



Air-to-Water Heat Pump Systems for R410A and R32

Technical Manual

2 x VP 1000L DHW

2 x VP 750L DHW

1 x VP 380L

2 x VP 380/440L



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2 x VP 750L DHW

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2 x VP 380/440L

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1 Introduction

Important Notice!

Please read before starting

Preparation for operation

Before operating the Air-to-Water Heat Pump System, it is absolutely mandatory to carefully read and to strictly execute the instructions and settings in Chapter 8.

Failure to follow instructions

The manufacturer shall in no way be responsible for improper installation, problems in operation, malfunction of the unit or safety hazards resulting from failure to follow the instructions in this manual.

Target groups

This manual is intended for specialist planners and installers, as well as service companies.

Installation, commissioning and maintenance of the products may only be carried out by qualified specialist personnel.

The operation of the products can also be carried out by private persons.

Treated products

This manual covers the following products:

R32 and R410A products

- Indoor Units, and connectable outdoor units combinations

Indoor Unit Type			
DHW tank	2xVP1000LDHW	2xVP750LDHW	VP380/440L
Buffer tank		VP380L	VP380/440L

- R410A-Outdoor Units

	Outdoor unit types
ME2 type	U-10ME2E8, U-18ME2E8
MF3 type	U-16MF3E8

Used symbols

The text in this manual uses various notices, symbols and textual representations, which are briefly explained below.

Safety-related cautions

Safety-related information alerts users to hazards and provides instructions for the safe, designated use of the product. This guide uses the following warnings and signs:



DANGER

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

► Follow the warnings provided to avoid this.



CAUTION

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

► Follow the warnings provided to avoid this.

WARNING

This signal word warns of a situation that can result in property damage.

► Follow the warnings provided to avoid this.

Further used symbols



Warning against Electrical Shock

Further notes



Important

Important notes that must be followed to ensure that the units work as intended.



Note

Hints for more useful information.

Text displays

- Indicates instructions in a warning.
- 1., 2., 3. ... or a, b, c ... Indicate steps to be performed in the specified order.
- ⇒ Indicates the result of a work step.
- ✓ Indicates the result of a sequence of work steps.
- Indicates an enumeration.
- [Key]** Indicates the name of a key.
- Option** Indicates an option of the panel.
- Menu » Option** Indicates a sequence of several options that must be selected one after the other.
- Accent** Indicates important terms or passages.
- (1)** Indicates references to legends in the text.
- *cross-reference* Indicates a cross-reference.
- www.example.com Indicates web addresses (without Hyperlink function).

2 Safety Instructions

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

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 codes.
- Pay close attention to all warning and caution notices given in this manual.



DANGER

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

► Follow the warnings provided to avoid this.



CAUTION

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

► Follow the warnings provided to avoid this.

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 sales/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.

2.1 Special Precautions



DANGER

When Wiring



**Electrical shock can cause severe personal injury or death.
Only a qualified, experienced electrician should attempt to wire this system.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- 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 or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Provide a power outlet to be used exclusively for each unit, and a power supply disconnect, circuit breaker and earth leakage breaker for overcurrent protection should be provided in the exclusive line.
- Provide a power outlet exclusively for each unit, and full disconnection means contact separation in all poles must be incorporated in the fixed wiring in accordance with the wiring rules.
- To prevent possible hazards from insulation failure, the unit must be grounded.
- This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case of equipment break down or insulation breakdown.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

In a Room

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



DANGER

- Keep the fire alarm and the air outlet at least 1.5 m away from the unit.
-

In moist or uneven locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

In an area with high winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

In a snowy area (for heat pump type systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

In laundry rooms

Do not install in laundry rooms. Indoor unit is not drip proof.

When Connecting Refrigerant Tubing



DANGER

- When performing piping work, do not mix air except for specified refrigerant (R410A or R32, depending on the outdoor unit model) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.
- If the refrigerant comes in contact with a flame, it produces a toxic gas.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury, etc.
- Ventilate the room immediately, in the event that is refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of toxic gas.
- Keep all tubing runs as short as possible.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts. Handle liquid refrigerant carefully as it may cause frostbite.
- Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the lower flammable limit (LFL) of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

When Servicing

- Contact the sales dealer or service dealer for a repair.
- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal chips or bits of wiring have been left inside the unit.



DANGER

- This product must not be modified or disassembled under any circumstances. Modified or disassembled unit may cause fire, electric shock or injury.
- Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this appliance, do not repair by yourself. Contact the sales dealer or service dealer for repair.



CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

Others

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- Do not sit or step on the unit, you may fall down accidentally.
- Do not stick any object into the FAN CASE. You may be injured and the unit may be damaged.



Note

The English text is the original instructions. Other languages are translations of the original instructions.

2.1.1 Important Information regarding the Refrigerant Used

Used refrigerant

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type: R410A

GWP(1) value: 1975

(1)GWP = global warming potential

Refrigerant type: R32

GWP(1) value: 675

(1)GWP = global warming potential

Periodical inspections for refrigerant leaks may be required depending on European or local legislation.

Please contact your local dealer for more information.

Sample label: R410A and R32 type outdoor unit

Please fill in with indelible ink,

- 1 the factory refrigerant charge of the product
- 2 the additional refrigerant amount charged in the field and
- 1 + 2 the total refrigerant charge on the refrigerant charge label supplied with the product.

The filled out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the service cover).

Label for R410A

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol.

R410A

① = kg

② = kg

① + ② = Max kg

⑤ ⑥

* English text printed on this label is original. Each language label will be sealed on this original text.

Label for R32

This product contains fluorinated greenhouse gases. CO₂ equivalent amount is shown in "CO₂ eq."

R32

GWP : 675 ③

① = kg

② = kg

① + ② = kg

"CO₂ eq."

$\frac{(① + ②) \times ③}{1000} = \text{ton}$

⑦ ⑤ ⑥

Legend:

- ① Factory refrigerant charge of the product: see unit name plate
- ② Additional refrigerant amount charged in the field
- ③ Total refrigerant charge
- ④ Contains fluorinated greenhouse gases covered by the Kyoto Protocol
- ⑤ Outdoor unit
- ⑥ Refrigerant cylinder and manifold for charging

1 Technical Data of Indoor Unit

1.1 Indoor/outdoor unit specifications

1.1.1 Tank model 2 x VP1000LDHW(*)

Heat Pump Model		U-10ME2E8
Tank Model		2xVP1000LDHW
Volume	L	1866
Height×Diameter	mm	2 x (2210×990)
Connections to the water supply network		RP 1 1/4"
Net weight / with water	kg	2x (191×1121)
Heat Pump		
Nominal electrical power	kW	6.62
Reference tapping cycle		3XL
Energy consumption by chosen cycle A7/W10-55	kWh	11,6
Energy consumption by chosen cycle A14/W10-55	kWh	9,8
COP DHW (A7/W10-55) EN16147		4.13
COP DHW (A14/W10-55) EN16147		4,50
Energy Efficiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)	Not in the scope of regulations
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1	Not in the scope of regulations
Standby heat loss	W/h	160
Sound power/Sound pressure (Outdoor/evaporator unit)	dB/dB(A)	56/77
Refrigerant		R410A
Refrigerant at shipment	kg	5.6
Outdoor ambient operating range	°C	-25/+35
Heating up time	min	185
VP tank DHW		
Stainless steel 316L pickling/protective titanium anode		+/+
Average insulation thickness	mm	100
Internal exchanger (m² surface-connection)		7,76~1/2"–3/4"
Electrical specifications		
Max power consumption without heater /with heater	kWh	10.0/16.0
Number of electrical heaters x power	W	2×6000
Voltage / frequency	V/Hz	400/50
Electric protection heat pump /heaters	A	20/16
Moisture protection		IP24
Working pressure (storage tank / heat exchanger)	MPa(bar)	0,95 - 9,5
Domestic hot water preparation		
Preparation with heat pump Min/Max water temperature	°C	2/73
Preparation with electrical heater Min/Max water temperature	°C	35/85
Refrigerant information		
Refrigerant (R410A)	kg/TCO2 Eq	5.6/11.6
Refrigerant (R32)	kg/TCO2 Eq	—

1.1.2 Tank model 2xVP750LDHW(*)

Heat Pump Model		U-10ME2E8
Tank Model		2xVP750LDHW
Volume	L	1452
Height×Diameter	mm	2x (1855x990)
Connections to the water supply network		RP 1 1/4"
Net weight / with water	kg	2x (179 / 929)
Heat Pump		
Nominal electrical power	kW	6.62
Reference tapping cycle		3XL
Energy consumption by chosen cycle A7/W10-55	kWh	13,00
Energy consumption by chosen cycle A14/W10-55	kWh	11,8
COP DHW (A7/W10-55) EN16147		3,85
COP DHW (A14/W10-55) EN16147		4,42
Energy Efficiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+--F)	Not in the scope of regulations
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1	Not in the scope of regulations
Standby heat loss	W/h	154
Sound power/Sound pressure (Outdoor/evaporator unit)	dB/dB(A)	56/77
Refrigerant		R410A
Refrigerant at shipment	kg	5.6
Outdoor ambient operating range	°C	-25/+35
Heating up time	min	154
VP tank DHW		
Stainless steel 316L pickling/protective titanium anode		+/+
Average insulation thickness	mm	100
Internal exchanger (m² surface~connection)		6,4~1/2"-3/4"
Electrical specifications		
Max power consumption without heater /with heater	kWh	10.0/22.0
Number of electrical heaters x power	W	2×6000
Voltage / frequency	V/Hz	400/50
Electric protection heat pump /heaters	A	20/16
Moisture protection		IP24
Working pressure (storage tank / heat exchanger)	MPa(bar)	0,95 - 9,5
Domestic hot water preparation		
Preparation with heat pump Min/Max water temperature	°C	2/73
Preparation with electrical heater Min/Max water temperature	°C	35/85
Refrigerant information		
Refrigerant (R410A)	kg/TCO2 Eq	5.6/11.6
Refrigerant (R32)	kg/TCO2 Eq	—

1.1.3 Tank model 1xVP380L

Heat Pump Model		U-18ME2E8
Tank Model		1 x VP380L
Cooling capacity at 35°C, water outlet 7/12°C	kW	47,00
EER at 35°C, water outlet 7/12°C	W/W	3,32
Heating capacity at 7°C, water temperature at 25/35°C	kW	62,40
COP at +7°C, water temperature at 25/35°C	W/W	4,05
Heating capacity at 7°C, heating water temperature at 45/55°C	kW	49,10
COP at +7°C, water temperature at 45/55°C	W/W	3,56
Energy Efficiency Class at 47/55°C		A+++
η_{sh} (LOT21) ²	%	156,00
Dimension	mm	1820x690
Net weight	kg	99
Water pipe connector		Rp 1 1/4" Female Thread
Heating water flow ($\Delta T=10$ K. 45/55°C)	m ³ /h	4,24
Capacity of electric heater waterborne	kW	2x6
Flow switch		Not equipped
Water filter		Not equipped
Maximum current	A	22,00
Outdoor unit		U-18ME2E8
Sound pressure	dB (A)	59
Dimension	mm	1842x1540x1000
Net weight	kg	375
Piping connection liquid pipe	inch / mm	5/8" (15,88)
Piping connection gas pipe	inch / mm	1-1/8" (28,58)
Refrigerant R32	kg	9,5 + need additional gas amount at site
Pipe lenght range / Elevation difference (in/out)	m	50 (OD above)-35 (OD below)
Pipe lenght for nominal capacity	m	7,5
Pipe lenght for additional gas / Additional gas amount (R410A)	m/g/m	185
Operation range outdoor temperature	Heat min-max °C	-30-+38
Water outlet temperature range	Cool min-max °C	+5-+30
Water outlet temperature range	Heat min-max °C	+10-+55

1.1.4 Tank model 2xVP380/440L(*)

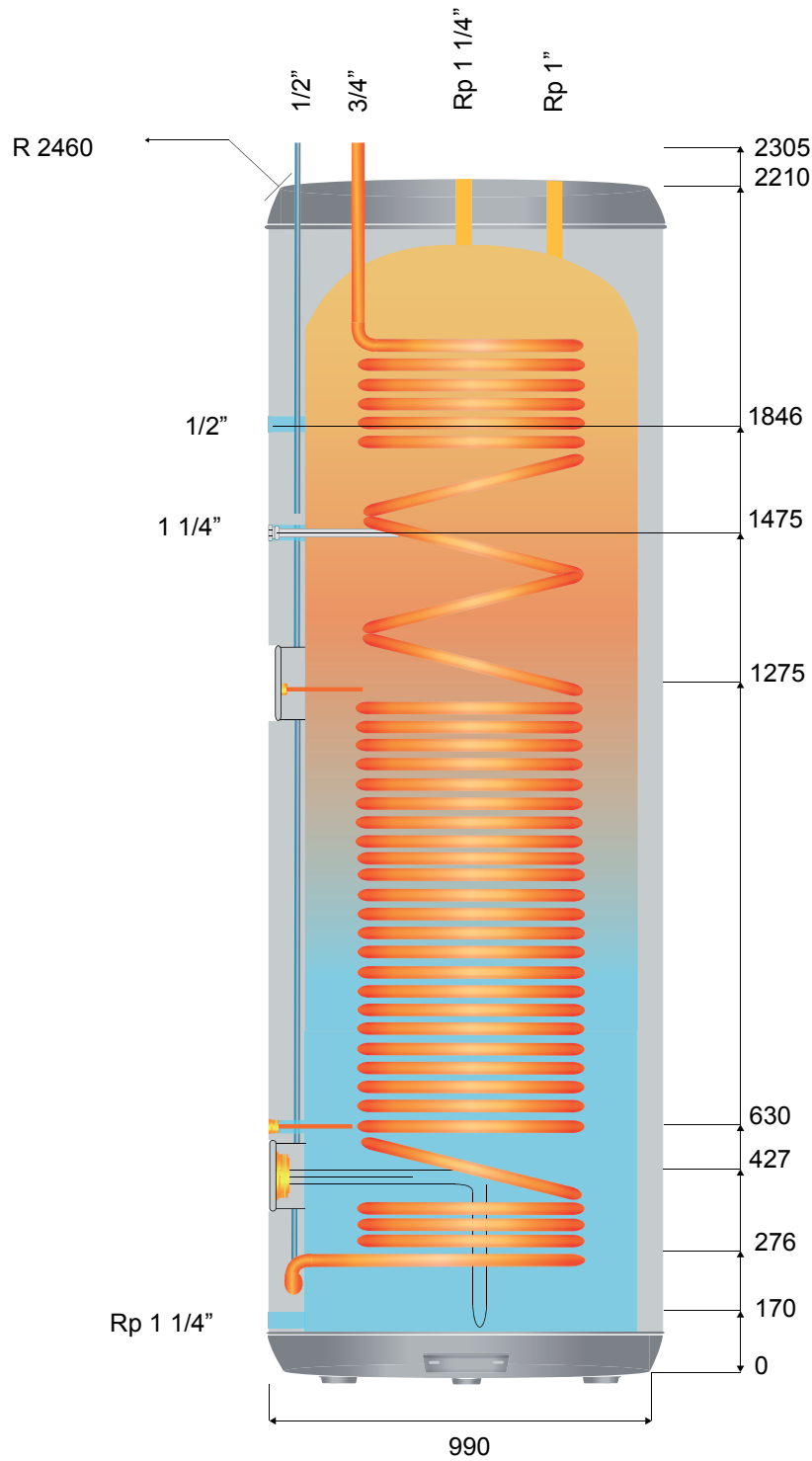
Heat Pump Model		U-18ME2E8
Tank Model		2 x VP380/440L
Heating capacity at 7°C, water temperature at 25/35°C	kW	62,40
COP at +7°C, water temperature at 25/35°C	W/W	4,05
Heating capacity at 7°C, water temperature at 45/55°C	kW	49,1
COP at +7°C, water temperature at 45/55°C	W/W	3,56
Energy Efficiency Class at 47/55°C		A+++
η_{sh} (LOT21) ²	%	156,00
Combination COP +7°C water at 30/35°C and DHW 75°C		5,12
Dimension	mm	2260x890
Net weight	kg	2x227
Heating water flow ($\Delta T=5$ K. 45/55°C)	m ³ /h	4,24
Capacity of electric heater waterborne	kW	6
COP DHW (A7/W10-55) EN16157 tapping profile XXXL		3,60
Capacity of electric heater DHW	kW	2x6
Energy efficiency class for energy label (EU) No. 812/2013 ANNEX III (A+-F)		A+
Energy efficiency class for product fiche (EU) No. 812/2013 ANNEX II, Table 1		A++
Outdoor unit		U-18ME2E8
Sound pressure	dB (A)	59
Dimension	mm	1842x1540x1000
Net weight	kg	375
Piping connection liquid pipe	inch / mm	5/8" (15,88)
Piping connection gas pipe	inch / mm	1-1/8" (28,58)
Refrigerant R32	kg	9,5 + need additional gas amount at site
Pipe lenght range / Elevation difference (in/out)	m	50 (OD above)-35 (OD below)
Pipe lenght for nominal capacity	m	7,5
Pipe lenght for additional gas / Additional gas amount (R410A)	m/g/m	185
Operation range outdoor temperature	Heat min-max °C	-30-+38
Water outlet temperature range	Heat min-max °C	+10-+55

(*)- EN 16147:2017 - Heat pumps with electrically driven compressors.

Testing and requirements for making of domestic hot water units;

- Commission Delegated Regulation (EU) No. 812/2013 and Commission Regulation (EU) No. 814/2013.

1.1.5 Outlines and dimensions - Tank model VP1000LDHW



All dimensions in mm.

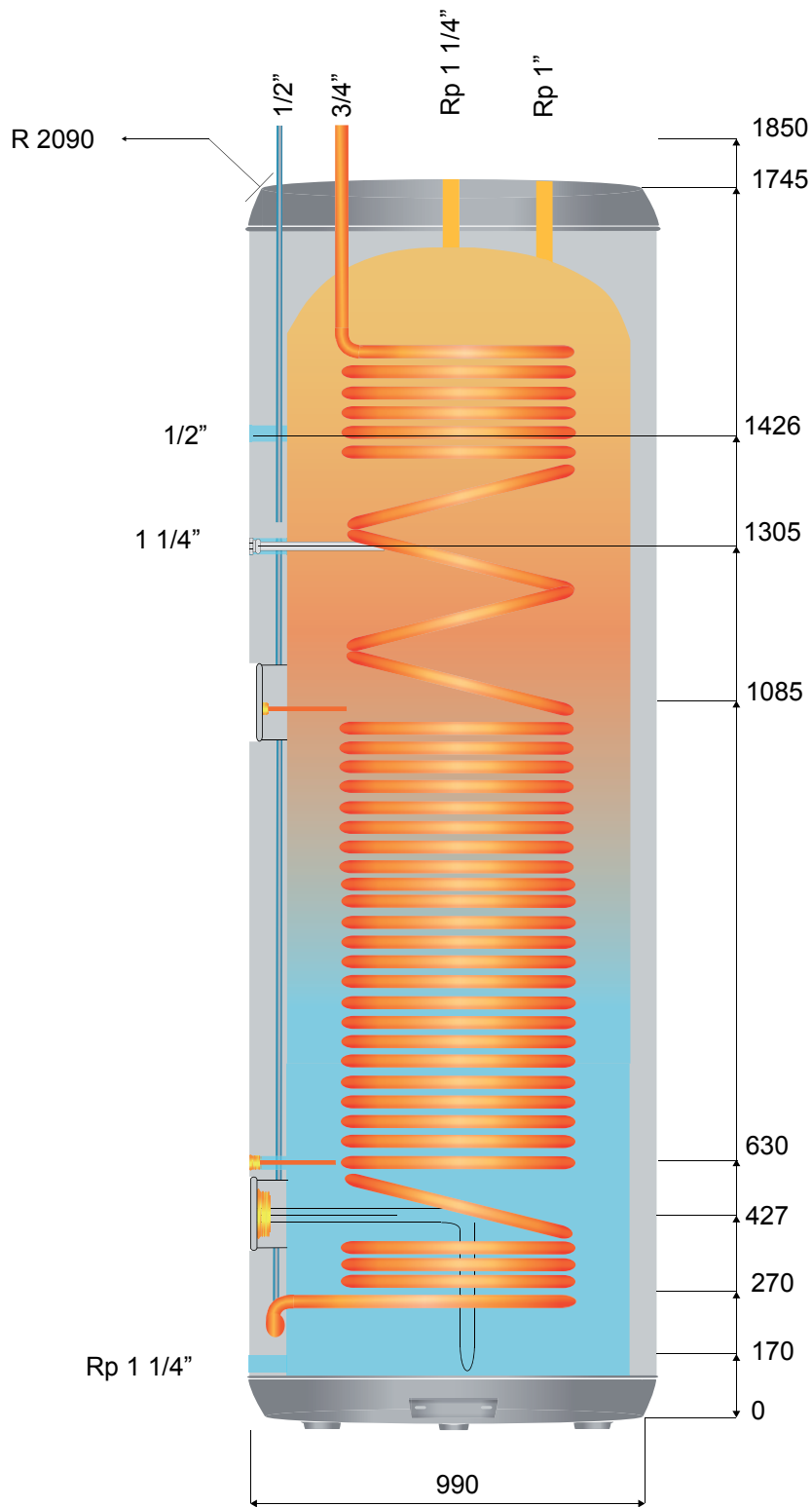


Note

R value indicates maximum overturning height.

1.1.6 Outlines and dimensions - Tank model VP750LDHW

1



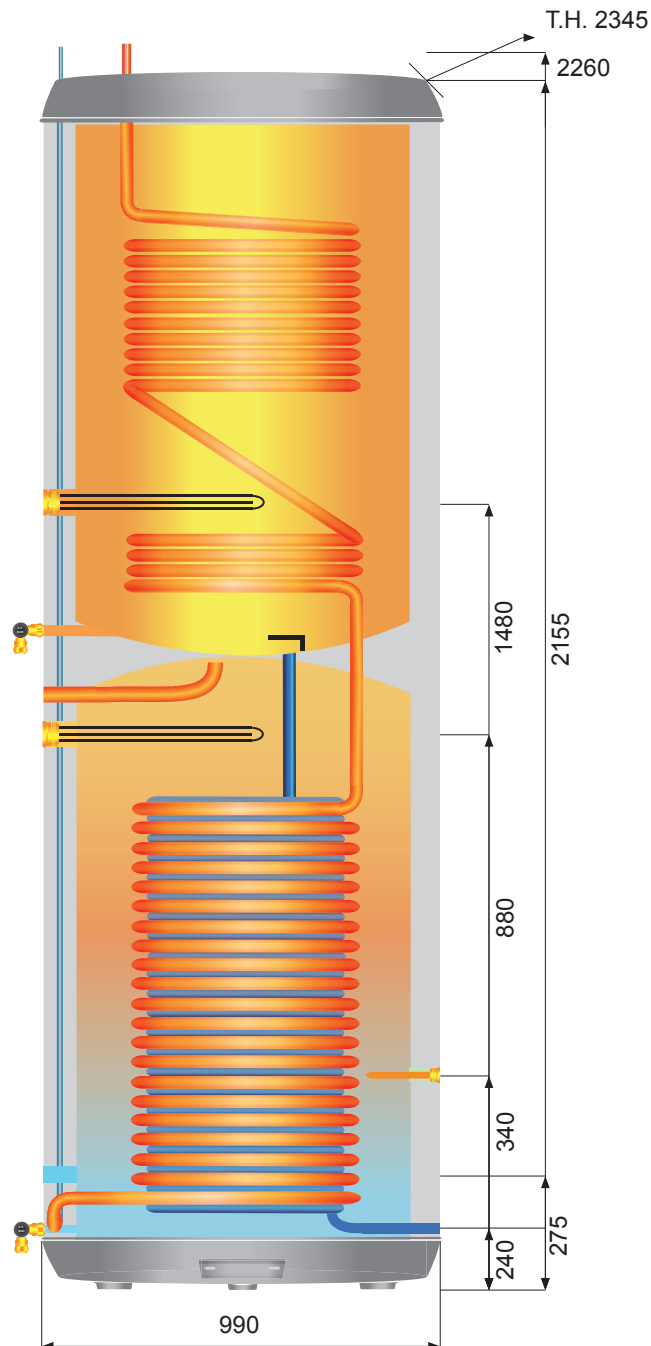
All dimensions in mm.



Note
R value indicates maximum overturning heig

All dimensions in mm.

1.1.7 Outlines and dimensions - Tank model VP380/440L



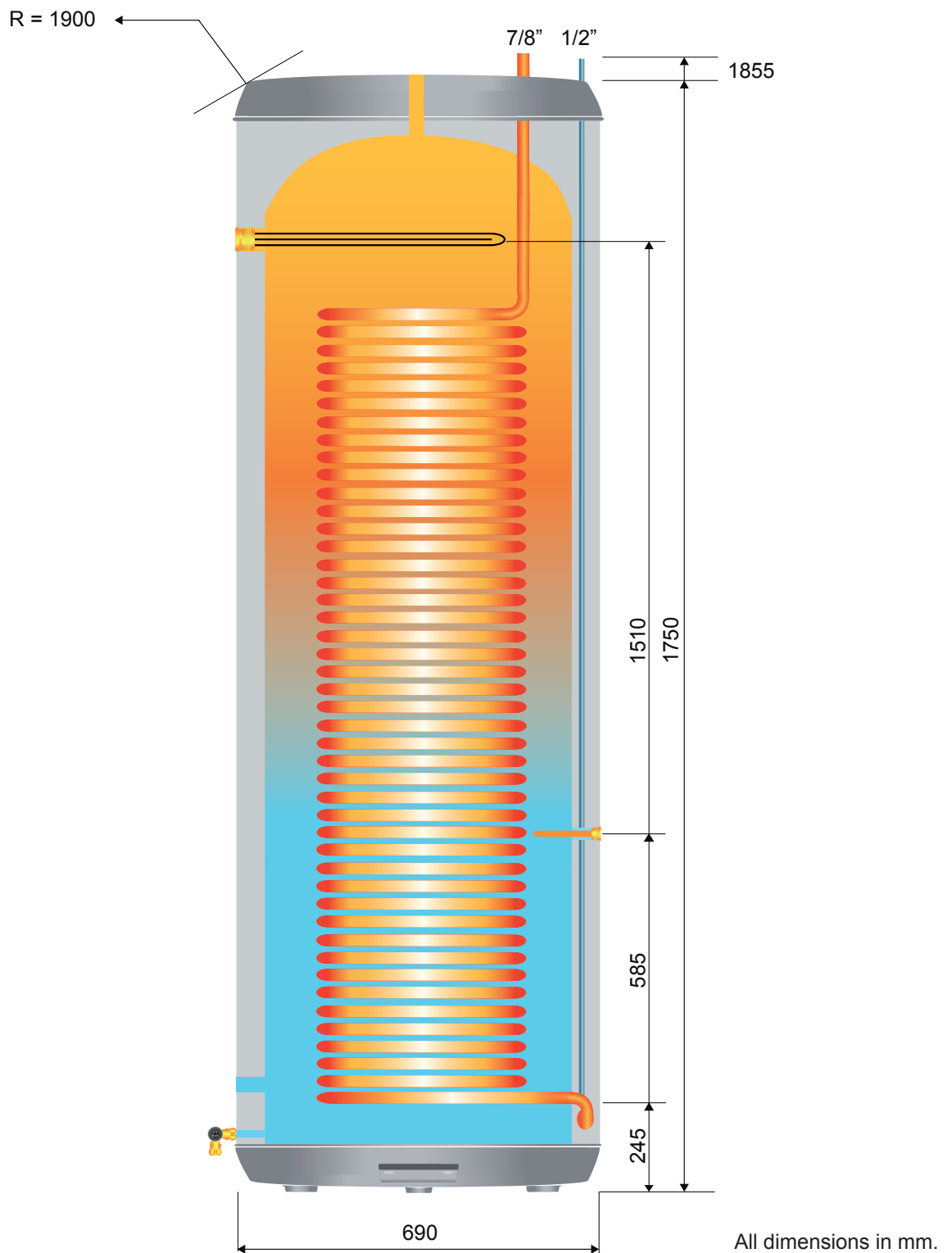
All dimensions in mm.



Note

TH value indicates maximum overturning height.

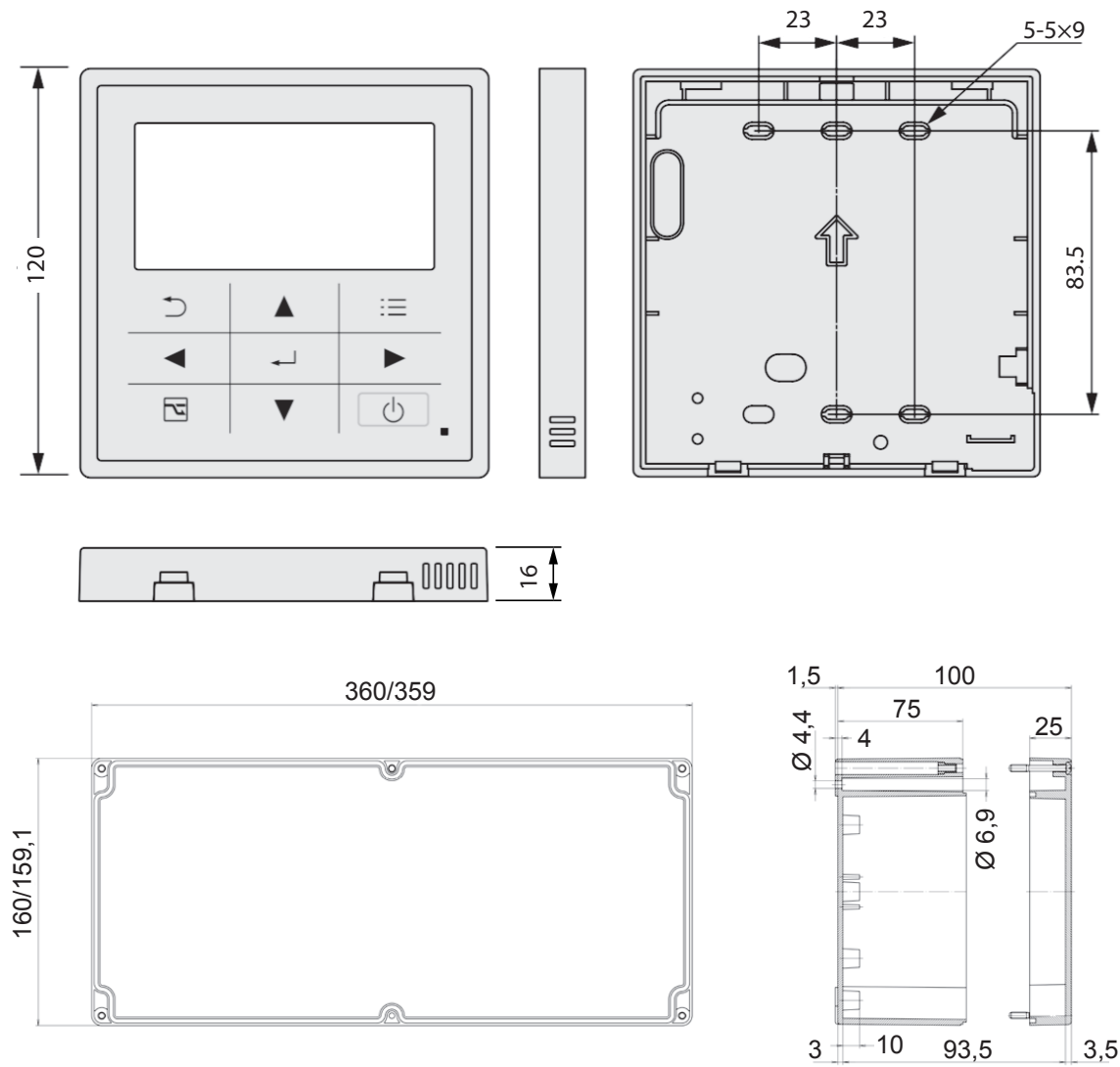
1.1.8 Outlines and dimensions - Tank model VP380L



Note

R value indicates maximum overturning height.

1.1.9 Outlines and dimensions - VP-RTC5B-ECO Smart

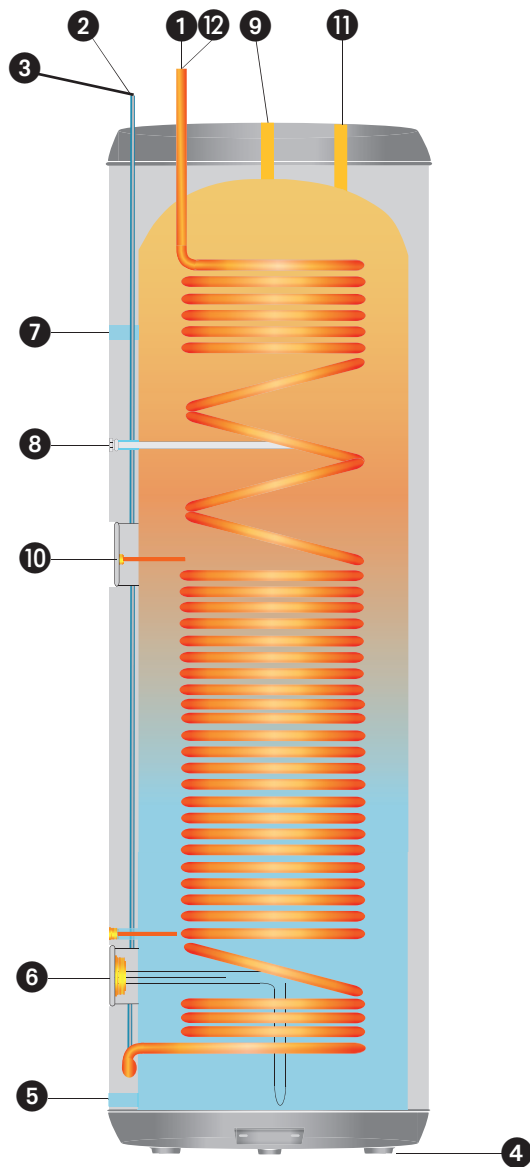


All dimensions in mm.

1.2 Main components

1.2.1 Tank models VP1000L DHW / VP750L DHW

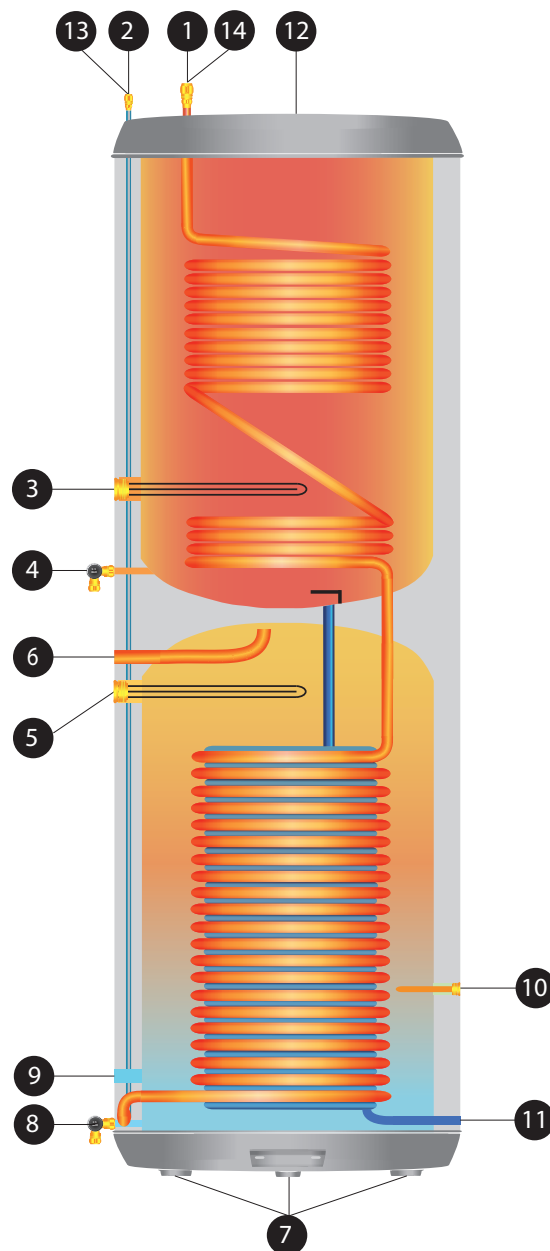
1



- 1. Discharge pipe 3/4"
- 2. Liquid pipe 1/2"
- 3. E1 sensor
- 4. Adjustable levelling feet
- 5. Inlet city water 1 1/4"
- 6. Booster heater 6 kW

- 7. Return pump circulation 1/2"
- 8. Magnesium anode
- 9. Outlet DHW 1 1/4"
- 10. Sensor pocket BL
- 11. Safety valve 1"
- 12. Hot gas sensor E3

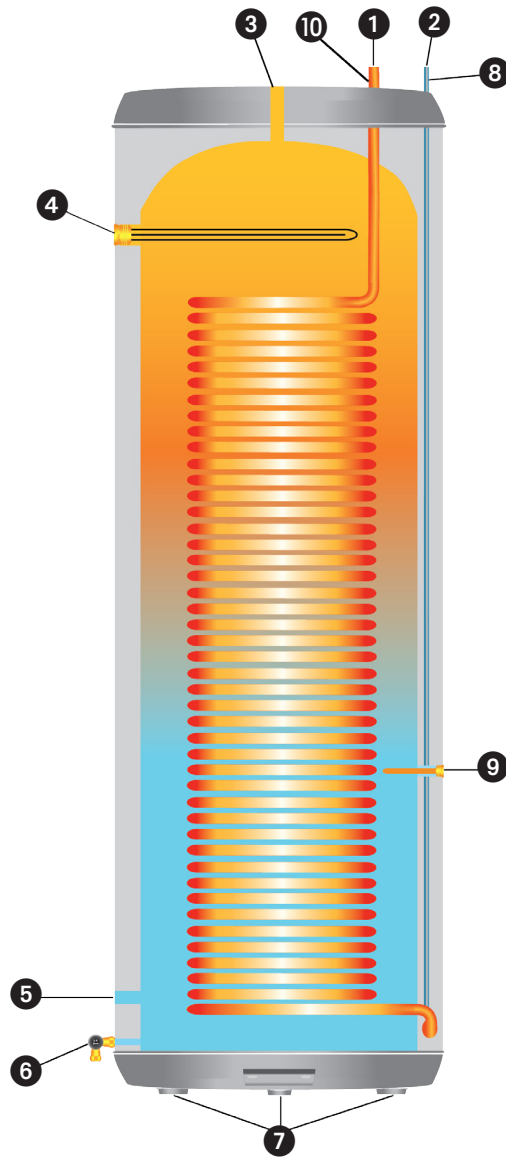
1.2.2 Tank model VP380/440L



- | | |
|------------------------------------|--|
| 1. Discharge pipe 3/4" | 9. Return waterborne heating 1 1/4" |
| 2. Liquid pipes 1/2" | 10. Water sensor TA PACi and BL for ECOi ME2 |
| 3. Booster heater DHW 6 kW | 11. Inlet city water 3/4" |
| 4. Safety valve 9,5 bar | 12. Outlet DHW water 1" |
| 5. Booster heater 6 kW | 13. E1 sensor |
| 6. Turn waterborne heating 1" 1/4" | 14. E3 sensor only for ECOi ME2 |
| 7. Adjustable leveling feet | |
| 8. Safety valve 3 bar | |

1.2.3 Tank model VP380L

1

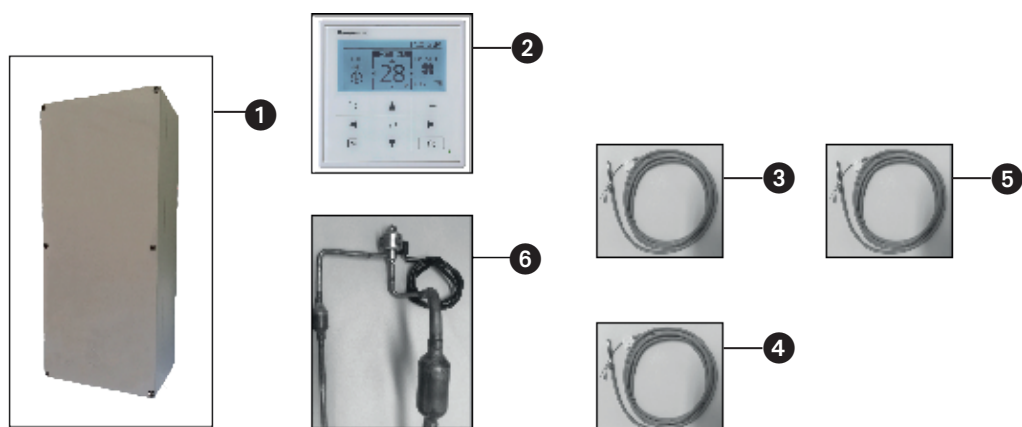


- | | |
|-----------------------------------|---|
| 1. Discharge pipe 3/4" | 6. Safety valve 3 bar |
| 2. Liquid pipe 1/2" | 7. Adjustable levelling feet |
| 3. Turn waterborne heating 1 1/4" | 8. Liquid sensor E1 |
| 4. Booster heater 6/9 kW | 9. Sensor pocket TA sensor only for PACi and BL sensor for ECOi ME2 |
| 5. Return waterborne heating | 10. Hot gas sensor E3 only for ECOi ME2 |

2 Control box parts and electronic anode

2.1 Control box parts

2.1.1 VP-RTC5B-ECO Smart



1. VP-RTC5A-ECO

2. CZ-RTC5B*

3. Temperature sensor BL*

4. Temperature sensor E1*

5. Temperature sensor E3*

6. Expansion valve VP-VALV-160 / VP-VALV-280 (Optional part)

* included in delivery



Important

When using ECOi outdoor unit and Polar Energi DHW tank one to one for water-borne heating or DHW, it is not necessary to install an expansion valve (7).

2.2 Electronic anode

ACES Datasheet Model Gn

For Boilers and Storage Tanks Up to 1000 ltr.

MAIN FUNCTIONS:

Continuous protection current variation.
Working Time counter
Protection against short circuit on output
Protection against polarity inversion on the power supply
Protection against polarity inversion on the Anode output
Integrated Function Indicator with red/green LED.
Integrated test circuit.
Overprotection Control

SPECIFICATIONS:

EXTERNAL POWER ADAPTER : 220V CC - 12V DC / 7W

POWER SUPPLY

Nominal Voltage : 12 V DC \pm 10%
Current (max) : 150 mA (with logic outputs ,without load)

ANODE OUTPUT

Protection Current, (max) : 130 mA
Voltage, (max) : 11 VDC (with power supply 12V)
Protection Voltage : 2.25 V (measured at the anode)
Consumption : 1.5 W

DIGITAL OUTPUT

STANDARD

2x P-TYPE Ports : 100 mA
for external signaling devices on output switches the supply voltage

OPTIONAL

1x Coded Serial Communication Port : Current mode 0-3,2 mA
Load = 1.0 K-ohm for 3.3V logic
Load = 1.5 K-ohm for 5V logic

MAIN SIGNALLING DEVICE : Integrated Two-color red/green Led

DIMENSIONS

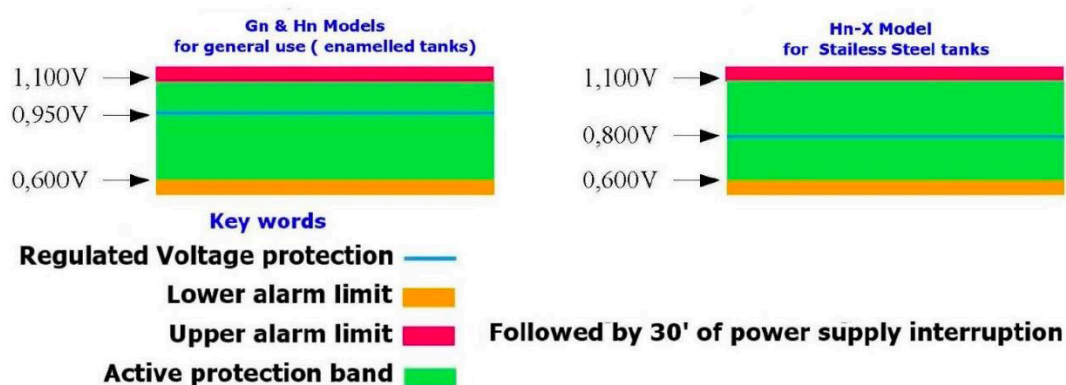
SIZE (Body) : L 55mm x W 45mm x H 10mm
WEIGHT : 25 g (about)
STANDARD ANODE CABLE : 2000 mm (as separate part)
STANDARD SUPPLY CABLE : 1500-2000 mm (as separate part)

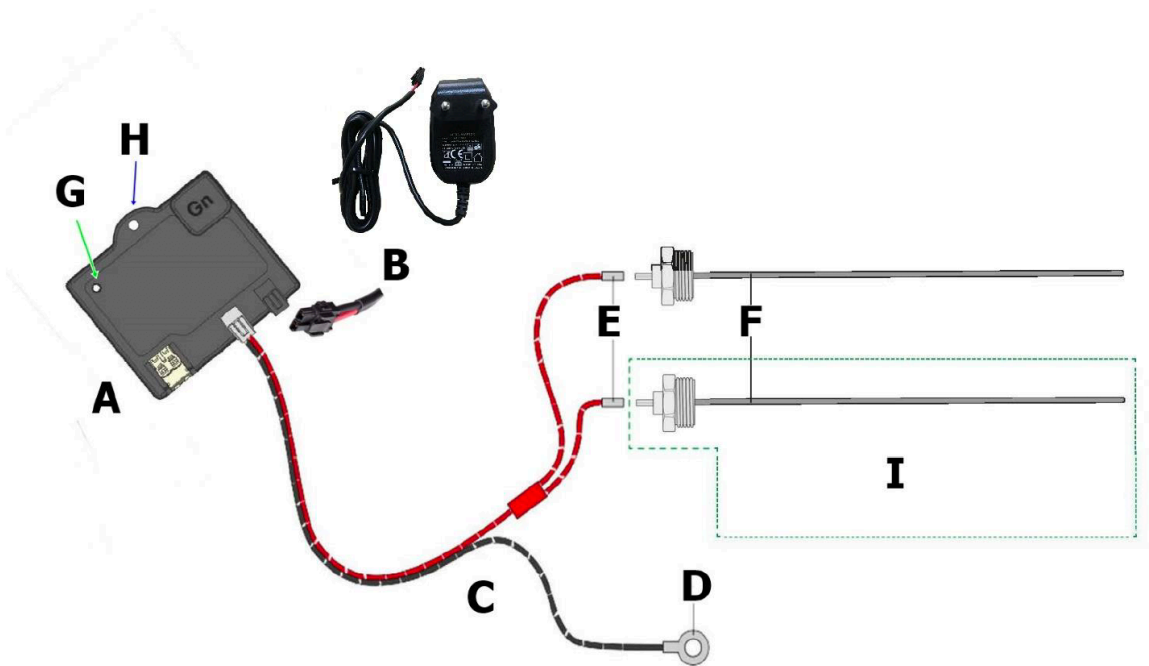
OTHER SPECIFICATIONS:

Operating Temperature : -10 /+ 50 °C
Storage Temperature : -10 / +90 °C
Protection Rating : IP64

Description Of LED Signals for ACES serie Hn and Gn	
After Switch On : Working Time Computing	
	3 Rapid Red Flashes = Entry in the Signalling function
	Number of Red Flashes shows Numbers of months
	Number of Green Flashes shows Numbers of years
	3 Rapid Green Flashes = Exit of the Signalling function
Note : To check the working time during normal operation simply disconnect and reconnect the Power Supply of the ACES device. This count is locked and not manageable	
Power Supply Alarm Signals	
	1 Red Flash Every 1 second- Insufficient Power Supply (<11V)
	2 Red Flashes Every 1 second- Overvoltage from Power Supply (>14V)
	No Signal - Device Off - No Power Supply
Wiring Alarm Signals	
	Green flash then one long Red, alternate - Anode Disconnected
	3 red flashes every 1 second - Short Circuit on Output
Working Signals	
	1 Green Flash every 1 second , repeated- Protection OK (*)
	1 Green Flash + 1 Red, repeated - Protection Low (*)
	1 Green Flash + 2 Red , repeated - NO Protection (*)
	1 Green Flash + 3 Red, repeated - Over Protection
(*) : At first use it might be possible to have all of these signals simultaneously as the potential of the enamelled walls of the boiler could be close to the protection limit.	
Signal Priority - In case of simultaneous Signals	
1- High Priority	Power Supply Alarms
2- Medium Priority	Wiring Alarms
3- Low Priority	Working Alarms

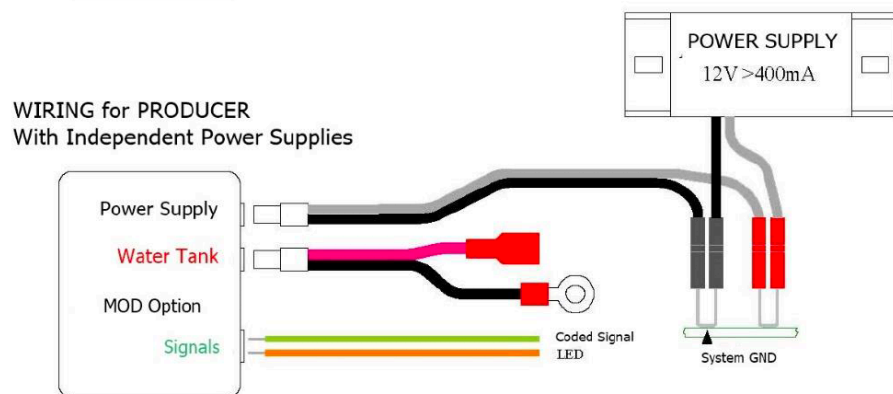
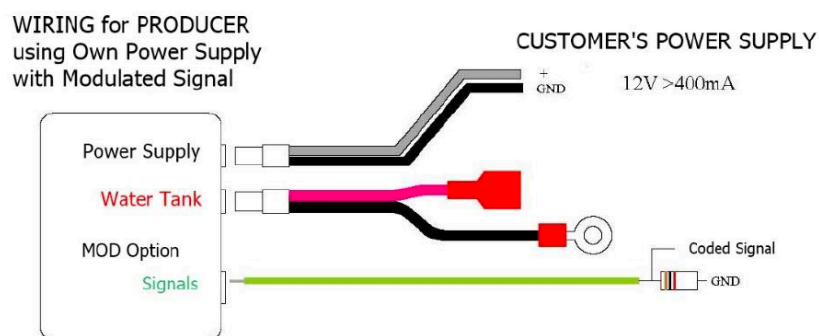
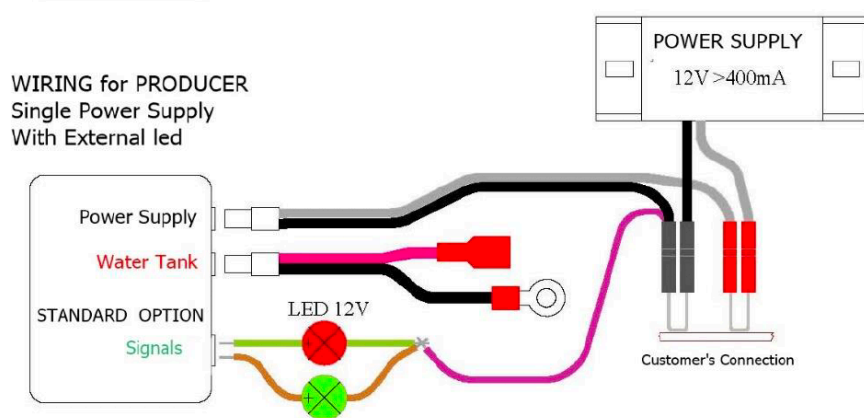
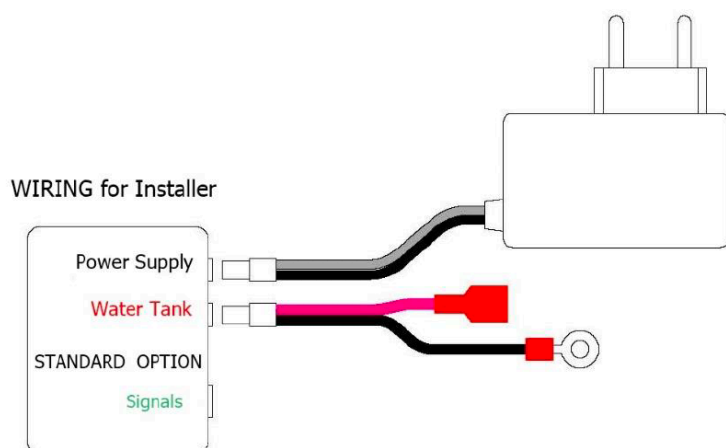
Protection Tresholds





Legenda	
A	Electronic Control Unit
B	External Power Adapter 12VDC-7W
C	Black Cable – to Tank
D	Tank connector
E	Red cable for Anode connection
F	Tiatnium Anode
G	Double-colored LED
H	Eyelet for Wall/Tank installation
I	Double Anode Version
L	Data Port (signals)





Anode Cable Specifications



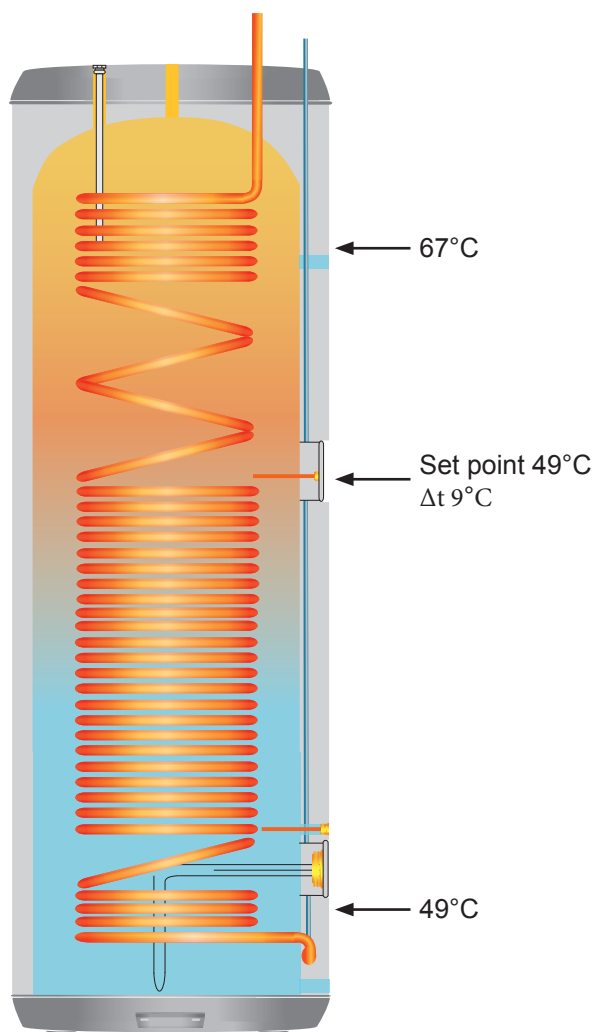


Costruttore; MOLEX
Famiglia: NANOFIT
codice corpo volante **bianco**: 105307-2202
codice del contatto dorato (flash gold): 105300-2200
codice del contatto stagnato (tin): 105300-2100
TPA bianco: 105325-2002



3 Important temperature setting for 2xVP750L and 2xVP1000L

3.1 DHW set temperature



*If the setpoint is desired to be higher (example 4 degrees), parameter 06 detail setting indoor unit must be changed from 0000 to 0004.

Important: with this setting, sensor BL changes to display 4 degrees lower temperature relative to correct temperature.

4 Water Piping Installation

General notes

- Please request a licensed technician to install this water circuit.
- This water circuit must comply with all relevant European and national regulations, i.e. IEC/EN 61770 European Council Directive 98/83 EC.
- Be careful not to deform the piping with excessive force when doing piping connection job.
- When connecting pipes to tank, always use brass between pipe and tank sleeve to prevent corrosion between base material.
- Choose proper sealer which can withstand the pressures and temperatures of the system. When tank is to be connected ensure the pipings are clean before water piping installation is carried out.
- Water operating pressures DHW tank (Minimum ~ Maximum): 0.05 MPa – 0.95 MPa

4.1 Tank unit refrigerant piping installation

1. Please make flare after inserting flare nut (located at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)
2. Do not use pipe wrench to open refrigerant piping. Flare nut may be broken and cause leakage. Use proper spanner or ring wrench.
3. Connect the piping:
 - Align the center of piping and sufficiently tighten the flare nut with fingers.
 - Further tighten the flare nut with torque wrench in specified torque as stated in the table.

Model	Piping size (Braising tank)	
	Gas	Liquid
VP1000L	3/4"	1/2"
VP750L	3/4"	1/2"
VP380/440L	3/4"	1/2"
VP380L	3/4"	1/2"

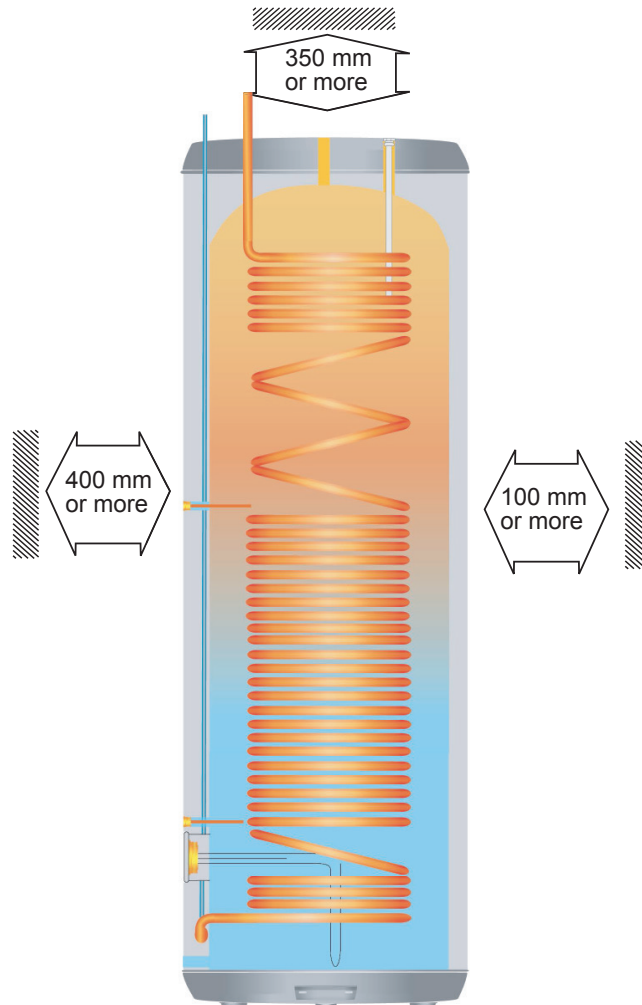
Please refer to chapter 4 for Refrigerant connecting pipes.

4.2 DHW tank water quality

Please refer to "User manual and technical documentation" handbook delivered with the tank product.

4.3 DHW tank unit installation space

The DHW tank must be within the following maintenance space.

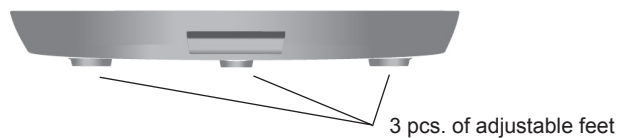


4



CAUTION

- The tank level must be adjusted before the piping installation can start. Use the three adjustable feet that are located under the floor tank.



4.4 Filling procedure

- DO NOT turn on any heat source connected to the storage tank until filling it.
- Ensure that all installation requirements, electrical and safety, have been met.
- Check all plumbing and electrical connections are properly connected.
- Make sure that unused connections are closed with sealing plugs.
- Open the bleed valve on the set which is connected to the kettle and start filling slowly.
- Let the unit fill, checking the bleeding air from the open tap; let out of the water to allow the flushing of the pipes.
- Close the bleed valve.
- Open the taps remaining to eliminate the residual air in the system.
- Close all the taps and check for water leaks in the system.
- Fill any circuits affecting internal heat exchangers to accumulation.
- Test manually the pressure regulating valve and the safety valves on each hydraulic circuit.

4.5 Emptying procedure

- Check that the heat source connected to the boiler and any loose electrical connections are off.
- Disconnect the water supply to the accumulation.
- Open a bleed valve on the set connected to the boiler to allow the entry of air into the system.
- Open the discharge of the system, paying attention to the high temperature of the exhaust as it could cause damage to property or persons.

4.6 Maintenance procedure

- Check periodically (at least once a year) the smooth operation of the safety valve.
- In accumulations of DHW always install a passive cathodic protection (magnesium anode) or active (impressed current anode) and check periodically, at least twice a year, wear a sacrificial magnesium anode or the presence of power supply on the anode impressed current; an anode of magnesium consumed more than 60% should be replaced.
- Inspect all water connections for leakage every year.
- Dismantle the flange with the DHW heater and clean the bottom tank internally every other year if the water quality is poor.
- Test safety thermostat and check electrical connections for DHW heater every year.
- Leak search refrigerant connections at the top of the tank for heat pump every year.
- Leak search refrigerant hose from double coil every year.
- Inspect the coil and clean it if necessary every other year.
- Test run the heat pump and check sensor info parameters.
- Check outdoor unit procedures referenced to the service manual for outdoor unit.

4.7 Warranty conditions

The manufacturer grants a warranty only for defects in material and workmanship on the boilers of its production under normal installation, use and maintenance of the product claimed.

The warranty is void if failure to respect the installation specifications listed above under "RULES OF INSTALLATION AND MAINTENANCE".

If the user or installer detects technical problems or functional product purchased, you must immediately contact the Local Retailer; it is recommended not to perform actions without the permission of the manufacturer or its dealer direct as possible tampering or repair could void the warranty.

The warranty period begins from the date shown on the delivery evidence by a serial number printed on the label of the tank. This term does not extend if it is renewed as a result of an intervention of warranty replacement.

The warranty period is shown on the label of each product. For accessories and items for the general, for which not expressly specified (hydraulic units, removable exchangers, etc.), The warranty period is of two years except for electrical and electronic devices for which the duration is one year. It is not covered by warranty accessory parts subject to natural wear such as screws, gaskets, wells, probes, anodes, thermometers, etc.

The manufacturer does not cover any costs for any direct and/or indirect damages resulting from defects found it costs related to removal of defective products and installation of replacement products. The persons who receive the goods are always required to verify the integrity of the product and compliance to order, any disputes must be noted on the transport document in the presence of the carrier and notified in not later than eight days from receipt of goods.

5 Tubing Data and Refrigerant

5.1 Tubing data for DHW and outdoor unit combination

1xVP380L

Combined with outdoor unit			U-18ME2E8
Tubing data			
Tubing size outer diameter	Liquid tube	[mm (in.)]	5/8"
	Gas tube	[mm (in.)]	1 3/8"
Limit of tubing length (L)			[m] 60
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher		[m] 50
	Outdoor unit is placed lower		[m] 30
Systems must be pre-charged with refrigerant			[kg] 1,5
Required additional refrigerant over 7 meters			[g/m] 185
Refrigerant charged at shipment R410A			[kg] 9,5

2xVP380/440L

Combined with outdoor unit			U-18ME2E8
Tubing data			
Tubing size outer diameter	Liquid tube	[mm (in.)]	5/8"
	Gas tube	[mm (in.)]	1 3/8"
Limit of tubing length (L)			[m] 60
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher		[m] 50
	Outdoor unit is placed lower		[m] 30
Systems must be pre-charged with refrigerant			[kg] 3,0
Required additional refrigerant			[g/m] 185
Refrigerant charged at shipment R410A			[kg] 9,5

2xVP1000LDHW

Combined with outdoor unit			U-10ME2E8
Tubing data			
Tubing size outer diameter	Liquid tube	[mm (in.)]	3/8"
	Gas tube	[mm (in.)]	7/8"
Limit of tubing length (L)			[m] 60
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher		[m] 50
	Outdoor unit is placed lower		[m] 30
Systems must be pre-charged with refrigerant			[kg] 1,0
Required additional refrigerant over 7 meters			[g/m] 60
Refrigerant charged at shipment R410A			[kg] 5,6

2xVP750LDHW

Tubing data		Combined with outdoor unit	U-10ME2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	3/8"
	Gas tube	[mm (in.)]	7/8"
Limit of tubing length (L)		[m]	60
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher		[m]
	Outdoor unit is placed lower		[m]
Systems must be pre-charged with refrigerant		[kg]	0
Required additional refrigerant over 7 meters		[g/m]	60
Refrigerant charged at shipment R410A		[kg]	5,6

5.2 Calculation of the refrigerant charge

How to calculate refrigerant charge

Example 1:

VP1000LDHW and U-250PZH2E8

Tubing lengths L = 25 m
(7.5 m – 25 m = 17.5 m)

Find the liquid tube size and additional charge from the tables below.

17.5 m × 80 g = 1400 g
1400 g – 1500 g = –100 g

Total amount to recover 100g

Example 2:

VP750LDHW and U-250PZH2E8

Sample tubing lengths L = 10 m
(7.5 m – 10 m = 2.5 m)

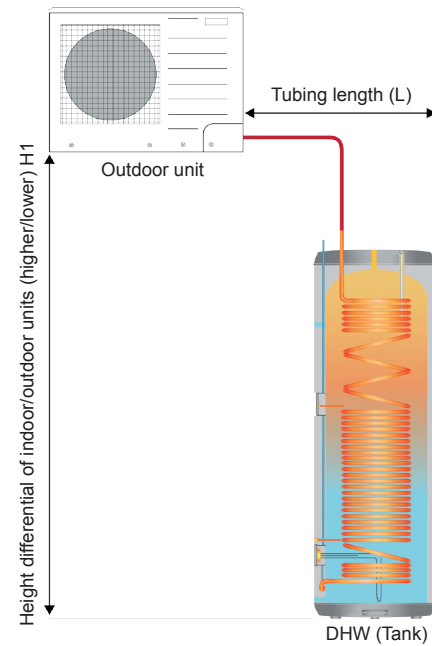
Find the liquid tube size and additional charge from the tables below.

2.5 m × 80 g = 200 g
200 g – 1500 g = 1300 g

Total amount to recover 1300 g

5.3 Temperature loss by refrigerant pipe length

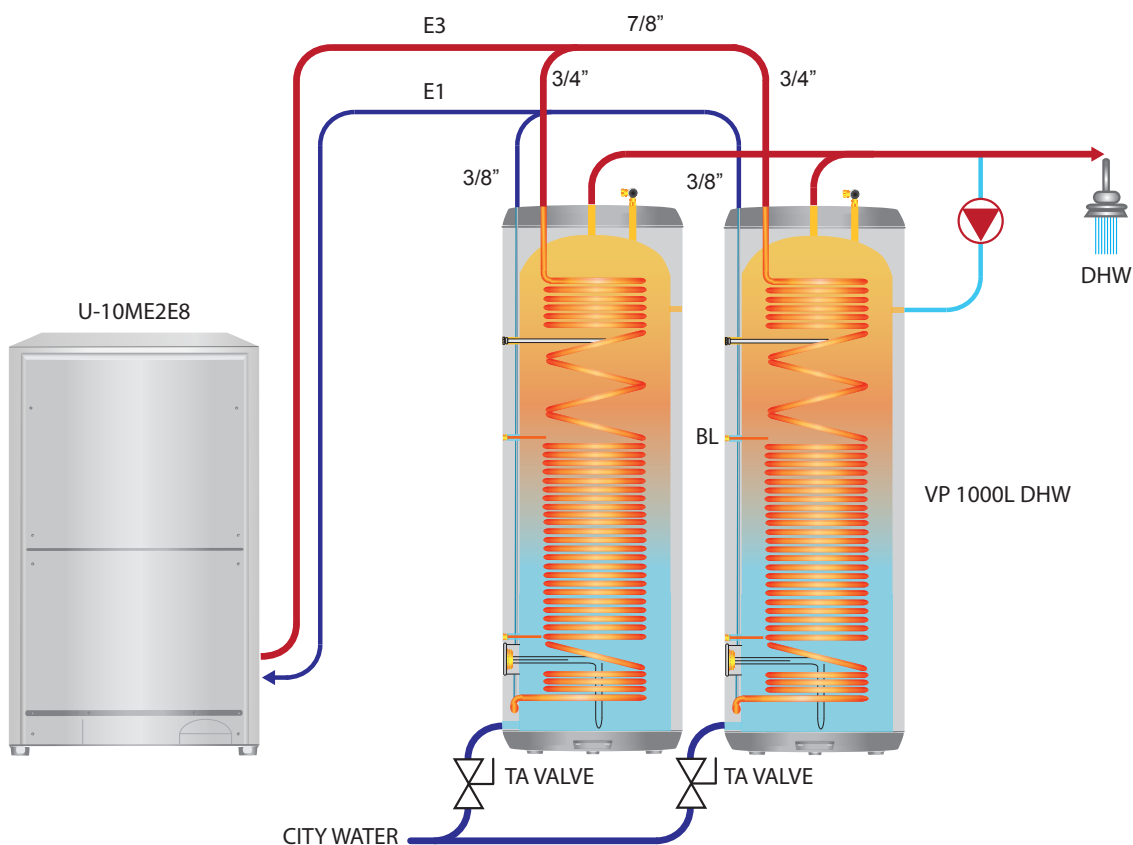
If the discharge pipe is well insulated between the heat pump and the tank, the heat loss is approximately 0.2 °C per meter.



6 System drawings

6.1 System ECOi DHW

Standard system 1:2 with circulation pipe

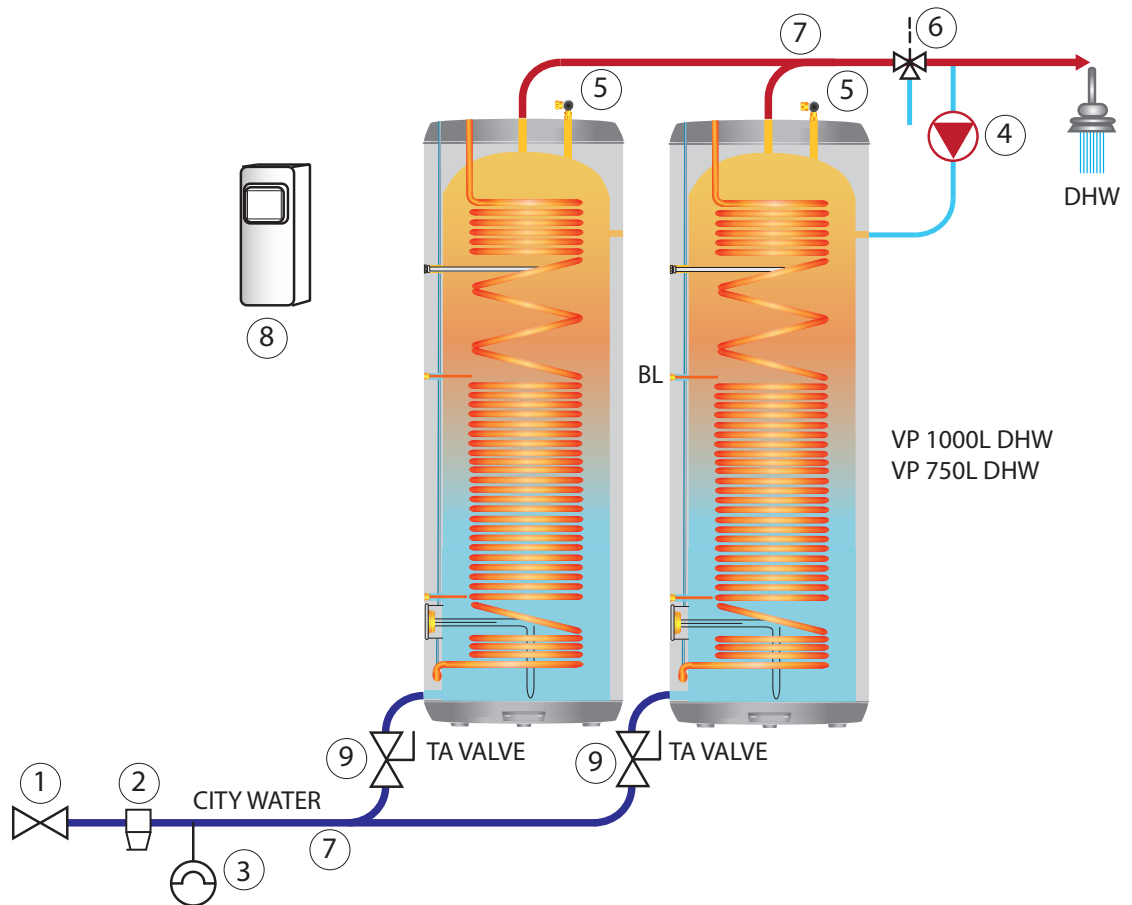


For a hotel or apartment complex where the last room is more than 30 meters away from the DHW tank, a water pump (for example type Grundfos comfort UP 15-14 BA PM) should be installed in order to obtain hot water quickly.

Remember to install a return pipe pump circulation of maximum Ø15 mm and make sure that supply and return pipes are well insulated for minimal heat loss.

6.2 System ECOi DHW

Standard system with circulation pipe and temperature control system



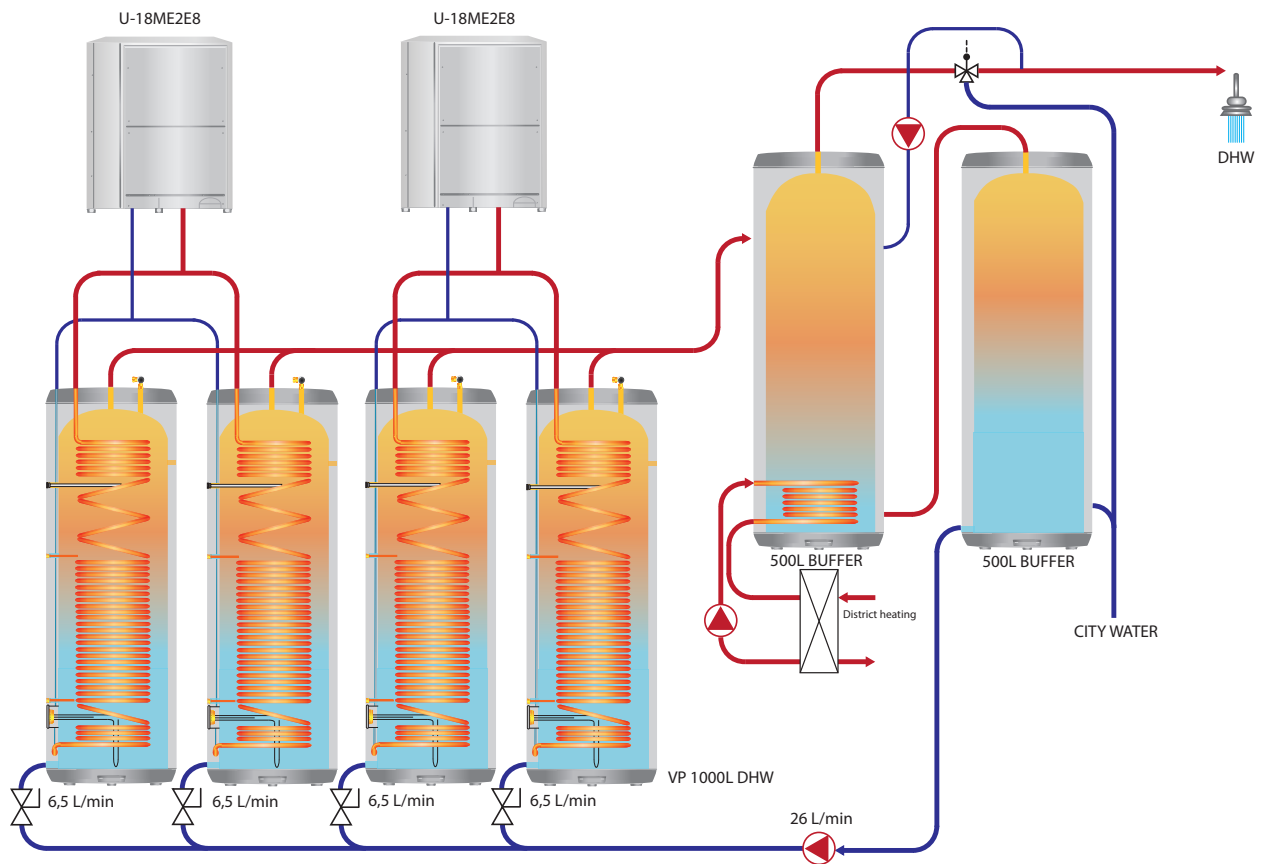
(Field supplied) accessories

- | | |
|--|--|
| 1. Pressure control valve if inlet city water is more than 6 bar (field supplied) | 5. Safety valve 6 or 9.5 bar (field supplied) |
| 2. Strainer (field supplied) | 6. Temperature control valve (field supplied) |
| 3. Expansion tank if check valve or pressure control valve is mounted (field supplied) | 7. Water pipe inlet/outlet VP1000L/750 (42 mm) |
| 4. Circulation water pump (e.g. Grundfos comfort UP 15–14 BA PM, field supplied) | 8. VP RTC5B ECO Smart controller |
| | 9. TA valve |

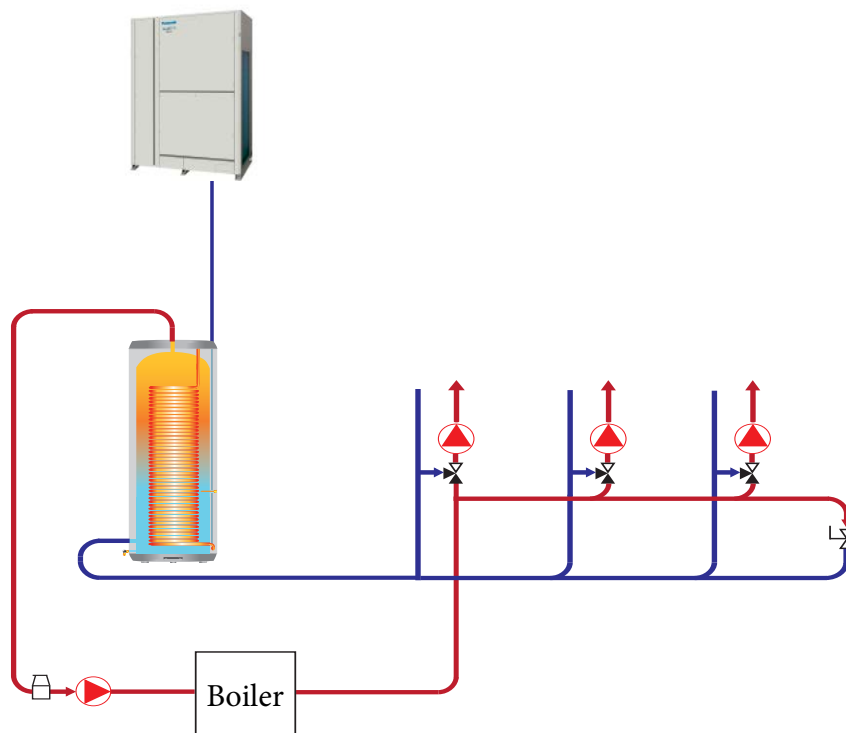
For a hotel or apartment complex where the last room is more than 30 meters away from the DHW tank, a water pump (for example type Grundfos comfort UP 15–14 BA PM) should be installed in order to obtain hot water quickly.

Remember to install a return pipe for pump circulation of maximum Ø15 mm and make sure that supply and return pipes are well insulated for minimal heat loss.

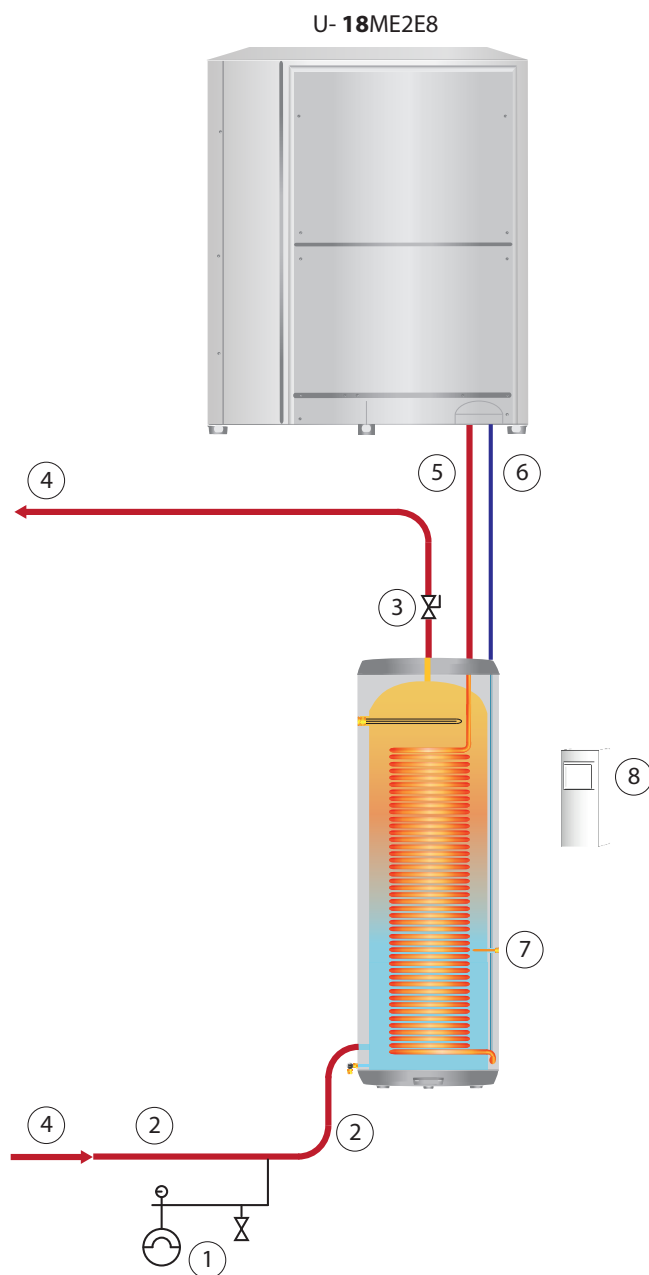
6.3 System ECOi DHW with buffer tank



6.4 System U-18ME2E8 - 1 x VP380L



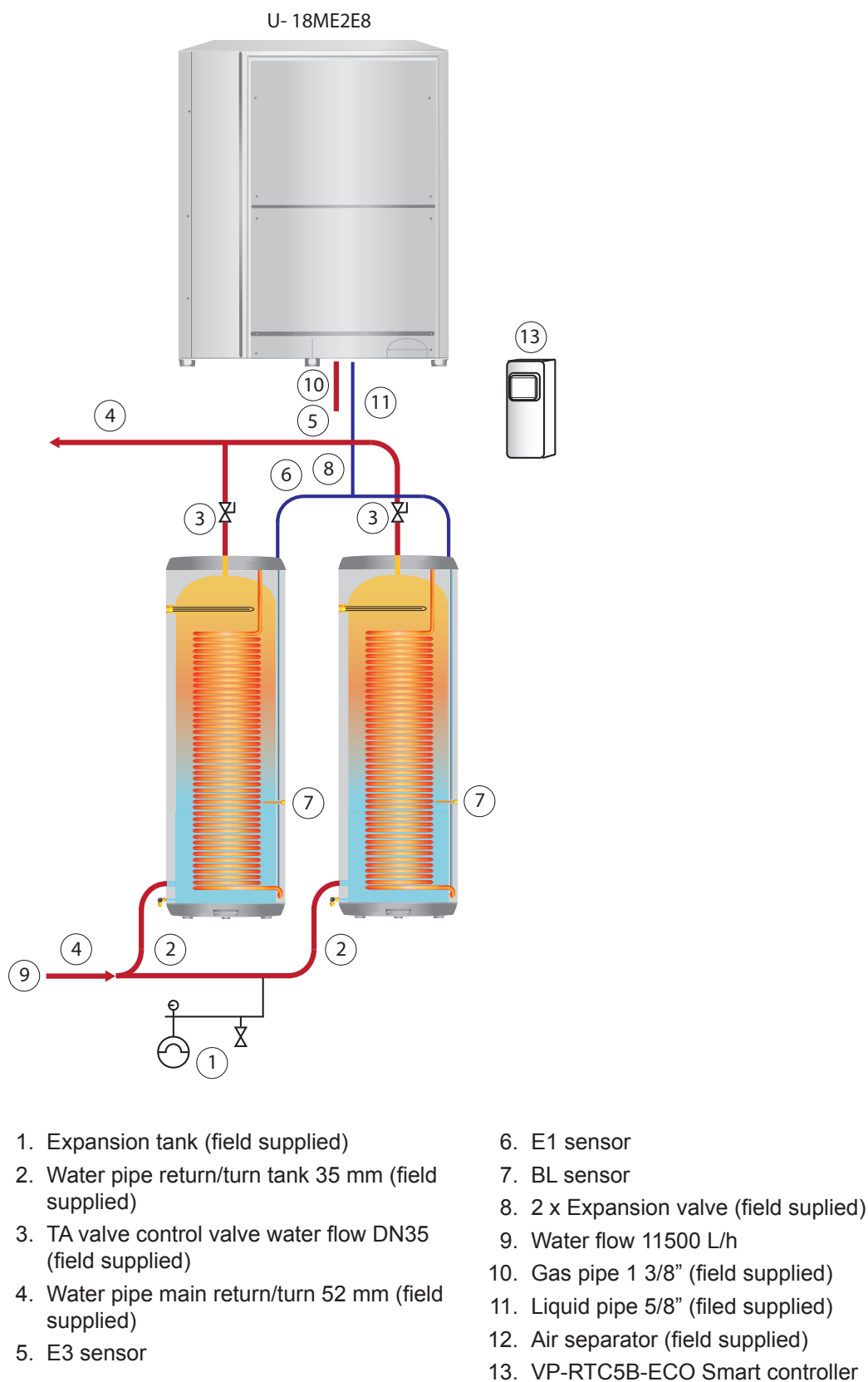
6.5 System U-18ME2E8 - 1 x VP380L



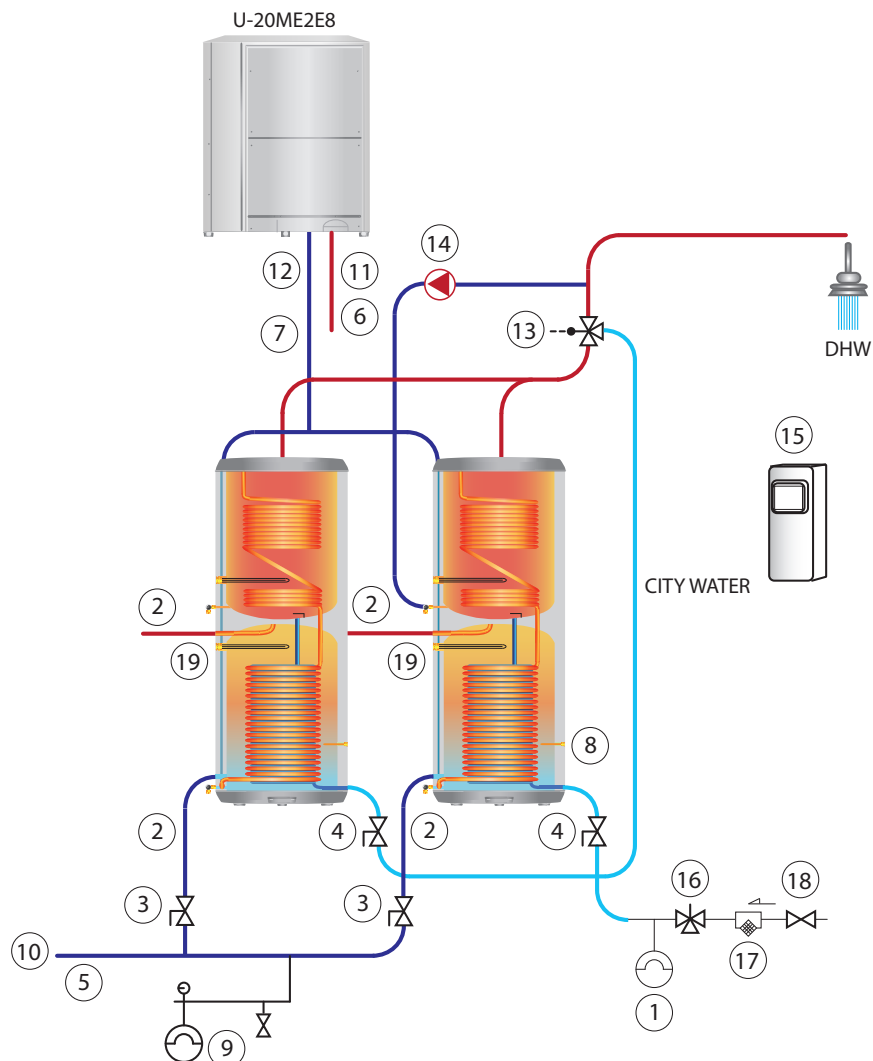
(Field supplied) accessories

- | | |
|--|-----------------------------------|
| 1. Expansion tank (field supplied) | 6. E1 sensor |
| 2. Water pipe return/turn tank 35 mm (field supplied) | 7. BL (TA) sensor |
| 3. TA valve control valve water flow DN35 (field supplied) | 8. VP-RTC5B-ECOi Smart controller |
| 4. Water pipe main return/turn 52 mm (field supplied) | |
| 5. E3 sensor | |

6.6 System U-18ME2E8 - 2 x VP380L cooling



6.7 System U-20ME2E8 - 2 x VP380/440L heating and DHW



- | | |
|--|--|
| 1. Expansion tank (field supplied) | 11. Gas pipe 1 3/8" (field supplied) |
| 2. Water pipe return/turn tank DN32 (field supplied) | 12. Liquid pipe 5/8" (field supplied) |
| 3. TA valve control valve water flow DN32 (field supplied) | 13. Temperature control valve (field supplied) |
| 4. TA valve control valve water flow DN20 (field supplied) | 14. Water pump Grundfos comfort UP 15-14 BA PM pump circulation DHW if needed (field supplied) |
| 5. Water pipe main return/turn 65 mm (field supplied) | 15. VP-RTC5B-ECO Smart controller |
| 6. E3 sensor | 16. Pressure control valve or check valve (field supplied) |
| 7. E1 sensor | 17. Strainer (field supplied) |
| 8. BL sensor | 18. Closing valve |
| 9. Expansion tank (field supplied) | 19. Immersion heater kit 6 kW 230/440V 3 pha (field supplied) |
| 10. Water flow max 11500 L/h | |

7 Electrical Wiring

7.1 General precautions on wiring

1. Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
2. Provide a power outlet to be used exclusively for each unit, and a power supply disconnect and circuit breaker for overcurrent protection should be provided in the exclusive line.
3. To prevent possible hazards from insulation failure, the unit must be grounded.
4. Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
5. Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
6. Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.
7. Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with all relevant rules and regulations.
8. To prevent malfunction of the Air-to-Water caused by electrical noise, care must be taken when wiring as follows:
 - The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
 - Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.
 - Use shielded wires for remote control wiring between units and ground the shield on indoor unit's side.
9. If the power supply cable of this appliance is damaged it must be replaced by a repair shop appointed by the manufacturer, because special-purpose tools are required.

7.2 Recommended wire diameter

Power supply wiring

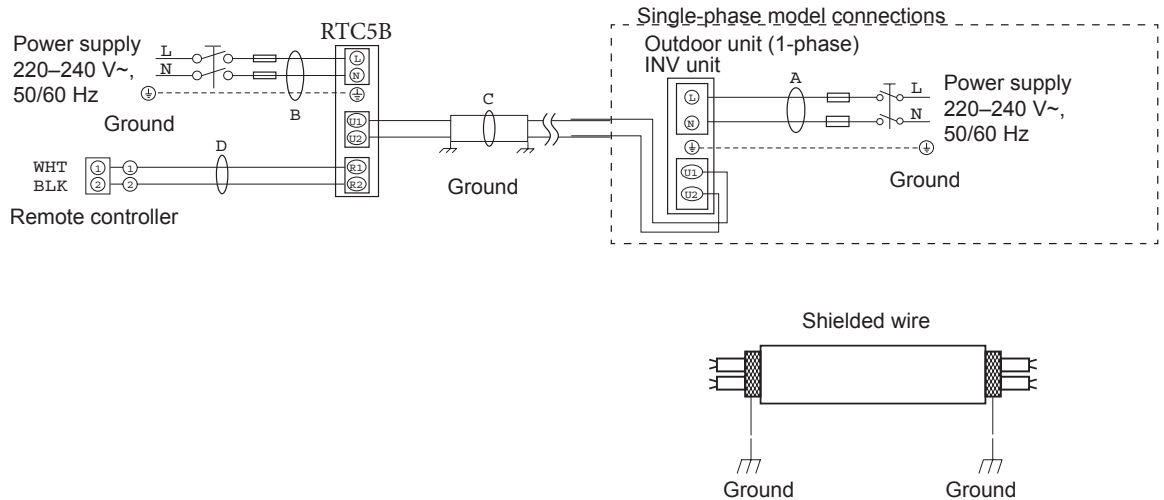
(B) Power supply cable control box			
Model name	Power supply	Minimum power supply cables L1, L2	Circuit breaker (minimum capacity)
RTC5B	Single phase 220/230/240 V	0.75 mm ²	2 A

Power supply cable backup heater			
Model name	Power supply	Minimum power supply cables L1, L2	Circuit breaker (minimum capacity)
VP1507170L U-71PZ2E5	230 V 1-phase	2.5 mm ²	16 A
VP1507170L U-100PZ2E5	230 V 1-phase	4 mm ²	25 A
VP1507170L U-125PZ2E5	230 V 1-phase	6 mm ²	32 A
VP380/440L U-200PZH2E8	3-phases 380/400/420 V	4 mm ²	20 A
2xVP380/440L U-18ME2E8	3-phases 380/400/420 V	6 mm ²	25 A
2xVP750LDHW U-10ME2E8	3-phases 380/400/420 V	4 mm ²	20 A
2xVP1000LDHW U-10ME2E8	3-phases 380/400/420 V	4 mm ²	20 A
VP380L U-200PZH2E8	3-phases 380/400/420 V	4 mm ²	20 A
VP380L U-250PZH2E8	3-phases 380/400/420 V	4 mm ²	20 A
2xVP380L U-18ME2E8	3-phases 380/400/420 V	6 mm ²	25 A

Control wiring

(B) Inter-unit (between outdoor and indoor units) control wiring	
Control wiring U1 U2	Length (m)
0.75 mm ² (AWG #18) Use shielded wiring* ²	Max. 100

Wiring system diagram



This equipment must be properly earthed.

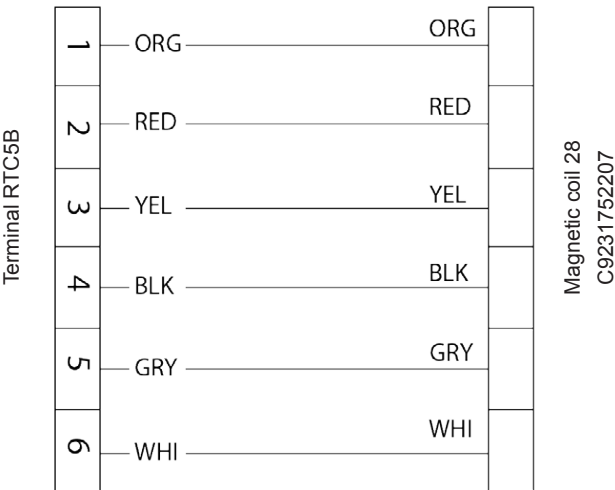
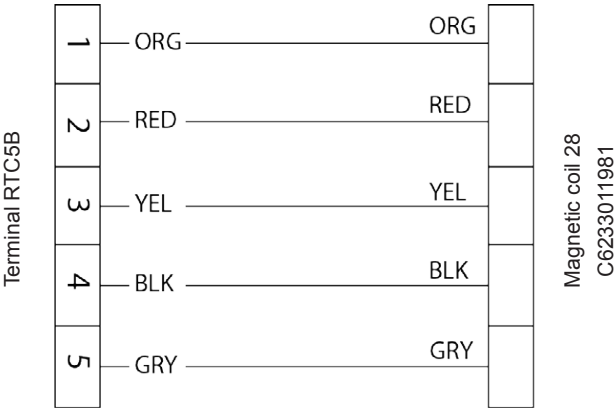
1. Use shielded wires for inter-unit control wiring (B) and ground the shield on both sides, otherwise misoperation from noise may occur. Connect wiring as shown in figure before.
2. Connecting cable between indoor unit and outdoor unit shall be approved poly-chloroprene sheathed 5 or 1.5 mm² flexible cord. Type designation 60245 IEC57 (H05RN-F, GP85PCP etc.) or heavier cord.
3. Use the standard power supply cables for Europe (such as H05RN-F or H07RN-F which conform to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (60245 IEC57, 60245 IEC66)

WARNING

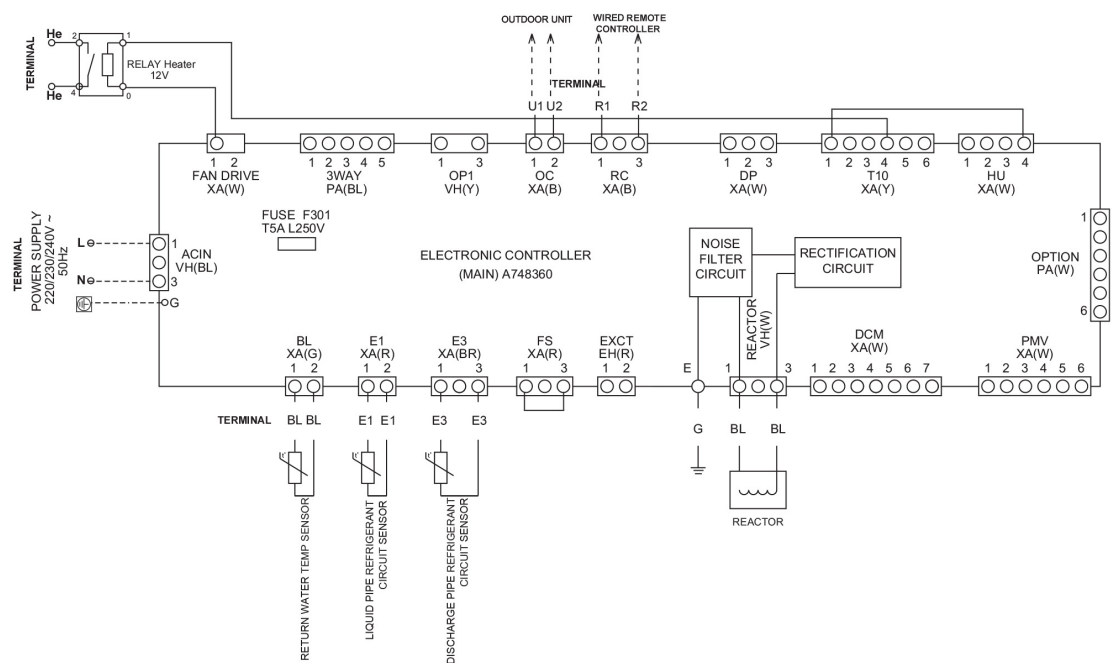
- Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also occur. Therefore, ensure that all wiring is tightly connected.
- When connecting each power wire to the terminal, follow the instructions on sec. 7.4 „How to connect electrical wires and sensors“ auf Seite 56 and fasten the wire securely with the terminal screw.

7.3 Indoor unit electric wiring diagrams

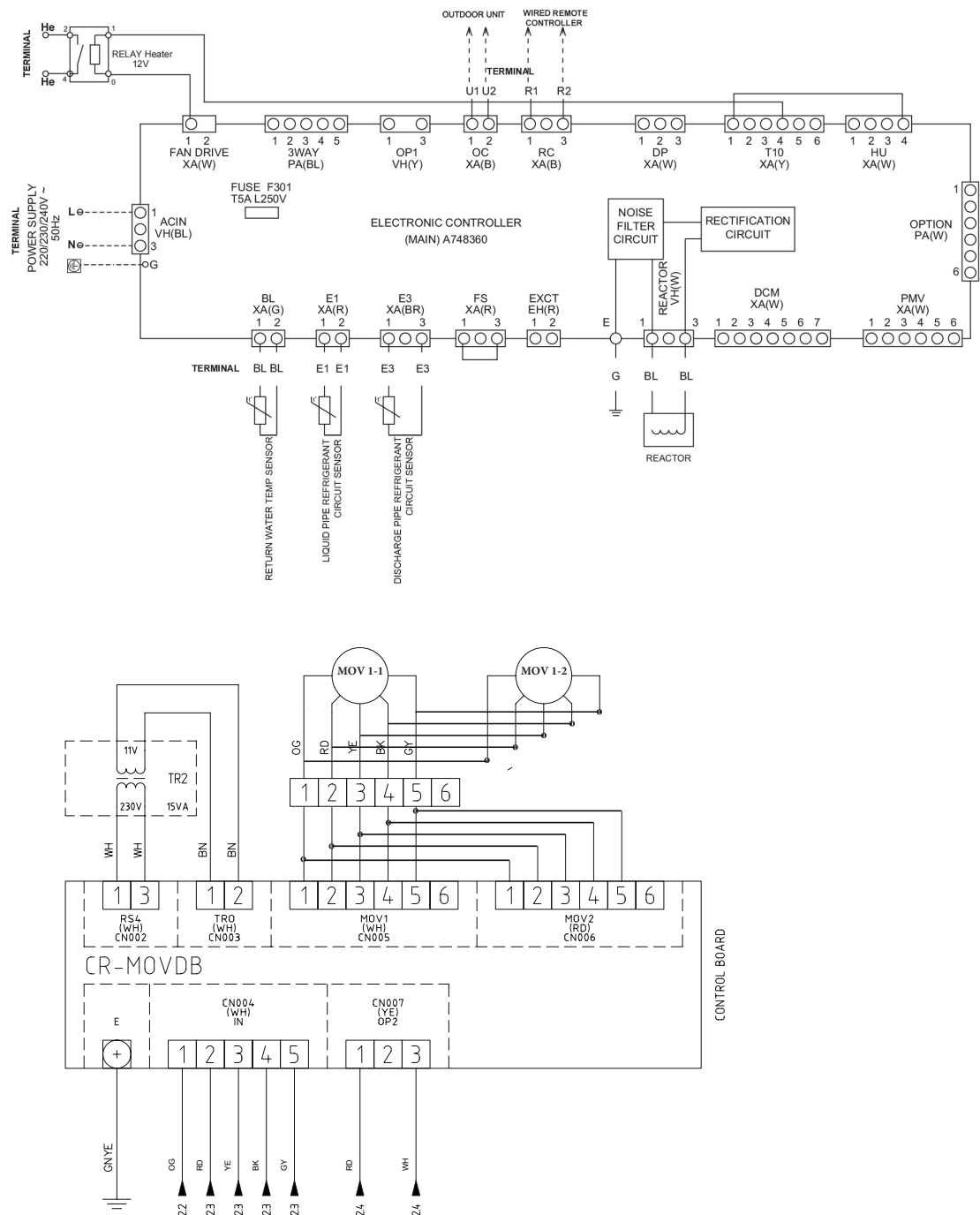
7.3.1 Wiring system diagram for EX valve magnetic coil



7.3.2 Wiring system diagram ECOi smart heating only



7.3.3 Wiring system diagram ECOi Smart heating and cooling



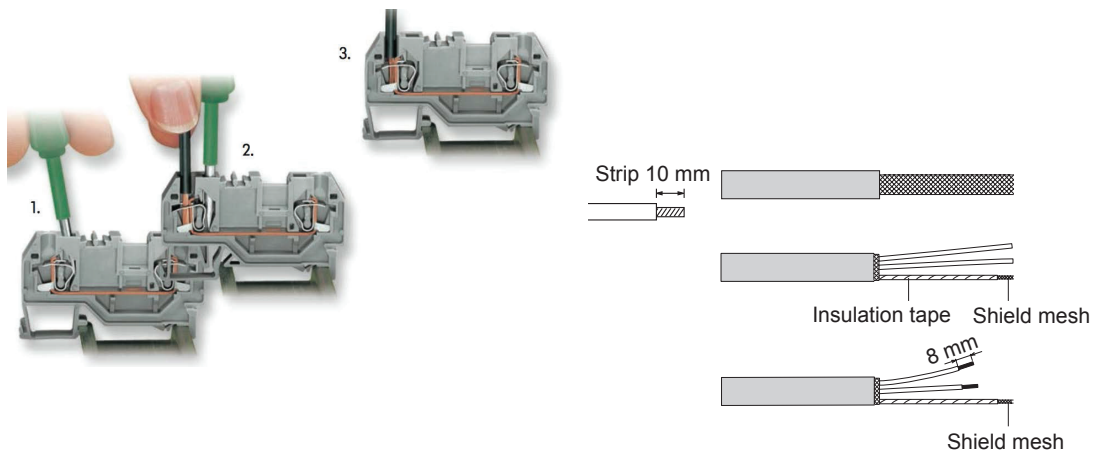
Item	Description	Position
BL	Set temperature thermistor	
E1	Liquid temperature thermistor	Heat exchanger outlet (heating mode)
E3	Discharge temperature thermistor	Heat exchanger inlet (heating mode)

7.4 How to connect electrical wires and sensors

7.4.1 How to connect wiring to the terminal

Proceed as follows:

1. A screwdriver is inserted with a rocking motion to the stop.
2. The screwdriver is captivated, holding the CAGE CLAMP open, while the wire is inserted.
3. The screwdriver is withdrawn and the wire is automatically dumped.



7.4.2 How to connect temp sensors TA, E1, E3 to the tank system

■ Terminal VP-RTC5B-ECO Smart heating only



Note

Remember that the E2 sensor is required.



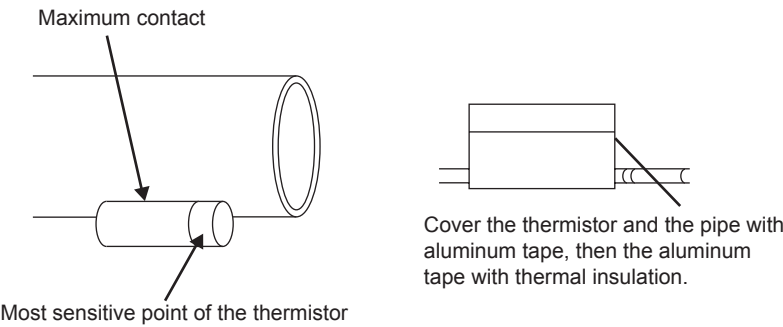
■ Terminal VP-RTC5B-ECO Smart heating and cooling



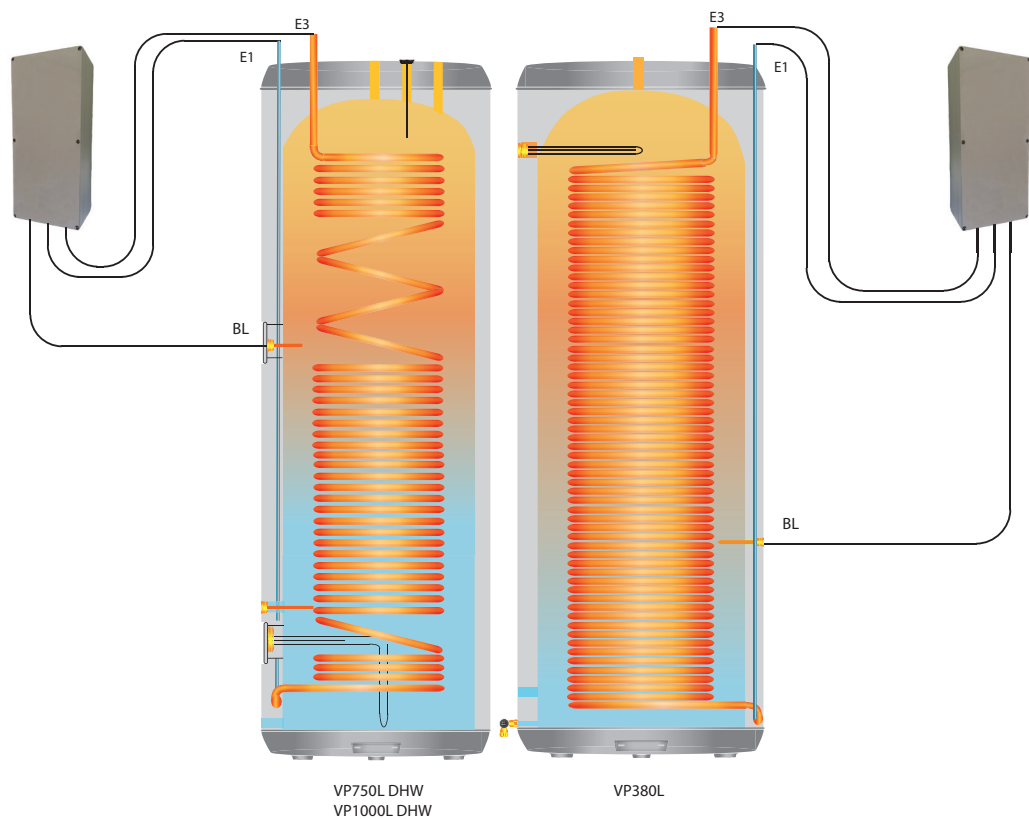
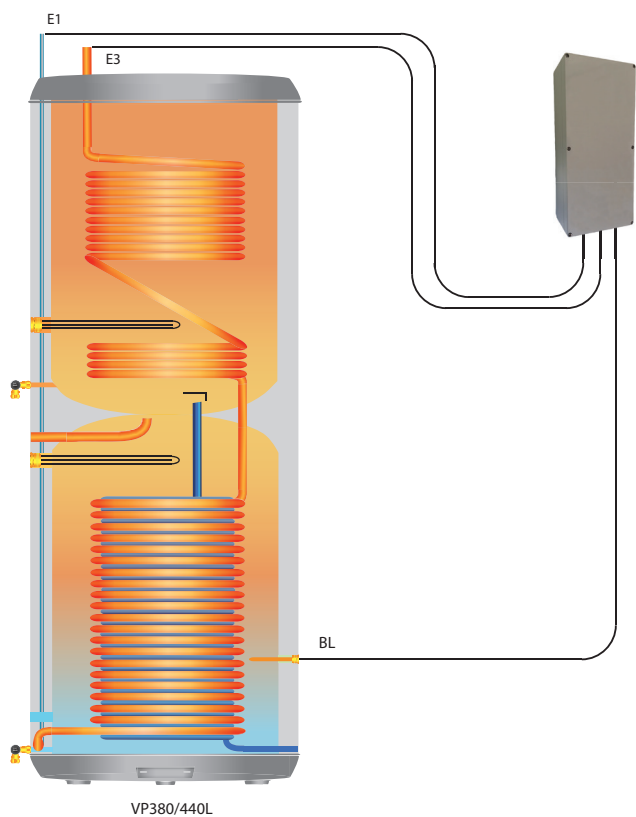
Important

When using RTC5B ECO together with ECOi MF3 DHW tank and air to air indoor unit remember to install adapter CZ-CAPE2 for solenoid valve kit.

7.4.3 How to mount the E1 and E3 sensors on the pipes



7.4.4 How to use with Terminal VP-RTC5B-ECO Smart



8 Connecting the Refrigerant Tubing

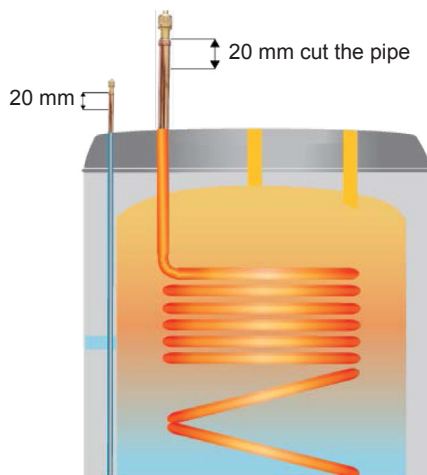
8.1 Use soldering method

Many of conventional split system air conditioners employ the flaring method to connect refrigerant tubes which run between indoor and outdoor units. In this method, the copper tubes are soldering at tank end.

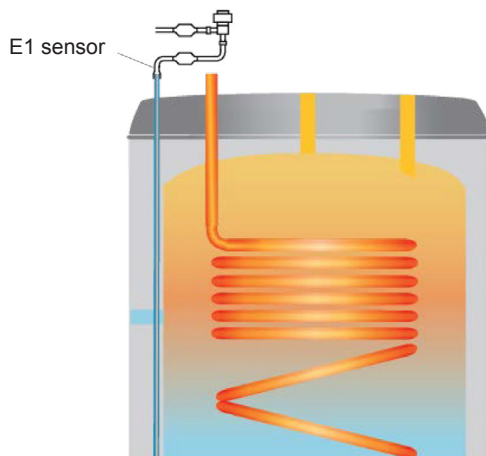
WARNING

Remember to cool down pipes with wet paper during soldering.

8.2 Preparation of cooling pipe for tank



8.3 How to install the expansion valve when using ECOi





Note

Vertical inclination of expansion valve must be less than $\pm 15^\circ$



CAUTION

Remember to cool down pipes with wet paper during soldering

When installing the expansion valve, the following limitations and restrictions need to be observed:

- ▶ The distance from tank heat exchanger and expansion valve must not exceed 2 meters.
- ▶ Pipe reducers or pipes expanders must be used in the field when needed.



Important

If there are multiple tanks in one ECOi system, an individual expansion valve and controller must be installed for each tank system.

For heating only, do not use expansion valve for ECOi one to one.

8.4 Expansion valve

When expansion valve shall be installed:

- Mini ECOi setup with air to air indoor units
- ECOi setup for 3 ways system
- Expansion valve ECOi setup when cooling and heating demand is needed

8.5 Choose the right expansion valve for different tank models for cooling mode ECOi

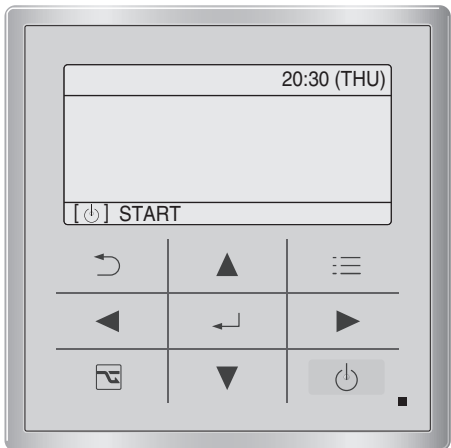
2xVP-VALV-280	VP-VALV-160
VP380L	

9 How to make Settings

9.1 Detailed settings for indoor unit

The settings must be made after switching on the power supply but before regular operation!

9.1.1 Setting procedure for remote controller model CZ-RTC5B



CZ-RTC5B

Operating procedure

1. Keep pressing the , and buttons simultaneously for 4 or more seconds. The “Maintenance func” screen appears on the LCD display.

Maintenance func		20:30 (THU)
1. Outdoor unit error data		
2. Service contact		
3. RC setting mode		
4. Test run		
▼ Sel.	► Page [] Confirm	





2. Press the or button to see each menu.
If you wish to see the next screen instantly, press the or button.
Select “8. Detailed settings” on the LCD display and press the button.



Maintenance func		20:30 (THU)
5. Sensor info.		
6. Servicing check		
7. Simple settings		
8. Detailed settings		
◄ Sel.	► Page [] Confirm	






The “Detailed settings” screen appears on the LCD display.




Select the “Unit no.” by pressing the or button for changes.





Detailed settings		20:30 (THU)
Unit no.	Code no.	Set data
3-1	10	0001
◄ Sel.	► Next	

3. Select the “Code no.” by pressing the  or  button.
Change the “Code no.” by pressing the  or  button (or keeping it pressed).

Detailed settings		20:30 (THU)
Unit no.	Code no.	Set data
3-1	 10 	0001
◀ Sel. ▶ Next		

4. Select the “Set data” by pressing the  or  button.
Select one of the “Set data” by pressing the  or  button.
Then press the  button.

Detailed settings		20:30 (THU)
Unit no.	Code no.	Set data
3-1	10	 0001 
◀ Sel. [] Confirm		

5. Select the “Unit no.” by pressing the  or  button and press the  button.
The “Exit detailed settings and restart?” (Detailed setting-end) screen appears on the LCD display. Select “YES” and press the  button











Detailed settings		20:30 (THU)
Exit detailed settings and restart?		
YES ▶ NO		
◀ Sel. ▶ Next		

9.1.2 Detailed setting procedure for remote controller model RTC4

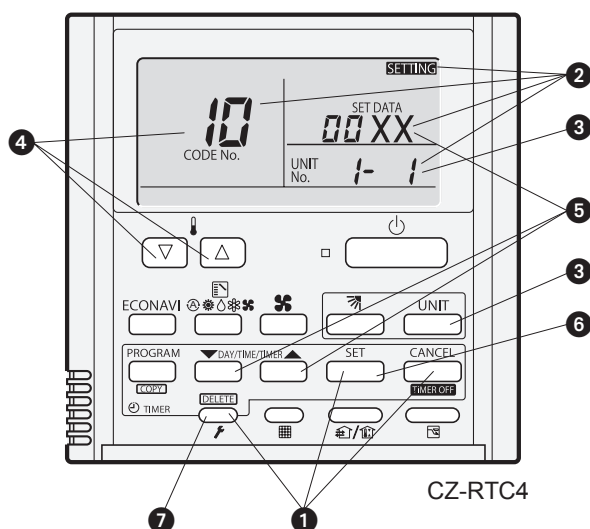
This allows the system address, indoor unit address, and other settings to be made for the individual or group-control indoor unit to which the remote controller used for detailed settings is connected.

When detailed settings mode is engaged, operation stops at the individual or group-control indoor unit where the remote controller used for detailed settings is connected. Simple settings items can also be set at this time.

Proceed as follows:

1. Press and hold the ,  and  button simultaneously for 4 seconds or longer.
2. "SETTING", unit No. "1- 1" (or "ALL" in the case of group control), item code "10", and settings data "00XX" are displayed blinking on the remote controller LCD display (see figure below). At this time, the indoor unit fan (or all indoor unit fans in the case of group control) begins operating.
3. If group control is in effect, press the  button and select the address (unit No.) of the indoor unit to set. At this time, the fan only at the selected indoor unit begins operating.
4. Press the temperature setting  /  buttons to select the item code to change.
5. Press the timer time  /  buttons to select the desired setting data.
- * For item codes and setting data, refer to sec. 9.2 „Detailed settings for indoor/outdoor unit RTC5B/RTC2/4“ auf Seite 101.
6. Press the  button. (The display stops blinking and remains lit, and setting is completed.)
7. Press the  button to return to normal remote controller display.







Keys and displays



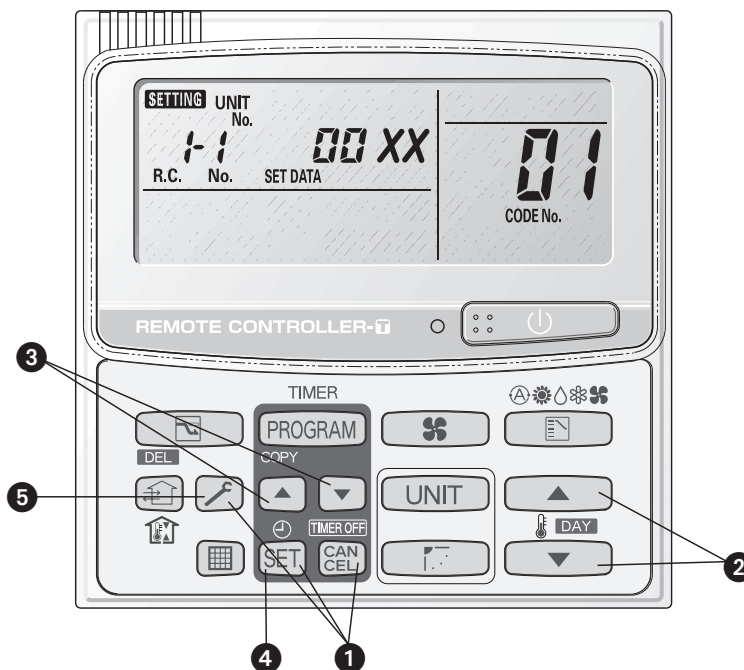
①—⑦:
Keys and displays for
the steps shown above.

9.1.3 Detailed setting procedure for remote controller model RTC2

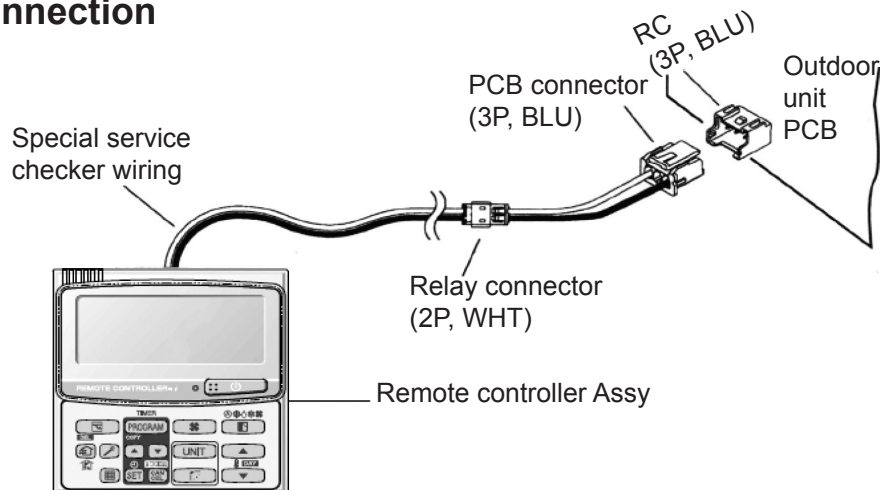
Proceed as follows:

1. Press and hold the , **SET** and **CAN CEL** buttons simultaneously for 4 seconds or longer.
2. Press the temperature setting  /  buttons to select the item code to change.
3. Press the timer time  /  buttons to select the desired setting data.
* For item codes and setting data, refer to sec. 9.2 „Detailed settings for indoor/outdoor unit RTC5B/RTC2/4“ auf Seite 101.
4. Press the **SET** button. (The display stops blinking and remains lit, and setting is completed.)
5. Press the  button to return to normal remote controller display.

Keys and displays



Connection



9.2 Setting flow chart

The system is in a fault-free state so that a safe commissioning can take place. All valid rules have been followed.

Important

To follow exactly the described steps at the following flow chart is mandatory.

No.	Action	Note
1	Check Indoor Unit	Check if all temperature sensors are correctly connected. All jumpers/bridged plugs (if any) according to the wiring diagram, power supply and communication wires are connected as shown in the electrical wiring diagram.
2	Turn Power "ON"	
3	Initialization	Wait until initialization is finished
4	Start Indoor Unit Detail Setting	Described at pages before: Setting Procedure for Remote Controller Model CZ-RTC5B
5	Set Indoor Unit „DN“ code 10 & 11	Attention: After the setting "DN" 10 & 11 go out of detailed setting:
6	Restart Detail Setting and set other Indoor Unit „DN“ codes	Follow described at pages before: Setting Procedure for Remote Controller Mode CZ-RTC5B See corresponding DN code list described on the following pages, (combination for combination) for Indoor Unit.
7	Finish Indoor Unit „DN“ code setting	Described at pages before: Setting Procedure for Remote Controller Model CZ-RTC5B
8	Initialization	Wait until initialization is finished
9	Start Outdoor Unit Detail Setting	Described at pages before: Detailed Setting Procedure for Remote Controller Model CZ-RTC2 / CZ-RTC4
10	Set Outdoor Unit „DN“ codes	See corresponding DN code list described on the following pages (combination for combination) for Outdoor unit.
11	Finish Outdoor unit „DN“ code setting	Described at pages before: Detailed Setting Procedure for Remote Controller Model CZ-RTC2 / CZ-RTC4
12	Reset Power supply	After restart Power supply and Initialisation is finished, proceed commissioning.

9.3 “DN” code setting list VP- RTC5B ECO Smart

Important

All settings are necessary, otherwise faultless operation is not possible. Please follow the sequence described above!

Indoor Unit detailed settings; remote controller VP-RTC5B ECO Smart

Parameter “DN” code	Default value	New value to set	Explanation	Check and adjust
06*	0000	0000	Inlet temperature shift in heating mode	
11	0028	0028	Capacity code U-18ME2E8 factory setting	
11	0028	0023	Capacity code U-10ME2E8	
1d	0000	0005	Shift up the discharge temperature	

*for tank DHW heating set new value 0004

Outdoor Unit detailed settings by RTC2/4

Parameter “DN” code	Default value	New value to set	Explanation	Check and adjust
05	1	8	Silent mode level 8	
35	000	-05	Specific Tank setting	
36	000	-05	Specific Tank setting	
4b	001	003	Tank setting	
50	000	001	Evaporation temperature shift by indoor unit type	
7b	001	002	Air to water indoor unit connection permission	

New software must be uploaded to the pcb outdoor unit.

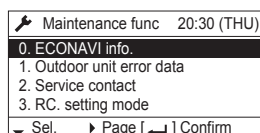
9.3.1 Detailed settings function ECO Smart

Detailed settings for Air-to-water

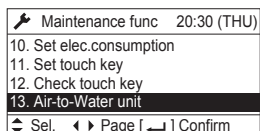
Procedure of RTC5B



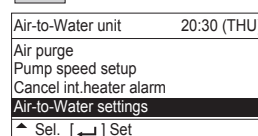
- ① Keep pressing the , and buttons simultaneously for 4 or more seconds.
The "Maintenance func" screen appears on the LCD display.



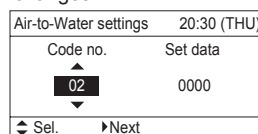
- ② Press the or button to see each menu.
If you wish to see the next screen instantly, press the or button.
Select "13. Air-to-Water unit" on the LCD display and press the button.



- ③ Press the or button to see each menu.
If you wish to see the next screen instantly, press the or button.
Select "Air-to-Water settings" on the LCD display and press the button.



- ④ The "Air-to-Water settings" screen appears on the LCD display.
Select the "Code no." by pressing the or button for changes.

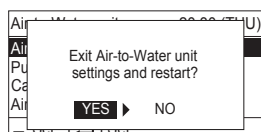


- ⑤ Select the "Set data" by pressing the or button.
Select one of the "Set data" by pressing the or button.
Then press the button.

List of detailed setting items for Air-to-Water

Item code	Item	Setting data	
		No.	Description
02	Mode select	0000	No *
		0001	Tank DHW heating only
		0002	Heating or cooling (factory setting)

- ⑥ Select the "Unit no." by pressing the or button and press the button.
The "Exit Air-to-Water unit settings and restart?" (Air-to-Water settings-end) screen appears on the LCD display.
Select "YES" and press the button.



9.3.2 “Item” code setting list ECO smart DHW - Air to water Indoor Unit

Important

All settings are necessary, otherwise faultless operation is not possible. Please follow the sequence described above!

2 X VP1000L DHW / 2 x VP750L DHW - U-10ME2E8

Item code	Item		Setting data	
			No.	Description
04	Heating curve function use		0000	No
31	Max temperature for sterilization		0050	50°C
			0051	51°C
			}	}
			0063	63°C
			0065	65°C*
50	Thermo ON margin BL sensor starting heatpump		0000	0°C
			0001	1°C
			}	}
			0004	4°C
			0005	5°C * Heatpump stop 45°C + (Item code 51)= 49°C
51	Thermo OFF margin BL sensor related to fix setpoint 45°C		-004	-4°C * Heatpump start 45°C - (Item code 50)= 40°C
			-003	-3°C
			-002	-2°
			-001	-1°C
			0000	0°C
68	Tank DHW setting range (for Water BL temperature sensor)	Upper limit	0035	35°C
			}	}
			0064	64°C
			0065	65°C *
69		Lower limit	0035	35°C *
			0036	36°C
			}	}
	0064		64°C	
			0065	65°C

Setting at shipment

- Do not change any setting data that does not appear in this list.
- In tank mode is fixed, heater will come on after minimum 30 minutes heat pump operation passed and in case water temperature 43°C or more. Then it will heat until T set reached. After achieving 49°C, heat pump operation will stop.
- (all these values are fixed, no parameter to modify)
- Item code 31 set to the desired sterilization temperature (65°C)

9.3.3 “Item” code setting list ECO smart heating - Air to water Indoor Unit

Important

All settings are necessary, otherwise faultless operation is not possible. Please follow the sequence described above!

2 X VP380L / 2 x VP380/440L - U-18ME2E8 (ECO Smart)

Item code	Item		Setting data	
			No.	Description
04	Heating curve function use		000 0	NO
			0001	YES * Only for heating mode
22	Outdoor temperature when heater can be enabled		-020	-20°C
			-012	-12°C*
			}	}
			0000	0°C
			}	}
			0025	25°C
23	Heater ON differential for waterborne heating		0000	0°C
			0001	1°C
			}	}
			0010	10°C *
			}	}
			0040	40°C
24	Heater OFF differential for waterborne heating		0001	1°C
			0002	2°C *
			}	}
			0009	9°C
			0010	10°C
62	Heat mode setting range (for max Water return temperature control)	Upper limit	0025	25°C
			0026	26°C
			}	}
			0044	44°C
63		Lower limit	0045	45°C *
			0025	25°C *
			0026	26°C
			}	}
			0044	44°C
			0045	45°C

Setting at shipment

- Do not change any setting data that does not appear in this list.
- 22 (you can set outdoor temperature which electrical heater will come in to help heat pump, default is below -12°C)
- 23 (th on differential, default 10 K) so it means the electrical heater will come on when water outlet temperature < T set – 10 K, you may change this also to 5 K, then electrical heater will come on when water outlet temperature < T set. But it will come on only with a delay of 10 minutes after pump start (this timing not possible to change) and 20 minutes after last time electrical heater on and in case of defrost this delay is 5 minutes only.
- 24 (Th off differential, default 2 K) so it will cut out after exceeding T set by 2 K, you can change this also from 1 ... 10 K.

9.3.4 Item code setting list ECO Smart cooling - Air to water Indoor Unit

Important

All settings are necessary, otherwise faultless operation is not possible. Please follow the sequence described above!

2 x VP380L - U-18ME2E8 (ECO Smart)

Cooling mode

Item code	Item		Setting data	
			No.	Description
04	Heating curve function use		0000	NO *
60	Cooling mode setting range (for Water return temperature control)	Upper limit	0005	5°C
			0006	6°C
			}	}
			0019	19°C
			0020	20°C *
61		Lower limit	0012	12°C *
			0014	14°C
			}	}
			0019	19°C
			0020	20°C

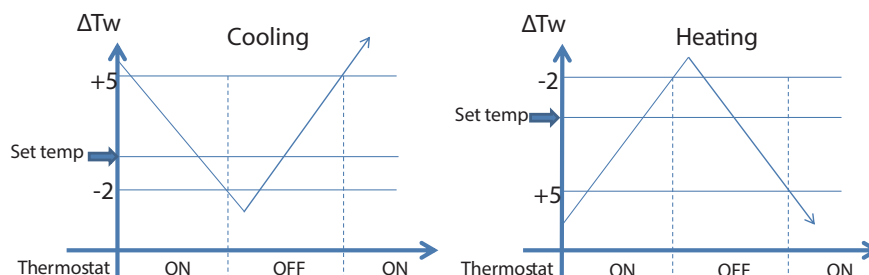
Setting at shipment

- Do not change any setting data that does not appear in this list.

9.3.5 Cooling Mode Operation - Tank Mode Operation

Thermo OFF Conditions = a and b and c

- a. Cooling mode
- b. $\Delta Tw(\text{Cool}) \leq \text{Thermo OFF margin}$
- c. Not in force Thermo ON



4. Tank Mode Operation

ON/OFF timing of Tank mode operation is basically the same as Heating mode.

The maximum Water outlet temperature is 65°C.

The Heat Pump operates at less than 45°C of the Water outlet temperature and will stop at 45°C. After reaching 45°C, the internal heater continues operating.

2. Heating Mode Operation

The water outlet sensor 2 (BL) will detect the Water outlet temperature.

The thermostat is turned ON or OFF according to the following ΔTw . ΔTw

(Heat) = Setting water temperature – Water outlet temperature

- Thermo ON Conditions = a and b

- a. Heating mode or Tank mode
- b. $\Delta Tw(\text{Heat}) \geq \text{Thermo ON margin}$

- Thermo OFF conditions = a and b and c

- a. Heating mode or Tank mode
- b. $\Delta Tw(\text{Heat}) \leq \text{Thermo OFF margin}$
- c. Not in Force Thermo ON

3. Cooling Mode Operation

The thermostat is turned ON or OFF according to the following ΔTw . $\Delta Tw(\text{Cool}) = \text{Water outlet temperature} - \text{Setting water temperature}$

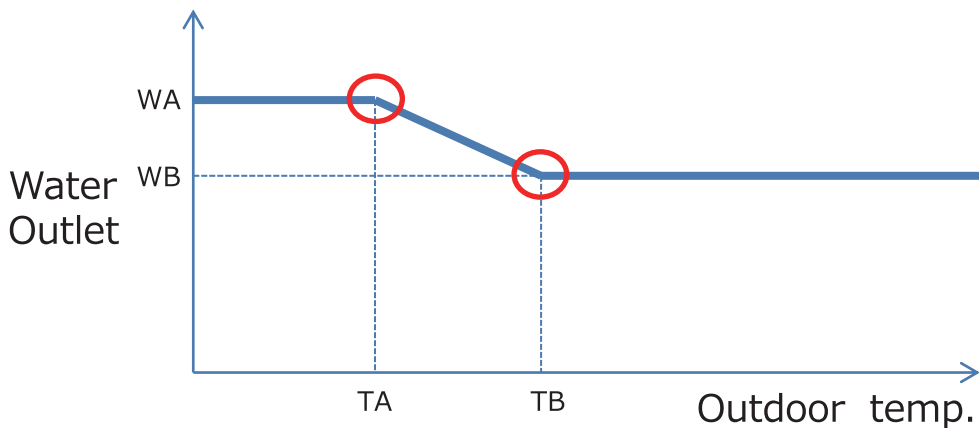
- Thermo ON Conditions = a and b and (e or c and d)

- a. Cooling mode
- b. $\Delta Tw(\text{Cool}) \geq \text{Thermo ON margin}$
- c. Outdoor temperature $< 10^\circ\text{C}$
- d. Inlet water temperature $\geq 7 \times (\text{Outdoor temperature} - 10) / (-17) + 10$
- e. Outdoor temperature $\geq 10^\circ\text{C}$

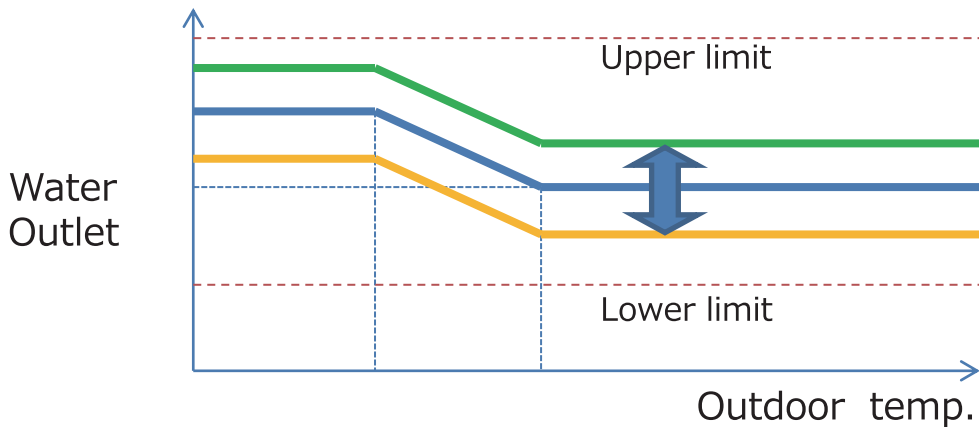
9.3.6 Heating Curve Function

This function is only for Heating mode

The Water outlet temperature is controlled automatically according to the outdoor temperature. It is possible to change the 2 points of the heating curve by the menu setting.



It is possible to shift the Water outlet temperature of heating curve by the remote controller. The shift range of the Water outlet temperature by the remote controller is $-5^{\circ}\text{C} \sim +5^{\circ}\text{C}$. The shifted temperature is displayed in the remote controller as setting temperature. If the shifted temperature is more than the upper limit or less than the lower limit as shown below, the shifted temperature is limited between the upper and lower limit.



Heating Curve Function Use setting

Code No.(DN):	04	
Data	00	No
	01	Yes (default)

9.3.7 Names of parts

TANK mode

HOT-WATER-SUPPLY

20:30 (THU)

TANK

SET TEMP.

65

°C

Operation mode

Set temperature (water)

Icon

Description

It is able to set Water Out Temperature.

Setting information icons displayed on the top screen

Icon	Description
	Switching operation modes is prohibited. (Switching to Auto mode is also prohibited.)
	Remote control operation is restricted by a central control device.
	[ON/OFF timer] is set.
	[Weekly timer] is set.
	Energy saving operation is in process.

Icon	Description
	Internal heater is active.
	Internal heater is abnormal.
	Internal heater is manually in process.
	Internal heater is not in process.
	Control to prevent water freezing is active.
	External device ready demand *1
	External device notice *2
	External pump is active.
	Water is under sterilization.

*1

When the heat capacity for Air-to-Water is insufficient, output signal is sent to the external device.

*2

When the notice is input from the external device, the icon appears on the wired remote controller.

Air-Conditioning mode

AIR-CONDITIONING

20:30 (THU)

MODE

HEAT

SET TEMP.

24

°C

45

°C

Operation mode

Set temperature

Water out temperature

The indoor unit is stopped or slight blow operation is in process.

Icon

Description

It is able to set Water Out Temperature.

It is able to set Room Temperature from thermo sensor (RC thermo or remote sensor thermo).

Thermo sensor (RC thermo or remote sensor thermo) is abnormal.

It is able to set Offset value of Heating Curve Function. (only heating mode)

Setting information icons displayed on the top screen

Icon	Description
	Switching operation modes is prohibited. (Switching to Auto mode is also prohibited.)
	Remote control operation is restricted by a central control device.
	[ON/OFF timer] is set.
	[Weekly timer] is set.
	Energy saving operation is in process.

Icon	Description
	Internal heater is active.
	Internal heater is abnormal.
	Internal heater is manually in process.
	Internal heater is not in process.
	Control to prevent water freezing is active.
	External pump is active.

9

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9.3.8 Initial settings

- Clock - Clock type.....- Operation lock

When applying a power on for the first time, it is necessary to initialize the remote controller for Air-to-Water unit.

Please refer to the installation instructions or consult the contractor.

1 Display the menu screen.

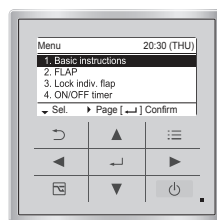


■ To return to the previous screen

Press .

■ To return to the top screen

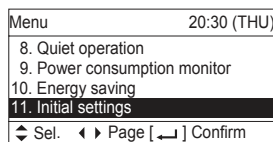
Press 2 times.



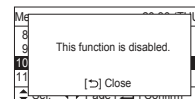
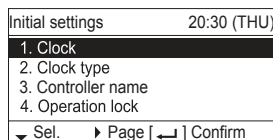
* The Air-to-Water function is not applicable to the feature list No.2, No.3, No.6, No.7, No.10, No.11 and No.12 at the Menu screen (in TANK mode and Air-Conditioning mode).

- 2. FLAP
- 3. Lock indiv. flap
- 6. Filter info
- 7. Outing function
- 10. Energy saving
- 11. Initial settings
 - Operation lock
 - Lock MODE (only TANK mode)
 - Lock FAN SPEED
 - Lock FLAP
- Temp sensor
- Main/sub
- Vent output
- 12. Ventilation

2 Select [Initial settings].



3 Select the item to set.



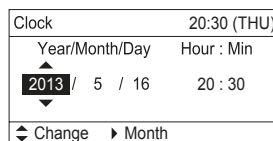
Clock

4 Set the date and time.



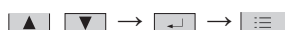
(Repeat)

(Press 2 times to finish.)

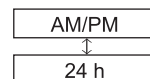
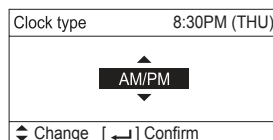


Clock type

4 Select the type to display.



(Press 2 times to finish.)

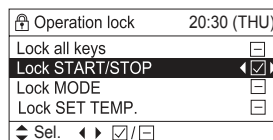


Operation lock

4 Select the type of lock and set to [✓].



(Press 2 times to finish.)

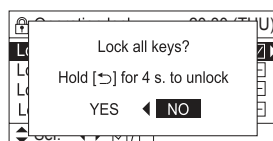


■ To cancel lock

Select [-] in step 4.

■ Only for [Lock all keys]

Select [YES].



9.3.9 Operation

TANK mode

1 Start Operation

Press 

(The operation indicator illuminates.)

2 Change the temperature setting

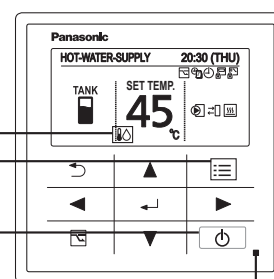
Press  

(In TANK mode, only "SET TEMP." can be changed. : 35°C to 65°C)
(The cursor disappears.)

Water Temperature

■ To change the setting

■ To stop
(The operation indicator turns off)



Operation indicator

Air-Conditioning mode

[Heating Curve Function] (Only heating mode)

Supply water temperature is adjusted automatically, according to outdoor temperature.

Supply water temperature is able to adjust manually by changing offset value.

■ Case: With use of Heating Curve Function.

1 Start Operation

Press 

(The operation indicator illuminates.)

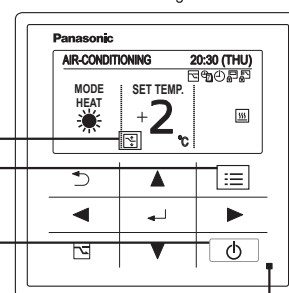
2 Change the setting

Press  

Under Heating Curve Control

■ To change the setting

■ To stop
(The operation indicator turns off)



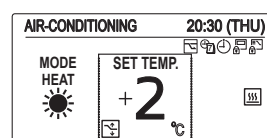
Operation indicator

⑥ Set temperature

Press 

(When the cursor is not visible.)

Heat (With use of Heating Curve) : -5°C to +5°C (offset)



For cooling, see the note [Normal mode] below.

[Normal mode] With no use of Heating Curve Function.

Supply water temperature can be set.

■ Case: With no use of Heating Curve Function.

1 Start Operation

Press 

(The operation indicator illuminates.)

2 Select the item to set

Press  

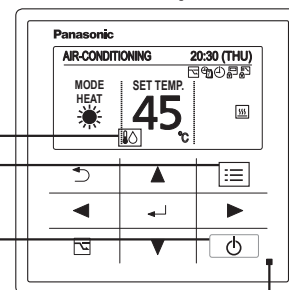
3 Change the setting

Press  

Water Temperature

■ To change the setting

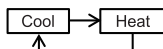
■ To stop
(The operation indicator turns off)



Operation indicator

⑥ Operation mode (e.g. Cool, Heat)

Press 



⑥ Set temperature

Press 

(When the cursor is not visible.)

Water temperature

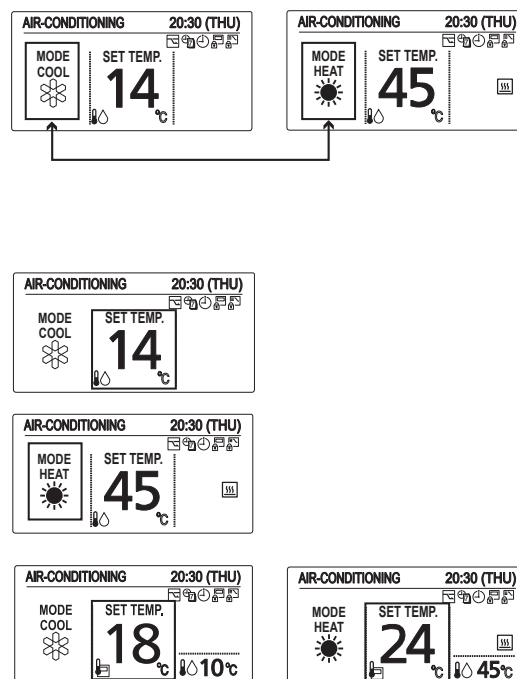
Cool : 5°C to 20°C

Heat (With no use of Heating Curve) : 25°C to 45°C

Room temperature (With use of remote controller thermo)

Cool : 18°C to 30°C

Heat : 16°C to 30°C



NOTE

- Group control function cannot be used for the Air-to-Water unit.

Be sure to confirm the individual remote controller connection is used for each Air-to-Water unit.

- If your heating appliance is a radiator or floor heating, dew may be condensed on the appliance during defrosting operation.

In that case, turn on the Air-to-Water in heating mode to prevent condensation.

Operation mechanism

Heating Performance

Since this Air-to-Water utilizes outside air for heating, its heating performance deteriorates as outdoor temperature decreases. (Due to heat pump system)

Defrosting

This appliance may start defrosting operation to melt frost form in the outdoor unit during long hour heating operation mode.

The indoor unit including Air-to-Water will stop for about 1 to 3 minutes at this time.

Heating Standby

The remote controller shows “ ” (Heating standby) on the display in the following mode and heating capacity will be limited.

- When operation started
- When Thermostat activated
- When defrosting

When Heating Operation Started

(Only 3WAY VRF)

When changed to heating mode from stopped or cooling operation mode, the unit does not work for about 3 minutes for the sake of self-protection.

It may take about 5 to 10 minutes until the hot water is delivered after starting the heating operation.

Oil Recovery

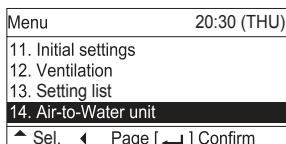
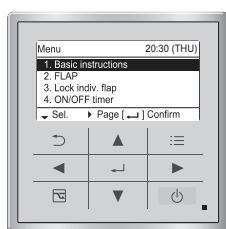
The water pump may run at a slow speed in order to recover the oil in the system every 1 to 3 hours during cooling or heating operation.

The unit will automatically resume the original operation after about 5 to 10 minutes.

Should the power failure occurs while the unit is running

When the unit automatically resumes operation after temporary power failure, it uses the same settings before the power was cut off.

9.3.10 Function air to water unit



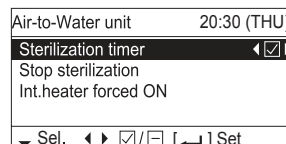
1 Display the menu screen.



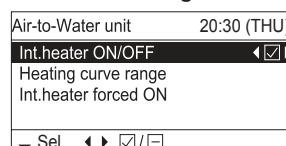
2 Select [14. Air-to-Water unit].



• TANK mode



• Air-Conditioning mode



3 Select the item to set.

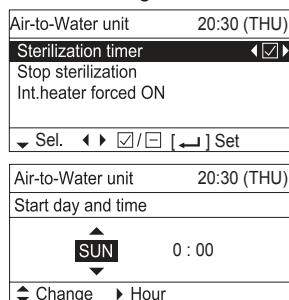


TANK mode

☞ Sterilization timer

To prevent propagation of legionella bacterium in the tank, it is able to perform sterilization process once a week. While the sterilization process is performed, ☼ icon appears.

• Timer Setting

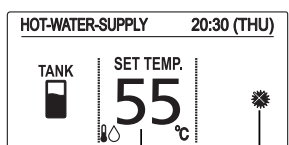


If "Sterilization timer" is enabled ☒, the screen is switched to set the day of the week and time for sterilization process.

Set the day of the week and time for sterilization process.

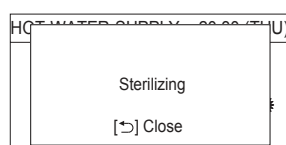
Select the item by button and decide by button.

• Under Sterilization process



Under Sterilization

Target water out temperature for sterilization (If the set temperature is higher than temperature for sterilization, the set temperature is displayed.)



*Under sterilization, the set temperature cannot be changed.

* It takes a maximum of 4 hours to finish the sterilization process.

Caution: Be careful. Hot water may lead to a burn injury.

* It is recommended to set the time not to overlap with other timer such as weekly timer.

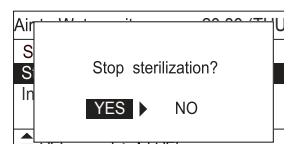
* In the centralized controller, the set temperature of normal operation is displayed even during sterilization.

Although it is able to change the set temperature or turn ON/OFF by the centralized controller, sterilization process will continue.

If the Air-to-Water unit is stopped by the centralized controller during sterilization process, the Air-to-Water unit will be stopped after sterilization process.

☞ Stop sterilization

Under unavoidable circumstances, this function is enabled when the Air-to-Water unit must be stopped. The display on the right appears.



Int. heater forced ON

The internal heater of Air-to-Water unit can be turned ON manually.

When the internal heater is turned ON manually,  icon appears.






*** This feature is for emergency operation when the outdoor unit has trouble.**

Contact to service technician definitely before setting this function.

*** Password will be required before setting this function.**

Press ,  button and select "Set" for forced ON.


Press  button after checking the confirmation screen.

Air-to-Water unit	20:30 (THU)
Int.heater forced ON	
  	
 Change  Confirm	

Air-Conditioning mode

Int. heater ON/OFF

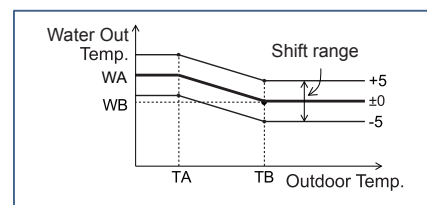
The internal heater of Air-to-Water unit can be disabled.

When the internal heater is disabled,  icon appears.

Press   button to switch ON/OFF.

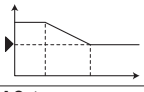


Heating curve range



It is able to select Heating curve range to automatically adjust the water out temperature with the outdoor temperature.



AIR-CONDITIONING	20:30 (THU)
MODE HEAT	SET TEMP. +0 °C

The initial setting is "±0" as the set temperature. Water out temperature can be changed (shift) from '-5' to '+5' as the set temperature.






Heating curve range	20:30 (THU)
WA 45 °C	
WB 25 °C	
TA -5 °C	
TB 20 °C	
 Sel.  Set	

The Shape of Heating curve range is able to change at menu screen. Select the temperature to change by ,  button.

Press  button, it is able to change the selected temperature.

Temperature range

WA	25~45°C
WB	25~45°C
TA	-20~15°C
TB	15~25°C

Heating curve range	20:30 (THU)
WB: Water out temp. (Lo)	
  	
 Change  Confirm	

The centralized controller displays the target water out temperature. It is only displayed information. It is not able to change the target water out temperature by the centralized controller.

Int. heater forced ON

The internal heater of Air-to-Water unit can be turned ON manually.

When the internal heater is turned ON manually,  icon appears.






*** This feature is for emergency operation when the outdoor unit has trouble.**

Contact to service technician definitely before setting this function.

*** Password will be required before setting this function.**

Press ,  button and select "Set" for forced ON.

Press  button after checking the confirmation screen.

Air-to-Water unit	20:30 (THU)
Int.heater forced ON	
  	
 Change  Confirm	

9.3.11 Electric heater control

The internal heater will be ON when heating capacity is not enough, especially low ambient temperature.

Internal heater ON condition (auxiliary heat source)

- 10 minutes from the start of operation, it is not energized.

(For the first time only, 20 minutes from the start of operation, and after 10 minutes from water pump ON)

- 20 minutes from the last heater energization is not energized.

(However, it is changed to 5 minutes after the special operations such as defrosting and oil recovery)

- Outdoor air temperature < Outdoor temperature using internal heater (0°C)
- Water outlet temperature < Setting water temperature – Internal Heater ON differential (10°C)

Internal heater ON condition (for DHW mode operation)

- It has passed 30 minutes of Thermo ON (Heat pump operation priority)
- Water outlet temperature $\geq 43^{\circ}\text{C}$

Sterilization mode

Purpose: To sterilize the water tank by setting the Temperature for sterilization (65°C). Control starts condition:

Tank connection menu is set to YES on the control panel. Sterilization menu is set to YES on the control panel.

Sterilization signal received from the timer by the remote controller.

Control stop condition:

After 4 hours of operation since sterilization function starts.

Tank temperature > Temperature for sterilization – Thermo OFF margin

Control content:

Once the sterilization function is enabled, set the target sterilization set temperature. Target tank temperature will set back to the normal tank set temperature.

9.3.12 Monitoring operations (Sensor info) ECOi

DN	Description	Remarks	
02	Indoor unit intake temp. (TA)	°C	Indoor unit
03	Indoor unit heat exchanger temp. E1 (E1)	°C	
04	—		
05	Indoor unit heat exchanger temp. E3	°C	
06	Discharge air temp. (BL)	°C	
07	Discharge air temp. setting	°C	
08	Indoor unit MOV pulse (MOV)	STEP	
09	Discharge temp. (DISCH)	°C	Outdoor unit
0C	High-pressure sensor temp.	°C	
0d	Heat exchanger gas (EXG)	°C	
0E	Heat exchanger liquid (EXL)	°C	
11	Outdoor air temp. (TO)	°C	
12	Inverter secondary current	A	
13	Inverter primary current (L2 phase) (Three phase only)	A	
15	MOV pulse 1 (MOV1)	STEP	
16	—		
17	—		
19	Inverter actual operating frequency	Hz	
1A	Sub cooler (MOV4)	STEP	
1b	Inverter primary current (L1 phase)	A	
1d	Low-pressure sensor temp.	°C	
1E	Suction temp. (SCT)	°C	
21	Inverter primary current (L3 phase) (Three phase only)	A	
24	Temp. sensor at refrigerant gas outlet of dual-tube temp. (SCG)	°C	
26	High-pressure	MPa	
27	Low-pressure	MPa	

**Note**

It takes about 10 seconds until outdoor unit data appears or changes on the display.

10 Error Codes ECOi

Error group	Symptoms	Possible causes/Remedy	Wired remote controller display
Thermistor fault	Outdoor thermistor is either open or damaged	Compressor 1 discharge temperature sensor has failure. (DISCH1) Compressor 2 discharge temperature sensor has failure. (DISCH2) Outdoor unit heat exchanger 1 gas temperature sensor has failure. (EXG1) Outdoor unit heat exchanger 1 liquid temperature sensor has failure. (EXL1) Outdoor temperature sensor has failure. (TO)	F04 F05 F06 F07 F08
	Outdoor thermistor is either open or damaged.	Compressor inlet temperature sensor has failure. (SCT) Subcooling heat exchanger temperature sensor has failure. (SCG) High pressure sensor has failure. (HPS) Low pressure sensor has failure. (LPS) Outdoor unit heat exchanger 2 gas temperature sensor has failure. (EXG2) Outdoor unit heat exchanger 2 liquid temperature sensor has failure. (EXL2)	F12 F14 F16 F17 F23 F24
	Protective device in indoor unit is activated.	Thermal protector for Indoor unit fan motor is activated. Connection to the panel of indoor unit is not good. Float switch of drain pan safety is activated. Drain pump failure or locked motor. (Indoor unit) Cooling water freeze (Air-to-Water) Indoor unit fan inverter protection control is activated. O2 sensor has activated.	<<P01>> <<P09>> <<P10>> <<P11>> <<P12>> P14
	Protective device in outdoor unit is activated.	Compressor 1 discharge temperature is too high. High pressure switch is activated. Compressor 1 AC power supply has abnormal. Compressor 2 AC power supply has abnormal. Compressor 1 secondary current is overcurrent. Compressor 2 discharge temperature is too high. Compressor 2 start failure. Compressor 2 is missing phase. Outdoor unit fan motor has failure. Compressor 2 secondary current is overcurrent. Compressor 1 start failure. Compressor 1 is missing phase.	P03 P04 P05 P15 P16 P17 P19 P22 P26 P29
	Indoor unit communication error of group control wiring.	Other indoor unit in group control has an alarm.	<P31>
EEPROM on indoor unit PCB failure.			F29
EEPROM on outdoor unit PCB has failure.			F31
Protective device for compressor is activated	Protective device for compressor No. 1 is activated.	Compressor 1 primary current is overcurrent. Compressor 1 current sensor is disconnected or shorted. Compressor 1 discharge temperature sensor is disconnected, shorted or misplaced. (DISCH1)	H01 H03 H05
	Protective device for compressor No. 2 is activated.	Compressor 2 primary current is overcurrent. Compressor 2 current sensor is disconnected or shorted. Compressor 2 discharge temperature sensor is disconnected, shorted or misplaced. (DISCH2) Low pressure sensor value is too low.	H11 H13 H15 H06
	Oil sensor fault. (Disconnection, etc.)	Compressor 1 oil temperature sensor has failure. (OIL1) Compressor 2 oil temperature sensor has failure. (OIL2)	H08 H27
	Abnormal device function	Compressor 2 HIC has failure. HIC is overcurrent or overheat. VDC is undervoltage or overvoltage. Compressor 1 HIC has failure. HIC is overcurrent or overheat. VDC is undervoltage or overvoltage.	H21 H31
	Alarm indication: Does not affect the operation of other indoor units.		<< >>
	Alarm indication: In some cases may affect the operation of other indoor units.		< >
	Unit Interlock EXCT Error		P23

Alarm codes for indoor/outdoor units ECOi R410A

Error group	Symptoms	Possible causes/Remedy	Wired remote controller display
Activation of protective device	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) Outdoor system address, indoor unit address, or indoor unit address independent/main/sub unit set-ting has not been made. (Auto address is not completed.) Error in transmitting serial communication signal.	<E01> <E02>
	Indoor unit is detecting error signal from remote controller and system controller.		<<E03>>
	Indoor unit is detecting error signal from outdoor unit.	<ul style="list-style-type: none"> • Error in receiving serial communication signal. • When turning on the power supply, the number of connected indoor units does not correspond to the number set. (Except R.C. address is "0.") • Group wiring failure of indoor units in the refrigerant system (oc-curring when remote controller is operated immediately after auto address setting) 	E04
	Outdoor unit is detecting error signal from indoor unit.	<ul style="list-style-type: none"> • Error in receiving serial communication signal. • There is an indoor unit which does not send signals when the power is ON. 	<E06>
	Improper setting	Indoor unit address setting is duplicated. Duplicated remote controller "main" setting.	E08 <<E09>>
	Improper setting	Auto address setting start is prohibited. AP pin (CN24) was short-circuited at time when auto address setting was started.	E12
	Indoor unit communication error of group control wiring	Error of main indoor unit in receiving serial communication signal from sub indoor units.	E18
	During auto address setting, number of connected units does not correspond to number set.	Number of connected indoor units is less than the number set. Number of connected indoor units is more than the number set. No indoor unit is connected during auto address setting. Main outdoor unit is detecting error signal from sub outdoor unit. Duplicated outdoor unit address. Mismatch in "No. of outdoor units" setting. Error of sub outdoor unit in receiving serial communication signal from main outdoor unit. Outdoor unit serial communications failure. Outdoor unit serial communications failure.	E15 E16 E20 E24 E25 E26 E29 E30 E31
	Improper setting	Connected indoor unit is not a multi unit. Duplication of main indoor unit address setting in group control. Duplicated indoor unit priority (priority indoor unit). Duplicated indoor unit priority (non-priority indoor unit) and outdoor unit. Group control wiring is connected to individual control indoor unit. Indoor unit address is not set. Capacity code of indoor unit is not set. Duplication of outdoor R.C. address setting. Duplication of outdoor R.C. address setting. Mismatch of outdoor unit type. 4-way valve operation failure.	<<L02>> <L03> L05 L06 L07 L08 <<L09>> L04 L10 L17 L18
Thermistor fault	Indoor unit	Indoor coil temp. sensor (E1) Indoor coil temp. sensor (E3) Indoor suction air (room) temp. sensor (TA) Indoor discharge air temp. sensor (BL)	<<F01>> <<F03>> <<F10>> <<F11>>

Alarm codes for indoor/outdoor units ECOi R410A

Error group	Symptoms	Possible causes/Remedy	Wired remote controller display
Thermistor fault	Outdoor unit	Comp. No. 1 discharge gas temp. sensor (DISCH1) Comp. No. 2 discharge gas temp. sensor (DISCH2) Outdoor No. 1 coil gas temp. sensor (EXG1) Outdoor air temp. sensor (TO) Outdoor No. 1 coil liquid temp. sensor (EXL1)	F04 F05 F06 F07 F08
	Outdoor thermistor is either open or damaged.	Compressor intake temp. sensor (SCT) High pressure sensor failure. High pressure trouble. Low-pressure sensor failure Outdoor No. 2 coil liquid temp. sensor (EXL2) Outdoor No. 2 coil gas temp. sensor (EXG2) Temp. sensor at refrigerant gas outlet of dual-tube (SCG)	F12 F14 F16 F17 F23 F24
Activation of protective device	Protective device in indoor unit is activated.	Thermal protector for Indoor unit fan motor is activated. Improper wiring connections of ceiling panel. Float switch is activated. Faulty drain pump. Drain pump locked. Operation of protective function of fan inverter. O2 sensor (detects low oxygen level) activated.	<<P01>> <<P09>> <<P10>> <<P11>> <<P12>> P14
	Protective device in outdoor unit is activated.	Discharge temperature error. (Comp. No. 1) High pressure switch is activated. Open phase.DC voltage charge failure (Comp. No. 1) Open phase.DC voltage charge failure (Comp. No. 2) Compressor No. 1 over secondary overcurrent. Discharge temperature error. (Comp. No. 2) Inverter for compressor No. 2 is unusual. High load alarm Outdoor unit fan motor 1 is unusual. Outdoor unit fan motor 2 is unusual. Compressor No. 2 over secondary overcurrent. Inverter for compressor No. 1 is unusual.	P03 P04 P05 P15 P16 P17 P19 P20 P22 P24 P26 P29
	Indoor unit communication error of group control wiring.	When alarm message in other indoor units occurs in case of group control, unalarmed state of indoor units are inoperative.	<P31>
EEPROM on indoor unit PCB failure.			F29
EEPROM on the main or sub outdoor unit PCB has failed.			F31
Protective device for compressor is activated	Protective device for compressor No. 1 is activated.	Compressor No. 1 current trouble (overcurrent) Compressor No. 1 CT sensor disconnected Compressor No. 1 discharge temp. sensor disconnected	H01 H03 H05
	Protective device for compressor No. 2 is activated.	Compressor No. 2 current trouble (overcurrent) Compressor No. 2 CT sensor disconnected Compressor No. 2 discharge temp. sensor disconnected Abnormal decrease of low-pressure Low oil alarm	H11 H13 H15 H06 H07
	Oil sensor fault. (Disconnection, etc.)	Compressor No. 1 oil sensor Compressor No. 2 oil sensor	H08 H27
	Abnormal device function	Compressor No. 2 HIC trip (HIC current or temperature). Compressor No. 1 HIC trip (HIC current or temperature).	H21 H31
	Alarm indication: Does not affect the operation of other indoor units.		<< >>
	Alarm indication: In some cases may affect the operation of other indoor units.		< >
	Unit Interlock EXCT Error		P23

Alarm codes for ECOi Smart indoor unit

Alarm code	E03
Alarm meaning	Remote controller communication error
Alarm conditions	(a and b) or (c and d) a: For 3 minutes without receiving from the remote controller b: For 15 minutes without receiving from system c: For 10 minutes without receiving from the remote controller d: Tank mode
Probable Cause	No communication from central controller or wired remote controller Indoor unit PCB failure or malfunction
Check	Check the wiring of controller In case that Air-to-Water module is set to Tank mode, wired remote controller must be connected.

Alarm code	E04
Alarm meaning	Abnormal indoor/outdoor communication error
Alarm conditions	No communication from the outdoor unit for 3 minutes.
Probable Cause	Trouble of power supply of outdoor unit Wiring trouble Wrong setting of NO. of IU on PCB of outdoor unit Indoor unit PCB failure or malfunction
Check	Check the power of the outdoor units and check communication wiring.

Alarm code	F01
Alarm meaning	Abnormal refrigerant sensor 1 (E1)
Alarm conditions	A/D step is 10 steps or less (short circuit). A/D step is 1014 steps or more (open circuit).
Probable Cause	Faulty connector connection Faulty sensor Faulty indoor unit PCB
Check	Measure the sensor resistance. Check that the sensor is operating normally. Use a remote controller monitor or PC monitor to check the temperature that is recognized by the microcomputer.

Alarm code	F02
Alarm meaning	Abnormal water outlet sensor 1 (E2)
Alarm conditions	A/D step is 10 steps or less (short circuit). A/D step is 1014 steps or more (open circuit).
Probable Cause	Faulty connector connection Faulty sensor Faulty indoor unit PCB
Check	Measure the sensor resistance. Check that the sensor is operating normally. Use a remote controller monitor or PC monitor to check the temperature that is recognized by the microcomputer.

Alarm code	F03
Alarm meaning	Abnormal water outlet sensor 2 (E3)
Alarm conditions	A/D step is 10 steps or less (short circuit). A/D step is 1014 steps or more (open circuit).
Probable Cause	Faulty connector connection Faulty sensor Faulty indoor unit PCB
Check	Measure the sensor resistance. Check that the sensor is operating normally. Use a remote controller monitor or PC monitor to check the temperature that is recognized by the microcomputer.

Alarm codes for ECOi Smart indoor unit

Alarm code	F10
Alarm meaning	Abnormal water outlet sensor (TA)
Alarm conditions	A/D step is 10 steps or less (short circuit). A/D step is 1014 steps or more (open circuit).
Probable Cause	Faulty connector connection Faulty sensor Faulty indoor unit PCB
Check	Measure the sensor resistance. Check that the sensor is operating normally. Use a remote controller monitor or PC monitor to check the temperature that is recognized by the microcomputer.

Alarm code	F11
Alarm meaning	Abnormal water outlet sensor 2 (BL)
Alarm conditions	A/D step is 10 steps or less (short circuit). A/D step is 1014 steps or more (open circuit).
Probable Cause	Faulty connector connection Faulty sensor Faulty indoor unit PCB
Check	Measure the sensor resistance. Check that the sensor is operating normally. Use a remote controller monitor or PC monitor to check the temperature that is recognized by the microcomputer.

Alarm code	L13
Alarm meaning	Mismatched indoor unit
Alarm conditions	Software of outdoor unit is not corresponding to Air-to-Water module.
Probable Cause	Software of 3WAY system (MF2, MF3) is old version. Outdoor unit is not 3WAY system (MF2, MF3).
Check	In case of 3WAY system (MF2, MF3), perform the version-up of software.

Alarm code	L16
Alarm meaning	Test run for water circuit is not finished.
Alarm conditions	Test run for water circuit is not finished.
Probable Cause	Air purge mode and Pump speed setting is not performed or not finished.
Check	Perform both Air purge mode and Pump speed setting.

Alarm code	L25
Alarm meaning	Unmatched remote controller
Alarm conditions	Unmatched remote controller is connected.
Probable Cause	Unmatched remote controller is connected.
Check	Check the remote controller. CZ-RTC5 or after version is corresponding.

Alarm code	P07
Alarm meaning	Abnormal Internal heater overload.
Alarm conditions	Overload protector of internal heater is active.
Probable Cause	Faulty power supply connector connection. Faulty connector connection. Faulty overload protector of internal heater (OLP). Faulty indoor unit PCB(main). Faulty Heater relay Faulty Water outlet sensor 2
Check	Check the failure of magnetic relay of internal heater. Welded or not. Check the external device state. If water temperature is reach to about 70°C, overload protector will be active. * After solving the problem, be sure to reset the alarm by remote controller. (Refer to Installation instructions) (No display icon of internal heater abnormal)

Alarm codes for ECOi Smart indoor unit

Alarm code	P09
Alarm meaning	Abnormal water flow
Alarm conditions	<p>OFF state of failure</p> <p>Conditions 1: a and {(b and c) and d} and e</p> <p>a: Water pump runs for 10 minutes or more. b: Input from the flow switch is OPEN.</p> <p>c: Water pump tap is "H" or "HH".</p> <p>d: Continues more than 1 minute</p> <p>e: Not under air purge mode.</p> <p>ON state of failure</p> <p>Conditions 2: a and b and c</p> <p>a: Flow switch detects the water flow for 60 seconds without water flow. (Flow switch is always "ON" position)</p> <p>b: External pump setting is not synchronized with internal pump.</p> <p>c: After 5 minutes passed since Water pump OFF</p>
Probable Cause	<p>Faulty water flow switch Water leak in system</p> <p>Faulty connector connection Faulty water pump</p> <p>Faulty indoor unit PCB (main)</p>
Check	<p>Check the probable cause above.</p> <p>If external pump runs, though internal pump is off, stop the external pump. Be sure to synchronize external pump with internal pump.</p>

Alarm code	P11
Alarm meaning	Cooling water freeze (Air-to-Water)
Alarm conditions	<p>This alarm occurs when the water tube freezed.</p> <p>The temperature of heat exchanger is 0°C or lower.</p> <p>The water temperature is 5°C or lower.</p>
Probable Cause	<p>(1) The amount of circulating water is insufficient.</p> <p>(2) Water application capacity is insufficient.</p> <p>(3) Each sensor failure or wiring connection failure.</p> <p>(4) Indoor unit control PCB is failure.</p>
Check	<p>(1) Check the circulation water pump is working normally.</p> <p>(2) Check the water valve is not closed.</p> <p>(3) Check the water pipe is not clogged.</p> <p>(4) Check the water application setting is appropriated.</p> <p>(5) Sensor failure and indoor unit control PCB failure.</p> <p>Check: • Check under the section 6 of SM830269 "5. Inspection and Characteristics of Parts (4) Indoor suction air temp. sensor, (5) Indoor coil temp. sensor".</p> <p>Replace the sensor with another sensor.</p> <p>Check the wiring connection of indoor unit PCB.</p>
Correction	<p>(1) Replace the water pump.</p> <p>(2) Change to water application setting.</p> <p>(3) Replace the sensor.</p> <p>(4) Replace the indoor unit control PCB.</p>

11 Check Before Requiring Services

11.1 Factory pre-installed Back-up heater


Trouble shooting

Before you contact your dealer, check following points:

Symptom	Cause	Remedy
Air-to-Water unit does not run at all although power is turned on.	Power failure or after power failure	Press ON/OFF operation button on remote controller again.
	Operation button is turned off.	Switch on breaker if power is turned off.
	Fuse blow out.	If breaker has been tripped, consult your dealer without turning it on.
	Improper temperature settings.	If fuse is blown out, consult your dealer.

If your Air-to-Water unit still does not work properly although you checked the points as described above, first stop the operation and turn off the power switch. Then contact your dealer and report the serial number and symptom.

Never repair your Air-to-Water unit by yourself since it is very dangerous for you to do so.

You also report if the inspection mark  and the letters E, F, H, L, P in combination with the numbers appear on the LCD of the remote control unit.

Should the power fail while the unit is running

If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was interrupted.

■ VP750LDHW, VP1000LDHW

The three above mentioned models are delivered with an additional electric heater as standard. The heating is available according to the requirements of the customer.

For example as:

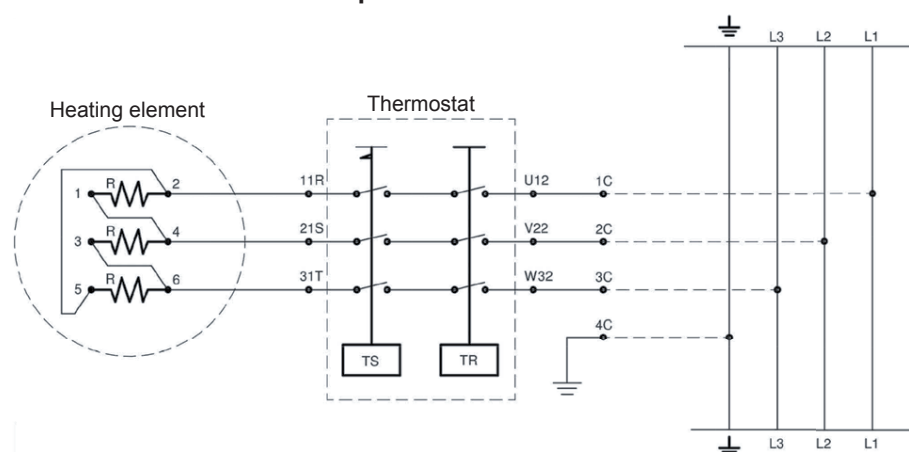
Anti-legionella heating, Additional heating, or both.

Important

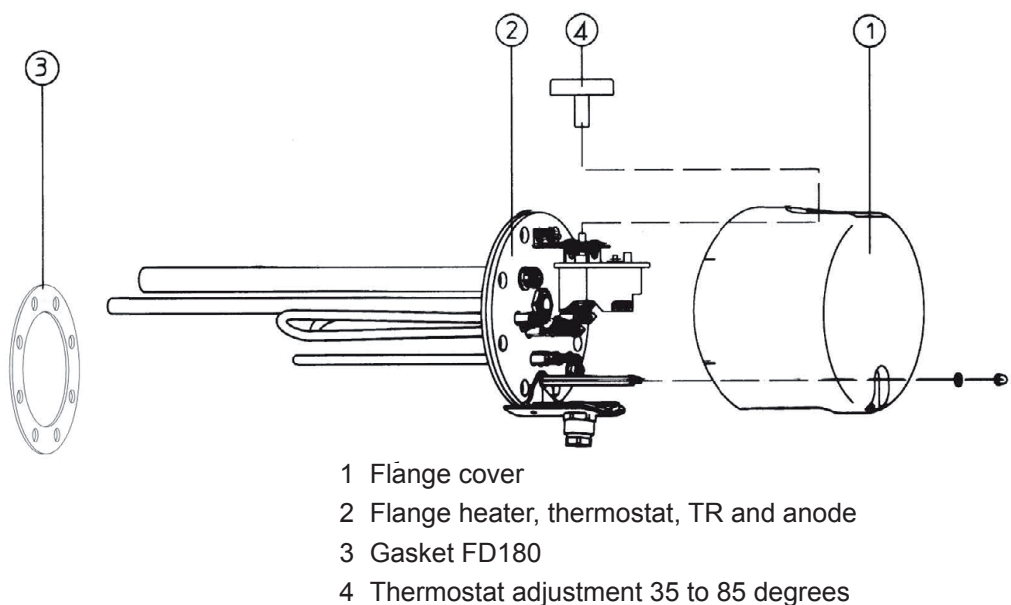
The control of the electric heating must be carried out by the customer.

Heater for	Voltage	Capacity
VP1000LDHW	400 V (L1/L2/L3/N/PE/50Hz)	6 kW
VP750LDHW	400 V (L1/L2/L3/N/PE/50Hz)	6 kW

Electrical connection three phase 400 V

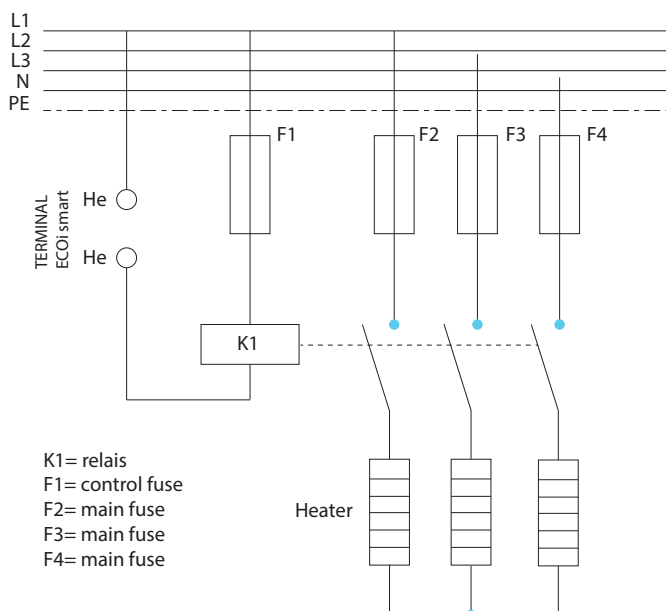


Symbol	Description
R	Electric heating element
1, 2, 3, 4, 5, 6	Heating elements contacts
11R, 21S, 31T	Thermostat-out contacts
TS	Thermostat safety device
TR	Contact operated
U12, V22, W32	Thermostat-in contacts
1C, 2C, 3C, 4C	Supply contacts
L1, L2	Electric line connection terminals
⊕	Ground



11.2 Electrical heater schemes for DHW heater and legionella

Example with 3 Phase heater – Timer controlled



- All components “black box” and wiring must be provided by the customer.
- The synchronization of the timer (remote control ECOi smart) is absolutely necessary.

12 Booster Heater for VP380L, VP380/440L

12.1 Models VP380L and VP380/440L

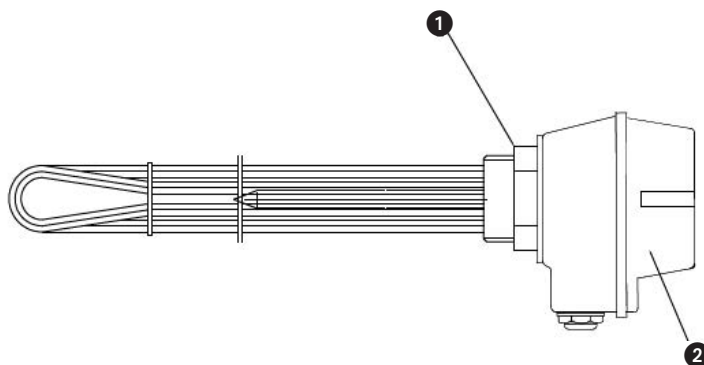
For the above mentioned heating or cooling tank, the electrical auxiliary heater is an optional component and must be ordered separately on request.

It can be useful, for example, when particularly low outside temperatures are expected or to compensate for maintenance interruptions

Heater for	Voltage	Capacity
VP380L/VP380/440L	400 V (L1/L2/L3/N/PE/50Hz)	6 kW

12.2 Installation of the heating unit

How to mount the heating unit

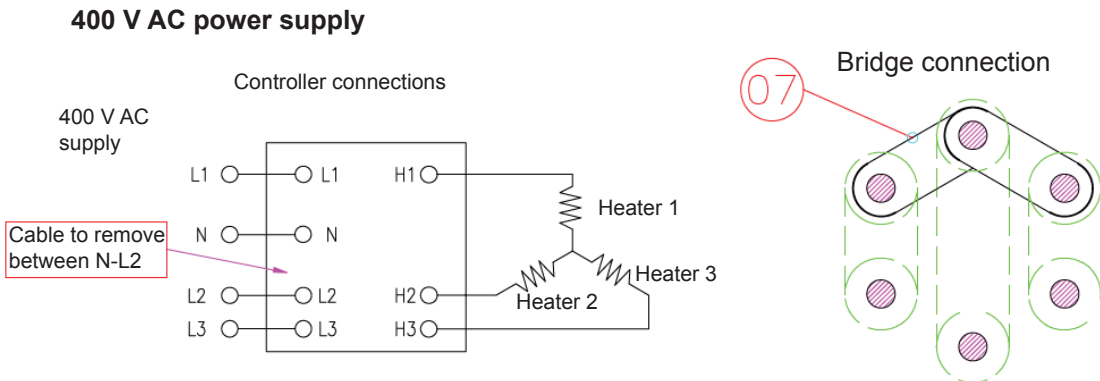


Proceed as follows:

1. Screw the heating unit (①) into the unit seat (ensure the appropriate tightness of the connection)
2. Unscrew the upper part of the box (②)
3. Connect the supplying cables to appropriate power connections situated in the upper part of the box (②) in accordance with the diagram for connecting three or one phase heaters (refer to sec. [12.3 „Electrical connection“ auf Seite 92](#)).
4. Assembly the upper part of the box with the rest of the heating unit.

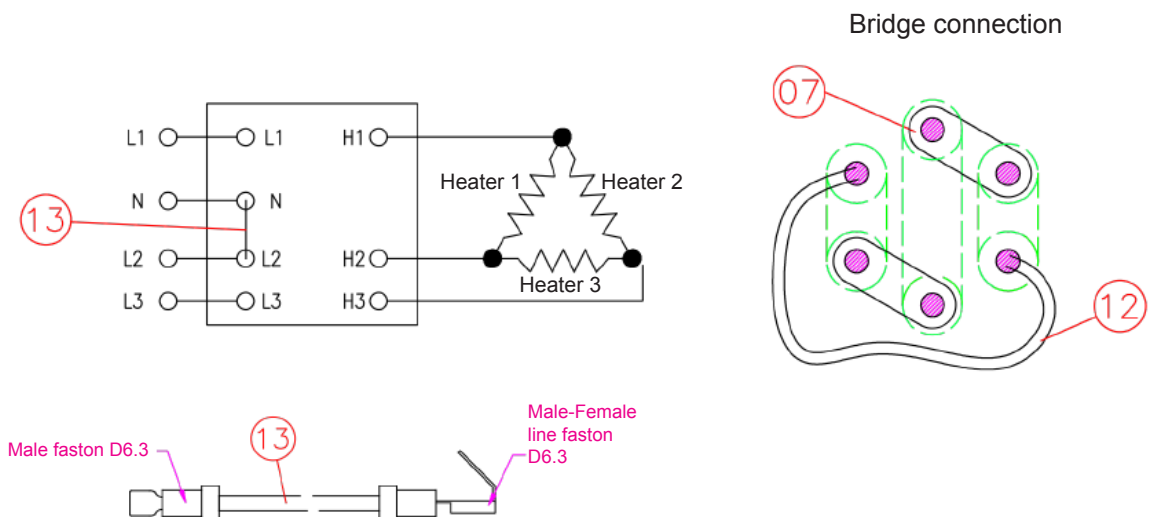
12.3 Electrical connection

12.3.1 Connection for 3 phases (Star)

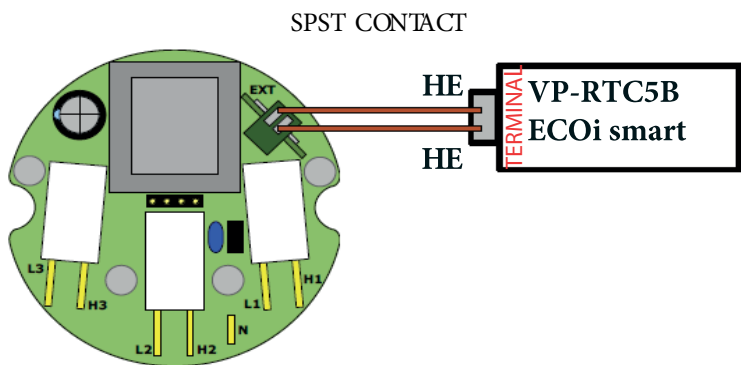


12.3.2 Connection for 3 phases (Triangle)

230 V 3 phase AC power supply



12.3.3 Connection for VP-RTC5B ECO Smart controlling heater on /off



EXTERNAL HEATING

The controller is equipped also with the function of external heating. This function enables to take over control the heater controller operation by ECOi smart controller. The additional input of the external control (EXT) is placed on the operating board of TR-01 controller.

If the function of the external control is not used, the jumper has to be connected to the terminals of EXT input.

Be aware not to connect the supply cables ~230V to EXT input! A bad connection may permanently damage the microprocessor unit! The VP-RTC5B ECOi smart controller has include voltage free output HE-HE on the terminal board .

When there is no heating demand for heater a symbol EOn appears in the heater display.

12.3.4 Check before requiring services


Factory pre-installed backup heater troubleshooting

Before you contact your dealer, check following points:

Symptom	Cause	Remedy
Air-to-Water unit does not run at all although power is turned on.	Power failure or after power failure Operation button is turned off. Fuse blow out. Improper temperature settings.	Press ON/OFF operation button on remote controller again. Switch on breaker if power is turned off. If breaker has been tripped, consult your dealer without turning it on. If fuse is blown out, consult your dealer.

If your Air-to-Water unit still does not work properly although you checked the points as described above, first stop the operation and turn off the power switch. Then contact your dealer and report the serial number and symptom.

Never repair your Air-to-Water unit by yourself since it is very dangerous for you to do so.

You also report if the inspection mark  and the letters E, F, H, L, P in combination with the numbers appear on the LCD of the remote control unit.

Should the power fail while the unit is running

If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was interrupted

12.4 Start-up and service

12.4.1 Operation keys and displays

The heater and protecting box equipped with the temperature controller is a simple unit serving to control the heating process. The unit controls the heater or set of the electric heaters which are supplied from the power supply 230 V AC (1or 3 phase) or 400 V AC (3 phase).


The appearance and description of control push-buttons and information LEDs are shown below.



Number	Name	Description
1	Alarm-LED diode	LED diode flashes, when alarm status is detected.
2	Heating-LED diode	LED diode lights during heating. For 3-phase unit diode flashes 1°C before the preset temperature.
3	“-“ push button	Reduces the setting value or, if pressed for approximately 3 seconds – changes the status of controller (ON/OFF) (see diagram page 13 for more information).
4	“+“ push button	Increases the setting value or, if pressed for approximately 3 seconds – moves to the menu for hysteresis change (ON/OFF) (see diagram page 13 for more information).
5	LED display	Displays the information on the current temperature, settings, alarms and the status of the controller.

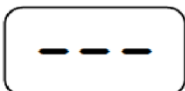


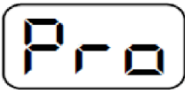


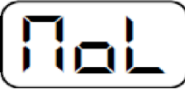


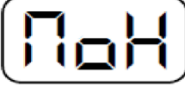


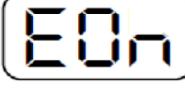
Connecting the TR-01 controller to supply voltage 230V/400V AC (depending on version) causes switching on the informative screen with the current software version and then switching off mode of the controller (OFF).



In this mode controlling of the heating process is switched off – all heaters are disconnected from the power supply. Pressing the push-button  by approximately 3 seconds causes a change of the controller mode into switched on (ON) and displaying the current temperature. From this moment the process of controlling heater/ heaters is switched on.

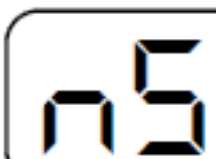
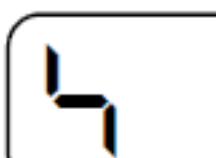


Also, the other information can be seen on the display. All reminders and their description are specified in the following table:

Information displayed	Acoustic alarm	Alarm diode	Description
	Variable 	Flashing 	Lack or failure of the sensor. Alarm switches off automatically after repair of the failure.
	Variable 	Flashing 	Exceeding of the maximum temperature (75 °C, 95 °C, 110 °C) (Protect). Alarm is switched off after manual deleting (entering the off switching mode).
	Interrupted 	Flashing 	Detection of lack of water (No Liquid). Alarm is switched off after manual deleting (entering the off switching mode).
	Interrupted 	Flashing 	Detection of lack of heating (No Heating). Alarm is switched off after manual deleting (entering the off switching mode).
	—	—	Input of the external control EXT opened. Controller stops the function of heating.

The menu is divided into two sections: the operational menu (the unit in the ON mode) and the service menu (unit in the OFF mode).

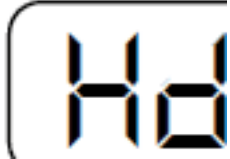
Operational Menu (Controller in ON Mode, see also sec.12.4.3 auf Seite 97)

Function name	Parameter	Setting ranges	Factory setting
Setting of heating temperature		15–160 °C*	50 °C**
Setting of temperature hysteresis		1–10 °C*	°C**

* Depending on the maximum heating temperature programmed in the controller.

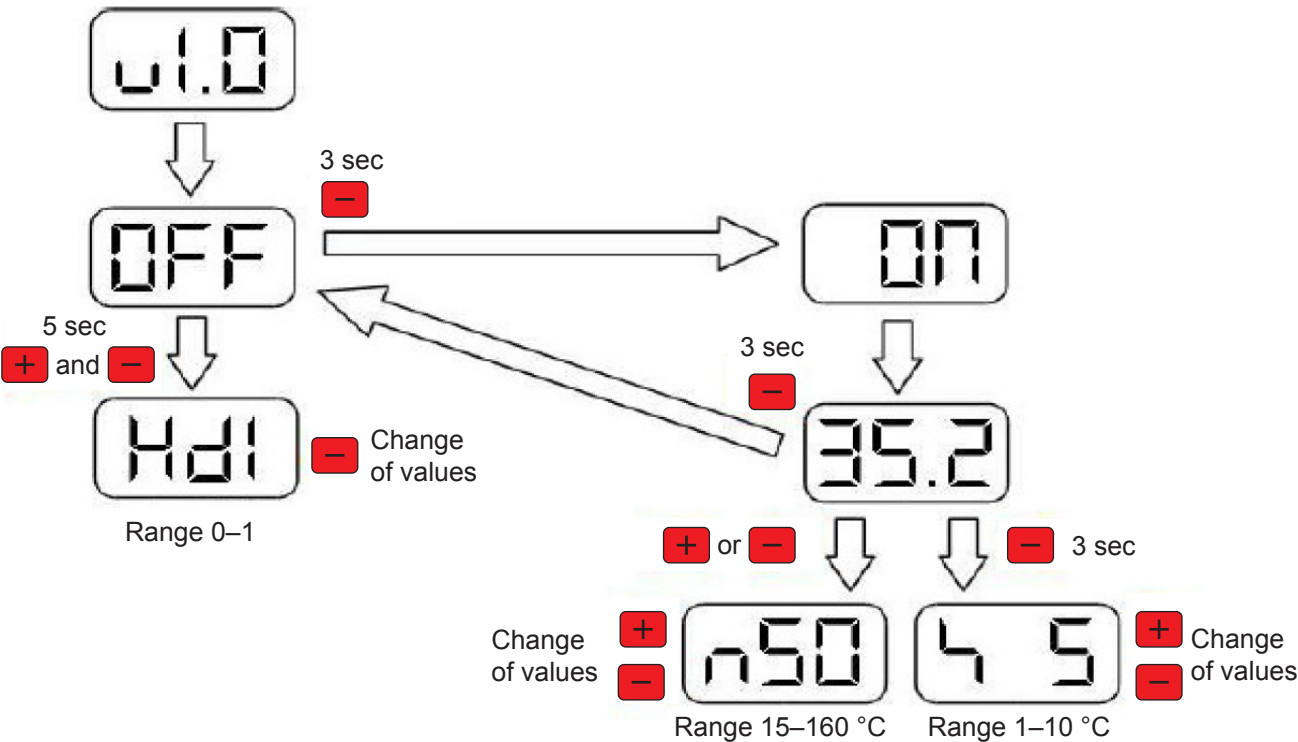
** Factory settings are only the proposals for a setting. All the values depend on the size of heaters, the capacity of the tank, user requirements etc.

Service Menu (Controller in OFF Mode, see also sec. 12.4.4 auf Seite 97)

Function name	Parameter	Setting ranges	Factory setting
Setting of heating detection		0 and 1	1

12.4.2 Menu diagram



The way of moving through the menu is shown in the following diagram.



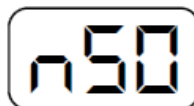
Important

Return from the setting mode is executed automatically after approximately 5 seconds from the last pressing of the push-button.

12.4.3 Operational menu

The operational menu is available when the controller operates in the switched on mode (ON). One pressing of or push-button  during displaying the temperature causes entering the SETTINGS OF TEMPERATURE mode. Keeping the push-button  pressed for 3 seconds while the temperature displaying causes entering the SETTINGS OF HYSTERESIS. Return from the settings to the temperature displaying is automatic after 5 seconds counted from pressing of the push-button. The description of parameters is presented below.

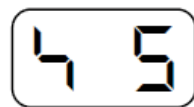
1. Setting of temperature



In this menu, the user sets the temperature to which the tank is to be heated. If 3 heaters are installed in the 3 phase system, one of three heaters will be switched off 0.5 °C before the preset temperature. The LED diode which shows heating starts flashing.






Depending on the application, such way of the heating enables setting the temperature of heating within the range from 15 to 160 °C.

2. Setting of hysteresis



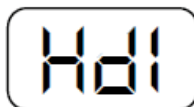
In this menu, the user sets the temperature hysteresis (the value by which the tank temperature has to decrease to switch heating again). Setting of hysteresis is possible within the range from 1 to 10 °C.

12.4.4 Service menu

The service menu is available when the controller operates in the switched off mode (OFF). The push-button  shall be pressed while switching on the unit until the inscription OFF appears. Then, within 2 seconds, the push-buttons  and  shall be pressed one after another. Making these steps causes entering the advanced service mode and appearing the first of parameters – SETTINGS OF HEATING DETECTION. Pressing the push-button  causes change of the value whilst pressing  causes moving to the next parameter. Return from settings to the OFF display is automatic after 5 seconds counted from the last pressing of the button.

The description of the described parameters is shown below:

1. Setting of heating detection



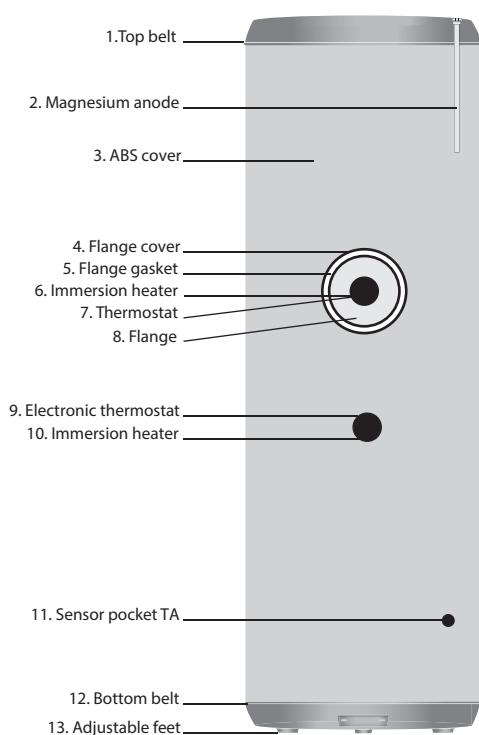
In this menu, the maker sets the status of the function of heating detection (Heating detect). Hd1 – the detection of heating switched on, Hd0 – the detection of heating switched off. Switching off this function causes switching off detection of lack of heating (NoH) and detection of lack of water (NoL). Switching off this function causes also switching off alarms initiated by these events. In case of problems during heating (too frequent switching on alarms from NoH or NoL) this function shall be set to Hd0.

13 Appendix

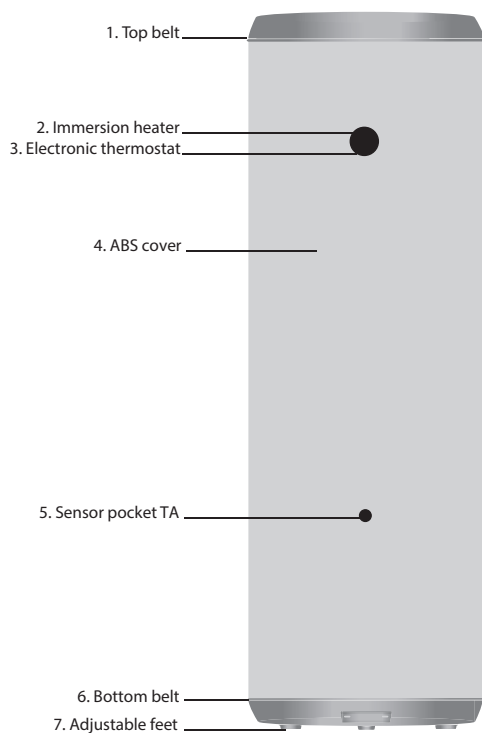
I.1. Spare parts – VP-RTC5B ECO Smart

Spare Parts			
Category	Polar Energi	Supplier	Part Name
	Art. Nr	Product code	
VP-RTC5B ECOi Smart cooling			
CR-MOVDB	371914	Panasonic	Electronic card for ex valve
Single Phase transformer 16w	371917	Panasonic	Transformer for Electronic card for ex valve
VP RTC5B ECOi Smart	80210	CZ-RTC5B	Remote Controller
	80211	ACXA73C0258	Circuit Board Ass'y CB-UXRP71B-P
	80213		Thermistor Ass'y (E1)
	80215		Thermistor Ass'y (E3)
	80216		Thermistor Ass'y (BL)
Optional Expansion Valve			
proHT-EEV16	80250	CV9231760257	Solenoid Control Valve UKV-30D33
Magnetic Coil	80260	CV9231752207	Magnetic Coil (MOV) UKV-U030E
proHT-EEV28	80251	CV6233159836	Tube 5/8 Ass'y (including strainer + MOV)
Magnetic Coil	80261	CV6233011981	Magnetic coil (MOV)

I.2. Spare parts – Tanks

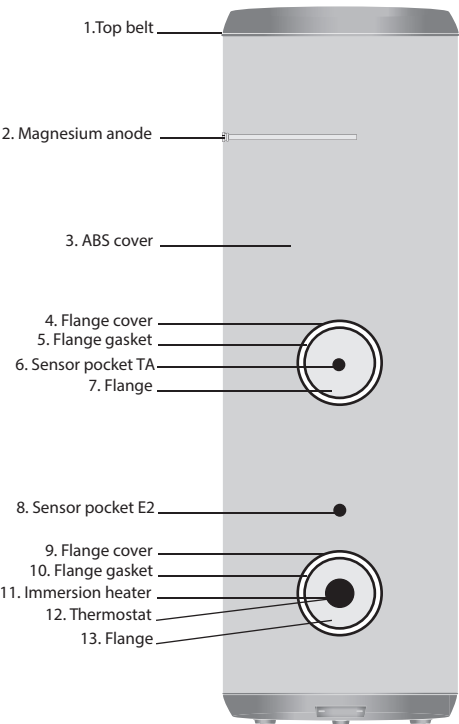


VP 380/440L



VP 380L

A



VP 750L DHW
VP 1000L DHW

Our Ref.	Your Ref.	Item
AM32	50490	Magnesium anode Mod. VP750/VP1000
POZ		½" Brass probe Mod. VP750/VP1000
R18-17MINCOLOY	50300	1,7 kw Incoloy heating element Mod. VP150/170L
R18-60TINCOLOY	50320	6,0 kw Incoloy heating element Mod. VP750/VP1000/VP380/440L
TERMOSTATOREU		Thermostat for heating element Mod. VP150/170L
TERMOSTATORDU		Thermostat for heating element Mod. VP750/VP1000/VP380/440L
IU39&K7E	50200	6 kW heating element with control unit Mod. VP380L/VP150/170L/VP380/440L
K7E	30200	Control unit for 6 kW heating element VP380/VP150/170L/VP380/440L
IU39	40200	6 kW heating element only for Mod. VP380/VP150/170L/VP380/440L
MABSV150170	50400	ABS External jacket for VP150/170L with belts and rosettes
MABSV380440	50410	ABS External jacket for VP380/440L with belts and rosettes
MABSV750	50420	ABS External jacket for VP750 with belts and rosettes
MABSV1000	50430	ABS External jacket for VP1000 with belts and rosettes
MABSV380	50440	ABS External jacket for VP380 with belts and rosettes
SETRS0012		Kit 10 rosette ø½"
SETRS0034		Kit 10 rosette ø¾"
SETRS0100		Kit 10 rosette ø1"
SETRS0114		Kit 10 rosette ø1¼"
SETRS0200		Kit 10 rosette ø2"
TMFCF200		Hatch cap ø 180 Mod. VP750/1000
GG18		120 mm EBDM gasket for all DHW models
K3P		Adjustable feet Mod. VP380/VP380/440L/VP150/170L

I.3. Product fiche: Water heater - VP380/440L, VP750L DHW, VP1000L DHW

Referring to EU Commission Delegated Regulation No. 812/2013

Supplier's name or trademark	Polar Energi AS, Norway			
Supplier's model identifier	VP380/440L	2xVP380/440L	2xVP750LDHW	2xVP1000LDHW
Declared load profile	XXL	XXXL	XXXL	XXXL
Water heating energy efficiency class	A+	Not in the scope of the regulation	Not in the scope of the regulation	Not in the scope of the regulation
Water heating energy efficiency	144%	Not in the scope of the regulation	Not in the scope of the regulation	Not in the scope of the regulation
Annual electricity consumption	1396 kWh	2810 kWh	2799 kWh	2786 kWh
Thermostat temperature setting as placed on the market	50 °C	50 °C	50 °C	50 °C
Sound power indoor/ tank unit LWA	10 db	10 db	10 db	10 db
This appliance is able to work only during off-peak hours	N	N	N	N
Specific precautions when assembled, installed and maintained	See installation manual			
Water heating energy efficiency: colder / warmer climate	118% / 178%	116% / 176%	117% / 177%	119% / 180%
Annual electricity consumption: colder / warmer climate	1812 kWh / 1209 kWh	3635 kWh / 2426 kWh	3624 kWh / 2418 kWh	3618 kWh / 2412 kWh

I.4. Possible combinations of Water tanks and Outdoor units

	Combination 1	Combination 2	Combination 3	Combination 4
Tank unit	VP380/440L	2xVP380/440L	2xVP750LDHW	2xVP1000LDHW
Outdoor unit	U-200PZH2E8	U-18ME2E8	U-10ME2E8	U-10ME2E8

I.5. Product Fiche

R32 (GWP=675) *1

Refrigerant leakage contributes to climate change. Refrigerant with lower global warming potential (GWP) would contribute less to global warming than a refrigerant with higher GWP, if leaked to the atmosphere.

This appliance contains a refrigerant fluid with a GWP equal to 675. This means that if 1 kg of this refrigerant fluid would be leaked to the atmosphere, the impact on global warming would be 675 times higher than 1 kg of CO₂ over a period of 100 years.

Never try to interfere with the refrigerant circuit yourself or disassemble the product yourself and always ask a professional.

R410A (GWP=2088) *2

Refrigerant leakage contributes to climate change. Refrigerant with lower global warming potential (GWP) would contribute less to global warming than a refrigerant with higher GWP, if leaked to the atmosphere.

This appliance contains a refrigerant fluid with a GWP equal to 2088. This means that if 1 kg of this refrigerant fluid would be leaked to the atmosphere, the impact on global warming would be 2088 times higher than 1 kg of CO₂ over a period of 100 years.

Never try to interfere with the refrigerant circuit yourself or disassemble the product yourself and always ask a professional

Referring to EU Commission Delegated Regulation No. 811/2013.



POLARENERGI		WARMER					AVERAGE							COLDER				
Indoor unit	Outdoor unit	P _{rated} kW (35/55°C)	η _s % (35/55°C)	Q _{HE} kWh (35/55°C)	P _{sup} kW	A+++G 35°C	A+++G 55°C	P _{rated} kW (35/55°C)	η _s % (35/55°C)	Q _{HE} kWh (35/55°C)	dB (35/55°C)	dB (35/55°C)	dB (35/55°C)	P _{sup} kW (35/55°C)	P _{rated} kW (35/55°C)	η _s % (35/55°C)	Q _{HE} kWh (35/55°C)	P _{sup} kW
VP380L	U-250PZH2E8	-18	-196%	-4306	-	-	A+++	-19	-165%	-6807	-10	-10	-73	-	-16	-150%	-5783	-
VP150/170L	U-71PZ2E5	-6	-187%	-1341	-	-	A+++	-7	-156%	-2594	-10	-10	-58	-	-4	-141%	-1576	-
VP150/170L	U-100PZ2E5	-10	-185%	-1413	-	-	A+++	-11	-154%	-3914	-10	-10	-64	-	-8	-139%	-2890	-
VP150/170L	U-125PZ2E5	-11	-189%	-1603	-	-	A+++	-12	-158%	-4104	-10	-10	-73	-	-9	-143%	-3080	-
VP380/440L	U-200PZH2E8	-18	-196%	-4306	-	-	A+++	-19	-165%	-6807	-10	-10	-73	-	-16	-150%	-5783	-
2 x VP380L	U-18ME2E8	-48	-187%	-20702	-	-	A+++	-49	-156%	-23203	-10	-10	-77	-	-46	-141%	-22179	-
2 x VP380/440L	U-18ME2E8	-48	-187%	-20702	-	-	A+++	-49	-156%	-23203	-10	-10	-77	-	-46	-141%	-22179	-

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I.6. Information sheet: Heat pump space heaters

Referring to EU Commission Delegated Regulation No. 811/2013

Models:	2 x VP380/440L + U-18ME2E8
Air-to-water heat pump:	yes
Water-to-water heat pump:	no
Brine-to-water heat pump:	no
Low-temperature heat pump:	no
Equipped with a supplementary heater:	yes
Heat pump combination heater:	yes

Average Climate Conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	<i>Prated</i>	49,10	kW	Seasonal space heating energy efficiency	<i>ηs</i>	156	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	<i>Pdh</i>	38,72	kW	Tj = -7 °C	<i>COP</i>	3,29	—
Tj = -2 °C	<i>Pdh</i>	23,76	kW	Tj = -2 °C	<i>COP</i>	4,04	—
Tj = +7 °C	<i>Pdh</i>	18,9	kW	Tj = +7 °C	<i>COP</i>	4,39	—
Tj = +12 °C	<i>Pdh</i>	20,8	kW	Tj = +12 °C	<i>COP</i>	5,07	—
Tj = bivalent temperature	<i>Pdh</i>	44,0	kW	Tj = bivalent temperature	<i>COP</i>	2,36	—
Tj = operation limit temperature	<i>Pdh</i>	44,0	kW	Tj = operating limit temperature	<i>COP</i>	2,36	—
For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	<i>Pdh</i>	na	kW	For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	<i>COP</i>	na	—
Bivalent temperature	<i>TBIV</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>Pcyc</i>	na	kW	Cycling interval efficiency	<i>COPcyc</i>	na	—
Degradation co-efficient	<i>Cdh</i>	0,9	—	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>POFF</i>	0,012	kW	Rated heat output	<i>Psup</i>	na	kW
Thermostat off mode	<i>PTo</i>	0,012	kW	Type of energy output	Electrical		
Standby mode	<i>PSB</i>	0,012	kW				
Crankcase heat mode	<i>PCK</i>	0,01	kW				

Other items

Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	—	24300	m³/h
Sound power level indoors/outdoors	<i>L_{WA}</i>	.../73	db	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	—	na	m³/h
Emissions of nitrogen oxides	<i>NO_x</i>	no	mg/kWh				

I.7. Information sheet: Heat pump space heaters

Referring to EU Commission Delegated Regulation No. 811/2013

Models:	2 x VP380L + U-18ME2E8
Air-to-water heat pump:	yes
Water-to-water heat pump:	no
Brine-to-water heat pump:	no
Low-temperature heat pump:	no
Equipped with a supplementary heater:	yes
Heat pump combination heater:	yes

Average Climate Conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	<i>Prated</i>	49,10	kW	Seasonal space heating energy efficiency	<i>ηs</i>	156	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	<i>Pdh</i>	38,72	kW	Tj = -7 °C	<i>COP</i>	3,29	—
Tj = -2 °C	<i>Pdh</i>	23,76	kW	Tj = -2 °C	<i>COP</i>	4,04	—
Tj = +7 °C	<i>Pdh</i>	18,9	kW	Tj = +7 °C	<i>COP</i>	4,39	—
Tj = +12 °C	<i>Pdh</i>	20,8	kW	Tj = +12 °C	<i>COP</i>	5,07	—
Tj = bivalent temperature	<i>Pdh</i>	44,0	kW	Tj = bivalent temperature	<i>COP</i>	2,36	—
Tj = operation limit temperature	<i>Pdh</i>	44,0	kW	Tj = operating limit temperature	<i>COP</i>	2,36	—
For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	<i>Pdh</i>	na	kW	For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	<i>COP</i>	na	—
Bivalent temperature	<i>TBIV</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>Pcyc</i>	na	kW	Cycling interval efficiency	<i>COPcyc</i>	na	—
Degradation co-efficient	<i>Cdh</i>	0,9	—	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>Poff</i>	0,012	kW	Rated heat output	<i>Psup</i>	na	kW
Thermostat off mode	<i>Pto</i>	0,012	kW	Type of energy output	Electrical		
Standby mode	<i>Psb</i>	0,012	kW				
Crankcase heat mode	<i>Pck</i>	0,01	kW				

Other items

Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	—	24300	m³/h
Sound power level indoors/outdoors	<i>LWA</i>	.../73	db	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	—	na	m³/h
Emissions of nitrogen oxides	<i>NOx</i>	no	mg/kWh				

DECLARATION OF CONFORMITY

Manufacturer's name & address

Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- VP 1000L-DHW
- VP 750L-DHW
- VP 150/170L
- VP 380/440L

to which this declaration relates is in conformity with following directives and requirements:

- EC directive on:
 - Electromagnetic Compatibility (EMC): 2014/30/EU
 - Low voltage Directive (LVD): 2014/35/EU
 - RoHS II 2011/65/EU
 - REACH

The conformity was checked in accordance with the following EN-standards:

ErP Lot2 Commission Regulation (EU) NO 814/2013. Commission delegated regulation (EU) NO 812/2013

Test standard:

IEC 60335-2-21: 2002 (Fifth Edition) (incl. Corr.1: 2007) + A1: 2004 + A2: 2008 used in conjunction with IEC 60335-1: 2001 (Fourth ed.) (incl. Corr.1: 2002) + A1: 2004 + A2: 2006 (incl. Corr. 1: 2006) and/or EN 60335-2-21: 2003 + A1: 2005 + A2: 2008 used in conjunction with EN 60335-1: 2002 + A11: 2004 + A1: 2004 + A12: 2006 + A2: 2006 + A13: 2008 and EN 50366: 2003 + A1: 2006

Safety standard:

EN 60335-2-21:2003 + A1:2005 + A2:2008 in conjunction with EN 60335-1:2002 + A11:2004 + A1:2004 + A12:2006 + A2:2006 + A13:2008

EMF standard:

EN 50366:2003 + A1:200

Signature:

Lars Hansen

Name:

Lars Hansen

Title:

CTO, Polar Energi AS

Place/Date:

Hamnvik, Norway, 30 November 2018

DECLARATION OF CONFORMITY

Manufacturer's name & address

Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- VP 150/170L
- Vp 380/440L
- VP 380L

to which this declaration relates is in conformity with following directives and requirements:

- EC directive on:
 - Electromagnetic Compatibility (EMC): 2014/30/EU
 - Low voltage Directive (LVD): 2014/35/EU
 - RoHS II 2011/65/EU
 - REACH

The conformity was checked in accordance with the following EN-standards:

ErP Lot1 Commission Regulation (EU) NO 813/2013 Commission delegated regulation (EU) NO 811/2013

Test standard:

IEC 60335-2-21: 2002 (Fifth Edition) (incl. Corr.1: 2007) + A1: 2004 + A2: 2008 used in conjunction with IEC 60335-1: 2001 (Fourth ed.) (incl. Corr.1: 2002) + A1: 2004 + A2: 2006 (incl. Corr. 1: 2006) and/or EN 60335-2-21: 2003 + A1: 2005 + A2: 2008 used in conjunction with EN 60335-1: 2002 + A11: 2004 + A1: 2004 + A12: 2006 + A2: 2006 + A13: 2008 and EN 50366: 2003 + A1: 2006

Safety standard:

EN 60335-2-21:2003 + A1:2005 + A2:2008 in conjunction with EN 60335-1:2002 + A11:2004 + A1:2004 + A12:2006 + A2:2006 + A13:2008

EMF standard:

EN 50366:2003 + A1:200

Signature:

Lars Hansen

Name:

Lars Hansen

Title:

CTO, Polar Energi AS

Place/Date:

Hamnvik, Norway, 30 November 2018

DECLARATION OF CONFORMITY

Manufacturer's name & address

Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- VP-RTC5B-PACi
- VP-RTC5B-ECOi Smart

The object of the declaration described above is in conformity with the requirements of the following EU legislation and harmonized standards:

(EU directive number) 2006/95/EC and 2004/108/EC
(EU council recommendation) 1999/519/EC

(Harmonized Standards)

EN60335-1:2012, +A11:2014
EN60335-2-40:2003, +A1:2006, +A2:2009, +A11:2004, +A12:2005, +A13:2012
EN55014-1:2006, +A1:2009, +A2:2001, EN55014-2:1997, +A1:2001, +A2:2008,
EN61000-3-2:2006, +A1, A2:2009, EN6100-3-3:2008 and EN62233:2008

Signature: Lars Hansen
Name: Lars Hansen
Title: CTO, Polar Energi AS
Place/Date: Hamnvik, Norway, 30 November 2018

