

■ Electrical wiring

REMKO HTS series

ARTstyle heat pumps

Air/water system for heating and cooling

HTS 80, HTS 90, HTS 110, HTS 130, HTS 200, HTS 260

HTS 200 Duo, HTS 260 Duo



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.

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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.
- Local regulations and laws such as Water Ecology Act 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 a heightened 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 must not be altered 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.

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.



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2 Electrical wiring - General

2.1 System layout

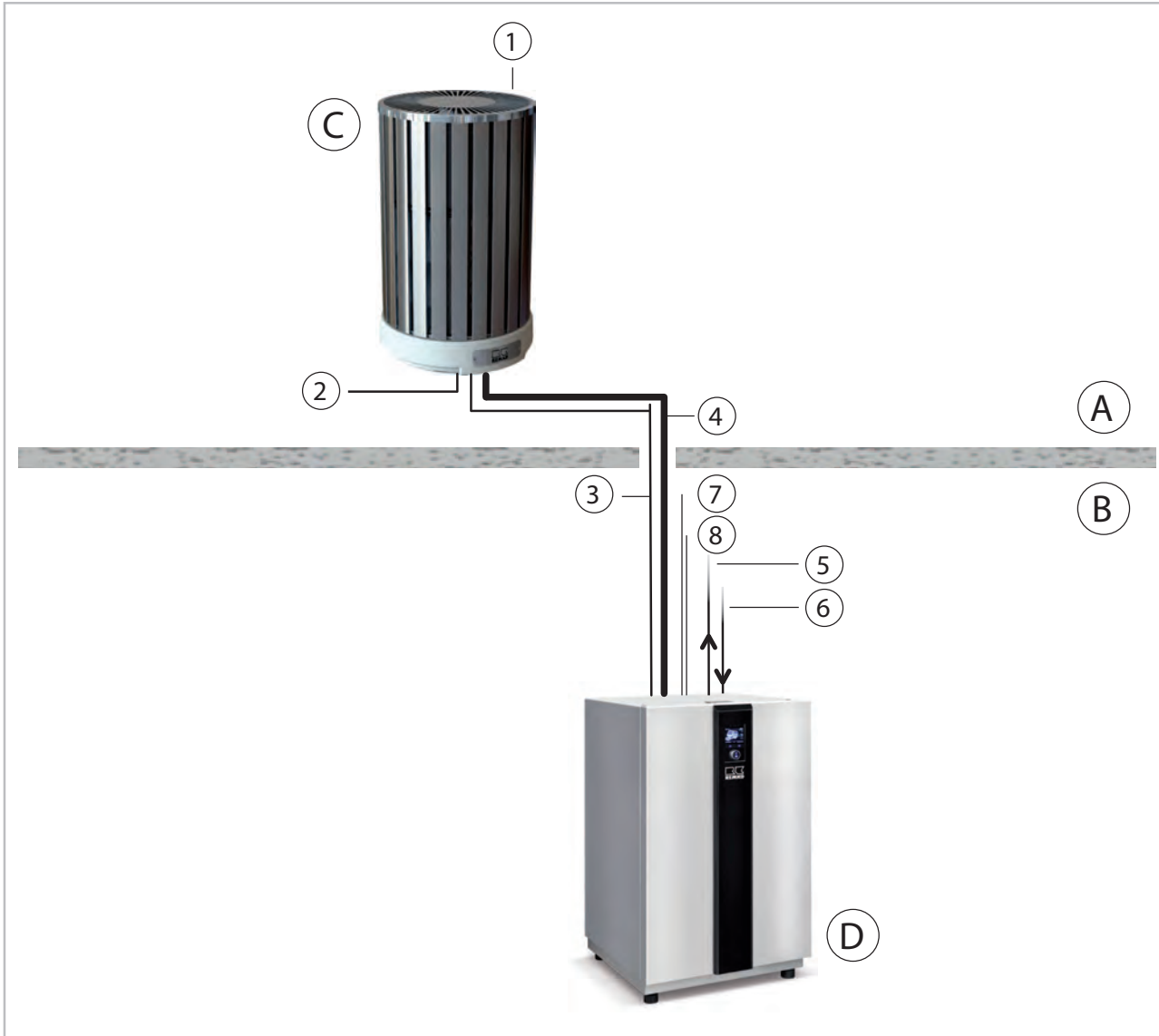


Fig. 1: System layout HTS 80/90/110/130

- | | |
|--|---|
| A: Outdoor area | 5: Inlet |
| B: Indoor area | 6: Return flow |
| C: Outdoor unit | 7: Power supply line to indoor module: |
| D: Indoor unit | HTS 90=230V/1~/ 50Hz, 16A |
| 1: Fan / air outlet | (e.g. 3x2.5 mm ²) |
| 2: Condensate drainage, outdoor unit | HTS 80/110/130=400V/3~/ 50Hz, 3x16A |
| (must be designed to be frost proof!) | (e.g. 5x2.5 mm ²) |
| 3: Lines between indoor and outdoor modules: | Control voltage regulation = |
| Control line outdoor module 0-10V (sheathed) / | 230V/1~/50Hz, 16A (e.g. 3x1.5 mm ²) |
| sensor cable (sheathed), e.g. 5 x 1,0 mm ² | 8: Mains supply line, electrical auxiliary heater = |
| Power supply coming from the outdoor unit / | 400V / 3~ / 50Hz, 16A (e.g. 5x2.5 mm ²) |
| Condensate drainage heating 5x1.5 mm ² , | |
| 4: Refrigerant lines $\frac{3}{8}$ " and $\frac{5}{8}$ " | |

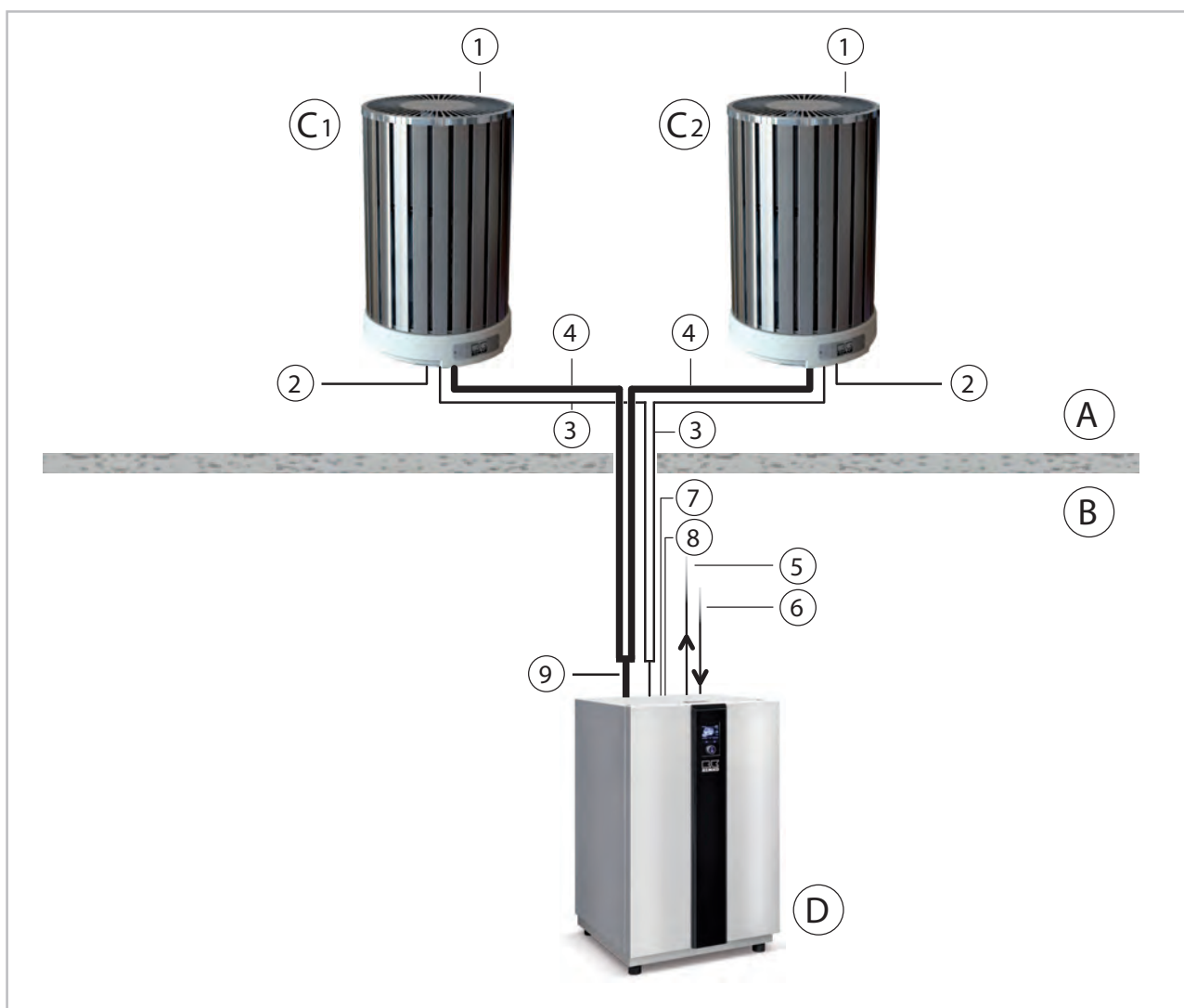


Fig. 2: System layout HTS 200/260

- | | |
|---|--|
| A: Outdoor area | 4: Refrigerant lines $\frac{3}{8}$ " and $\frac{5}{8}$ " |
| B: Indoor area | 5: Inlet |
| C1: Outdoor unit 1 | 6: Return flow |
| C2: Outdoor unit 2 | 7: Power supply, indoor unit = |
| D: Indoor unit | 400V / 3~ / 50Hz, 16A (e.g. 5 x 2.5 mm ²) |
| 1: Fan | Control voltage regulation = |
| 2: Condensate drain, external module | 230V / 1~ / 50Hz, 16A (e.g. 3 x 1.5 mm ²) |
| (must contain anti-freeze!) | 8: Mains supply line, electrical auxiliary heater = |
| 3: Lines between indoor and outdoor modules: | 400V / 3~ / 50Hz, 16A (e.g. 5 x 2.5 mm ²) |
| Control line outdoor module (sheathed) / sensor | 9: Refrigerant line $\frac{1}{2}$ " and $\frac{3}{4}$ " |
| cable (sheathed), e.g. 5 x 1,0 mm ² | |
| Power supply from the outdoor unit / | |
| condensate drainage heating 5 x 1.5 mm ² | |

The indoor and outdoor modules have to be connected with refrigerant lines of dimensions (outer diameter) $\frac{3}{8}$ " (=9.52 mm) and $\frac{5}{8}$ " (=15.88 mm).

WARNING!

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

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2.2 General notes

- It is necessary to lay multiple power supply lines from the distribution system to the indoor unit, depending on the version. See "Electrical wiring" chapter.
- The electrical connection between outdoor and indoor units is made using a sheathed control line (see "Overview of electrical connecting lines" chapter).
- A connection schematic along with corresponding circuit diagrams can be found in the "Connection diagram" chapter of this manual.
- If an auxiliary heater is required in the indoor unit, another three-phase 400 V / 3~50 Hz power supply shall be provided to the indoor unit for an auxiliary heater.
- 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 installed by the customer for this purpose. (contact closed signifies release, while contact open signifies an off-period).
- Special rates for heat pumps may be offered by the power-company (utility).
- Ask your local power company 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!



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 - indoor module

The following instructions describe the electrical connection of the inner module.

- Remove the cover from the indoor module by pressing it upwards and pulling it forwards out of the rear groove.
- Guide the supply cable to the indoor module through the cable openings, and also route the control cable between indoor and outdoor modules and the cables for external devices and sensors into the indoor module. Note that the cable openings are located at the top.
- Connect the mains power supply line and the control line of the indoor module to the terminals (see chapter "Electrical wiring").
- Connect all secondary consumers (HGM, HGU, changeover valves etc.) to the I/O module.



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 Electrical connection - outdoor module

- To connect up the electrics, remove the whole basket.

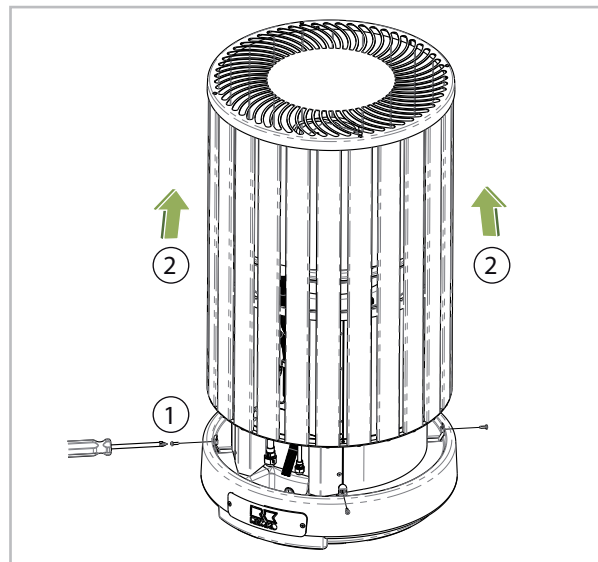


Fig. 3: Remove the basket

- Electrical protection for the system is implemented in accordance with the information in the Technical Data. Observe the required conductor cross-sections!
- All cables must be connected with the correct polarity and strain relief.
- Follow the connection schematic and the circuit diagrams (Chapter 2.6 'Terminal block / key' on page 14).
- When connecting the control cable, make sure that polarity is correct.
- If the outdoor module is installed on a roof, it and the supporting structure must be earthed separately (connection to lightning conductors or foundation earth/ground feature).

Temperature sensors

- The number of sensors required can vary with the type of system.
- Observe the pertinent notes for the sensor position found in the hydraulic schematic.
- The standard scope of delivery includes the outdoor sensors (S10), an immersion sensor (provided for use as a domestic hot water sensor - (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 sensor.
- All sensors are to be connected to the indoor module switch cabinet in accordance with the terminal assignment diagram.

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Contact sensor

Contact sensors can be mounted on the pipes, to measure the heating-circuit temperatures, for example.

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

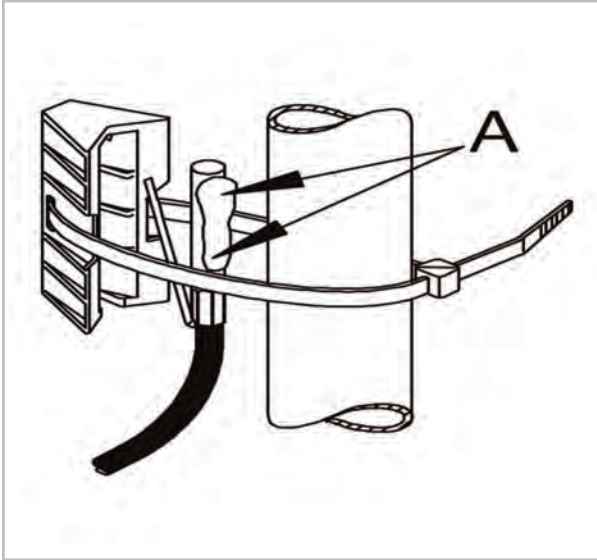


Fig. 4: Securing the inductive sensor (figure similar)



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.

Outdoor sensor

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

- Mount the outdoor sensor 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 sensor with the screw provided.
- A cable with wire cross-sections of min. 0.5 mm² is recommended for connecting the sensor.

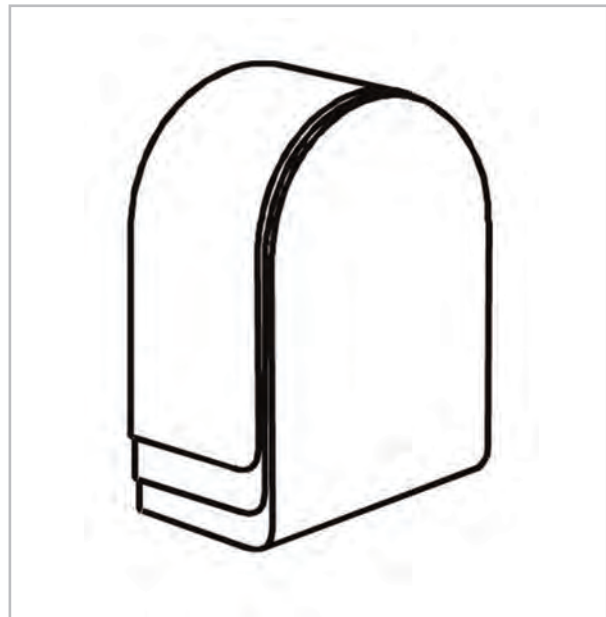
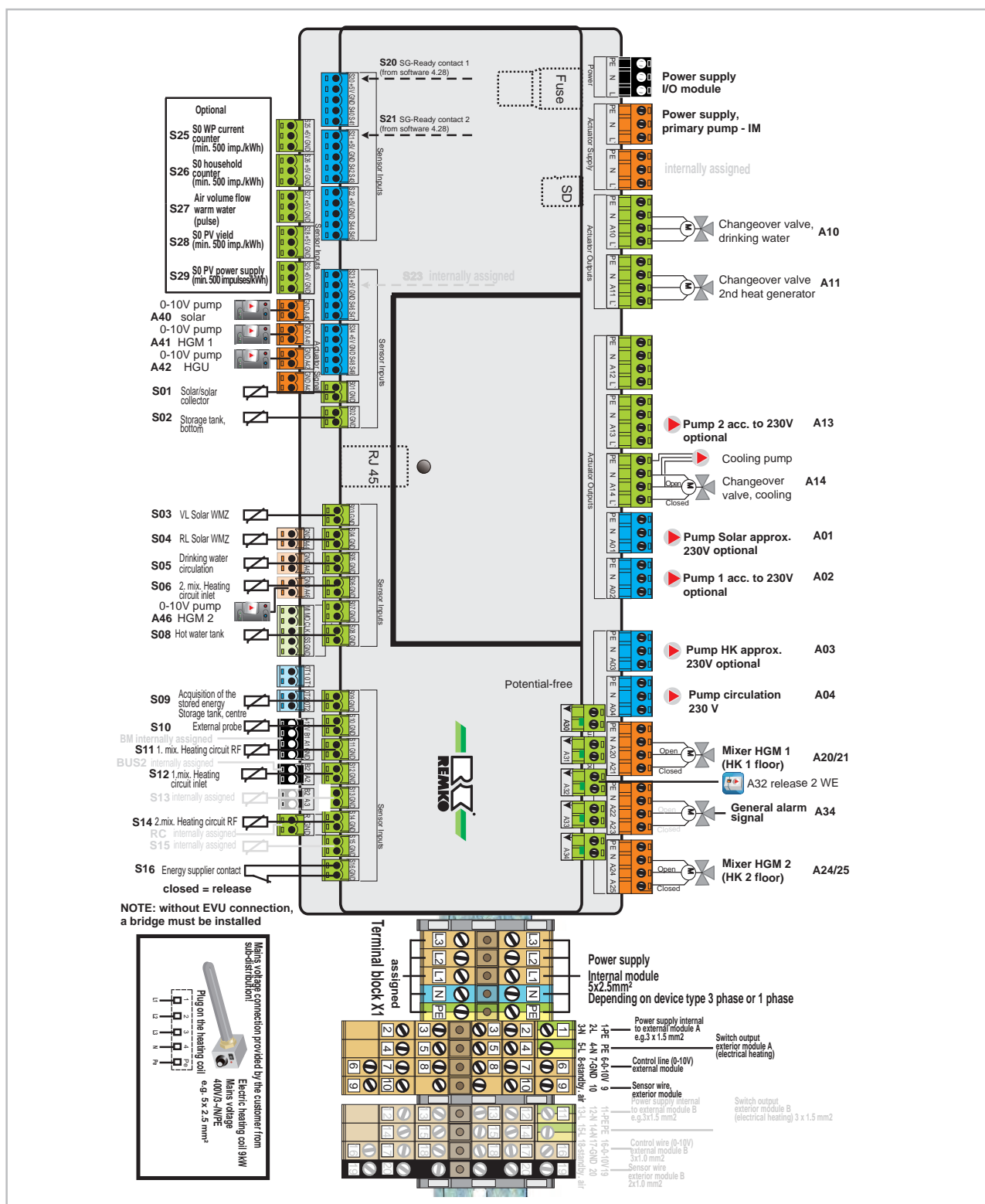


Fig. 5: Outdoor sensor (figure similar)

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 block / key

Terminal configuration

Designation	Input	Output	Signal	Description
PW	X			Power supply I/O 230V
PP		X		Power supply primary pump IM
S01	X			Solar probe collector
S02	X			Solar probe storage tank, bottom
S03	X			Solar probe inlet HM solar
S04	X			Solar probe RF HM solar
S05	X			Circulation RF temp./impulse
S06	X			2nd mixed heating cycle inlet sensor
S07	X			Not connected
S08	X			Drinking water storage tank at top
S09	X			Buffer storage tank, centre
S10	X			External probe
S11	X			1st mixed heating circuit RF
S12	X			1st mixed heating circuit INL
S13	X			Heat pump inlet
S14	X			2nd mixed heating circuit RF
S15	X			Heat pump RF
S16	X			EVU contact (NC) / dewpoint monitoring external (open = locked, closed = release)
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, impulse rate
S24	X			Ultrasonic flow rate meter HP, impulse rate
S25	X			HP electricity meter S0
S26	X			Household electricity S0
S27	X			Probe flow volume
S28	X			PV yield electricity meter S0
S29	X			PV in-feed electricity meter S0
A01		X		Solar pump unregulated (230 V)
A02		X		1st mixed heating cycle pump (230 V) switched
A03		X		Pump unmixed Heating circuit HK (230 V) switched
A04		X		Circulation pump (230V) switched
A10		X		Changeover valve, drinking water

Designation	Input	Output	Signal	Description
A11		X		Changeover valve 2WE
A12		X		Not connected
A13		X		Pump 2nd mixed heating circuit (230 V) switched
A14		X		Changeover valve / pump cooling (230 V) switched
A20		X		1st mixed heating circuit 'Open'
A21		X		1st mixed heating circuit 'Closed'
A22		X		Bypass mixer 'Open'
A23		X		Bypass mixer 'Closed'
A24		X		2nd mixed heating circuit 'Open'
A25		X		2nd mixed heating circuit 'Closed'
A30		X		Not connected
A31		X		Not connected
A32		X		Enable 2nd WE booster heating or boiler
A33		X		Not connected
A34		X		General fault, external
A40			X	Speed setting solar pump PWM
A41			X	Speed specification, 1st mixed heating circ. (0-10V)
A42			X	Speed specification unmixed heating circuit (0-10V)
A43			X	PWM
A44			X	Not connected
A45			X	Not connected
A46			X	Speed specification 2nd mixed heating circ. (0-10V)
MI				Not connected
MO				
CLK				
nSS				
GND				
OT 1 (2x)				Not connected
OT 2 (2x)				Not connected
B1, A1 +12 Volt, GND				Operating module 1 - Bus 1 communication
B2 / A2				Bus 2 communication
B3 / A2				Not connected
R				RC code resistance HTS 90/130/200/260

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3 Electrical wiring HTS 80

3.1 Overview of electrical connection cables

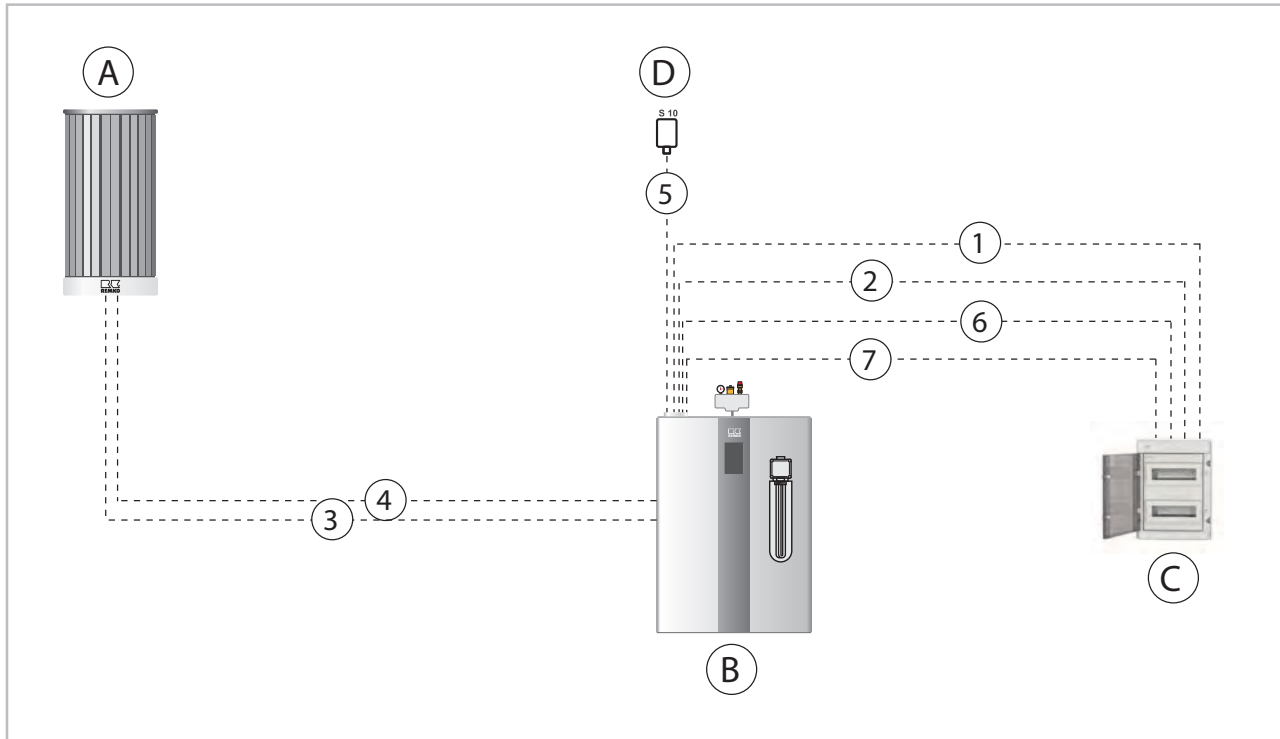


Fig. 6: Overview of electrical connection HTS 80

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 1.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 5: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 6: Power supply, controller (Smart-Control) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²
- 7: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

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

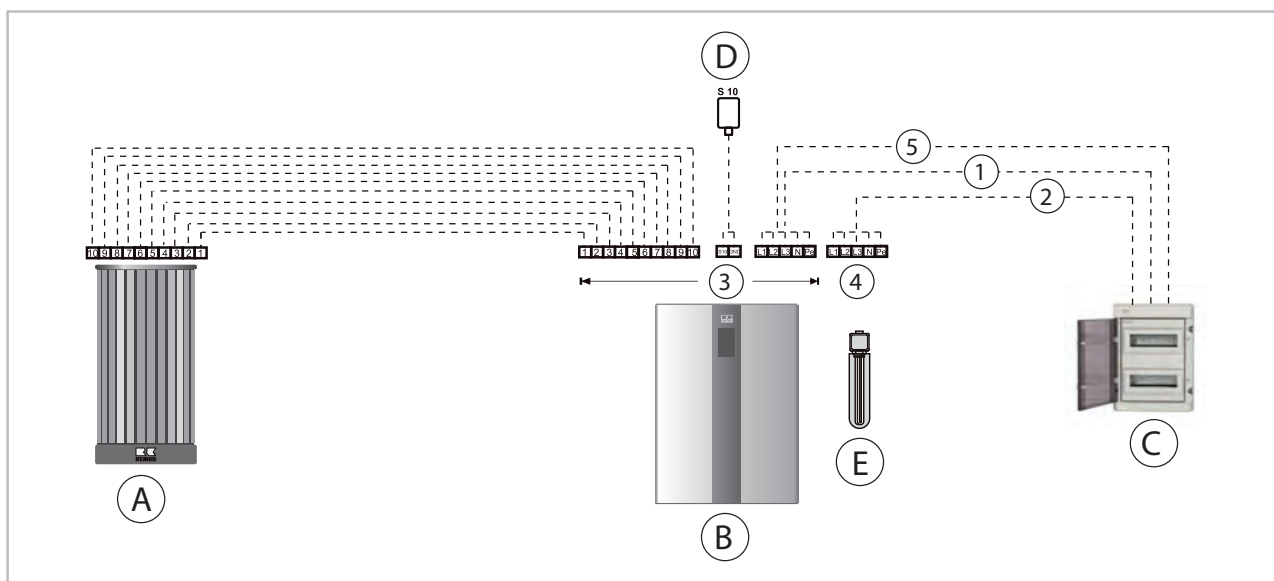


Fig. 7: Terminal configuration HTS 80

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- E: Electrical heating coil
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 3 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 1.5 mm²
- 3: Terminals in indoor unit
- 4: Terminals on electrical heating coil
- 5: Power supply, Smart-Control controller (I/O module) 230V / 1~/ 50Hz, e.g. 3 x 1.5 mm²

Electrical connections between indoor and outdoor unit

Indoor unit		Outdoor unit
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

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Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

4 Electrical wiring HTS 90

4.1 Overview of electrical connection cables

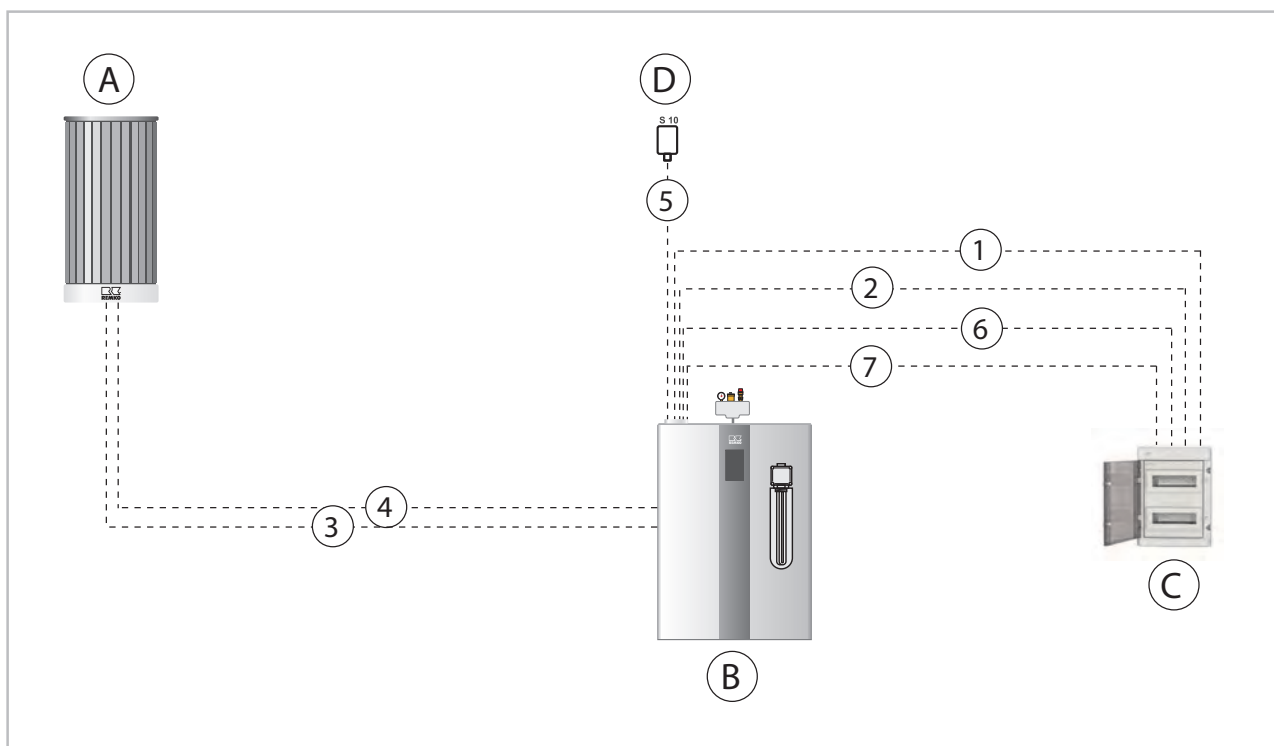


Fig. 8: Overview of electrical connection HTS 90

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 230V / 1~ / 50Hz, 16A, e.g. 3 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 5: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 6: Power supply, Smart-Control controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²
- 7: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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



All cable insertions to the indoor module are made from above!
All cable insertions to the outdoor module are made from below!

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.

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4.2 Overview of terminal assignment

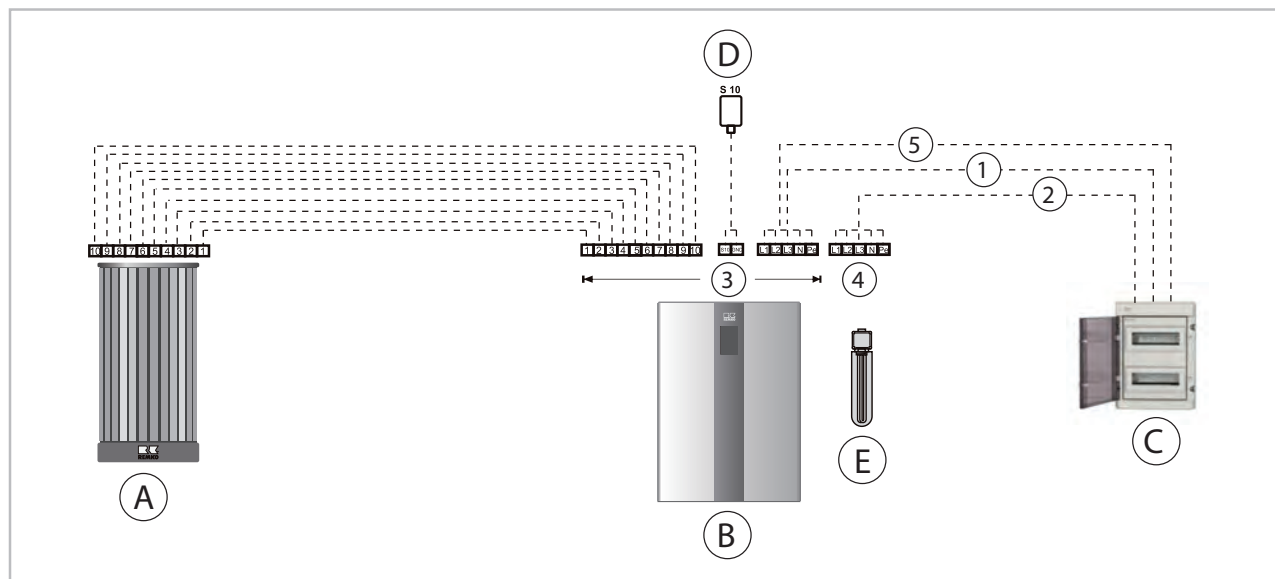


Fig. 9: Terminal configuration HTS 90

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- E: Electrical heating coil
- 1: Power supply, indoor unit, 230V / 1~ / 50Hz, 16A, e.g. 3 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Terminals in indoor unit
- 4: Terminals on electrical heating coil
- 5: Power supply, controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²

Electrical connections between indoor and outdoor unit

Indoor unit		Outdoor unit
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 230V/ 1~/ 50Hz	L1
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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5 Electrical wiring HTS 110

5.1 Overview of electrical connection cables

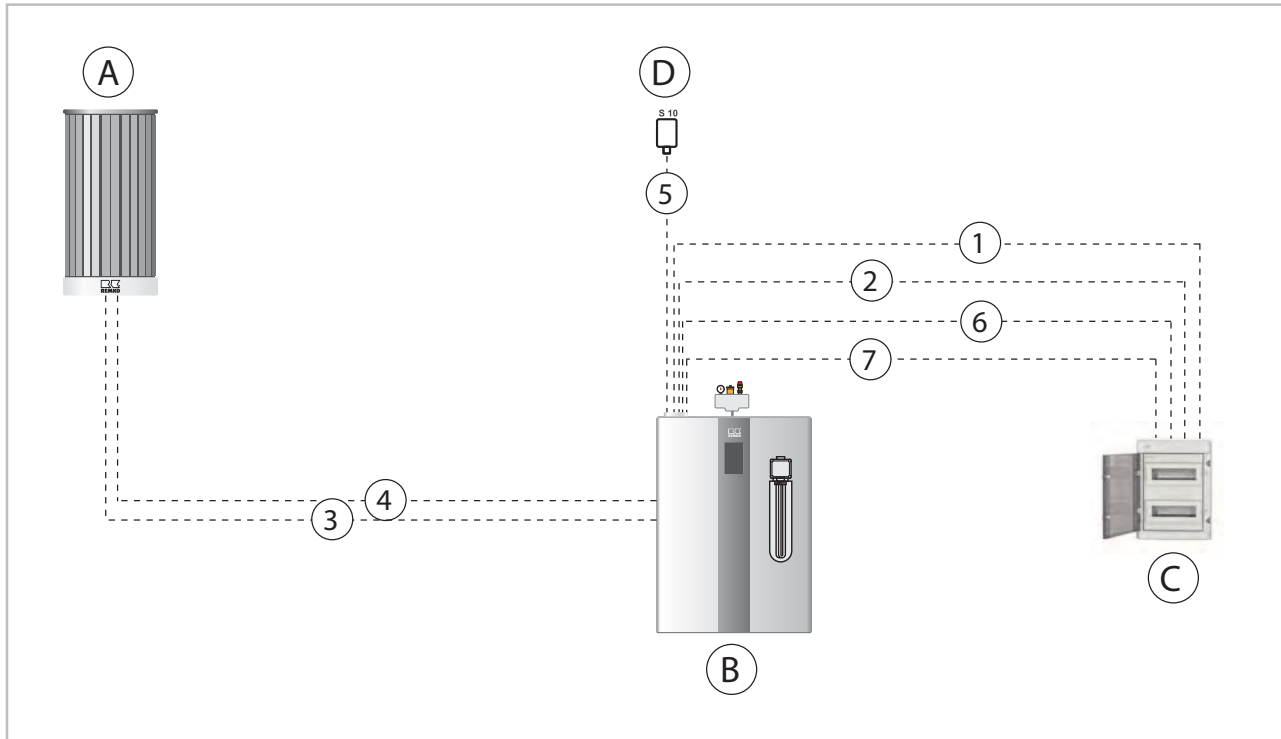


Fig. 10: Overview of electrical connection HTS 110

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 5: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 6: Power supply, Smart-Control controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²
- 7: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

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

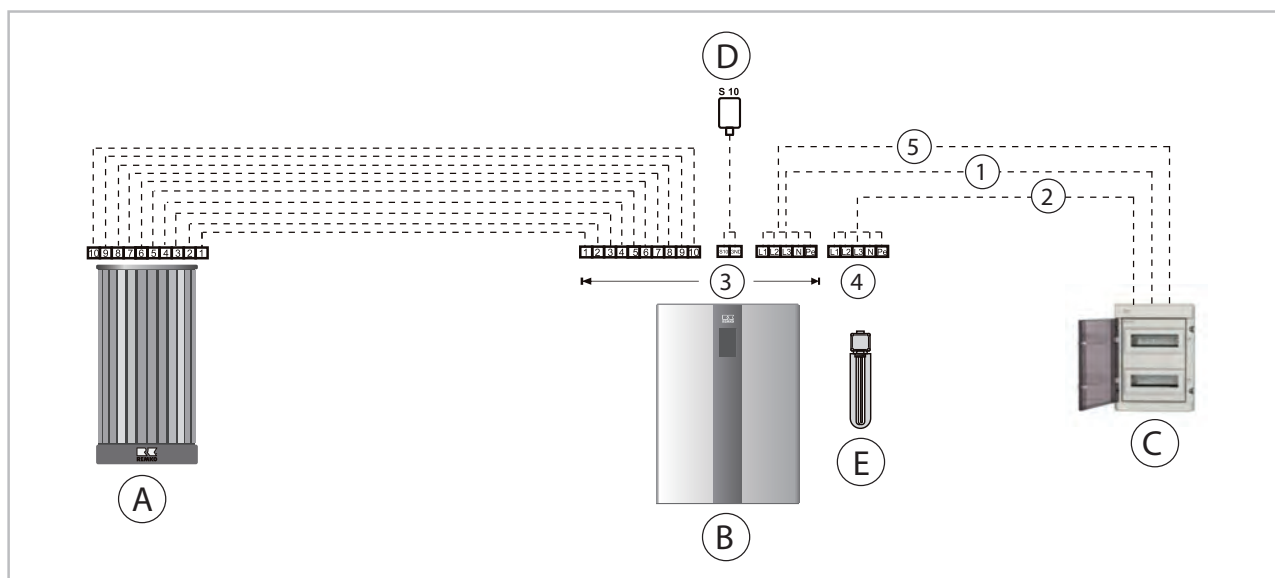


Fig. 11: Terminal configuration HTS 110

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- E: Electrical heating coil
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Terminals in indoor unit
- 4: Terminals on electrical heating coil
- 5: Power supply, control unit (I/O module) 400V / 3~ / 50Hz, e.g. 3 x 1.5 mm²

Electrical connections between indoor and outdoor unit

Indoor unit		Outdoor unit
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

REMKO HTS series

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

6 Electrical wiring HTS 130

6.1 Overview of electrical connection cables

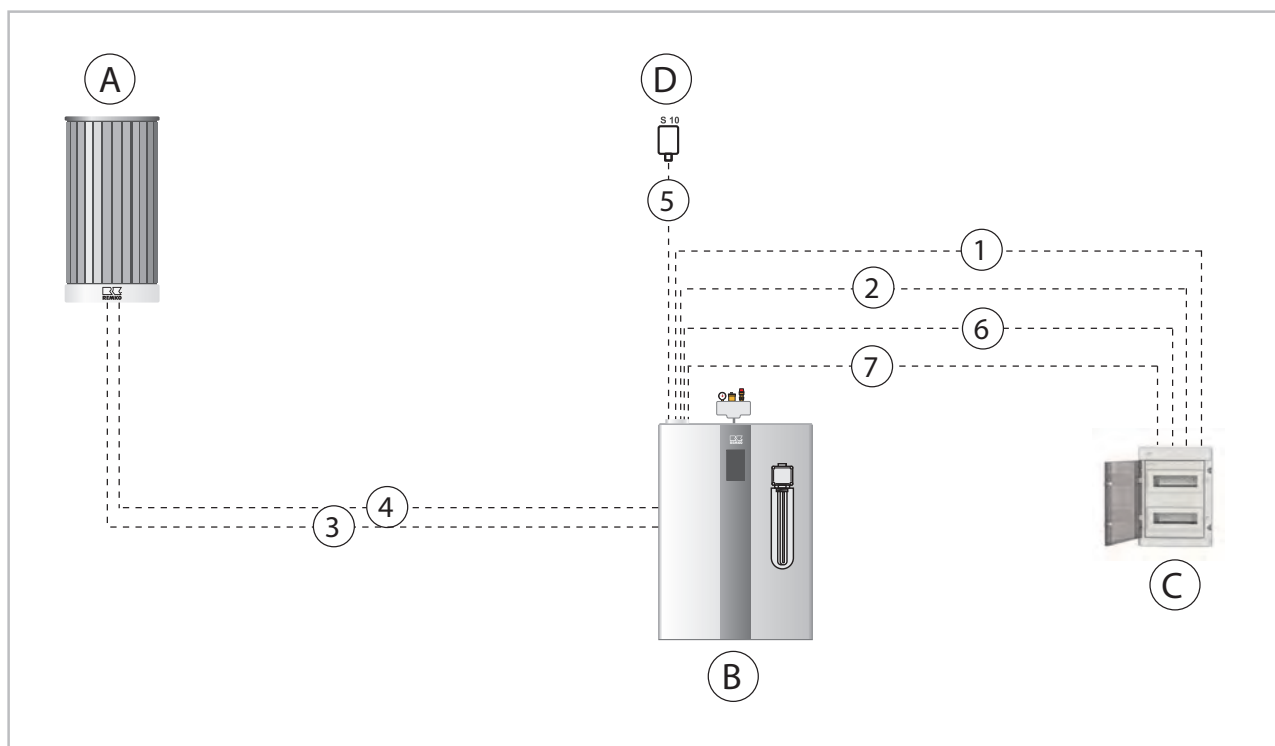


Fig. 12: Overview of electrical connection HTS 130

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 5: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 6: Power supply, controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²
- 7: Electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

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.

REMKO HTS series

6.2 Overview of terminal assignment

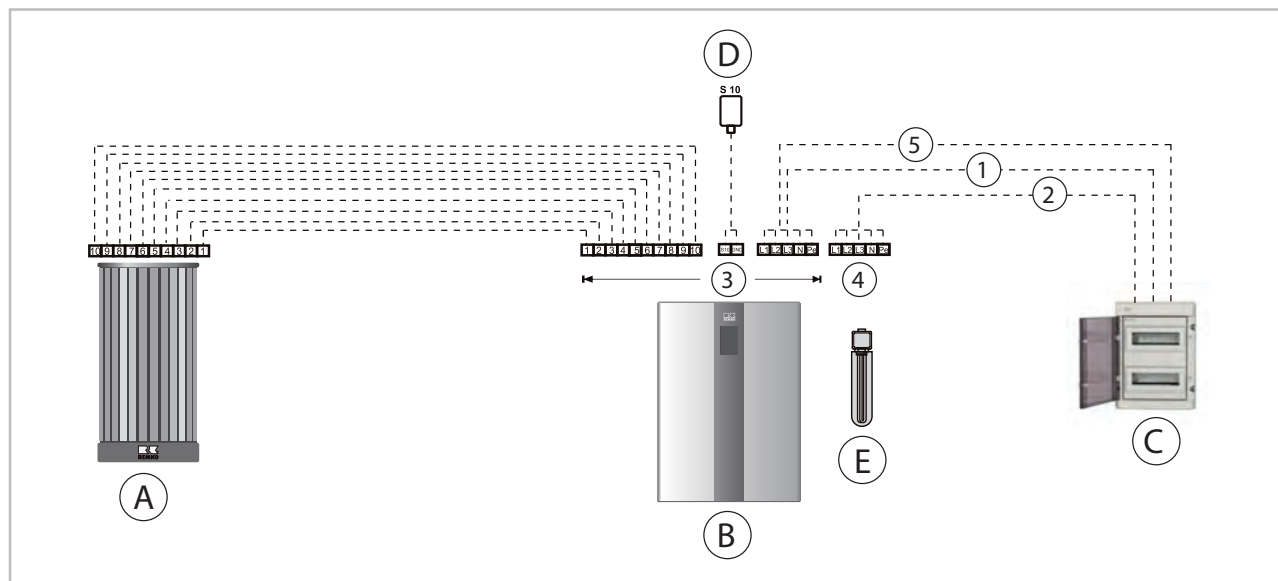


Fig. 13: Terminal configuration HTS 130

- A: Outdoor unit
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- E: Electrical heating coil
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Terminals in indoor unit
- 4: Terminals on electrical heating coil
- 5: Power supply, control unit (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²

Electrical connections between indoor and outdoor unit

Indoor unit		Outdoor unit
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

REMKO HTS series

7 Electrical wiring HTS 200

7.1 Overview of electrical connection cables

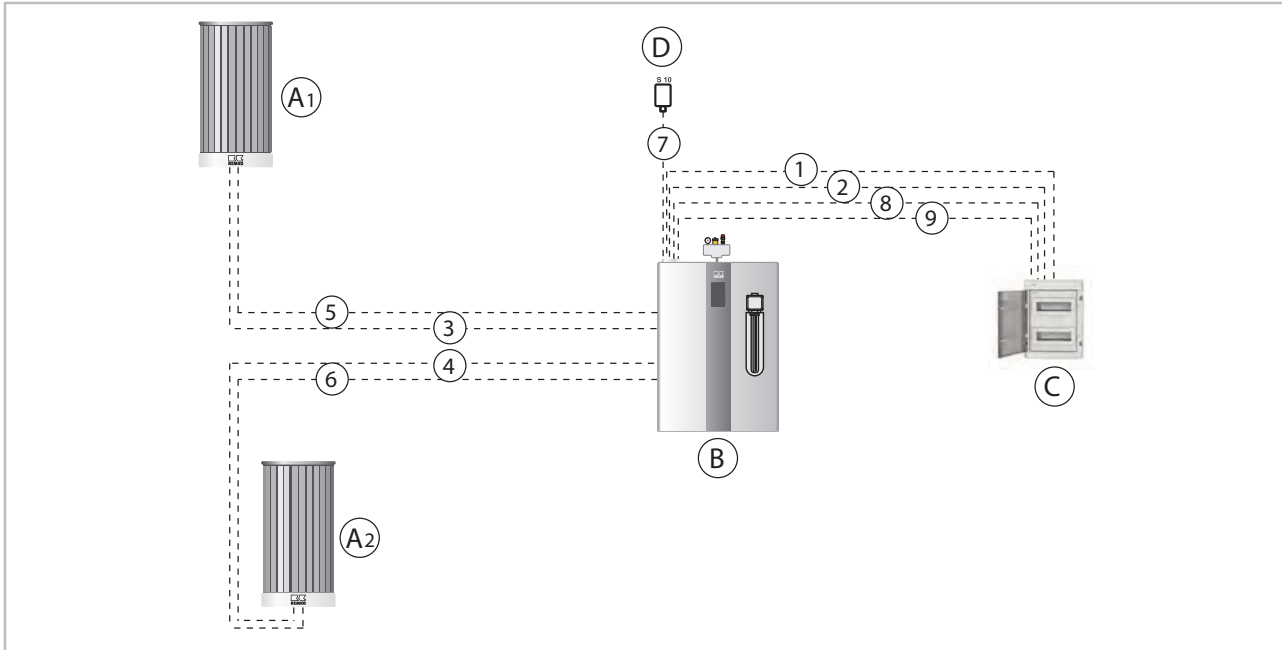


Fig. 14: Connection cables HTS 200

- A1: Outdoor unit 1
- A2: Outdoor unit 2
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from IM to AM 1 / condensate drain heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Power supply from IM to AM 2 / condensate drain heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²
- 5: Control line, outdoor unit 1 (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 6: Control line, outdoor unit 2, (sheathed), e.g. 3 x 1.0 mm²
- 7: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 8: Power supply, Smart-Control controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²
- 9: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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

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.



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

7.2 Overview of terminal assignment

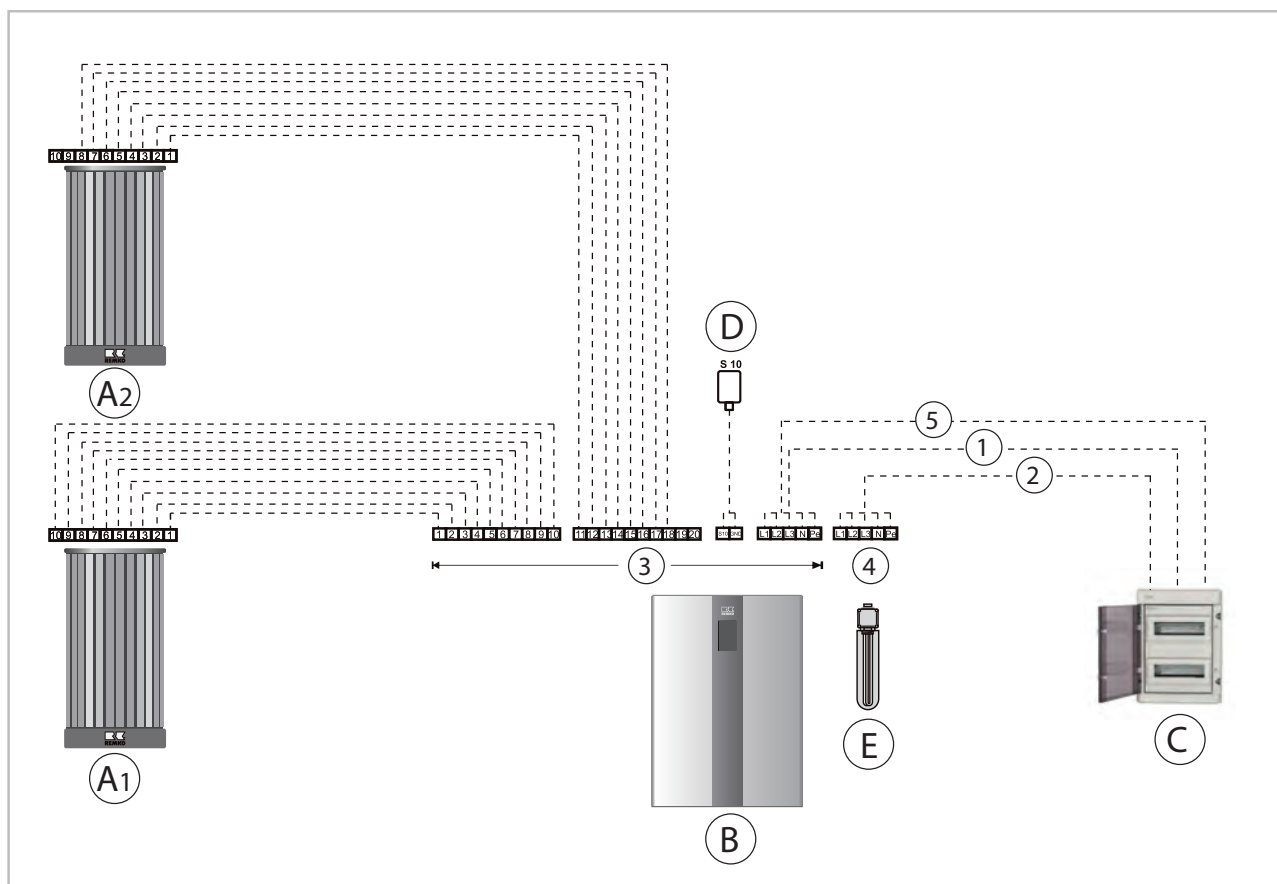


Fig. 15: Terminal configuration HTS 200

- | | |
|---|--|
| A1: Outdoor unit 1 | 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm ² |
| A2: Outdoor unit 2 | 3: Terminals in indoor unit |
| B: Indoor unit | 4: Terminals on electrical heating coil |
| C: Customer-provided sub-distribution | 5: Power supply, Smart-Control controller (I/O module) 230V / 1~/ 50Hz, e.g. 3 x 1.5 mm ² |
| D: External probe | |
| E: Electrical heating coil | |
| 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm ² | |

REMKO HTS series

Electrical connections between indoor and outdoor unit 1

Indoor unit		Outdoor unit 1
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between indoor module and outdoor unit 2

Indoor unit		Outdoor unit 2
Terminal	Description	Terminal
11	Power supply PE	1
12	Power supply L	2
13	Power supply N	3
14	Power supply, auxiliary heating L	4
15	Power supply, auxiliary heating N	5
16	Signal cable 0-10V	6
17	GND	7
18	Response signal	8
19	Not connected	9
20	Not connected	10

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

REMKO HTS series

8 Electrical wiring HTS 260

8.1 Overview of electrical connection cables

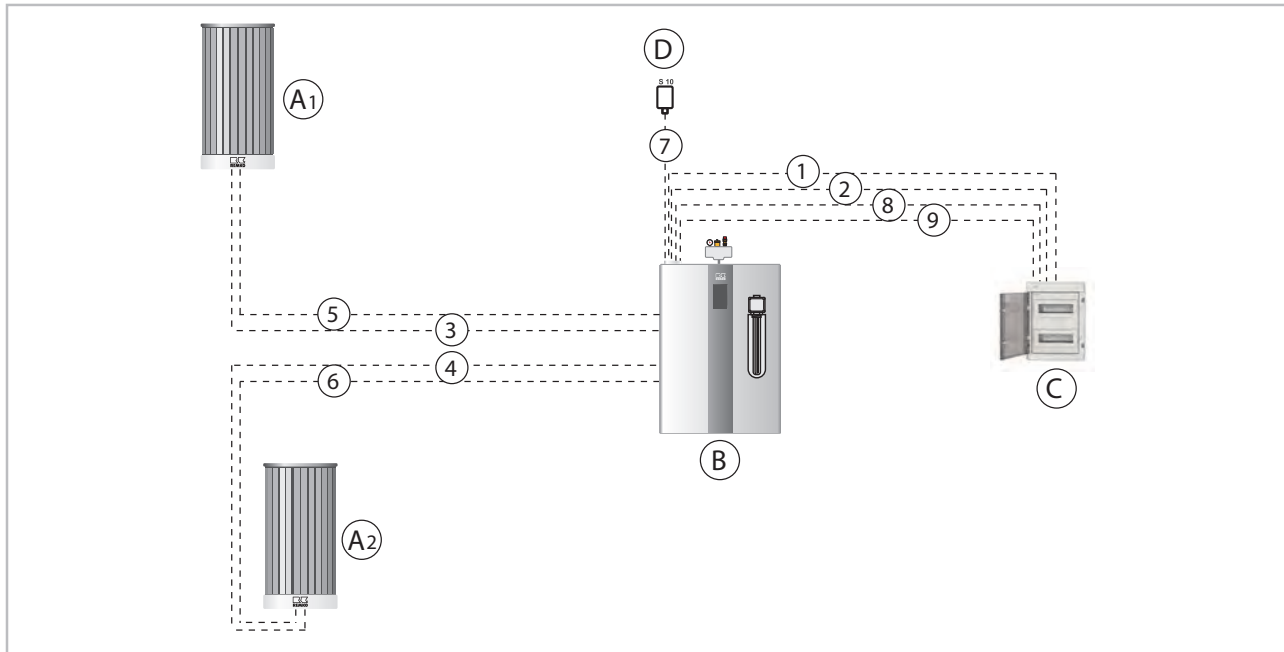


Fig. 16: Connection cables HTS 260

- A1: Outdoor unit 1
- A2: Outdoor unit 2
- B: Indoor unit
- C: Customer-provided sub-distribution
- D: External probe
- 1: Power supply, indoor unit, 400V/3~/50Hz, 20A, e.g. 5 x 2.5 mm²
- 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²
- 3: Power supply from IM to AM 1 / condensate drain heating, 230V /1~/ 50Hz, 10A, e.g. 5 x 1.5 mm²
- 4: Power supply from IM to AM 2 / condensate drain heating, 230V /1~/ 50Hz, 10A, e.g. 5 x 1.5 mm²
- 5: 230V /1~/ 50Hz, 10A, e.g. 5 x 1.5 mm²
- 6: Control line, outdoor unit 1 (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²
- 7: Control line, outdoor unit 2, (sheathed), e.g. 3 x 1.0 mm²
- 8: Sensor cable on external probe, e.g. 2 x 1.0 mm²
- 9: Power supply, Smart-Control controller (I/O module) 230V /1~/ 50Hz, e.g. 3 x 1.5 mm²
- 10: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

WARNING!

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

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.



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

8.2 Overview of terminal assignment

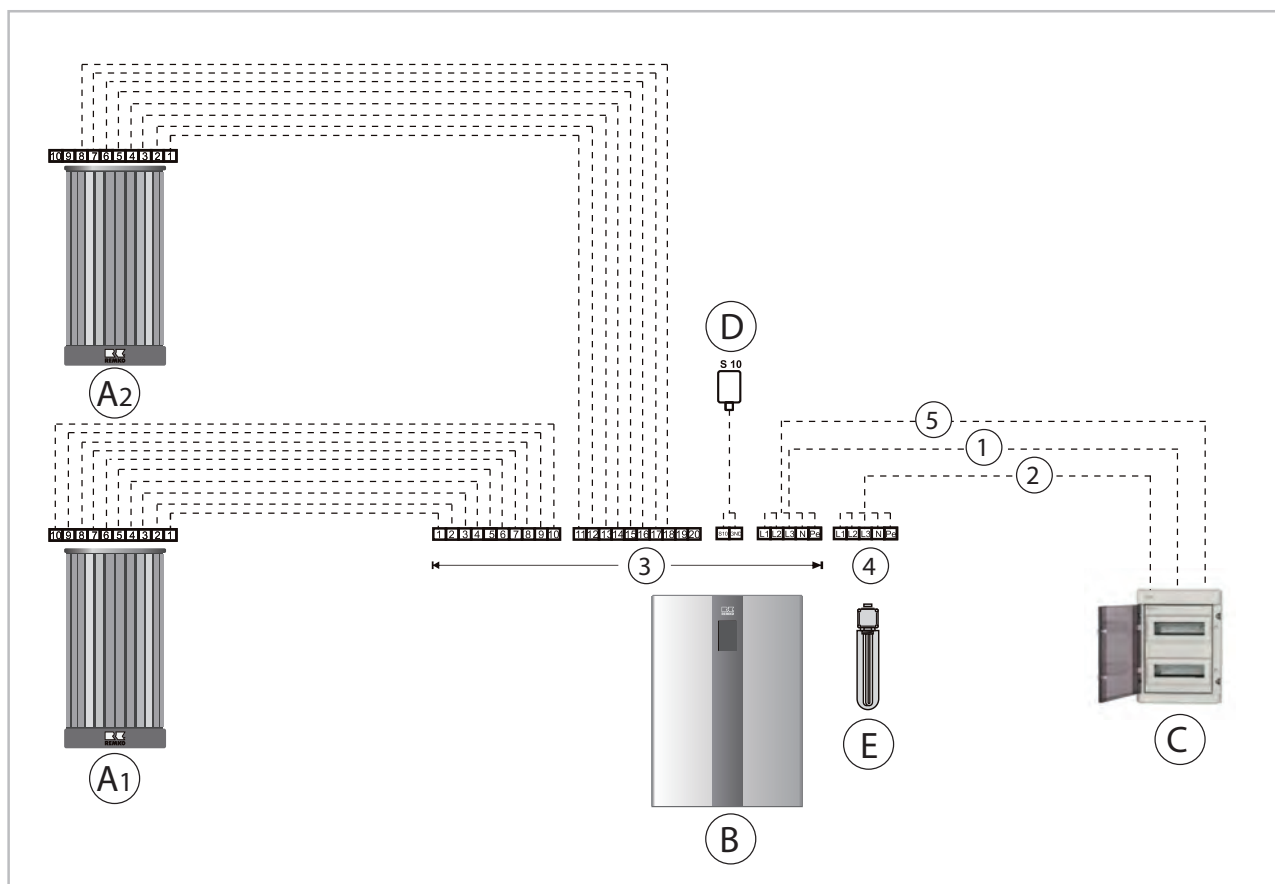


Fig. 17: Terminal configuration HTS 260

- | | |
|---|---|
| A1: Outdoor unit 1 | 2: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm ² |
| A2: Outdoor unit 2 | 3: Terminals in indoor unit |
| B: Indoor unit | 4: Terminals on electrical heating coil |
| C: Customer-provided sub-distribution | 5: Power supply, Smart-Control controller (I/O module) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm ² |
| D: External probe | |
| E: Electrical heating coil | |
| 1: Power supply, indoor unit, 400V / 3~ / 50Hz, 20A, e.g. 5 x 2.5 mm ² | |

REMKO HTS series

Electrical connections between indoor and outdoor unit 1

Indoor unit		Outdoor unit 1
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between indoor module and outdoor unit 2

Indoor unit		Outdoor unit 2
Terminal	Description	Terminal
11	Power supply PE	1
12	Power supply L	2
13	Power supply N	3
14	Power supply, auxiliary heating L	4
15	Power supply, auxiliary heating N	5
16	Signal cable 0-10V	6
17	GND	7
18	Response signal	8
19	Not connected	9
20	Not connected	10

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

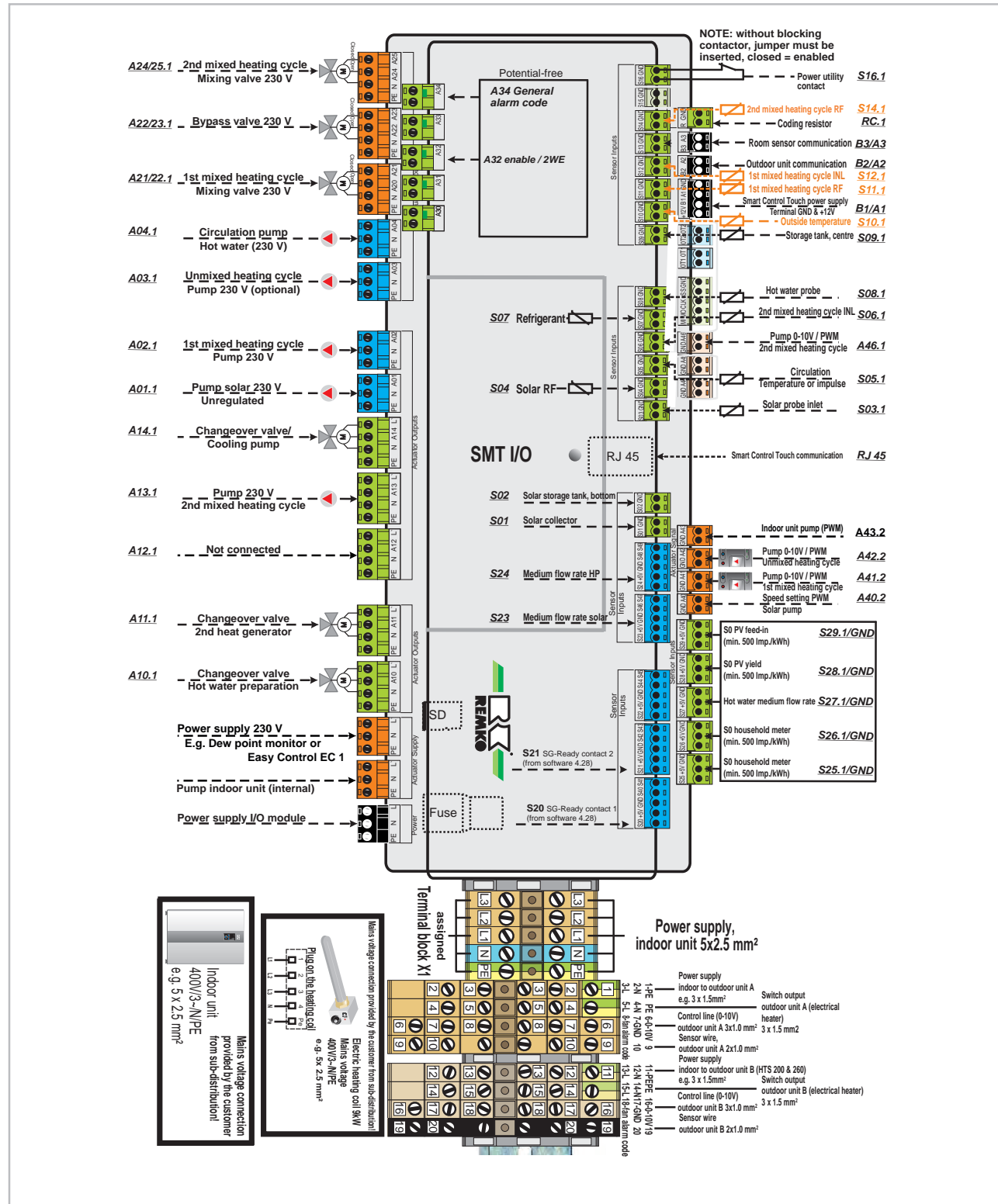
REMKO HTS series

9 Cascade electrical wiring

9.1 Electrical system layout HTS 200 Duo and HTS 260 Duo (Cascade) - HP 1

Heat pump 1 I/O module

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



9.2 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			Circ. Probe RF Temp./Pulse encoder / PT 1000
S06	X			Probe inlet 2nd mixed heating cycle INL / PT 1000
S07	X			Not connected
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 1st mixed heating cycle RF / PT 1000
S12	X			Probe 1st mixed heating cycle INL / PT 1000
S13	X			Heat pump INL / PT 1000
S14	X			Probe 2nd mixed heating cycle RF
S15	X			Probe heat pump RF / PT 1000
S16	X			Power utility contact (NC) / dewpoint monitoring external (open = locked, closed = release)
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
S28	X			PV yield electricity meter S0
S29	X			PV in-feed electricity meter S0
A01		X		Solar pump unregulated (230 V)
A02		X		1st mixed heating cycle pump (230 V) switched
A03		X		Pump unmixed Heating cycle HK (230 V) switched
A04		X		Circulation pump (230V) switched
A10		X		Changeover valve, drinking water

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Designation	Input	Output	Signal	Description
A11		X		Changeover valve 2WE
A12		X		Not connected
A13		X		2nd mixed heating cycle pump (230 V) switched
A14		X		Changeover valve / pump cooling (230 V) switched
A20		X		1st mixed heating cycle 'Open'
A21		X		1st mixed heating cycle 'Closed'
A22		X		Bypass mixer 'Open'
A23		X		Bypass mixer 'Closed'
A24		X		2nd mixed heating cycle 'Open'
A25		X		2nd mixed heating cycle 'Closed'
A30		X		Not connected
A31		X		Not connected
A32		X		Enable 2nd WE booster heating or boiler
A33		X		Not connected
A34		X		General alarm signal, external
A40			X	Speed setting solar pump PWM
A41			X	Speed specification, 1st mixed heating cycle (0-10V)
A42			X	Speed specification unmixed heating cycle (0-10V)
A43			X	PWM
A44			X	Not connected
A45			X	Not connected
A46			X	Speed specification 2nd mixed heating cycle (0-10V)
MI				Not connected
MO				
CLK				
nSS				
GND				
OT 1 (2x)				Not connected
OT 2 (2x)				Not connected
B1, A1				Communication WP 1 and WP 2
+12 Volt, GND				Operating module
B2/A2				Bus 2 communication
B3 / A2				Not connected
R				RC code resistance HTS 90/130/200/260

REMKO HTS series

9.4 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 (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 setting primary pump indoor unit (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 Cascade communication
B2 / A2				Communication Com-Kit 2
B3 / A2				Non functional
RC.2				RC coding resistance slave 1

REMKO HTS series

10 Electrical wiring HTS 200 Duo Cascade

10.1 Overview of electrical connecting lines HTS 200 Duo (cascade)

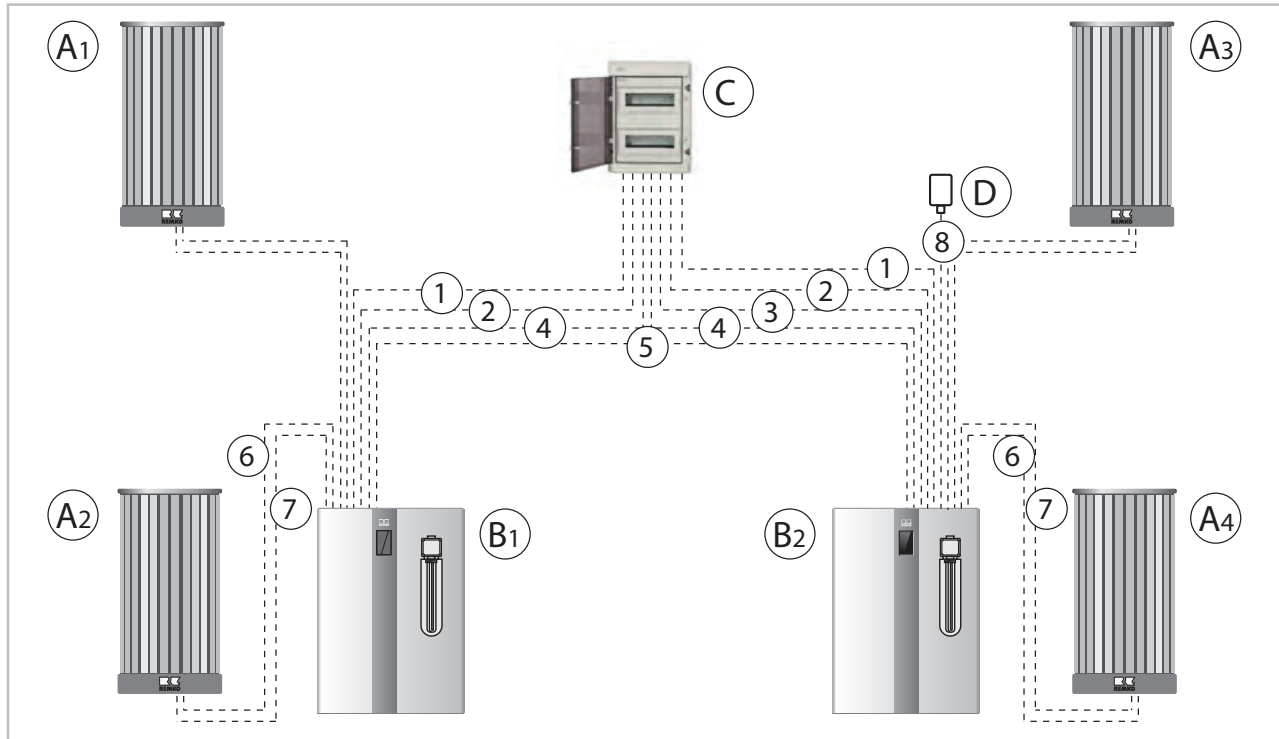


Fig. 18: Overview of the electrical wiring HTS 200 Duo

- | | |
|---|--|
| A1-4: Outdoor unit 1 to 4 | 4: Power supply, controller (Smart-Control)
230V / 1~ / 50Hz, e.g. 3 x 1.5 mm ² |
| B1-4: Indoor unit 1 to 4 | 5: Cascade control line, 0-10V (sheathed), e.g. 2 x 1.0 mm ² |
| C: Sub-distribution (provided by the customer) | 6: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm ² |
| D: External probe | 7: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm ² |
| 1: Power supply, auxiliary heating,
400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm ² | 8: Sensor cable on external probe, e.g. 2 x 1.0 mm ² |
| 2: Compressor power supply
400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm ² | |
| 3: Potential-free electrical power supply company signal for Smart-Control S16,
e.g. 2 x 1.0 mm ² | |

WARNING!

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



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!

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.

10.2 Overview of terminal assignment HTS 200 Duo (cascade)

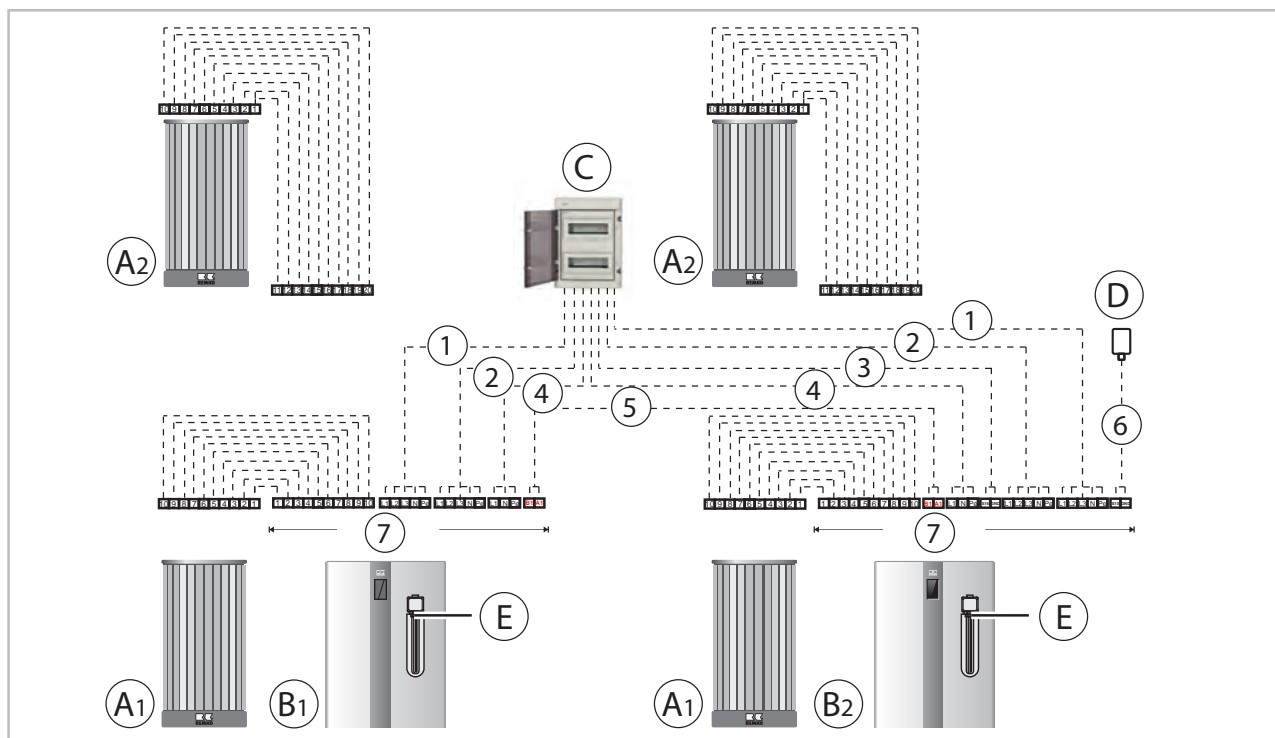


Fig. 19: Terminal assignment HTS 200 Duo

- | | | | |
|-------|---|----|--|
| A1-2: | Outdoor unit 1 to 2 | 4: | Power supply, controller (Smart-Control) |
| B1-2: | Indoor unit 1 to 2 | 5: | 230V / 1~/ 50Hz, e.g. 3 x 1.5 mm ² |
| C: | Sub-distribution (provided by the customer) | 6: | Cascade control line, 0-10V (sheathed), e.g. 2 x 1.0 mm ² |
| D: | External probe | 7: | Sensor cable on external probe, e.g. 2 x 0.5 mm ² |
| E: | Electrical heating coil | | |
| 1: | Power supply, auxiliary heating, 400V / 3~/ 50Hz, 16A, e.g. 5 x 1.5 mm ² | | |
| 2: | Compressor power supply, 400V/3~/50Hz, 16A, e.g. 5 x 1.5 mm ² | | |
| 3: | Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm ² | | |

REMKO HTS series

Electrical connections between indoor module and outdoor unit 1

Indoor unit		Outdoor unit 1
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between indoor module and outdoor unit 2

Indoor unit		Outdoor unit 2
Terminal	Description	Terminal
11	Power supply PE	1
12	Power supply L	2
13	Power supply N	3
14	Power supply, auxiliary heating L	4
15	Power supply, auxiliary heating N	5
16	Signal cable 0-10V	6
17	GND	7
18	Response signal	8
19	Not connected	9
20	Not connected	10

Electrical connections between distribution and indoor unit

Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 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

REMKO HTS series

11 Electrical wiring HTS 260 Duo Cascade

11.1 Overview of electrical connecting lines HTS 260 Duo (cascade)

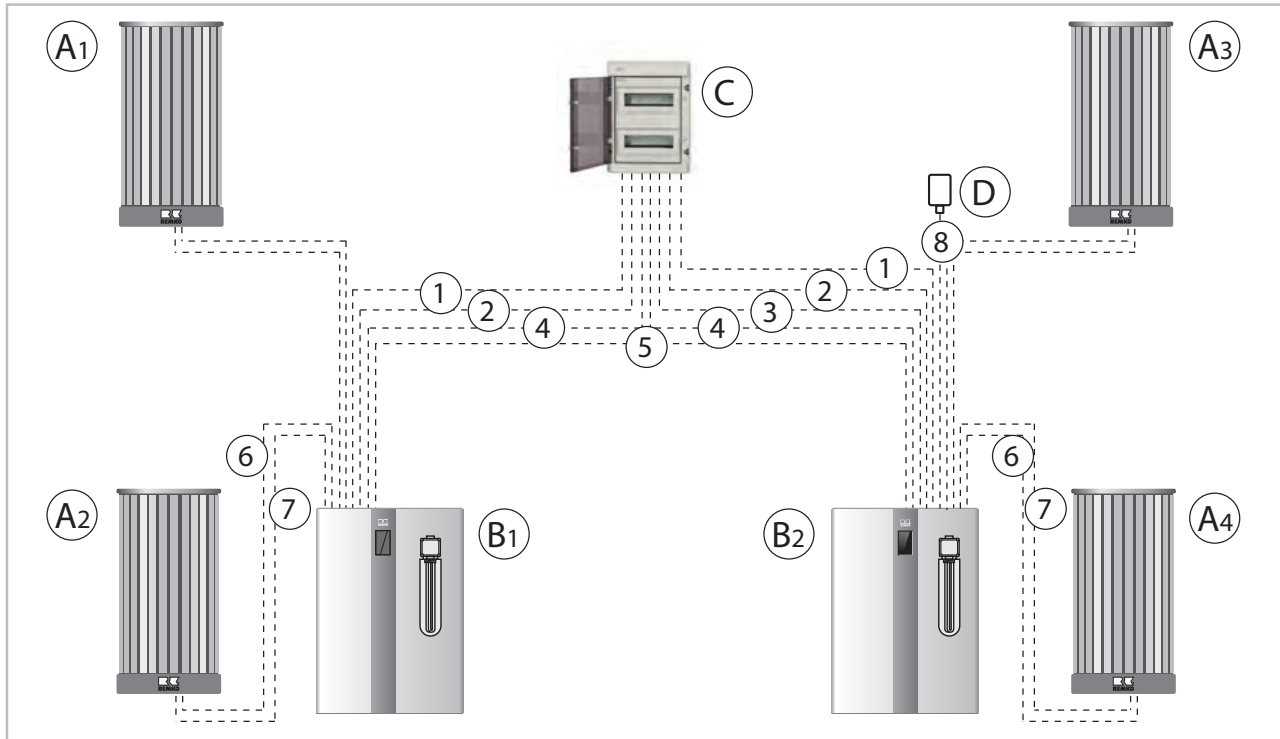


Fig. 20: Overview of the electrical wiring HTS 260 Duo

A1-4: Outdoor unit 1 to 4

B1-4: Indoor unit 1 to 4

C: Sub-distribution (provided by the customer)

D: External probe

1: Power supply, auxiliary heating, 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²

2: Compressor power supply 400V / 3~ / 50Hz, 16A, e.g. 5 x 2.5 mm²

3: Potential-free electrical power supply company signal for Smart-Control S16, e.g. 2 x 1.0 mm²

4: Power supply, controller (Smart-Control) 230V / 1~ / 50Hz, e.g. 3 x 1.5 mm²

5: Cascade control line, 0-10V (sheathed), e.g. 2 x 1.0 mm²

6: Power supply from indoor to outdoor unit / condensate drainage heating, 230V / 1~ / 50Hz, 10A, e.g. 5 x 1.5 mm²

7: Control line, outdoor unit 0-10V (sheathed) / sensor line (sheathed), e.g. 5 x 1.0 mm²

8: Sensor cable on external probe, e.g. 2 x 1.0 mm²



WARNING!

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



All cable insertions to the indoor module are made from above!

All cable insertions to the outdoor module are made from below!



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.

11.2 Overview of terminal assignment HTS 260 Duo (cascade)

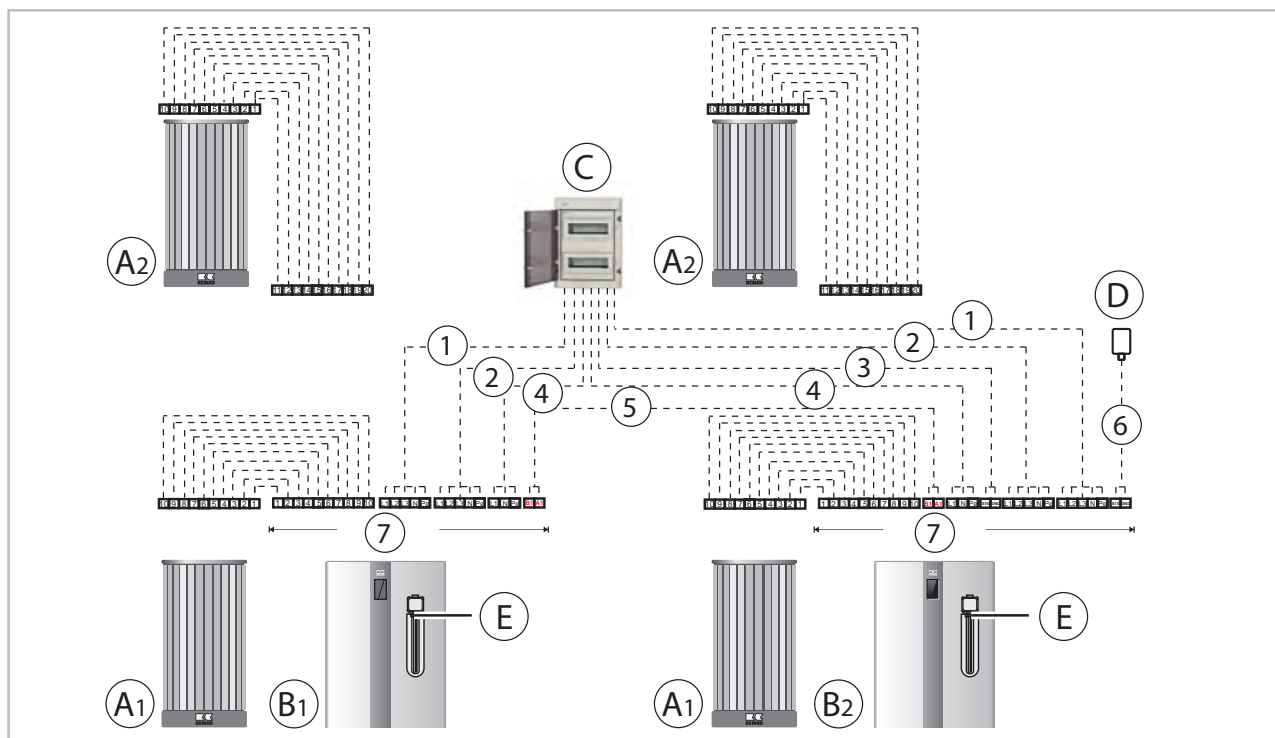


Fig. 21: Terminal assignment HTS 260 Duo

- | | | | |
|-------|--|----|---|
| A1-2: | Outdoor unit 1 to 2 | 4: | Power supply, controller (Smart-Control)
230V / 1~/ 50Hz, e.g. 3 x 1.5 mm ² |
| B1-2: | Indoor unit 1 to 2 | 5: | Cascade control line, 0-10V (sheathed), e.g. 2 x 1.0 mm ² |
| C: | Sub-distribution (provided by the customer) | 6: | Sensor cable on external probe, e.g. 2 x 0.5 mm ² |
| D: | External probe | 7: | Terminals in indoor unit |
| E: | Electrical heating coil | | |
| 1: | Power supply, auxiliary heating,
400V / 3~/ 50Hz, 16A, e.g. 5 x 1.5 mm ² | | |
| 2: | Compressor power supply,
400V/3~/50Hz, 16A, e.g. 5 x 1.5 mm ² | | |
| 3: | Potential-free electrical power supply company signal for Smart-Control S16,
e.g. 2 x 1.0 mm ² | | |

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Electrical connections between indoor module and outdoor unit 1

Indoor unit		Outdoor unit 1
Terminal	Description	Terminal
1	Power supply PE	1
2	Power supply L	2
3	Power supply N	3
4	Power supply, auxiliary heating L	4
5	Power supply, auxiliary heating N	5
6	Signal cable 0-10V	6
7	GND	7
8	Response signal	8
9	Temperature sensor	9
10	GND	10

Electrical connections between indoor module and outdoor unit 2

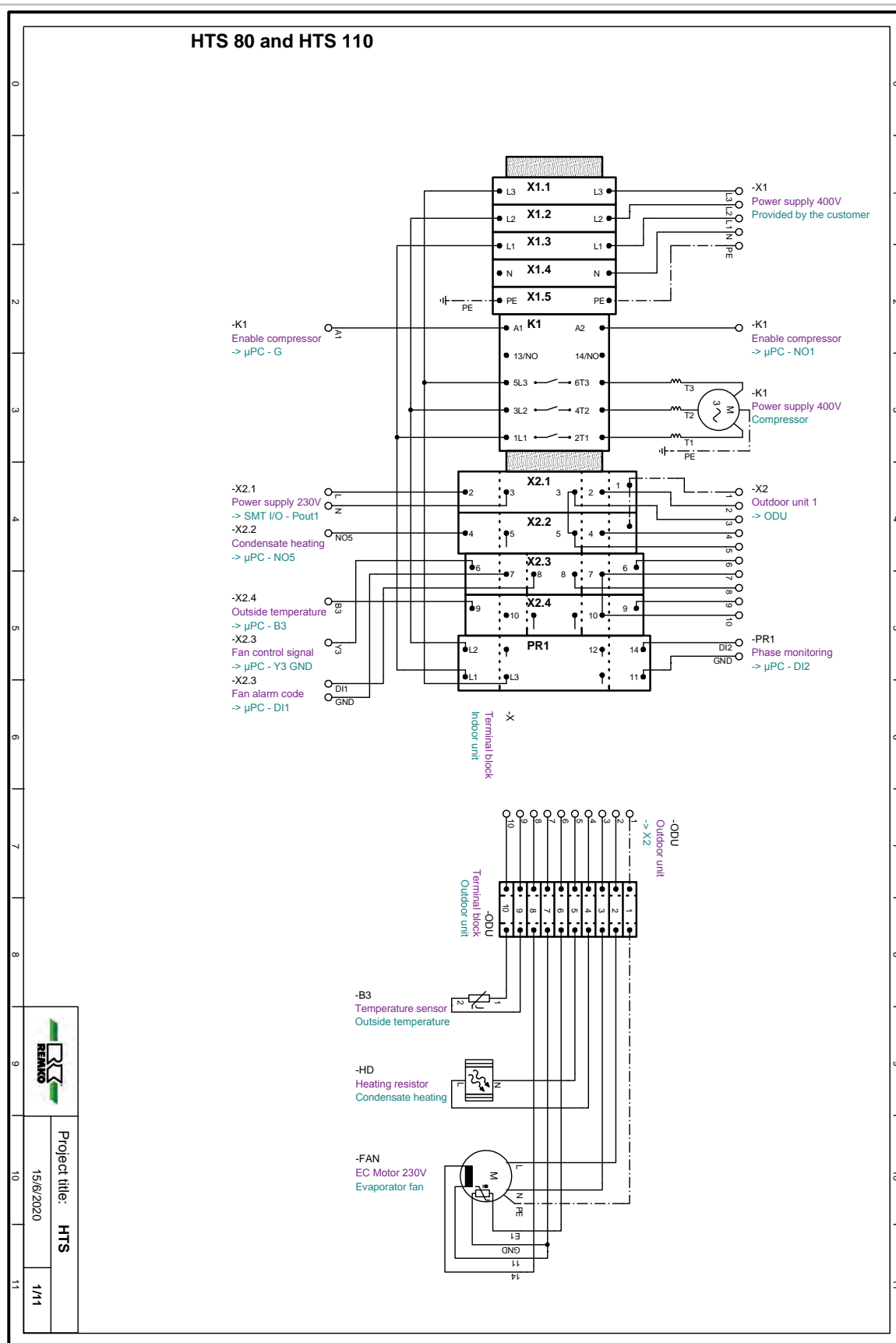
Indoor unit		Outdoor unit 2
Terminal	Description	Terminal
11	Power supply PE	1
12	Power supply L	2
13	Power supply N	3
14	Power supply, auxiliary heating L	4
15	Power supply, auxiliary heating N	5
16	Signal cable 0-10V	6
17	GND	7
18	Response signal	8
19	Not connected	9
20	Not connected	10

Electrical connections between distribution and indoor unit

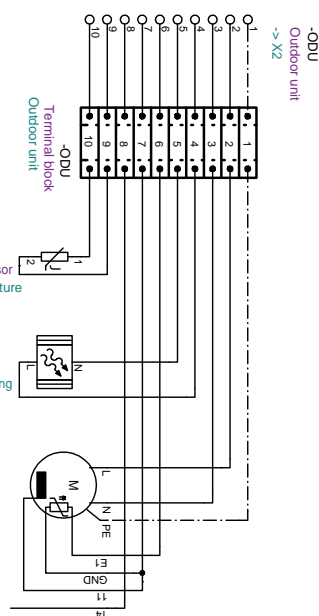
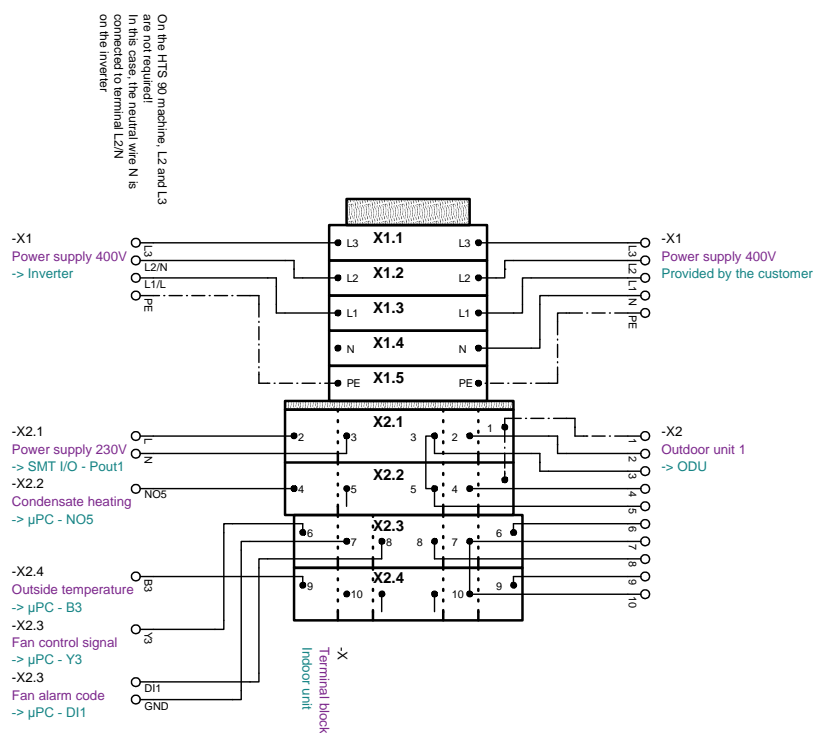
Distribution		Indoor unit
Terminal	Description	Terminal
L1	Power supply, indoor unit 400V/ 3~/ 50Hz	L1
L2		L2
L3		L3
N		N
Pe		Pe
L	Power supply, Smart-Control 230V/1~/ 50Hz	L
N		N
Pe		Pe
L1	Power supply, Smart-Serv 400V/3~/ 50Hz 9kW	L1
L2		L2
L3		L3
N		N
Pe		Pe

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12 Circuit diagrams version PSD 1 inverter



HTS 90 and HTS 130



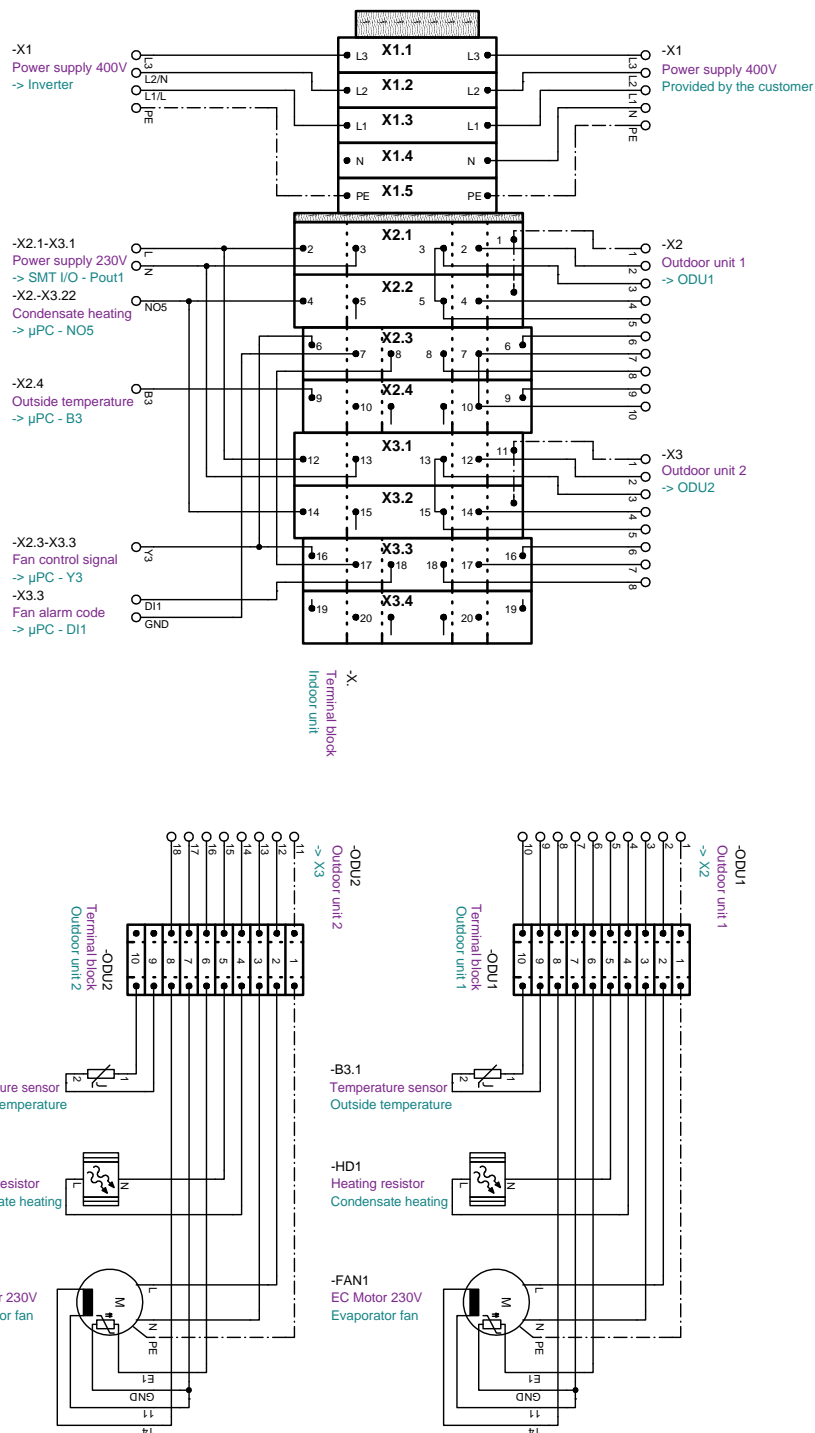
Project title: HTS

12/6/2020

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REMKO HTS series

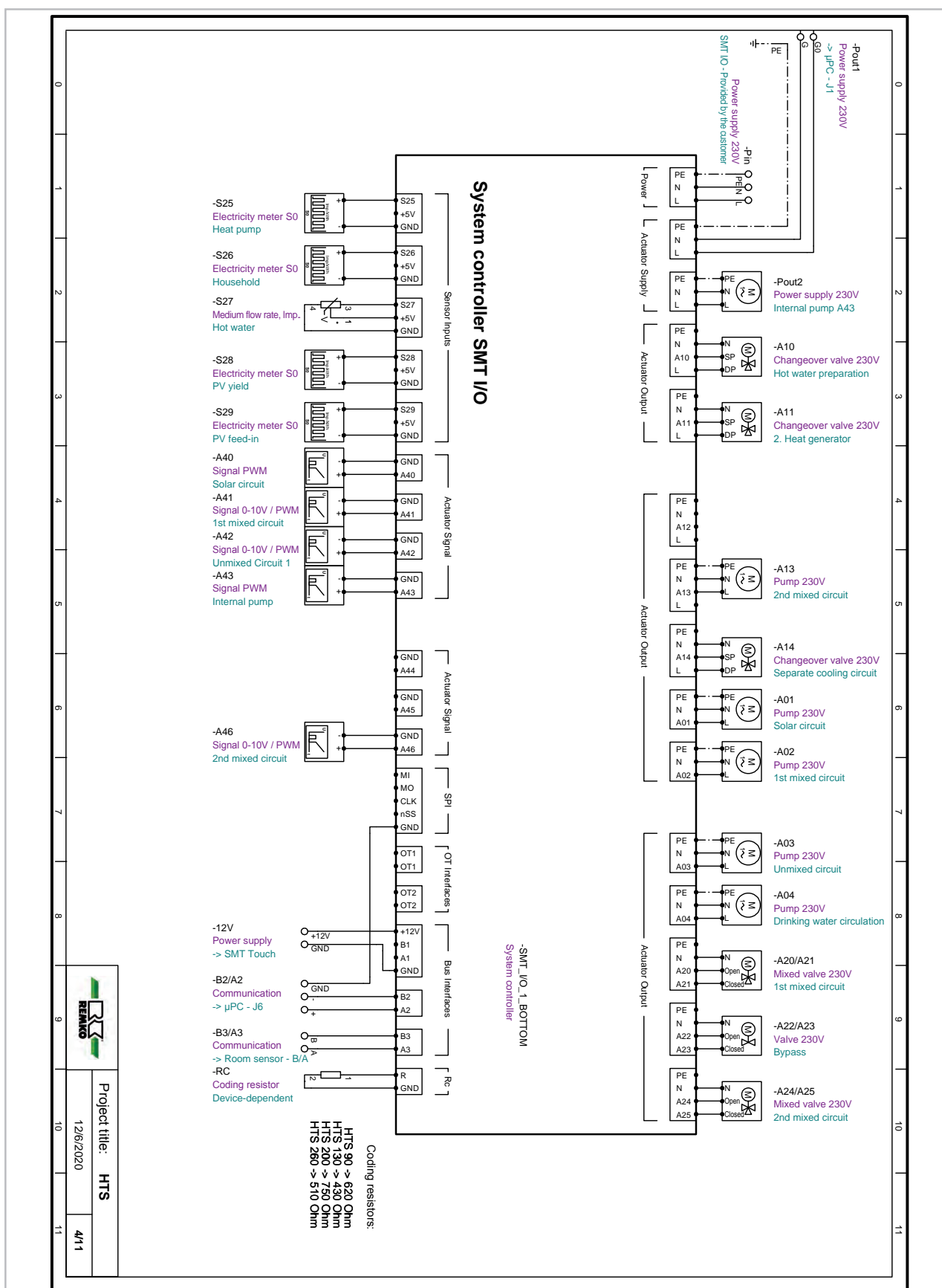
HTS 200 and HTS 260



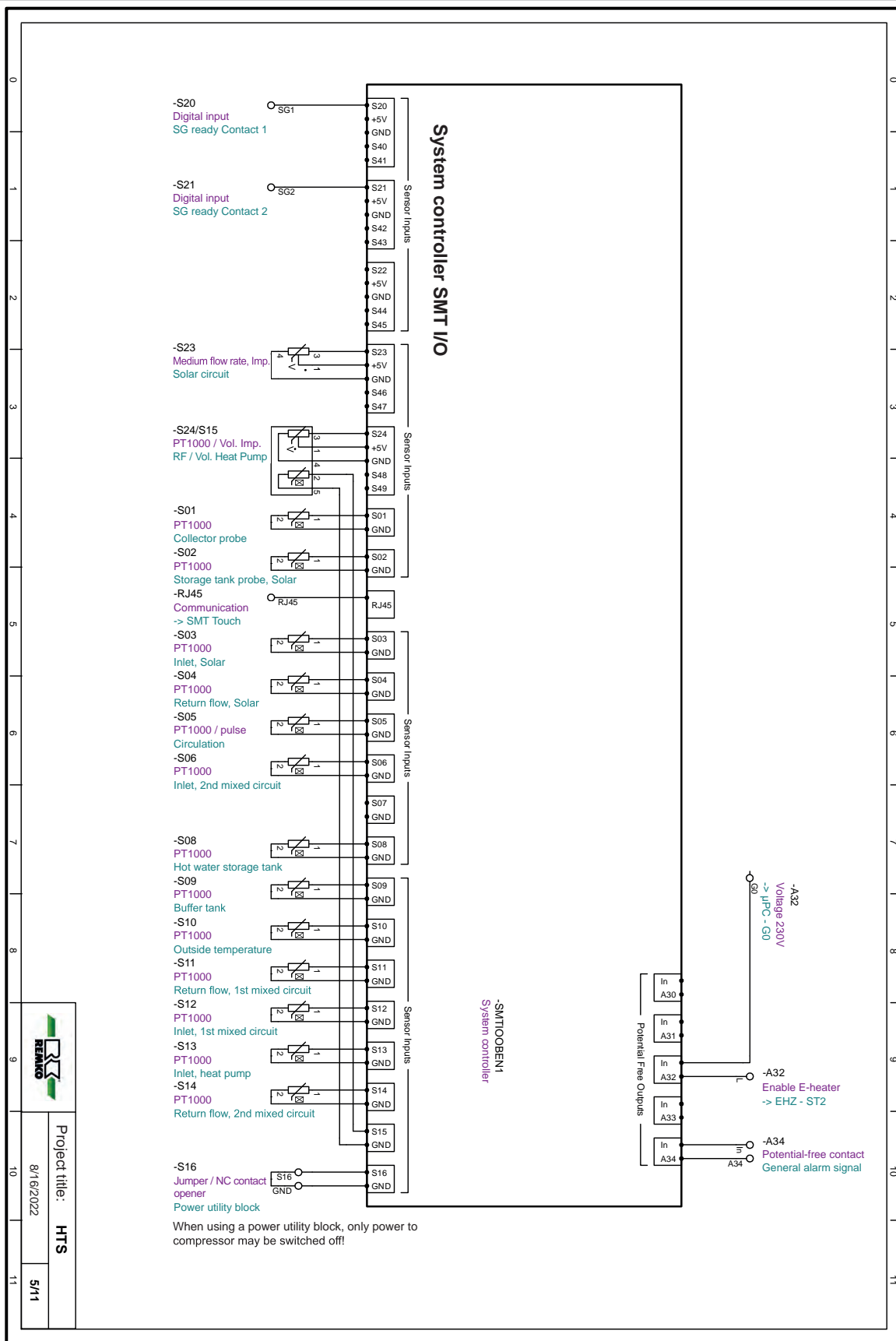
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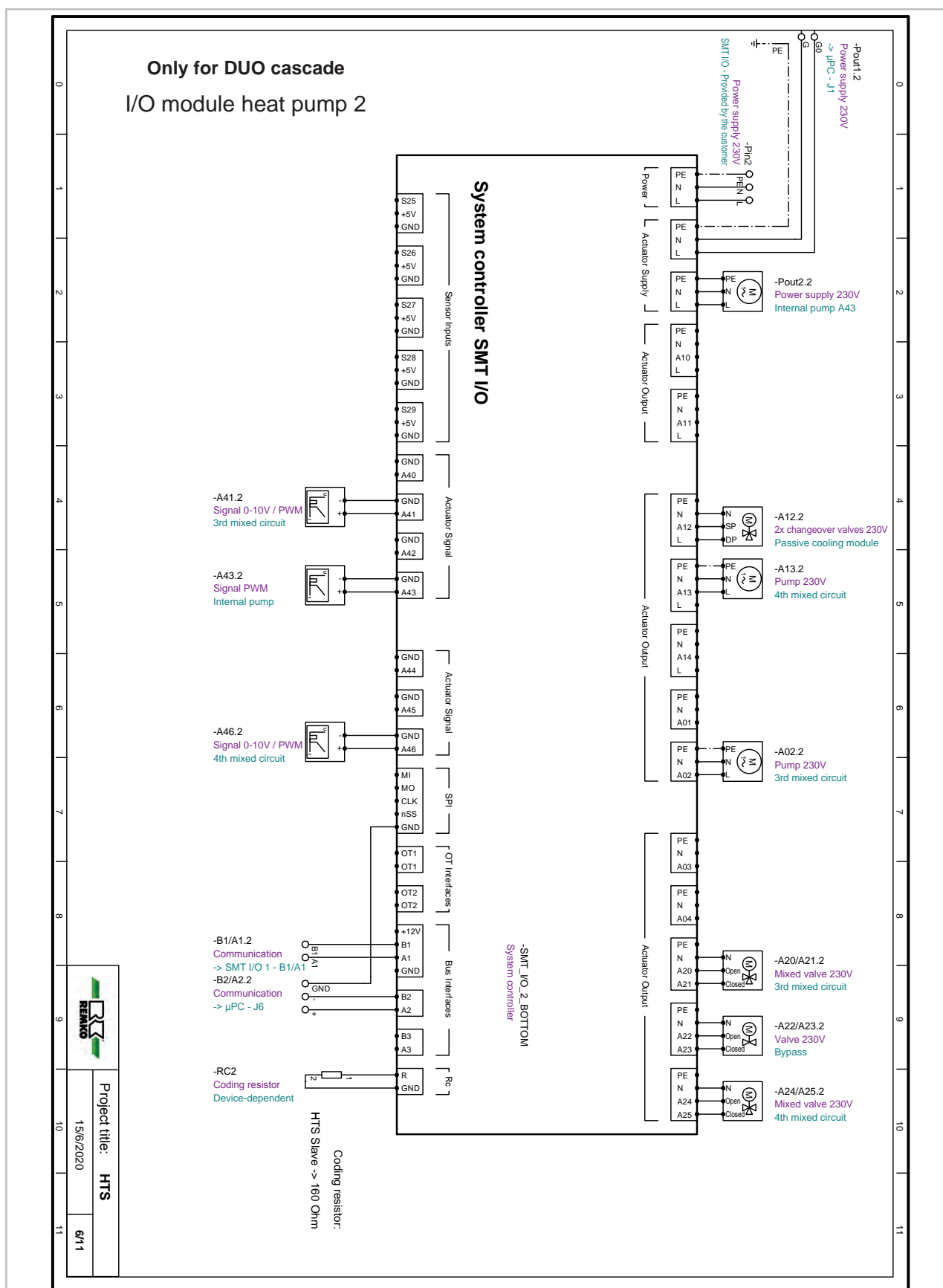
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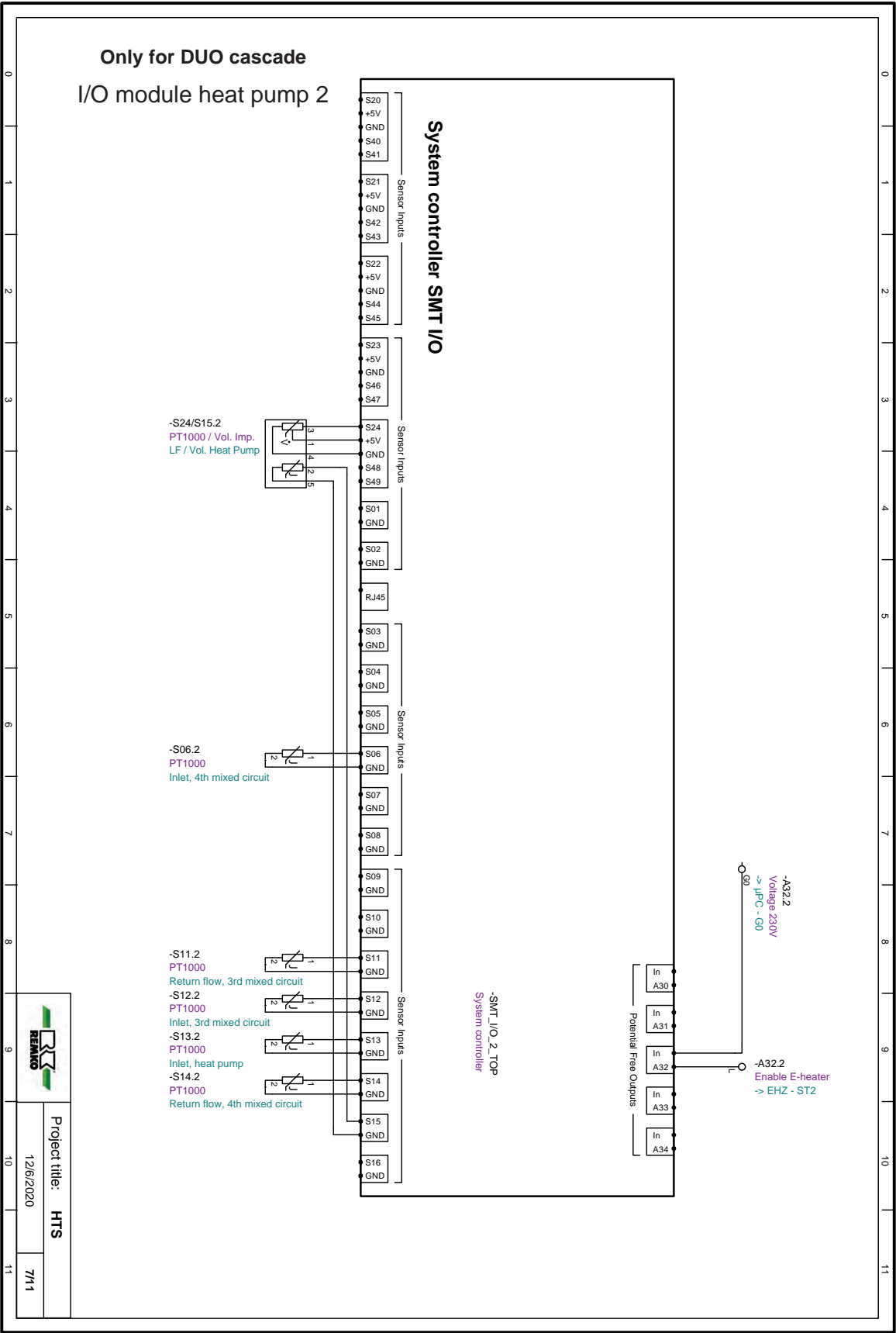


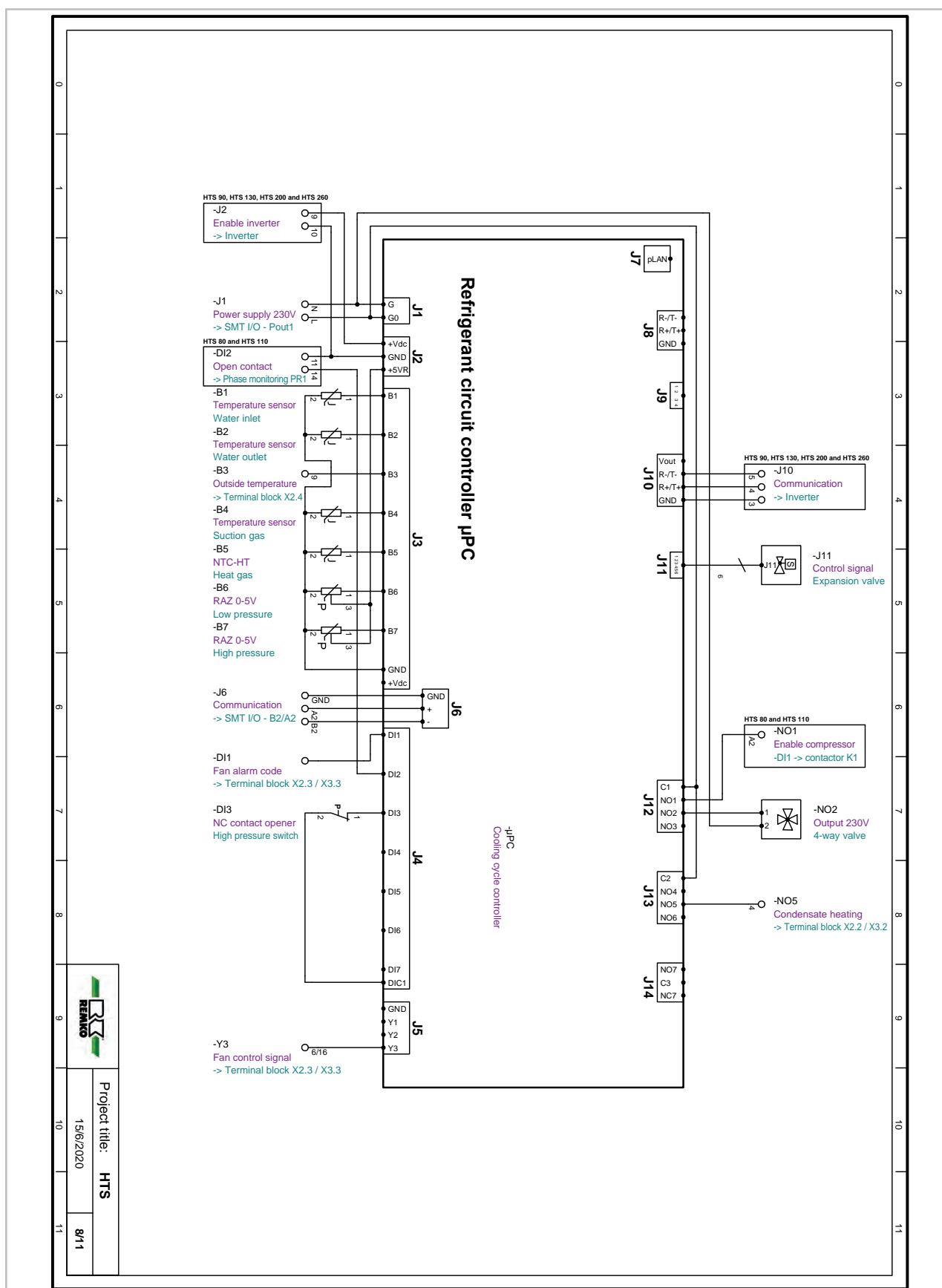
REMKO HTS series



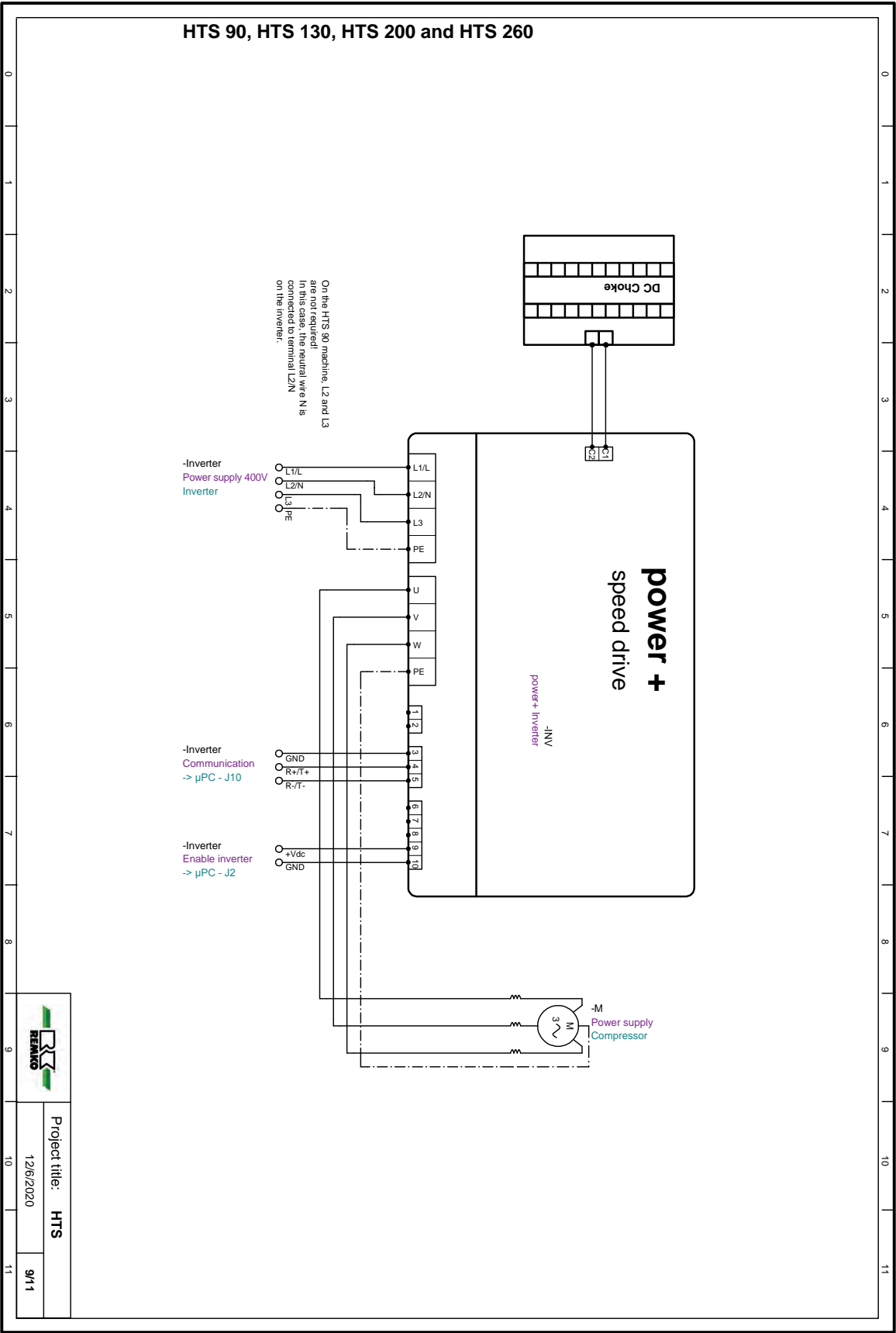


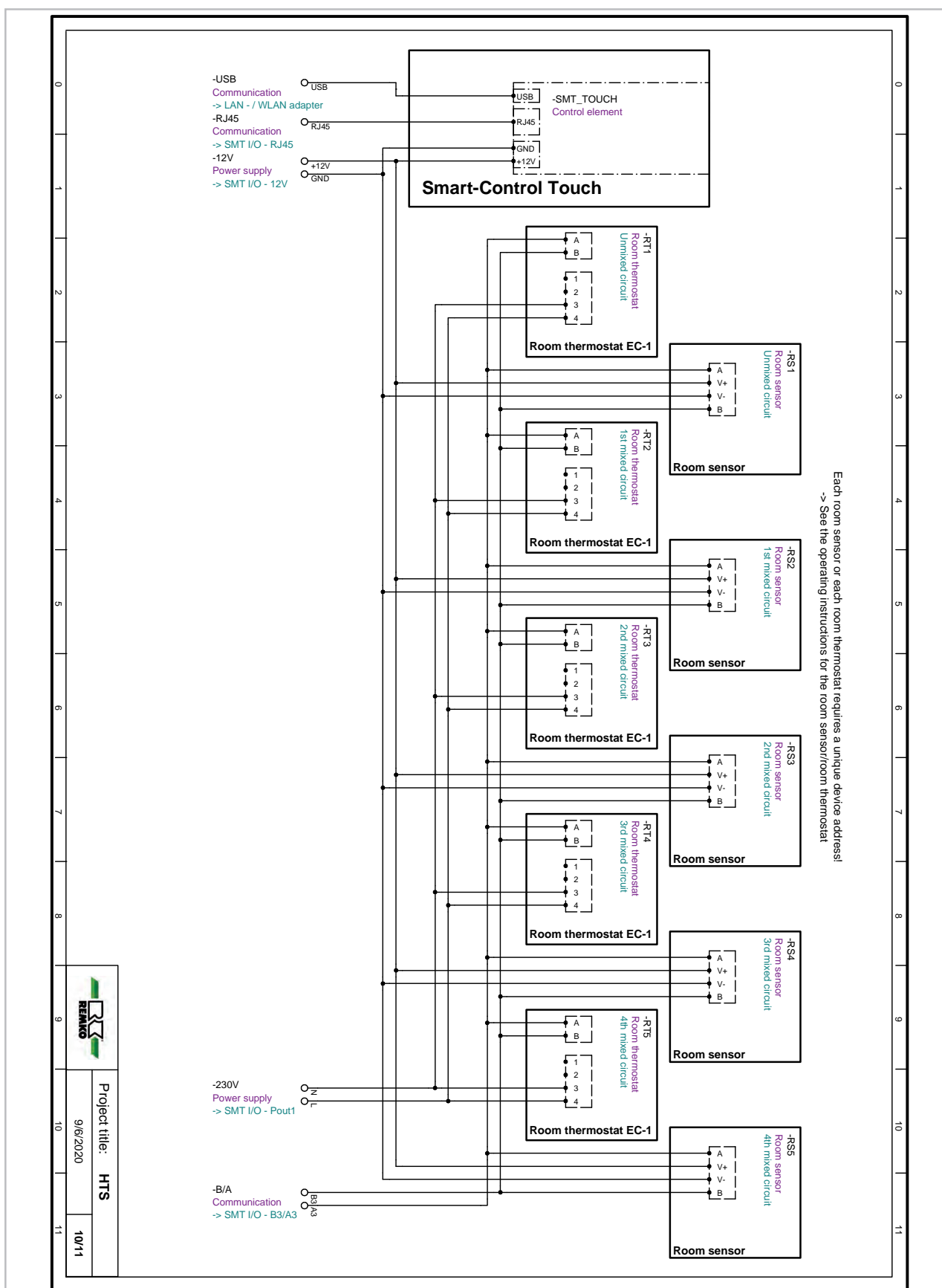
REMKO HTS series



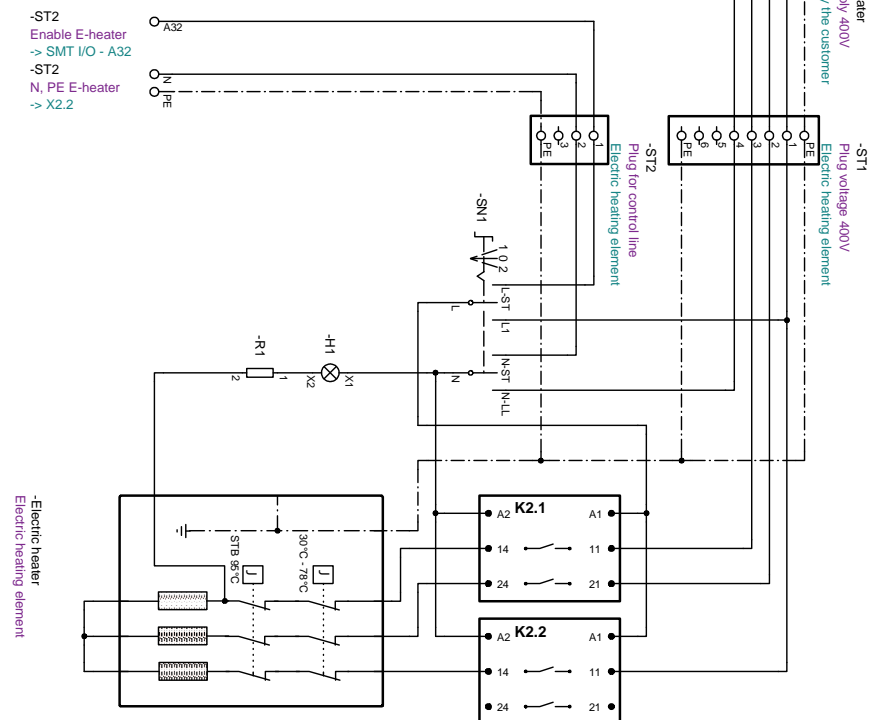
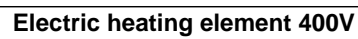


REMKO HTS series

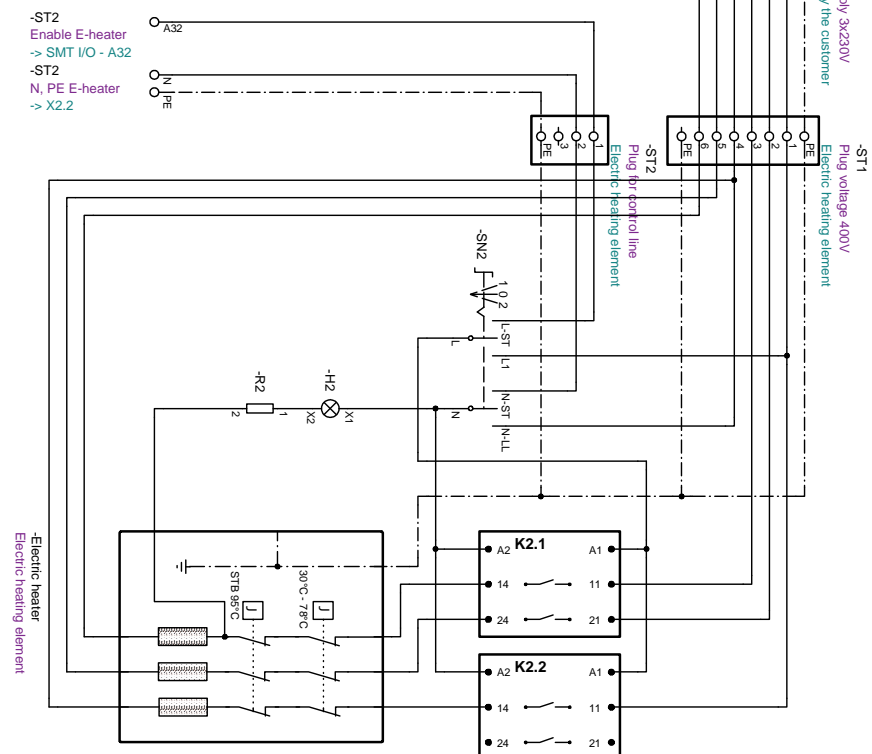




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Electric heating element 3x230V

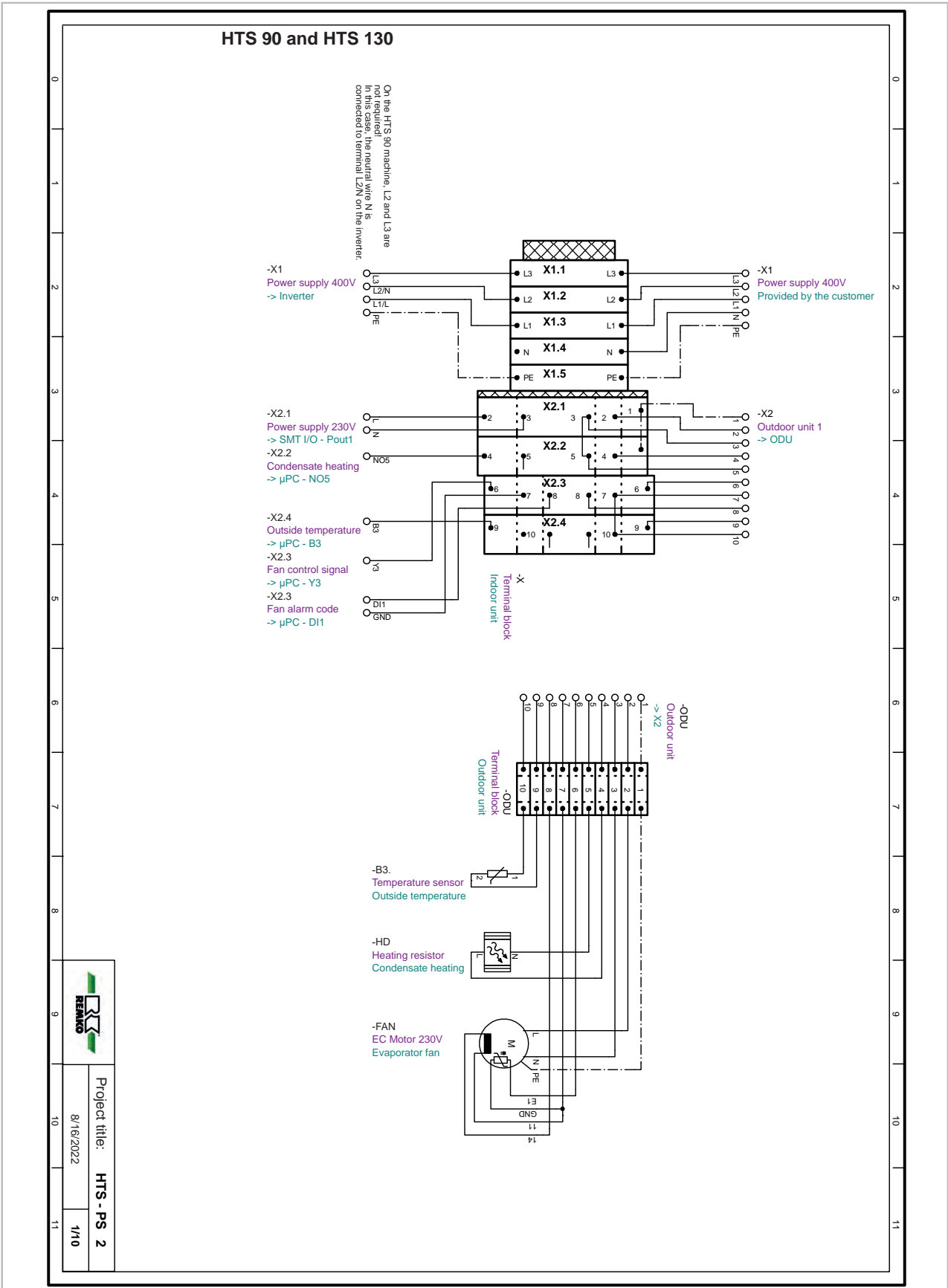


Legend for the circuit diagrams

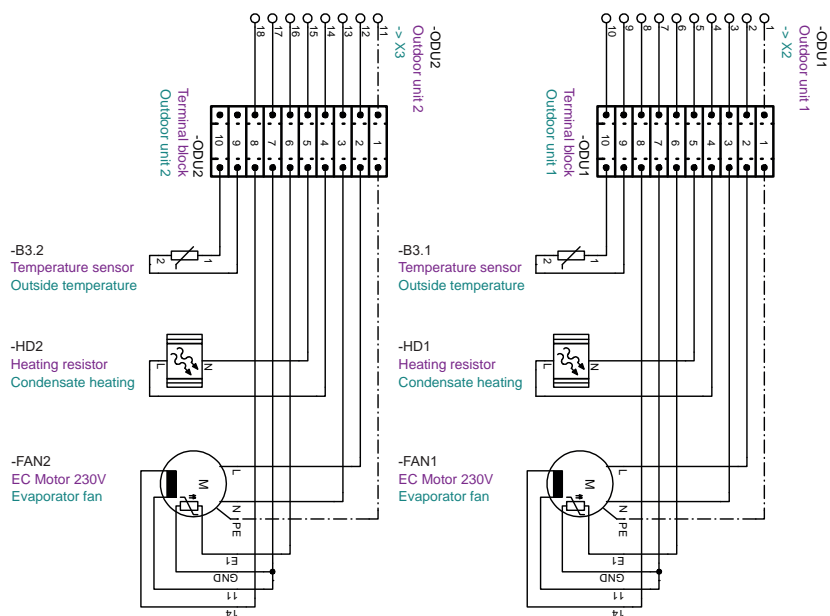
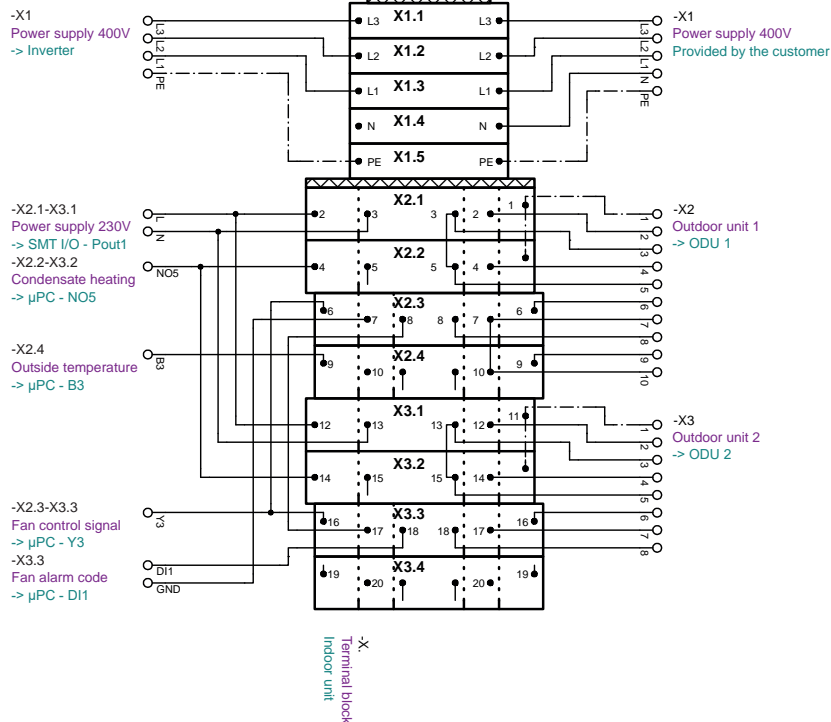
EHZ:	Electric heater
E-heater:	Electric heater
EVU:	Energy supply companies
mix.:	mixed
Imp.	Impulse
INV:	Inverter
PV:	Photovoltaic
PWM:	Pulse width modulation
RL:	Return flow
unmixed:	unmixed
VL:	Inlet
Vol.:	Medium flow rate

REMKO HTS series

13 Circuit diagrams version PS 2 inverter



HTS 200 and HTS 260

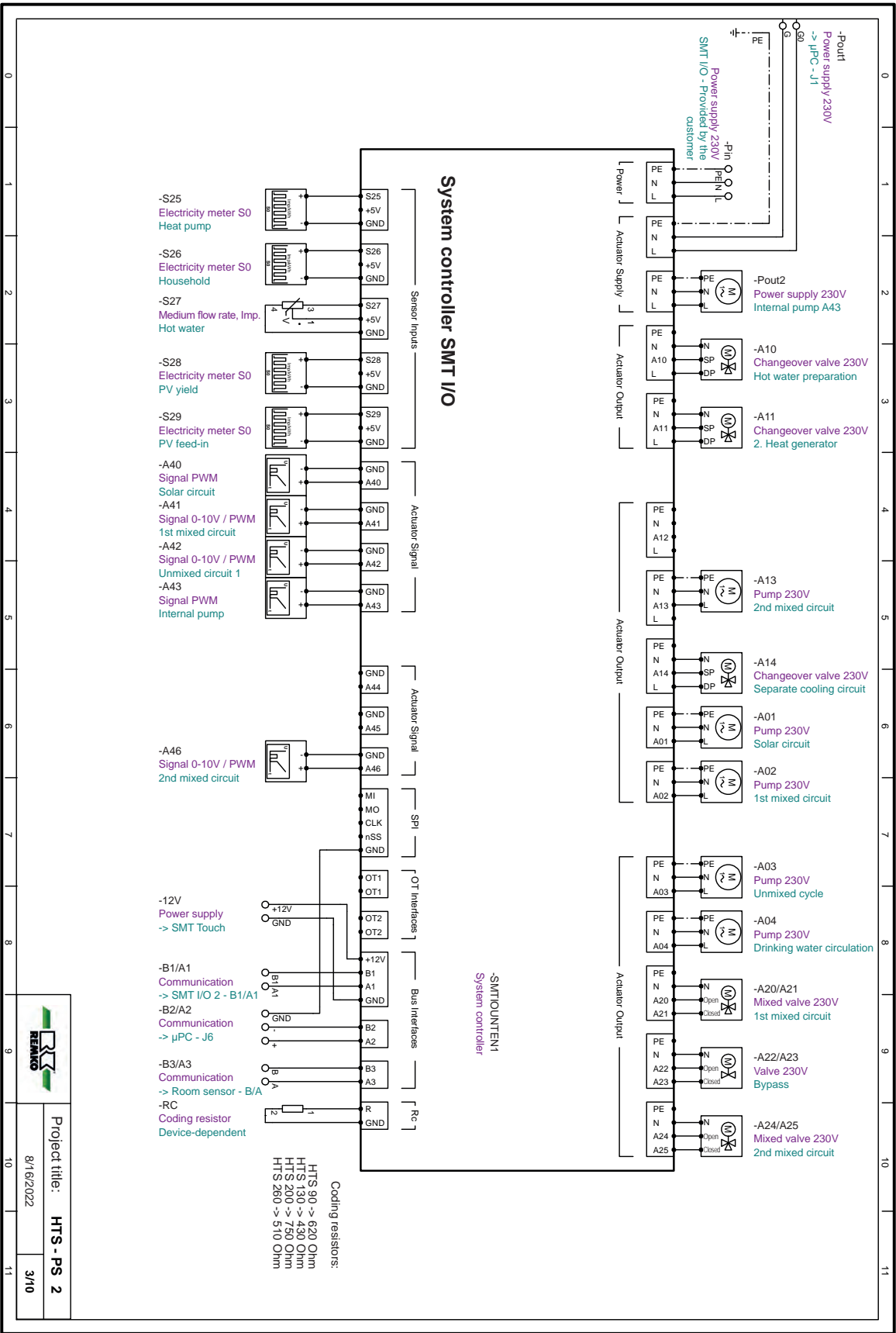


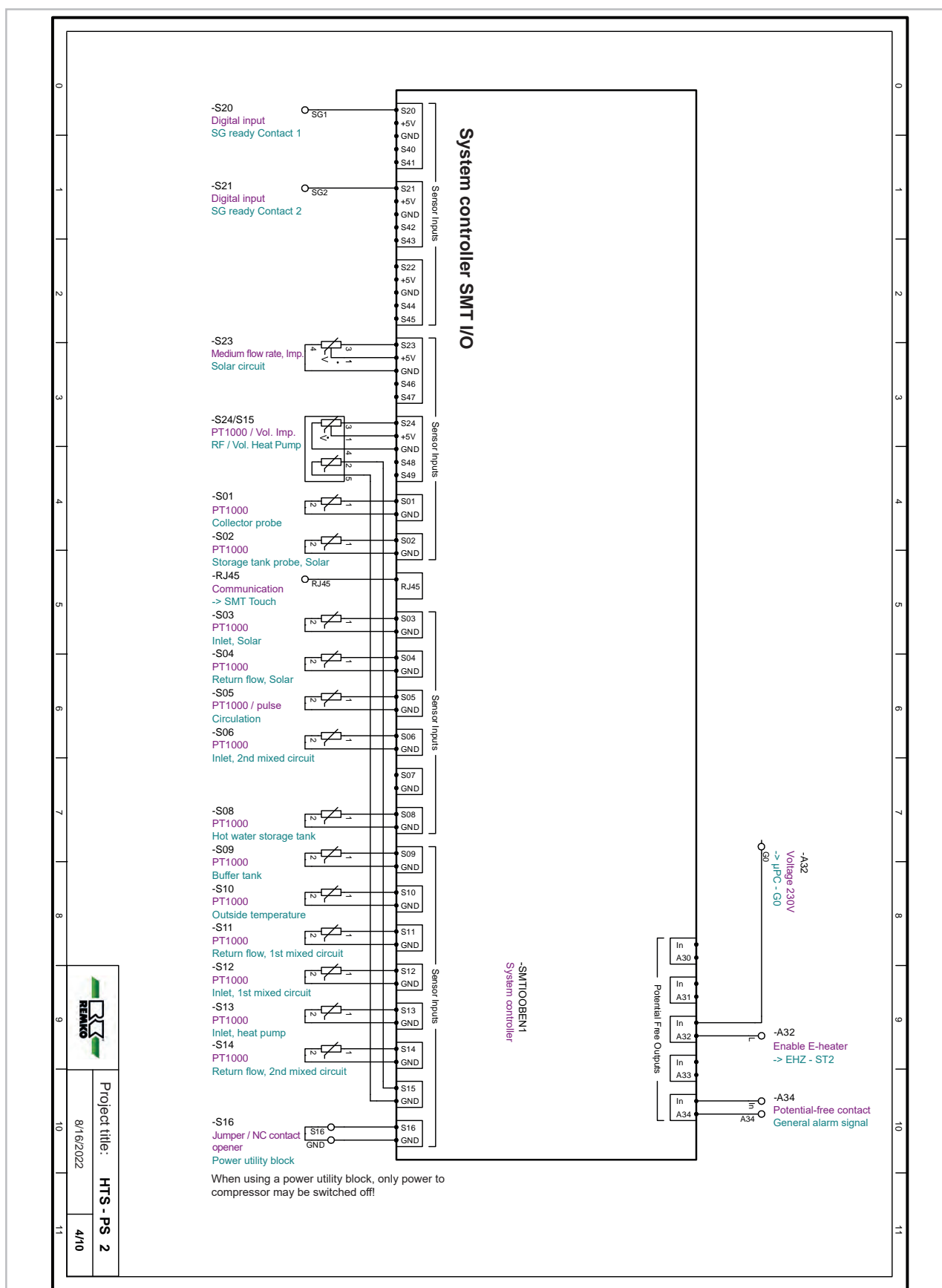
Project title: HTS - PS 2

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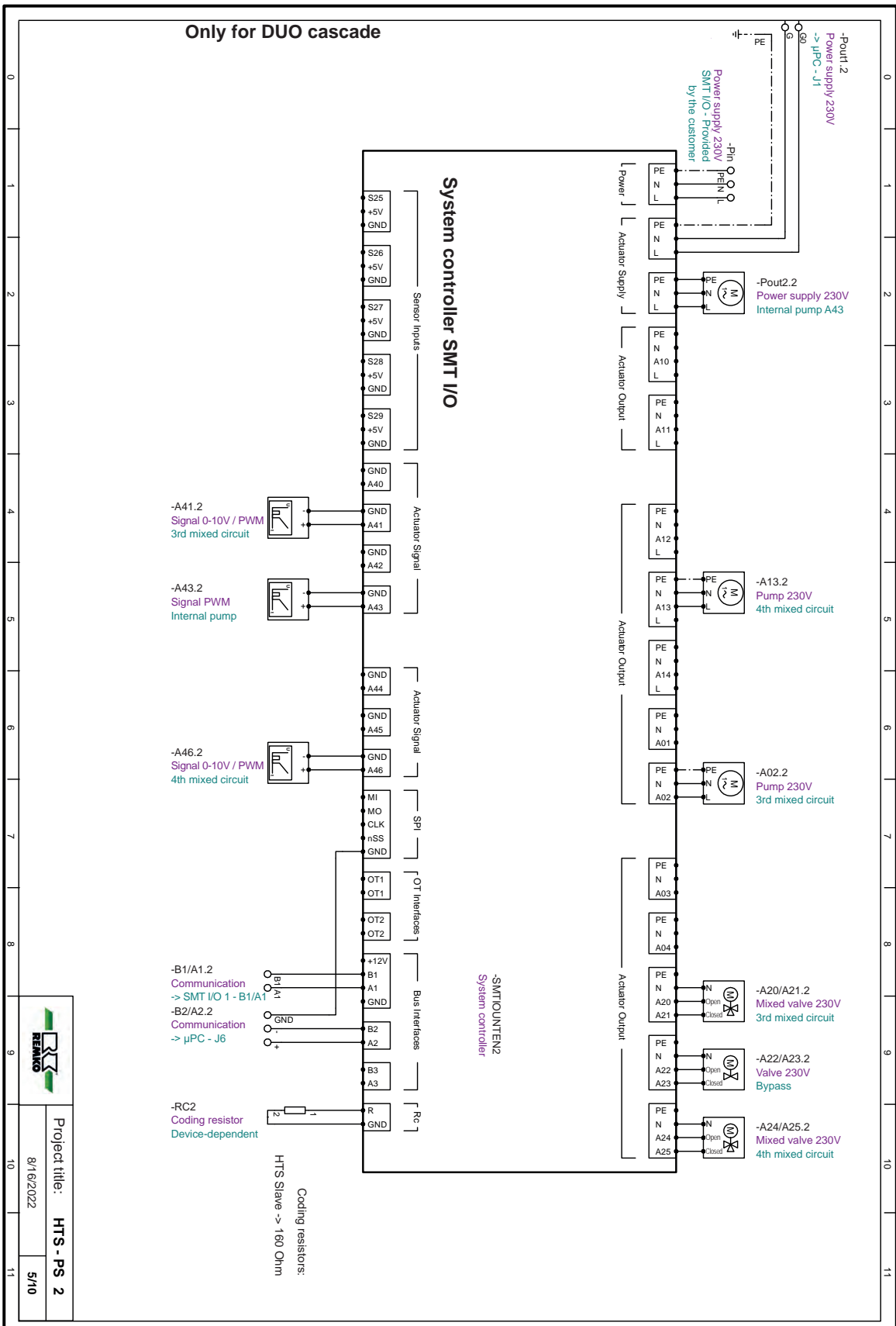
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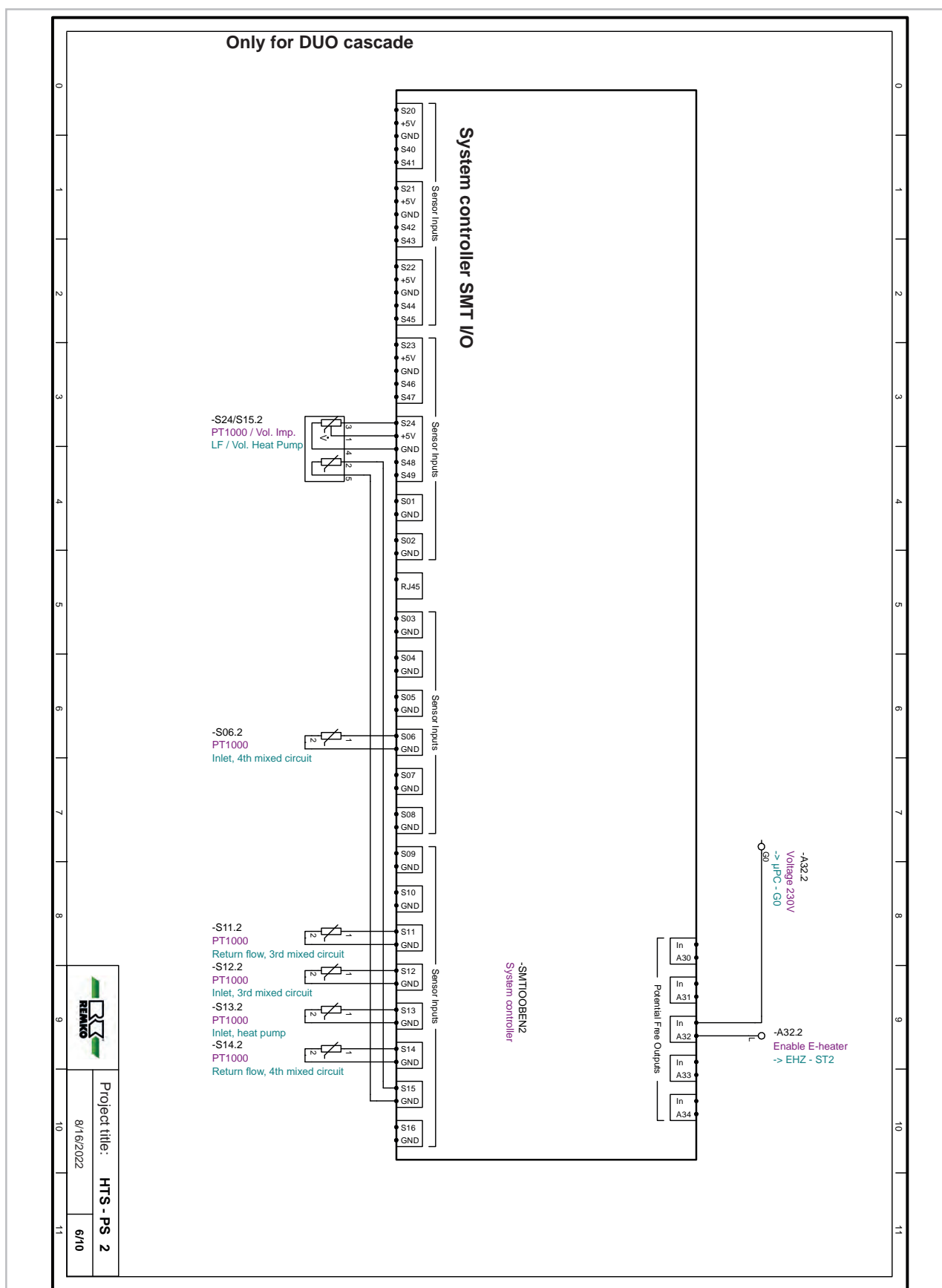
REMKO HTS series



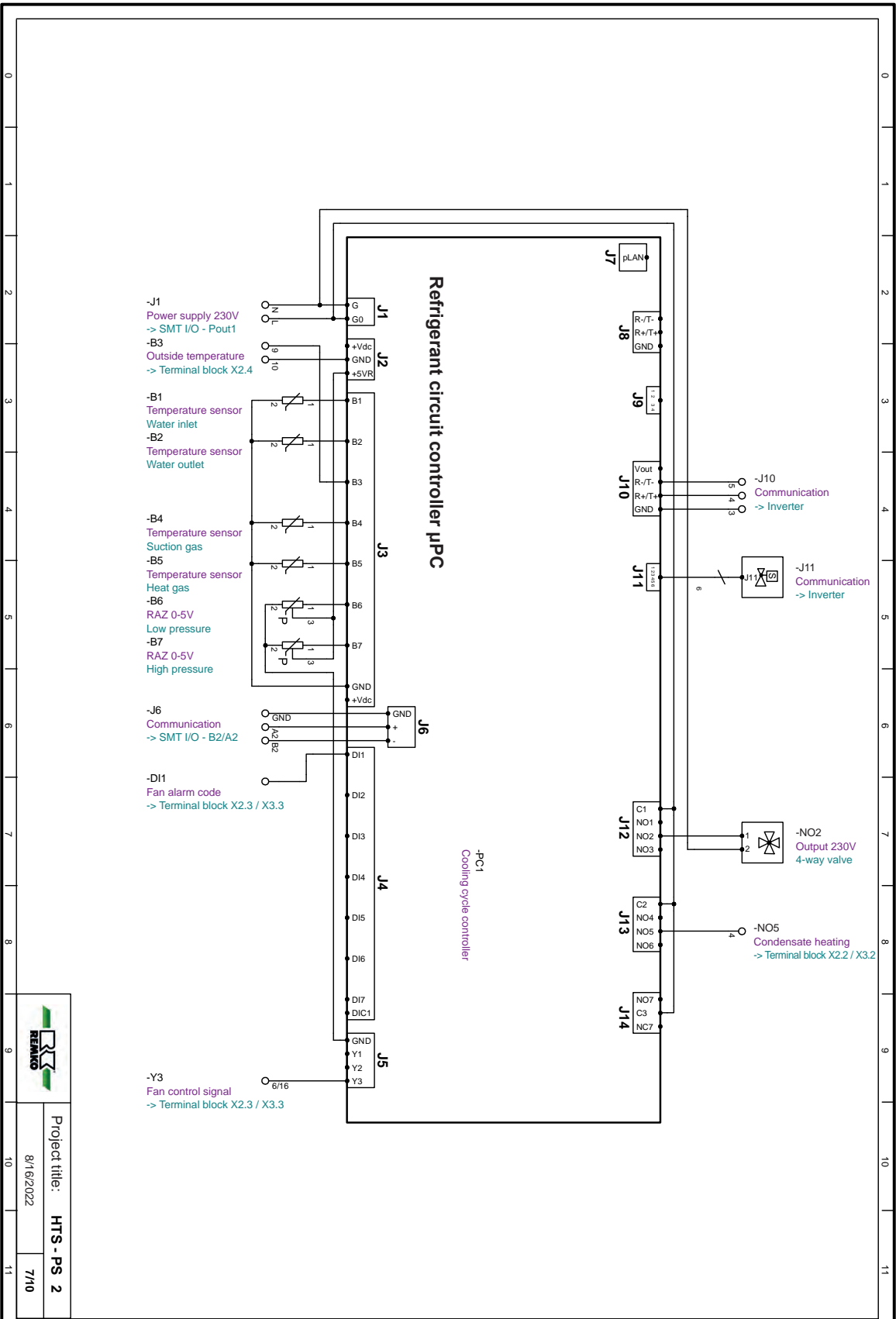


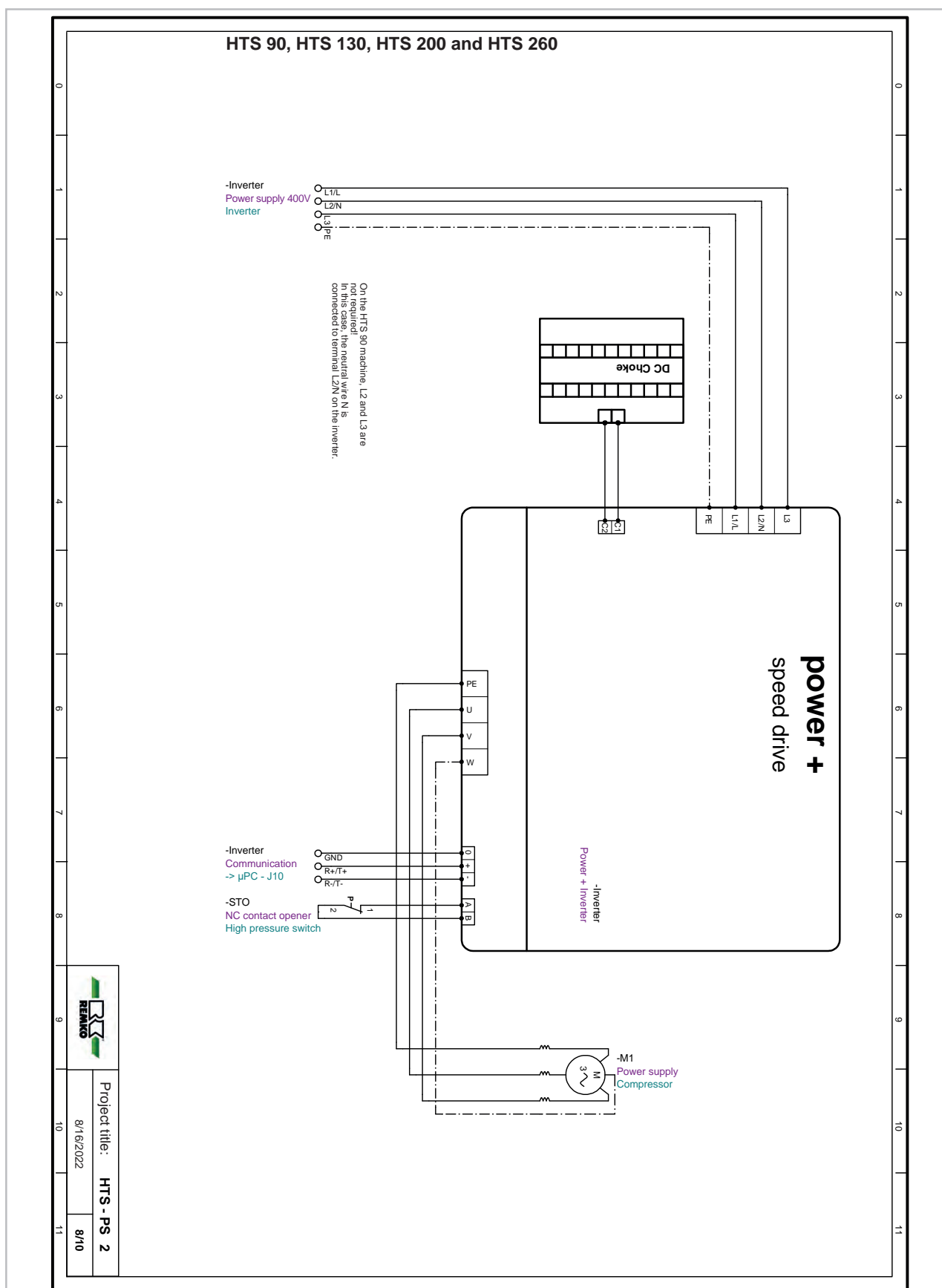
REMKO HTS series



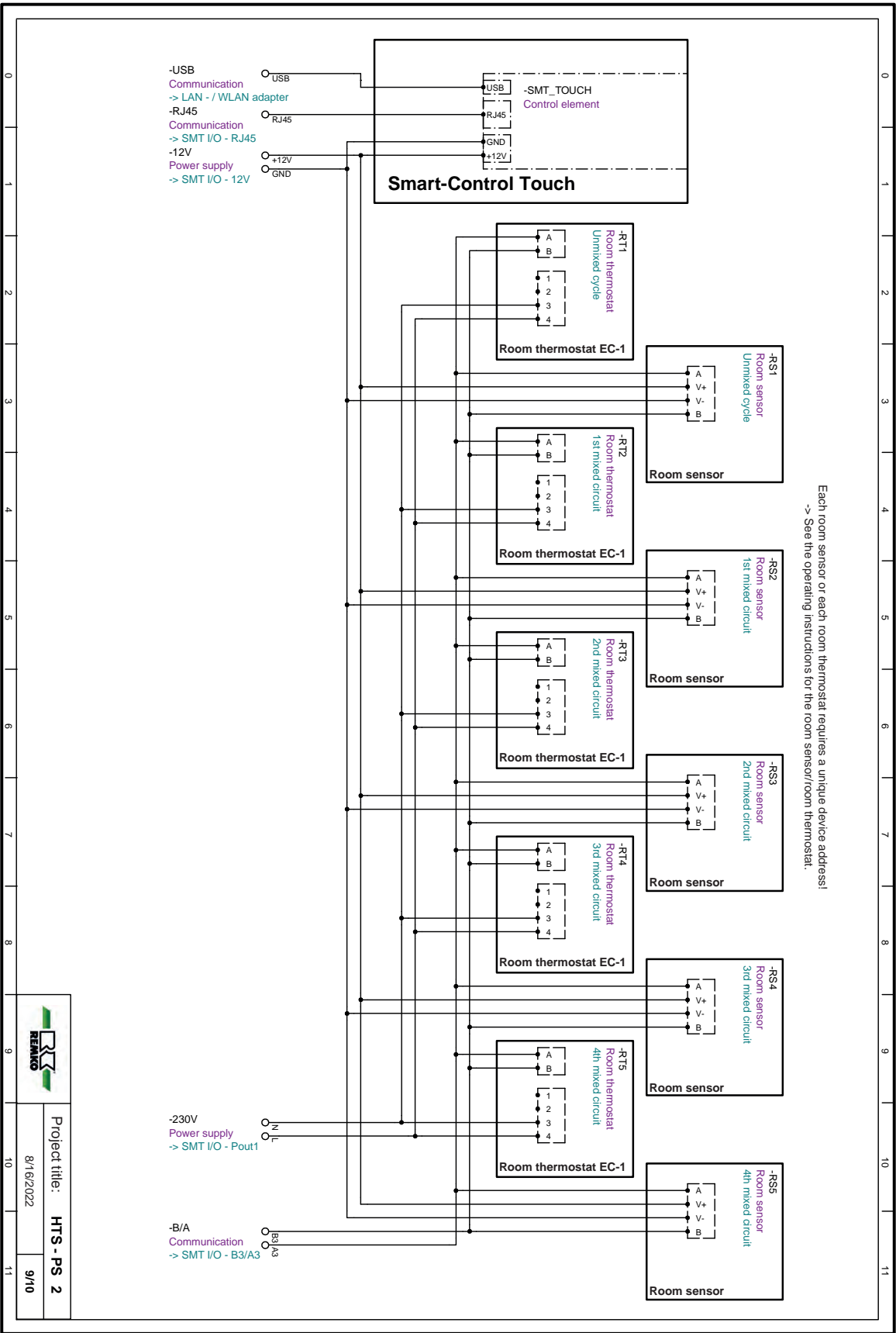


REMKO HTS series





REMKO HTS series

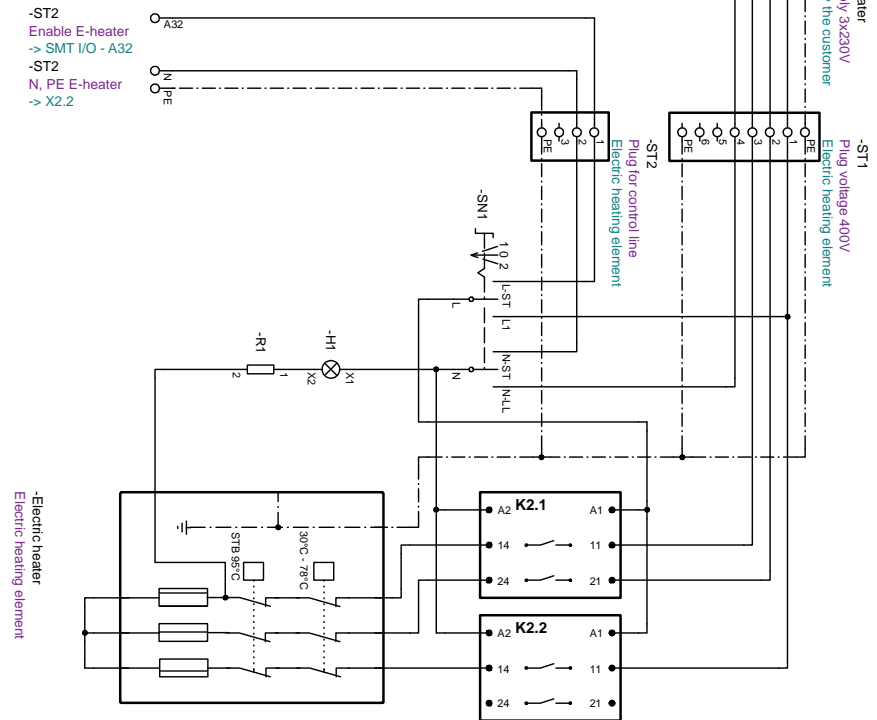


Project title: HTS - PS 2

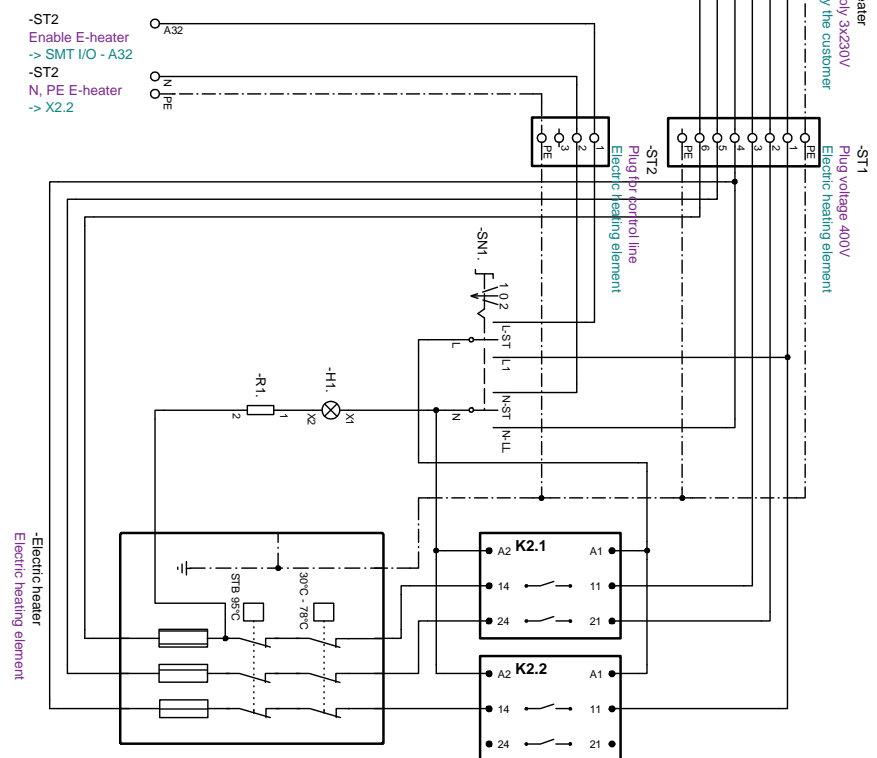
8/16/2022

9/10

Electric heating element 400V



Electric heating element 3x230V



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Legend for the circuit diagrams

EHZ:	Electric heater
E-heater:	Electric heater
EVU:	Energy supply companies
mix.:	mixed
Imp.	Impulse
INV:	Inverter
PV:	Photovoltaic
PWM:	Pulse width modulation
RL:	Return flow
unmixed:	unmixed
VL:	Inlet
Vol.:	Medium flow rate

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