

It is possible to set the maximum achievable setpoint when the Heat Pump is working only for Emix. This limit can be set to 50°C or 58°C.
To change the setting, from the configuration menu, quickly press BUTTON 9 until the BLUE and YELLOW LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the setting.

NOTE

By default the limit is set to 50°C. We recommend to keep this setting to preserve the Emix performance.

Temperature delta setting for restart of the heat pump

When the water temperature reaches the set value or the maximum achievable value (in the case of Emix operation without other indoor units), the heat pump switches off and starts up again only when the water temperature drops below the desired temperature of a certain value (delta).
You can change the startup delta of the heat pump by setting it to 5°C or 10°C.
To change the set value, from the configuration menu, quickly press BUTTON 9 until the BLUE and RED LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the setting.

NOTE

By default the startup delta of the heat pump is set to 10°C.

Reset of the factory settings

To reset all the factory settings, from the configuration menu, quickly press BUTTON 9 until the BLUE, YELLOW and RED LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press BUTTON 9 once more.
3 consecutive beeps confirm the reset of factory settings.

OPERATION OF THE ELECTRICAL HEATER ELEMENTS

In addition to the already described modes in the section “EMIX CONFIGURATION”, Emix software can automatically manage electrical back up heaters under certain conditions. This mean that these operation modes are not to be set and that can not be deactivated. They are:

- Antifreeze mode
- Cold draft prevention mode
- Electrical water heater mode (in case heat pump is not active)
- Antilegionella cycle

Electrical back up heater management – Antifreeze mode

If water temperature inside the tank is lower than 5° C, all connected electrical elements are switched on until the water temperature reaches 10° C.

Electrical back up heater management – Cold draft prevention mode

When one or more indoor units are in cold draft prevention mode and compressor is operating since 20’, one by one electrical element are switched on every 20’; they will be switched off one by one when no indoor unit will be any more in Cold draft prevention mode.

Electrical back up heater management – Electric water heater mode

If the outdoor unit is stopped for maintenance the end user could decide to use Emix as controller of the electrical heater elements located inside the tank, exactly like any electrical water heater. In this case, if the water temperature is lower than the desired temperature for more than 10’, all the connected electrical heaters will switch on up to the reaching of the setpoint. End users can switch off Emix if they do not want to utilise this option.

Electrical back up heater management – Antilegionella cycle

During the Antilegionella cycle, one or more electrical heaters may be automatically switched on. See section “ANTILEGIONELLA CYCLE”.

ANTI-LEGIONELLA CYCLE

Legionella is a bacteria that under certain conditions can be present in any water system.
The proliferation of this bacteria depends on many factors and it finds the best conditions to survive between 20ºC to 45ºC. That's why, even though each Country has a different local regulation about Legionella prevention, all of them require to heat water over than 50ºC.

Anti legionella cycle is a special operation mode performed by Emix. The goal of this mode is to heat the water of the tank. In this way, all bacteria that may have been inside the water would be killed.

The antilegionella cycle is closed when:

- the water temperature is above 65°C, or
- the water temperature is above 50°C for a variable period of time depending on the temperature itself.

If within 72 hours (3 days) none of the above conditions have been satisfied, the cycle is activated.
During the cycle the YELLOW LED lights up.
The connected electrical heaters can be used during anti legionella cycle.
During the cycle, by water temperature trend analysis, if the software understands that there is not enough energy using only the heat pump, the first electrical element will be switched on automatically. All the other electrical elements will be switched on every 120' checking water temperature trend up to reach the necessary conditions to close the cycle. If there is a flow switch connected, the cycle time will be reduced according to the amount of water taken.

If after 8 hours none of the above conditions occurred, the cycle will continue, but the YELLOW LED will begin flashing with low frequency to alert the end user.

NOTE: The antilegionella cycle is fundamental for the health of people; it is normally completed due to thermodynamic energy, however, we can not exclude that in unfavorable atmospheric conditions, the heat pump is unable to complete by itself the cycle. For this reason it is obligatory to connect the heater / the heaters; in case you do not connect at least one electrical heater, under certain operating conditions, it may happen that the legionella cycle will not be closed, a condition for which our company does not assume any responsibility.

AUTO-DIAGNOSIS TABLE

Error	Cause	LED		
		BLUE	YELLOW	RED
1	Error on outdoor unit	○	○	F
3	Communication error with outdoor unit	F	F	F
4	Sensor REFRIGERANT OUT damaged or disconnected	F	F	○
5	Sensor H2O IN damaged or disconnected	○	F	F
6	Sensor H2O OUT damaged or disconnected	F	○	○
7	Circulation pump error or lack of water flow	F	○	F
8	Electrical heaters not set	F	○	●

F flashing LED

● LED ON

○ LED OFF

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