

Electrical wiring

REMKO WSP series **System brine/water**

WSP 80, WSP 110, WSP 140, WSP 180



Instructions for Technicians



Read these operating instructions carefully before commissioning / using this device!

These instructions are an integral part of the system and must always be kept near or on the device.

Subject to modifications; No liability accepted for errors or misprints!

Translation of the original

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1 Safety and usage instructions

1.1 General safety notes

Carefully read the operating manual before commissioning the units for the first time. It contains useful tips and notes such as hazard warnings to prevent personal injury and material damage. Failure to follow the directions in this manual not only presents a danger to people, the environment and the system itself, but will void any claims for liability.

Keep this operating manual and the refrigerant data sheet near to the units.

1.2 Identification of notes

This section provides an overview of all important safety aspects for proper protection of people and safe and fault-free operation. The instructions and safety notes contained within this manual must be observed in order to prevent accidents, personal injury and material damage.

Notes attached directly to the units must be observed in their entirety and be kept in a fully legible condition.

Safety notes in this manual are indicated by symbols. Safety notes are introduced with signal words which help to highlight the magnitude of the danger in question.



DANGER!

Contact with live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components may pose a danger of death.



DANGER!

This combination of symbol and signal word warns of a situation in which there is immediate danger, which if not avoided may be fatal or cause serious injury.



WARNING!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may be fatal or cause serious injury.



CAUTION!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause injury or material and environmental damage.



NOTICE!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause material and environmental damage.



This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Personnel qualifications

Personnel responsible for commissioning, operation, maintenance, inspection and installation must be able to demonstrate that they hold a qualification which proves their ability to undertake the work.

1.4 Dangers of failure to observe the safety notes

Failure to observe the safety notes may pose a risk to people, the environment and the units. Failure to observe the safety notes may void any claims for damages.

In particular, failure to observe the safety notes may pose the following risks:

- The failure of important unit functions.
- The failure of prescribed methods of maintenance and repair.
- Danger to people on account of electrical and mechanical effects.

1.5 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.6 Safety notes for the operator

The operational safety of the units and components is only assured providing they are used as intended and in a fully assembled state.

- The units and components may only be set up, installed and maintained by qualified personnel.
- Protective covers (grille) over moving parts must not be removed from units that are in operation.
- Do not operate units or components with obvious defects or signs of damage.
- Contact with certain unit parts or components may lead to burns or injury.
- The units and components must not be exposed to any mechanical load, extreme levels of humidity or extreme temperature.
- Spaces in which refrigerant can leak sufficient to load and vent. Otherwise there is danger of suffocation.
- All housing parts and device openings, e.g. air inlets and outlets, must be free from foreign objects, fluids or gases.
- The units must be inspected by a service technician at least once annually. Visual inspections and cleaning may be performed by the operator when the units are disconnected from the mains.

1.7 Safety notes for installation, maintenance and inspection

- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The setup, connection and operation of the units and its components must be undertaken in accordance with the usage and operating conditions stipulated in this manual and comply with all applicable regional regulations.
- The heat pump must be connected to the heat source and heating or cooling system in accordance with the relevant regulations.
- Regional regulations and laws as well as the Water Ecology Act (WHG) must be observed.
- The power supply should be adapted to the requirements of the units.
- Units may only be mounted at the points provided for this purpose at the factory. The units may only be secured or mounted on stable structures, walls or floors.
- Mobile units must be set up securely on suitable surfaces and in an upright position. Stationary units must be permanently installed for operation.
- The units and components should not be operated in areas where there is an increased risk of damage. Observe the minimum clearances.

- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Safety devices may not be modified or bypassed.

1.8 Unauthorised modification and changes

Modifications or changes to units and components are not permitted and may cause malfunctions. Safety devices may not be modified or bypassed. Original replacement parts and accessories authorised by the manufacturer ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

Depending on the model, the equipment and the additional fittings with which it is equipped is only intended to be used as an air-conditioner for the purpose of cooling or heating the air in an enclosed room.

Any different or additional use shall be classed as non-intended use. The manufacturer/supplier assumes no liability for damages arising from such use. The user bears the sole risk in such cases. Intended use also includes working in accordance with the operating and installation instructions and complying with the maintenance requirements.

Under no circumstances should the threshold values specified in the technical data be exceeded.

1.10 Warranty

For warranty claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The warranty conditions are detailed in the "General business and delivery conditions". Furthermore, only the parties to a contract can conclude special agreements beyond these conditions. In this case, contact your contractual partner in the first instance.

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1.11 Transport and packaging

The devices are supplied in a sturdy shipping container. Please check the equipment immediately upon delivery and note any damage or missing parts on the delivery and inform the shipper and your contractual partner. For later complaints can not be guaranteed.



WARNING!

Plastic films and bags etc. are dangerous toys for children!

Why:

- Leave packaging material are not around.
- Packaging material may not be accessible to children!

1.12 Environmental protection and recycling

Disposal of packaging

All products are packed for transport in environmentally friendly materials. Make a valuable contribution to reducing waste and sustaining raw materials. Only dispose of packaging at approved collection points.



Disposal of equipment and components

Only recyclable materials are used in the manufacture of the devices and components. Help protect the environment by ensuring that the devices or components (for example batteries) are not disposed in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using certified firms and recycling specialists or at collection points.



2 Electrical wiring - General

2.1 System layout

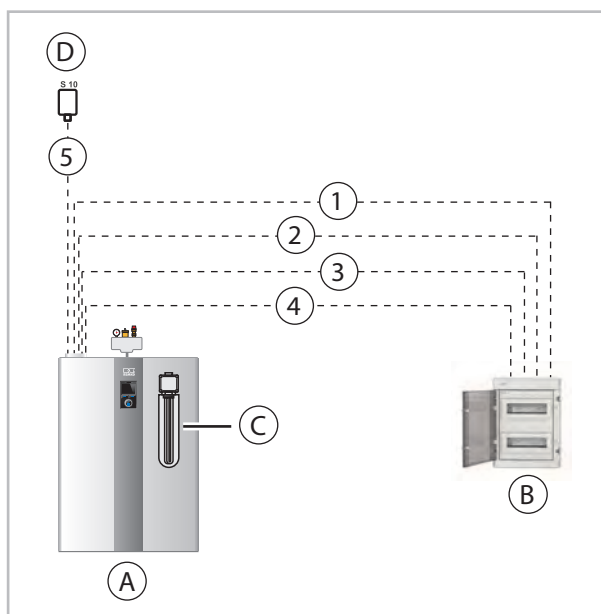


Fig. 1: System layout

- A: Heat pump
- B: Sub-distribution (provided by the customer)
- C: Electrical heating coil
- D: External probe
- 1: Power supply, heat pump
- 2: Power supply, auxiliary heater
- 3: Power supply, Smart Control controller
- 4: Potential-free power utility signal for Smart-Control
- 5: Probe cable, external probe

WARNING!

All electric lines are in accordance VDE regulations to dimension and to lay.

2.2 General notes

- It is necessary to lay multiple power supply lines from the distribution system to the heat pump, depending on the version. See "Electrical wiring WSP" chapter.
- A connection diagram can be found in the "Overview of terminal assignment" chapter and the corresponding diagrams can be found in the "Circuit diagrams" chapter of this manual.
- If an auxiliary heater is required in the heat pump, another three-phase 400V / 3~/50 Hz power supply shall be provided to the indoor unit.
- Power to the smart control may not be disconnected by the power company when fitted with an off-period circuit (anti-freeze protection).
- The Smart-Control needs to know whether a power company release or off-period is in effect (contact S16). A potential-free switch must be provided by the customer for this purpose. (Contact closed signifies enabled, while contact open signifies a blocking period).
- Special rates for the operation of heat pumps may be offered by the power utility.
- Ask your local power utility about the details of any rates that might be available.

DANGER!

All electrical installation work must be done by an electrician.

WARNING!

Always note the currently applicable VDE guidelines and the notes in TAB 2007. The size and type of the fuse are to be taken from the technical data.

WARNING!

All cable sizes are to be selected according to VDE 0100. Special attention should be given to cable lengths, cable type and the kind of installation. The information in the connection diagram and in the system overview are to be seen as an acceptable installation possibility only in a standard case!

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! NOTICE!

The electrical connection for the units must be made at a separate feedpoint with a residual current device in accordance with local regulations and should be laid out by an electrician.



Check all plugged and clamped terminals to verify that they are seated correctly and make permanent contact. Tighten as required.

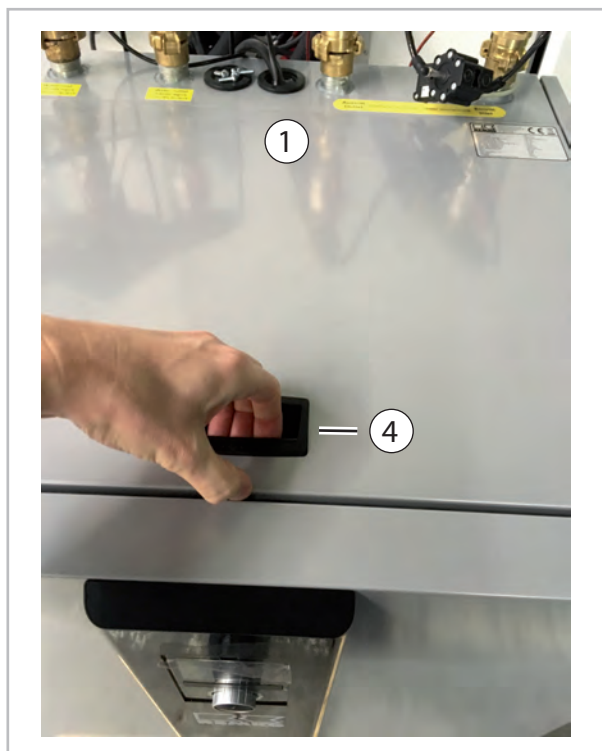
2.3 Electrical connection, heat pump

The following instructions describe the electrical connection of the heat pump.

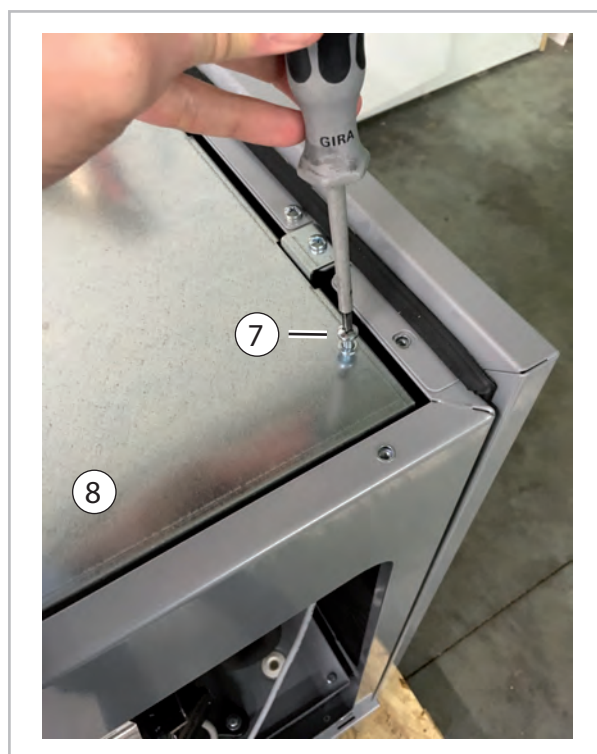
1. ➔ Remove the two covers [2] and loosen the two screws [3] left and right at the edge of the cover [1].



2. ➤ Remove the cover [1] of the device by holding it by the grip [4] and pushing it out of the rear groove.



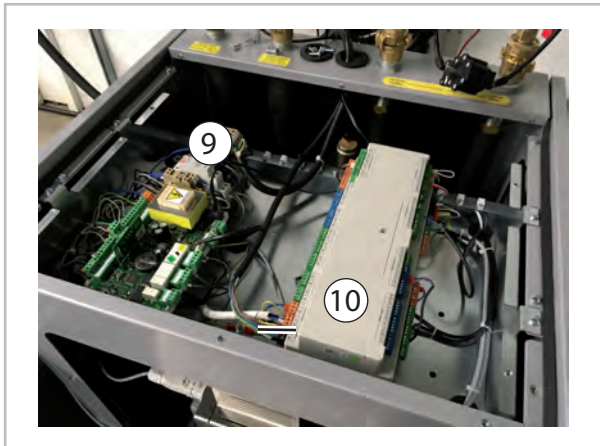
4. ➤ Then loosen the screws [7] of the junction box cover [8] and remove it.



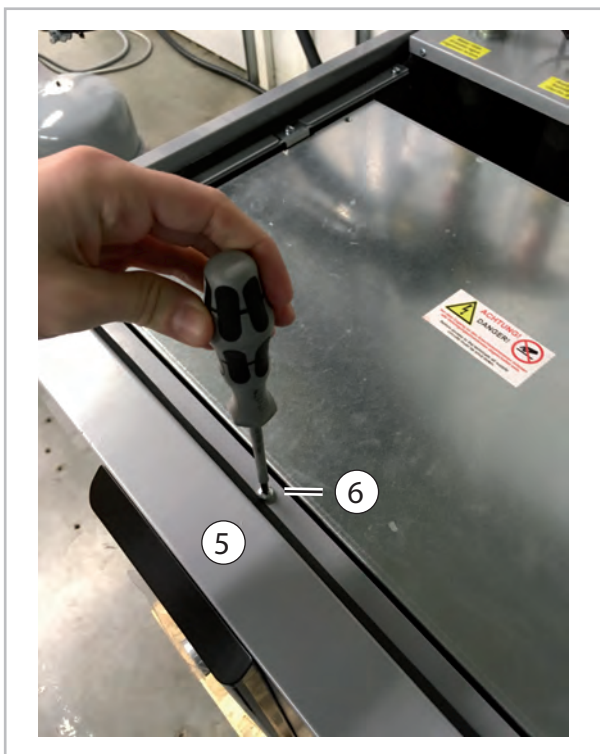
5. ➤ Feed the supply line of the heat pump as well as the lines of the external devices and probes through the cable glands into the unit. Note that the cable openings are located at the top.

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6. ➤ Connect the power supply and the control line of the heat pump to the terminal blocks [9] (see chapter “Electrical wiring”). Connect all secondary consumers (HGM,HGU, changeover valves etc.) to the I/O module [10].



7. ➤ In order to be able to connect the electric heating element, the front door [5] must be opened. To do this, loosen the three upper screws [6] behind the front door.



8. ➤ Then tilt the front door [5] forward and remove it carefully.



! NOTICE!

Attach cables in accordance with the connection schematic and/or the circuit diagram in the control box.

! NOTICE!

Ensure correct polarity when connecting the electrical leads, especially the control cable.



The number of lines and the sensors is dependent on the configuration of the heating system and the components.



At the site, avoid adding cable inlets.

! NOTICE!

It is necessary to provide a separate RCD 100 mA, type B (universal current-sensitive) with a contact load of 40 A for the heat pump.

2.4 Connection of sensors and probes

Temperature probes

- The number of probes required can vary with the type of system.
- Observe the relevant notes for the probe position found in the hydraulic circuit diagram.
- The standard scope of delivery includes the external probes (S10), an immersion probe (provided for use as a domestic hot water sensor PT-1000 (S08)).
- When connecting up a solar system, use a PT-1000 sensor (S01) as a collector sensor and a PT-1000 sensor (S02) as the lower storage tank probe.
- All probes are to be connected to the heat pump switch cabinet in accordance with the terminal assignment diagram.

Contact probe

PT-1000 contact probes can be mounted on the pipes, to measure the heating-circuit temperatures, for example.

- The contact probes are fixed to a pipe with the accessories provided.
- Clean the appropriate point. Subsequently a thermal compound (A) is applied and the probe is fixed in position.

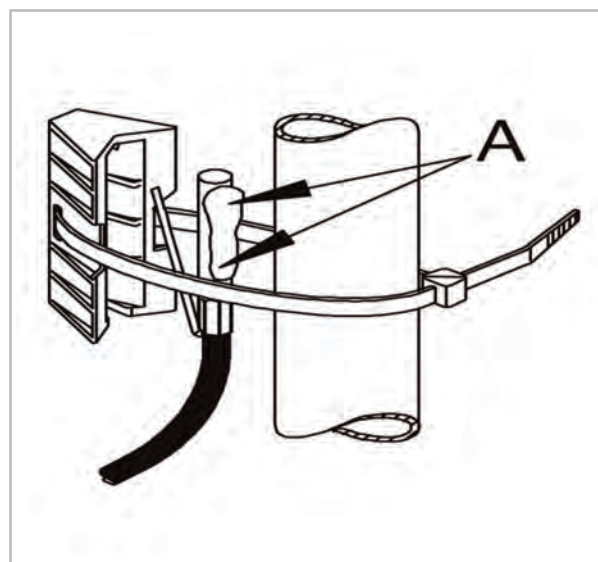


Fig. 2: Securing the contact probe (as in figure)

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If the sensor cables are too short, they can be extended up to a maximum of 100m with wire having a cross-section of 1.5 mm².

External probe

The connection of an outdoor sensor is always required for Smart Control.

- Mount the external probe pointing skyward, in a north-easterly direction, about 2.5 metres above the ground. It may not be subjected to direct sunlight and is to be protected against excessive wind. Installation above windows or air ducts is to be avoided.
- In order to carry out the installation, remove the cover and secure the probe with the screw provided.
- A cable with wire cross-sections of min.1.0 mm² provided by the customer is recommended for connecting the probe.

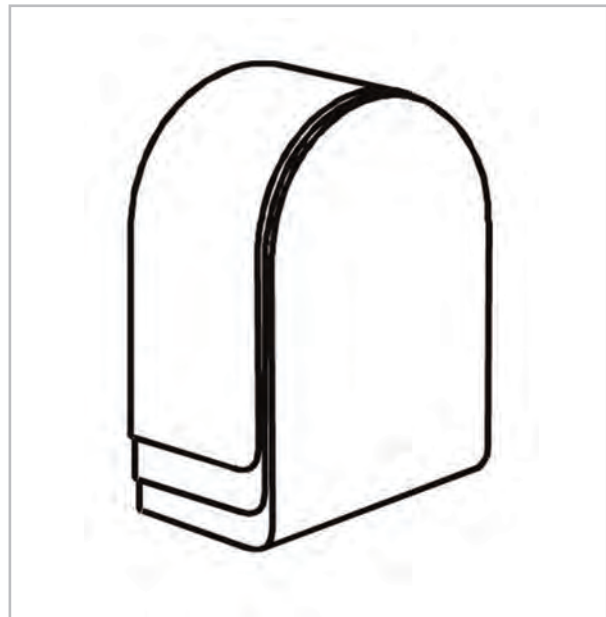
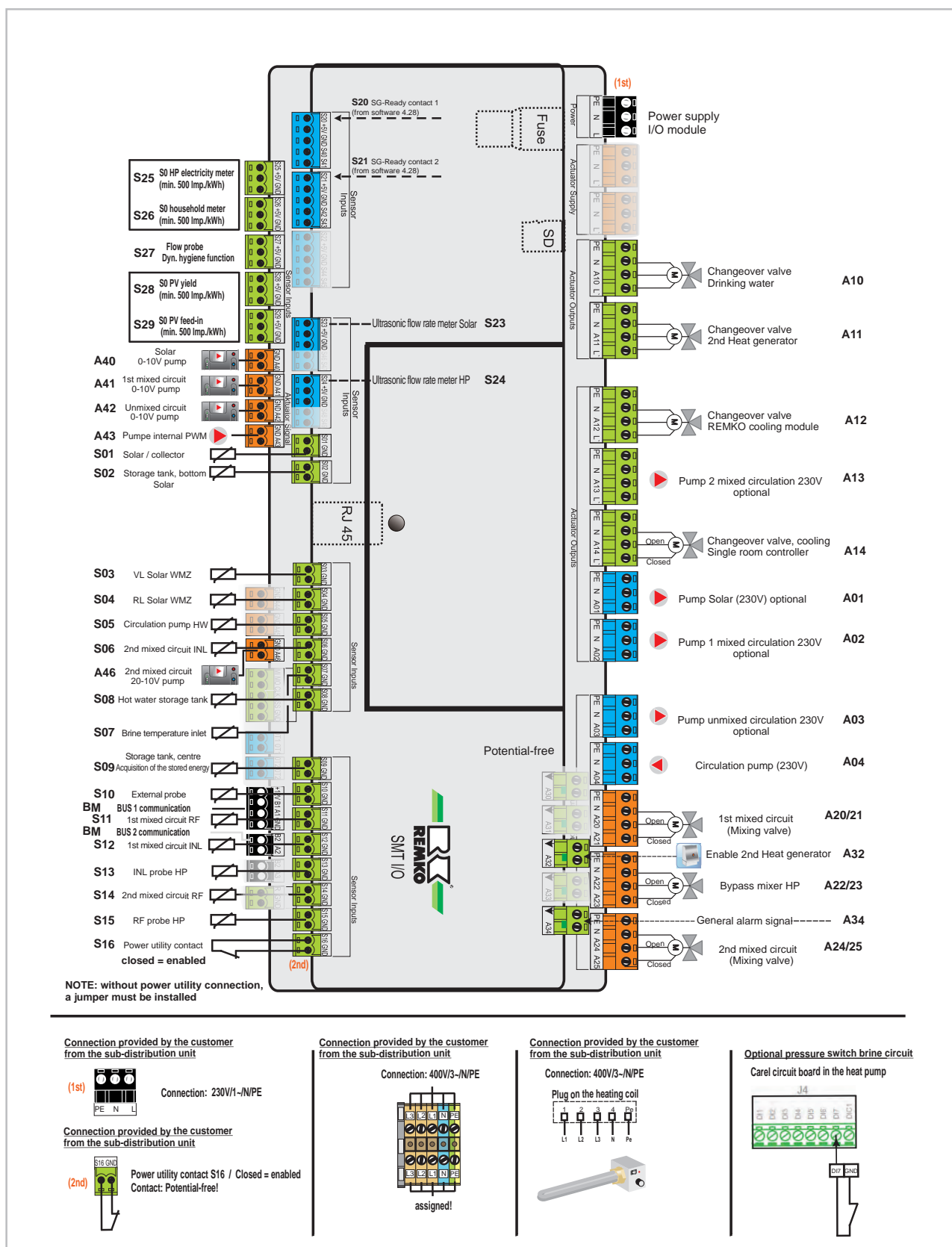


Fig. 3: External probe (as in figure)

2.5 Electrical configuration - I/O module

Use wire gauge corresponding with the connection cable supplied!
Lay load lines separately to measuring lines!



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2.6 Terminal assignment / legend

Terminal configuration

Designation	Input	Output	Signal	Description
PW	X			Power supply I/O 230V
PP1		X		Power supply primary pump IM
S01	X			Solar probe collector PT 1000
S02	X			Solar probe storage tank bottom PT 1000
S03	X			Solar probe INL HM Solar PT 1000
S04	X			Solar probe RF HM Solar PT 1000
S05	X			Probe circulation PT 1000 RF Temp./Pulse encoder
S06	X			Probe INL 2nd mixed circuit PT 1000
S07	X			Brine inlet temperature PT 1000
S08	X			Probe drinking water tank top PT 1000
S09	X			Probe buffer storage tank middle PT 1000
S10	X			External probe PT 1000
S11	X			Probe RF 1st mixed circuit PT 1000
S12	X			Probe INL 1st mixed circuit PT 1000
S13	X			Probe INL heat pump PT 1000
S14	X			Probe RF 2nd mixed circuit PT 1000
S15	X			Probe RF heat pump PT 1000
S16	X			Power utility contact (NC) / dewpoint monitoring external (open = locked, closed = enabled)
S20	X			SG-Ready contact 1 (from software 4.28)
S21	X			SG-Ready contact 2 (from software 4.28)
S22	X			Not connected
S23	X			Ultrasonic flow rate meter Solar, pulse rate
S24	X			Ultrasonic flow rate meter HP, impulse rate
S25	X			HP electricity meter S0
S26	X			Household electricity S0
S27	X			Flow probe hot water
S28	X			PV yield electricity meter S0
S29	X			PV in-feed electricity meter S0
A01		X		Solar pump unregulated (230V)
A02		X		Pump 1st mixed circuit (230V) switched
A03		X		Pump unmixed Circuit (230V) switched
A04		X		Circulation pump (230V) switched
A10		X		Changeover valve, hot water

Designation	Input	Output	Signal	Description
A11		X		Changeover valve 2nd WE (230V)
A12		X		REMKO cooling module changeover valve (230V)
A13		X		Pump 2nd mixed circuit (230 V) switched
A14		X		Changeover valve cool./single room contr. (230V)
A20		X		1st mixing circuit mixing valve "Open" (230V)
A21		X		1st mixing circuit mixing valve "Closed" (230V)
A22		X		Bypass mixing valve "Open" (230V)
A23		X		Bypass mixing valve "Closed" (230V)
A24		X		2nd mixing circuit mixing valve "Open" (230V)
A25		X		2nd mixing circuit mixing valve "Closed" (230V)
A30		X		Not connected
A31		X		Not connected
A32		X		Enable 2nd WE booster heating or boiler (potential-free)
A33		X		Not connected
A34		X		General alarm signal external (potential-free)
A40			X	Speed setting solar pump PWM
A41			X	Speed specification, 1st mixed circuit (0-10V)
A42			X	Speed specification unmixed Circuit (0-10V)
A43			X	PWM (pump internal)
A44			X	Not connected
A45			X	Not connected
A46			X	Speed specification, 2nd mixed circuit (0-10V)
MI				Not connected
MO				
CLK				
nSS				
GND				
OT 1 (2x)				Not connected
OT 2 (2x)				Not connected
B1, A1 +12 Volt, GND				Bus 1 communication
B2 / A2				Bus 2 communication
B3 / A2				Not connected
R				RC coding resistance

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3 Electrical wiring WSP 80-180

3.1 Overview of electrical connecting lines

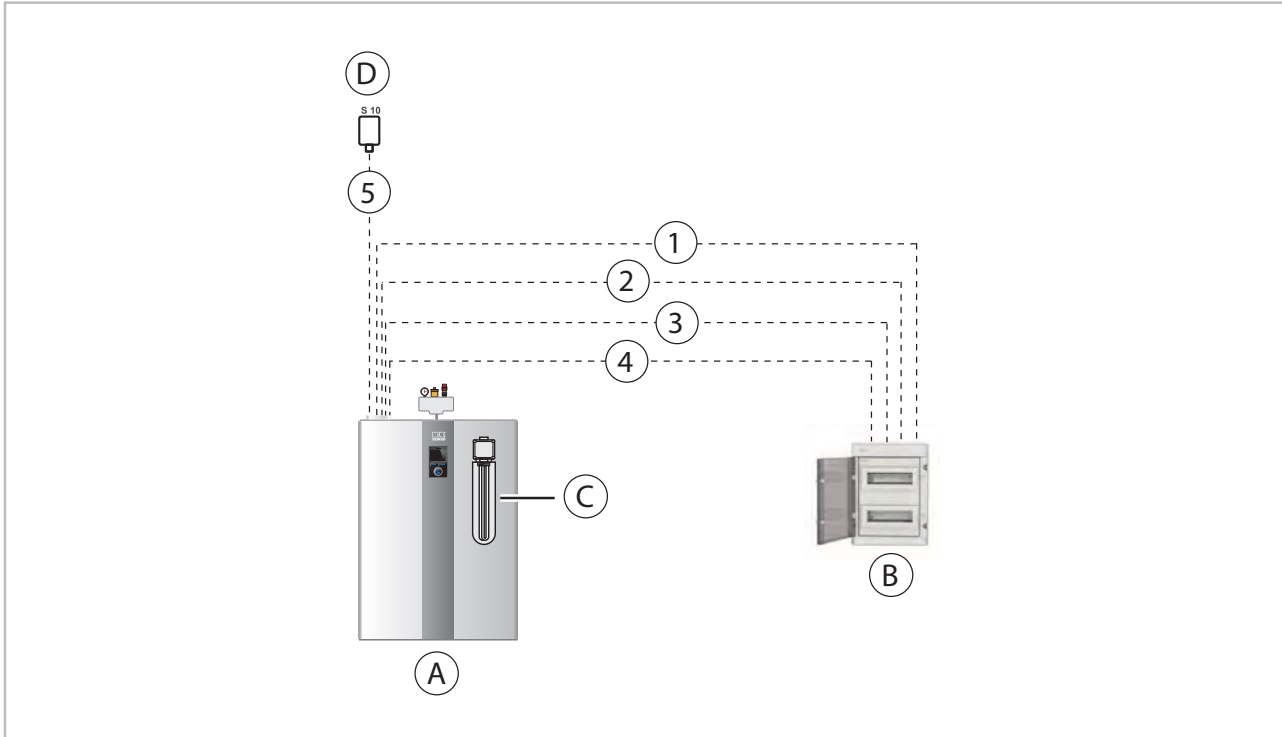


Fig. 4: Overview of electrical connection WSP

- | | |
|---|--|
| <p>A: Heat pump</p> <p>B: Sub-distribution (provided by the customer)</p> <p>C: Electrical heating coil</p> <p>D: External probe</p> <p>1: Power supply heat pump, 400V/3~/50Hz, e.g. 5 x 2.5 mm²
Fuse WSP 80/110/140 = 3 x 16A
Fuse WSP 180 = 3 x 20A</p> | <p>2: Power supply, auxiliary heating, mm²
400V/3~/50Hz, 16A, e.g. 5 x 2.5</p> <p>3: Power supply, Smart Control controller
230V/1~/50Hz, 10A, e.g. 5 x 1.5 mm²</p> <p>4: Potential-free power utility signal for Smart Control S16, e.g. 2 x 1.0 mm²</p> <p>5: Sensor cable on external probe, e.g. 2 x 1.0 mm²</p> |
|---|--|



WARNING!

The configuration of the core cross sections can **only** be defined by an installation specialist!



All connections to the heat pump are made from above!



NOTICE!

For an existing block the heat pump by the utility (utility switching) must be used the control contact S 16 of the Smart-Control.

3.2 Overview of terminal assignment

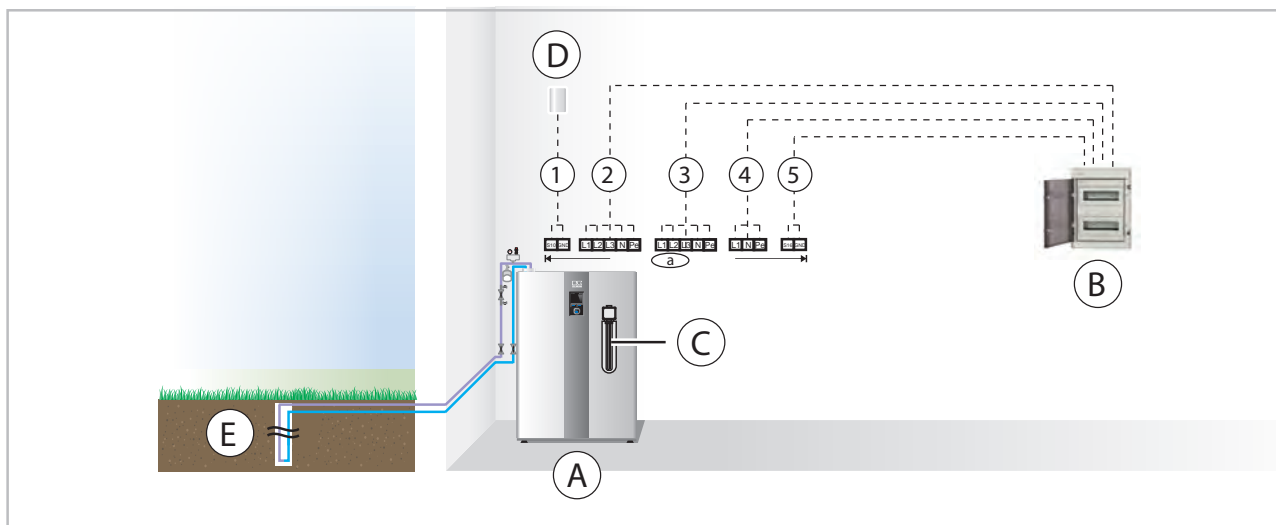


Fig. 5: Terminal configuration WSP

- A: Heat pump
 B: Sub-distribution (provided by the customer)
 C: Electrical heating coil
 D: External probe
 E: Heat source
 a: Terminals in unit
 1: Sensor cable on external probe, e.g. 2 x 1.0 mm²
 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
 3: Power supply heat pump, 400V/3~/50Hz, e.g. 5 x 2.5 mm²
 Fuse WSP 80/110/140 = 3 x 16A
 Fuse WSP 180 = 3 x 20A
 4: Power supply, controller (I/O module) 400V/3~/50Hz, e.g. 3 x 1.5 mm²
 5: Smart Control signal cable (potential-free power utility signal), e.g. 2 x 1.0 mm²

Electrical connections between distribution and heat pump

Distribution - terminal	Description	Heat pump - terminal
L1	Power supply, heat pump 400V/ 3~/50Hz	L1
L2		L2
L3		L3
N		N
Pe		Pe
L	Power supply, Smart-Control 230V/1~/50Hz	L
N		N
Pe		Pe
L1	Power supply, Smart-Serv 400V/3~/ 50Hz 9kW	L1
L2		L2
L3		L3
N		N
Pe		Pe

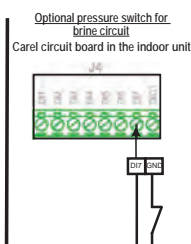
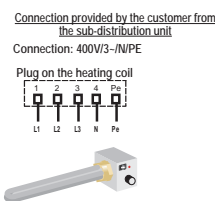
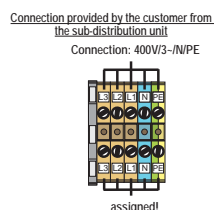
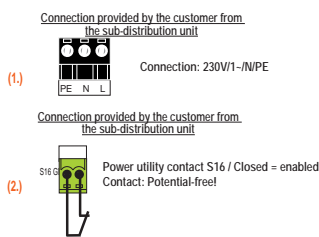
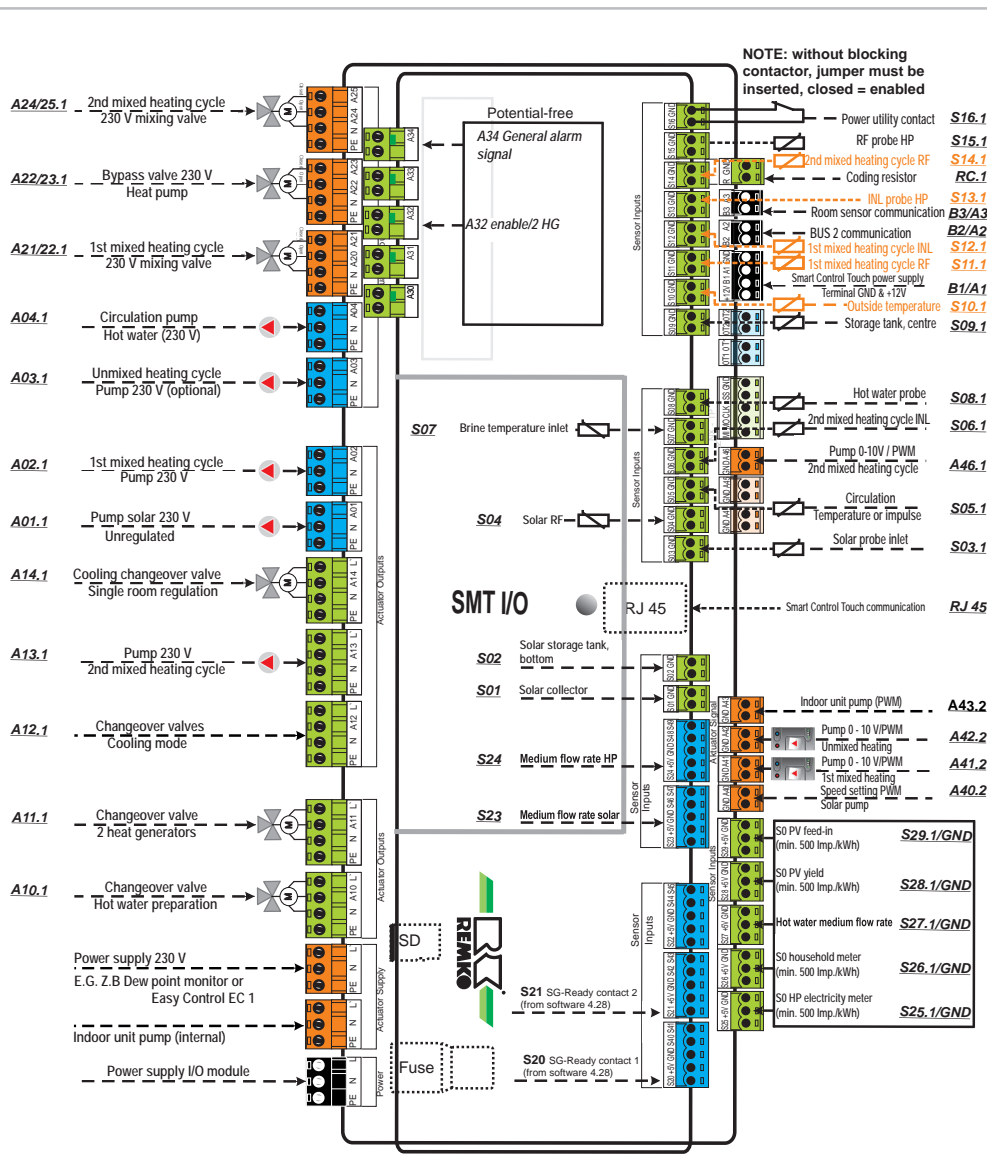
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4 Electrical wiring cascade

4.1 Electr. configurat. WSP 140 and WSP 180 Duo - cascade - heat pump 1

I/O module heat pump 1

Use wire gauge corresponding with the connection cable supplied!
Lay load lines separately to measuring lines!



4.2 Terminal assignment / legend - cascade - heat pump 1

Terminal assignment

Designation	Input	Output	Signal	Description
PW	X			Power supply I/O 230V
PP1		X		Power supply primary pump IM
S01	X			Solar probe collector PT 1000
S02	X			Solar probe storage tank bottom PT 1000
S03	X			Solar probe INL HM Solar PT 1000
S04	X			Solar probe RF HM Solar PT 1000
S05	X			Probe circulation PT 1000 RF Temp./Pulse encoder
S06	X			Probe INL 2nd mixed circuit PT 1000
S07	X			Brine inlet temperature PT 1000
S08	X			Probe drinking water tank top PT 1000
S09	X			Probe buffer storage tank middle PT 1000
S10	X			External probe PT 1000
S11	X			Probe RF 1st mixed circuit PT 1000
S12	X			Probe INL 1st mixed circuit PT 1000
S13	X			Probe INL heat pump PT 1000
S14	X			Probe RF 2nd mixed circuit PT 1000
S15	X			Probe RF heat pump PT 1000
S16	X			Power utility contact (NC) / dewpoint monitoring external (open = locked, closed = enabled)
S20	X			SG-Ready contact 1 (from software 4.28)
S21	X			SG-Ready contact 2 (from software 4.28)
S22	X			Not connected
S23	X			Ultrasonic flow rate meter Solar, pulse rate
S24	X			Ultrasonic flow rate meter HP, impulse rate
S25	X			HP electricity meter S0
S26	X			Household electricity S0
S27	X			Flow probe hot water
S28	X			PV yield electricity meter S0
S29	X			PV in-feed electricity meter S0
A01		X		Solar pump unregulated (230V)
A02		X		Pump 1st mixed circuit (230V) switched
A03		X		Pump unmixed Circuit (230V) switched
A04		X		Circulation pump (230V) switched
A10		X		Changeover valve, hot water

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Designation	Input	Output	Signal	Description
A11		X		Changeover valve 2nd WE (230V)
A12		X		REMKO cooling module changeover valve (230V)
A13		X		Pump 2nd mixed circuit (230 V) switched
A14		X		Changeover valve cooling/single room control (230V)
A20		X		1st mixing circuit mixing valve "Open" (230V)
A21		X		1st mixing circuit mixing valve "Closed" (230V)
A22		X		Bypass mixing valve "Open" (230V)
A23		X		Bypass mixing valve "Closed" (230V)
A24		X		2nd mixing circuit mixing valve "Open" (230V)
A25		X		2nd mixing circuit mixing valve "Closed" (230V)
A30		X		Not connected
A31		X		Not connected
A32		X		Enable 2nd WE booster heating or boiler (potential-free)
A33		X		Not connected
A34		X		General alarm signal external (potential-free)
A40			X	Speed setting solar pump PWM
A41			X	Speed specification, 1st mixed circuit (0-10V)
A42			X	Speed specification unmixed Circuit (0-10V)
A43			X	PWM (pump internal)
A44			X	Not connected
A45			X	Not connected
A46			X	Speed specification, 2nd mixed circuit (0-10V)
MI				Not connected
MO				
CLK				
nSS				
GND				
OT 1 (2x)				Not connected
OT 2 (2x)				Not connected
B1, A1 +12 Volt, GND				Bus 1 communication
B2/A2				Bus 2 communication
B3/A2				Not connected
R				RC coding resistance

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4.4 Terminal assignment / legend - cascade - heat pump 2

Terminal assignment

Designation	Input	Output	Signal	Description
Power	X			Power supply I/O 230V
PP		X		Power supply primary pump, indoor unit
S01.2	X			Not connected
S02.2	X			Not connected
S03.2	X			Not connected
S04.2	X			Not connected
S05.2	X			Not connected
S06.2	X			4th mixed heating cycle inlet probe / PT1000
S07.2	X			Probe refrigerant piping
S08.2	X			Not connected
S09.2	X			Not connected
S10.2	X			Not connected
S11.2	X			3rd mixed heating cycle RF probe / PT1000
S12.2	X			3rd mixed heating cycle inlet probe / PT1000
S13.2	X			Heat pump inlet
S14.2	X			4th mixed heating cycle inlet probe / PT1000
S15.2	X			Not connected
S16.2	X			Not connected
S20.2	X			Not connected
S21.2	X			Not connected
S22.2	X			Not connected
S23.2	X			Not connected
S24.2	X			Ultrasonic flow rate meter HP, impulse rate
S25.2	X			Not connected
S26.2	X			Not connected
S27.2	X			Not connected
S28.2	X			Not connected
S29.2	X			Not connected
A01.2		X		Not connected
A02.2		X		3rd mixed heating cycle pump (230V) switched
A03.2		X		Not connected
A04.2		X		Not connected
A10.2		X		Not connected

Designation	Input	Output	Signal	Description
A11.2		X		Not connected
A12.2		X		Not connected
A13.2		X		4th mixed heating cycle pump (230V) switched
A14.2		X		Not connected
A20.2		X		3rd mixed heating cycle mixing valve open (230V)
A21.2		X		3rd mixed heating cycle mixing valve closed s(230V)
A22.2		X		Not connected
A23.2		X		Not connected
A24.2		X		4th mixed heating cycle mixing valve open (230V)
A25.2		X		4th mixed heating cycle mixing valve closed (230V)
A30.2		X		Not connected
A31.2		X		Not connected
A32.2		X		Not connected
A33.2		X		Not connected
A34.2		X		Not connected
A40.2			X	Not connected
A41.2			X	3rd mixed heating cycle pump (0-10V)
A42.2			X	Not connected
A43.2			X	Speed specification, indoor unit primary pump (PWM) I/O 2
A44.2			X	Not connected
A45.2			X	Not connected
A46.2			X	4th mixed heating cycle pump (0-10V)
MI				Non functional
MO				
CLK				
nSS				
GND				
OT 1 (2x)				Non functional
OT 2 (2x)				Non functional
B1, A1 +12 Volt, GND				A1/B1 Communication cascade
B2 / A2				Communication Com-Kit 2
B3 / A2				Non functional
RC.2				RC coding resistance slave 1

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5 Electrical wiring WSP 140 and WSP 180 Duo cascade

5.1 Overview of electrical connecting lines

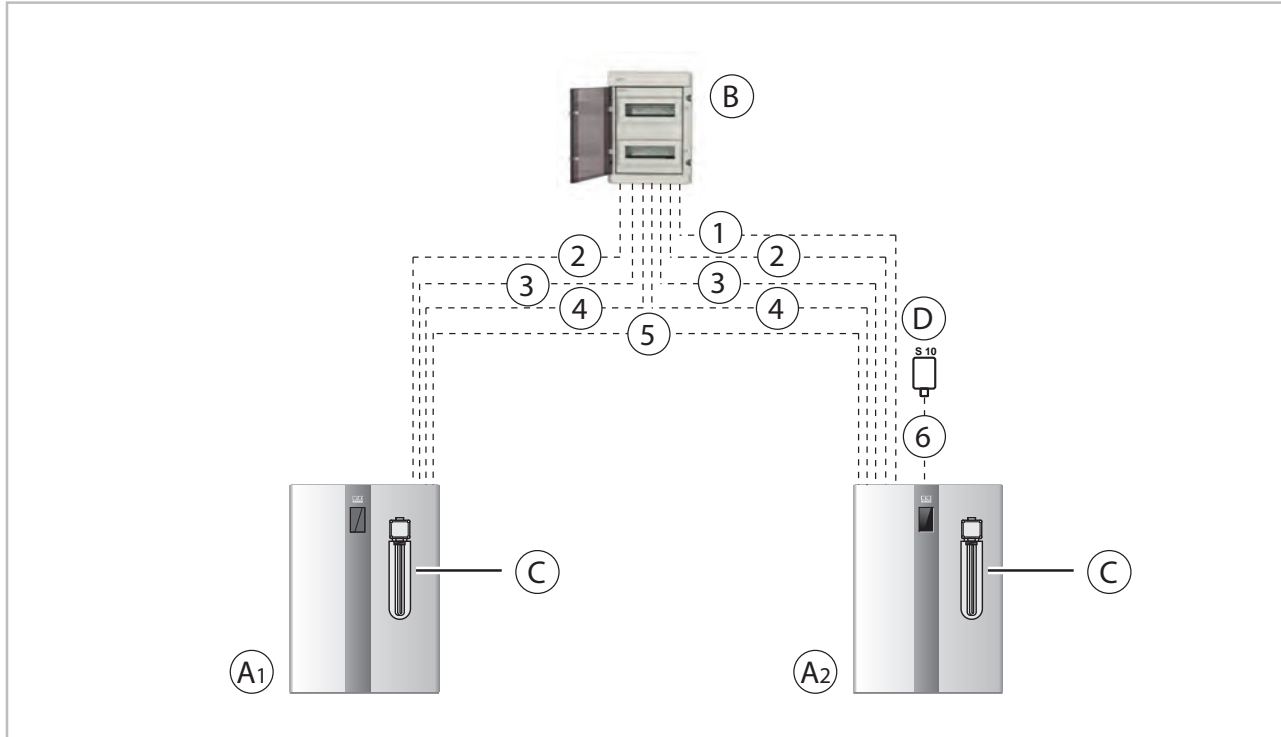


Fig. 6: Overview of electrical wiring WSP 140 and WSP 180 Duo cascade

- | | | |
|-------|---|-------------------------------|
| A1-2: | Heat pumps 1 to 2 | e.g. 5 x 2.5 mm ² |
| B: | Sub-distribution (provided by the customer) | Fuse WSP 80/110/140 = 3 x 16A |
| C: | Electrical heating coil | Fuse WSP 180 = 3 x 20A |
| D: | External probe | |
| 1: | Potential-free power utility signal for Smart Control S16, e.g. 2 x 1.0 mm ² | |
| 2: | Power supply, auxiliary heating, 400V/3~/50Hz, 16A, e.g. 5 x 2.5 mm ² | |
| 3: | Compressor power supply, 400V/3~/50Hz, | |
| 4: | Power supply, Smart Control controller 230V/1~/50Hz, 10A, e.g. 5 x 1.5 mm ² | |
| 5: | Control line, cascade 0-10V (sheathed), e.g. 2 x 1.0 mm ² | |
| 6: | Sensor cable on external probe, e.g. 2 x 0.5 mm ² | |



WARNING!

The configuration of the core cross sections can **only** be defined by an installation specialist!



All connections to the heat pump are made from above!



NOTICE!

For an existing block the heat pump by the utility (utility switching) must be used the control contact S 16 of the Smart-Control.

5.2 Overview of terminal assignment WSP 140 and WSP 180 Duo cascade

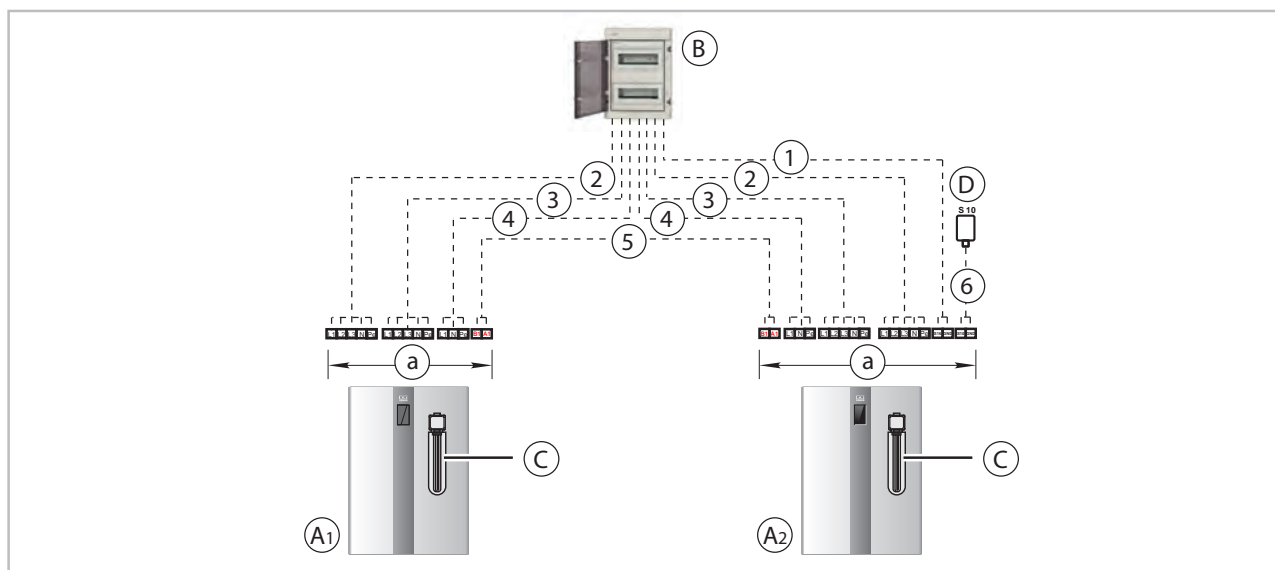


Fig. 7: Terminal assignment WSP 140 and WSP 180 Duo

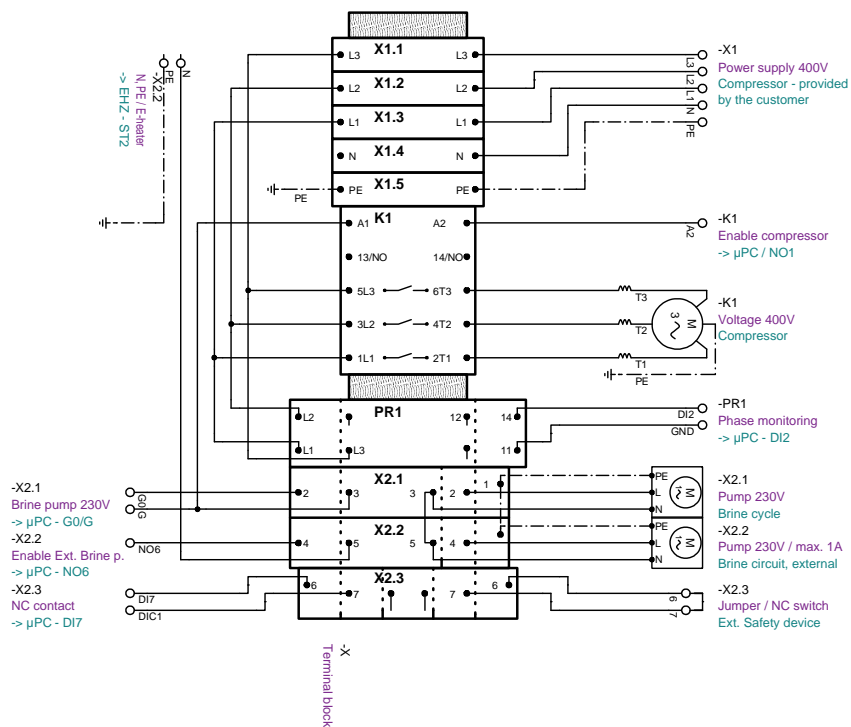
- | | |
|--|---|
| A1-2: Heat pumps 1 to 2 | e.g. 5 x 2.5 mm ² |
| B: Sub-distribution (provided by the customer) | Fuse WSP 80/110/140 = 3 x 16A |
| C: Electrical heating coil / D: External probe | Fuse WSP 180 = 3 x 20A |
| a: Terminals in indoor unit | 4: Power supply, Smart Control controller |
| 1: Potential-free power utility signal for Smart Control S16, e.g. 2 x 1.0 mm ² | 230V/1~/50Hz, 10A, e.g. 5 x 1.5 mm ² |
| 2: Power supply, auxiliary heating, 400V/3~/50Hz, 16A, e.g. 5 x 2.5 mm ² | 5: Control line, cascade 0-10V (sheathed), e.g. 2 x 1.0 mm ² |
| 3: Compressor power supply, 400V/3~/50Hz, | 6: Sensor cable on external probe, e.g. 2 x 0.5 mm ² |

Electrical connections between distribution and heat pump

Distribution - terminal	Description	Heat pump - terminal
L1	Power supply, heat pump 400V/ 3~/50Hz	L1
L2		L2
L3		L3
N		N
Pe	Power supply, Smart-Control 230V/1~/50Hz	Pe
L		L
N		N
Pe	Power supply, Smart-Serv 400V/3~/ 50Hz 9kW	Pe
L1		L1
L2		L2
L3		L3
N		N
Pe		Pe

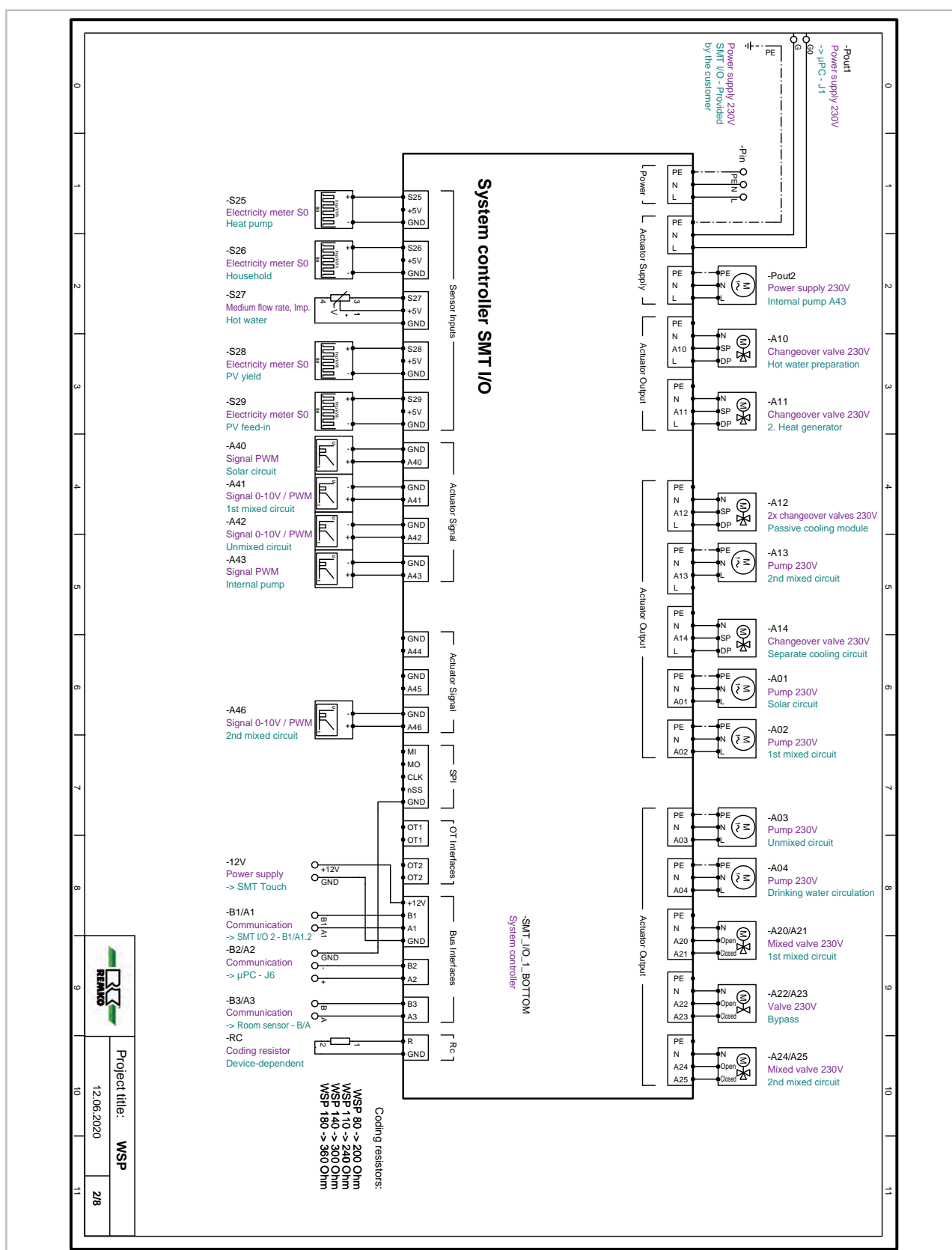
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6 Circuit diagrams

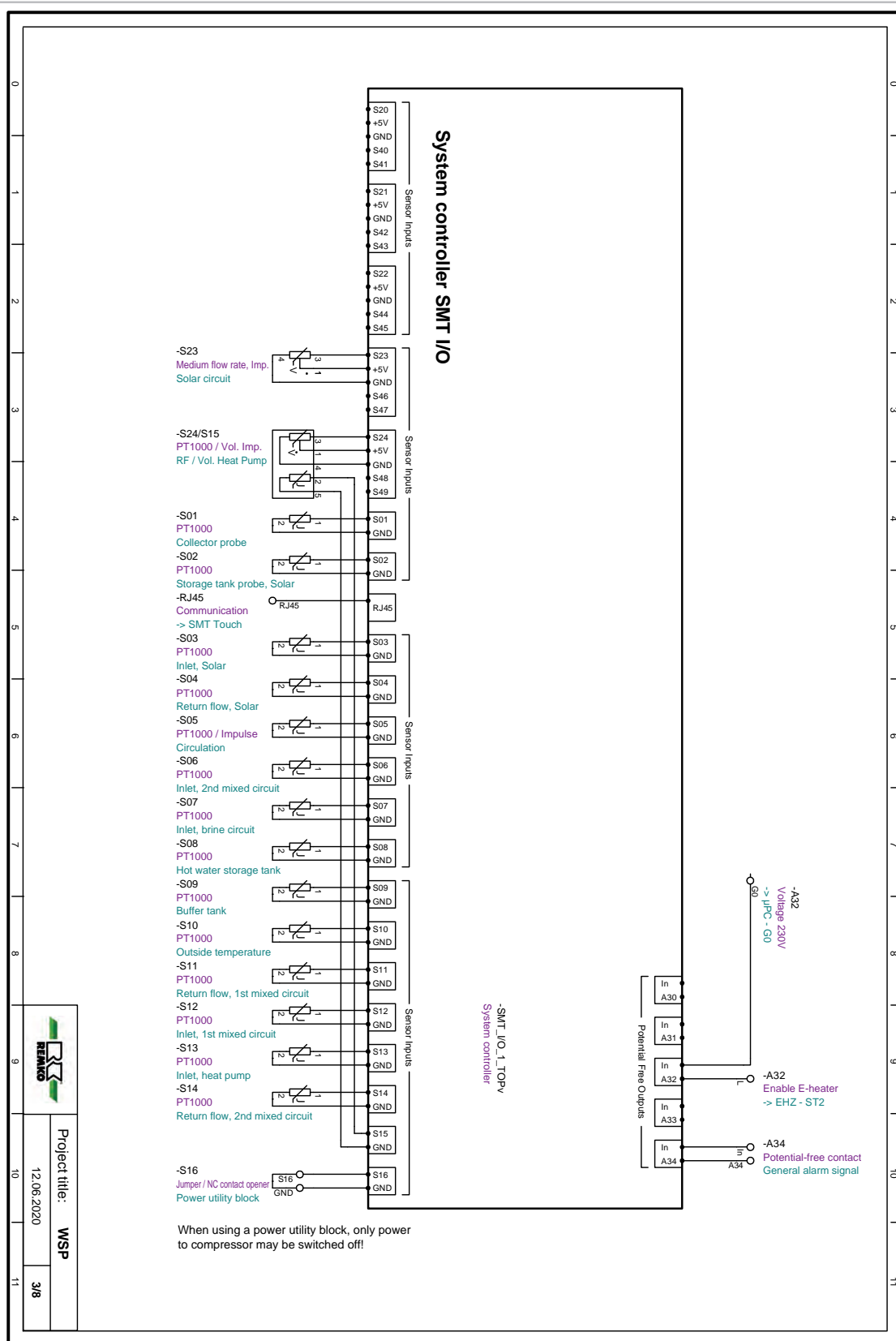
Project title: **WSP**

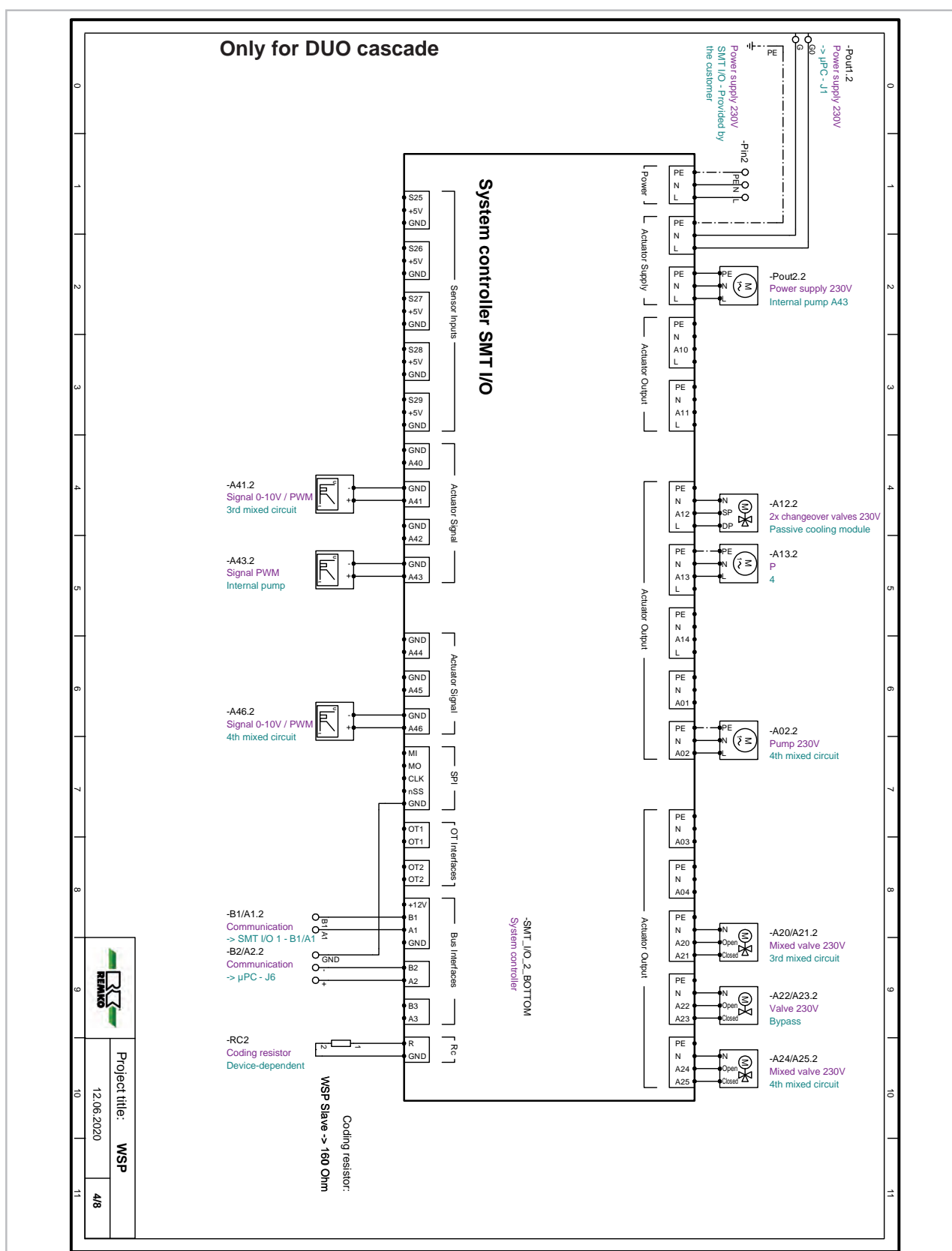
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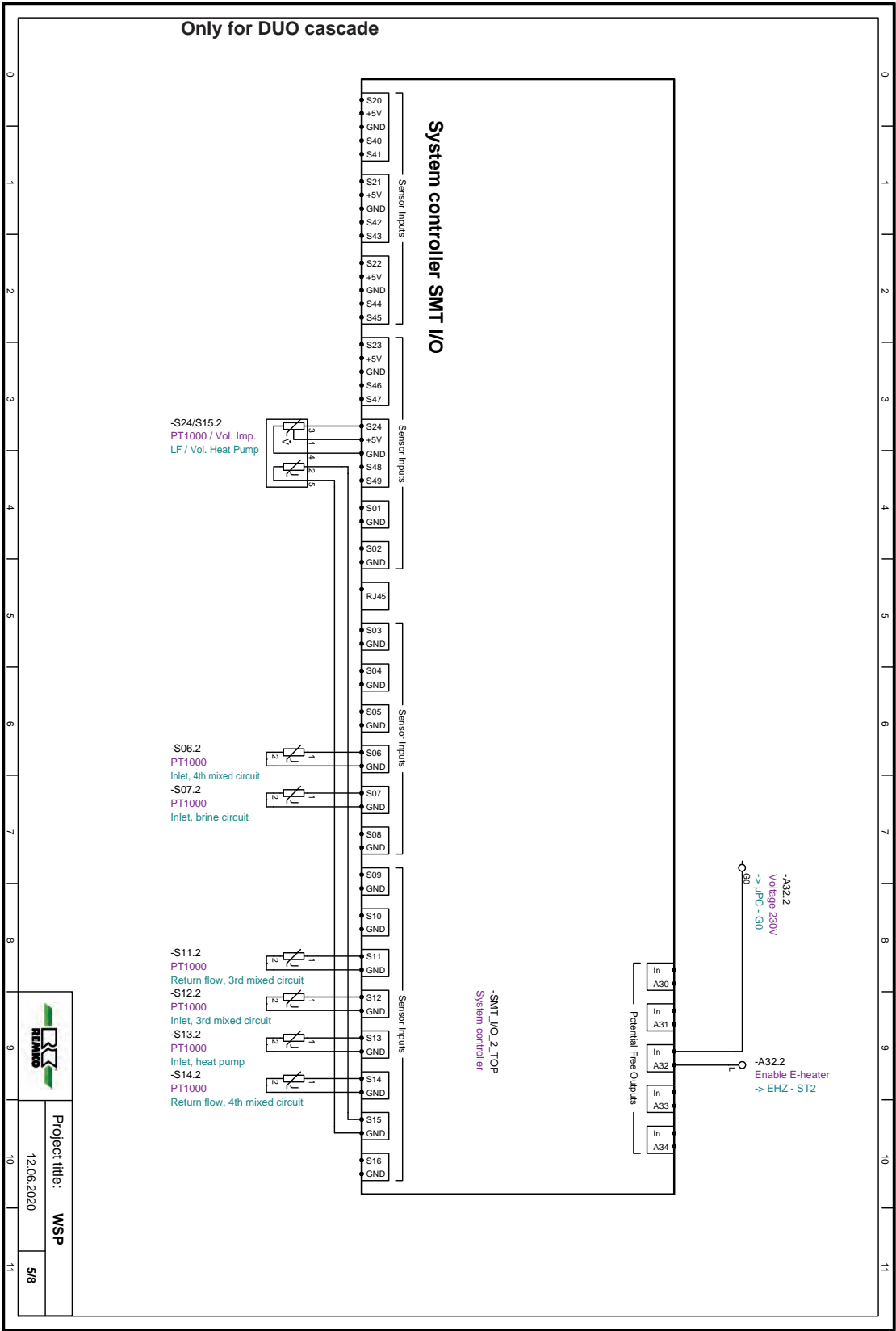


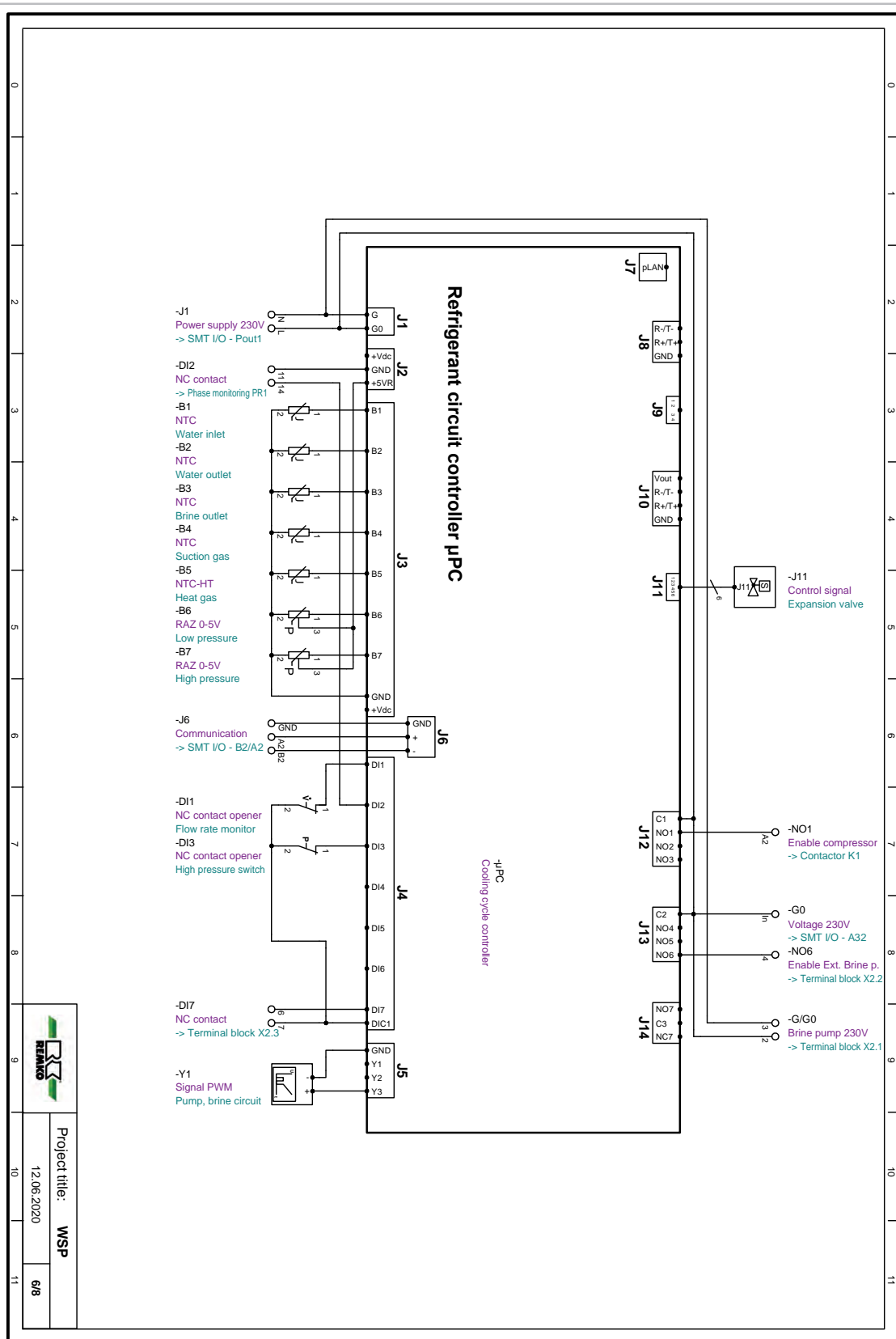
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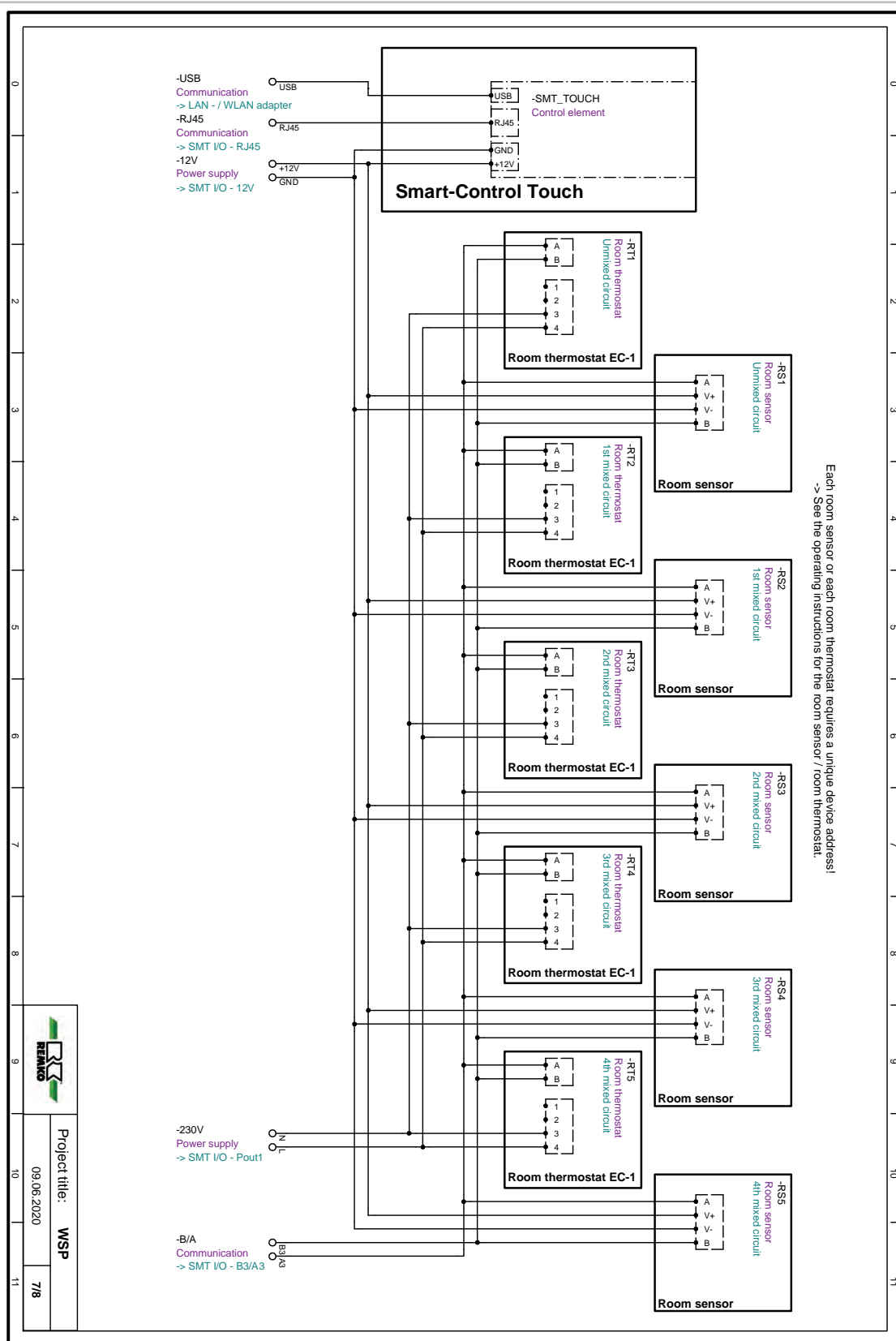


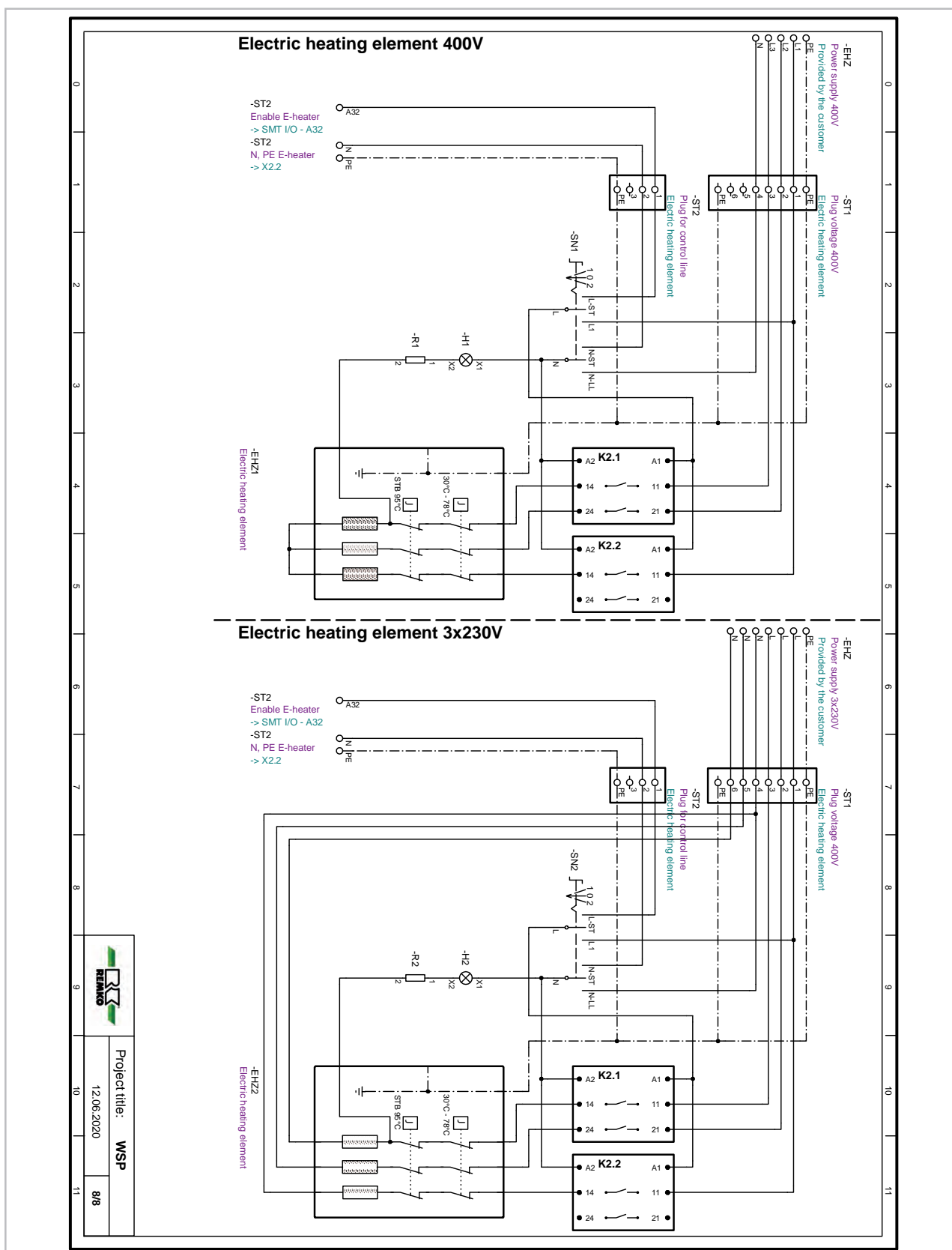
Project title: **WSP**

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Legend for the circuit diagrams

E-heater: Electric heating element
EHZ: Electric heating element
EVU: Power utility
Ext.: External
mix.: mixed
Imp.: Impulse
PV: Photovoltaic
PWM: Pulse width modulation
RL: Return flow
Brine p.: Brine pump
unmixed: unmixed
Vol.: Medium flow rate

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