# emix TANK

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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 • MANUAL DE INSTRUÇÕES E INSTALAÇÃO
**ΟΔΗΓΙΕΣ ΧΡΗΣΗΣ ΚΑΙ ΕΓΚΑΤΑΣΤΑΣΗΣ** • ANVÄNDNINGS- OCH INSTALLATIONSHANDBOK

Emix Tank 200 V2

Emix Tank 300 V2

04/2017

**DECLARATION OF CONFORMITY**

This product is marked CE as it satisfies Directives:
– LVD no. 2014/35/EU (Standard: EN 60335-1:2012 + A11:2014; EN 60335-2-21:2012).
– EMC no. 2014/30/EU (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).
– RoHS2 n.2011/65/EU + 2015/863/EU amending ANNEX II.
– ERP 2009/125/EC (Commission regulation EU no. 814/2013 Ecodesign Requirements).
– ERP 2010/30/EU (Commission regulation EU no. 812/2013 Energy labelling).
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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## INDICE



**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.

**OPERATING LIMITS**

- Room temperature
  Max : 35°C
  Min. : 5°C
- Relative room humidity
  Max : 95 %
  Min. : 0 %
- Water pression
  Max : 6 bar

**DOMESTIC HOT WATER SANITARY CIRCUIT**

Emix Tank 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 refri-gerant and tap water.

**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 floor 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)

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

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**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.

## 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.
- 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.

**NOTES**

1. Also check the PH of water that should be at least neutral (values from 6.9 to 7). Values below 6.9 can cause corrosion of materials.
2. It is necessary to wash throughly the system after installation of the appliance and before its use.

**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

**In addition to this, it is required:**
- an expansion vessel (MINIMUM 18 l)
- a 3/4" water filter to be installed upstream of Emix Tank tap water connection
- inlet and outlet service valves for Emix Tank
- a pressure reducing valve (check hydraulic diagrams).

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## RATING DATA

| | Emix Tank 200 | Emix Tank 300 |
|---|---|---|
| Power supply | 230 V /1/50 Hz - 400 V /3N/50 Hz | |
| Max power input | 60 W | |
| Max power input with electrical heaters | 2x1000 W | |
| Water connection | 3/4" G – 3/4" G | |
| Refrigerant connection (R410A) | 3/8" – 3/8" | |
| Solar coil connection | 1" G | |
| Max operating pressure | 6 bar | |
| Net weight | 103 Kg | 133 Kg |
| Packaged weight | 115 Kg | 145 Kg |
| Dimensions (H/W/D) | 1460x620x640 mm | 1875x620x640 mm |

## INTRODUCTION

Emix Tank 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 Tank 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.

### Emix Tank 200 & 300 liters

Emix Tank 200 and 300 liters offers you a complete solution, including:
- The Emix concepts and components.
- A tank of 200 or 300 liters made in steel with porcelainized coating.
- A solar coil in Fe P195GH to be connected to a third parts solar panel system.
- Two per 1 kW electric elements managed by the electronics of Emix Tank.
- A thermostatic mixing valve to manage properly the hot water temperature.

Emix Tank is both a proper heat pump tank and a full feature electrical water heater.

Emix Tank 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). Further informations in the paragraph " Only DHW application".

Anyway, in case of outdoor unit failure, you can use Emix Tank as electrical water heater without the heat pump.

## MODELS COMBINATION

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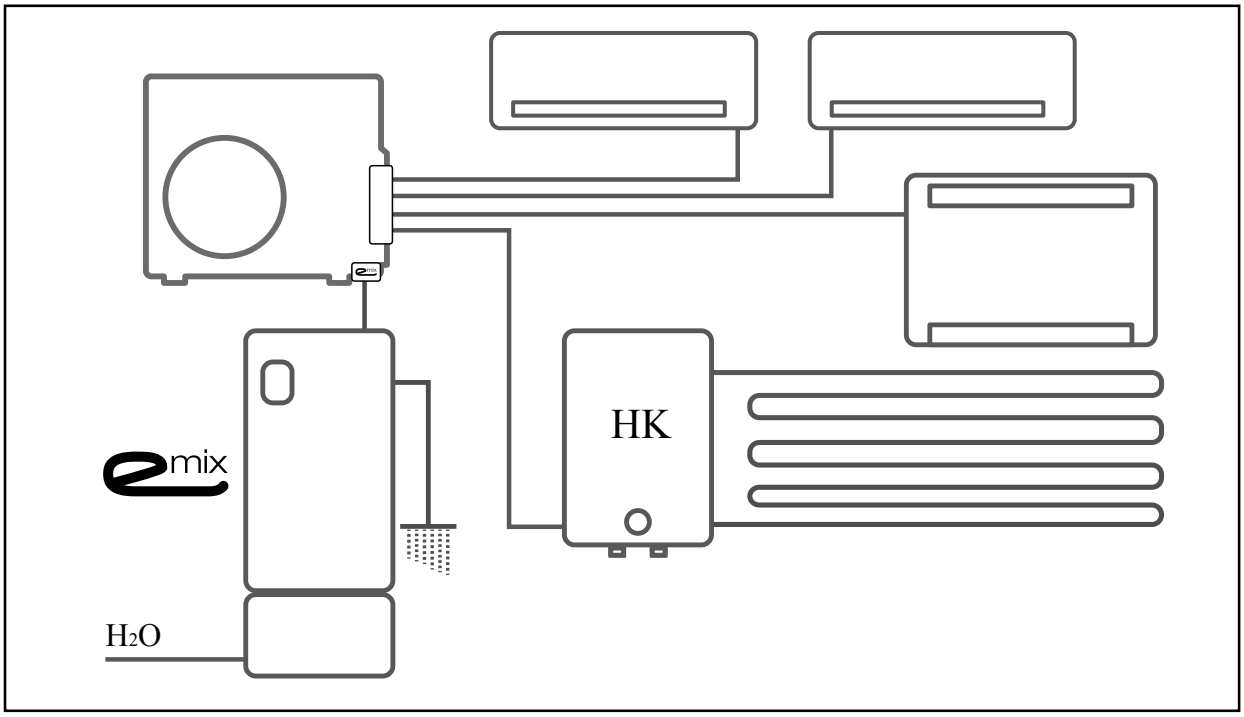
The following diagram illustrates the concept exposed above and shows a system configuration where three indoor direct expansion units, a hydrokit for a floor system and an Emix Tank coexist, all connected to a G110.




Emix Tank always works in heating mode even when the heat pump is working for cooling of the environments; during this operation mode, Emix Tank 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 Tank and the one represented in the previous figure is just one of many.

## TUBING LENGTH AND ELEVATION DIFFERENCE LIMITS

**Refrigerant Circuit**

Emix Tank 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 Tank pipe to be added to the total length set by the outdoor unit (we advise a specific insulation of the Emix Tank pipes to guarantee the minimum dispersion of energy).

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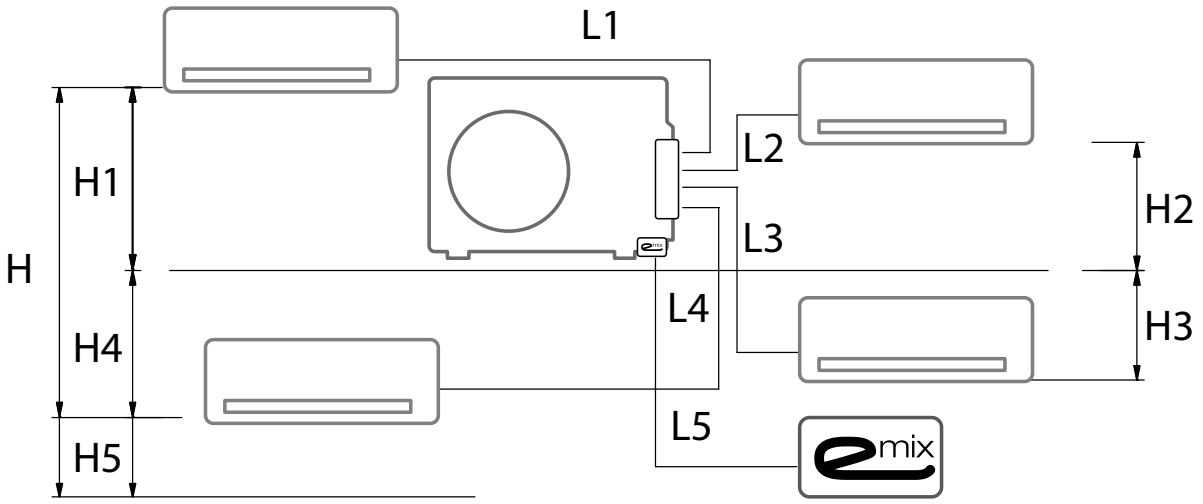


FOR TUBING LENGTH AND ELEVATION DIFFERENCE LIMIT SEE INSTALLATION INSTRUCTIONS OF OUTDOOR UNIT.
CONSIDER EMIX TANK AS AN INDOOR UNIT OF THE SYSTEM.
FOR THE BEST PERFORMANCE, KEEP EMIX TANK TUBING AS SHORT AS POSSIBLE (MAX. 10m).

Additional refrigerant charge for Emix Tank 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 Tank tubing length: 5 meters
- Total tubing length (including Emix Tank): 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 Tank tubing length: 7 meters
- Total tubing length (including Emix Tank): 57 meters

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

# INSTALLATION INSTRUCTIONS

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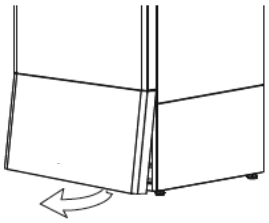
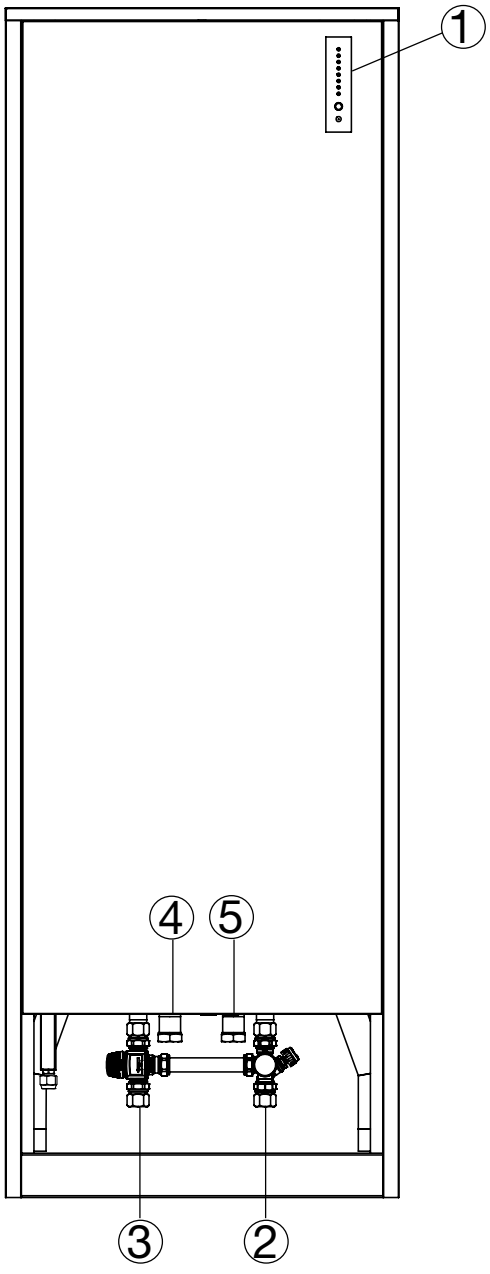
## A HOW TO REMOVE THE BOTTOM COVER

The cover can be removed by pulling it out from the bottom. When the cover is partially removed, pull it towards you.

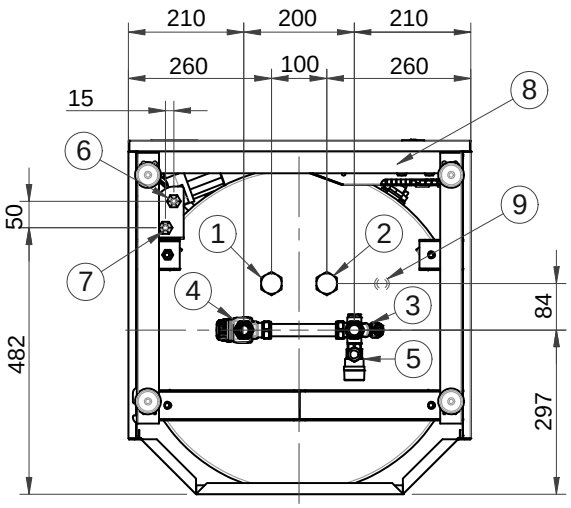


## B MAIN PARTS

1. Control panel
2. Cold water inlet
3. Hot water outlet
4. Solar coil inlet
5. Solar coil outlet

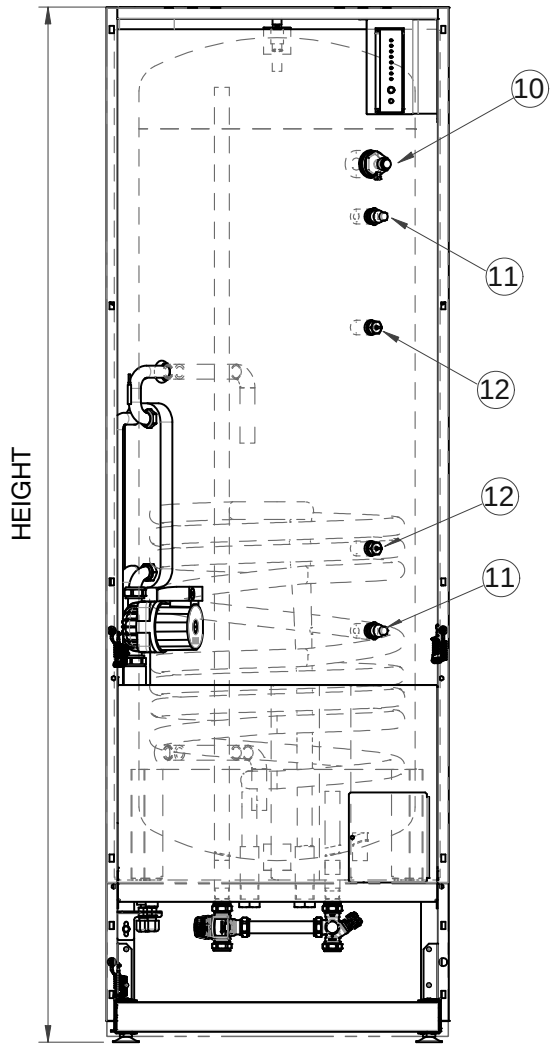


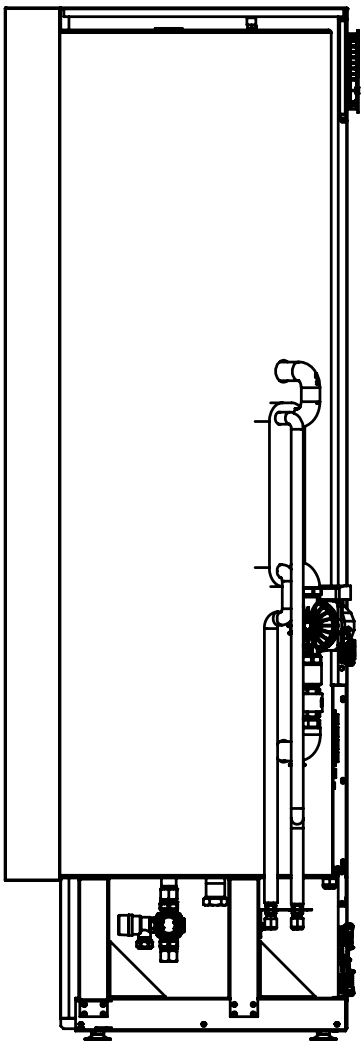
## C FURTHER INFORMATION




1. SOLAR COIL INLET
2. SOLAR COIL OUTLET
3. COLD DOMESTIC WATER INLET
4. HOT WATER OUTLET
5. PRESSURE RELIEF VALVE OUTLET (6 bar)
   SEE NOTES BELOW
6. REFRIGERANT IN
7. REFRIGERANT OUT
8. ELECTRIC INLETS
9. SENSOR'S THERMOWELL FOR SOLAR SYSTEM
10. MAGNESIUM ANODE
11. ELECTRICAL HEATERS
12. STRATIFICATION SENSORS
13. WATER DISCHARGE + EXPANSION VESSEL CONNECTION
14. THERMOSTATIC MIXING VALVE
15. COLD WATER INLET VALVE

EG



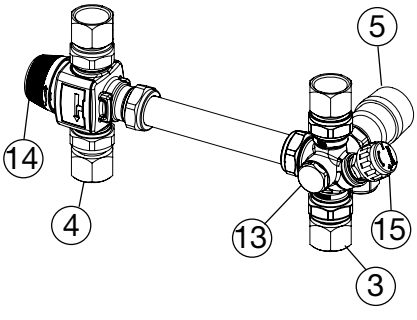



HEIGHT

200 LITRE UNIT 1460 mm
300 LITRE UNIT 1875 mm

WEIGHT

200 LITRE UNIT 103 Kg
300 LITRE UNIT 133 Kg




**NOTES**

**IMPORTANT ! PRESSURE RELIEF VALVE OUTLET (5)**

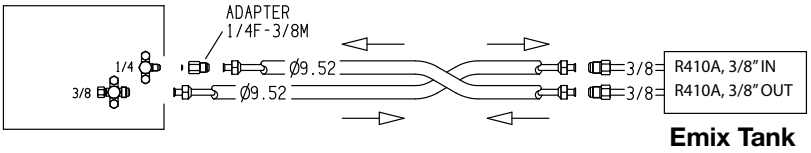
- The outlet of the safety group emptying must be sized according to the requirements of the DTU (unified technical document) and must never be obstructed.
  It must be connected, via a funnel which allows a distance of at least 20mm, to a vertical exhaust pipe with a diameter at least equal to that of the device connection pipe.
- The outlet of the safety group emptying must be installed in a place protected from the risk of freezing and inclined downwards.

**WARNIG !**

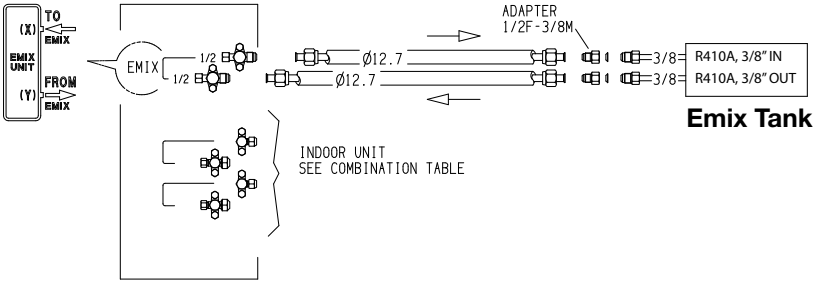
**In the absence of such a precaution, the intervention of the safety valve could cause damage to people, animals and things and THE MANUFACTURER can not be held responsible.**

## D REFRIGERANT CONNECTION BETWEEN EMIX TANK AND OUTDOOR UNIT

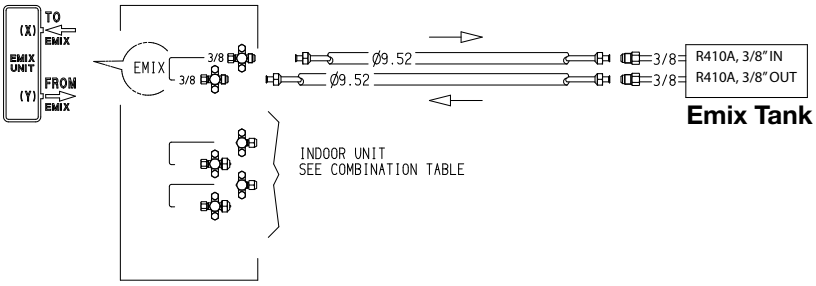
### G30 / G42 ONLY DHW (SEE SECTION “ONLY DHW APPLICATION”)



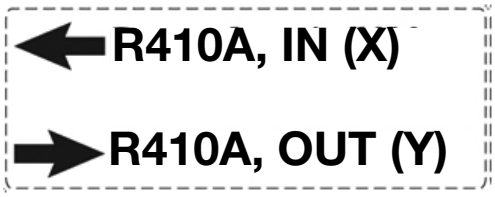

### G140

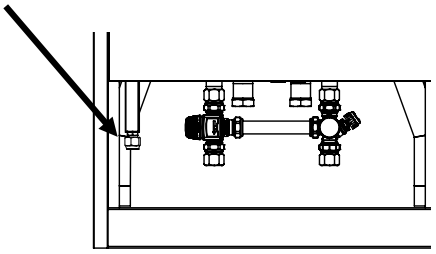



### OTHER OUTDOOR UNITS




- 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 Tank unit).
- Connect the refrigerant pipes of Emix Tank to the outdoor unit (it is warmly suggested a strong insulation).
  On the bottom part you will see two pipes; they are for the refrigerant circuit between the outdoor unit and Emix Tank, marked with the following label:



R410A, IN (X) is the pipe from the outdoor unit
R410A, OUT (Y) is the pipe to the outdoor unit

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

- In case Emix Tank is connected to Emix port:

  - connect the port (X) of outdoor unit to the pipe R410A, IN (X) of Emix Tank
  - connect the port (Y) of outdoor unit to the pipe R410A, OUT (Y) of Emix Tank

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

  - connect the gas pipe 3/8” of outdoor unit to the pipe R410A, IN (X) of Emix Tank
  - connect the liquid pipe 1/4” of outdoor unit to the pipe R410A, OUT (Y) of Emix Tank

  Use the adapter indicated in the figure.

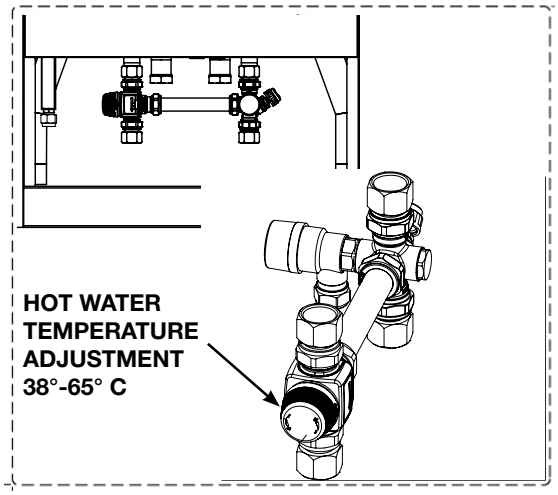
- Perform the vacuum procedure.
- Open the valves of the outdoor unit port where Emix Tank is connected.

## E HYDRAULIC CONNECTION BETWEEN EMIX TANK AND DOMESTIC WATER CIRCUIT

- Connect the water to the tank. Install an expansion vessel of 18 litres minimum and service valves on the connections of the water circuit in order to make installation and maintenance operations easier. The output of the safety valve should be connected to a drain.
- Install a filter upstream the cold water circuit and a softener (or polyphosphate treatment system) to avoid limestone.

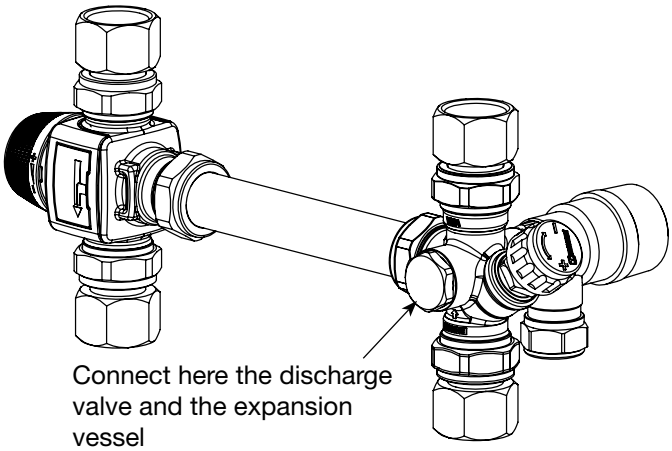
Here below you can see the water connections and how to set the thermostatic mixing valve.






## F HOW TO INSTALL EXPANSION VESSEL

Expansion vessel installation is always warmly recommended in order to prevent hydraulic issues to Emix Tank unit
(e.g. due to suddenly pressure change in the water inlet circuit) and, most of all, to counteract the pressure increasing due to water heating.




1. Remove the cap.
2. Install a valve in order to discharge water from the circuit (in case of need).
3. Install the expansion vessel min. 18 litres (½" connection).

## G CONNECTION OF FLOW SWITCH ON DOMESTIC HOT WATER (OPTIONAL)

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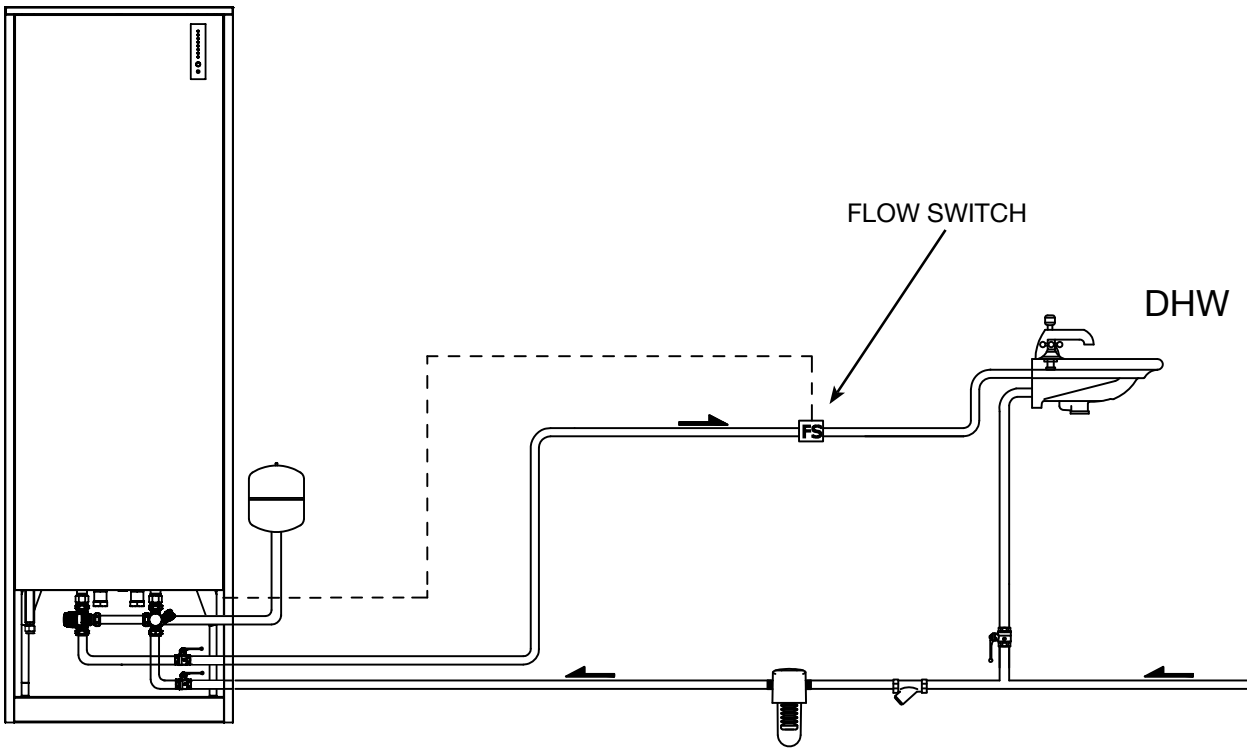



Place the flow switch on the domestic hot water tap as shown in figure.
Connect the flow switch to the connector J14 on the main board.

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

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

## 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 cables connection**

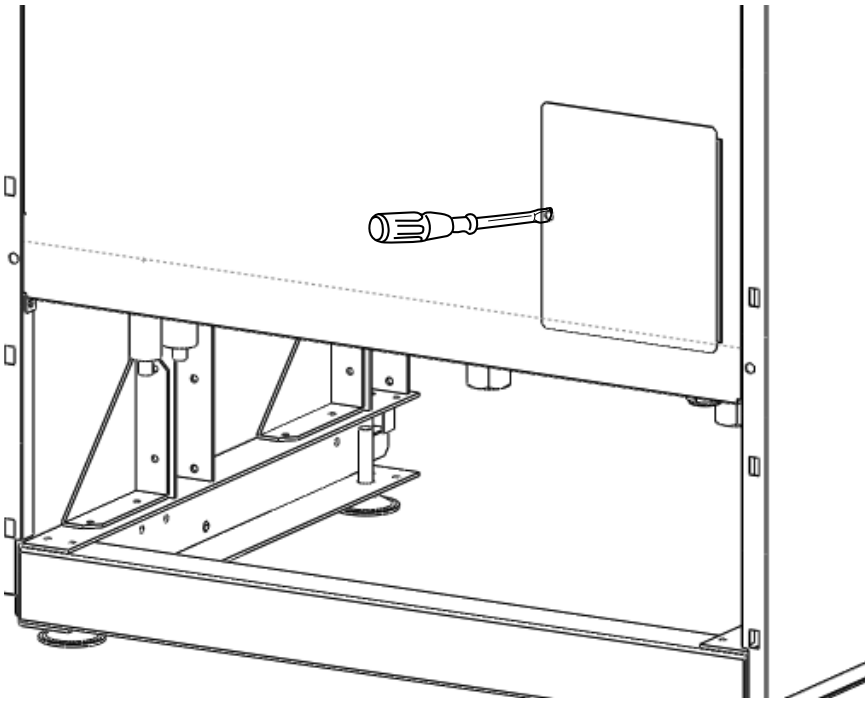
Emix Tank must always be connected to the electrical power supply in a separate manner compared to the connection of the outdoor unit, using only the bipolar shielded cable as all the other indoor units.

- 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).



### HOW TO ACCESS THE WIRING CONNECTIONS

- Remove the front panel in the same way of the bottom part (there are no screw to be removed and no wire to be disconnected).
- After you removed the front panel you will see the tank.
- In the bottom right part, you will see the cover of electrical connections.



### HOW TO REMOVE THE COVER OF ELECTRICAL CONNECTIONS

- Unscrew the fixing screw.
- Pull the cover and remove it.

**NOTE**

THE FRONT PANEL AND THE COVER OF ELECTRICAL CONNECTIONS MUST BE FASTENED SECURELY DURING OPERATION OF THE UNIT.

**WIRING DIAGRAM**

TERMINAL BLOCKS AND ELECTRICAL CONNECTIONS

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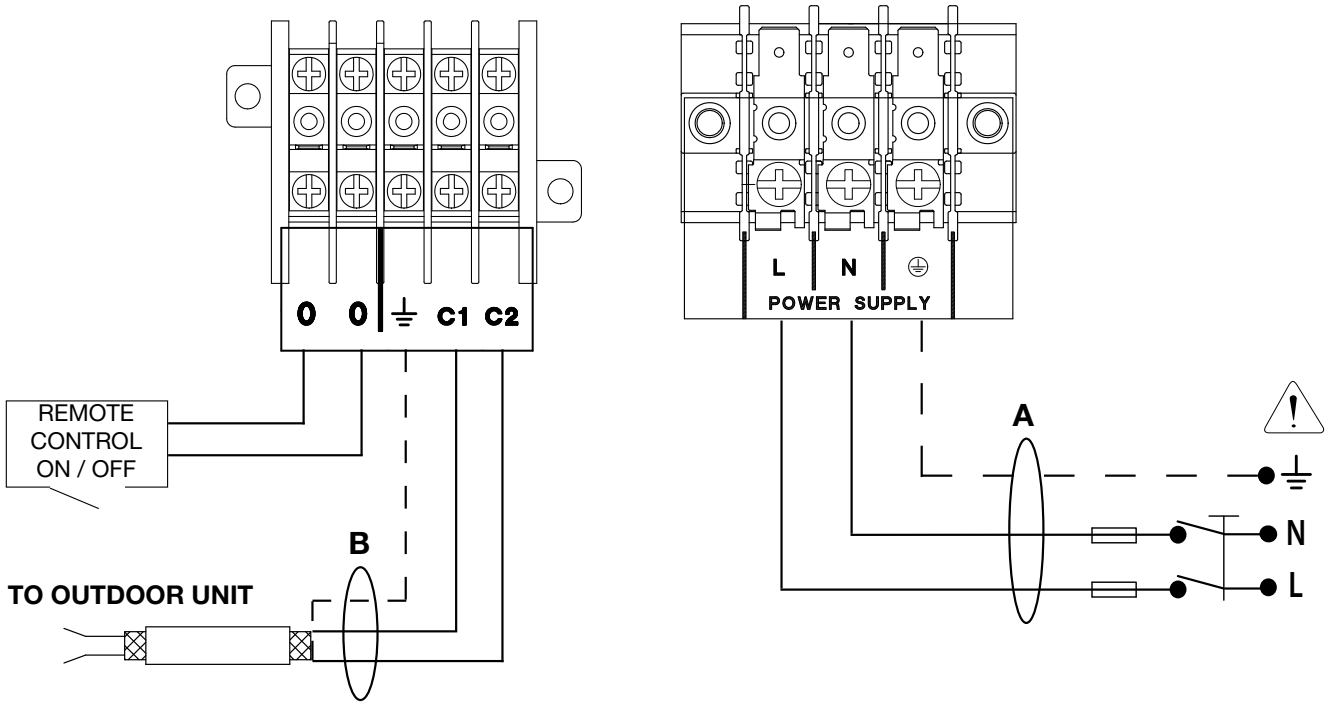



DELAYED FUSE

**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.**

**NOTE** : The unit must be supplied with a dedicated electrical line.

**WARNING !**

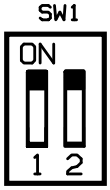
Always connect Phase to L and Neutral to N

**DO NOT INVERT THE WIRES, OTHERWISE THE CIRCULATION PUMP DOES NOT WORK PROPERLY.**

Connect the communication shielded pair cable to the connection block C1 and C2 taking care about polarity between outdoor unit and Emix Tank. Connect the shield to the communication ground connection. In case of mistake you will see a communication error indication (all the LED flashing). SEE AUTO-DIAGNOSIS TABLE.
REMOTE CONTROL is a connection giving you the opportunity to control the Emix Tank by a remote wired connection, for example by a Solar Panel Control Box or a Timer. (See the section “Home Automation Connections”).
The label of the electric wiring diagram is applied on the electrical box panel.

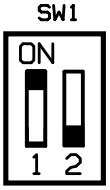
## Setting of electrical heater elements

The electrical heater elements of Emix Tank are both enabled (factory setting). It is possible to change this setting utilizing the switch **SW1** in order to exclude the lower element or the upper one, but **you must anyway let at least one electric heater element enabled.**
Failure to use 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.

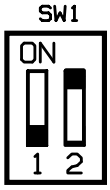



Factory setting

2 elements
1+1kW
lower +
upper




1 element
1kW
lower




1 element
1kW
upper

## LENGTH, SIZE OF WIRES AND DELAYED FUSE

| A | | B | | |
|---|---|---|---|---|
| L ( m ) | S ( $mm^2$) | L ( m ) | S ( $mm^2$) | |
| 15 | 2,5 | SEE OUT.UNIT | 0,75 | 16 A |

**Supply power wire A:**

**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 Instructions of outdoor unit (consider Emix Tank as an indoor unit).**
**The wires have not to be lighter than Mod. H05VVC4V5-K (according to CEI 20-20 CENELEC HD21).**

EG

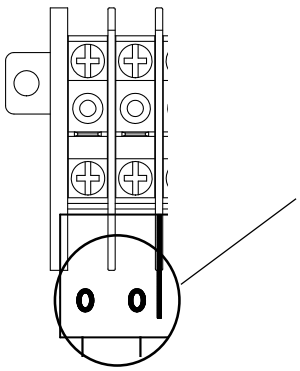
**Connection and maintenance of the supply power wire**

- 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.

## Home Automation connections

It is possible to connect Emix Tank to an Home Automation system, according to the following instructions:

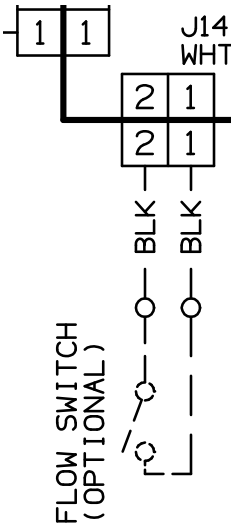
**REMOTE CONTROL**




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

## Flow switch connection on DHW (optional)

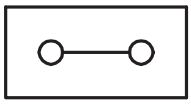
Connect the flow switch to the connector J14.
SEE SECTION G



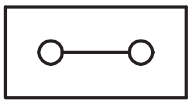

EG

## JUMPERS SETTING (CONTROL BOARD)

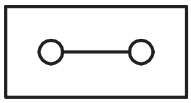
### FACTORY SETTING



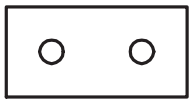
JP1



JP2



JP3



JP4

JP1= CLOSED

JP2= CLOSED

JP3= CLOSED (DO NOT CHANGE)

JP4= OPEN (DO NOT CHANGE)

**WARNING !**
Power down the system before changing the settings.

JP1
Application type selection:
CLOSED: connect the unit to the special Emix port (when Emix Tank 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.

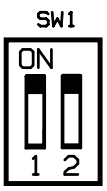
JP2
Internal use. Do not change factory setting. If changed, the unit will not run properly.

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.



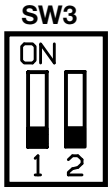

**SW1:** SETTING OF ELECTRICAL BACKUP HEATERS

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

EG

**SW3:** SETTING OF TANK VOLUME

Set **SW3** in order to select the water volume of the tank. **SW3** is pre-set in the factory




OFF - OFF = 300 l

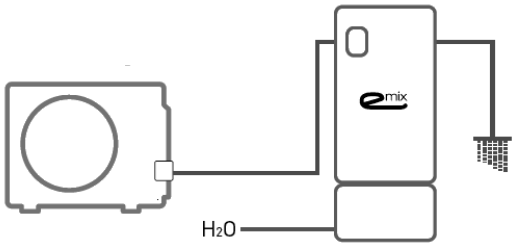

ON - OFF = 200 l

## EMIX TANK CONNECTION- ONLY DHW APPLICATION - G30 / G42

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

### Only DHW application: G30 / G42 + Emix Tank

Connect Emix Tank 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 Tank unit before switching on the system.**
In this application, you can not connect other indoor units to G42.

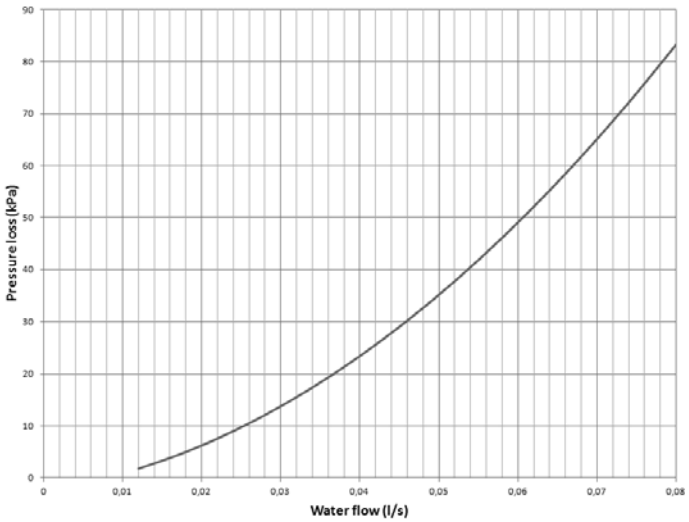



## HOW TO CONNECT EMIX TANK TO A SOLAR THERMAL SYSTEM

Emix Tank could be connected to any type of thermal solar forced circulation system (see example in the system layout). The panel will be connected directly to the coil inside Emix Tank unit (the connections are in the lower part of the tank). The temperature sensor of the tank for the solar thermal system can be placed in its thermowell in the lower part of the unit (accessible by removing the lower panel - see section C).

Solar coil length: 13,2 m
Material: Fe P195GH
Diameter: 33,7mm
Surface: 1,4m$^2$
Position: Inside the tank

**Pressure loss of solar coil**



## HOW TO DISCONNECT AND/OR REMOVE EMIX TANK UNIT

### How to disconnect the refrigerant circuit

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

In case of Emix Tank 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:

EG

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

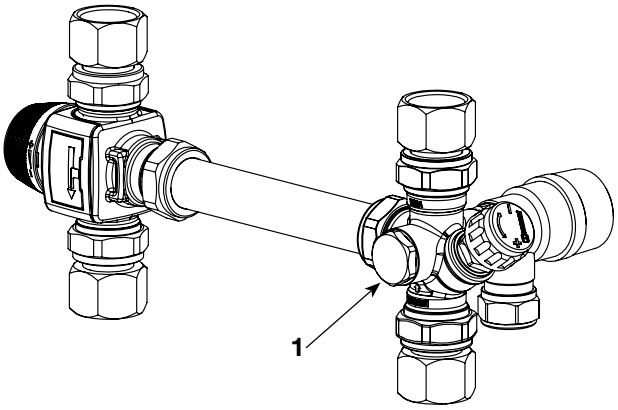
In case of Emix Tank is connected to the Emix port and by any reason it has to be removed definitively, the installer has to do this procedure using a refrigerant recovery unit:

- close the valves of Emix port that connect Emix Tank to outdoor unit;
- connect the refrigerant recovery unit to one of the two valves;
- recover the refrigerant inside the copper pipes and Emix Tank unit;
- disconnect Emix Tank;
- 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 Tank 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.

### How to empty the water tank

In case Emix Tank has to be removed or replaced, proceed as follows to empty the water tank:

- close the water inlet valve of Emix Tank;
- open the sinks' taps of users connected to Emix Tank. Alternatively, open the vent valve placed on the top of the tank;
- connect to tube 1 (see figure) a discharge pipe for the water contained in the tank;
- the water will come out from the tank through the connected tube.

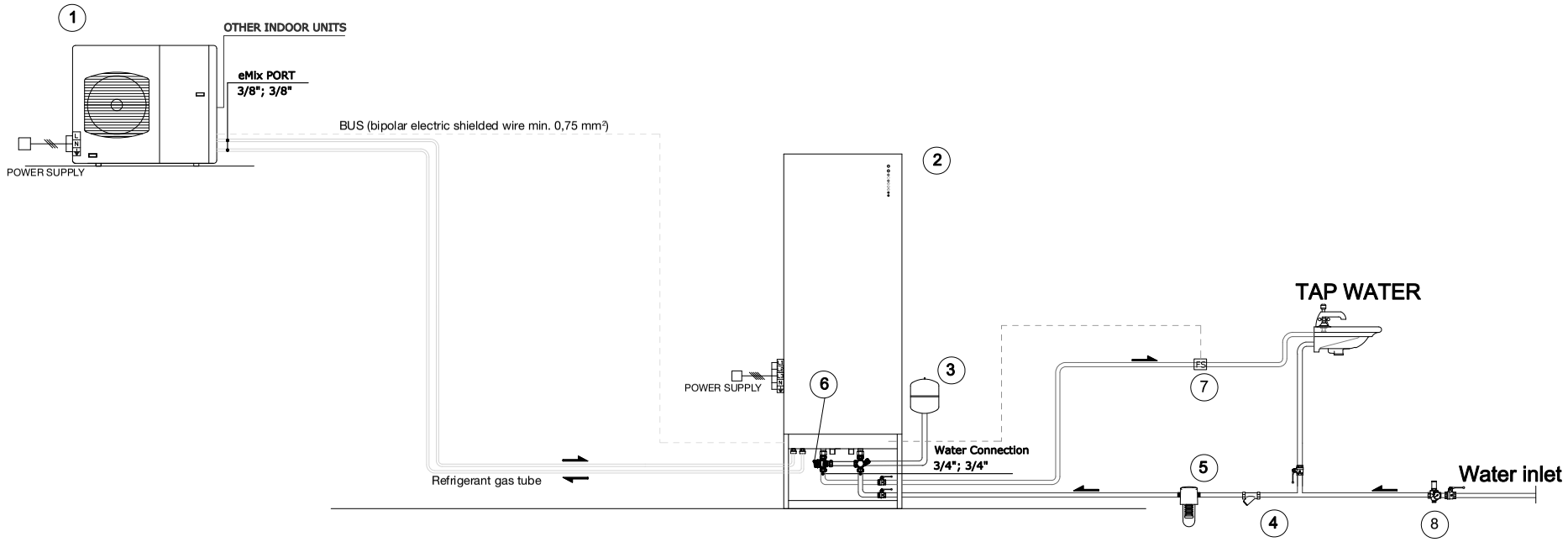



**INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT IN ACCORDANCE WITH THE EUROPEAN DIRECTIVE 2012/19/EU**

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.

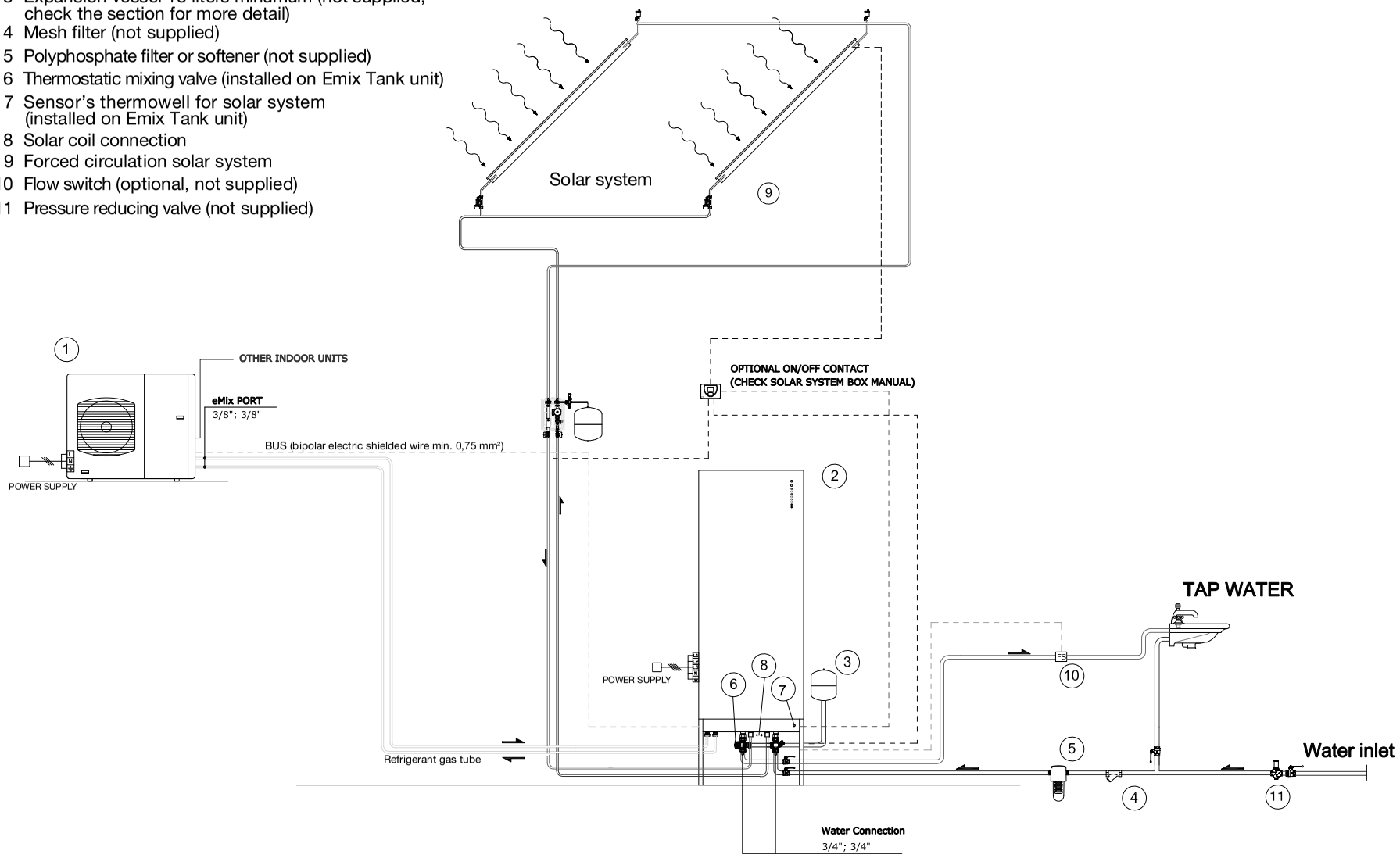
# HYDRAULIC INDICATIVE LAYOUT – EMIX TANK 200/300 CONNECTION

1 EMX outdoor unit
2 Emix Tank 200/300
3 Expansion vessel 18 liters minimum (not supplied; check the section for more detail)
4 Mesh filter (not supplied)
5 Polyphosphate filter or softener (not supplied)
6 Thermostatic mixing valve (installed on Emix Tank unit)
7 Flow switch (optional, not supplied)
8 Pressure reducing valve (not supplied)



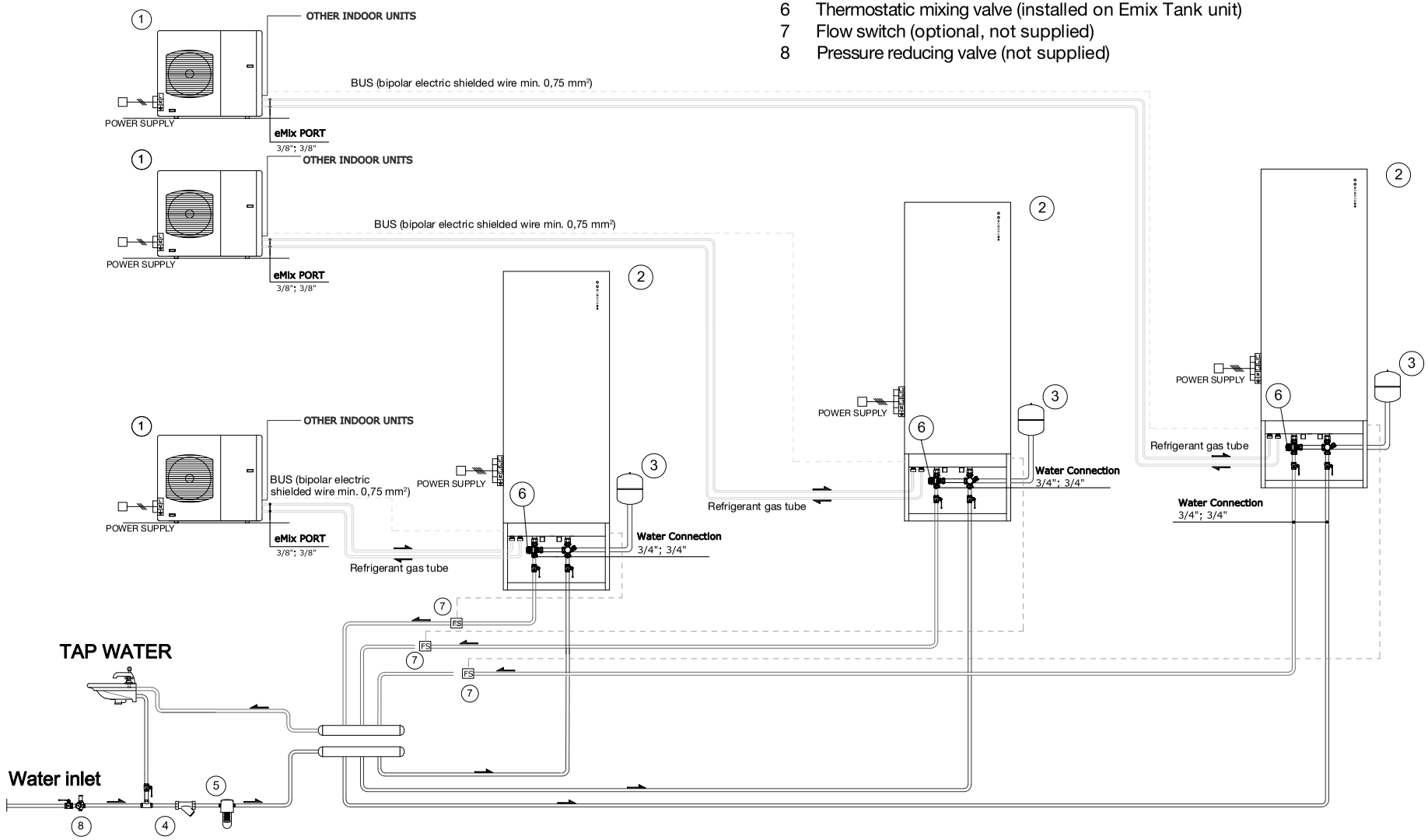
# HYDRAULIC INDICATIVE LAYOUT – EMIX TANK 200/300 INTEGRATION WITH FORCED SOLAR SYSTEM

1 EMX outdoor unit
2 Emix Tank 200/300
3 Expansion vessel 18 liters minumum (not supplied; check the section for more detail)
4 Mesh filter (not supplied)
5 Polyphosphate filter or softener (not supplied)
6 Thermostatic mixing valve (installed on Emix Tank unit)
7 Sensor's thermowell for solar system (installed on Emix Tank unit)
8 Solar coil connection
9 Forced circulation solar system
10 Flow switch (optional, not supplied)
11 Pressure reducing valve (not supplied)



# HYDRAULIC INDICATIVE LAYOUT – EMIX TANK 200/300 MULTIPLE CONNECTION

1 EMX outdoor unit
2 Emix Tank 200/300
3 Expansion vessel 18 liters minimum (not supplied; check the section for more detail)
4 Mesh filter (not supplied)
5 Polyphosphate filter or softener (not supplied)
6 Thermostatic mixing valve (installed on Emix Tank unit)
7 Flow switch (optional, not supplied)
8 Pressure reducing valve (not supplied)



# 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 ! The use of the appliance is FORBIDDEN if the tank is not filled with water.**

EG

**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.

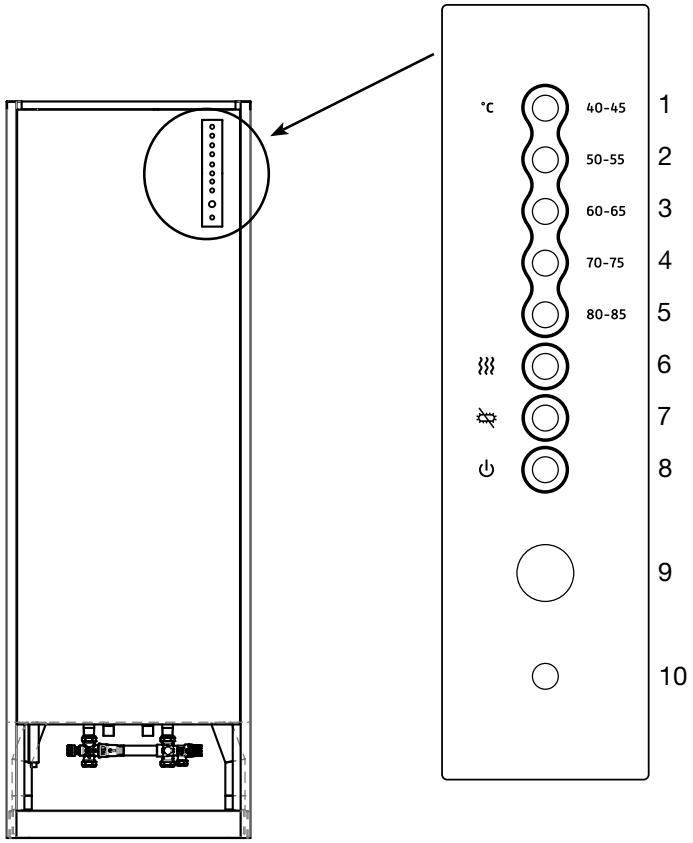
**CAUTION**

- 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




The control panel is located on the front of Emix Tank. From top to bottom 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 anti-legionella 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).

EG

**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 TANK

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

### Power ON / OFF of Emix Tank

To switch on Emix Tank, push and hold the BUTTON for about 4 seconds until the RED LED turns off and the GREEN LEDs of water temperature light up. Emix Tank unit is designed to be always ON.
To switch off Emix Tank, push and hold the BUTTON for about 4 seconds until the GREEN LEDs turn off and only the RED LED stays on. At this point release the BUTTON.
Once turned on, Emix Tank unit displays the temperature inside the tank.

EG

### Desired temperature setting (setpoint)

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

### Super Booster mode activation

When the Super Booster mode is activated, all the 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 the Super Booster mode, press and hold the BUTTON until the BLUE LED lights up.
At this point release BUTTON.
3 consecutive beeps confirm the setting.

To deactivate the Super Booster mode, press and hold the BUTTON until the GREEN LEDs turn off and the BLUE LED lights up. At this point release BUTTON.
3 consecutive beeps confirm the deactivation.

**NOTE**

By default, the Super Booster mode is off.

## EMIX TANK CONFIGURATION

When Emix Tank is on, you can change the setting of some parameters.
To enter the configuration menu, press and hold the BUTTON until the BLUE, YELLOW and RED LEDs light up contemporary. At this point release the BUTTON.
After 5 seconds without any operation, Emix Tank exits the configuration procedure and returns to the previous menu.

### Booster mode setting

The use of electrical heating elements installed in the storage tank allows you to heat the cold water faster and to reach the desired water temperature even in conditions of very low external temperatures.
When you activate the Booster mode, the software will automatically handle the electrical heaters.
If after 120‘ from start up of the system the water setpoint is not reached, the first electrical element is automatically activated. The second element will be activated after 120‘ following the course of the water temperature, until reaching the setpoint.
To activate / deactivate the Booster mode, enter the configuration menu, then quickly press the BUTTON until the only BLUE LED is flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the setting.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

**NOTE**

By default, the Booster mode is off.

## Antilegionella cycle setting

To activate / deactivate the Antilegionella cycle, enter the configuration menu, then quickly press the BUTTON until the only YELLOW LED is flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the setting.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

**NOTE**

By default, the Antilegionella cycle is on. If the cycle is turned off, the MANUFACTURER can not be held responsible.

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 only with the Heat Pump. This limit can be set to 50°C or 58°C.
To change the setting, enter the configuration menu, then quickly press the BUTTON until the BLUE and YELLOW LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the setting.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

**NOTE**

By default the limit is set to 50°C. We recommend to keep this setting to optimize the energy efficiency of Emix Tank.

## Temperature delta setting for restart of the heat pump

When the water temperature reaches the set value or the maximum achievable value with the heat pump alone (in the case of Emix Tank 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, enter the configuration menu, then quickly press the BUTTON until the BLUE and RED LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the setting.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

**NOTE**

By default the startup delta of the heat pump is set to 10°C. We recommend to keep this setting to optimize the energy efficiency of Emix Tank.

## Stratification sensor selection

Emix Tank measures the water temperature in the tank through one of the two stratification sensors.
It is possible to select which of the two sensors is read for the measurement.
To change the sensor, enter the configuration menu, then quickly press the BUTTON until the YELLOW and RED LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the setting.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

**NOTE**

By default the selected stratification sensor is the upper one.

## Reset of the factory settings

To reset all the factory settings, enter the configuration menu, then quickly press the BUTTON until the BLUE, YELLOW and RED LEDs are flashing.
Then wait a few seconds until all the 5 GREEN LEDs light up and press the BUTTON once more.
3 consecutive beeps confirm the reset of factory settings.
If the button is not pressed, after a few seconds the display will return to the main menu without making any setting.

## OPERATION OF THE ELECTRICAL HEATER ELEMENTS

In addition to the already described modes in the section “EMIX TANK CONFIGURATION”, Emix Tank 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

EG

### Electrical back up heater management – Antifreeze mode

If water temperature inside the tank is lower than 5° C, all 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, Emix Tank will control automatically 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 electrical heaters will switch on up to the reaching of the setpoint. The end user can switch off Emix Tank if he does 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 Tank. 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.
It is possible that the electrical heaters are activated 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 heater will be switched on automatically. The second electrical heater will be switched on after 120’ depending on the 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 fresh water introduced into the tank.

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 use the heater / the heaters. In case you disconnect the electrical heaters, 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 | ○ | ○ |
| 8 | Electrical heaters not set | F | ○ | ● |
| 9 | Reversed refrigerant tubes error | F | ● | ○ |
| 10 | Sensor REFRIGERANT IN damaged or disconnected | ● | F | ○ |
| 11 | Tank sensor (1/3) damaged or disconnected | ○ | F | ● |
| 12 | Tank sensor (2/3) damaged or disconnected | ○ | ● | F |



F flashing LED

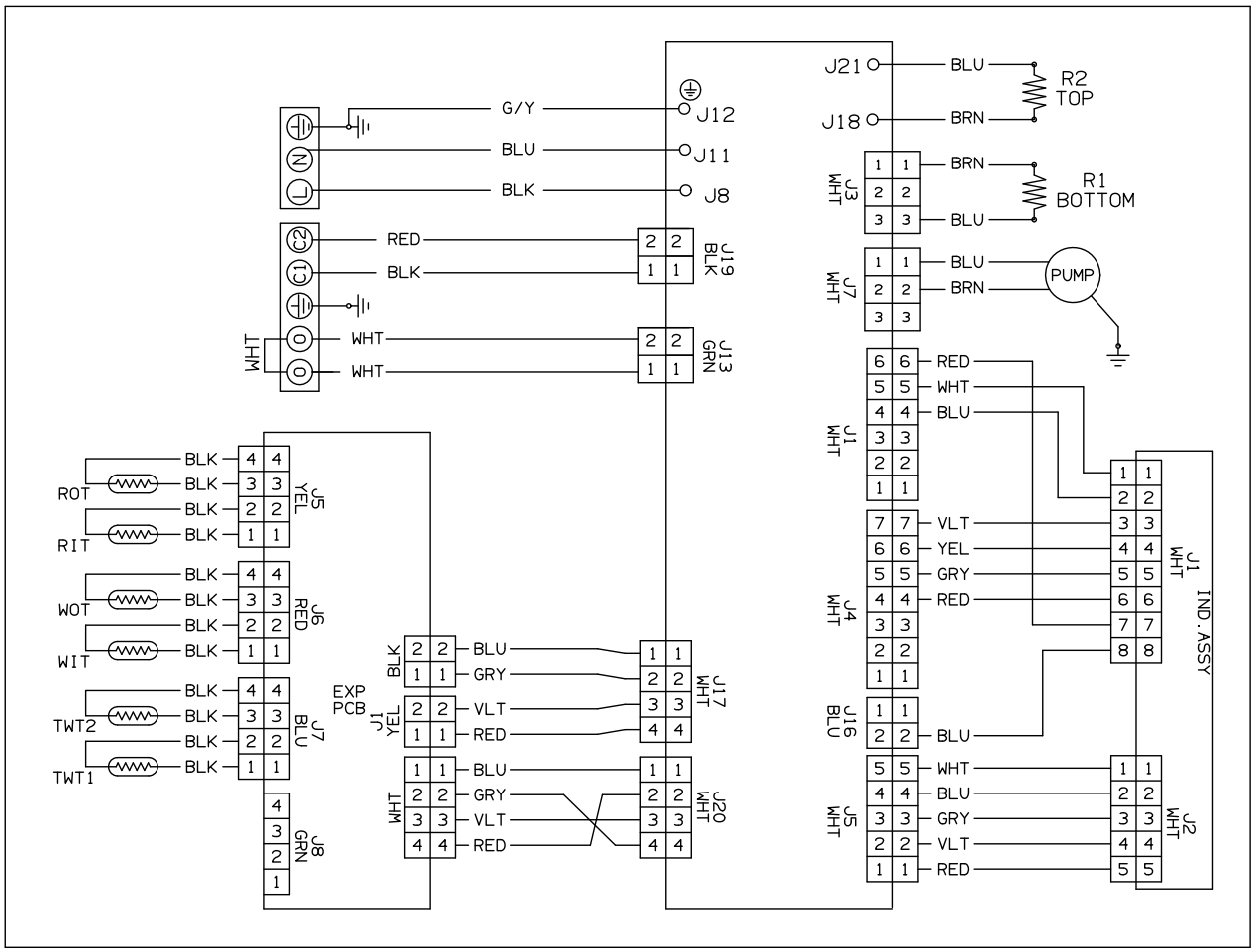
● LED ON

○ LED OFF

## CARE AND MAINTENANCE

In order to ensure optimum efficiency of the product it is necessary to make the following checks annually:
- check of expansion vessel's pressure;
- check of mineral salts or polyphosphate treatment system; it is recommended to replace them when they remain just under a centimeter;
- check of any impurities present within the filter of the water supply system;
- check of magnesium anode's integrity and replacement, if necessary (even every 6 months).

## WIRING DIAGRAM - SCHEMA ELETTRICO - SCHÉMA ÉLECTRIQUE - SCHALTPLAN - ESQUEMA ELÉCTRICO - ESQUEMA ELÉTRICO - ΔΙΑΓΡΑΜΜΑ ΣΥΝΔΕΣΜΟΛΟΓΙΑΣ - ELSCHEMA



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