Air-to-Water Heat Pump Systems

PAW-VP1000LDHW

PAW-VP750LDHW

PAW-VP500LDHW

PAW-VP200LDHW

PAW-VP380L

Domestic Hot Water System for R410A and R32 Use

Technical Manual

Commercial System Air Conditioner

20191101-1

Air-to-Water Heat Pump Systems

PAW-VP1000LDHW

PAW-VP750LDHW

PAW-VP500LDHW

PAW-VP200LDHW

PAW-VP380L

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Technical Manual

Origin Technical Manual (English)

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CE

Contents

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	PAW-VP1000LDHW	PAW-VP750LDHW	PAW-VP500LDHW	PAW-VP200LDHW
Buffer tank	—	—	PAW-VP380L	—

- R32-Outdoor Units

	Outdoor unit types
PZHE2 type	U-100PZH2E5/8, U-200PZH2E8, U-250PZH2E8

- R410A-Outdoor Units

	Outdoor unit types
ME2 type	—
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).

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.

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.

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.

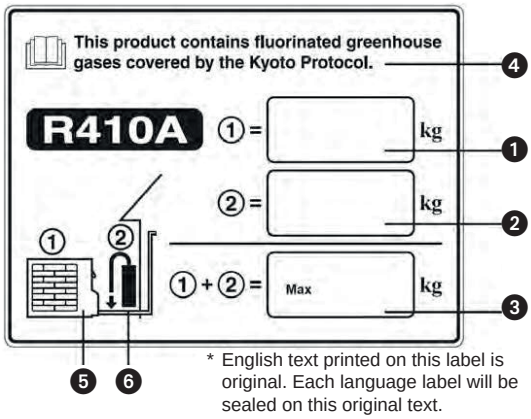
Sample label: R410A and R32 type outdoor unit

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.

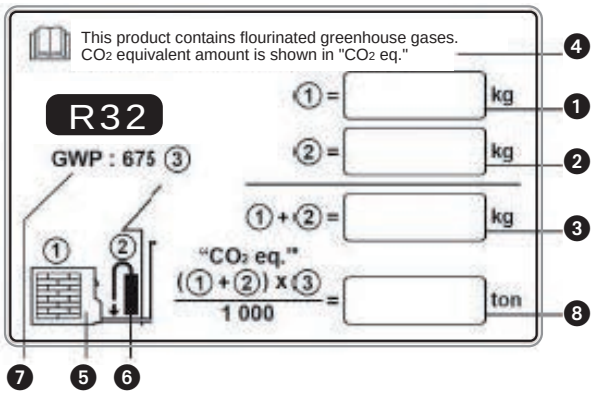
The filled out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the service cover).

Label for R410A



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

Label for R32



Legend:

❶ Factory refrigerant charge of the product: see unit name plate
❷ Additional refrigerant amount charged in the field
❸ Total refrigerant charge
❹ Contains fluorinated greenhouse gases covered by the Kyoto Protocol
❺ Outdoor unit
❻ Refrigerant cylinder and manifold for charging

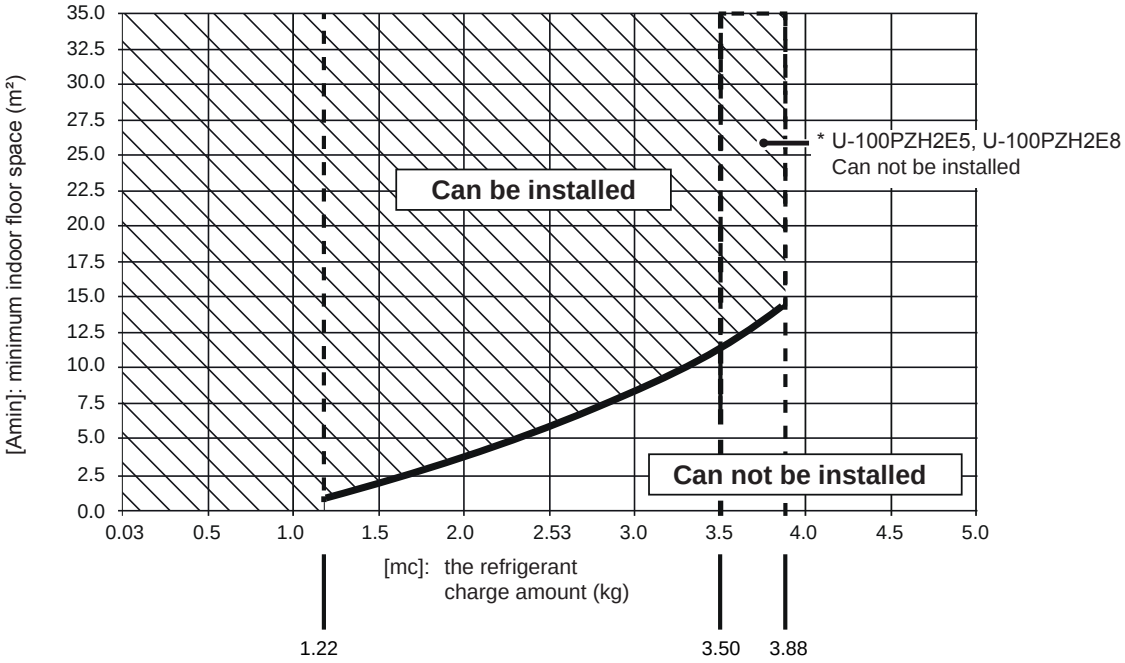
Check of Density Limit

■ U-100PZH2E5

The refrigerant (R32), which is used in the air conditioner, is a flammable refrigerant. So the requirements for installation space of appliance are determined according to the refrigerant charge amount [mc] used in the appliance.

The minimum indoor floor space compared with the amount of refrigerant is roughly as follows, in case it is installed in a living area:

PAW-VP200LDHW, PAW-VP500LDHW must be calculated as wall mounted.



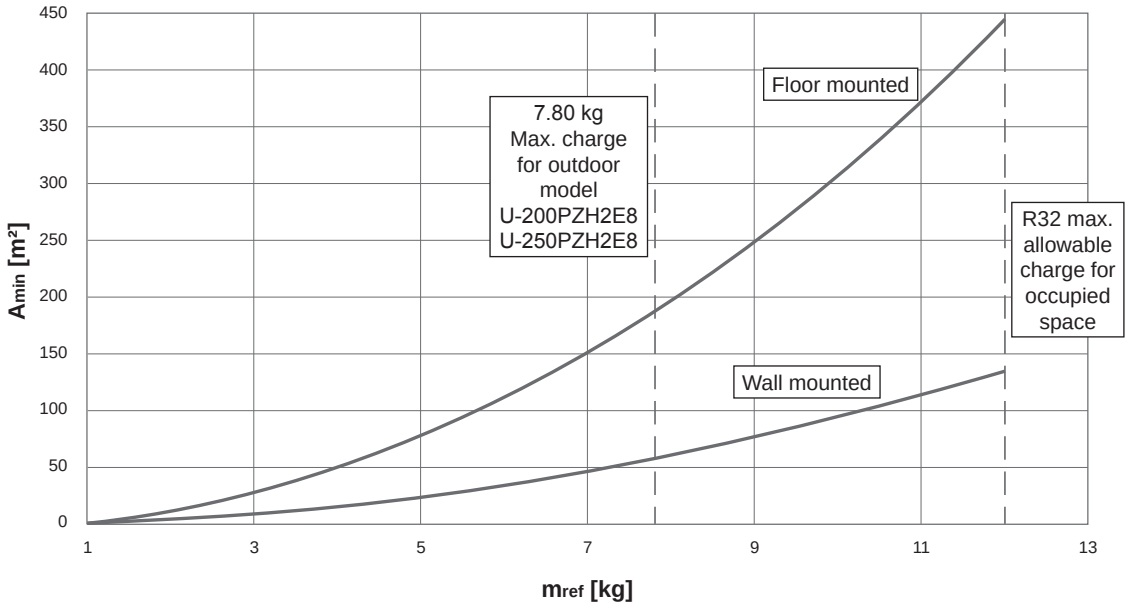
[mc]: the refrigerant charge amount (Total of refrigerant at shipment and refrigerant charge amount in the field)

[mmax]: maximum refrigerant charge amount

	U-100PZH2E5 U-100PZH2E8
$(m_{max})^3$	3,50 kg

■ U-200PZH2E8 U-250PZH2E8

PAW-VP750LDHW, PAW-VP1000LDHW must be calculated as floor mounted.
PAW-VP380L must be calculated as wall mounted.



For R410A please refer to installation manual for outdoor unit.

1 Technical Data of Indoor Unit

1.1 Indoor/outdoor unit specifications

1.1.1 Tank model PAW-VP1000LDHW

Heat Pump Model			U-250PZH2E8
Tank Model			PAW-VP1000LDHW
Volume		L	933
Height×Diameter		mm	2210x990
Connections to the water supply network			RP 1 1/4”
Net weight / with water		kg	191 / 1121
Heat Pump			
Nominal electrical power		kW	7.14
Reference tapping cycle			2XL
Energy consumption by chosen cycle A7/W10-55		kWh	6.3
Energy consumption by chosen cycle A14/W10-55		kWh	5.12
COP DHW (A7/W10-55) EN16147			3.91
COP DHW (A14/W10-55) EN16147			4.81
Energy Effiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)		A+
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1		A+
Standby heat loss		W/h	80
Sound power/Sound pressure (Outdoor/evaporator unit)		dB/dB(A)	57/51
Refrigerant			R32
Refrigerant at shipment		kg	5.2
Outdoor ambient operating range		°C	-20/+35
Heating up time		min	173
VP tank DHW			
Stainless steel 316L pickling/protective magnesium anode			+/+
Average insulation thickness		mm	100
Internal exchanger (m² surface~connection)			4.0~1/2"–3/4"
Electrical specifications			
Max power consumption without heater /with heater		kWh	10.0/16.0
Number of electrical heaters x power		W	1×6000
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)/5.5(55)
Domestic hot water preparation			
Preparation with heat pump Min/Max water temperature		°C	5/65
Preparation with electrical heater Min/Max water temperature		°C	15/85
Refrigerant information			
Refrigerant (R410A)		kg/TCO2 Eq	—
Refrigerant (R32)		kg/TCO2 Eq	5.2/3.51

- 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.

1.1.2 Tank model PAW-VP750LDHW

Heat Pump Model			U-250PZH2E8
Tank Model			PAW-VP750LDHW
Volume		L	726
Height×Diameter		mm	1855x990
Connections to the water supply network			RP 1 1/4”
Net weight / with water		kg	179 / 929
Heat Pump			
Nominal electrical power		kW	7.14
Reference tapping cycle			2XL
Energy consumption by chosen cycle A7/W10-55		kWh	6.3
Energy consumption by chosen cycle A14/W10-55		kWh	5.12
COP DHW (A7/W10-55) EN16147			3.91
COP DHW (A14/W10-55) EN16147			4.81
Energy Effiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)		A+
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1		A+
Standby heat loss		W/h	77
Sound power/Sound pressure (Outdoor/evaporator unit)		dB/dB(A)	57/51
Refrigerant			R32
Refrigerant at shipment		kg	5.2
Outdoor ambient operating range		°C	-20/+35
Heating up time		min	150
VP tank DHW			
Stainless steel 316L pickling/protective magnesium anode			+/+
Average insulation thickness		mm	100
Internal exchanger (m² surface~connection)			4.0~1/2"–3/4"
Electrical specifications			
Max power consumption without heater /with heater		kWh	10.0/16.0
Number of electrical heaters x power		W	1×6000
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)/5.5(55)
Domestic hot water preparation			
Preparation with heat pump Min/Max water temperature		°C	5/65
Preparation with electrical heater Min/Max water temperature		°C	15/85
Refrigerant information			
Refrigerant (R410A)		kg/TCO2 Eq	—
Refrigerant (R32)		kg/TCO2 Eq	5.2/3.51

- 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.

1.1.3 Tank model PAW-VP1000/750LDHW

Heat Pump Model			U-16MF3E8	U-16MF3E8
Tank Model			PAW-VP1000LDHW	PAW-VP750LDHW
Volume		L	933	726
Height×Diameter		mm	2210x990	1855x990
Connections to the water supply network			RP 1 1/4”	RP 1 1/4”
Net weight / with water		kg	191 / 1121	179 / 929
Heat Pump				
Nominal electrical power		kW	6.14	5.12
Reference tapping cycle			2XL	2XL
Energy consumption by chosen cycle A7/W10-55		kWh	5.1	4.14
Energy consumption by chosen cycle A14/W10-55		kWh	4.61	3.5
COP DHW (A7/W10-55) EN16147			4.81	5.29
COP DHW (A14/W10-55) EN16147			5.32	7.01
Energy Effiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)		Not in the Scope of the regulation	
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1			
Standby heat loss		W/h	80	77
Sound power/Sound pressure (Outdoor/evaporator unit)		dB/dB(A)	57/52	57/52
Refrigerant			R410A	R410A
Refrigerant at shipment		kg	8.3	8.3
Outdoor ambient operating range		°C	-20/+35	-20/+35
Heating up time		min	162	133
VP tank DHW				
Stainless steel 316L pickling/protective magnesium anode			+/+	+/+
Average insulation thickness		mm	100	100
Internal exchanger (m² surface~connection)			4.0~1/2"–3/4"	4.0~1/2"–3/4"
Electrical specifications				
Max power consumption without heater /with heater		kWh	20.4/26.4	20.4/26.4
Number of electrical heaters x power		W	1×6000	1×6000
Voltage / frequency		V/Hz	400/50	400/50
Electric protection heat pump /heaters		A	40/16	40/16
Moisture protection			IP24	IP24
Working pressure (storage tank / heat exchanger)		MPa(bar)	0.95(9.5)/5.5(55)	0.95(9.5)/5.5(55)
Domestic hot water preparation				
Preparation with heat pump Min/Max water temperature		°C	5/65	5/65
Preparation with electrical heater Min/Max water temperature		°C	15/85	15/85
Refrigerant information				
Refrigerant (R410A)		kg/TCO2 Eq	8.3/17.1	8.3/17.1
Refrigerant (R32)		kg/TCO2 Eq	—	—

- 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.

1.1.4 Tank model PAW-VP500LDHW

Heat Pump Model			U-100PZH2E8
Tank Model			PAW-VP500LDHW
Volume		L	510
Height×Diameter		mm	1660x790
Connections to the water supply network			RP 3/4" / 1"
Net weight / with water		kg	122 / 632
Heat Pump			
Nominal electrical power		kW	2.32
Reference tapping cycle			XL
Energy consumption by chosen cycle A7/W10-55		kWh	4.5
Energy consumption by chosen cycle A14/W10-55		kWh	3.6
COP DHW (A7/W10-55) EN16147			4.23
COP DHW (A14/W10-55) EN16147			5.29
Energy Effiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)		A+
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1		A++
Standby heat loss		W/h	40.10
Sound power/Sound pressure (Outdoor/evaporator unit)		dB/dB(A)	65/49
Refrigerant			R32
Refrigerant at shipment		kg	3.05
Outdoor ambient operating range		°C	-20/+35
Heating up time		min	126
VP tank DHW			
Stainless steel 316L pickling/protective magnesium anode			+/+
Average insulation thickness		mm	70
Internal exchanger (m² surface~connection)			2,2 ~ 3/8"-5/8"
Electrical specifications			
Max power consumption without heater /with heater		kWh	3.99/6.99
Number of electrical heaters x power		W	1×3000
Voltage / frequency		V/Hz	230/50
Electric protection heat pump /heaters		A	25/16
Moisture protection			IP24
Working pressure (storage tank / heat exchanger)		MPa(bar)	0,95(9,5)/5,5(55)
Domestic hot water preparation			
Preparation with heat pump Min/Max water temperature		°C	5/65
Preparation with electrical heater Min/Max water temperature		°C	15/85
Refrigerant information			
Refrigerant (R410A)		kg/TCO2 Eq	—
Refrigerant (R32)		kg/TCO2 Eq	3.05/2.05

- 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 Tank model PAW-VP200LDHW

Heat Pump Model			U-100PZH2E8
Tank Model			PAW-VP200LDHW
Volume		L	214
Height×Diameter		mm	1568×590
Connections to the water supply network			RP 3/4" / 1"
Net weight / with water		kg	54 / 254
Heat Pump			
Nominal electrical power		kW	1.30
Reference tapping cycle			M
Energy consumption by chosen cycle A7/W10-55		kWh	1.09
Energy consumption by chosen cycle A14/W10-55		kWh	0.910
COP DHW (A7/W10-55) EN16147			5.36
COP DHW (A14/W10-55) EN16147			6.42
Energy Effiency Class	for Energy Label; (EU) No. 812/2013 ANNEX III (A+–F)		A+
	for Product fiche: (EU) No. 812/2013 ANNEX II, Table1		A+++
Standby heat loss		W/h	25.1
Sound power/Sound pressure (Outdoor/evaporator unit)		dB/dB(A)	64/48
Refrigerant			R32
Refrigerant at shipment		kg	3.05
Outdoor ambient operating range		°C	-20/+35
Heating up time		min	123
VP tank DHW			
Stainless steel 316L pickling/protective magnesium anode			+/+
Average insulation thickness		mm	70
Internal exchanger (m² surface~connection)			1.46~3/8"–5/8"
Electrical specifications			
Max power consumption without heater /with heater		kWh	3.99/5.99
Number of electrical heaters × power		W	1×2000
Voltage / frequency		V/Hz	230/50
Electric protection heat pump /heaters		A	25/16
Moisture protection			IP24
Working pressure (storage tank / heat exchanger)		MPa(bar)	0.95(9.5)/5.5(55)
Domestic hot water preparation			
Preparation with heat pump Min/Max water temperature		°C	5/65
Preparation with electrical heater Min/Max water temperature		°C	15/85
Refrigerant information			
Refrigerant (R410A)		kg/TCO2 Eq	—
Refrigerant (R32)		kg/TCO2 Eq	3.05-2.05

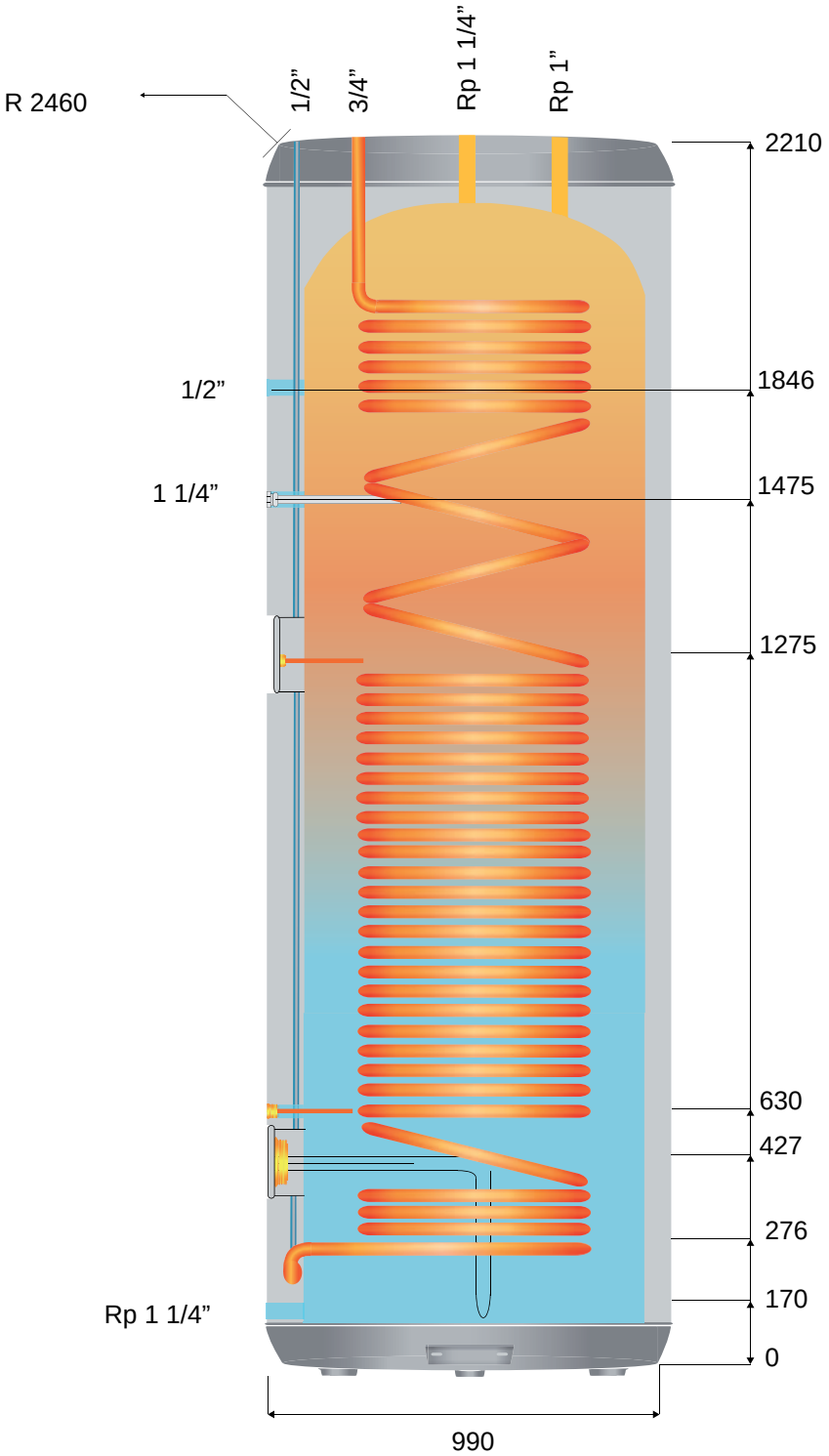
- EN 16147:2017 - Heat pumps with electrically driven compressors. Testing and requirements for making of domestic hot water units;
- Commission Delegated Regulation (EU) No. 812/2013 and Commission Regulation (EU) No. 814/2013.

1.1.6 Tank model PAW-VP380L

Heat Pump Model		U-200PZH2E8
Tank Model		PAW-VP380L
Cooling capacity at 35°C, water outlet 7°C	kW	12.80
Heating capacity	kW	25.00
Heating capacity at +7°C, heating water temperature at 40/45°C	kW	23.00
COP at +7°C, with heating water temperature at 40/45°C	W/W	3.26
Heating Energy Efficiency class at 35°C		A++
ηsh (LOT1)	%	156
Height×Diameter	mm	1820 × 690
Shipping weight	kg	99
Water pipe connection		1 1/4”
Heating water flow (ΔT=5K, 35°C)	m³/h	3.9
Capacity of integrated electrical heater	kW	Not equipped
Flow switch		Not equipped
Water filler		Not equipped
Input power		Not equipped
Maximum current		Not equipped
Outdoor unit		U-200PZH2E8
Sound power/Sound pressure (Outdoor/evaporator unit)	dB/dB(A)	73/57
Dimension (H×W×D)	mm	1500 × 980 × 370
Net weight		117
Piping connections (liquid pipe / gas pipe)	inch / (mm))	1/2” (12.7) / 3/4 (19.05)
Refrigerant (R32) at shipment		Refrigerant 4.2 kg
Pipe length range/elevation difference (in/out)		30/30 (0D above) 30 (0D below)
Pipe length for nominal capacity		7.5
Pipe length for additional gas/Additional gas amount (R32)		45/ refer to manual
Operation range (Heat Min/Max)	°C	-20 to +24

1.2 Outlines and dimensions

1.2.1 Tank model PAW-VP1000LDHW

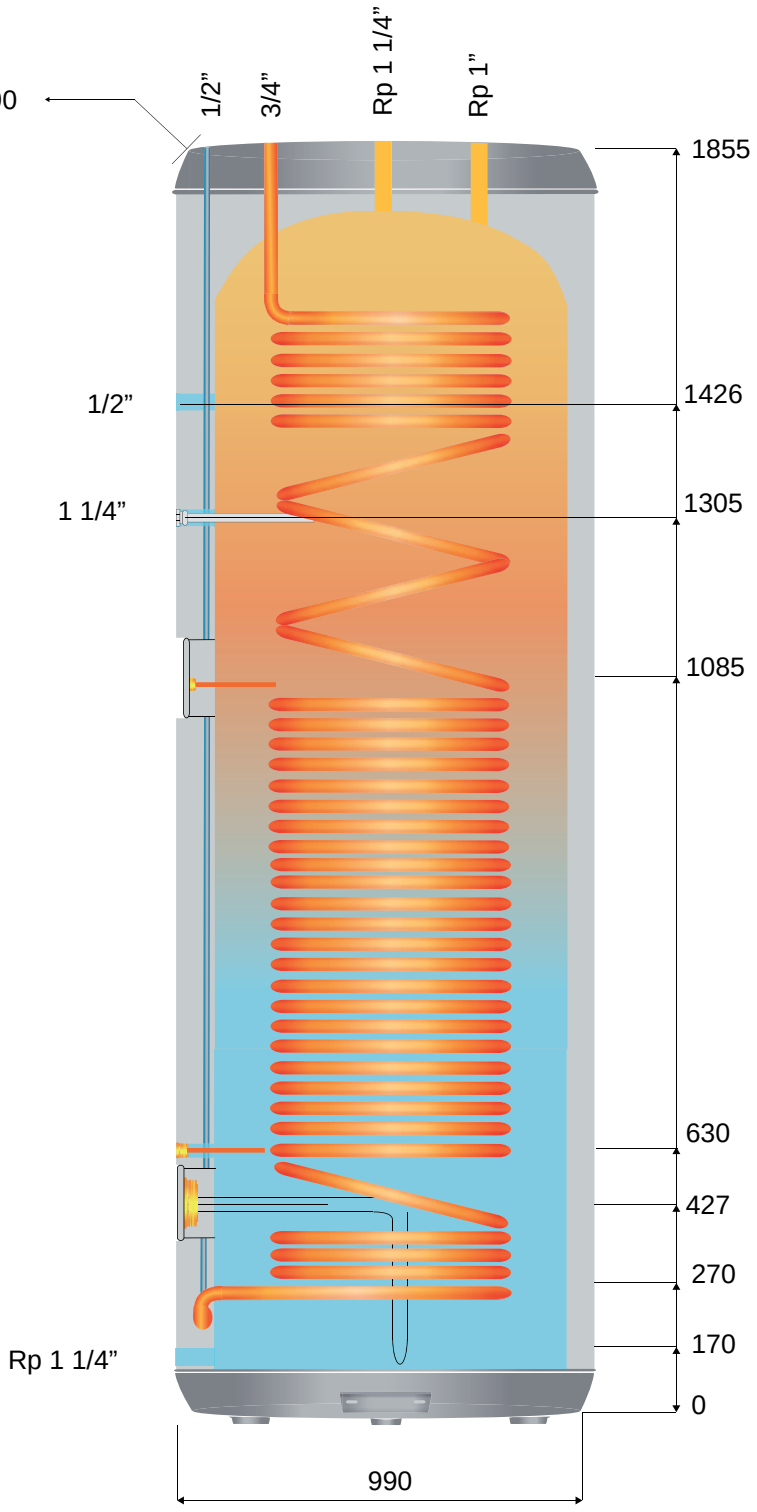


All dimensions in mm.

Note

R value indicates maximum overturning height.

1.2.2 Tank model PAW-VP750LDHW

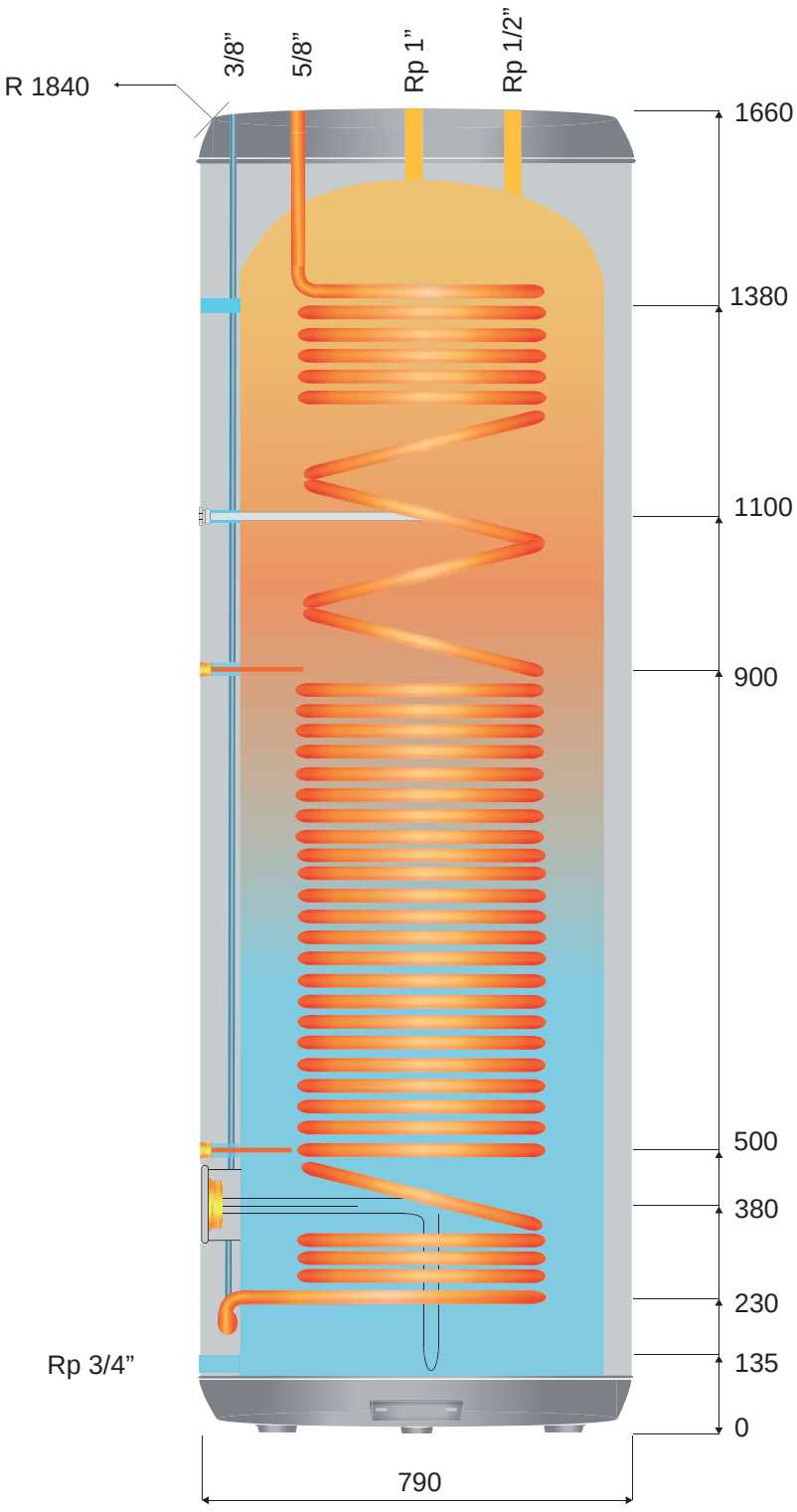


All dimensions in mm.

Note

R value indicates maximum overturning height.

1.2.3 Tank model PAW-VP500LDHW



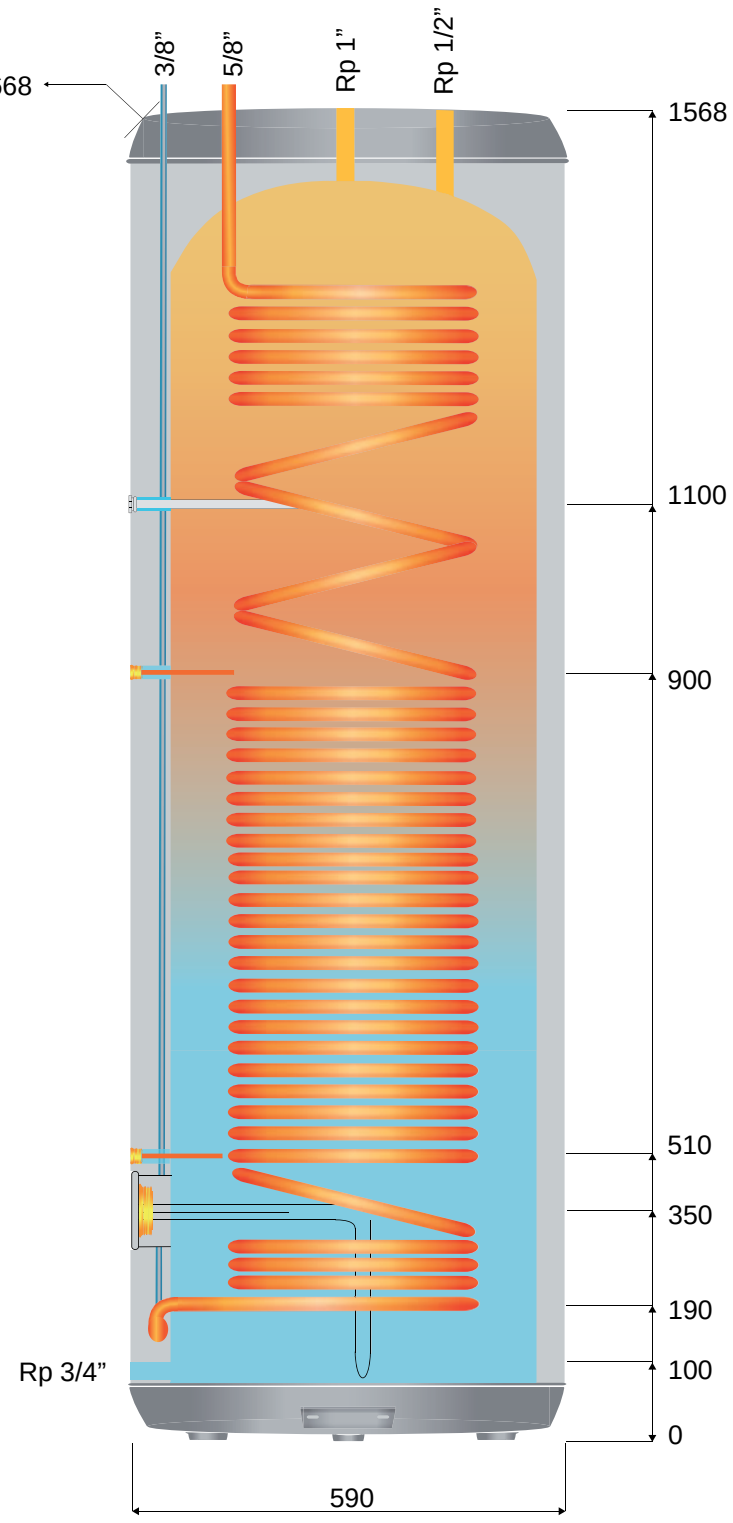
All dimensions in mm.

Note

R value indicates maximum overturning height.

1

1.2.4 Tank model PAW-VP200LDHW

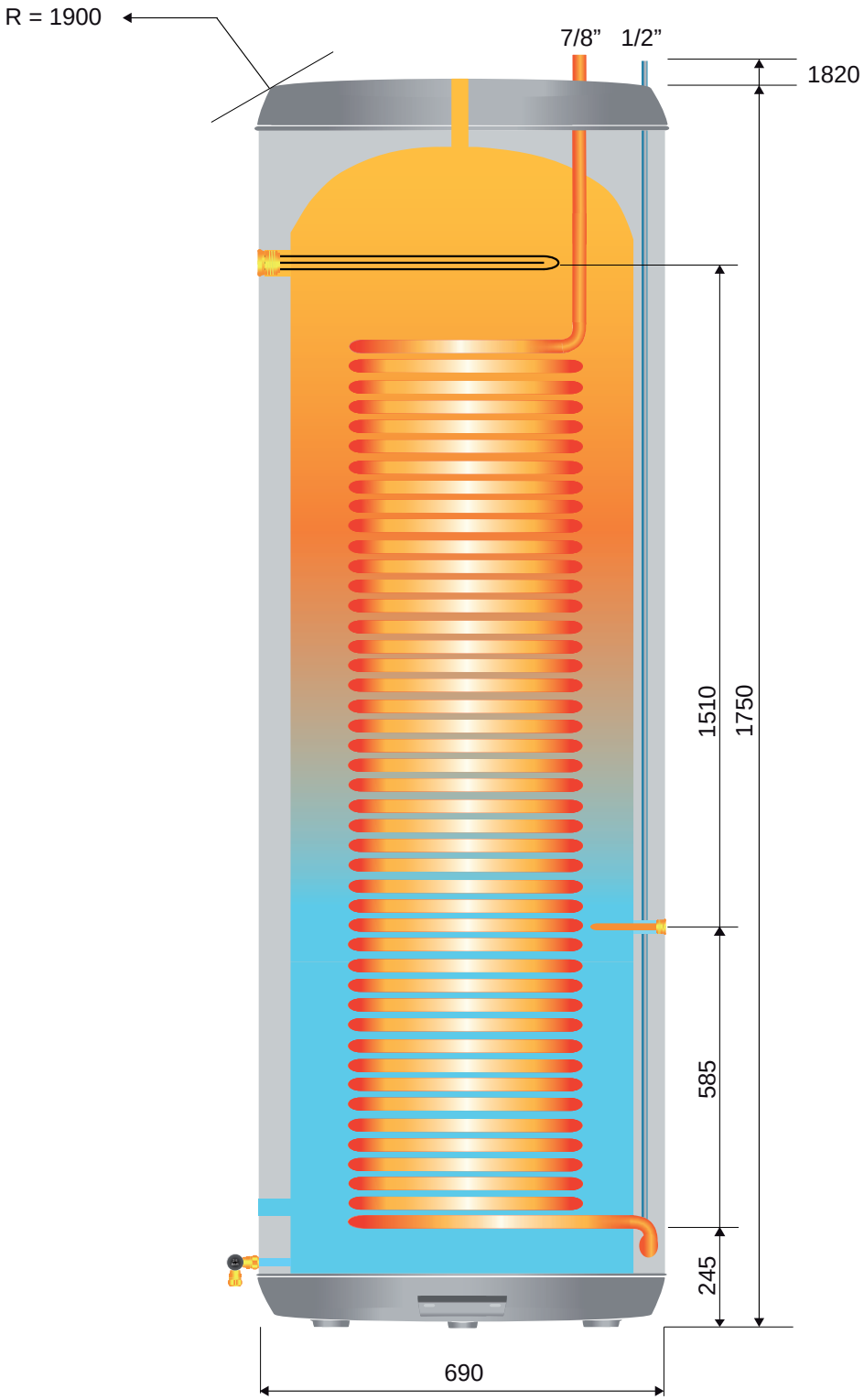


All dimensions in mm.

Note

R value indicates maximum overturning height.

1.2.5 Tank model PAW-VP380L

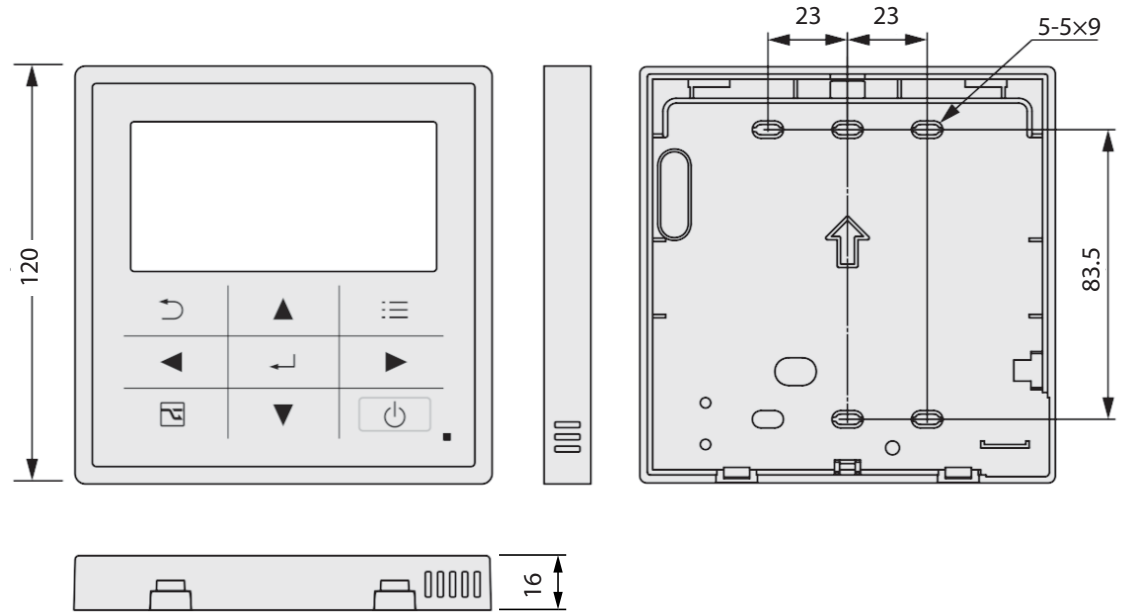


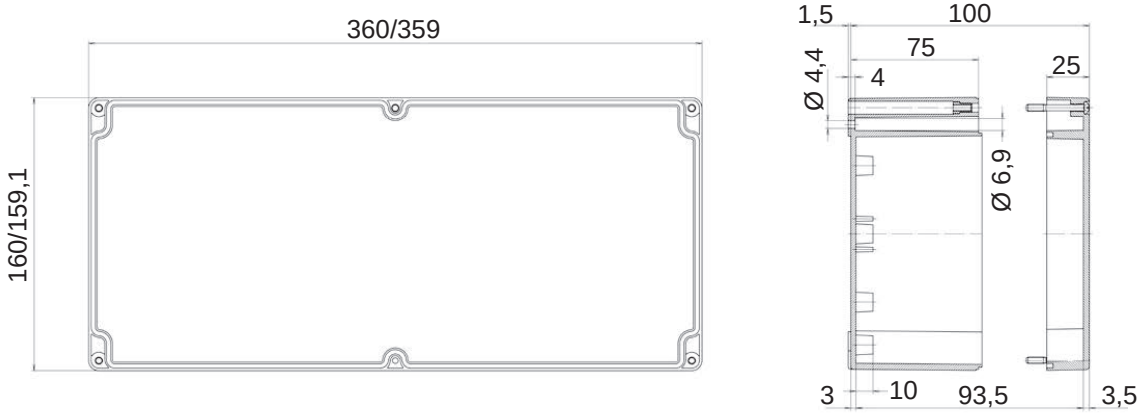
All dimensions in mm.

Note

R value indicates maximum overturning height.

1.2.6 PAW-VP-RTC5B-PAC / PAW-VP-RTC5B-ECO

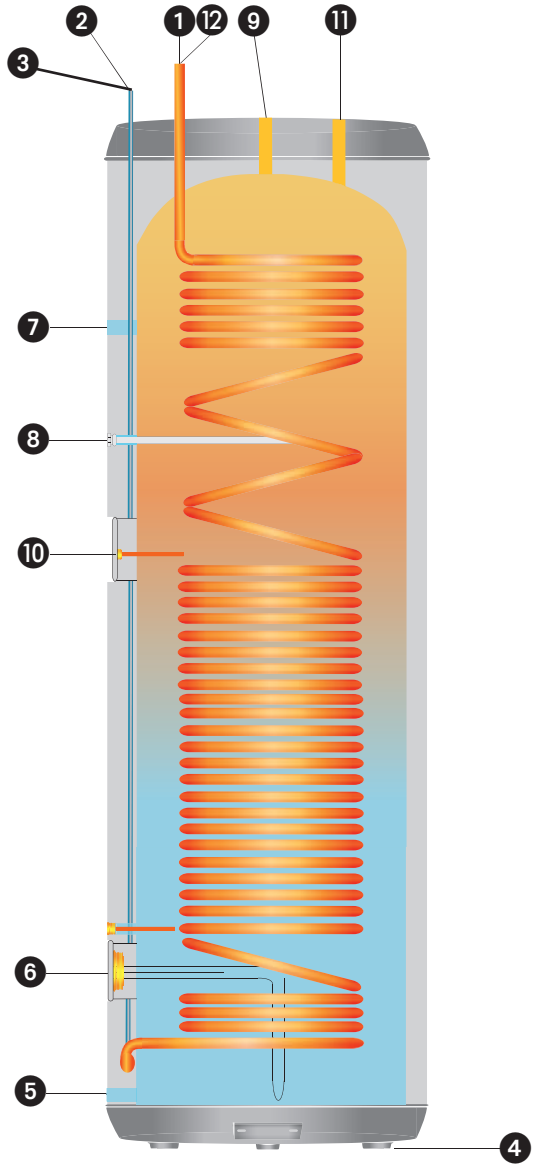




All dimensions in mm.

1.3 Main components

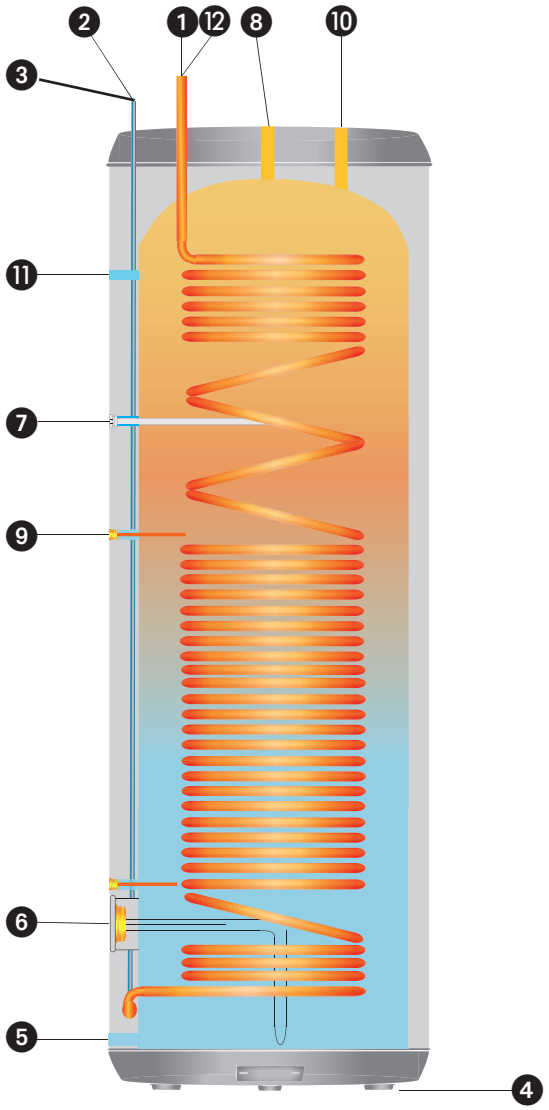
1.3.1 Tank models PAW-VP1000L / 750L



1. Turn pressure pipe 3/4"
2. Return liquid pipe 1/2"
3. E1 and E2 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 TA
11. Safety valve 1"
12. Hot gas sensor E3

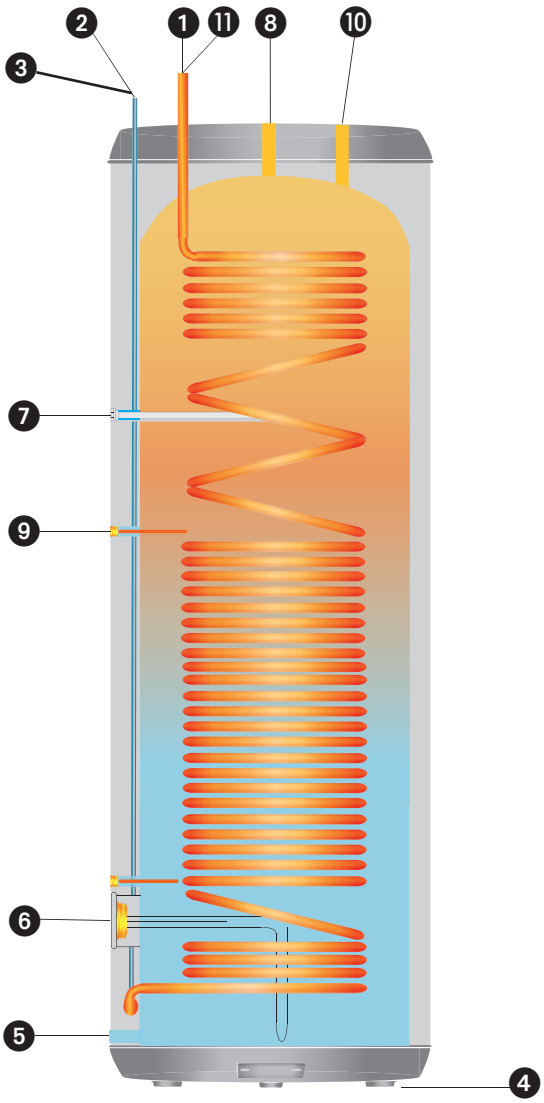
1

1.3.2 Tank model PAW-VP500L



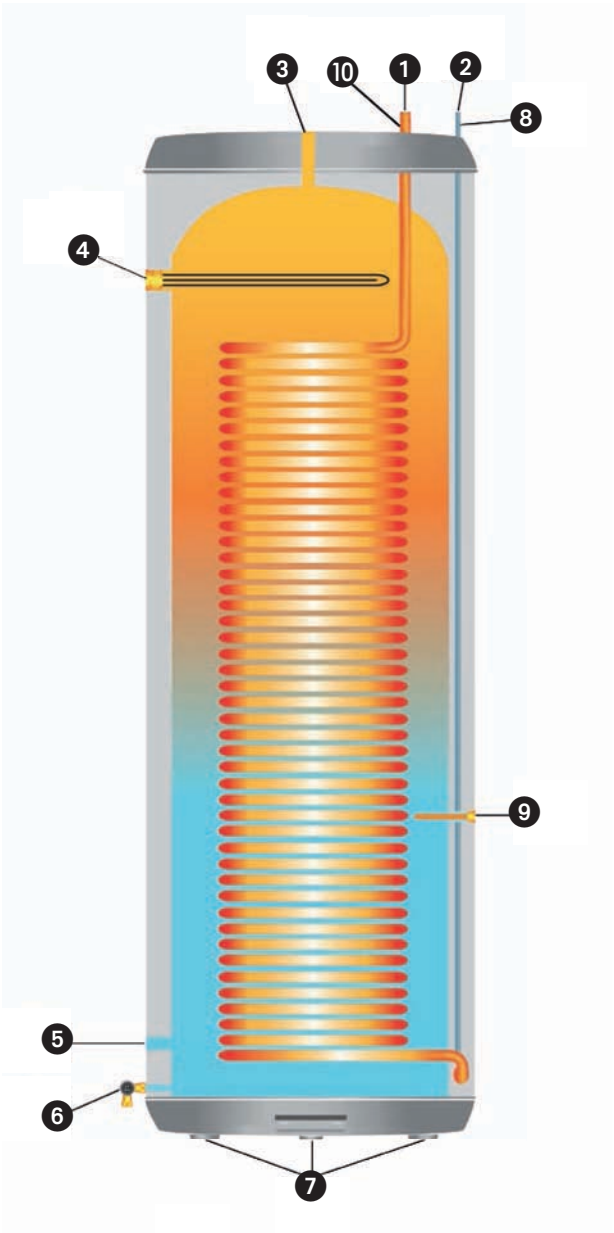
1. Turn pressure pipe 5/8"
2. Return liquid pipe 3/8"
3. E1 and E2 sensor
4. Adjustable levelling feet
5. Inlet city water 3/4"
6. Booster heater 3 kW
7. Magnesium anode
8. Outlet DHW 1"
9. Sensor pocket TA
10. Safety valve
11. Return pump circulation 1/2"
12. Hot gas sensor E3

1.3.3 Tank model PAW-VP200L



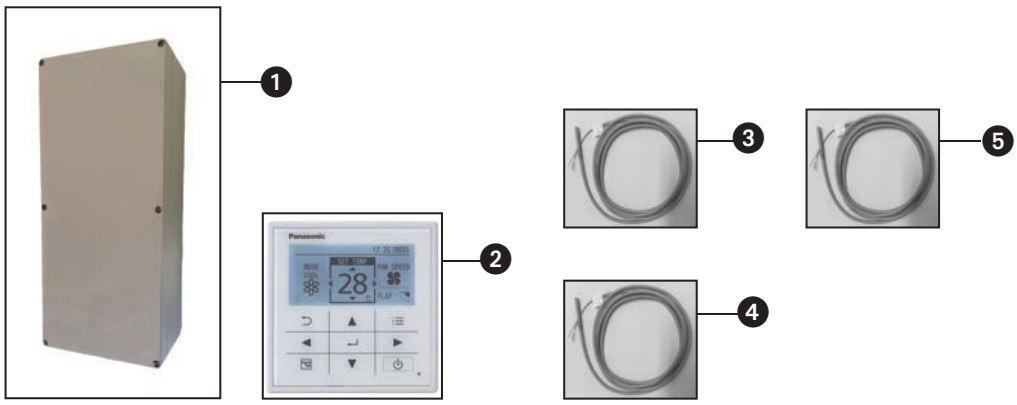
1. Turn pressure pipe 5/8"
2. Return liquid pipe 3/8"
3. E1 and E2 sensor
4. Adjustable levelling feet
5. Inlet city water 3/4"
6. Booster heater 3 kW
7. Magnesium anode
8. Outlet DHW 1"
9. Sensor pocket TA
10. Safety valve
11. Hot gas sensor E3

1.3.4 Tank model PAW-VP380L



1. Turn pressure pipe 3/4"
2. Return liquid pipe 1/2"
3. Turn waterborne heating 1 1/4"
4. Booster heater 6/9 kW
5. Return waterborne heating
6. Safety valve 3 bar
7. Adjustable levelling feet
8. Liquid sensor E1 and E2
9. Sensor pocket TA
10. Hot gas sensor E3

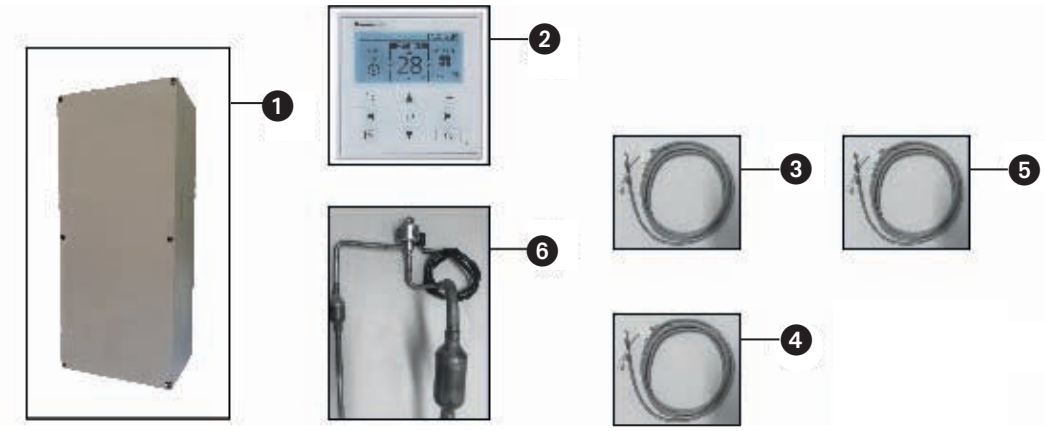
1.3.5 PAW-VP-RTC5B-PAC



1. PAW-VP-RTC5A-PAC
2. CZ-RTC5B*
3. Temperature sensor TA*
4. Temperature sensor E1*
5. Temperature sensor E2*

* included in delivery

1.3.6 VP-RTC5B-ECO



1. PAW-VP-RTC5A-PAC
2. CZ-RTC5B*
3. Temperature sensor TA*
4. Temperature sensor E1*
5. Temperature sensor E3*
6. Expansion valve PAW-VP-VALV-160 / PAW-VP-VALV-280 (Optional part)

* included in delivery

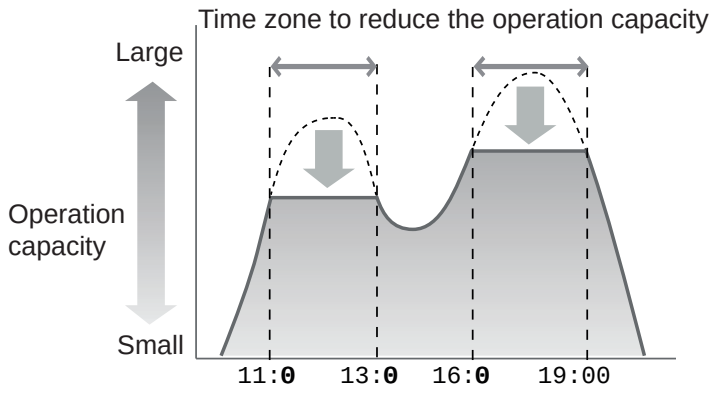
Important

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 Important Peak Cut Settings

2.1 Setting of peak cut for all DHW applications

2.1.1 Creation of a peak cut schedule by using the remote controller

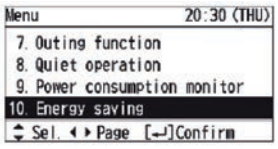


Proceed as follows

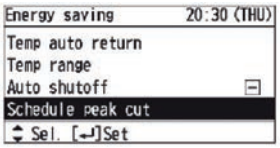
1 Display the menu screen .

- To return to the last screen Press .
- To return to the top screen Press 2 times.

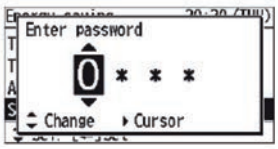
2 Select [Energy saving].
▲ ▼ → ↵



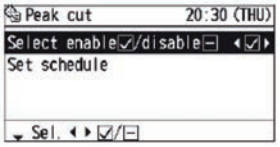
3 Select [Schedule peak cut].
▲ ▼ → ↵



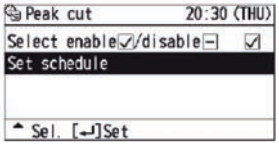
4 Enter the password.
▲ ▼ → ▶ → ↵
(Repeat)



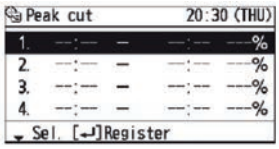
5 Set [Select enable/disable] to [☑]
▲ ▼ → ◄ ►



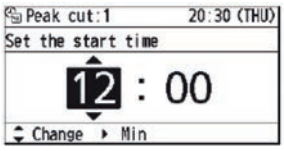
6 Select [Set schedule].
▲ ▼ → ↵



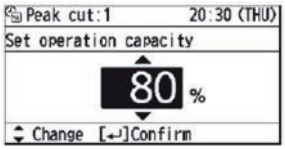
7 Change the setting.
Select the field to register.
▲ ▼ → ↵



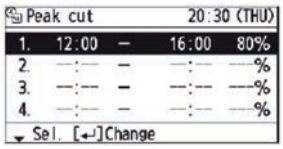
8 Set the start time and end time.
▲ ▼ → ► → ▲ ▼ → ↵
(Repeat)



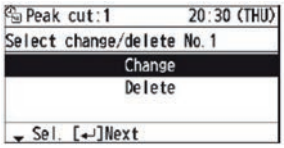
9 Select the operation capacity.
▲ ▼ → ↵ → ☰
(Press 2 times to finish)



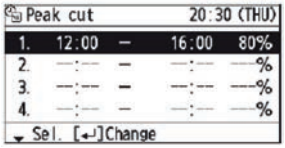
- To set in series
  Repeat from step 4 without pressing ☰.
- To change
  - Select the field to change in step 7 above.



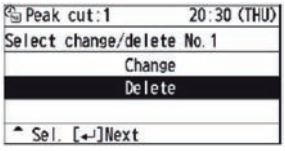
  - Select [Change].
    ▲ ▼ → ↵
  - Following the above steps 8 to 9, select the start time, end time and operation capacity.



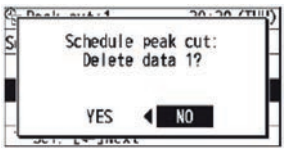
- To delete
  - Select the field to delete in step 7 above



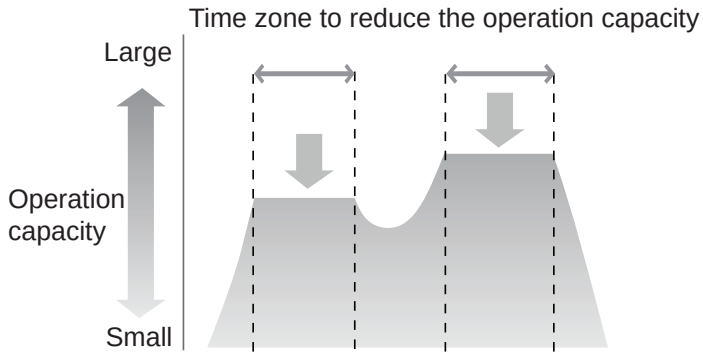
  - Select [Delete].
    ▲ ▼ → ↵



  - Select [YES].
    ▲ ▼ → ↵ → ☰
    (Press 2 times to finish.)



2.1.2 Details of peak cut settings



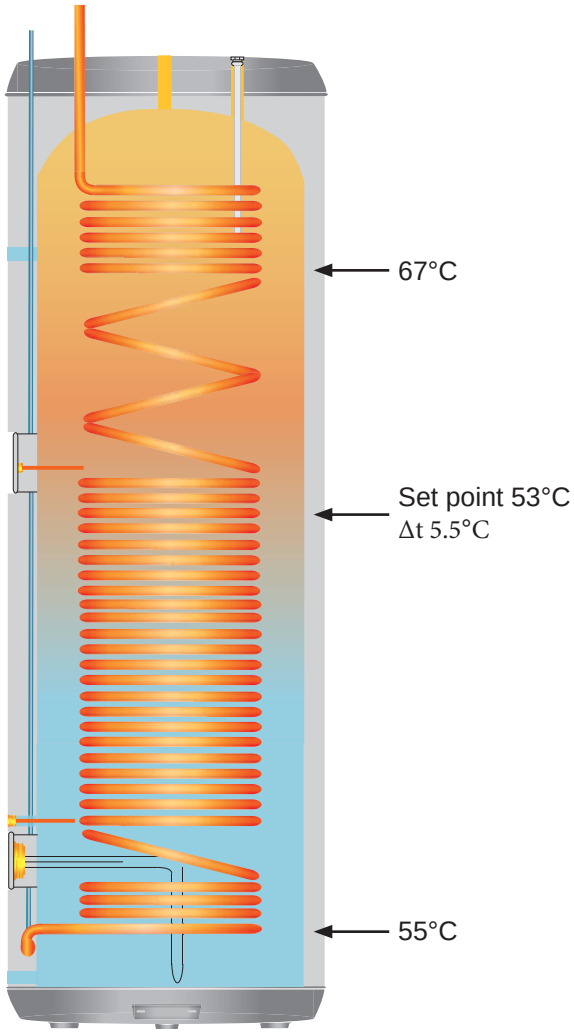
Peak cut must be set to 70% or 60%.

Peak cut	Compressor HZ	Heating up time	SCOP
70 %	45 Hz less than max Hz	173	3.9
60 %	55 Hz less than max Hz	208	4.1

Capacity Performance Data with peak cut 70 % set point TA 46°C U-250PZH2E8/ PAW-VP1000LDHW

- Capacity U-250PZH2E8/PAW-VP1000LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 70 %/14 kW, heating up time 173 min
- Capacity U-10ME2E8/PAW-VP1000LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 70 %/16 kW, heating up time 144 min
- Capacity U-250PZH2E8/PAW-VP750LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 70 %/14 kW, heating up time 150 min
- Capacity U-10ME2E8/PAW-VP750LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 70 %/16 kW, heating up time 121 min
- Capacity U-100PZH2E8/PAW-VP500LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 70 %/7 kW, heating up time 126 min
- Capacity U-100PZH2E8/PAW-VP200LDHW at +7°C ambient temperature, heating water from +10°C to 55°C
  Capacity Performance Data with peak cut demand 60 %/5 kW, heating up time 133 min

2.2 DHW set temperature



Set point	Low part tank	Middle part tank	Upper part tank	Mixing temperature
46	48 °C	50 °C	57 °C	52 °C
50	52 °C	54 °C	60 °C	56 °C
53	55 °C	57 °C	67 °C	61 °C
55	58 °C	60 °C	70 °C	63 °C

Maximum and Minimum frequency related to outdoor temperature

Heat pump (U-)	PZH		
TO temp (Heating)	100PZH2	200PZH2	250PZH2
Hz +20/18	49	60	80
Hz +11/9	55	70	95
Hz +4/2	60	80	100
Hz -4/-20	65	95	110

3 Performance Characteristic Tables

3.1 Capacity table PAW-VP1000LDHW (10 °C)

City water inlet temp: **10 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP1000LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:45:41	38265.21	11018.40	3.47
	50°C	3:29:38	44341.77	13940.58	3.18
	55°C	4:15:42	48379.39	17004.43	2.85
+20°C	45°C	2:51:13	11385.92	11385.92	3.36
	50°C	3:36:38	44341.77	14405.58	3.08
	55°C	4:25:14	48379.39	17571.62	2.75
+15°C	45°C	2:41:04	38265.21	10710.73	3.57
	50°C	3:23:47	44341.77	13551.32	3.27
	55°C	4:08:34	48379.39	16529.61	2.93
+12°C	45°C	2:44:23	38265.21	10931.24	3.50
	50°C	3:27:58	44341.77	13830.31	3.21
	55°C	4:13:41	48379.39	16869.92	2.87
+7°C	45°C	2:41:04	38265.21	10710.73	3.57
	50°C	3:23:47	44341.77	13551.32	3.27
	55°C	4:08:34	48379.39	16529.61	2.93
+2°C	45°C	3:08:53	38265.21	12560.31	3.05
	50°C	3:58:58	44341.77	15891.42	2.79
	55°C	4:51:29	48379.39	19384.02	2.50
+0°C	45°C	3:10:40	38265.21	12679.80	3.02
	50°C	4:01:15	44341.77	16042.61	2.76
	55°C	4:54:16	48379.39	19568.44	2.47
-2°C	45°C	3:09:42	38265.21	12615.06	3.03
	50°C	4:00:01	44341.77	15960.70	2.78
	55°C	4:52:46	48379.39	19468.52	2.49
-7°C	45°C	3:13:32	38265.21	12870.25	2.97
	50°C	4:04:52	44341.77	16286.57	2.72
	55°C	4:58:41	48379.39	19862.35	2.44
-10°C	45°C	3:16:45	38265.21	13084.10	2.92
	50°C	4:08:56	44341.77	16554.13	2.68
	55°C	5:03:39	48379.39	20192.37	2.40
-15°C	45°C	3:22:07	38265.21	13440.51	2.85
	50°C	4:15:43	44341.77	17005.06	2.61
	55°C	5:11:55	48379.39	20742.41	2.33
-20°C	45°C	3:27:28	38265.21	13796.92	2.77
	50°C	4:22:30	44341.77	17456.00	2.54
	55°C	5:20:11	48379.39	21292.45	2.27

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	221.16
>60°C	36.21
>55°C	145.18
>50°C	212.43
>45°C	80.83
>40°C	55.94

Tapping amount 50°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	212.75
>55°C	44.62
>50°C	227.30
>45°C	115.43
>40°C	94.09

Tapping amount 45°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	245.73
>45°C	31.36
>40°C	263.84

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 10°C
Without reheating
Heating the water from 10°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.2 Capacity table PAW-VP1000LDHW (12 °C)

City water inlet temp: **12 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP1000LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:38:55	36084.34	10568.29	3.41
	50°C	3:22:52	42160.90	13490.47	3.13
	55°C	4:08:56	46198.52	16554.32	2.79
+20°C	45°C	8:09:36	36084.34	10920.80	3.30
	50°C	3:29:38	42160.90	13940.49	3.02
	55°C	4:17:14	46198.52	17106.50	2.70
+15°C	45°C	2:34:29	36084.34	10273.18	3.51
	50°C	3:17:12	42160.90	13113.77	3.22
	55°C	4:01:59	46198.52	16092.07	2.87
+12°C	45°C	2:37:40	36084.34	10484.69	3.44
	50°C	3:21:16	42160.90	13383.76	3.15
	55°C	4:06:58	46198.52	16423.37	2.81
+7°C	45°C	2:34:29	36084.34	10273.18	3.51
	50°C	3:17:12	42160.90	13113.77	3.22
	55°C	4:01:59	46198.52	16092.07	2.87
+2°C	45°C	3:01:10	36084.34	12047.34	3.00
	50°C	3:51:15	42160.90	15378.33	2.74
	55°C	4:43:46	46198.52	18870.92	2.45
+0°C	45°C	3:02:53	36084.34	12161.82	2.97
	50°C	3:53:27	42160.90	15524.63	2.72
	55°C	4:46:28	46198.52	19050.46	2.43
-2°C	45°C	3:01:57	36084.34	12099.73	2.98
	50°C	3:52:16	42160.90	15445.37	2.73
	55°C	4:45:01	46198.52	18953.19	2.44
-7°C	45°C	3:05:38	36084.34	12344.49	2.92
	50°C	3:56:58	42160.90	15757.81	2.68
	55°C	4:50:47	46198.52	19336.59	2.39
-10°C	45°C	3:08:43	36084.34	12549.60	2.88
	50°C	4:00:54	42160.90	16019.63	2.63
	55°C	4:55:36	46198.52	19657.88	3.35
-15°C	45°C	3:13:51	36084.34	12891.45	2.80
	50°C	4:07:28	42160.90	16456.01	2.56
	55°C	5:03:40	46198.52	20193.36	2.29
-20°C	45°C	3:19:00	36084.34	13233.34	2.73
	50°C	4:14:01	42160.90	16892.38	2.50
	55°C	5:11:43	46198.52	20728.84	2.23

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	216.82
>60°C	35.50
>55°C	142.33
>50°C	208.27
>45°C	79.25
>40°C	54.84

Tapping amount 50°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	208.58
>55°C	43.75
>50°C	222.85
>45°C	113.17
>40°C	92.25

Tapping amount 45°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	240.92
>45°C	30.75
>40°C	258.67

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 12°C
Without reheating
Heating the water from 12°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.3 Capacity table PAW-VP1000LDHW (15 °C)

City water inlet temp: **15 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP1000LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:30:48	32815.53	10027.72	3.27
	50°C	3:14:44	38892.08	12949.91	3.00
	55°C	4:00:48	42929.71	16013.75	2.68
+20°C	45°C	2:35:49	32815.53	10362.53	3.17
	50°C	3:21:14	38892.08	13381.86	2.91
	55°C	4:08:50	42929.71	16547.90	2.59
+15°C	45°C	2:26:35	32815.53	9747.71	3.37
	50°C	3:09:18	38892.08	12588.30	3.09
	55°C	3:54:05	42929.71	15566.59	2.76
+12°C	45°C	2:29:36	32815.53	9948.40	3.30
	50°C	3:13:12	38892.08	12847.47	3.03
	55°C	3:58:54	42929.71	15887.08	2.70
+7°C	45°C	2:26:35	32815.53	9747.71	3.37
	50°C	3:09:18	38892.08	12588.30	3.09
	55°C	3:54:05	42929.71	15566.59	2.76
+2°C	45°C	2:51:54	32815.53	11431.00	2.87
	50°C	3:41:59	38892.08	14762.12	2.63
	55°C	4:34:30	42929.71	18254.71	2.35
+0°C	45°C	2:53:32	32815.53	11539.75	2.84
	50°C	3:44:06	38892.08	14902.56	2.61
	55°C	4:37:07	42929.71	18428.38	2.33
-2°C	45°C	2:52:39	32815.53	11480.83	2.86
	50°C	3:42:57	38892.08	14826.47	2.62
	55°C	4:35:42	42929.71	18334.29	2.34
-7°C	45°C	2:56:08	32815.53	11713.07	2.80
	50°C	3:47:28	38892.08	15126.39	2.57
	55°C	4:41:17	42929.71	18705.17	2.30
-10°C	45°C	2:59:04	32815.53	11907.69	2.76
	50°C	3:51:15	38892.08	15377.72	2.53
	55°C	4:45:57	42929.71	19015.97	2.26
-15°C	45°C	3:03:56	32815.53	12232.06	2.68
	50°C	3:57:33	38892.08	15796.61	2.46
	55°C	4:53:45	42929.71	19533.96	2.20
-20°C	45°C	3:08:49	32815.53	12556.42	2.61
	50°C	4:03:51	38892.08	16215.50	2.40
	55°C	5:01:32	42929.71	20051.96	2.14

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	225.79
>60°C	36.97
>55°C	148.21
>50°C	216.87
>45°C	82.52
>40°C	57.11

Tapping amount 50°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	204.41
>55°C	42.87
>50°C	218.39
>45°C	110.90
>40°C	90.40

Tapping amount 45°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	236.10
>45°C	30.13
>40°C	253.49

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 15°C
Without reheating
Heating the water from 15°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.4 Capacity table PAW-VP1000LDHW (18 °C)

City water inlet temp: **18 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP1000LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:26:11	29593.81	9721.20	3.04
	50°C	3:10:08	35670.36	12643.39	2.82
	55°C	3:56:12	39707.99	15707.23	2.53
+20°C	45°C	2:31:04	29593.81	10045.46	2.95
	50°C	3:16:28	35670.36	13065.11	2.73
	55°C	4:04:05	39707.99	16231.15	2.45
+15°C	45°C	2:22:06	29593.81	9449.75	3.13
	50°C	3:04:49	35670.36	12290.34	2.90
	55°C	3:49:36	39707.99	15268.63	2.60
+12°C	45°C	2:25:02	29593.81	9644.30	3.07
	50°C	3:08:37	35670.36	12543.38	2.84
	55°C	3:54:20	39707.99	15582.99	2.55
+7°C	45°C	2:22:06	29593.81	9449.75	3.13
	50°C	3:04:49	35670.36	12290.34	2.90
	55°C	3:49:36	39707.99	15268.63	2.60
+2°C	45°C	2:46:38	29593.81	11081.58	2.67
	50°C	3:36:44	35670.36	14412.70	2.47
	55°C	4:29:15	39707.99	17905.30	2.22
+0°C	45°C	2:48:14	29593.81	11187.01	2.65
	50°C	3:38:48	35670.36	14549.82	2.45
	55°C	4:31:49	39707.99	18075.64	2.20
-2°C	45°C	2:47:22	29593.81	11129.86	2.66
	50°C	3:37:41	35670.36	14475.53	2.46
	55°C	4:30:26	39707.99	17983.35	2.21
-7°C	45°C	0:02:50	29593.81	11355.03	2.61
	50°C	3:42:05	35670.36	14768.35	2.42
	55°C	4:35:54	39707.99	18347.13	2.16
-10°C	45°C	2:53:35	29593.81	11546.70	2.56
	50°C	3:45:46	35670.36	15013.74	2.38
	55°C	4:40:29	39707.99	18651.68	2.13
-15°C	45°C	2:58:19	29593.81	11858.16	2.50
	50°C	3:51:55	35670.36	15422.71	2.31
	55°C	4:48:07	39707.99	19160.06	2.07
-20°C	45°C	3:03:03	29593.81	12172.61	2.43
	50°C	3:58:04	35670.36	15831.68	2.25
	55°C	4:55:46	39707.99	19668.14	2.02

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	210.32
>60°C	34.44
>55°C	138.06
>50°C	202.02
>45°C	76.87
>40°C	53.19

Tapping amount 50°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	202.32
>55°C	42.43
>50°C	216.16
>45°C	109.77
>40°C	89.48

Tapping amount 45°C*	
PAW-VP1000LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	233.69
>45°C	29.83
>40°C	250.91

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 18°C
Without reheating
Heating the water from 18°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.5 Capacity table PAW-VP750LDHW (10 °C)

City water inlet temp: **10 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP750LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:37:15	29687.43	10456.67	2.84
	50°C	3:18:30	34401.82	13199.90	2.61
	55°C	4:01:45	37534.35	16076.11	2.33
+20°C	45°C	2:42:29	29687.43	10805.46	2.75
	50°C	3:25:07	34401.82	13640.19	2.52
	55°C	4:09:49	37534.35	16612.23	2.26
+15°C	45°C	2:32:51	29687.43	10164.68	2.92
	50°C	3:12:57	34401.82	12831.31	2.68
	55°C	3:55:00	37534.35	15627.21	2.40
+12°C	45°C	2:26:00	29687.43	10373.96	2.86
	50°C	3:16:55	34401.82	13095.49	2.63
	55°C	3:59:50	37534.35	15948.94	2.35
+7°C	45°C	2:32:51	29687.43	10164.00	2.92
	50°C	3:12:57	34401.82	12831.31	2.68
	55°C	3:55:00	37534.35	1627.21	2.40
+2°C	45°C	2:59:15	29687.43	11919.97	2.49
	50°C	3:46:16	34401.82	15047.09	2.90
	55°C	4:35:35	37534.35	18325.79	2.05
+0°C	45°C	3:00:57	29687.43	12033.38	2.47
	50°C	3:48:25	34401.82	15190.24	2.26
	55°C	4:38:12	37534.35	18500.14	2.03
-2°C	45°C	3:00:02	29687.43	11971.94	2.48
	50°C	3:47:16	34401.82	15112.68	2.28
	55°C	4:36:47	37534.35	18405.68	2.04
-7°C	45°C	3:03:40	29687.43	12214.11	2.43
	50°C	3:51:51	34401.82	15418.39	2.23
	55°C	4:42:24	37534.35	18778.00	2.00
-10°C	45°C	3:06:43	29687.43	12417.06	2.39
	50°C	3:55:42	34401.82	15674.58	2.19
	55°C	4:47:04	37534.35	19090.01	1.97
-15°C	45°C	3:11:49	29687.43	12755.30	2.33
	50°C	4:02:08	34401.82	16401.55	2.14
	55°C	4:54:53	37534.35	19610.02	1.91
-20°C	45°C	3:16:54	29687.43	13093.54	2.27
	50°C	4:08:33	34401.82	16528.53	2.08
	55°C		37534.35	20130.04	1.86

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	171.58
>60°C	28.10
>55°C	112.63
>50°C	164.81
>45°C	62.71
>40°C	43.40

Tapping amount 50°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	165.06
>55°C	34.62
>50°C	176.35
>45°C	89.55
>40°C	73.00

Tapping amount 45°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	190.65
>45°C	24.33
>40°C	204.70

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 10°C
Without reheating
Heating the water from 10°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.6 Capacity table PAW-VP750LDHW (12 °C)

City water inlet temp: **12 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP750LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:30:43	27995.43	10022.22	2.79
	50°C	3:11:58	32709.83	12765.45	2.56
	55°C	3:55:13	35842.35	15641.66	2.29
+20°C	45°C	2:35:44	27995.43	10356.52	2.70
	50°C	3:18:22	32709.83	13191.25	2.48
	55°C	4:03:04	35842.35	16163.39	2.22
+15°C	45°C	2:35:44	27995.43	10356.52	2.70
	50°C	3:18:22	32709.83	13191.25	2.48
	55°C	4:03:04	35842.35	16163.39	2.22
+12°C	45°C	2:29:31	27995.43	9942.94	2.82
	50°C	3:10:27	32709.83	12664.47	2.58
	55°C	3:53:21	35842.35	15517.35	2.31
+7°C	45°C	2:26:30	27995.43	9742.37	2.87
	50°C	3:06:36	32709.83	12408.99	2.64
	55°C	3:48:39	35842.35	15204.89	2.36
+2°C	45°C	2:51:48	27995.43	11424.73	2.45
	50°C	3:38:49	32709.83	14551.84	2.25
	55°C	4:28:08	35842.35	17830.54	2.01
+0°C	45°C	2:53:26	27995.43	11533.42	2.43
	50°C	3:40:54	32709.83	14690.28	2.23
	55°C	4:30:41	35842.35	18000.18	1.99
-2°C	45°C	2:52:33	27995.43	11474.53	2.44
	50°C	3:39:47	32709.83	14615.28	2.24
	55°C	4:29:18	35842.35	17908.27	2.00
-7°C	45°C	2:56:02	27995.43	11706.65	2.39
	50°C	3:44:13	32709.83	14910.93	2.19
	55°C	4:34:45	35842.35	18270.54	1.96
-10°C	45°C	2:58:58	27995.43	11901.19	2.35
	50°C	3:47:57	32709.83	15158.68	2.16
	55°C	4:39:19	35842.35	18574.11	1.93
-15°C	45°C	3:03:50	27995.43	12225.35	2.29
	50°C	3:54:10	32709.83	15571.60	2.10
	55°C	4:46:55	35842.35	19080.07	1.88
-20°C	45°C	3:08:43	27995.43	12549.54	2.23
	50°C	4:00:22	32709.83	15984.05	2.05
	55°C	4:54:32	35842.35	19586.03	1.83

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	168.22
>60°C	27.54
>55°C	110.42
>50°C	161.58
>45°C	61.48
>40°C	42.55

Tapping amount 50°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	160.83
>55°C	33.94
>50°C	172.89
>45°C	87.80
>40°C	71.57

Tapping amount 45°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	186.91
>45°C	23.86
>40°C	200,68

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 12°C
Without reheating
Heating the water from 12°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.7 Capacity table PAW-VP750LDHW (15 °C)

City water inlet temp: **15 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP750LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:23:05	25459.38	9514.76	2.68
	50°C	3:04:20	30173.78	12257.99	2.46
	55°C	3:47:35	33303.30	15134.20	2.20
+20°C	45°C	2:27:51	25459.38	9832.13	2.59
	50°C	3:10:29	30173.78	12666.86	2.38
	55°C	3:55:10	33303.30	15639.01	2.13
+15°C	45°C	2:19:05	25459.38	9249.08	2.75
	50°C	2:59:11	30173.78	11915.70	2.53
	55°C	3:41:14	33303.30	14711.60	2.26
+12°C	45°C	2:21:57	25459.38	9439.50	2.70
	50°C	3:02:52	30173.78	12161.03	2.48
	55°C	3:45:47	33303.30	15014.48	2.22
+7°C	45°C	2:19:05	25459.38	9249.08	2.75
	50°C	2:59:11	30173.78	11915.70	2.53
	55°C	3:41:14	33303.30	14711.60	2.26
+2°C	45°C	2:43:06	25459.38	10846.25	2.35
	50°C	3:30:08	30173.78	13973.37	2.16
	55°C	4:19:26	33303.30	17252.07	1.93
+0°C	45°C	2:44:39	25459.38	1949.44	2.33
	50°C	3:32:07	30173.78	14106.31	2.14
	55°C	4:21:54	33303.30	17416.20	1.91
-2°C	45°C	2:43:49	25459.38	10893.54	2.34
	50°C	3:31:03	30173.78	14034.08	2.15
	55°C	4:20:34	33303.30	17327.28	1.92
-7°C	45°C	2:47:08	25459.38	11113.90	2.29
	50°C	3:35:19	30173.78	14318.18	2.11
	55°C	4:25:50	33303.30	17677.79	1.88
-10°C	45°C	2:49:54	25459.38	11298.56	2.25
	50°C	3:38:53	30173.78	14556.08	2.07
	55°C	4:30:15	33303.30	17971.52	1.85
-15°C	45°C	2:54:32	25459.38	11606.34	2.19
	50°C	0:03:45	30173.78	14952.59	2.02
	55°C	4:37:37	33303.30	18461.06	1.80
-20°C	45°C	2:59:10	25459.38	11914.11	2.14
	50°C	3:50:49	30173.78	15349.10	1.97
	55°C	4:44:58	33303.30	18950.60	1.76

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	164.86
>60°C	26.99
>55°C	108.22
>50°C	158.35
>45°C	60.25
>40°C	41.70

Tapping amount 50°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	158.59
>55°C	33.26
>50°C	169.43
>45°C	86.04
>40°C	70.14

Tapping amount 45°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	183.17
>45°C	23.38
>40°C	196.67

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 15°C
Without reheating
Heating the water from 15°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.8 Capacity table PAW-VP750LDHW (18 °C)

City water inlet temp: **18 °C**
Outdoor unit type: **U-250PZH2E8**
Tank type: **PAW-VP750LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:18:45	22959.86	9227.01	2.49
	50°C	3:00:00	27674.26	11970.24	2.31
	55°C	3:43:15	30806.78	14846.45	2.08
+20°C	45°C	2:23:23	22959.86	9534.78	2.41
	50°C	3:06:00	27674.26	12369.51	2.24
	55°C	3:50:42	30806.78	15341.66	2.01
+15°C	45°C	2:14:53	22959.86	8969.36	2.56
	50°C	2:54:59	27674.26	11635.99	2.38
	55°C	3:37:01	30806.78	14431.88	2.13
+12°C	45°C	2:17:39	22959.86	9154.02	2.51
	50°C	2:58:35	27674.26	11875.55	2.33
	55°C	3:41:29	30806.78	14729.01	2.09
+7°C	45°C	2:14:53	22959.86	8969.36	2.56
	50°C	2:54:59	27674.26	11635.99	2.38
	55°C	3:37:01	30806.78	14431.88	2.13
+2°C	45°C	2:38:10	22959.86	10518.23	2.08
	50°C	3:25:12	27674.26	13645.35	2.03
	55°C	4:14:30	30806.78	16924.05	1.82
+0°C	45°C	2:39:40	22959.86	10618.30	2.16
	50°C	3:27:09	27674.26	13775.17	2.01
	55°C	4:16:55	30806.78	17085.06	1.80
-2°C	45°C	2:38:52	22959.86	10564.09	2.17
	50°C	3:26:05	27674.26	13704.83	2.02
	55°C	4:15:36	30806.78	16997.83	1.81
-7°C	45°C	2:42:04	22959.86	10777.79	2.13
	50°C	3:30:15	27674.26	13982.07	1.98
	55°C	4:20:47	30806.78	17341.68	1.78
-10°C	45°C	2:44:46	22959.86	10956.87	2.01
	50°C	3:33:45	27674.26	14214.39	1.95
	55°C	4:25:07	30806.78	17629.82	1.75
-15°C	45°C	2:49:15	22959.86	11255.33	2.04
	50°C	3:39:34	27674.26	14601.59	1.90
	55°C	4:32:20	30806.78	18110.06	1.70
-20°C	45°C	2:53:44	22959.86	11553.80	1.99
	50°C	3:45:24	27674.26	14988.79	1.85
	55°C	4:29:33	30806.78	1859.29	1.66

- Based on peak cut setting 70%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	163.17
>60°C	26.72
>55°C	107.11
>50°C	156.73
>45°C	59.64
>40°C	41.27

Tapping amount 50°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	156.97
>55°C	32.92
>50°C	167.71
>45°C	85.16
>40°C	69.42

Tapping amount 45°C*	
PAW-VP750LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	181.30
>45°C	23.14
>40°C	194.66

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 18°C
Without reheating
Heating the water from 18°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.9 Capacity table PAW-VP500LDHW (10 °C)

City water inlet temp: **10 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP500LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:42:39	20931.40	5421.88	3.86
	50°C	3:25:20	24255.33	6844.27	3.54
	55°C	4:10:04	26463.94	8335.00	3.17
+20°C	45°C	2:42:36	20931.40	5420.04	3.86
	50°C	3:25:16	24255.33	6841.95	3.55
	55°C	4:09:59	26463.94	8332.78	3.18
+15°C	45°C	2:42:33	20931.40	5418.20	3.86
	50°C	3:25:11	24255.33	6839.62	3.55
	55°C	4:09:54	26463.94	8329.95	3.18
+12°C	45°C	2:42:31	20931.40	5417.10	3.86
	50°C	3:25:09	24255.33	6838.23	3.55
	55°C	4:09:51	26463.94	8328.25	3.18
+7°C	45°C	2:41:01	20931.40	5366.95	3.90
	50°C	3:23:15	24255.33	6774.93	3.58
	55°C	4:07:32	26463.94	8251.16	3.21
+2°C	45°C	3:09:48	20931.40	6326.80	3.31
	50°C	3:59:36	24255.33	7986.58	3.04
	55°C	4:51:48	26463.94	9726.83	2.72
+0°C	45°C	3:11:41	20931.40	6389.35	3.28
	50°C	4:01:58	24255.33	8065.55	3.01
	55°C	4:54:41	26463.94	9832.00	2.69
-2°C	45°C	3:10:33	20931.40	6351.40	3.30
	50°C	4:00:32	24255.33	8017.64	3.03
	55°C	4:52:56	26463.94	9764.65	2.71
-7°C	45°C	3:13:53	20931.40	6463.05	3.24
	50°C	4:04:45	24255.33	8158.58	2.97
	55°C	4:58:05	26463.94	9936.30	2.66
-10°C	45°C	3:16:48	20931.40	6560.19	3.19
	50°C	4:08:26	24255.33	8281.20	2.93
	55°C	5:02:34	26463.94	10185.65	2.62
-15°C	45°C	3:21:40	20931.40	6722.09	3.11
	50°C	4:14:34	24255.33	8485.58	2.86
	55°C	5:10:02	26463.94	10334.56	2.56
-20°C	45°C	3:26:31	20931.40	6883.99	3.04
	50°C	4:20:42	24255.33	8689.95	2.79
	55°C	5:17:30	26463.94	10583.46	2.50

- Based on peak cut setting 65%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	120.98
>60°C	19.81
>55°C	79.41
>50°C	116.20
>45°C	44.22
>40°C	30.60

Tapping amount 50°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	116.38
>55°C	24.41
>50°C	124.34
>45°C	63.14
>40°C	51.47

Tapping amount 45°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	134.42
>45°C	17.16
>40°C	144.32

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 10°C
Without reheating
Heating the water from 10°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.10 Capacity table PAW-VP500LDHW (12 °C)

City water inlet temp: **12 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP500LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:35:54	19735.44	5196.61	3.80
	50°C	3:18:34	23062.37	6619.00	3.48
	55°C	4:03:19	25270.98	8110.34	3.12
+20°C	45°C	2:35:51	19735.44	5194.85	3.80
	50°C	3:18:30	23062.37	6616.76	3.49
	55°C	4:03:14	25270.98	8107.59	3.12
+15°C	45°C	2:35:48	19735.44	5193.09	3.80
	50°C	3:18:26	23062.37	6614.51	3.49
	55°C	4:03:09	25270.98	8104.84	3.12
+12°C	45°C	2:35:46	19735.44	5192.03	3.80
	50°C	3:18:24	23062.37	6613.16	3.49
	55°C	4:03:06	25270.98	8103.19	3.12
+7°C	45°C	2:34:19	19735.44	5143.96	3.84
	50°C	3:16:33	23062.37	6551.94	3.52
	55°C	4:00:51	25270.98	8028.17	3.15
+2°C	45°C	3:01:55	19735.44	6063.93	3.26
	50°C	3:51:43	23062.37	7723.72	2.99
	55°C	4:43:55	25270.98	9463.97	2.67
+0°C	45°C	3:03:43	19735.44	6123.89	3.22
	50°C	3:54:00	23062.37	7800.08	2.96
	55°C	4:46:44	25270.98	9557.54	2.64
-2°C	45°C	3:02:38	19735.44	6087.51	3.24
	50°C	3:52:37	23062.37	7753.75	2.97
	55°C	4:45:01	25270.98	9500.77	2.66
-7°C	45°C	3:05:50	19735.44	6194.52	3.19
	50°C	3:56:42	23062.37	7890.05	2.92
	55°C	4:50:02	25270.98	9667.78	2.61
-10°C	45°C	3:08:38	19735.44	6287.63	3.14
	50°C	4:00:16	23062.37	8008.64	2.88
	55°C	4:54:24	25270.98	9813.09	2.58
-15°C	45°C	3:13:17	19735.44	6442.80	3.06
	50°C	4:06:11	23062.37	8206.29	2.81
	55°C	5:01:39	25270.98	10055.27	2.51
-20°C	45°C	3:17:56	19735.44	6597.98	2.99
	50°C	4:12:07	23062.37	8403.94	2.74
	55°C	5:08:55	25270.98	10297.45	2.45

- Based on peak cut setting 65%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	118.60
>60°C	19.42
>55°C	77.86
>50°C	113.92
>45°C	43.35
>40°C	30.00

Tapping amount 50°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	114.10
>55°C	23.93
>50°C	121.90
>45°C	61.90
>40°C	50.46

Tapping amount 45°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	131.78
>45°C	16.82
>40°C	141.49

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 12°C
Without reheating
Heating the water from 12°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.11 Capacity table PAW-VP500LDHW (15 °C)

City water inlet temp: **15 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP500LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:28:00	17950.37	4933.49	3.64
	50°C	3:10:41	21274.30	6355.88	3.35
	55°C	3:55:25	23482.92	7847.22	2.99
+20°C	45°C	2:27:57	17950.37	4931.82	3.64
	50°C	3:10:37	21274.30	6353.72	3.35
	55°C	3:55:20	23482.92	7844.56	2.99
+15°C	45°C	2:27:54	17950.37	4930.14	3.64
	50°C	3:10:33	21274.30	6351.57	3.35
	55°C	3:55:15	23482.92	7841.89	2.99
+12°C	45°C	2:27:52	17950.37	4929.14	3.64
	50°C	3:10:30	21274.30	6350.27	3.35
	55°C	3:55:13	23482.92	7840.30	3.00
+7°C	45°C	2:26:30	17950.37	4883.51	3.68
	50°C	3:08:45	21274.30	6291.49	3.38
	55°C	3:53:02	23482.92	7767.72	3.02
+2°C	45°C	2:52:42	17950.37	5756.90	3.12
	50°C	3:42:30	21274.30	7416.68	2.87
	55°C	4:34:42	23482.92	9156.93	2.56
+0°C	45°C	2:54:25	17950.37	5813.81	3.09
	50°C	3:44:42	21274.30	7490.01	2.84
	55°C	4:37:25	23482.92	9247.46	2.54
-2°C	45°C	2:53:23	17950.37	5779.28	3.11
	50°C	3:43:22	21274.30	7445.52	2.86
	55°C	4:35:47	23482.92	9192.53	2.55
-7°C	45°C	2:56:26	17950.37	5880.87	3.05
	50°C	3:47:18	21274.30	7576.40	2.81
	55°C	4:40:37	23482.92	9354.13	2.51
-10°C	45°C	2:59:05	17950.37	5969.26	3.01
	50°C	3:50:43	21274.30	7690.28	2.77
	55°C	4:44:50	23482.92	9494.72	2.47
-15°C	45°C	3:03:30	17950.37	6116.58	2.93
	50°C	3:56:24	21274.30	7880.07	2.70
	55°C	4:51:52	23482.92	9729.05	2.41
-20°C	45°C	3:07:55	17950.37	6263.90	2.87
	50°C	4:02:06	21274.30	8069.86	2.64
	55°C	4:58:54	23482.92	9963.37	2.36

- Based on peak cut setting 65%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	116.23
>60°C	19.03
>55°C	76.30
>50°C	111.64
>45°C	42.48
>40°C	29.40

Tapping amount 50°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	111.81
>55°C	23.45
>50°C	119.46
>45°C	60.67
>40°C	49.45

Tapping amount 45°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	129.15
>45°C	16.48
>40°C	138.66

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 15°C
Without reheating
Heating the water from 15°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.12 Capacity table PAW-VP500LDHW (18 °C)

City water inlet temp: **18 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP500LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	2:23:32	16188.06	4784.29	3.38
	50°C	3:06:12	19511.99	6206.68	3.14
	55°C	3:50:56	21720.61	7698.02	2.82
+20°C	45°C	2:23:29	16188.06	4782.67	3.38
	50°C	3:06:08	19511.99	6204.57	3.14
	55°C	3:50:52	21720.61	7695.41	2.82
+15°C	45°C	2:23:06	16188.06	4781.04	3.39
	50°C	3:06:04	19511.99	6202.47	3.15
	55°C	3:50:47	21720.61	7692.79	2.82
+12°C	45°C	2:23:24	16188.06	4780.07	3.39
	50°C	3:06:02	19511.99	6201.20	3.15
	55°C	3:50:44	21720.61	7691.23	2.86
+7°C	45°C	2:22:04	16188.06	4735.82	3.42
	50°C	3:04:19	19511.99	6143.80	3.18
	55°C	3:48:36	21720.61	7620.03	2.85
+2°C	45°C	2:47:29	16188.06	5582.79	2.90
	50°C	3:37:17	19511.99	7242.58	2.69
	55°C	4:29:29	21720.61	8982.83	2.42
+0°C	45°C	2:49:08	16188.06	5637.99	2.87
	50°C	3:39:26	19511.99	7314.19	2.67
	55°C	4:32:09	21720.61	9071.64	2.39
-2°C	45°C	2:48:08	16188.06	5604.50	2.89
	50°C	3:38:07	19511.99	7270.74	2.68
	55°C	4:30:32	21720.61	9017.75	2.41
-7°C	45°C	2:51:05	16188.06	5703.02	2.84
	50°C	3:41:57	19511.99	7398.55	2.64
	55°C	4:35:17	21720.61	9176.27	2.37
-10°C	45°C	2:53:40	16188.06	5788.74	2.80
	50°C	3:45:18	19511.99	7509.75	2.60
	55°C	4:39:26	21720.61	9317.20	2.33
-15°C	45°C	2:57:57	16188.06	5931.60	2.73
	50°C	3:50:51	19511.99	7695.09	2.54
	55°C	4:46:19	21720.61	9544.07	2.28
-20°C	45°C	3:02:14	16188.06	6074.00	2.66
	50°C	3:56:25	19511.99	7880.43	2.48
	55°C	4:53:13	21720.61	9773.94	2.22

- Based on peak cut setting 65%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	115.05
>60°C	18.84
>55°C	75.52
>50°C	110.51
>45°C	42.05
>40°C	29.10

Tapping amount 50°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	110.67
>55°C	23.21
>50°C	118.24
>45°C	60.05
>40°C	48.95

Tapping amount 45°C*	
PAW-VP500LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	127.83
>45°C	16.32
>40°C	137.25

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 15°C
Without reheating
Heating the water from 15°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.13 Capacity table PAW-VP200LDHW (10 °C)

City water inlet temp: **10 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP200LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	1:42:59	8748.67	2917.90	3.00
	50°C	2:10:00	10134.97	3683.39	2.75
	55°C	2:38:20	11061.10	4485.99	2.47
+20°C	45°C	1:42:57	8748.67	2916.91	3.00
	50°C	2:09:57	10134.97	3682.14	2.75
	55°C	2:38:17	11061.10	4484.46	2.47
+15°C	45°C	1:42:55	8748.67	2915.92	3.00
	50°C	2:09:55	10134.97	3680.89	2.75
	55°C	2:38:13	11061.10	4482.94	2.47
+12°C	45°C	1:42:54	8748.67	2915.33	3.00
	50°C	2:09:53	10134.97	3680.14	2.75
	55°C	2:38:11	11061.10	4482.03	2.47
+7°C	45°C	1:41:56	8748.67	2888.34	3.03
	50°C	2:08:41	10134.97	3646.07	2.78
	55°C	2:36:43	11061.10	4440.54	2.49
+2°C	45°C	2:00:10	8748.67	3404.90	2.57
	50°C	2:31:42	10134.97	4298.15	2.36
	55°C	3:04:45	11061.10	5234.70	2.11
+0°C	45°C	2:01:22	8748.67	3438.57	2.54
	50°C	2:33:12	10134.97	4340.65	2.34
	55°C	3:06:35	11061.10	5286.46	2.09
-2°C	45°C	2:00:38	8748.67	3418.14	2.56
	50°C	2:32:17	10134.97	4314.86	2.35
	55°C	3:05:28	11061.10	5255.06	2.10
-7°C	45°C	2:02:46	8748.67	3478.23	2.52
	50°C	2:34:58	10134.97	4390.71	2.31
	55°C	3:08:44	11061.10	5347.43	2.07
-10°C	45°C	2:04:36	8748.67	3530.51	2.48
	50°C	2:37:18	10134.97	4456.71	2.27
	55°C	3:11:34	11061.10	5427.81	2.04
-15°C	45°C	2:07:41	8748.67	3617.64	2.42
	50°C	2:41:11	10134.97	4566.70	2.22
	55°C	3:16:18	11061.10	5561.76	1.99
-20°C	45°C	2:10:45	8748.67	3704.77	2.36
	50°C	2:45:04	10134.97	4676.68	2.17
	55°C	3:21:02	11061.10	5695.72	1.94

- Based on peak cut setting 45%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	50.56
>60°C	8.28
>55°C	33.19
>50°C	48.57
>45°C	18.48
>40°C	12.79

Tapping amount 50°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	48.64
>55°C	10.20
>50°C	51.97
>45°C	26.39
>40°C	21.51

Tapping amount 45°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	56.18
>45°C	7.17
>40°C	60.32

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 10°C
Without reheating
Heating the water from 10°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.14 Capacity table PAW-VP200LDHW (12 °C)

City water inlet temp: **12 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP200LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	1:38:42	8250.05	2796.67	2.95
	50°C	2:05:43	9639.35	3562.16	2.71
	55°C	2:34:03	10562.48	4364.75	2.42
+20°C	45°C	1:38:40	8250.05	2795.00	2.95
	50°C	2:05:41	9639.35	3560.95	2.71
	55°C	2:34:00	10562.48	4363.27	2.42
+15°C	45°C	1:38:38	8250.05	2794.77	2.95
	50°C	2:05:38	9639.35	3559.74	2.71
	55°C	2:23:57	10562.48	4361.79	2.42
+12°C	45°C	1:38:37	8250.05	2794.20	2.95
	50°C	2:05:37	9639.35	3559.02	2.71
	55°C	2:33:55	10562.48	4360.90	2.42
+7°C	45°C	1:37:42	8250.05	2768.33	2.98
	50°C	2:04:27	9639.35	3526.07	2.73
	55°C	2:32:29	10562.48	4320.53	2.44
+2°C	45°C	1:55:11	8250.05	3263.44	2.53
	50°C	2:26:42	9639.35	4156.69	2.32
	55°C	2:59:46	10562.48	5093.24	2.07
+0°C	45°C	1:56:19	8250.05	3295.70	2.50
	50°C	2:28:09	9639.35	4197.78	2.30
	55°C	3:01:32	10562.48	5143.59	2.05
-2°C	45°C	1:55:38	8250.05	3276.12	2.52
	50°C	2:27:17	9639.35	4172.85	2.31
	55°C	3:00:28	10562.48	5113.04	2.07
-7°C	45°C	1:57:40	8250.05	3333.71	2.47
	50°C	2:29:52	9639.35	4246.20	2.27
	55°C	3:03:38	10562.48	5202.92	2.03
-10°C	45°C	1:59:26	8250.05	3383.82	2.44
	50°C	2:32:07	9639.35	4310.02	2.24
	55°C	3:06:24	10562.48	5281.12	2.00
-15°C	45°C	2:02:23	8250.05	3467.33	2.38
	50°C	2:35:52	9639.35	4416.39	2.18
	55°C	3:11:00	10562.48	5411.46	1.95
-20°C	45°C	2:05:19	8250.05	3550.84	2.32
	50°C	2:39:38	9639.35	4522.76	2.13
	55°C	3:15:36	10562.48	554.79	1.91

- Based on peak cut setting 45%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	49.57
>60°C	8.12
>55°C	32.54
>50°C	47.62
>45°C	18.12
>40°C	12.54

Tapping amount 50°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	47.69
>55°C	10.00
>50°C	50.95
>45°C	25.87
>40°C	21.09

Tapping amount 45°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	55.08
>45°C	7.03
>40°C	59.14

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 12°C
Without reheating
Heating the water from 12°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.15 Capacity table PAW-VP200LDHW (15 °C)

City water inlet temp: **15 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP200LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	1:33:42	7502.70	2655.06	2.83
	50°C	2:00:44	8891.99	3420.55	2.60
	55°C	2:29:03	9815.13	4223.15	2.32
+20°C	45°C	1:33:41	7502.70	2654.16	2.83
	50°C	2:00:41	8891.99	3419.39	2.60
	55°C	2:29:00	9815.13	4221.71	2.32
+15°C	45°C	1:33:39	7502.70	2653.26	2.83
	50°C	2:00:39	8891.99	3418.23	2.60
	55°C	2:28:57	9815.13	4220.28	2.33
+12°C	45°C	1:33:38	7502.70	2652.72	2.83
	50°C	2:00:37	8891.99	3417.53	2.60
	55°C	2:28:55	9815.13	4219.42	2.33
+7°C	45°C	1:32:46	7502.70	2628.16	2.85
	50°C	1:59:30	8891.99	3385.90	2.63
	55°C	2:27:33	9815.13	4180.36	2.35
+2°C	45°C	1:49:21	7502.70	3098.20	2.42
	50°C	2:20:52	8891.99	3991.45	2.23
	55°C	2:53:59	9815.13	4928.00	1.99
+0°C	45°C	1:50:26	7502.70	3128.83	2.40
	50°C	2:22:16	8891.99	4030.91	2.21
	55°C	2:55:39	9815.13	4976.72	1.97
-2°C	45°C	1:49:46	7502.70	3110.24	2.41
	50°C	2:21:25	8891.99	4006.97	2.22
	55°C	2:54:36	9815.13	4947.16	1.98
-7°C	45°C	1:51:42	7502.70	3164.92	2.37
	50°C	2:23:55	8891.99	4077.40	2.18
	55°C	2:57:40	9815.13	5034.12	1.95
-10°C	45°C	1:53:23	7502.70	3212.49	2.34
	50°C	2:26:04	8891.99	4138.69	2.15
	55°C	3:00:21	9815.13	5109.79	1.92
-15°C	45°C	1:56:11	7502.70	3291.77	2.28
	50°C	2:29:41	8891.99	4240.83	2.10
	55°C	3:04:48	9815.13	5235.89	1.87
-20°C	45°C	1:58:59	7502.70	3371.05	2.23
	50°C	2:33:17	8891.99	4342.97	2.05
	55°C	3:09:15	9815.13	5362.00	1.83

- Based on peak cut setting 45%
- Please note: The data mentioned in this document is gotten by calculation (approximation). Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	48.58
>60°C	7.95
>55°C	31.89
>50°C	46.66
>45°C	17.76
>40°C	12.29

Tapping amount 50°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	46.73
>55°C	9.80
>50°C	49.93
>45°C	25.36
>40°C	20.67

Tapping amount 45°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	53.98
>45°C	6.89
>40°C	57.96

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 15°C
Without reheating
Heating the water from 15°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.16 Capacity table PAW-VP200LDHW (18 °C)

City water inlet temp: **18 °C**
Outdoor unit type: **U-100PZH2E5/8**
Tank type: **PAW-VP200LDHW**

Ambient temperature	Water temp	Time	Heating Capacity	Power Input	COP
WB	Set temp	[h:m:s]	[Ws]	[Ws]	[Ws / Ws]
+25°C	45°C	1:30:52	6766.11	2574.77	2.63
	50°C	1:57:53	3340.26	3340.26	2.44
	55°C	2:26:13	9078.58	4142.85	2.19
+20°C	45°C	1:30:51	6766.11	2573.89	2.63
	50°C	1:57:51	3340.26	3339.12	2.44
	55°C	2:26:10	9078.58	4141.45	2.19
+15°C	45°C	1:30:49	6766.11	2573.02	2.63
	50°C	1:57:49	3340.26	3337.99	2.44
	55°C	2:26:07	9078.58	4140.04	2.19
+12°C	45°C	1:30:48	6766.11	2572.50	2.63
	50°C	1:57:47	3340.26	3337.31	2.44
	55°C	2:26:05	9078.58	4139.20	2.19
+7°C	45°C	1:29:57	6766.11	2548.68	2.65
	50°C	1:56:42	3340.26	3306.42	2.47
	55°C	2:24:44	9078.58	4100.88	2.21
+2°C	45°C	1:46:02	6766.11	3004.50	2.25
	50°C	2:17:34	3340.26	3897.75	2.09
	55°C	2:50:37	9078.58	4834.30	1.88
+0°C	45°C	1:47:05	6766.11	3034.20	2.23
	50°C	2:18:56	3340.26	3936.29	2.07
	55°C	2:52:19	9078.58	4882.10	1.86
-2°C	45°C	1:46:27	6766.11	3016.18	2.24
	50°C	2:18:06	3340.26	3912.90	2.08
	55°C	2:51:17	9078.58	4852.10	1.87
-7°C	45°C	1:48:19	6766.11	3069.20	2.20
	50°C	2:20:32	3340.26	3981.69	2.05
	55°C	2:54:18	9078.58	4938.41	1.84
-10°C	45°C	1:49:57	6766.11	3115.33	2.17
	50°C	2:22:39	3340.26	4041.53	2.02
	55°C	2:56:55	9078.58	5012.63	1.81
-15°C	45°C	1:52:40	6766.11	3192.22	2.12
	50°C	2:26:10	3340.26	4141.28	1.97
	55°C	3:01:17	9078.58	5136.34	1.77
-20°C	45°C	1:55:23	6766.11	3269.10	2.07
	50°C	2:29:41	3340.26	4241.02	1.92
	55°C	3:05:39	9078.58	5260.05	1.73

- Based on peak cut setting 45%
- Please note: The data mentioned in this document is gotten by calculation (approximation).
  Please use only for reference."
- Equivalent tubing length: 7,5 m, Difference of elevation: 0 m

Tapping amount with end temperature

Tapping amount 55°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	48.09
>60°C	7.87
>55°C	31.57
>50°C	46.19
>45°C	17.58
>40°C	12.16

Tapping amount 50°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	46.26
>55°C	9.70
>50°C	49.42
>45°C	25.10
>40°C	20.46

Tapping amount 45°C*	
PAW-VP200LDHW	
[°C]	[ltr.]
>65°C	0.00
>60°C	0.00
>55°C	0.00
>50°C	53.43
>45°C	6.82
>40°C	57.37

* Based on:
End temperature: 55°C, 50°C, 45°C
Outdoor temperature: +7°C
City water temperature: 18°C
Without reheating
Heating the water from 18°C to end temperature
Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.17 Cooling capacity table PAW-VP380L

Operation type: **Cooling capacity**
Outdoor unit type: **U-200PZH2E8**
Tank type: **PAW-VP380L**

Ambient temperature	**Δt 5K** Water Outlet	Cooling capacity [kW]	Power Input [kW]	EER [kW/kW]
+40°C	5°C	10.20	7.75	1.32
	7°C	11.69	8.93	1.31
	12°C	20.40	9.44	2.16
+35°C	5°C	11.20	6.74	1.66
	7°C	12.80	8.00	1.60
	15°C	22.40	8.43	2.66
+30°C	5°C	12.00	5.90	2.03
	7°C	13.75	7.10	1.94
	12°C	22.80	7.70	2.96
+25°C	5°C	12.54	5.05	2.48
	7°C	14.37	5.98	2.40
	12°C	23.00	6.30	3.65
+20°C	5°C	13.21	4.88	2.71
	7°C	15.14	5.73	2.64
	12°C	23.40	6.11	3.83
+15°C	5°C	12.15	4.80	2.53
	12°C	13.92	5.64	2.47
	15°C	23.30	6.11	3.81
+10°C	5°C	12.32	4.72	2.61
	7°C	14.11	5.56	2.54
	12°C	23.20	5.81	3.99
+2°C	5°C	12.54	4.63	2.71
	7°C	14.24	5.47	2.60
	12°C	23.00	5.73	4.01
0°C	5°C	12.54	4.55	2.76
	7°C	14.37	5.39	2.67
	12°C	22.90	5.64	4.06
-7°C	5°C	11.42	4.38	2.61
	7°C	13.90	5.22	2.66
	12°C	22.84	5.56	4.11
-10°C	5°C	11.48	4.29	2.68
	7°C	13.15	5.14	2.56
	12°C	22.90	5.39	4.25

Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

3.18 Heating capacity table PAW-VP380L

Operation type: **Heating capacity**
Outdoor unit type: **U-200PZH2E8**
Tank type: **PAW-VP380L**

Ambient temperature	Δt 10K Water Outlet	Heating capacity [kW]	Power Input [kW]	COP [kW/kW]
+25°C	35°C	25.95	5.18	5.01
	40°C	24.95	5.38	4.64
	45°C	24.45	5.83	4.19
	50°C	21.82	6.39	3.41
+20°C	35°C	25.50	5.52	4.62
	40°C	24.70	5.72	4.32
	45°C	24.20	5.72	4.23
	50°C	21.58	6.73	3.21
+15°C	35°C	23.25	7.18	3.24
	40°C	22.45	7.38	3.04
	45°C	21.95	7.83	2.80
	50°C	19.33	8.39	2.30
+10°C	35°C	25.20	7.07	3.56
	40°C	24.40	7.27	3.36
	45°C	23.90	7.72	3.10
	50°C	21.28	8.28	2.57
+7°C	35°C	25.00	7.03	3.56
	40°C	24.20	7.23	3.35
	45°C	23.70	7.23	3.28
	50°C	21.08	8.24	2.56
+2°C	35°C	23.00	6.94	3.31
	40°C	22.20	7.14	3.11
	45°C	21.70	7.59	2.86
	50°C	19.08	8.15	2.34
+0°C	35°C	22.50	6.88	3.27
	40°C	21.70	7.08	3.06
	45°C	21.20	7.53	2.82
	50°C	18.58	8.08	2.30
-7°C	35°C	20.06	5.52	3.63
	40°C	19.80	5.72	3.46
	45°C	19.30	6.16	3.13
	50°C	16.68	6.73	2.48
-10°C	35°C	19.30	5.18	3.73
	40°C	18.50	5.38	3.44
	45°C	18.00	5.83	3.09
	50°C	15.38	6.39	2.41
-15°C	35°C	17.00	4.60	3.70
	40°C	16.20	4.82	3.36
	45°C	15.70	5.27	2.98
	50°C	13.08	5.83	2.24
-20°C	35°C	14.50	4.01	3.62
	40°C	13.70	4.21	3.25
	45°C	13.20	4.66	2.83
	50°C	10.58	5.23	2.02

Please note: The data mentioned in this document is gotten by calculation (approximation).
Please use only for reference.

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
PAW-VP1000L	3/4”	1/2”
PAW-VP750L	3/4”	1/2”
PAW-VP500L	5/8”	3/8”
PAW-VP200L	5/8”	3/8”
PAW-VP380L	3/4”	1/2”

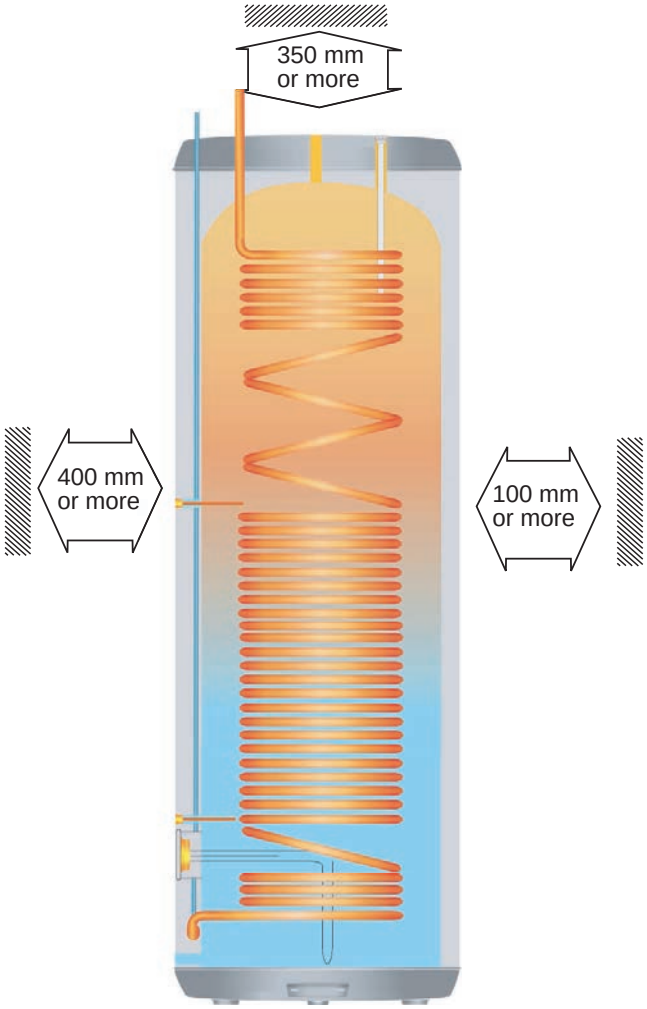
Please refer to chapter 4 for Refrigerant connecting pipes.

4.2 DHW tank water quality

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

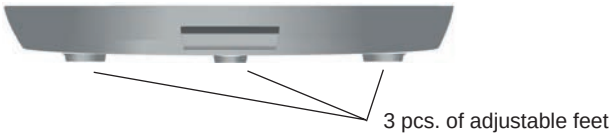
4.3 DHW tank unit installation space

The DHW tank must be within the following maintenance space.



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

PAW-VP1000LDHW

Tubing data \ Combined with outdoor unit			U-250PZH2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	1/2”
	Gas tube	[mm (in.)]	1 1/8”
Limit of tubing length (L)		[m]	30
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	30
Attention: follow instruction			Remove 600 g for pipe length 7.5 m
Required additional refrigerant over 7 meters		[g/m]	80
Refrigerant charged at shipment R32		[kg]	5.2

PAW-VP1000LDHW

Tubing data \ Combined with outdoor unit			U-16MF3E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	1/2”
	Gas tube	[mm (in.)]	1 1/8”
Limit of tubing length (L)		[m]	50
Height Differential of Indoor/Outdoor Units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	30
Attention: follow instruction if piping under 15 m. Over 50 m meters is not needed			Add receiver tank 3 liter
Required additional refrigerant over 7.5 meters		[g/m]	80
Refrigerant charged at shipment R410A		[kg]	8.3

The system must have extra refrigerant filling, please see installation manual for U-16MF3E8.

PAW-VP750LDHW

Tubing data \ Combined with outdoor unit			U-250PZH2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	1/2”
	Gas tube	[mm (in.)]	1 1/8”
Limit of tubing length (L)		[m]	30
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	30
Attention: follow instruction			Remove 1500 g for pipe length 7,5 m
Required additional refrigerant		[g/m]	80
Refrigerant charged at shipment R32		[kg]	5.2

PAW-VP750LDHW

Tubing data \ Combined with outdoor unit			U-16MF3E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	1/2”
	Gas tube	[mm (in.)]	1 1/8”
Limit of tubing length (L)		[m]	50
Height Differential of Indoor/Outdoor Units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	30
Attention: follow instruction if piping under 15 m. Over 50 m meters is not needed			Add receiver tank 3 liter
Required additional refrigerant over 7.5 meters		[g/m]	80
Refrigerant charged at shipment R410A		[kg]	8.3

The system must have extra refrigerant filling, please see installation manual for U-16MF3E8.

PAW-VP500LDHW

Tubing data \ Combined with outdoor unit			U-100PZH2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	3/8”
	Gas tube	[mm (in.)]	5/8”
Limit of tubing length (L)		[m]	30
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	15
Attention: follow instruction			Remove 1000 g for pipe length 7.5 m
Required additional refrigerant		[g/m]	45
Refrigerant charged at shipment R32		[kg]	3.05

PAW-VP200LDHW

Tubing data \ Combined with outdoor unit			U-100PZH2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	3/8”
	Gas tube	[mm (in.)]	5/8”
Limit of tubing length (L)		[m]	30
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	15
Attention: follow instruction			Remove 1400 g for pipe length 7.5 m
Required additional refrigerant		[g/m]	45
Refrigerant charged at shipment R32		[kg]	3.05

PAW-VP380L

Tubing data \ Combined with outdoor unit			U-200PZH2E8
Tubing size outer diameter	Liquid tube	[mm (in.)]	3/8”
	Gas tube	[mm (in.)]	1 1/8”
Limit of tubing length (L)		[m]	30
Height differential of Indoor/ Outdoor units (H1)	Outdoor unit is placed higher	[m]	30
	Outdoor unit is placed lower	[m]	30
Systems must be pre-charged with refrigerant		[kg]	1
Required additional refrigerant over 7.5 meters		[g/m]	60
Refrigerant charged at shipment R32		[kg]	4.2

5.2 Calculation of the refrigerant charge

How to calculate refrigerant charge

Example 1:

PAW-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:

PAW-VP750LDHW and U-250PZH2E8

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

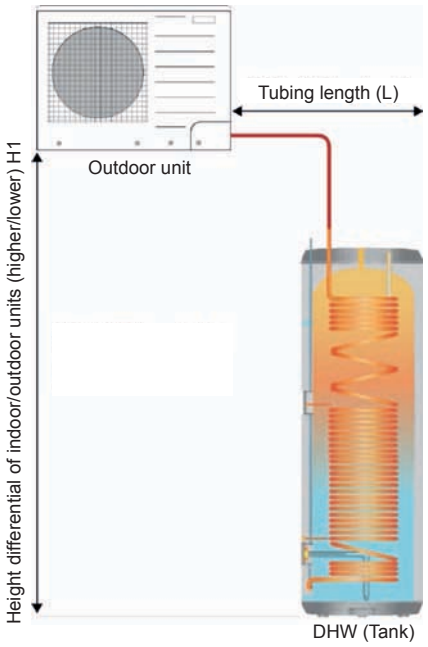
Find the liquid tube size and additional charge from the tables below.

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.

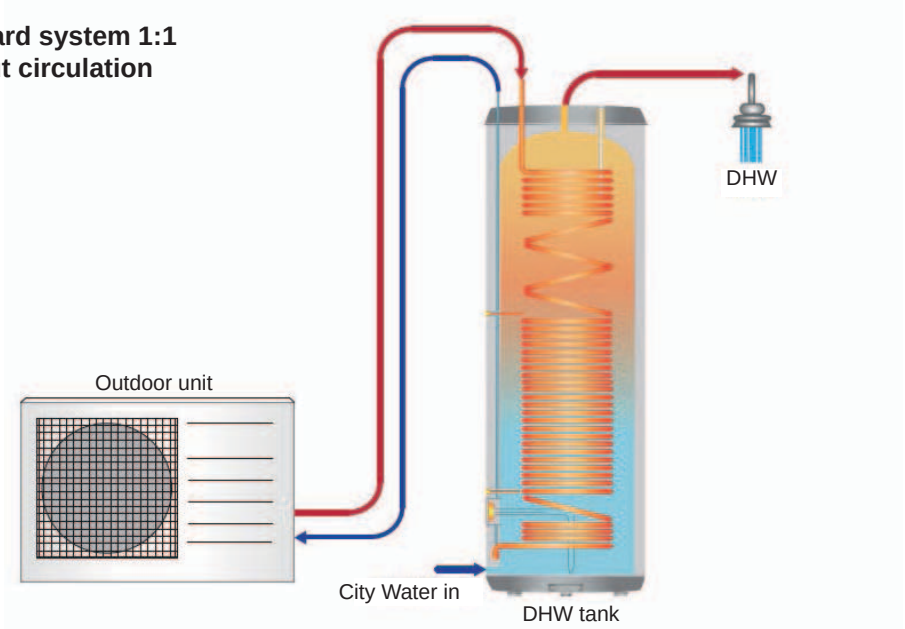


5

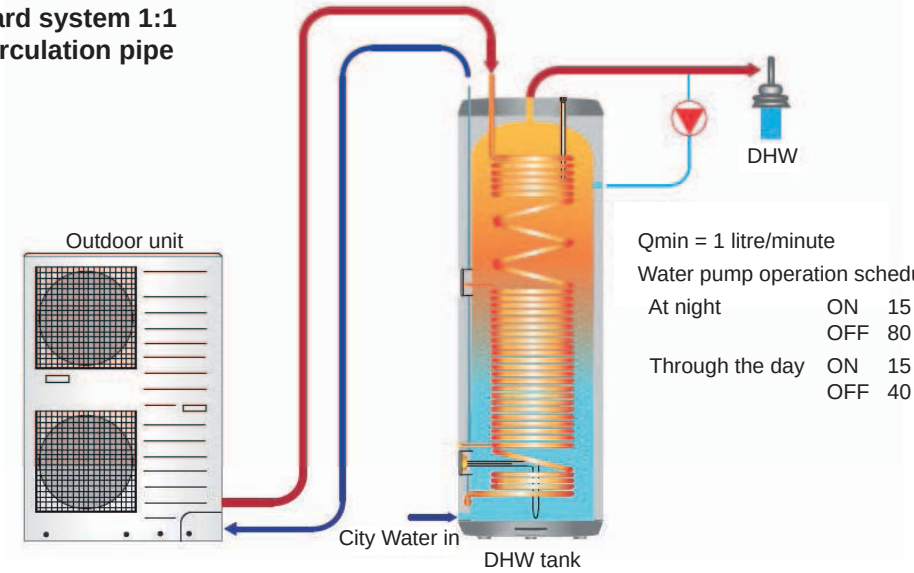
6 System drawings

6.1 System PAC DHW

■ **Standard system 1:1 without circulation**



■ **Standard system 1:1 with circulation pipe**



Qmin = 1 litre/minute

Water pump operation schedule

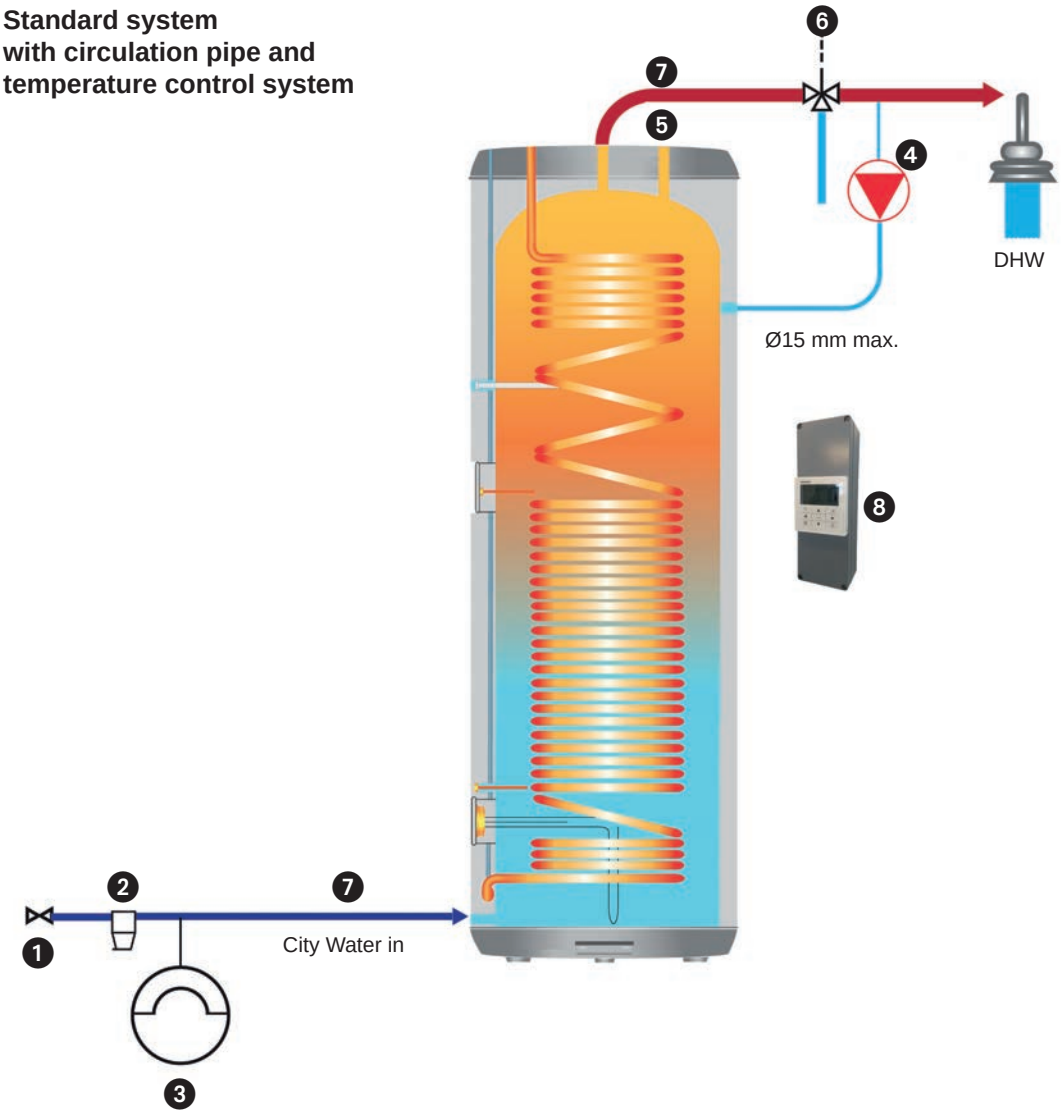
At night	ON	15 min
	OFF	80 min
Through the day	ON	15 min
	OFF	40 min

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 PACi/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)
2. Strainer (field supplied)
3. Expansion tank if check valve or pressure control valve is mounted (field supplied)
4. Circulation water pump (e.g. Grundfos comfort UP 15–14 BA PM, field supplied)
5. Safety valve 6 or 9.5 bar (field supplied)
6. Temperature control valve (field supplied)
7. Water pipe inlet/outlet VP1000L/750 (35 mm) VP500L/200 (22 mm)
8. PAW-VP RTC5B PAC/ECO controller

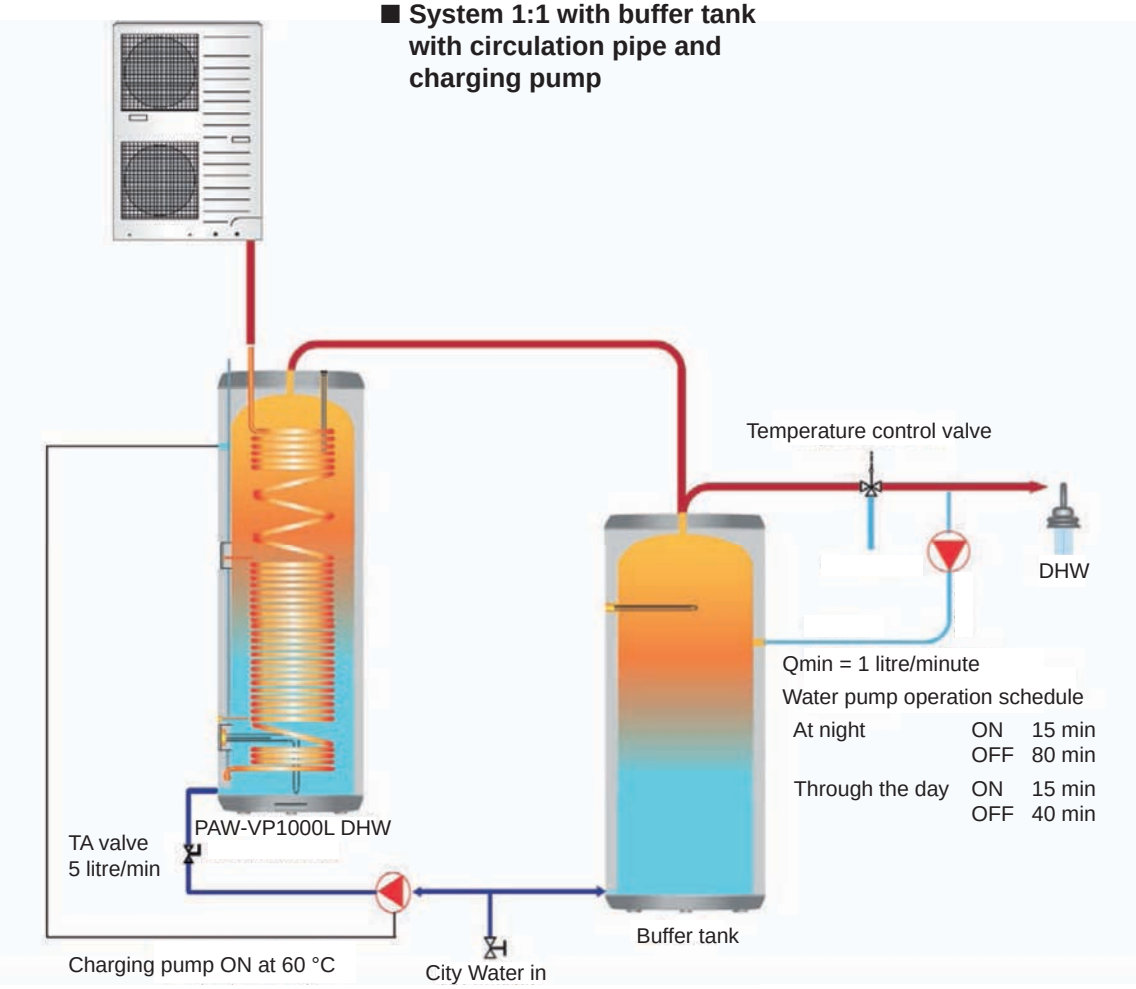
For a hotel or apartment complex where the last room is more than 30 meters away from the DHW tank, a water pump (for example type Grundfos comfort UP 15-14 BA PM) should be installed in order to obtain hot water quickly.

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 PAC DHW with buffer tank

Refer to the next chapter for details.

■ System 1:1 with buffer tank with circulation pipe and charging pump



If the consumption is more than 1400 liters of DHW, this solution is cost effective as a result of a low investment costs.

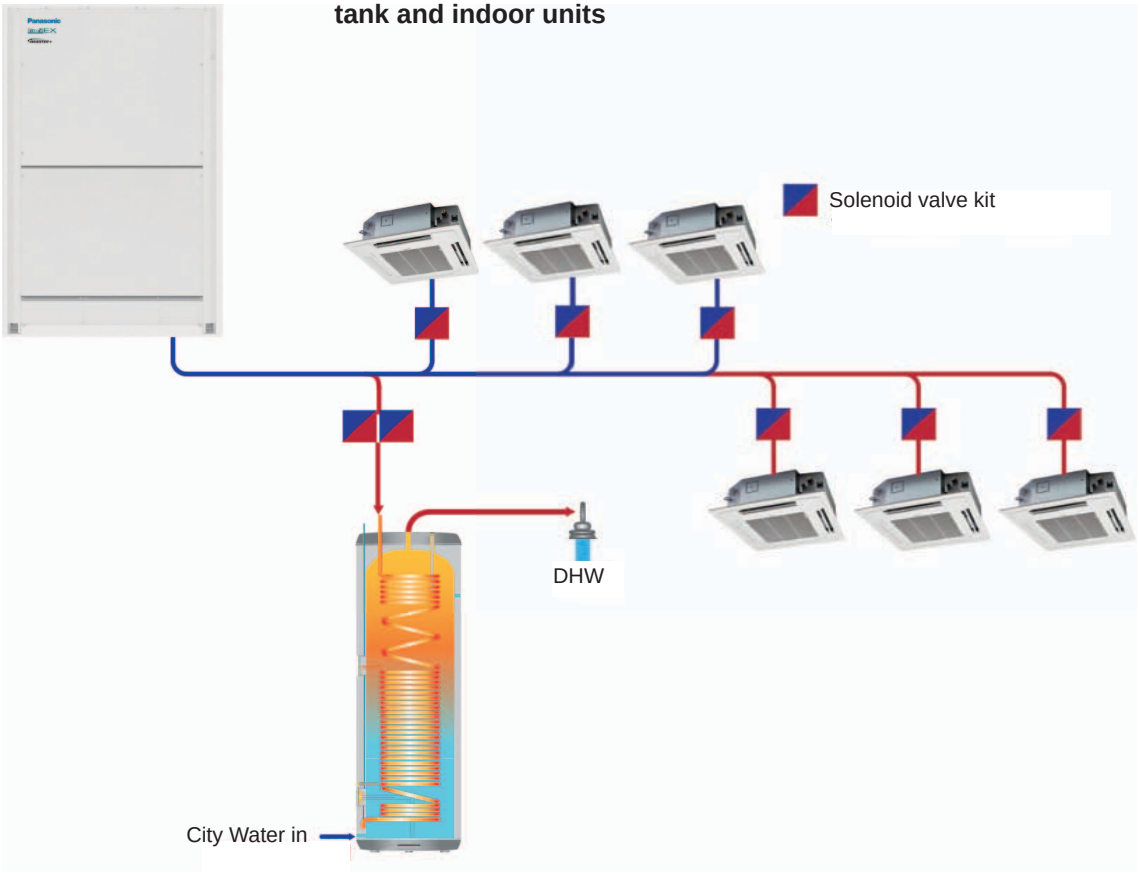
When the consumption of DHW is 4500 liters in the morning and 4500 liters in the evening, that is a typical tapping cycle for a small hotel, this solution can satisfy the total need of DHW by producing hot water from 10 °C to a maximum of 65 °C.

Water pump, for example Grundfos comfort UP 15-14 BA PM for pump circulation.

The buffer tank shown in this example is 3000 liters.

6.4 System U-16MF3E8

■ **Mixed System with DHW tank and indoor units**



The discharge pipe must be kept as short as possible, max 50 m to the DHW tank and connected at the first branch of the outdoor unit.

The pressure pipe from the MF3 to the DHW tank must be insulated with the correct insulation. Do not use Armaflex insulation.

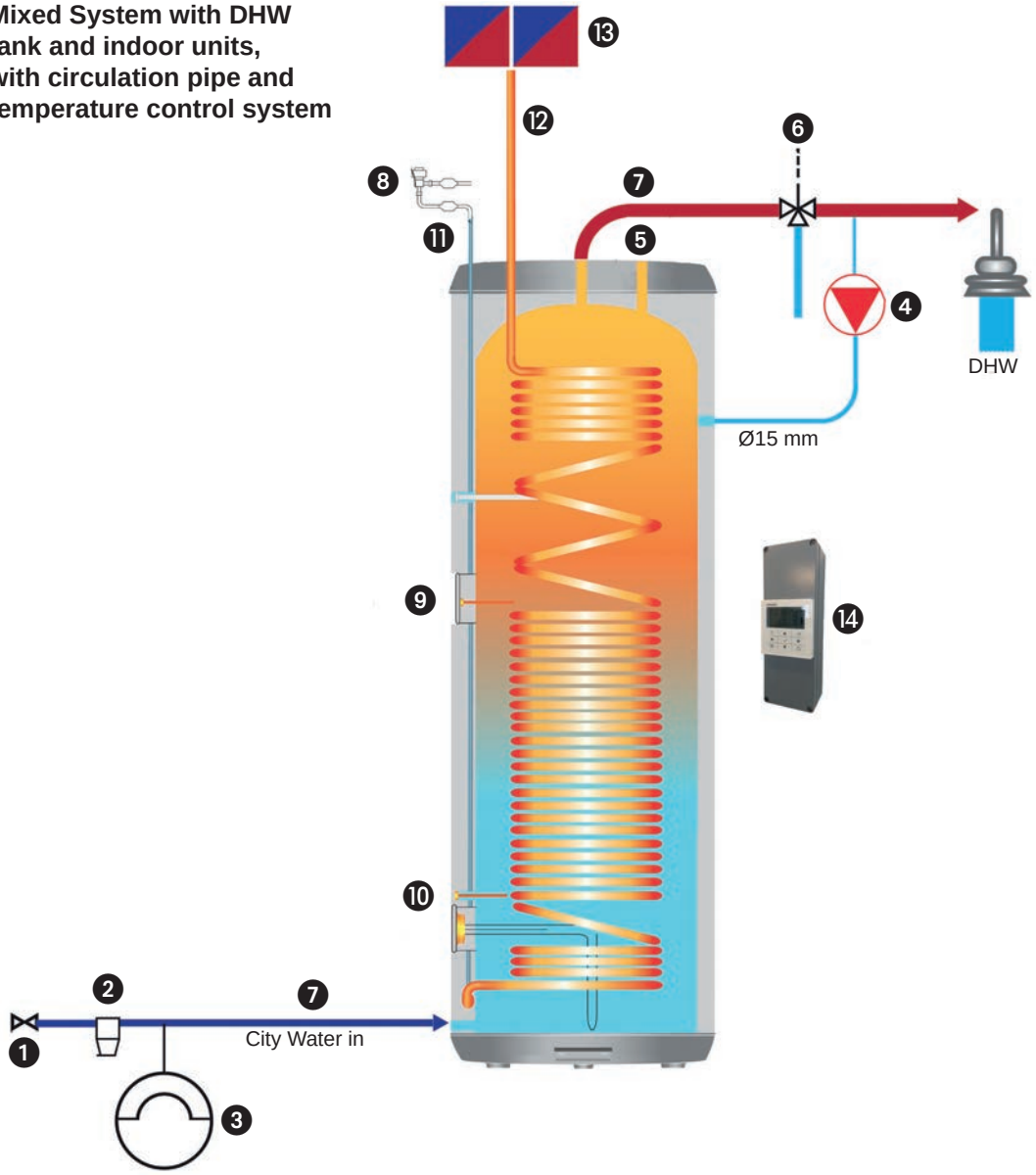
Recommended insulation: Glass wool pipe insulation with aluminum folio with a minimum thickness of 20 mm.

The solenoid valve kit is delivered for following DHW tanks:

PAW-VP-VALV-280
PAW-VP1000LDHW
PAW-VP750LDHW

6.5 System U-16MF3E8 with DHW

■ **Mixed System with DHW tank and indoor units, with circulation pipe and temperature control system**

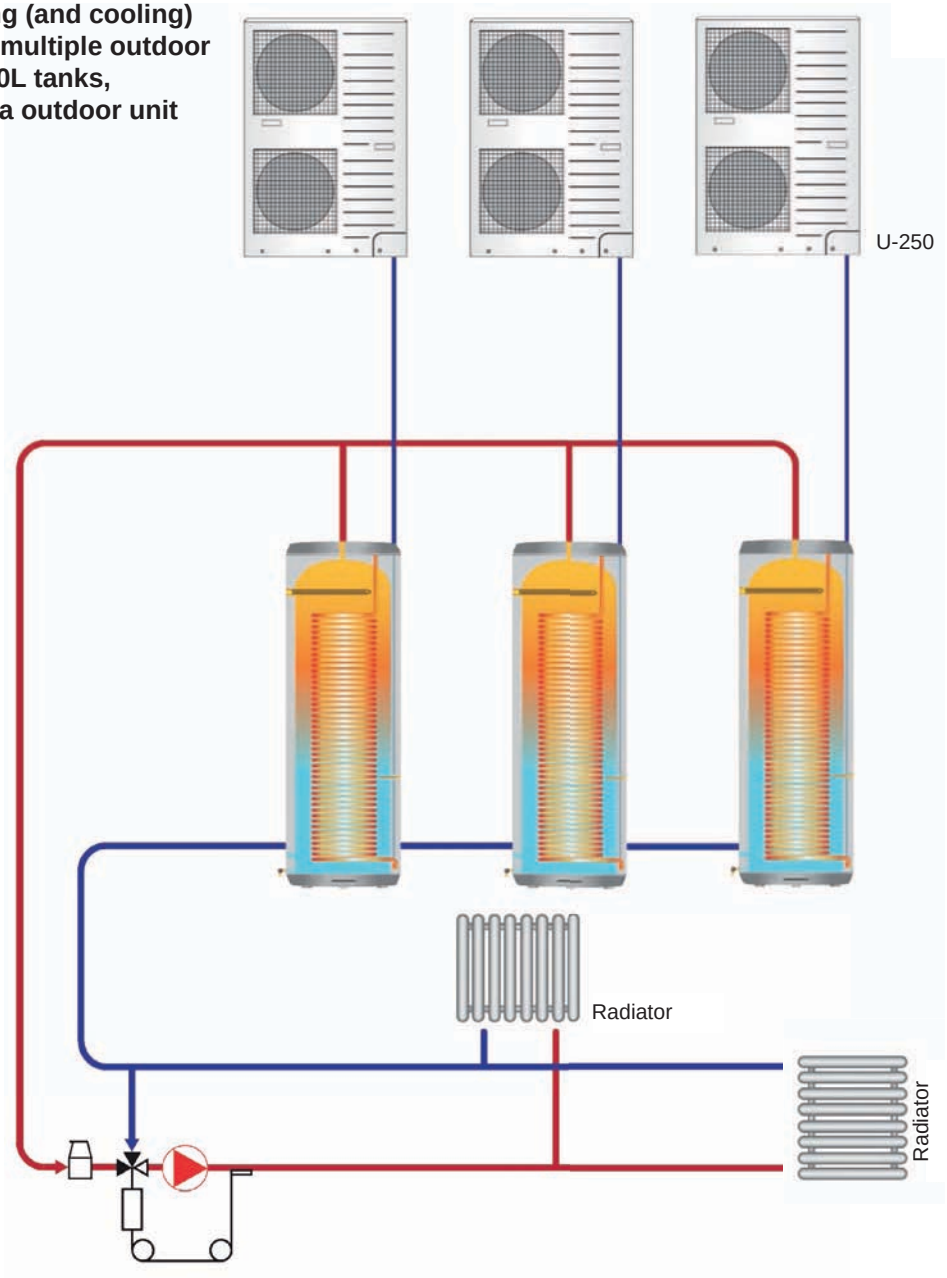


(Field supplied) accessories

1. Pressure control valve if inlet city water is more then 6 bar (field supplied)
2. Strainer (field supplied)
3. Expansion tank if check valve or pressure control valve is mounted (field supplied)
4. Circulation water pump (e.g. Grundfos comfort UP 15–14 BA PM, field supplied), if needed
5. Safety valve 6 or 9.5 bar (field supplied)
6. Temperature control valve (field supplied)
7. Water pipe inlet/outlet VP1000L/750 (35 mm) VP500L/200 (22 mm)
8. Expansion valve PAW-VP-VALV-280/-160 (field supplied)
9. TA sensor
10. E2 sensor
11. E1 sensor
12. E3 sensor
13. Solenoid valve kit (field supplied)
14. PAW-VP RTC5B ECO controller, CZ-CAPE2 for solenoid valve kit

6.6 System PACi PAW-VP380L

■ **Room heating (and cooling) system with multiple outdoor units and 380L tanks, controlled via outdoor unit**



This system solution has no limitations on capacity or functionality. To increase capacity, increase the number of PAW-VP380L tanks.

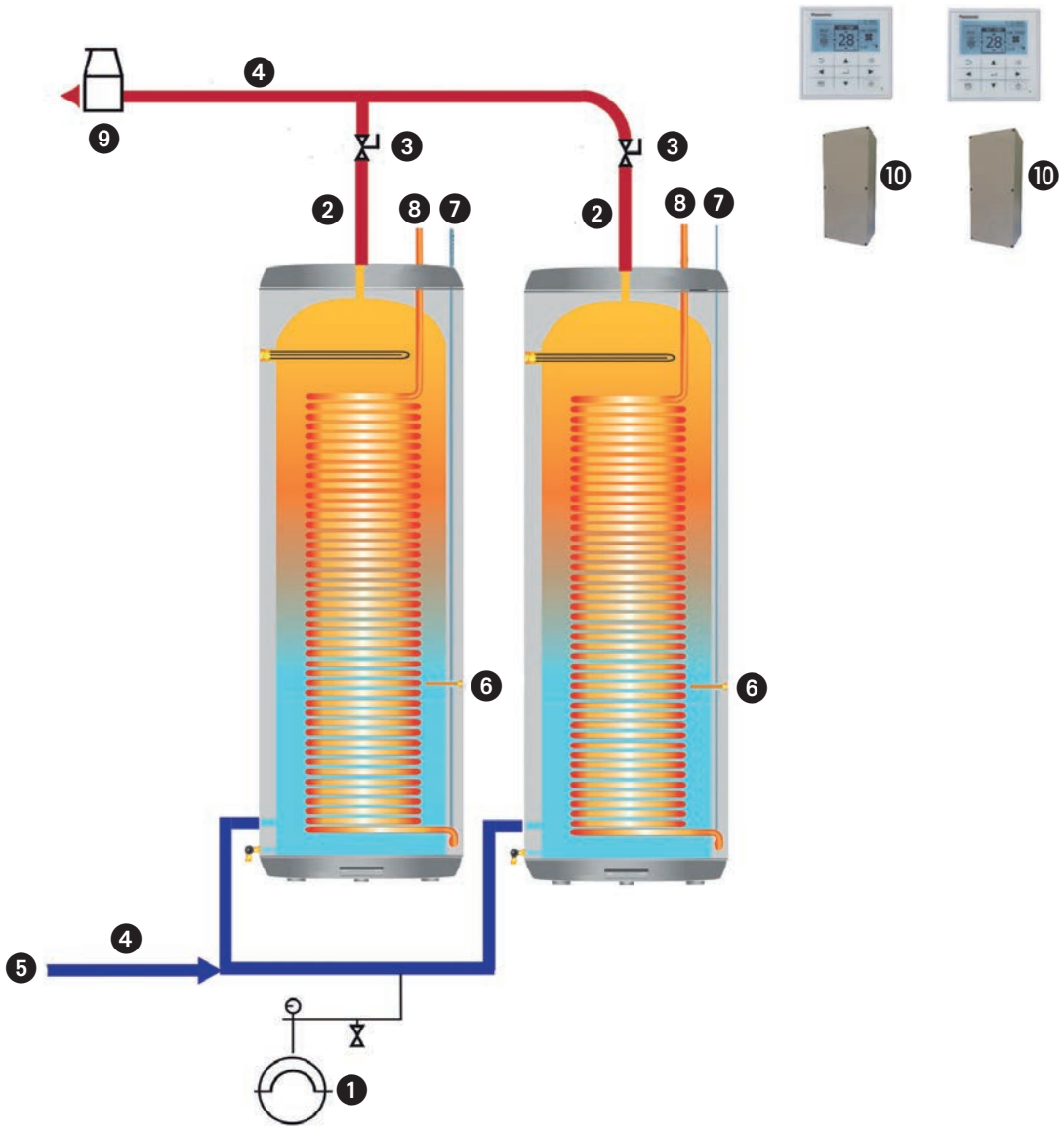
The system solution can be used for heating and cooling.

Remember to always install TA valve for outlet water for equal water flow. Water circulation can be increased or decreased for the desired temperature difference between turn and return water flow.

One controller PAW-VP-RTC5B-PAC for each tank is needed when using PACi.

6.7 System PACi and PAW-VP 380L Cooling/Heating

L Room heating (and cooling) system with multiple outdoor units and 380L tanks



(Field supplied) accessories

1. Expansion tank (field supplied)
2. Water pipe return/turn tank 35 mm (field supplied)
3. TA valve control valve water flow DN35 (field supplied)
4. Water pipe main return/turn 52 mm (field supplied)
5. Max water flow 8000 L/h
6. TA sensor
7. E1 sensor
8. E3 sensor
9. Air separator (field supplied)
10. PAW-VP-RTC5B-PAC controller
11. (Fig not shown) Immersion heater kit 6 kW 230/400 V single or 3 phase version

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

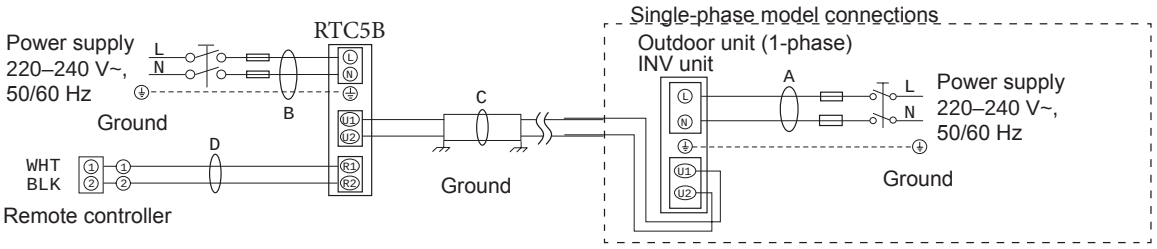
(B) Power supply cable control box			
Model name	Power supply	Minimum power supply cables L1, L2	Circuit breaker (minimum capacity)
RTC5B	Single phase 220/230/240 V	0.75 mm^2	2 A

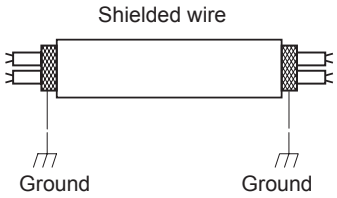
Power supply cable backup heater			
Model name	Power supply	Minimum power supply cables L1, L2	Circuit breaker (minimum capacity)
VP200LDHW	Single phase 220/230/240 V	1.5 mm^2	10 A
VP500LDHW	Single phase 220/230/240 V	2.5 mm^2	16 A
VP750LDHW	3-phases 380/400/420 V	2.5 mm^2	16 A
VP1000LDHW	3-phases 380/400/420 V	2.5 mm^2	16 A
VP380L	3-phases 380/400/420 V	2.5 mm^2	16 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.

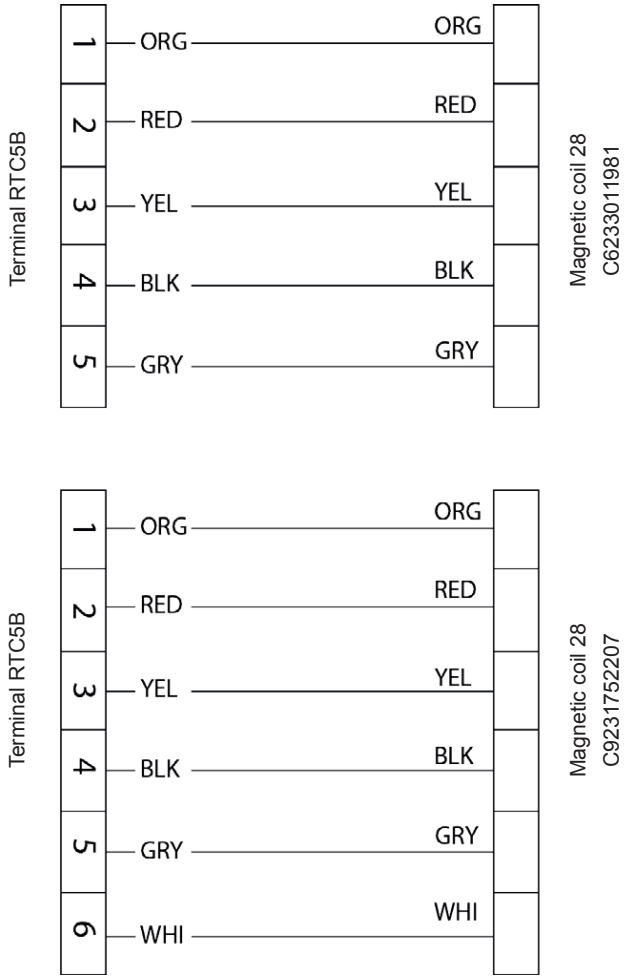
1. Use shielded wires for inter-unit control wiring (B) and ground the shield on both sides, otherwise misoperation from noise may occur. Connect wiring as shown in figure before.
2. Connecting cable between indoor unit and outdoor unit shall be approved poly-chloroprene sheathed 5 or 1.5 mm² flexible 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

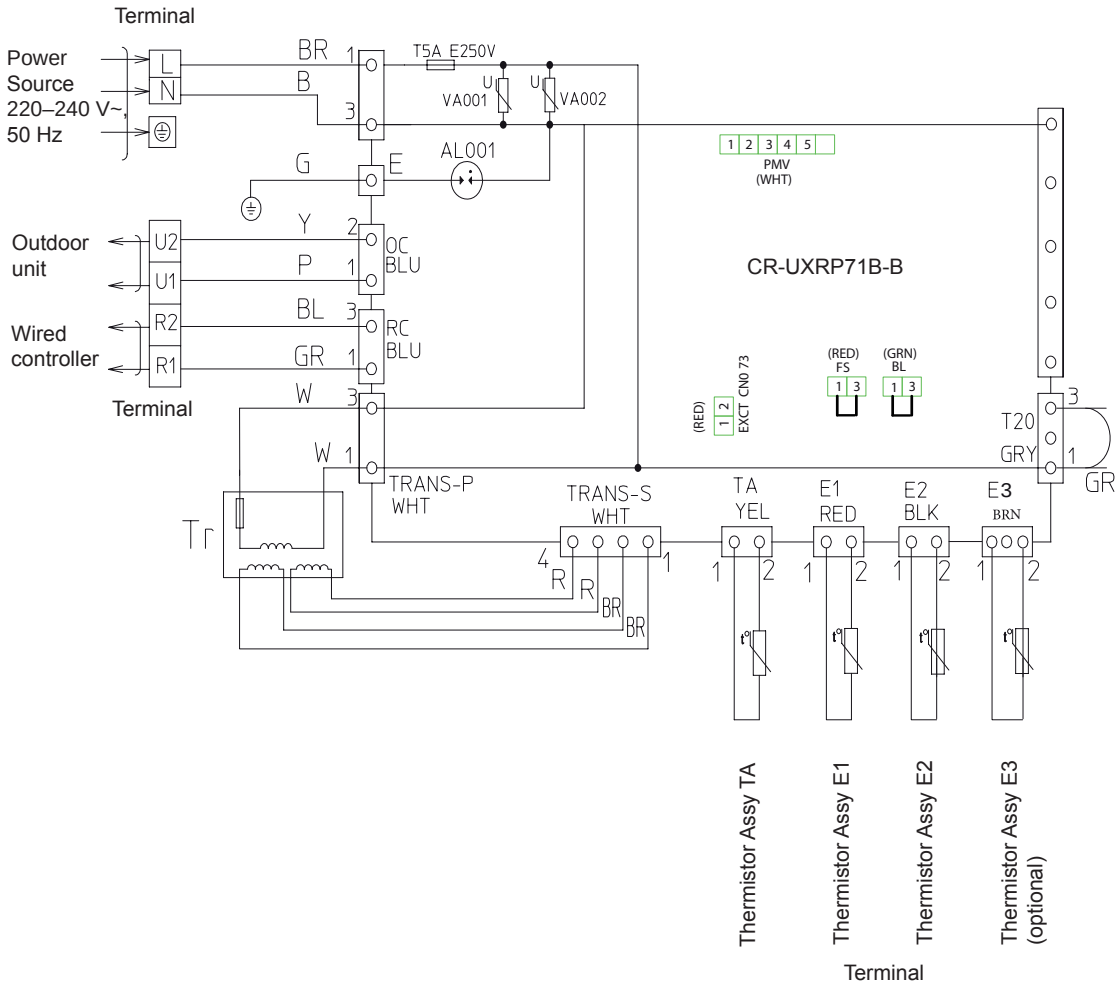
- ► Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also occur. Therefore, ensure that all wiring is tightly connected.
- ► When connecting each power wire to the terminal, follow the instructions on sec. *6.4 „How to connect electrical wires and sensors“ auf Seite 95* 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



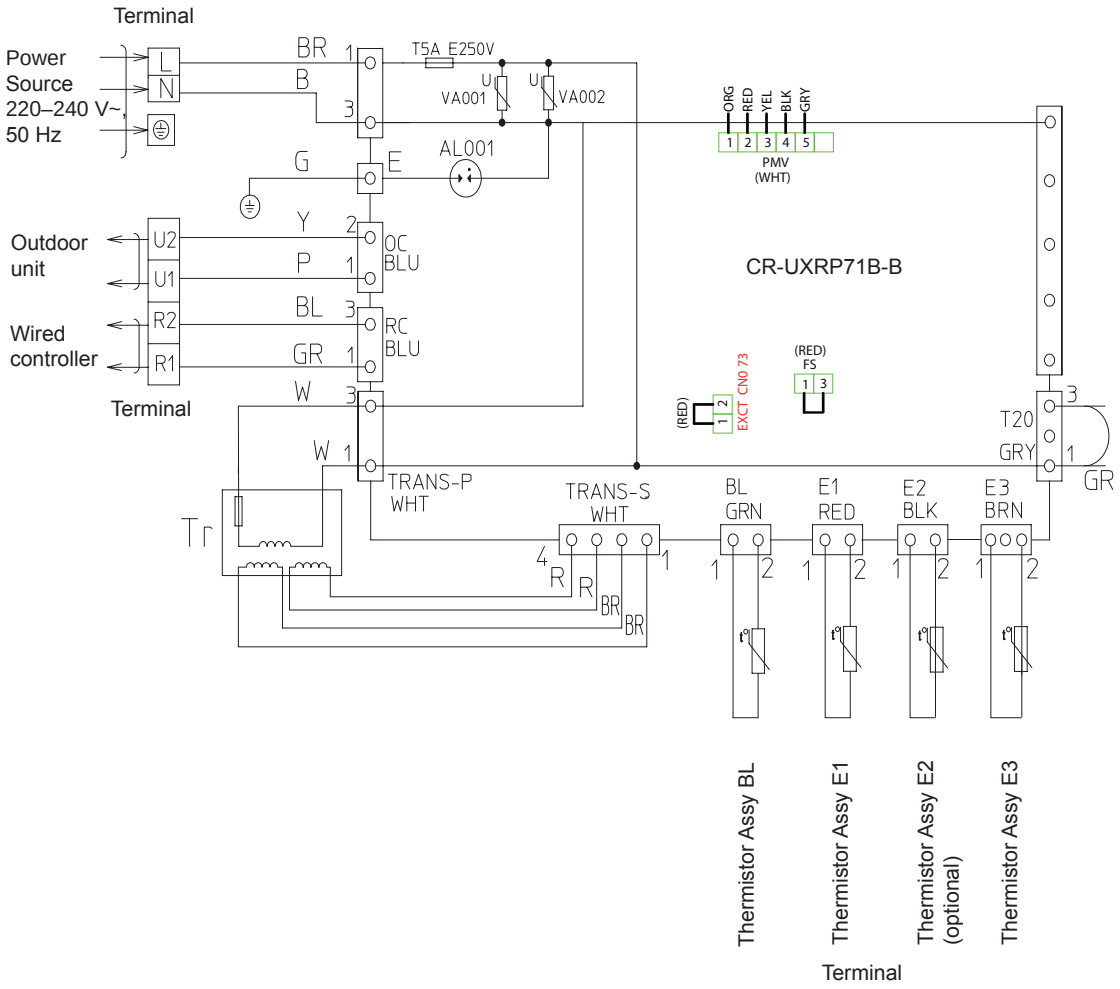
7.3.2 Wiring system diagram PACi



Item	Description	Position
TA	Set temperature thermistor	
E1	Liquid temperature thermistor	Heat exchanger outlet (heating mode)
E2	Condensing temperature thermistor	Heat exchanger outlet (heating mode)
E3*	Discharge temperature thermistor	Heat exchanger inlet (heating mode)

* E3 to be purchased separately (for monitoring only)

7.3.3 Wiring system diagram ECOi



Item	Description	Position
BL	Set temperature thermistor	
E1	Liquid temperature thermistor	Heat exchanger outlet (heating mode)
E2*	Condensing temperature thermistor	Heat exchanger outlet (heating mode)
E3	Discharge temperature thermistor	Heat exchanger inlet (heating mode)

* E2 to be purchased separately (for monitoring only)

Note

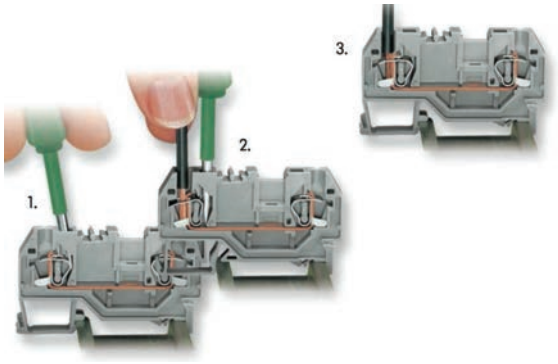
The SVK box need to be added.

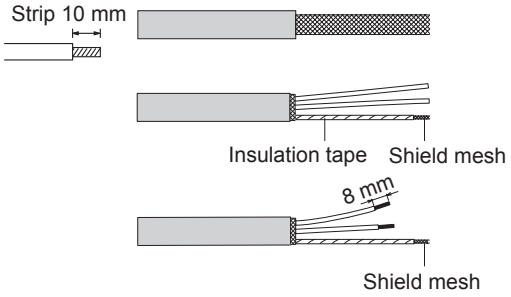
7.4 How to connect electrical wires and sensors

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, E2, E3 to the tank system

■ Terminal PAW-VP-RTC5B-PACi

Note

Remember that the E2 sensor is required.

Important

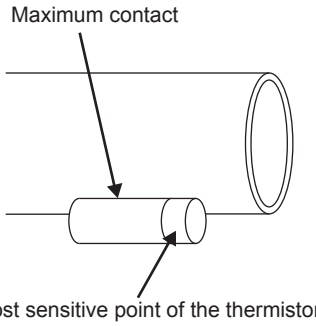
When using RTC5B PACi together with DHW tank remove jumper for E2-E2 and connect the sensor E2.

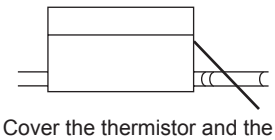
■ Terminal PAW-VP-RTC5B-ECOi

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.

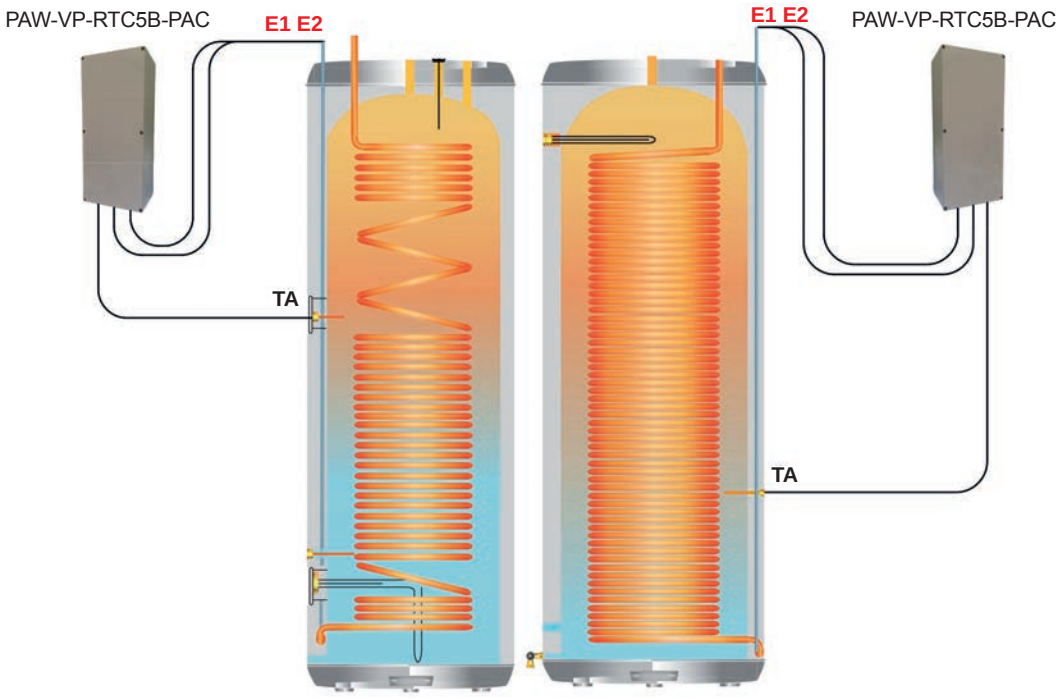
7.4.3 How to mount the E1, E2 and E3 sensors on the pipes



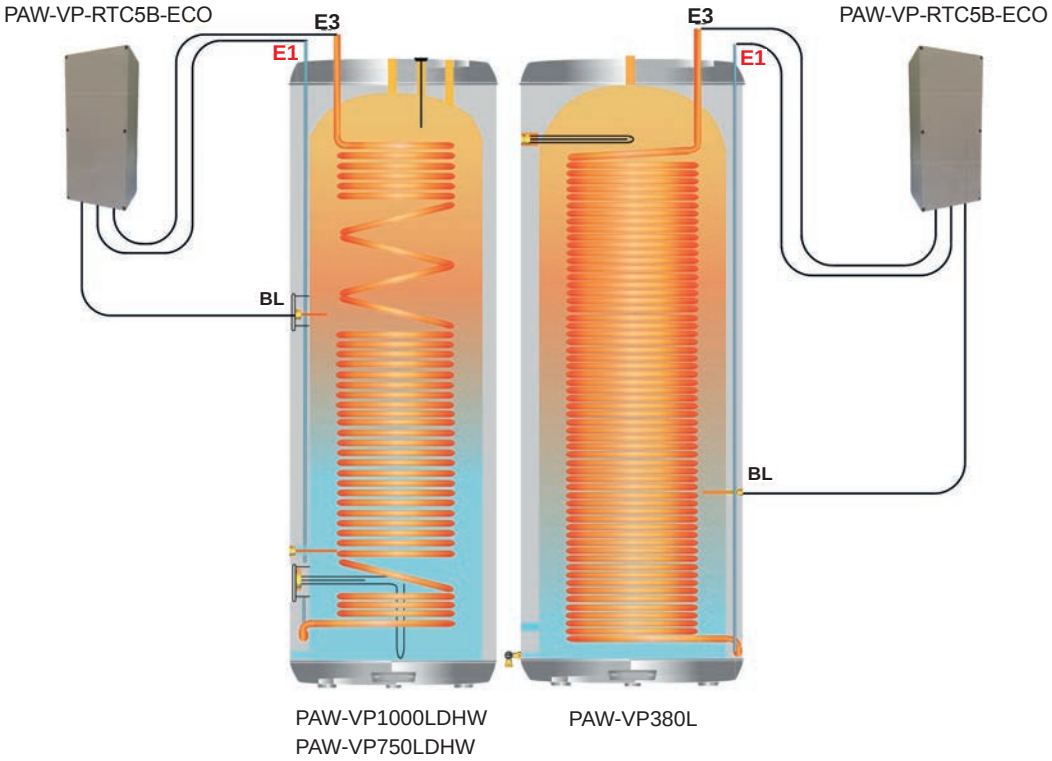


Cover the thermistor and the pipe with aluminum tape, then the aluminum tape with thermal insulation.

7.4.4 How to use with Terminal PAW-VP-RTC5B-PAC



7.4.5 How to use with Terminal PAW-VP-RTC5B-ECO



8 Connecting the Refrigerant Tubing

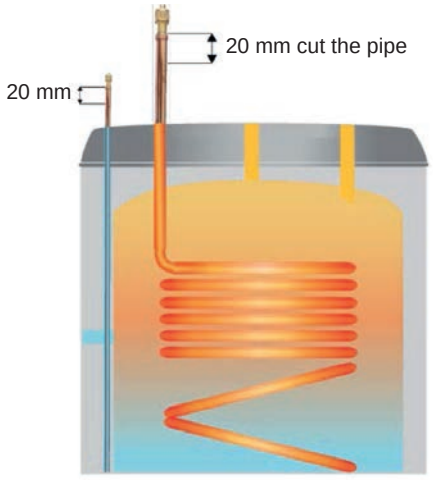
8.1 Use soldering method

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.

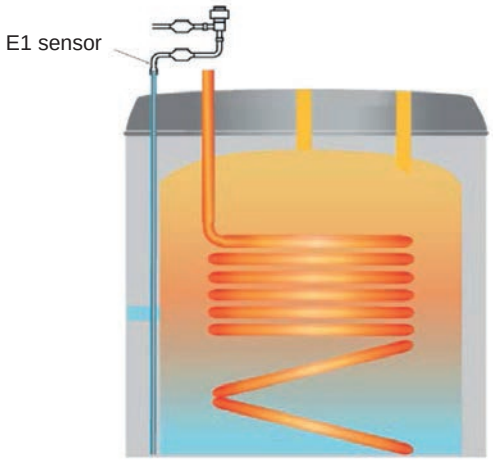
WARNING

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 ±15°

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

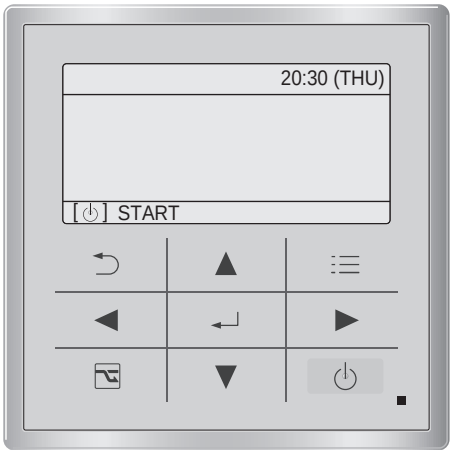
PAW-VP-VALV-280	PAW-VP-VALV-160
PAW-VP1000LDHW	PAW-VP500LDHW
PAW-VP750LDHW	PAW-VP200LDHW
PAW-VP380L	

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!

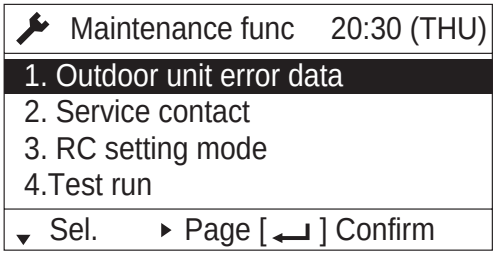
9.1.1 Setting procedure for remote controller model CZ-RTC5B



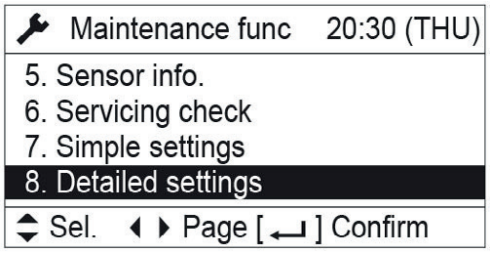
CZ-RTC5B

Operating procedure

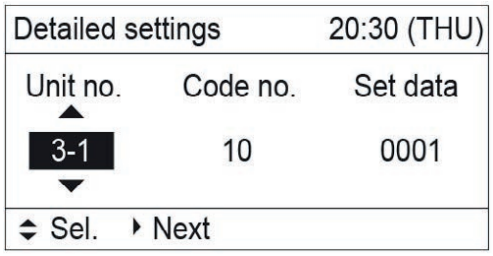
1. Keep pressing the ↩ , ↵ and ▶ buttons simultaneously for 4 or more seconds. The “Maintenance func” screen appears on the LCD display.



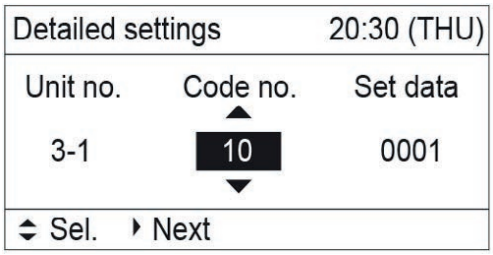
2. Press the ▼ or ▲ button to see each menu.
   If you wish to see the next screen instantly, press the ▲ or ▶ button.
   Select “8. Detailed settings” on the LCD display and press the ↵ button.



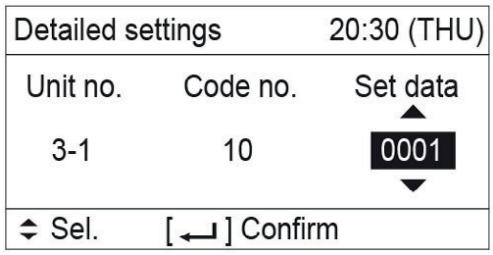
   The “Detailed settings“ screen appears on the LCD display.
   Select the “Unit no.” by pressing the ▼ or ▲ button for changes.



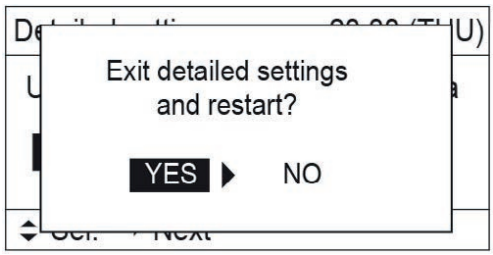
3. Select the “Code no.” by pressing the ▲ or ▶ button.
   Change the “Code no.” by pressing the ▼ or ▲ button (or keeping it pressed).



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.



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



9

9.1.2 Detailed setting procedure for remote controller model RTC4

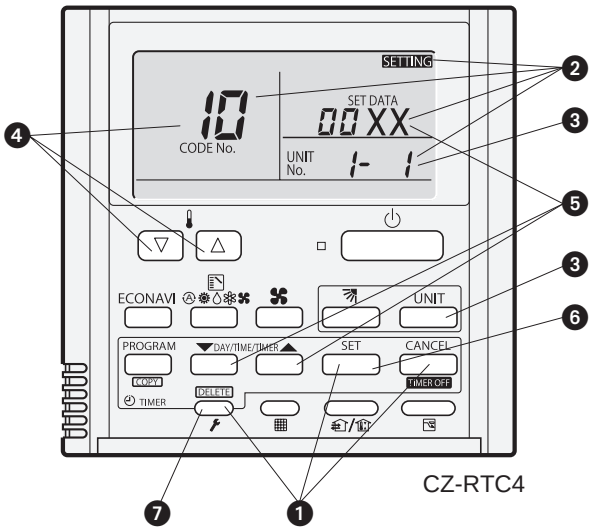
This allows the system address, indoor unit address, and other settings to be made for the individual or group-control indoor unit to which the remote controller used for detailed settings is connected.

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 , SET and CANCEL 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 UNIT 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 DAY/ / /TIMER 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" on page 104.
6. Press the SET 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



CZ-RTC4

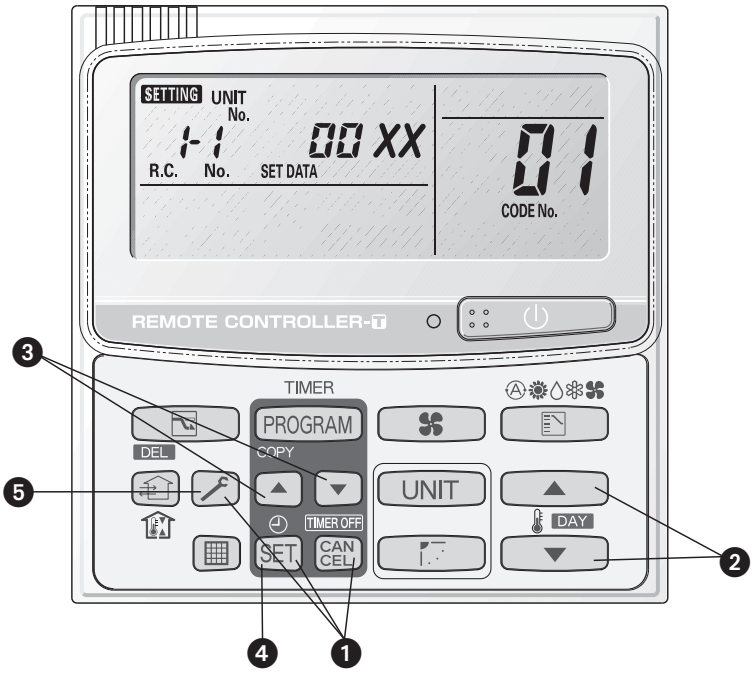
❶–❼:
Keys and displays for the steps shown above.

9.1.3 Detailed setting procedure for remote controller model RTC2

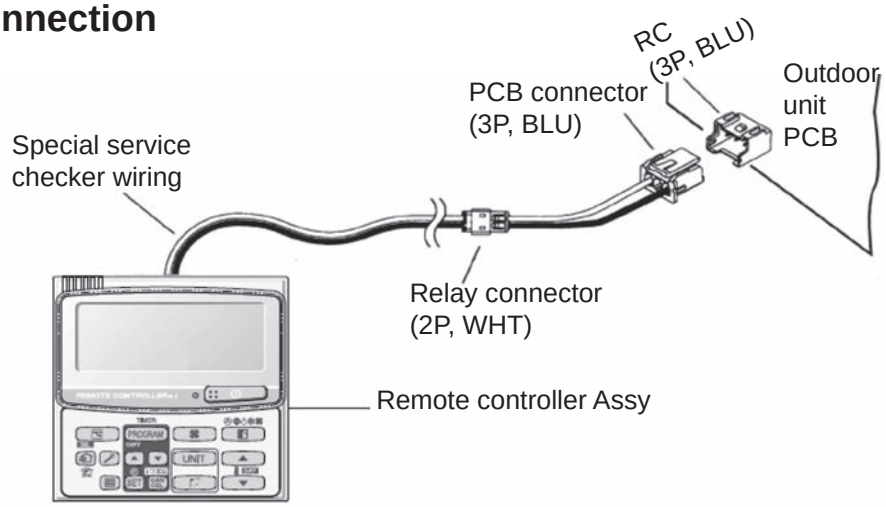
Proceed as follows:

1. Press and hold the [🔧], [SET] and [CANCEL] 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“ on page 104.
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 Detailed settings for indoor/outdoor unit RTC5B/RTC2/4

The new value must be set during the commissioning

U-100PZH2E5/VP200LDHW				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
10	0031	0031	Water unit	
11	0012	0012	Indoor capacity type 100	
16	0015	0000	No fan	
2C	0000	0006	No expansion valve	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
20	-015	-035	Th. Off differential change from 1.5 k to 3.5 k	
21	150	600	Th. Off judging time in sec.	
4E	000	+005	Condensing temperature lower limit	
4F	000	+005	Condensing temperature upper limit	
42	-002	000	Condensing temp. offset from -2 k to 0 k	
A5	000	030	Frost adherence temp. change from -2 °C to -4 °C	

U-100PZH2E5/VP500LDHW				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
10	0031	0031	Water unit	
11	0012	0015	Indoor capacity type 100	
16	0015	0000	No fan	
2C	0000	0006	No expansion valve	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
20	-015	-035	Th. Off differential change from 1.5 k to 3.5 k	
21	10	600	Th. Off judging time in sec.	
4E	000	+005	Condensing temperature lower limit	
4F	000	+005	Condensing temperature upper limit	
42	-002	000	Condensing temp. offset from -2 k to 0 k	
A5	000	030	Frost adherence temp. change from -2 °C to -4 °C	

U-250PZH2E8/PAW-VP750LDHW				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
10	0031	0031	Water unit	
11	0012	0023	Indoor capacity type 250	
16	0015	0000	No fan	
2C	0000	0006	No expansion valve	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
20	-015	-035	Th. Off differential change from 1.5 k to 3.5 k	
21	180	600	Th. Off judging time in sec.	
4E	000	+005	Condensing temperature lower limit	
4F	000	+005	Condensing temperature upper limit	
42	-002	000	Condensing temp. offset from -2 k to 0 k	
A5	000	030	Frost adherence temp. change from -2 °C to -4 °C	

U-250PZH2E8 / PAW-VP1000LDHW				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
10	0031	0031	Water unit	
11	0012	0023	Indoor capacity type 250	
16	0015	0000	No fan	
2C	0000	0006	No expansion valve	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
20	-015	-035	Th. Off differential change from 1.5 k to 3.5 k	
21	180	600	Th. Off judging time in sec.	
4E	000	+005	Condensing temperature lower limit	
4F	000	+005	Condensing temperature upper limit	
42	-002	000	Condensing temp. offset from -2 k to 0 k	
A5	000	030	Frost adherence temp. change from -2 °C to -4 °C	

ECOi U-10ME2E8 ECOi U-16MF3E8 / PAW-VP1000LDHW PAW-VP750LDHW				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
0B	0000	0001	02 sensor	
0C	0000	0001	Display of cold wind prevention	
0D	0000	0001	Auto mode cooling/heating	
10	0030	0031	Water unit	
11	0012	0023 / 0018	Indoor capacity type 140	
16	0015	0000	No fan	
2C	0000	0000	Expansion valve present	
2D	0000	0010	Operating mode setting	
			Attention: add jumper to EXCT CN073 (red) supplied with PCB	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
35	000	-005	Condensing temp. Offset from 0 k to 5 k	
36	000	-005	Condensing temp. Offset from -2 k to 5 k	

U-200PZH2E8 / PAW-VP380L				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
10	0031	0031	Water unit	
11	0012	0021	Indoor capacity type 200	
2C	0000	0006	No expansion valve	

Outdoor unit detailed settings by RTC2/4			Explanation	Check and adjust
Parameter	Default value	New value to set		
4E	000	+005	Condensing temperature lower limit	
4F	000	+005	Condensing temperature upper limit	

U-200PE2E8 / PAW-VP380L				
Tank controller CZ-RTC5B detailed settings			Explanation	Check and adjust
Parameter	Default value	New value to set		
11	0012	0021	Indoor capacity type 200	
2C	0000	0002	No expansion valve	

9.3 Monitoring operations (Sensor info)

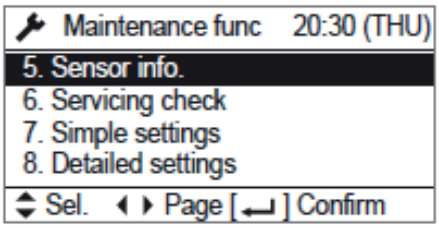
9.3.1 How to open the sensor menu

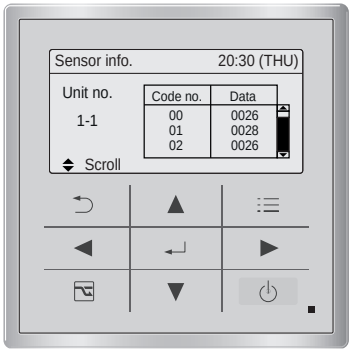
Proceed as follows:

Press the ▼ or ▲ button to scroll thrugh see each menu.

If you wish to see the next screen instantly, press the ◄ or ► button.

Select “5. Sensor info.” on the LCD display and press the ↵ button.





9.3.2 Monitoring operations (Sensor info) PACi

	Item code	Meaning of Code
Indoor unit data	02	Indoor unit intake temp.
	03	Indoor unit heat exchanger temp. (E1)
	04	Indoor unit heat exchanger temp. (E2)
	05	Indoor unit heat exchanger temp. (E3)
	06	—
Outdoor unit data	07	—
	08	—
	09	
	0A	Discharge temp. (TD)
	0b	—
	0C	—
	0d	Intake temp. (TS)
	0E	Outdoor unit heat exchanger temp. (C1)
	0F	Outdoor unit heat exchanger temp. (C2)
	10	—
	11	Outdoor air temp. (TO)
	12	—
	13	Inverter primary current
	14	—
	15	Outdoor MV value
	16	—
	19	Frequency

Note: Depending on the model, some items may not be displayed.

9.3.3 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	
0A	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 PACi & ECOi

Alarm codes for indoor/outdoor units PACi

Alarm Code	Alarm Meaning
E01	Remote controller reception error
E02	Remote controller transmission error
E03	Error in indoor unit receiving signal from remote controller (central)
E04	Error in indoor unit receiving signal from the outdoor unit. No communication from the outdoor unit for 3 minutes
E05	Abnormal indoor/outdoor communication error
E06	Outdoor unit failed to receive serial communication signals from indoor unit
E08	Dublicate indoor unit address settings error
E09	More than one remote controller set to main error
E12	Automatic address setting start is prohibited while auto-address setting in progress.
E14	Main unit dublication in simultaneous-operation multi control (detected outdoor unit)
E15	Automatic address alarm (the total capacity of indoor units is too low)
E16	Automatic address alarm (the total capacity of indoor units is too high or the total number of indoor units is too many)
E18	Faulty communication in group control wiring
E20	Connection problem of indoor/outdoor units
F01	Abnormal refrigerant sensor liquid return (E1) indoor unit
F04	Compressor discharge temperature sensor (TD) trouble
F06	Inlet temperature sensor (C1) in heat exchanger trouble intermediate
F07	Temperature sensor (C2) in heat exchanger trouble outdoor air temperature
F08	Sensor (TO) trouble
F10	Abnormal water inlet/outlet sensor (TA) indoor unit
F12	Compressor inlet suction temperature sensor (TS) trouble
F31	Outdoor unit nonvolatile memory (EEPROM) trouble
H01	Primary (input) Overcurrent detected
H02	PAM trouble
H03	Primary Current CT sensor (current sensor) failure
H31	HIC trouble
L04	Outdoor unit address duplication
L10	Outdoor unit capacity not set or invalid
L13	Indoor unit type setting error
L18	4-way valve operation failure
P03	Compressor dicharge temperatue trouble
P04	High pressure trouble
P05	AC power supply trouble
P13	Alarm valve open
P14	O2 sensor detect
P15	Insufficient gas level detected
P16	Compressor overcurrent trouble
P22	Outdoor unit fan motor trouble
P29	Lack if INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure
P31	Group control error

Alarm codes for indoor/outdoor units ECOi

Remote control display	Alarm contents
E14	Two or more indoor units are set as main, in the group controlled indoor units
E15	Fewer indoor units are found in Auto addressing than the setting on outdoor PCB.
E16	More indoor units are found in auto addressing than the setting on outdoor PCB
E18	No response from sub indoor to the main indoor unit in group control wiring
E20	No indoor unit responded in auto addressing
E31	Error in communication inside outdoor unit control box
F01	Indoor unit heat exchanger liquid temperature sensor has failure (E1)
F02	Indoor unit heat exchanger temperature sensor has failure (E2)
F03	Indoor unit heat exchanger gas temperature sensor has failure (E3)
F04	Compressor discharge to temperature sensor has failure (DISCH)
F06	Outdoor unit heat exchanger gas temperature sensor has failure (EXG)
F07	Outdoor unit heat exchanger liquid temperature sensor has failure (EXL)
F08	Outdoor temperature sensor has failure (TO)
F10	Indoor suction air (room) temperature sensor has failure (TA)
F11	Indoor discharge air temperature sensor has failure (BL)
F12	Compressor inlet temperature sensor has failure (SCT)
F14	Subcooling heat exchanger temperature sensor has failure (SCG)
F16	High pressure sensor has failure (HPS)
F17	Low pressure sensor has failure (LPS)
F29	EEPROM on indoor unit PCB has failure
F31	EEPROM on outdoor unit PCB has failure
H01	Compressor primary current is overcurrent
H02	PFC is overcurrent or VDC is overvoltage
H03	Compressor current sensor is disconnected or shorted
H05	Compressor discharge temperature sensor is disconnected, shorted or misplaced (DISCH)
H06	Low pressure sensor value is too low
H31	Compressor HIC has failure. HIC is overcurrent or overheat. VDC is undervoltage or overvoltage
L01	Indoor unit address setting has error. (No main indoor unit in group control)
L02	Indoor unit model does not match with the outdoor unit model. (Multi-split/mini-split))
L03	Two or more indoor units are set as main in group control
L04	Duplicate system address setting on outdoor units.
L05	Two or more indoor units are set as priority indoor unit (priority indoor unit)
L06	Two or more indoor units are set as priority indoor unit (non-priority indoor unit)
L07	Group control wiring is detected for indoor unit set as individual control
L08	Indoor unit address is not set
L09	Capacity setting of indoor unit is not correct
L10	Capacity setting of outdoor unit is not correct
L13	Indoor unit model does not match with outdoor unit
L17	Model mismatch between outdoor units
L18	4-way valve has failure

Remote control display	Alarm contents
P01	Thermal protector for indoor unit fan motor is activated
P03	Compressor discharge temperature is too high
P04	High pressure switch is activated
P05	AC power supply has abnormal
P09	Connection to the panel of indoor unit is not good
P10	Float switch of drain pan safety is activated
P11	Drain pump failure or locked rotor
P12	Indoor unit fan inverter protection control is activated.
P14	O2 sensor has activated
P16	Compressor secondary current is overcurrent
P20	Too high load in refrigerant circuit
P22	Outdoor unit fan motor has failure
P29	Compressor start failure. Compressor is missing phase or reverse phase
P31	Other indoor unit in group control has an alarm.

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
Ait-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

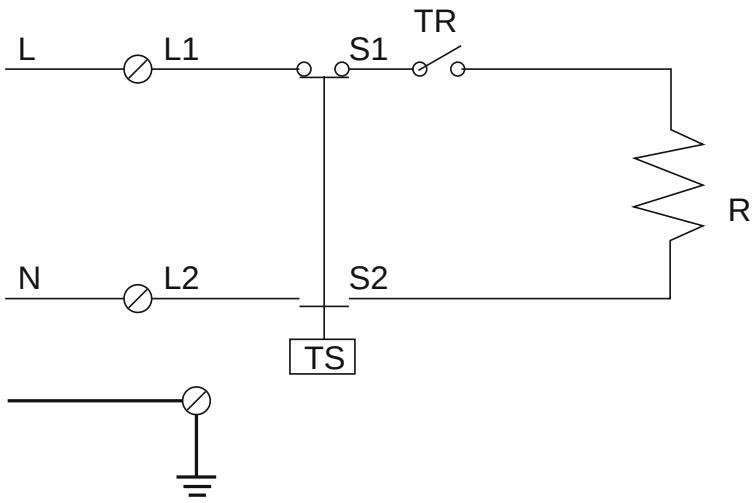
If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was interrupted.

11

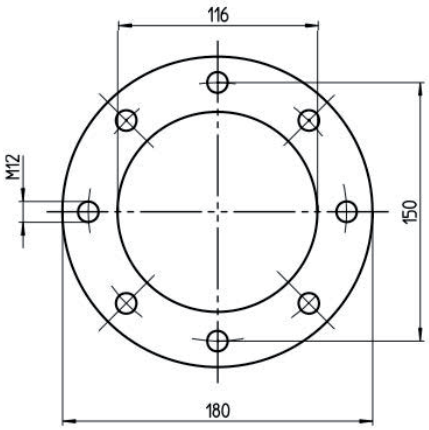
11.2 Electrical connection check points

■ PAW-VP200LDHW, PAW-VP500LDHW

Electrical connection single phase 230 V

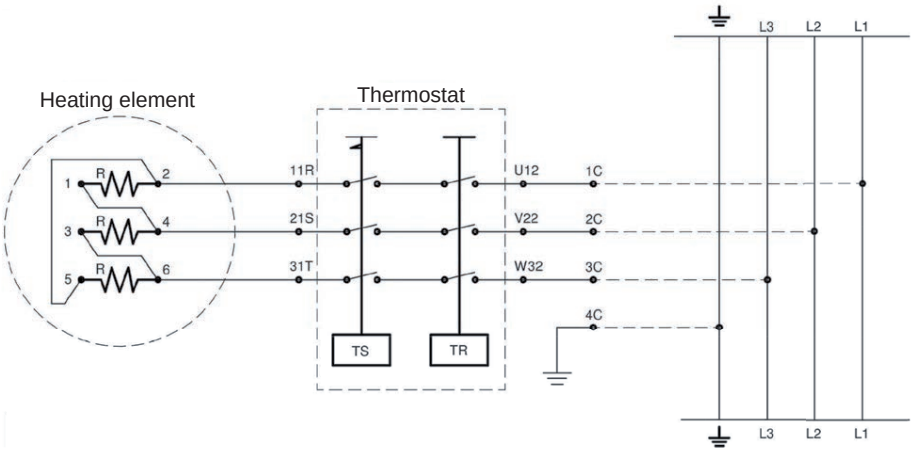


Symbol	Description
R	Electric heating element
TS	Thermostat safety device
L-N	Power supply line
L1, L2	Electric line connection terminals
S1, S2	Thermostat contacts
TR	Contact operated
⏚	Ground

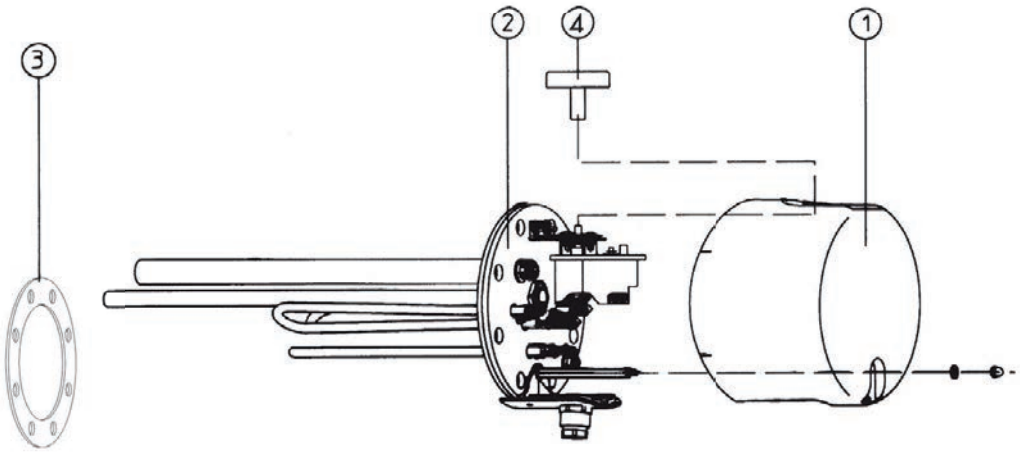


■ PAW-VP750LDHW, PAW-VP1000LDHW

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



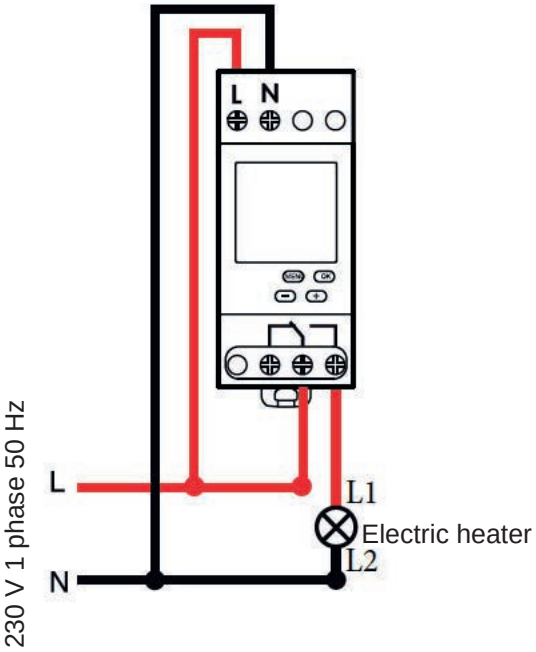
1 Flange cover
2 Flange heater, thermostat, TR and anode
3 Gasket FD180
4 Thermostat adjustment 35 to 85 degrees

12 Legionella Protection Control

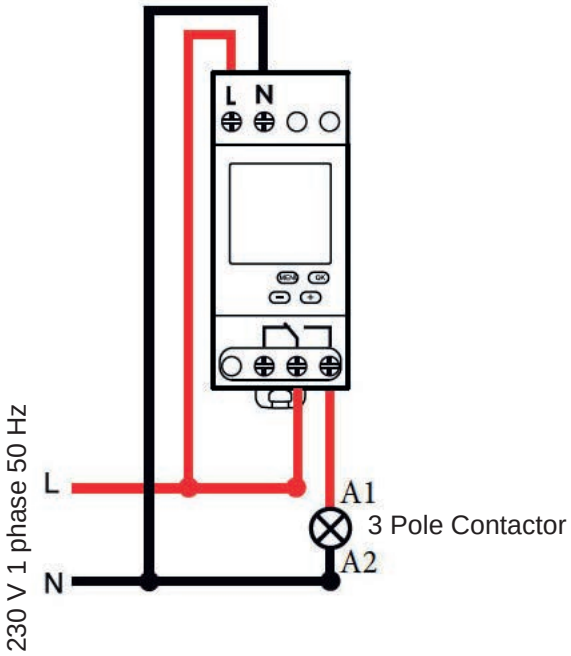
Legionella protection cycle

- At least once a week, the heating element must be activated until the minimum temperature in the tank is reached at 63 degrees.
- Minimum ON time 3 hrs.
- The timer switch must have a 16 amp connector for the VP200L and 500L which connects directly to the heating element.
- 10 amps for 750 and 1000LDHW and connected to poles for contactor A1-A2

DIN rail time switch MicroRex D21 Plus



DIN rail time switch MicroRex D21 Plus



Digital weekly DIN rail mounting time switch
1 program consists of 1 ON and 1 OFF time and the allocation of any day of the week or a combination of days and the selected channel.

Example:
1. Prog.: ON 03:00h OFF 06:00h MO
2. Prog.: ON 03:00h OFF 06:00h FR

Important

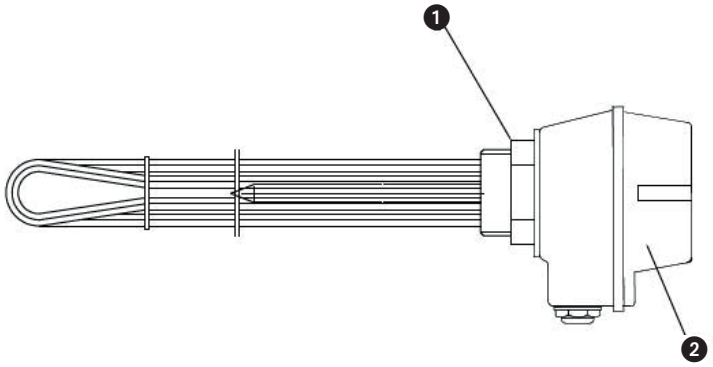
Adjust the thermostat for the immersion heater to the desired setpoint. Minimum setpoint must always apply.

13 Booster Heater for PAW-VP380L

Optional part: Installation and Service Manual

13.1 Installation of the heating unit

How to mount the heating unit



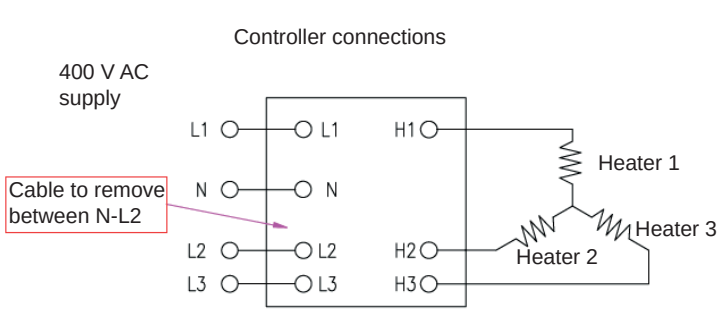
Proceed as follows:

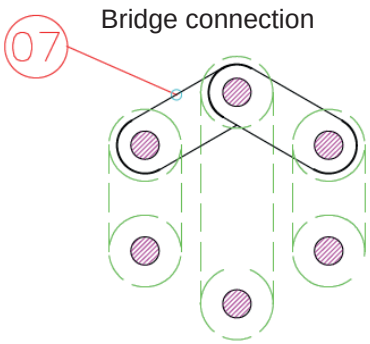
1. Screw the heating unit (❶) into the unit seat (ensure the appropriate tightness of the connection)
2. Unscrew the upper part of the box (❷)
3. Connect the supplying cables to appropriate power connections situated in the upper part of the box (❷) in accordance with the diagram for connecting three or one phase heaters (refer to sec. 13.2 „Electrical Connection“ on page 116).
4. Assembly the upper part of the box with the rest of the heating unit.

13.2 Electrical connection

13.2.1 Connection for 3 phases (Star)

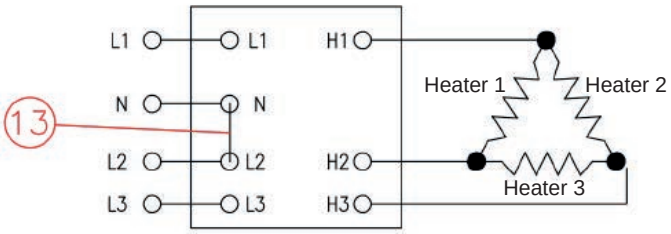
400 V AC power supply

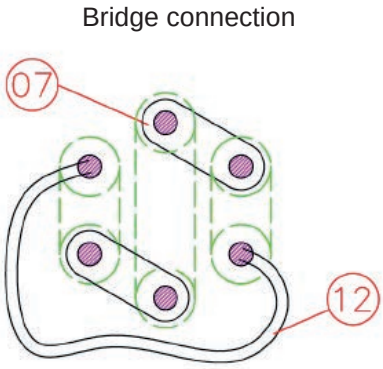


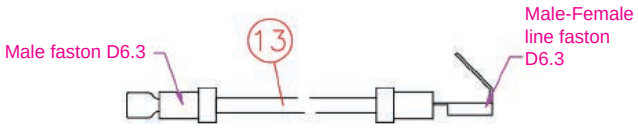


13.2.2 Connection for 3 phases (Triangle)

230 V 3 phase AC power supply







13.3 Start-up and service

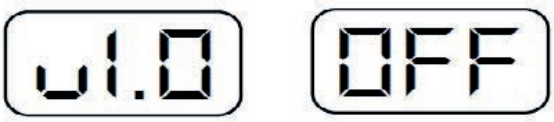
13.3.1 Operation keys and displays

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).

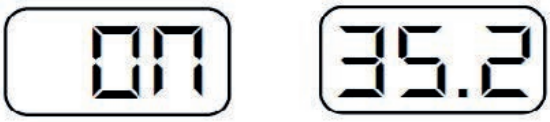
The appearance and description of control push-buttons and information LEDs are shown below.

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.

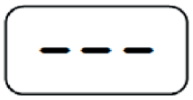
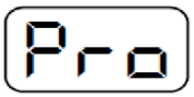
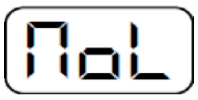
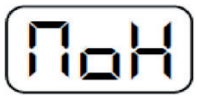
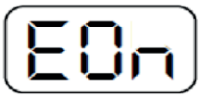
Connecting the TR-01 controller to supply voltage 230V/400V AC (depending on version) causes switching on the informative screen with the current software version and then switching off mode of the controller (OFF).



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.

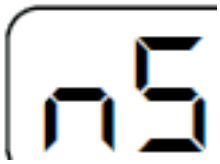
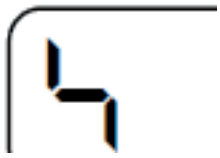


Also, the other information can be seen on the display. All reminders and their description are specified in the following table:

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).

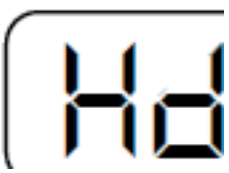
Operational Menu (Controller in ON Mode, see also sec.13.3.3 on page 120)

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.

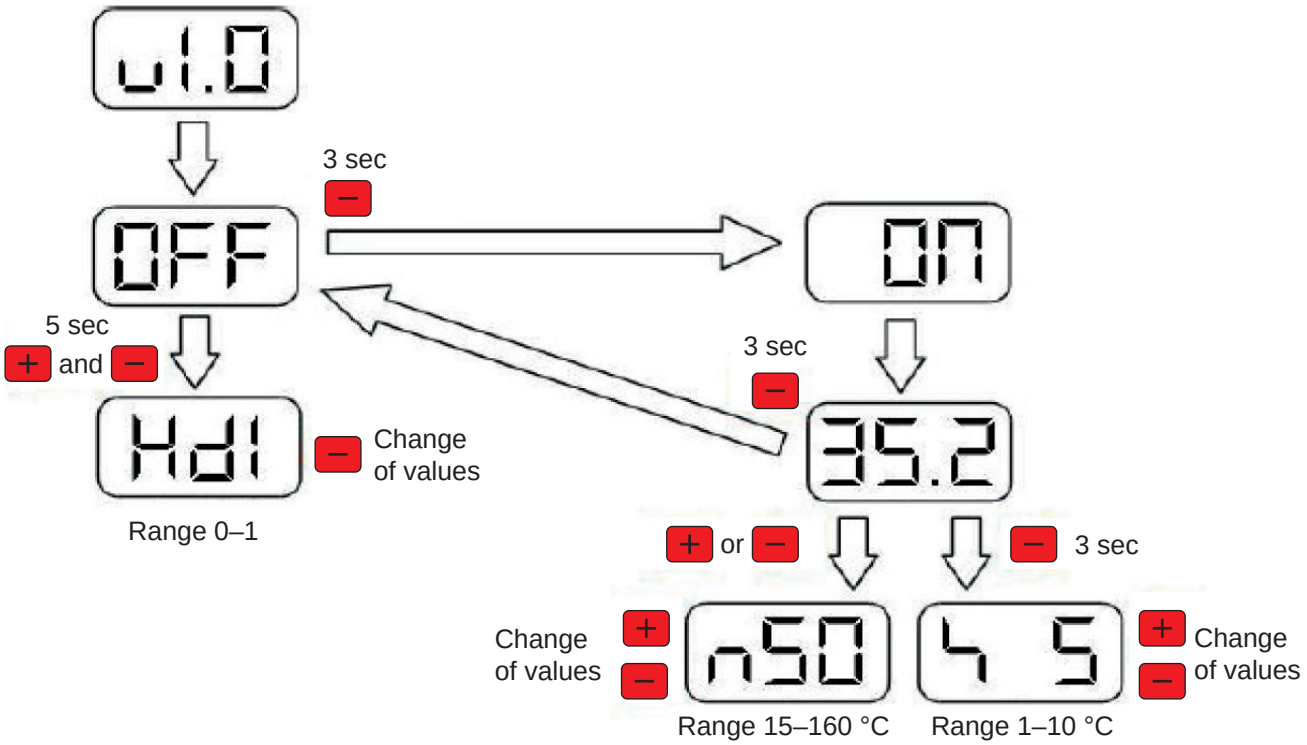
** Factory settings are only the proposals for a setting. All the values depend on the size of heaters, the capacity of the tank, user requirements etc.

Service Menu (Controller in OFF Mode, see also sec. 13.3.4 on page 120)

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

13.3.2 Menu diagram

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



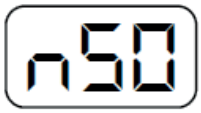
Important

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

13.3.3 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.

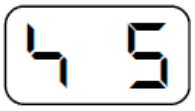
1. Setting of temperature



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



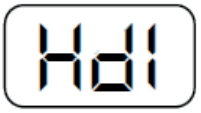
In this menu, the user sets the temperature hysteresis (the value by which the tank temperature has to decrease to switch heating again). Setting of hysteresis is possible within the range from 1 to 10 °C.

13.3.4 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.

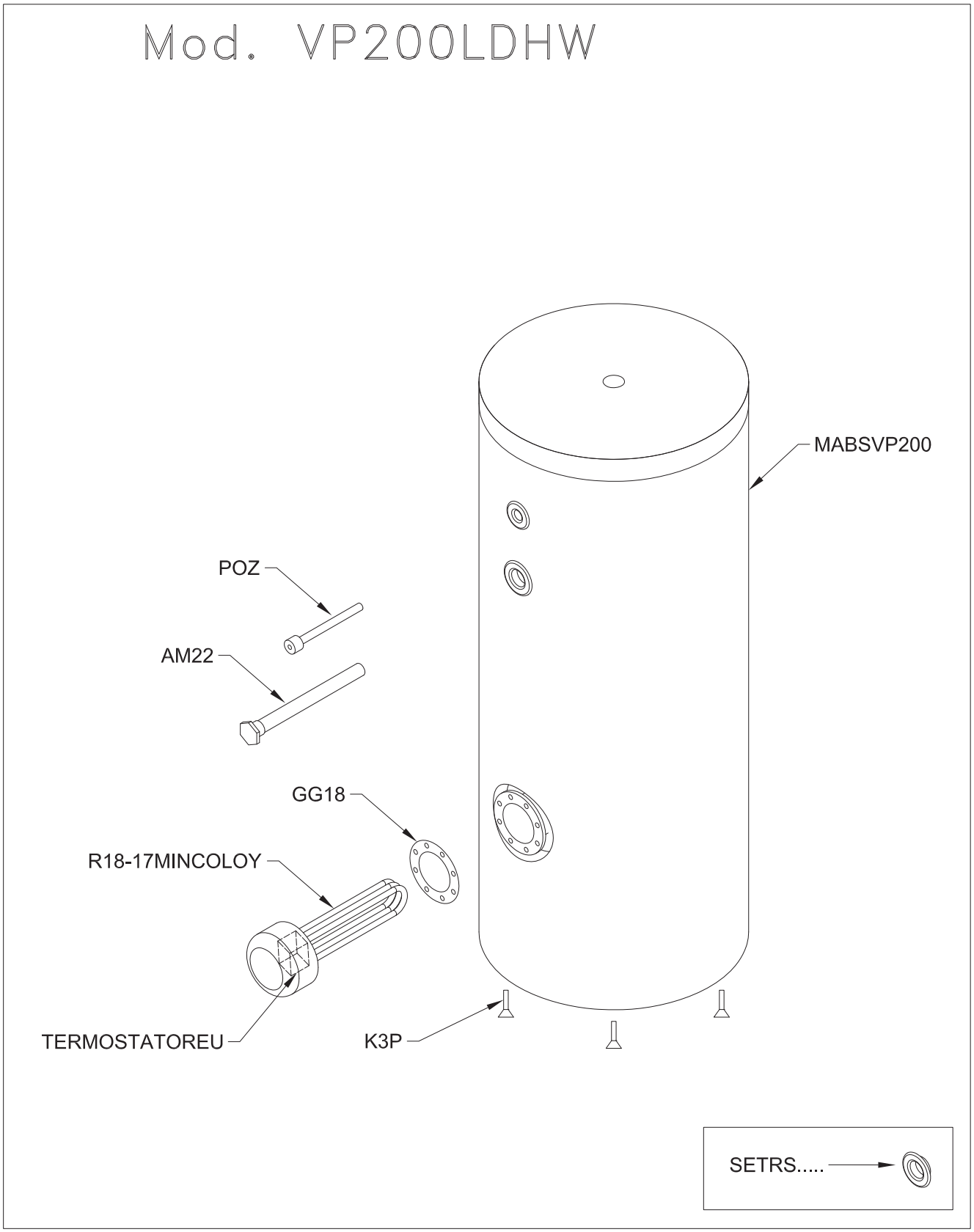
A Appendix

A.1. Spare parts – PAW-RTC5B

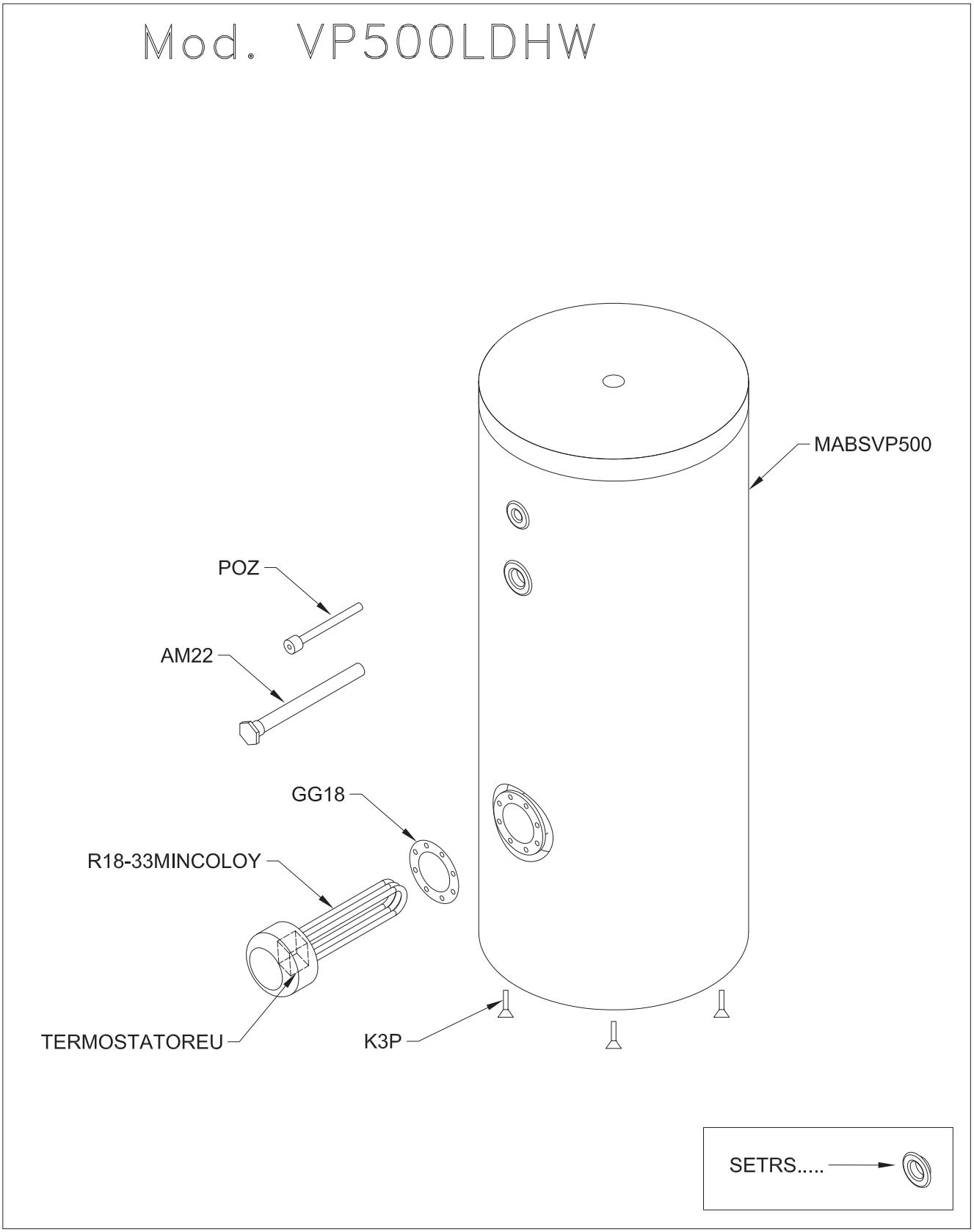
Spare Parts			
Category	Polar Energi Art. Nr	Supplier Product code	Part Name
PAW-VP-RTC5B PACi	80210	CZ-RTC5B	Remote Controller
	80211	PAW-CV6233167589	Circuit Board Ass'y CB-UXRP71B-P
	80212	PAW-CV6233209937	Transformer Ass'y, 12 watt
	80213		Thermistor Ass'y (E1)
	80214		Thermistor Ass'y (E2)
	80215		Thermistor Ass'y (E3)
	80216		Thermistor Ass'y (TA)
PAW-VP RTC5B ECOi	80210	CZ-RTC5B	Remote Controller
	80211	PAW-CV6233167589	Circuit Board Ass'y CB-UXRP71B-P
	80212	PAW-CV6233209937	Transformer Ass'y, 12 watt
	80213		Thermistor Ass'y (E1)
	80215		Thermistor Ass'y (E3)
	80216		Thermistor Ass'y (TA)
Optional Expansion Valve			
PAW-proHT-EEV16	80250	PAW-CV9231760257	Solenoid Control Valve UKV-30D33
Magnetic Coil	80260	PAW-CV9231752207	Magnetic Coil (MOV) UKV-U030E
PAW-proHT-EEV28	80251	PAW-CV6233159836	Tube 5/8 Ass'y (including strainer + MOV)
Magnetic Coil	80261	PAW-CV6233011981	Magnetic coil (MOV)

A

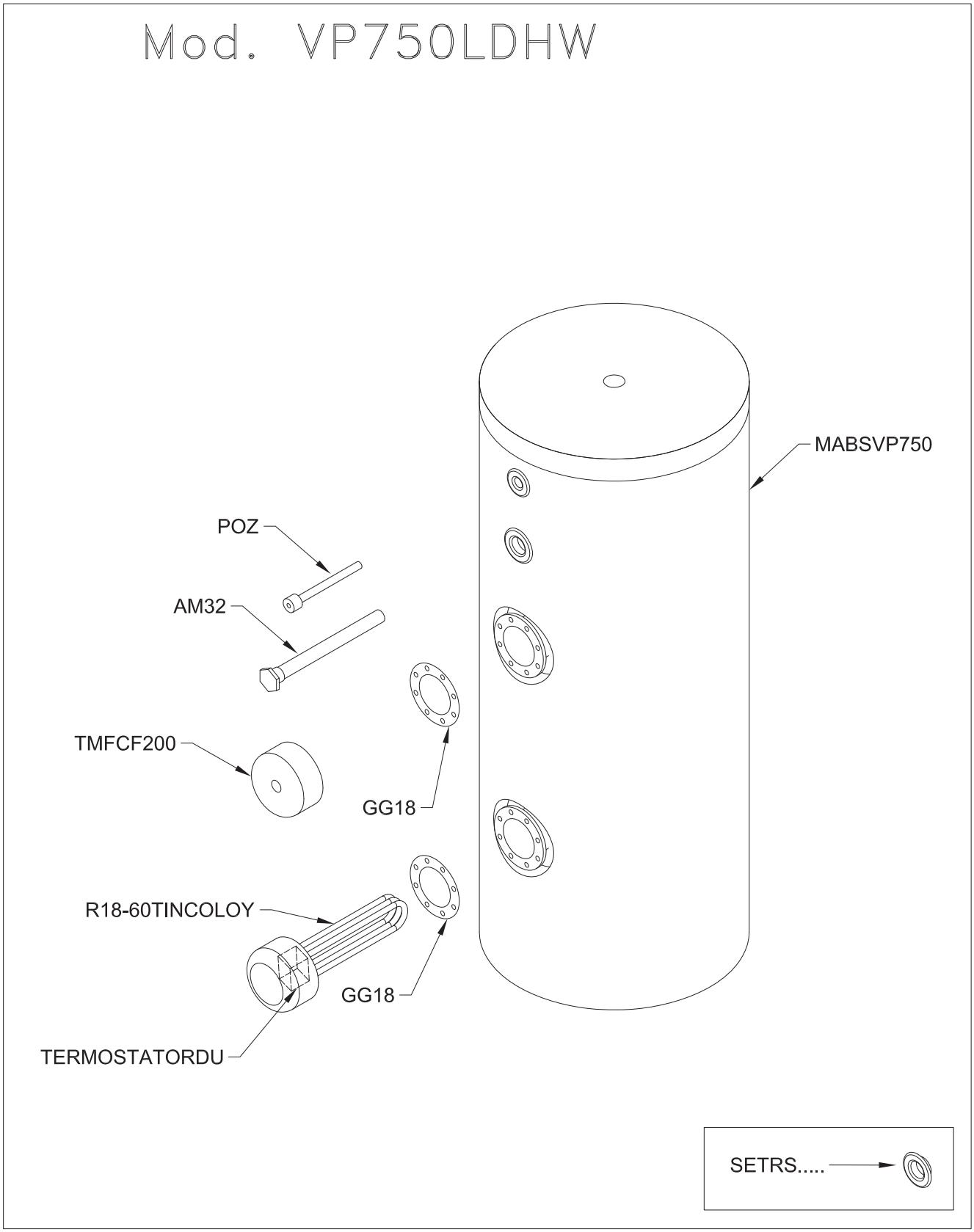
A.2. Spare parts – Tanks



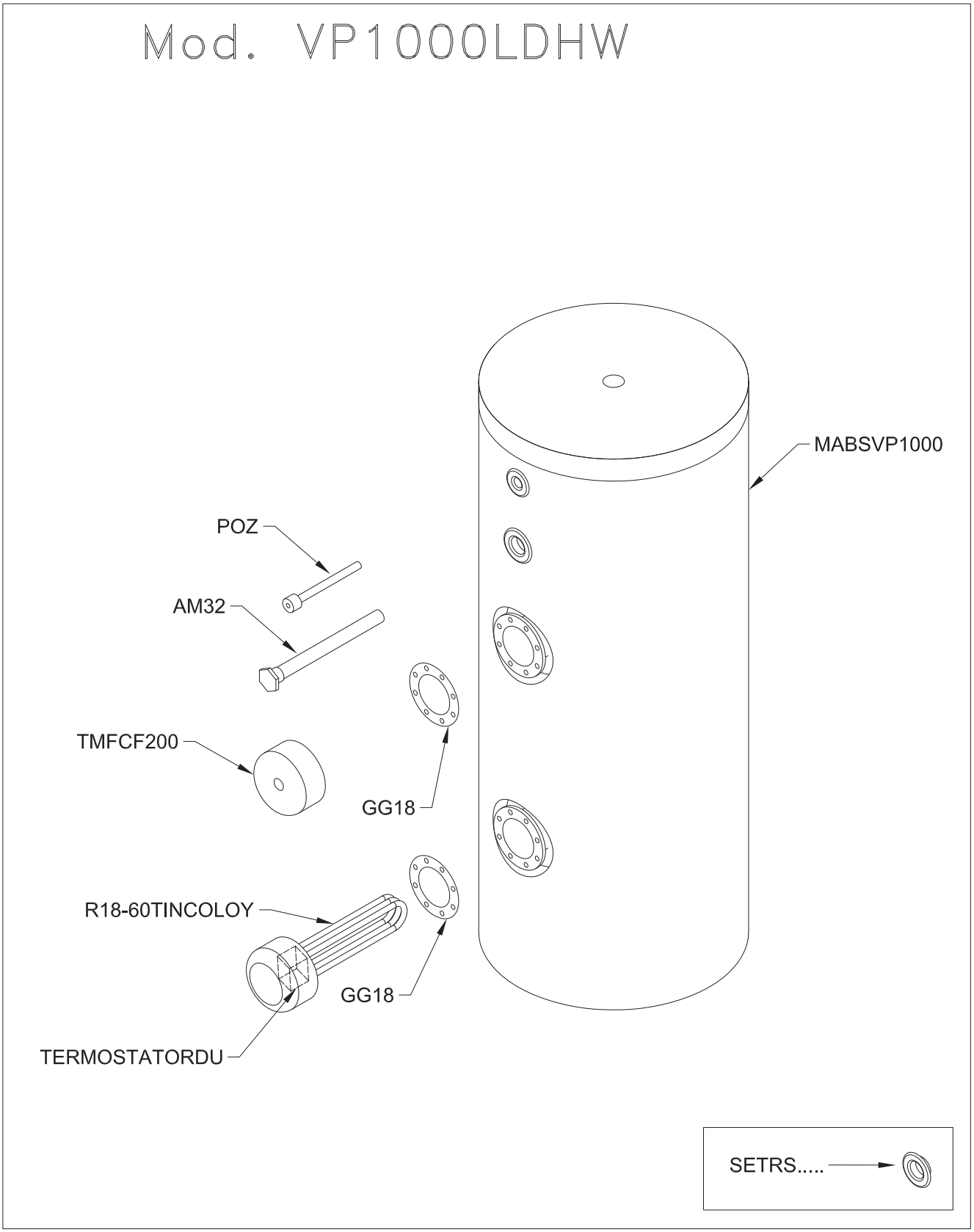
A


Mod. VP500LDHW
MABSVP500
POZ
AM22
GG18
R18-33MINCOLOY
TERMOSTATOREU
K3P
SETRS.....

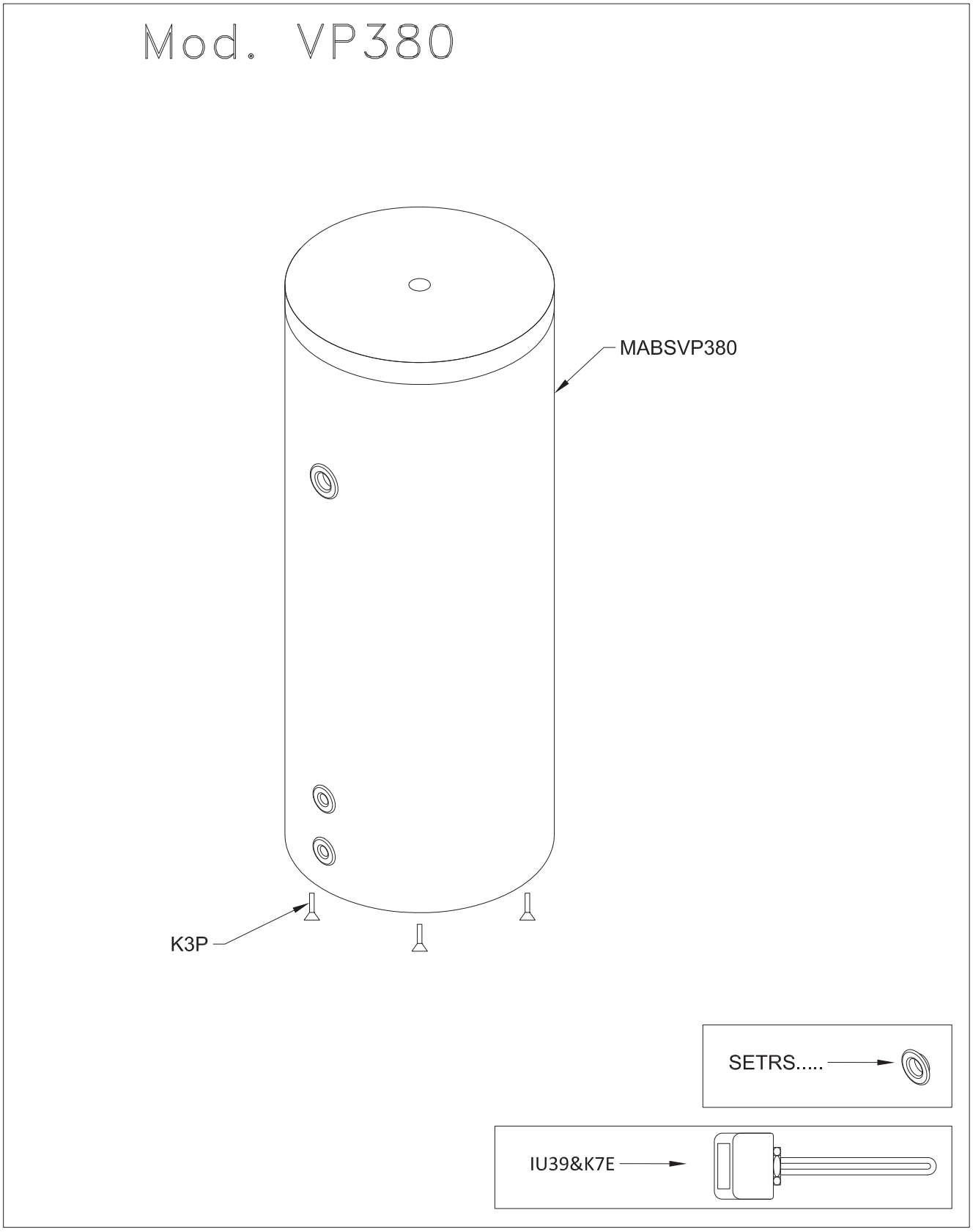
A


Mod. VP750LDHW
MABSVP750
POZ
AM32
TMFCF200
GG18
R18-60TINCOLOY
GG18
TERMOSTATORDU
SETRS.....

A


Mod. VP1000LDHW
MABSVP1000
POZ
AM32
TMFCF200
GG18
R18-60TINCOLOY
GG18
TERMOSTATORDU
SETRS.....

A



Our Ref.	Your Ref.	Item
AM22	50480	Magnesium anode Mod. VP200/VP500
AM32	50490	Magnesium anode Mod. VP750/VP1000
POZ		½" Brass probe Mod. VP 200/VP500/VP750/VP1000
R18-17MINCOLOY	50300	1,7 kw Incoloy heating element Mod. VP200
R18-33MINCOLOY	50310	3,3 kw Incoloy heating element Mod. VP500
R18-60TINCOLOY	50320	6,0 kw Incoloy heating element Mod. VP750/VP1000
TERMOSTATOREU		Thermostat for heating element Mod. VP200/VP500
TERMOSTATORDU		Thermostat for heating element Mod. VP750/VP1000
IU39&K7E	50200	6 kW heating element with control unit Mod. VP380
K7E	30200	Control unit for 6 kW heating element VP380
IU39	40200	6 kW heating element only for Mod. VP380
MABSVP200	50400	ABS External jacket for VP200 with belts and rosettes
MABSVP500	50410	ABS External jacket for VP500 with belts and rosettes
MABSVP750	50420	ABS External jacket for VP750 with belts and rosettes
MABSVP1000	50430	ABS External jacket for VP1000 with belts and rosettes
MABSVP380	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. VP200/VP500/VP380/

A

A.3. Product fiche: Water heater

Referring to EU Commission Delegated Regulation No. 812/2013

Supplier's name or trademark	Polar Energi AS, Norway			
Supplier's model identifier	**PAW- VP200LDHW**	**PAW- VP500LDHW**	**PAW- VP750LDHW**	**PAW-VP1000LDHW**
Declared load profile	M	XL	XXL	XXl
Water heating energy efficiency class	A+++	A++	A+	A+
Water heating energy efficiency	211,0%	180,0%	163,0%	154,40%
Annual electricity consumption	299 kWh	748 kWh	1122 kWh	1396 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	163,56% / 243,49%	139,53% / 207,72%	126,35% / 188,1%	118,93% / 178,19%
Annual electricity consumption: colder / warmer climate	378 kWh / 259 kWh	970 kWh / 648 kWh	1495 kWh / 972 kWh	1812 kWh / 1209 kWh

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

	Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Tank unit	PAW-VP200LDHW	PAW-VP500LDHW	PAW-VP750LDHW	PAW-VP1000LDHW
Outdoor unit	U-100PZH2E8	U-100PZH2E8	U-250PZH2E8	U-250PZH2E8

A.5. Information sheet: Heat pump space heaters

Referring to EU Commission Delegated Regulation No. 811/2013

Models:	PAW-VP380L + U-200PZH2E8
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:	no

Average Climate Conditions:

Item	Symbol	Value	Unit
Rated heat output	*Prated*	19,52	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	*Pdh*	12,16	kW
Tj = -2 °C	*Pdh*	7,46	kW
Tj = +7 °C	*Pdh*	7,3	kW
Tj = +12 °C	*Pdh*	8	kW
Tj = bivalent temperature	*Pdh*	13,82	kW
Tj = operation limit temperature	*Pdh*	13,82	kW
For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	*Pdh*	na	kW
Bivalent temperature	T_{BIV}	-10	°C
Cycling interval capacity for heating	*Pcych*	na	kW
Degradation co-efficient	*Cdh*	0,9	—
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0,026	kW
Thermostat off mode	P_{TO}	0,026	kW
Standby mode	P_{SB}	0,026	kW
Crankcase heat mode	P_{CK}	0,01	kW

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	*ηs*	179	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	*COP*	2,616	—
Tj = -2 °C	*COP*	5,429	—
Tj = +7 °C	*COP*	5,145	—
Tj = +12 °C	*COP*	4,787	—
Tj = bivalent temperature	*COP*	2,003	—
Tj = operating limit temperature	*COP*	2,003	—
For air-to-water heat pumps: Tj = -15 °C (if TOL < -20 °C)	*COP*	na	—
For air-to-water heat pumps: Operation limit temperature	*TOL*	-10	°C
Cycling interval efficiency	*COPcyc*	na	—
Heating water operating limit temperature	*WTOL*	55	°C
Supplementary heater			
Rated heat output	*Psup*	na	kW
Type of energy output	Electrical		

Other items

Capacity control	*variable*		
Sound power level indoors/outdoors	L_{WA}	../82	db
Emissions of nitrogen oxides	NO_X	no	mg/kWh

For air-to-water heat pumps: Rated air flow rate, outdoors	—	9600	m³/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	—	na	m³/h

POLARENERGI

DECLARATION OF CONFORMITY

Manufacturer's name & address
Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- PAW-VP 1000L-DHW
- PAW-VP 750L-DHW
- PAW-VP 500L-DHW
- PAW-VP 200L-DHW

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 Commisssion Regulation (EU) NO 814/2013. Commisssion 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**

POLARENERGI

DECLARATION OF CONFORMITY

Manufacturer's name & address
Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- PAW-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 Commisssion Regulation (EU) NO 813/2013 Commisssion 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**

POLARENERGI

DECLARATION OF CONFORMITY

Manufacturer's name & address
Polar Energi As
Postboks 117
9450 Hamnvik, Norway

Object of declaration, Polar Energi product name and model:

- PAW-VP-RTC5B-PAC
- PAW-VP-RTC5B-ECO

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**

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