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manual

Installation and operating instructions

Heat pump manager WPM 6.0

83322602 · 1/2025-05

Table of contents

1 Safety notes

1.1 Symbols and markings

Particularly important information in these instructions is marked with CAUTION! or NOTE.

⚠ CAUTION

Immediate danger to life or danger of severe personal injury or significant damage to property.

⚠ Note

Risk of damage to property or minor personal injury or important information with no further risk of personal injury or damage to property.

1.2 Important information

- During commissioning, observe the respective country-specific regulations and the applicable VDE safety regulations, particularly VDE 0100 as well as the technical connection requirements of the utility companies (EVU) and network operators!
- The heat pump manager may only be operated in dry rooms with temperatures between 0 °C and 35 °C. Condensation is not permitted.
- All sensor connection lines can be extended to up to 50 m with PVC Cu cables with routing type B2 and an ambient temperature of 35 °C. Sensor leads should not be installed next to power cables.
- To ensure that the frost protection function of the heat pump works properly, the heat pump manager must remain connected to the power supply and the flow must be maintained through the heat pump at all times.
- The switching contacts of the output relay are interference-suppressed. Therefore, depending on the internal resistance of the measuring instrument, a voltage can also be measured when the contacts are open. However, this will be much lower than the line voltage.
- The adapter PCBs -N1/SL, -N1/ML, -N17/LV and the plugs -N1/J9 .. J14 and J29 and -N17/J6 and J9 carry extra-low voltage. If, due to a wiring error, the line voltage is mistakenly connected to these terminals, the heat pump manager will be destroyed.

2 Heat pump manager: scope of supply

- Heat pump manager with casing
- 3 dowels (6 mm) with screws for wall mounting
- Outside temperature sensor R1
- Demand sensor R2.2

3 Mounting

3.1 Attaching the wall-mounted heat pump manager

The controller is attached to the wall with the 3 screws and wall plugs (6 mm) included in the scope of supply. The following installation procedure must be followed to avoid soiling or damaging the controller:

- Mount the wall plugs for the upper fastening eyelet at operator level.
- Screw the screw into the wall plug so that the controller can be mounted.
- Mount the controller by the upper fastening eyelet.
- Mark the position of the side drill-holes.
- Unhook the controller.
- Mount the wall plugs for the side drill-holes.
- Remount the controller at the top and tighten the screws.

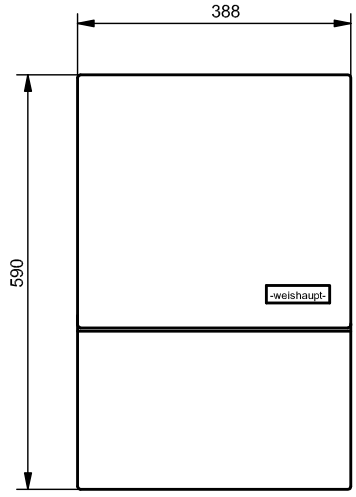


Fig. 3.1: Dimensions of the wall-mounted heat pump manager

3.2 Temperature sensor (heating controller N1)

Depending on the heat pump type used, the following temperature sensors are already installed or must be additionally mounted:

NTC-2 sensor
- Outside temperature (R1)

NTC-10 sensor
- 1st, 2nd and 3rd heating circuit temperature sensor (R35, R5 and R21)
- Demand sensor (R2.2)
- DHW temperature sensor (R3)
- Renewable cylinder temperature sensor (R13)

	Temperature in °C																
	-20	**-15**	**-10**	**-5**	**0**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
NTC-2 in kΩ	14.6	11.4	8.9	7.1	5.6	4.5	3.7	2.9	2.4	2.0	1.7	1.4	1.1	1.0	0.8	0.7	0.6
NTC-10 in kΩ	67.7	53.4	42.3	33.9	27.3	22.1	18.0	14.9	12.1	10.0	8.4	7.0	5.9	5.0	4.2	3.6	3.1

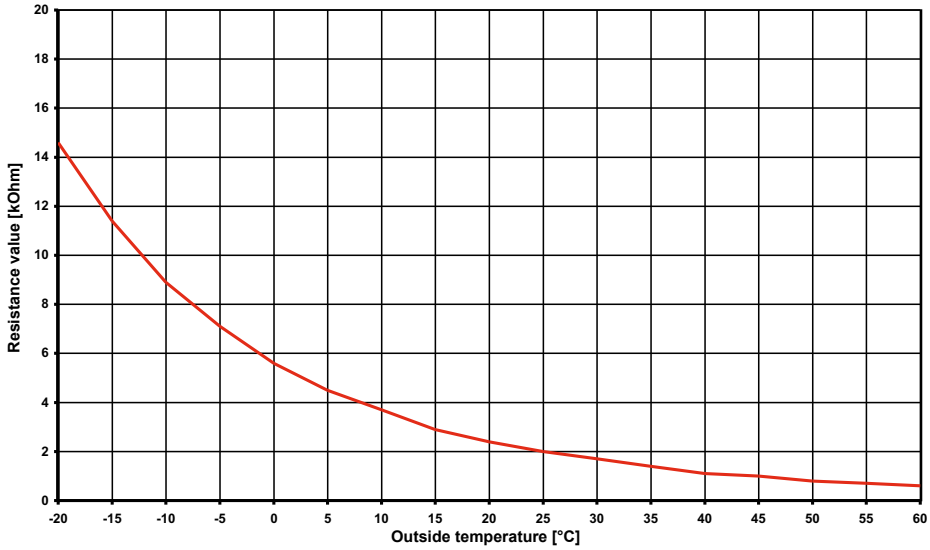


Fig. 3.2: Sensor characteristic curve, NTC-2 according to DIN 44574

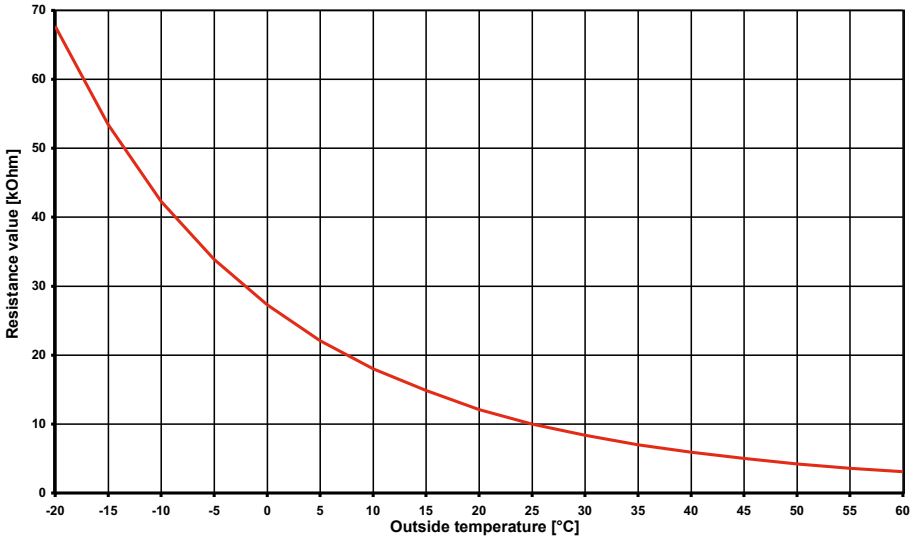


Fig. 3.3: NTC-10 sensor characteristic curve for connection to the heating controller with removable control panel

3.2.1 Mounting the outside temperature sensor

The temperature sensor must be mounted in such a way that all weather conditions are taken into consideration and the measured value is not falsified.

Mounting:
- On the external wall of a heated room used as living space, if possible on the north or north-west side of the building
- Do not install in a "sheltered position" (e.g. in a wall niche or under a balcony)
- Not in the vicinity of windows, doors, exhaust air vents, external lighting or heat pumps
- Not to be exposed to direct sunlight at any time of year

Sensor lead: max. length: 50 m

Core cross-section: min. 0.75 mm^2

Conductor material: Cu

Routing type: B2

3.2.2 Mounting the strap-on sensor

It is only necessary to mount the strap-on sensors if they are included in the scope of supply of the heat pump but have not yet been installed.

The strap-on sensors can be fitted as pipe-mounted sensors or installed in the immersion sleeve of the compact manifold.
- Remove paint, rust and scale from heating pipe
- Coat the cleaned surface with heat transfer compound (apply sparingly)
- Attach the sensor with a hose clip (tighten firmly, as loose sensors can cause malfunctions) and thermally insulate

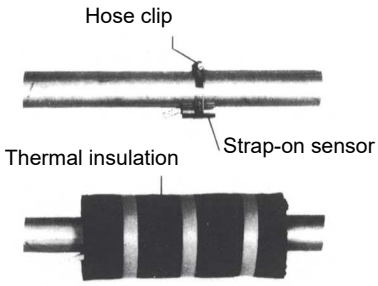


Fig. 3.4: Mounting a pipe strap-on sensor

3.2.3 Hydraulic distribution system

The compact manifold and the dual differential pressureless manifold function as an interface between the heat pump, the heating distribution system, the buffer tank and, in some cases, even the domestic hot water cylinder. A compact system is used to simplify the installation process, so that a lot of different components do not have to be installed individually. Further information can be found in the relevant installation instructions.

Compact manifold

If a compact manifold is used, the demand sensor is mounted on the joint return as a strap-on sensor or in an immersion sleeve.

Dual differential pressureless manifold

In order for the heating circuit pumps of the generator and consumer circuits to supply the flow to the demand sensor R2.2, the demand sensor must be installed in the immersion sleeve of the dual differential pressureless manifold. The return sensor remains in the heat pump.

⚠Note

Through installation of the demand sensor R2.2 as a strap-on sensor at the water outlet of the buffer tank connected in series, operation of the heating system can be optimised.

4 Electrical installation work for the heat pump

4.1 Electrical installation work

1. The electrical supply cable for the output section of the heat pump (up to 5-core) is fed from the electricity meter of the heat pump via the utility company blocking contactor (if required) into the heat pump (see heat pump instructions for supply voltage).
   An all-pole disconnecting device with a contact gap of at least 3 mm (e.g. utility company blocking contactor or power contactor) and an all-pole circuit breaker with common tripping for all external conductors must be installed in the power supply for the heat pump (tripping current and characteristic in compliance with the device information).
2. The three-core electricity supply cable for the heat pump manager (N1) is fed into the heat pump (device with integrated controller) or to the future mounting location of the heat pump manager (WPM).
   The supply cable (-X1/L/N/PE ~230 V, 50 Hz) for the WPM must have a continuous voltage. For this reason, it should be tapped upstream from the utility company blocking contactor or be connected to the household current, because otherwise important protection functions could be lost during a utility block.
3. The utility company blocking contactor (K22) with 3 main contacts (1/3/5 // 2/4/6) and an auxiliary contact (NO contact e.g. 13/14) should be dimensioned according to the heat pump output and must be supplied on-site. The NO contact of the utility company blocking contactor (13/14) is connected to pin (1) (=DI1) of function block 0 (grey). CAUTION! Extra-low voltage!
4. The contactor (K20) for the immersion heater (E10) of mono energy systems (2nd heat generator) should be dimensioned according to the radiator output and must be provided on-site. The control (230 V AC) is performed from the heat pump manager, with the function applied via pin (7) (=NO3) of function block 0 (grey).
5. The contactor (K21) for the flange heater (E9) in the domestic hot water cylinder should be dimensioned according to the radiator output and must be provided on-site. The control (230 V AC) is performed from the WPM via pin (7) of the defined function block.
6. The contactors mentioned above in points 3, 4 and 5 are installed in the electrical distribution system. The mains cables for the radiators should be dimensioned and protected according to DIN VDE 0100.
7. The heat circulating pump (M13) is connected to terminals -X1/M13.
8. The auxiliary circulating pump (M16) is connected to terminals -X1/M16.
9. The domestic hot water circulating pump (M18) is connected to terminals -X1/M18

⚠Note

If three-phase pumps are implemented, a power contactor can be controlled via the 230 V output signal of the heat pump manager.
Sensor cables can be extended up to 50 m with 2 x 0.75 mm cables.

⚠Note

Further information on the wiring of the heat pump manager is available in the circuit diagram.

⚠ CAUTION

The communication cable is necessary for the function of air-to-water heat pumps in outdoor installation. It must be shielded and laid separately from the mains cable. It is connected to N1-J25. For further information, see circuit diagram.

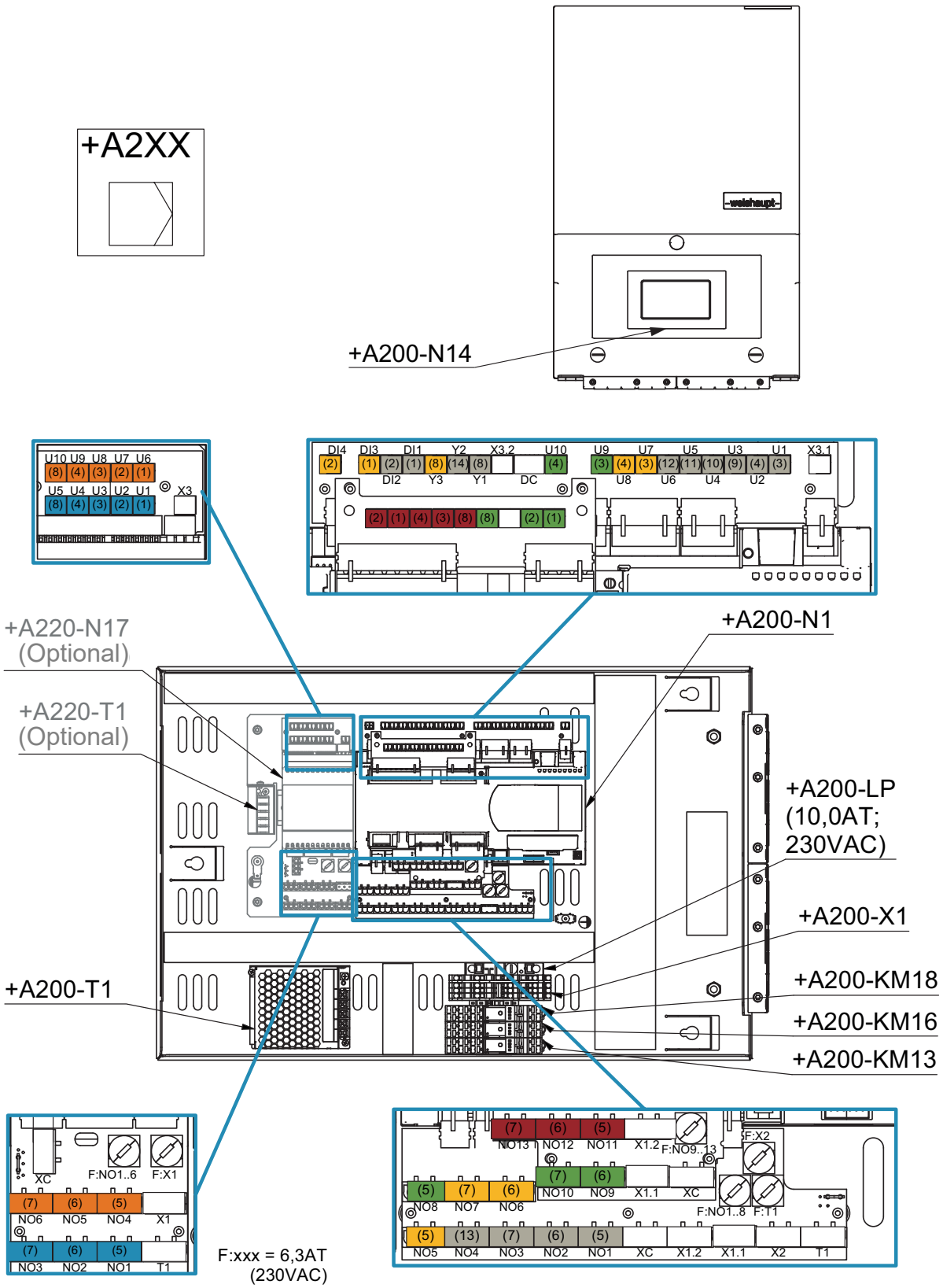


Fig. 4.1: Wall-mounted heat pump manager

4.2 Functions

In its basic version, the WPM 6.0 heat pump manager comes with one unchangeable pin assignment on the “grey” function block for the function “General/unmixed circuit 1”. Additional functions can be assigned as desired to three function blocks (yellow, green, red) (see Chapter 4.2.1 on page 11).

If these three function blocks are not enough, you can add two more function blocks (orange, blue) using the extension optionally available as a special accessory. Five is the maximum possible number of function blocks (yellow, green, red, orange, blue).

⚠Note

The “Active cooling” function can only be selected for reversible heat pumps.

4.2.1 Overview of functions

General/unmixed circuit 1 +A400	
A1/K22	Utility company disable contactor
A2/K23	External disable contactor
R1	Outside temperature sensor
R2.2	Demand sensor
M13	Heat circulating pump
H5	Remote fault indicator
E10.1/K20	Pipe heater/immersion heater
N27.1	Smart Grid green
N27.2	Smart Grid red
N28	Building management system 0-10 V setpoint
M16	Auxiliary circulating pump
AO M16	Control signal for circulating pump
Domestic hot water +A420	
K31	Circulation system requirements
B3	Thermostat
R3	Domestic hot water sensor
(Y)M18	Circulating pump/reversing valve
E9/K21	Flange heater
M24	Circulation pump
AO M18	Control signal for circulating pump
Mixed circuit 1 +A411	
R35	Sensor
M13	Circulating pump
M21↑	Mixer open
M21↓	Mixer closed
Mixed circuit 2 +A412	
R5	Sensor
M15	Circulating pump
M22↑	Mixer open
M22↓	Mixer closed
Mixed circuit 3 +A413	
R21	Sensor
M20	Circulating pump
M29↑	Mixer open
M29↓	Mixer closed
Bivalent +A441	
E10.2/3	Oil/gas boiler
M26↑	Mixer open
M26↓	Mixer closed
AO E10.2/3	Oil/gas boiler control signal

	Renewable +A442
R13	Sensor
M28	Circulating pump
M27↑	Mixer open
M27↓	Mixer closed
	Swimming pool +A430
B4	Thermostat
R20	Swimming pool sensor
(Y)M19	Circulating pump/reversing valve
K36	Flange heater
AO M19	Control signal for circulating pump
	Active cooling +A451
N5	Dew point monitor
K28	Switching, heating/cooling
R24.2	Return sensor, primary circuit, cooling
R39	Demand sensor, cooling
N9/M17	Switching, room thermostat/cooling circulating pump
Y12↑	External 4-way reversing valve open
Y12↓	External 4-way reversing valve closed
	Passive cooling +A452
N5	Dew point monitor
K28	Switching, heating/cooling
R11	Flow, cooling water
R4	Return, cooling water
M12	Primary circulating pump, passive cooling
Y5/Y6	3- or 2-way valve
M17	Cooling circulating pump

4.2.2 List of pin assignments for function block, fixed

	Connector number													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Function block 0	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey
Function														
General/unmixed circuit 1 +A400	A1 K22	A2 K23	R1	R2.2	M13	H5	E10.2 K20	-	N27.1	N27.2	N28	-	M16	AO M16

4.2.3 List of pin assignments for function block, flexible

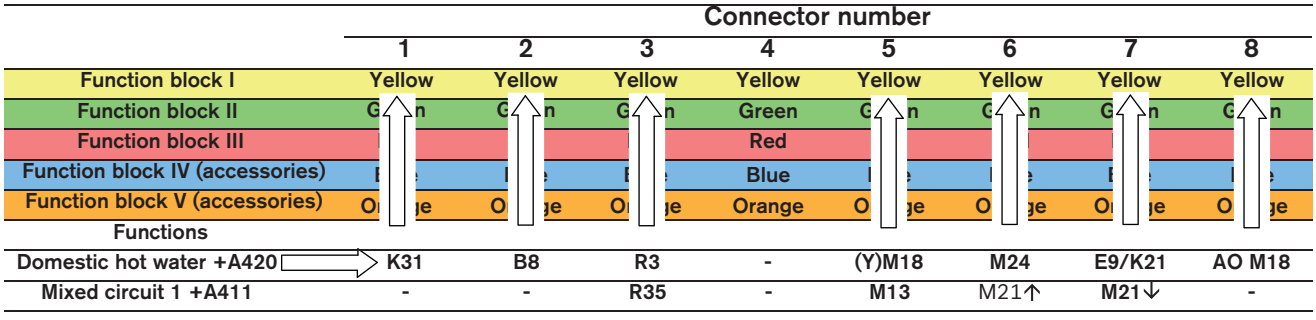
	Connector number							
	1	2	3	4	5	6	7	8
Function block I	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Function block II	Green	Green	Green	Green	Green	Green	Green	Green
Function block III	Red	Red	Red	Red	Red	Red	Red	Red
Function block IV (accessories)	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Function block V (accessories)	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Functions								
Domestic hot water +A420	K31	B8	R3	-	(Y)M18	M24	E9/K21	AO M18
Mixed circuit 1 +A411	-	-	R35	-	M13	M21↑	M21↓	-
Mixed circuit 2 +A412	-	-	R5	-	M15	M22↑	M22↓	-
Mixed circuit 3 +A413	-	-	R21	-	M20	M29↑	M29↓	-
Bivalent +A441	-	-	-	-	E10.2/3	M26↑	M26↓	AO E10.2/3
Renewable +A442	-	-	R13	-	M28	M27↑	M27↓	-
Swimming pool +A430	-	B4	R20	-	M19	-	K36	AO M19
Active cooling +A451	N5	K28	R24.2	R39	N9/M17	Y12↑	Y12↓	-
Passive cooling +A452	N5	K28	R11	R4	M12	Y5/Y6	M17	-

Example: Chosen pin assignment for domestic hot water function set to function block yellow

First, choose the function for use, in this case domestic hot water, and the colour for the function block assigned, in this case yellow. Then find the domestic hot water line in the table and choose the component for connection, for example domestic hot water sensor R3. Afterwards, choose the pin for assignment on the yellow function block in the first line. In this case, domestic hot water sensor R3 needs to be connected to yellow pin number 3. Proceed likewise for all components you wish to connect.

⚠Note

When commissioning the system through the touch display, the function for use and its associated colour assignment is queried and set.



⚠ Note

You can find detailed circuit diagram in the accessories pack

⚠ Note

The wall-mounted heat pump manager and the heat pump need to be connected to one another with communication and control voltage cables

4.3 Connecting electronically regulated circulating pumps

Electronically regulated circulating pumps may have high starting currents, which may reduce the service life of the heat pump manager. If the starting current value is high, or is unknown, install a coupling relay – insofar as it is not already integrated. The coupling relay must usually be supplied on-site (not for M13, M16, M18). This is not necessary if the maximum permissible operating current of the heat pump manager (see specifications in the circuit diagram) is not exceeded by the electronically regulated circulating pump or a relevant approval has been issued by the pump manufacturer.

⚠ Note

The high-efficiency pumps (UPH) are supplied with the relevant coupling relay for connecting and operating the electronically regulated circulating pump.

⚠ CAUTION

It is not permitted to connect more than one electronically regulated circulating pump via a single relay output.

5 Special accessories

5.1 Room temperature controller RTM Econ

With cooling using panel heating/cooling systems, regulation is carried out according to the room temperature and humidity measured by the room controllers.

The minimum possible cooling water temperature is calculated from the room temperature and humidity measured in the reference room. The control response of the cooling system is influenced by the currently measured room temperature and the set room set temperature.

Fig. 5.1: Room temperature controller

5.2 Building management system

The heat pump manager can be connected to a building management system network by adding the relevant extension interface. Observe the specifications detailing connection and parameterisation in the supplementary installation instructions of the extension interface.

The following network connections can be made on the heat pump manager:
- EIB, KNX
- Ethernet
- Modbus TCP
- Modbus RTU

6 Technical device information

Nominal voltage	230 V AC 50 Hz
Voltage range	195 to 253 V AC
Power consumption	50 VA
Fusing / RCD type	C13A / A
Fuse breaking capacity	≤1.5 kA
Switching capacity of outputs	See circuit diagram (depending on the output)
Degree of protection according to EN 60529	IP 20
Operating temperature	0 °C to +35 °C
Storage temperature	-15 °C to +60 °C
Weight	12.6 kg with packaging 9.5 kg without packaging
Mode of action	Type 1.C
Degree of soiling	2
Heat/fire resistance	Category D
Temperature for ball pressure test	125 °C

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budur. Αυτό σημαίνει αξιοπιστία. 그것은 바로 신뢰성입니다.
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luotettavuutta. هذه هي الوثوقية See on usaldusväärsus.
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