Operating manual

REMKO Smart-Control Touch

For the heat pump series
HTS, WKF, WKF Duo, WKF-compact, WKF NEO, LWM, LWM Duo

From software version 4.28

Specialist and user manual

0203-2022-07 Edition 6, en_GB

Read the instructions prior to performing any task!

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 operating manual

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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.
- 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 manufactured ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

The units are designed depending on the model and equipment exclusively as a control unit for the heat pump and the heating system.

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 or inside the heat pump casing. 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 Technical data

Series		Smart Control Touch
Power supply	V	+12 V DC
Enclosure class	IP	30
Power consumption	mW	< 100
Max. cable length	m	15
Recommended cable	mm^2	2 x 0,5
Dimensions		
Height	mm	150
Width	mm	80
Depth	mm	35
Environment		
Ambient temperature	°C	0-70
Air humidity	% rH	0-95 (relative) non-condensing

We reserve the right to make technical changes for the purpose of technical advancement.

3 Operation - General notes

Overview of the controls

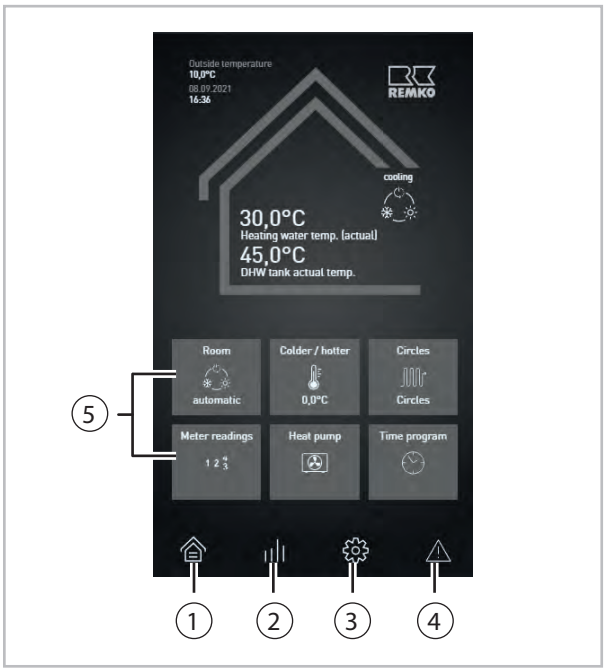

Fig. 1: Smart-Control Touch start screen

1: Overview (quick access)
2: Information (quick access)
3: Settings (quick access)
4: Messages (warnings, information notes and errors)
5: Widgets

Function display

Unit operation is intuitive and self-explanatory via the plain text display on the user interface on the touch display. No buttons are required to adjust and change parameters. Instead, this takes place by touching the surface of the controller at the appropriate points. The installation of further functions such as Smart-Count or Smart-Web is possible through the installation of further supplementary software available as an accessory.

When in an idle state, the display is inactive. The basic display only starts once the display is touched and it always starts with the user level.

Selecting user/expert mode

You can access the expert level by touching the REMKO logo in the upper right corner of the display. After entering the password (0321) using the +/- combination and then touching the "Next" and "OK" displays, the expert level is enabled.

> **! NOTICE!**
>
> The settings in expert mode may only be configured by REMKO-authorised installers!

Basic display

The basic display shows the average outside temperature as well as the time and date. You can also find the selected operating mode and the temperatures for the heating and hot water in the overview.

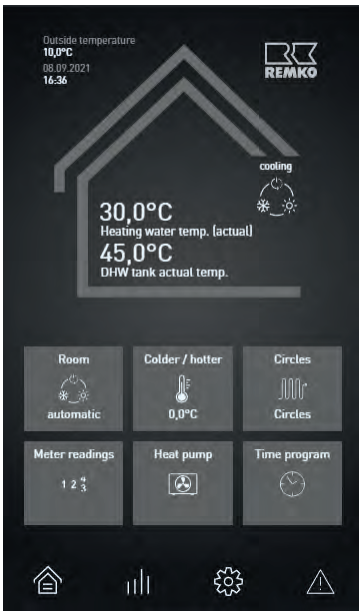

Fig. 2: Overview

The tiles (widgets) in the basic display can be changed individually for each operator. To change a widget, you must adjust the displays in the "Settings" level. The adjustments can be made in the level described below.

- Settings
- Basic settings
- Display
- Home Parameters
- Widget 1-6

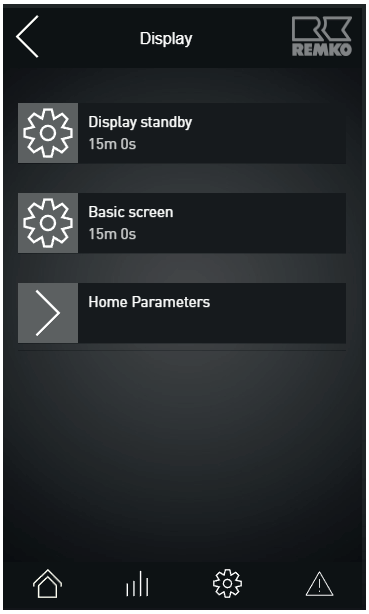

Fig. 3: Menu items in the "Settings-Display" level

Menu Home Parameters

Fig. 4: "Home Parameters" menu item

The individual widgets can be adjusted with the following parameters:

- Heat pump
- Meter readings
- Chimney sweep (only in bivalent operation)
- Weather (only with Smart-Web)
- Circuits
- Drinking water mode
- Time program
- Storage tank target temperature
- Room climate mode
- Emergency-heat operation
- Away mode
- Party mode
- User profile
- Colder/warmer

4 Operation - User level

4.1 Menu structure

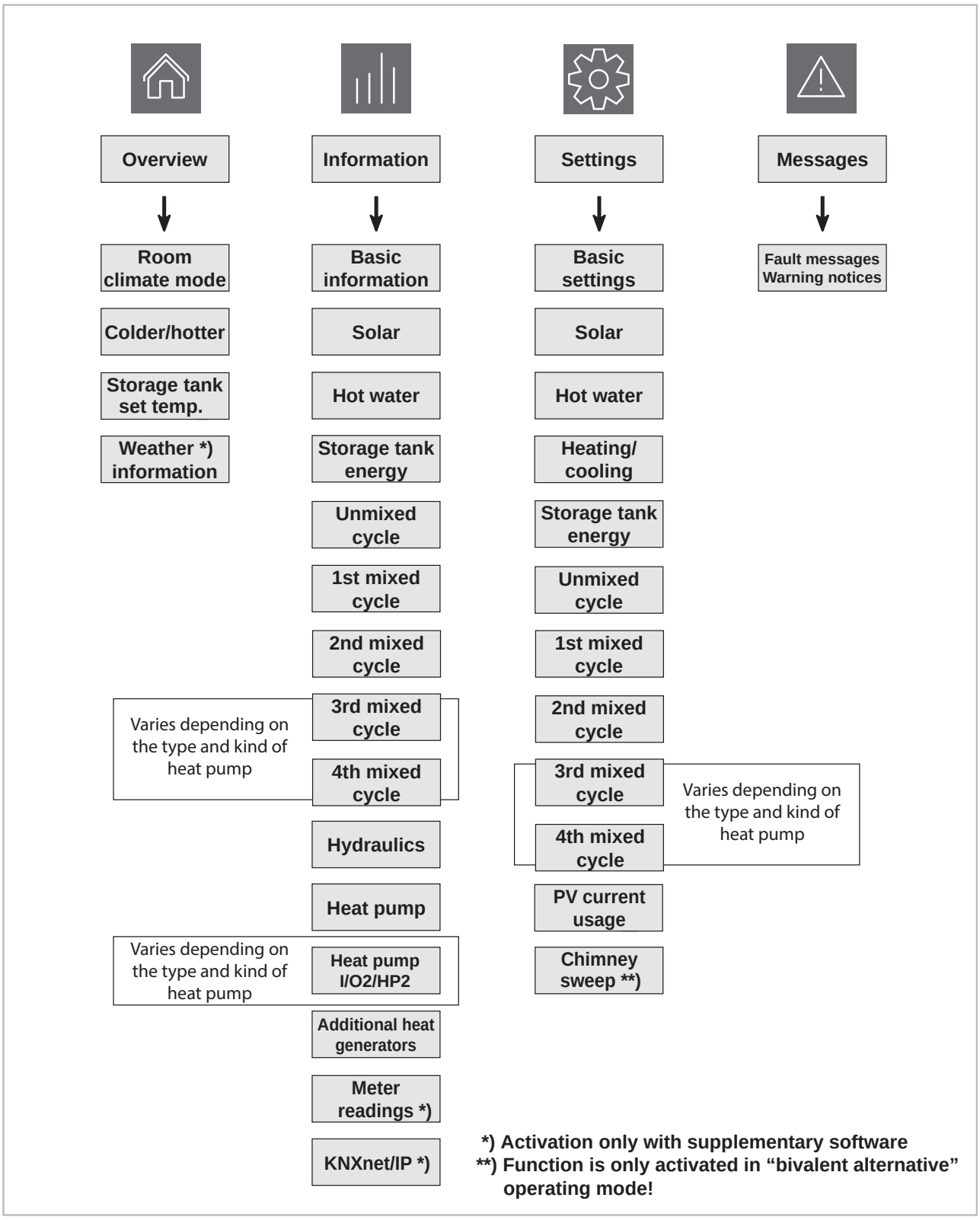

Fig. 5: User level menu structure overview

User level structure

In the “User” level, you have access to the following submenus:

- Overview
- Information
- Settings
- Messages

These first level menus can be operated by users and experts alike. Some menu items and parameters are only visible in expert mode. They may only be adjusted by specialists!

Overview

The indicators on the overview are the parameters that are often used.

Information

You can obtain basic information about the complete system here.

Here, you will also find corresponding information on the respective parameters enabled, such as hot water, heating circuits or the hydraulics and their operating statuses.

Settings

In the settings menu item it is possible to adjust parameters for the enabled components. Here, you have the option of adjusting e.g. heating curves in accordance with the requirements the REMKO heat pump user. Relevant points that affect the safety of the complete system are only to be changed by a specialist. These are only enabled in the expert level following entry of the password.

Messages

The "messages" level displays warnings, faults and malfunctions.

In the following, you will find tables containing the respective parameters for the available settings.

You can find numerous info texts about the individual level menu items on your Smart-Control Touch controller.

The following diagrams and explanations relate to the full menu structure, which my differ from the menu structure of your own controller. Only the relevant menu items and parameters are displayed by the Smart Control, depending upon which heat generators and functions you have activated. For example, if no heating cycle has been activated, the corresponding menu items and parameters are not displayed.

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"Information" menu item - User

This menu contains information about the current operating status of the system.

Level 2 menu item	Level 3 menu item	Level 4 menu item
Basic information	Status	Detected unit
		Current operating mode
		Previous operating mode
		Room climate
		Party mode
		Away mode
		Anti-freeze protection
		Smart-Count *)
		Smart-Web *)
		Smart-Com *)
		Activation code
	Date/Time	Time
		Date
		Time zone
	Version number	Software control panel
		Software
		Software I/O 2
		Software date
		Software date I/O 2
		Revision
		Revision
	Network (USB)	USB interface
		IP address
		Subnet
		Gateway
		MAC address
		WLAN status
	Licence information	---

*) These functions are only possible with the requisite supplementary software, available to purchase

"Information" menu item (continued) - User

Level 2 menu item	Level 3 menu item
Solar	Pump A01
	Pump control signal A40
	Collector temp. S01
	Lower storage tank temp. S02
	Storage tank charging status
	Current output
Hot water	HW request
	HW storage tank set temperature
	HW storage tank actual temperature S08
	Hygiene function
	Circulation request S05
	Circulation set temperature
	Circulation actual temperature S05
	Circulation pump A04
Stored energy	Stored energy
	Buffer tank temp. S09
	Hot water temperature (setpoint)
Source buffer (buffer for operation with MWL heat pump)	Operating mode
	Set temperature
	Actual temperature
Unmixed cycle	Operating mode
	Set temperature
	Actual temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature

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"Information" menu item (continued) - User

Level 2 menu item	Level 3 menu item
1st mixed cycle	Operating mode
	Set temperature
	Actual temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
2nd mixed cycle	Operating mode
	Set temperature
	Actual temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
3rd mixed cycle *)	Operating mode
	Set temperature
	Actual temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
4th mixed cycle *)	Operating mode
	Set temperature
	Actual temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - User

Level 2 menu item	Level 3 menu item
Hydraulics	Demand
	Hot water temperature (setpoint)
	Hot water temperature (actual value)
	Power, thermal
	Changeover valve A11 2nd heat generator)
	Changeover valve cooling A14
	Pump speed rel. A43
	Valve source
	Pump speed rel. A43.2 *)
	Pump speed rel. HP 1 *)
	Pump speed rel. (LWM - HP 2 *))
Heat pump (I/O 1/HP 1 *)	Heat pump status
	Remaining idle time
	Defrost status
	Compressor status
	Compressor frequency
	Fault status
	Fault code (outside) *)
	Fault code (inside) *)
	Target temperature
	Enable signal
	Disable compressor
	Heat pump mode
	Disable signal
	Fan status
	Air temperature
	Power, thermal
	Power, electric

*) This menu item may differ from your display depending on the type and model of the heat pump.

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"Information" menu item (continued) - User

Level 2 menu item	Level 3 menu item
Heat pump (I/O 2/HP 2) *)	Heat pump status
	Remaining idle time
	Defrost status
	Compressor status
	Compressor frequency
	Fault status
	Fault code (outside)
	Fault code (inside)
	Target temperature
	Enable signal
	Disable compressor
	Heat pump mode
	Disable signal S16, energy supplier cut-off
	Fan status
	Source pomp
	Air temperature, outdoor unit
Auxiliary heat generator	Heat generator status
	Heat generator stage *)
	Potential-free output A32
	Potential-free output A32.2
	Potential-free output A33 *)
	Potential-free output A33.2 *)
	Enable electric heater (HP 1)*)
	Enable electric heater (HP 2)*)

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
Meter readings *)	Solar	Current output
		Solar yield
	Heat pump	Thermal power, heat pump
		Thermal energy, heat pump
		Electrical power, heat pump
		Electrical energy, heat pump
		Output, environment
		Environmental energy
	Household	Current household output
		Household energy
	Photovoltaic	Photovoltaic output
		Photovoltaic yield
		Feed-in power
		Feed-in
		Private consumption power
		Energy consumption
	Heating and Hot water	Heating energy
		Hot water energy
		Cooling energy
		Hot water meter
	CO_2 savings	CO_2 savings
		Equivalent in trees
KNXnet/IP *)	IP of the KNX interface	
	MAC for the KNX interface	
	Adress for the interface	
	Physical adress	
	KNX connection status	
	Programming mode	
	Programming mode (interface)	
	Application version	

*) Activation only with supplementary software

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"Settings" menu item ⚙ - User

In this menu you can configure the settings. For example, you can adjust hot water and heating temperatures or change time settings.

Level 2 menu item	Level 3 menu item	Level 4 menu item
Basic settings	Language/Time	Time synchronisation
		Date
		Time
		Date format
		Time format
		Language
		Time zone
	Display	Display brightness
		Display off
		Default screen
		Home Parameters
	Interfaces/ Network (USB)	Network
		DHCP via input
		DHCP using
		Lokal IP Address
		Subnet mask
		Gateway Address
		Network (USB)
		USB-Ethernet
		Authentication
		SSID
		Password
		Status
		DHCP using
		Lokal IP Address
		Subnet mask
		Gateway Address
	Interfaces/KNXnet/IP	Smart-Com
		Programming mode

"Settings" menu item ⚙ (continued) - User

In this menu you can configure the settings. For example, you can adjust hot water and heating temperatures or change time settings.

Level 2 menu item	Level 3 menu item	Level 4 menu item
Solar	Storage tank	Solar set temperature
Hot water	Domestic hot-water heating	Storage tank set temperature
		Mode
		Time program A
		Time program B
		Time program C
		Tolerance during ECO operation
		1 x hot water heating
	Circulation	Circulation set temperature
		Time program
Heating/cooling	Mode	Room climate mode
		User profile
		Away mode
		Party mode
		Difference from cooling limit
		Difference from heating limit
	Building adaptation	Standard outside temperature (heating)
		Standard outside temperature (cooling)
Source storage tank	Operating mode	
	Fixed value	

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"Settings" menu item ⚙ (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
Unmixed cycle	Operating mode	
	Heating cycle mode	
	Fixed value	
	Heating curve adjustment	
	Cooling cycle mode	
	Fixed value	
	Cooling curve adjustment	
	Time program A	
	Time program B	
	Time program C	
	Time program function	
	Room temperature reduction	
	Room temperature increase	
	Room unit	
	Room sensor address	
	Easy Control EC-1 address	
	Room temperature influence	

"Settings" menu item ⚙ (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
1st mixed cycle	Operating mode	
	Heating cycle mode	
	Fixed value	
	Heating curve adjustment	
	Cooling cycle mode	
	Fixed value	
	Cooling curve adjustment	
	Time program A	
	Time program B	
	Time program C	
	Time program function	
	Room temperature reduction	
	Room temperature increase	
	Room unit	
	Room sensor address	
	Easy Control EC-1 address	
	Room temperature influence	

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"Settings" menu item ⚙ (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
2nd mixed cycle	Operating mode	
	Heating cycle mode	
	Fixed value	
	Heating curve adjustment	
	Cooling cycle mode	
	Fixed value	
	Cooling curve adjustment	
	Time program A	
	Time program B	
	Time program C	
	Time program function	
	Room temperature reduction	
	Room temperature increase	
	Room unit	
	Room sensor address	
	Easy Control EC-1 address	
	Room temperature influence	

"Settings" menu item ⚙ (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
3rd mixed cycle *)	Operating mode	
	Heating cycle mode	
	Fixed value	
	Heating curve adjustment	
	Cooling cycle mode	
	Fixed value	
	Cooling curve adjustment	
	Time program A	
	Time program B	
	Time program C	
	Time program function	
	Room temperature reduction	
	Room temperature increase	
	Room unit	
	Room sensor address	
	Easy Control EC-1 address	
	Room temperature influence	

*) This menu item may differ from your display depending on the type and model of the heat pump.

REMKO Smart-Control Touch

"Settings" menu item ⚙ (continued) - User

Level 2 menu item	Level 3 menu item	Level 4 menu item
4th mixed cycle *)	Operating mode	
	Heating cycle mode	
	Fixed value	
	Heating curve adjustment	
	Cooling cycle mode	
	Fixed value	
	Cooling curve adjustment	
	Time program A	
	Time program B	
	Time program C	
	Time program function	
	Room temperature reduction	
	Room temperature increase	
	Room unit	
	Room sensor address	
	Easy Control EC-1 address	
	Room temperature influence	
Heat pump	Graduated tariff	Number of power tariffs
		Time field Tariff 1-9
		Power tariff 1-9
	PV current Consumption	Power tariff
		Feed-in tariff
		Personal use tariff
Chimney sweep **)	Mode	
	HW valve	
	Run-time in minutes	

*) This menu item may differ from your display depending on the type and model of the heat pump.

**) Function is only activated in "bivalent alternative" operating mode!

"Messages" menu item

This menu displays warnings, faults, operating statuses or messages.

If this “Messages” symbol should light up in red or yellow in the basic display, it is necessary to check what type of message is displayed in the message level. In order to call up the message level, it is only necessary to touch the symbol.

Possible messages can be found in the chapter "Error messages on the Smart Control".

Differentiation is made here between numbers that start with 6000, which are to be considered pure operating messages and do not constitute a fault.

Numbers that start with 7000 are relevant faults, which require the heat pump to be switched off.

Numbers that start with 8000 are warnings and indicate that the heat pump must be checked!

4.2 Setting the heating/cooling operating mode

Heating curve heating circuit mode

The heating curve can be adjusted in three points, according to the structure and location-related conditions of the building:

Base point:

The base point corresponds to the minimum set temperature of the heating water at an outside temperature of 20 °C. If the heating is too cold at relatively high outside temperatures (trans-seasonal period), the base point should be set higher.

Standard inlet temperature:

The standard inlet temperature corresponds to the set temperature of the heating water at the standard outside temperature in the building location. If the heating is not warm enough at low outside temperatures, the standard inlet temperature should be increased.

Standard outside temperature:

The standard outside temperature is dependent on the regional location of the building and must be set according to the region.

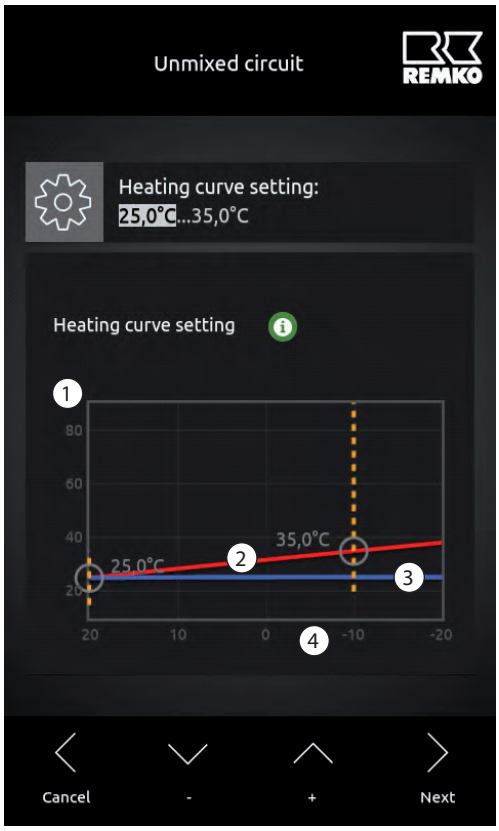

Fig. 6: Heating curve adjustment

1: Temperature of the heating water in °C
2: Inlet temperature heating curve
3: Return flow heating curve
4: Outside temperature in °C

For optimal configuration of the heating curve parameters, the heating load calculation and/or energy consumption must be taken into account.

Differences between the installed parameters and the design of the actual building can cause the heat pump to run inefficiently.

Setting the heating curve:

1. Base point

In this level, select the circuit to be changed and select the parameter "Heating curve settings". Change the value with "+/-" under the heating curve schematic and select the next value with "Next". Then confirm with "OK".

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Heating curve adjustment	
↓	
Setting the base point	

2. Standard inlet temperature

The standard inlet temperature is set using the same procedure.

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Heating curve adjustment	
↓	
Setting the standard inlet temperature	

3. Set the standard outside temperature

The standard outside temperature can be changed in the user and expert level.

Here, it is possible to set the standard outside temperature to the respective value for heating and cooling mode.

The standard outside temperature is only changed once here for each active heating circuit. After changing this parameter, the value is automatically accepted with all active heating circuits.

For optimal configuration of the heating curve parameters, the heating load calculation and/or energy consumption must be taken into account.

Differences between the installed parameters and the design of the actual building can cause the heat pump to run inefficiently.

Access this parameter as follows:

User level	Expert level
↓	
Settings	
↓	
Heating/cooling	
↓	
Building adaptation	
↓	
Standard outside temperature	

Fixed-value-control heating circuit mode

Specify the set temperature for fixed value control. The heating circuit is kept permanently at this temperature in fixed value control. When doing so, a tolerance of approx. 2 Kelvin is possible.

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Fixed value	

Operating the heating cycle with a fixed value is not recommended, as it will cause the heat pump to operate inefficiently.

The mixed heating cycles each require a supply and return probe! These probes are included in the scope of supply of the mixed REMKO heating circuit groups.

Activation of the cooling function via the unmixed circuit

This is where you can select between the different **cooling circuit modes**. The choice is between control according to the set **"cooling curve"** and **"fixed value regulation"**.

Activation of the cooling function can take place in every heating circuit via the operating mode.

Menu item	Parameter	Factory setting
Cooling circuit mode with underfloor system active	Cooling curve	**According to design**
	Fixed value	**8 °C - 35 °C**

Cooling curve cooling circuit mode

The cooling curve can be set at three points, depending on the structural and location-related conditions of the building:

Base point:

The base point corresponds to the minimum set temperature of the cooling water at an outside temperature of 20 °C. If the cooling is too cold at relatively high outside temperatures (trans-seasonal period), the base point should be set higher.

Standard inlet temperature:

The inlet temperature corresponds to the set temperature of the cooling water at the standard outside temperature in the building location. If the cooling is not warm enough at low outside temperatures, the inlet temperature should be increased.

Standard outside temperature:

The standard outside temperature is dependent on the regional location of the building and must be set according to the region.

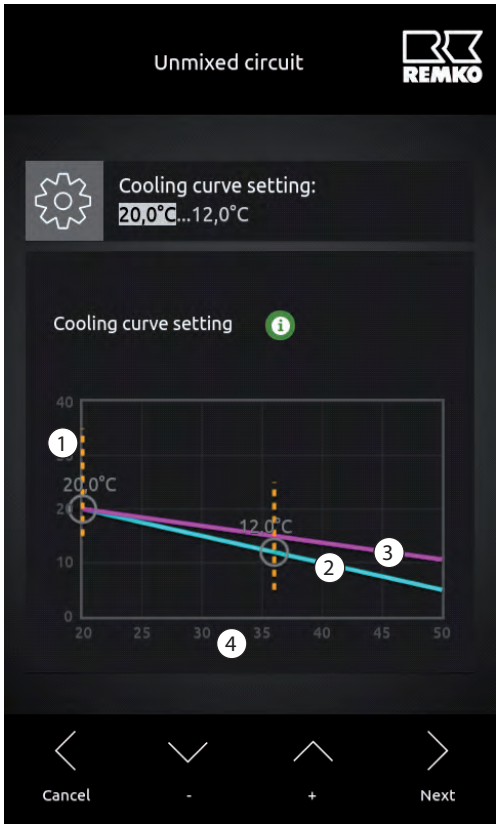

Fig. 7: Cooling curve adjustment

1: Temperature of the cooling water in °C
2: Cooling curve, inlet temperature
3: Cooling curve, return flow
4: Outside temperature in °C

For optimal configuration of the cooling curve parameters, the cooling load calculation and/or energy consumption must be taken into account.

Differences between the installed parameters and the design of the actual building can cause the heat pump to run inefficiently.

Setting cooling curve:

1. Base point

In the "Settings" level, select the circuit to be changed and the parameter "Cooling curve setting". Change the value with "+/-" under the cooling curve schematic and select the next value with "Next". Then confirm with "OK".

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Cooling curve adjustment	
↓	
Setting the base point	

2. Standard inlet temperature

Change the value of the setting of the inlet temperature and the outside temperature with "+/-" and select the next value with "Next". Then confirm with "OK".

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Cooling curve adjustment	
↓	
Setting the standard inlet temperature	

A cooling function via the cooling curve setting is only enabled by REMKO if the corresponding humidity probe is installed!

> **! NOTICE!**
> At least one dew point monitor with corresponding probes should be installed to protect the system in the case of panel heating.

3. Set the standard outside temperature

The standard outside temperature can be changed in the user and expert level.

Here, it is possible to set the outside temperature to the respective value for heating and cooling mode.

Cooling is active if the stored cooling limit is exceeded by the set value.

Example: The room target temperature is 20 °C and the set cooling limit is 4 K. If a temperature of over 24 °C is now measured at the external probe, cooling will be active. The inlet temperature falls as the outside temperature rises, up to the value assigned for the outside temperature. When setting the cooling curve, make sure that the dew point is not undershot with panel heating (e.g. if the underfloor system is to be cooled). REMKO recommends protecting the system with dew point monitors in the case of panel heating.

Access this parameter as follows:

User level	Expert level
↓	
Settings	
↓	
Heating/cooling	
↓	
Building adaptation	
↓	
Standard outside temperature	

Fixed value control cooling circuit mode

Specify the set temperature for fixed value control. With this, the cooling circuit regulates to an averaged temperature. The value is calculated from the inlet temperature plus the return temperature divided by two.

User level	Expert level
↓	
Settings	
↓	
e.g. unmixed cycle	
↓	
Fixed value	

> ℹ
> *Operating the cooling cycle with a fixed value is not recommended, as it will cause the heat pump to operate inefficiently and there is a risk that the dew point will be undershot.*

Cooling is active if the set cooling limit is exceeded by the set value. Example: The room target temperature is 20 °C and the set cooling limit is 4 K. If a temperature of over 24 °C is now measured at the external probe, cooling will be active. The cooling function is immediately active if the operating mode is set from "Automatic" to "Cooling".

Hydraulic circuit diagram

Heating and hot water functions, including Smart-Serv emergency heating coil.

The sample hydraulic schematic shown below is only to be used as a planning aid, and does not replace an installation drawing! Technical modifications reserved!

The design and planning of customer-provided hydraulic systems must be performed by a specialist installer!

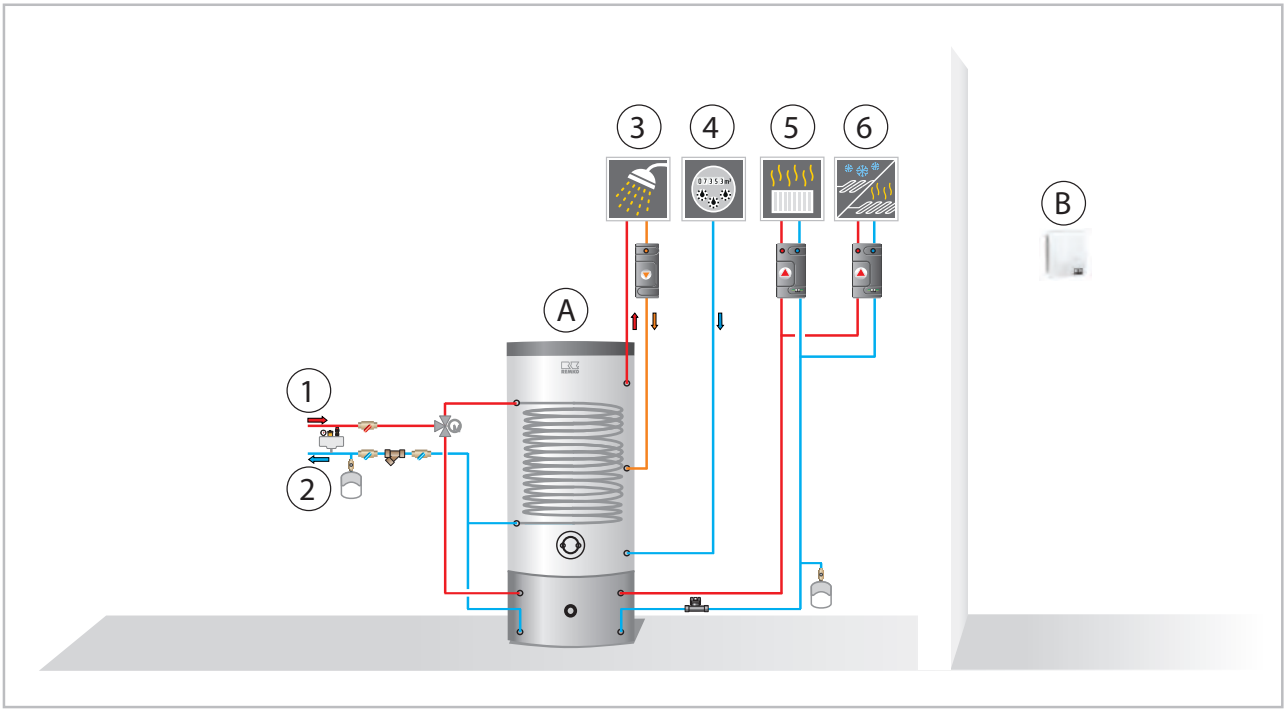

Fig. 8: Example hydraulic diagram

A: Combination buffer tank
B: Room temperature/humidity probe
1: Heat pump inlet line
2: Heat pump return flow
3: Hot water
4: Cold water
5: Unmixed cycle
6: Mixed cycle

CAUTION

During cooling mode via the underfloor/panel heating system, make sure that the dew point is not undershot. REMKO recommends installing dew point probes in conjunction with one (max. five probes for dew point monitoring) or more dew point monitors.

Cooling via an underfloor/panel heating system is technically only released in conjunction with a room temperature/moisture probe from REMKO.

4.3 Changeover summer/ winter mode

During the usual heating period (from around October to the start of May of the following year), the REMKO heat pump must provide constant heat for the heating operation.

The heat pump, circulation pumps and heating surfaces are constantly in operation, in order to keep all rooms at the desired temperature. However, during the summertime warming up the heating surfaces is not necessary.

So-called summer mode exists to prevent the heat pump continuing to produce heat to warm the building during the warmer months. With this mode, the heat pump is controlled such that the heating operation and circulation pumps for the heating surfaces only go into operation if a certain temperature limit is undershot at the external probe.

The basic setting of the REMKO Smart-Control Touch controller is 16 degrees if no adjustment has been made to the desired room set temperature. The adjustment of this summer/winter changeover is described in the following steps.

Heating limit

The heating limit of the Smart-Control Touch controller is coupled with the room set temperature via the parameter "Difference from heating limit".

In the following diagram, the possible value setting for the different building types is to be determined. The information in the diagram pertains to a room set temperature of 20 °C.

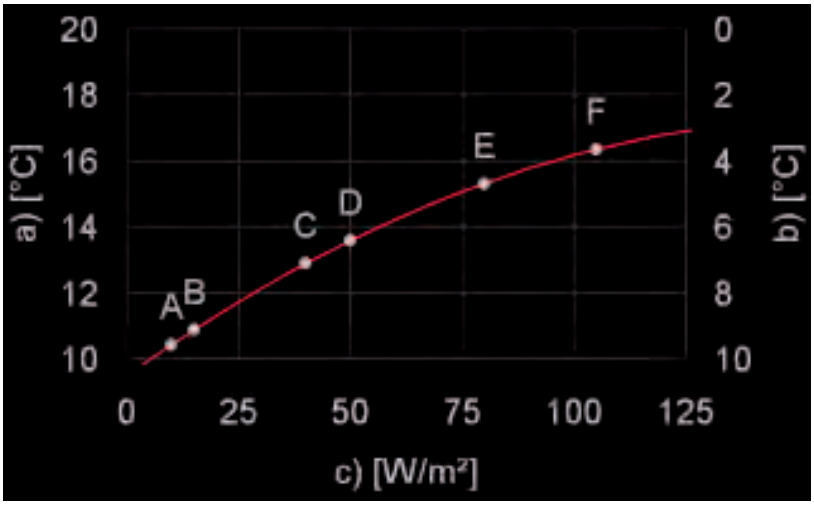

Fig. 9: Setting the heating limit

a: Heating limit temperature
b: Difference from heating limit
c: Energy requirement of the building
A: Zero-energy house
B: 3-litre house
C: Low-energy house
D: ENEV-WSchV 1995 [German Heat Protection Ordinance]
E: Year of construction 1977 to 1995
F: Before 1977

Room target temperature

In order to specify the point of the summer/winter changeover, you must first determine the value "colder/hotter" because this is coupled with the heating limit temperature (see "Example setting").

This parameter is used to calculate the desired target room temperature.

The value 0.0 °C gives a desired room temperature of 20 °C.

This value can be changed from -10 °C (room target temperature +10 °C) to +10 °C (room target temperature +30 °C).

upon

Overview (user)
↓
Colder/hotter

Heating limit (summer mode)

The value required to switch off heating operation of the heat pump can be set in the parameter "Difference from heating limit".

Overview (user)
↓
Settings
↓
Heating/cooling
↓
Mode
↓
Difference from heating limit

The value 0.0 K means that the heat pump only switches to summer mode if the room set temperature, e.g. 20 °C, is reached at the external probe. Please note the diagram in Fig. 9 for information on which value should be set here.

Example setting:

The "colder/hotter" parameter (room target temperature) of +2 °C means a desired room temperature of +22 °C.

The "Difference from heating limit" parameter (summer/winter changeover) of 7.0 K means heating operation of the heat pump up to an outside temperature of +15 °C

(+22 °C room target temperature - 7.0 K "colder/hotter" = +15 °C).

The heating operation is interrupted when the desired heating limit is exceeded and after the time stored for the building time constant has passed. Only the hot water supply is still active.

The building time constant is preset by REMKO in the factory at 10 hours. Setting the building time constant should prevent the heat pump from cycling. The better the building standard, the longer the possible setting of the building time constant. This value can only be changed in the expert level and must generally only be saved once.

Expert level (password protected)
↓
Settings
↓
Heating/cooling
↓
Building adaptation
↓
Difference from heating limit

4.4 WLAN function

Installation and setup of the WLAN function

System requirements

The following system requirements are necessary to complete the WLAN function installation successfully:

- REMKO Smart Control Touch controller with software version 4.25 or higher
- JavaScript/HTML5-capable web browser (version not more than two years old)
- Broadband internet connection of at least 10 mbit/s
- The WLAN router must support the WPA 2 encryption/security standard

Installation in house

The central controller for the REMKO heat pump via a smart phone or other mobile devices can be installed virtually anywhere in the building.

The connection requires a router which is connected directly to the control unit of the heat pump via WLAN.

! NOTICE!

The router must be set up by a specialist

The WLAN function is limited to the in-house WLAN network of the operator only. Outside the WLAN network of the in-house router, access to the heat pump parameters is not possible.

Fig. 10: External access

1: Router (example)

2: REMKO Smart-Control Touch

REMKO Smart-Control Touch

Installation on mobile devices

To be able to use the WLAN function of the REMKO heat pump, a connection must be established with the WLAN-capable in-house router. This is only possible at the expert level. To do so, touch the REMKO logo in the upper right corner of the display.

After activating the expert level by touching the corresponding REMKO logo, a password is required. To enter the password at this level, use "+/-" and then proceed to the next item with "Next". Once you have finished entering the REMKO default password "0321", confirm the input with "OK".

Overview (user)
↓
Touch the REMKO logo
↓
Enter Expert password
↓
Overview (expert)
↓
Default settings
↓
Interfaces
↓
Network

Setting up the network

In the authentication parameter, now select the appropriate parameter for your WLAN network. Note that the REMKO Smart-Control Touch only supports the WPA 2 encryption/security standard. For this purpose you must know the name of your WLAN network and the corresponding password. Once you have selected, for example "WPA2 personnel", you must then enter the SSID (name of the WLAN network).

Network
↓
Authentication
↓
WPA2 Personal
WPS Push Button
WPS Pin
SERVICE HOTSPOT
↓
e.g. WPA2 Personal

For authentication via the "WPS Push Button" the internal house router must have a push button function.

To select the "SSID" parameter, scroll down the screen in the "Network" level.

Then enter the name of your network and the password. When doing so you can choose between upper and lower case letters, numbers or special characters such as ?/&/%. To do so, press the "Selection" icon multiple times. Select "Next" to proceed to the next letter or number for entry. The "Delete" icon removes incorrectly stored entries.

Network
↓
SSID
↓
Selection
Enter network name
Enter password

Once you have entered the network name or password correctly, confirm the input with the "OK" icon.

Touching the "Cancel" icon completely cancels the entry.

Once all parameters for your WLAN network have been correctly saved, the heat pump will connect with your network. You can check this via the "Network USB" parameter. "Connect" must be displayed here (if all data is correct). To view the heat pump data on a smartphone, tablet or laptop, make a note of the IP address that comes after the identifier "connected".

Overview (expert)
↓
Information
↓
Basic information
↓
Network (USB)
connected (IP address)

WLAN function

After the parameters described above have been set, activation is complete. To return to the basic display, exit the parameter level via the arrow at the top left or touch the "Overview" symbol.

> *To connect the REMKO Smart-Control Touch with your router, the WLAN network must be received by the controller with sufficient signal strength!*

When you enter the IP address provided in your web browser, you access the basic display of your heat pump controller. You now have the option of controlling the relevant operating parameters for the user and expert level of your REMKO heat pump via a PC, laptop or smartphone.

This function is available to you constantly whilst connected to the WLAN network of your router. Outside of your network, you have no further access to the parameters of your controller.

If you require the option of accessing the parameters of your controller outside of the actual WLAN network, this is only possible with the REMKO Smart-Web function.

This supplementary software can be additionally ordered and installed on the Smart-Control Touch controller.

Please observe the separate operating instructions for the REMKO Smart-Web function in this regard.

4.5 Emergency-heat operation

To activate Emergency-heat operation, the parameter "Heat pump" must be changed from "activated" to "deactivated". This is only possible at the expert level. To do so, touch the REMKO logo in the upper right corner of the display.

After activating the expert level by touching the corresponding REMKO logo, a password is required. To enter the password at this level, use "+/-" and then proceed to the next item with "Next". Once you have finished entering the REMKO default password "0321", confirm the input with "OK".

Now the expert level is enabled.

Overview (user)
↓
Touch the REMKO logo
↓
Enter Expert password
↓
Overview (expert)

In the expert level, the parameter "Heat pump" can be accessed as follows:

Overview (expert)
↓
Settings
↓
Default settings
↓
System configuration
↓
Heat pump (activated)

Then deactivate the heat pump by touching the parameter "Heat pump" and changing from "activated" to "deactivated" via the indicators "V and Λ".

Then confirm the change with "OK".

System configuration
↓
Touch "Heat pump activated"
↓
Heat pump deactivated

With the deactivation of the heat pump, the Emergency-heat operation via the auxiliary heating is active.

To return to the basic display, touch the REMKO logo.

From software version 4.28 it is possible to save the emergency-heat operation as a widget in the start menu. You will find a description of this in the chapter "Operation - General information".

5 Operation - Expert level

5.1 Menu structure

Structure of the expert level

The following information is primarily directed at specialist personnel.

> **! NOTICE!**
>
> The settings in expert mode may only be configured by REMKO-authorised installers!

You can access the expert level by touching the REMKO logo in the upper right corner of the display.

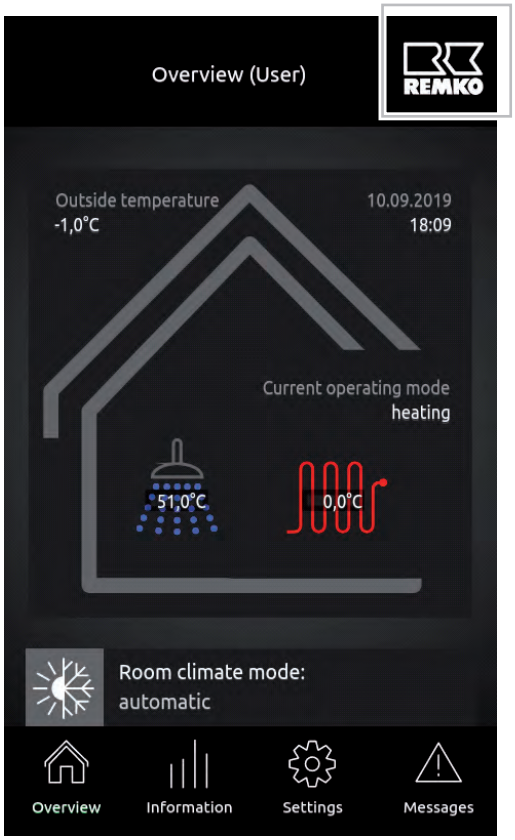

Fig. 11: Access to the expert level

> *The expert level is password-protected. After entering the **password "0321"** the authorised specialist accesses the expert level without confirming the code.*
>
> *This password is only valid if it has not already been changed!*

After activating the expert level by touching the corresponding REMKO logo, a password is required. To enter the password at this level, use "+/-" and then proceed to the next item with "Next". Once you have finished entering the password (0321), confirm the input with "OK".

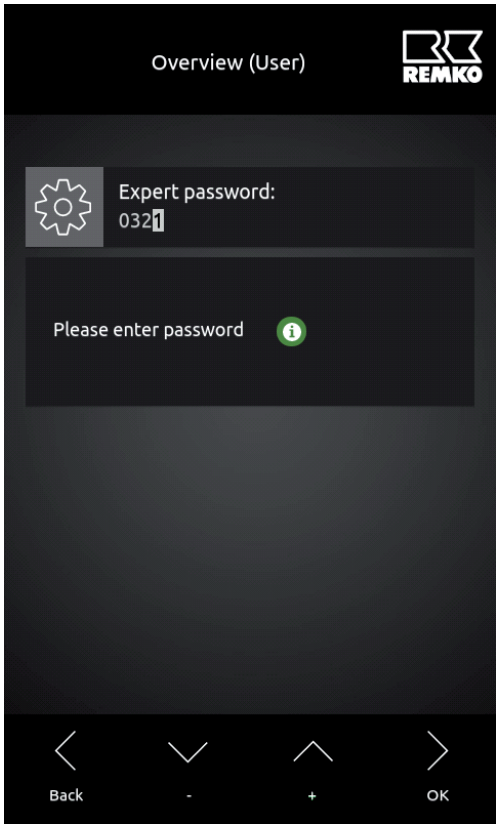

Fig. 12: Password input

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After entering the password, the basic display of the expert level appears.

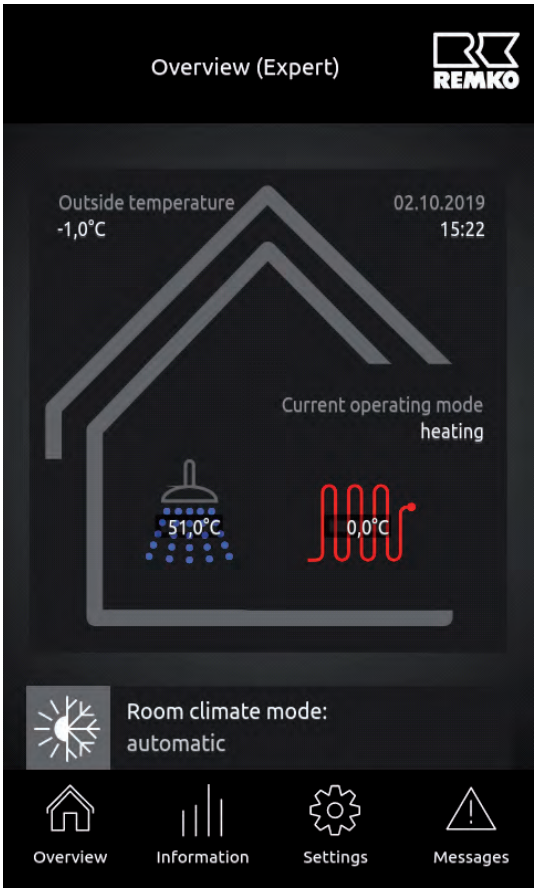

Fig. 13: "Expert" basic display

In the "Expert" level, you have access to the following submenus:

- Overview
- Information
- Settings
- Messages

These first level menus can only be operated by experts.

Overview

The indicators on the overview are the parameters that are often used.

Information

You can obtain basic information about the complete system here.

Here, you will also find corresponding information on the respective parameters enabled, such as hot water, heating circuits or the hydraulics and their operating statuses.

Settings

In the settings menu item it is possible to adjust parameters for the enabled components. Here, you have the option of adjusting e.g. heating curves in accordance with the requirements the REMKO heat pump user. Relevant points that affect the safety of the complete system are only to be changed by a specialist. These are only enabled in the expert level following entry of the password.

Messages

The "messages" level displays warnings, faults and malfunctions.

In the following, you will find tables containing the respective parameters for the available settings.

You can find numerous info texts about the individual level menu items on your Smart-Control Touch controller.

The following diagrams and explanations relate to the full menu structure, which my differ from the menu structure of your own controller. Only the relevant menu items and parameters are displayed by the Smart Control, depending upon which heat generators and functions you have activated. For example, if no heating cycle has been activated, the corresponding menu items and parameters are not displayed.

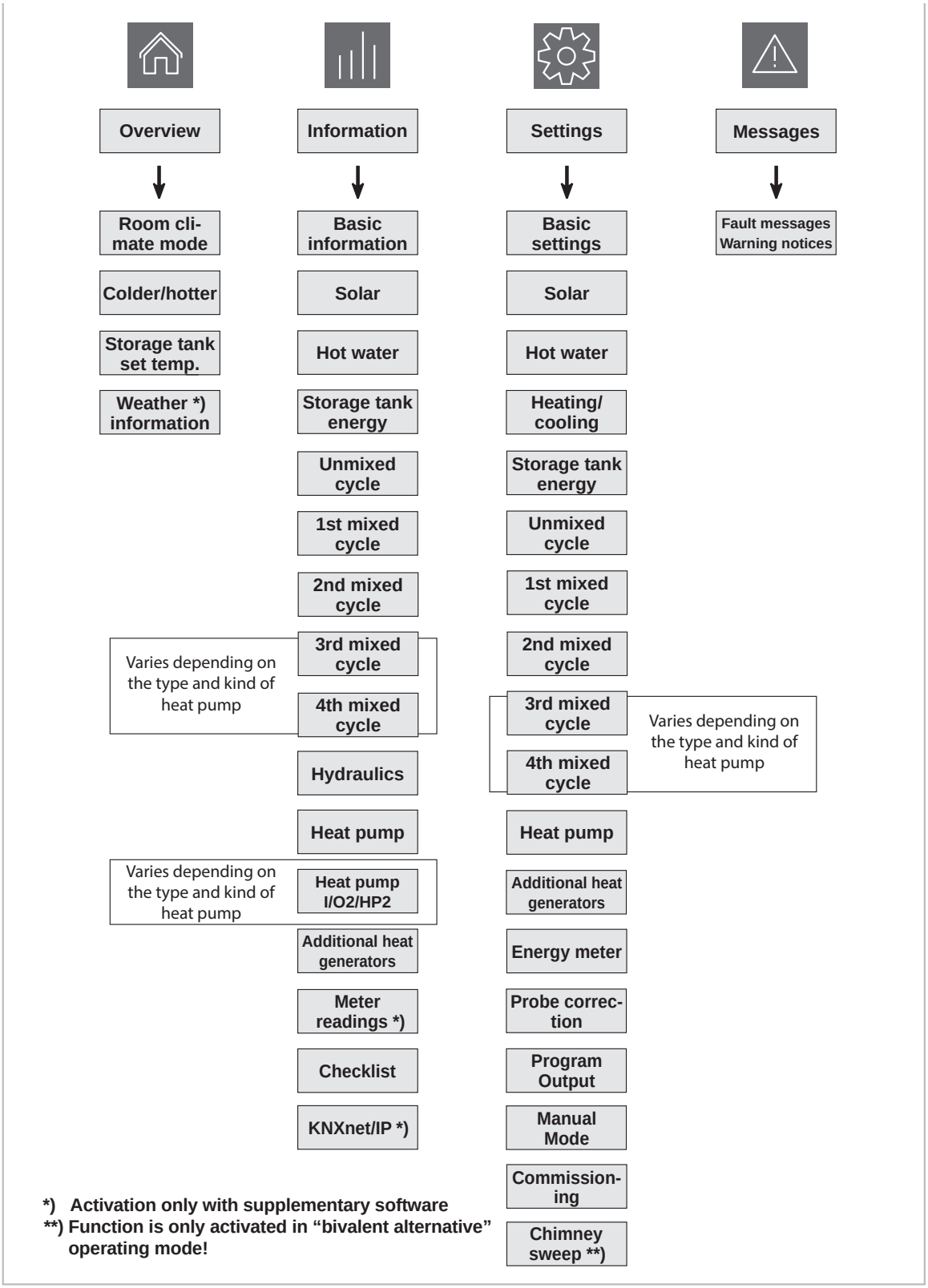

Fig. 14: Expert level menu structure overview

"Information" menu item - Expert

This menu contains information about the current operating status of the system.

Depending on the heat pump installed and the design, individual parameters may vary from version to version.

Level 2 menu item	Level 3 menu item	Level 4 menu item
Basic information	Status	Detected unit
		Control algorithm
		Current operating mode
		Previous operating mode
		Room climate
		Party mode
		Away mode
		Anti-freeze protection
		Power consumption L
		Mains frequency
		Cascade
		Smart-Count *)
		Smart-Web *)
		Smart-Com *)
		Activation code
		Serial number
		I/O module status
		SG-Ready operating state
	Date/Time	Time
		Date
		Time zone

*) These functions are only possible with the requisite supplementary software, available to purchase

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Basic information (continued)	Version number	Hardware control panel
		Hardware
		Software control panel
		Software
		Software (I/O 2) *)
		Linux Kernel Control Panel
		Linux Kernel
		HP edition *)
		µPC software date *)
		µPC version 2 *)
		µPC software date 2 *)
		EEPROM edition
		Revision
		Inverter model
		Revision
		Inverter model
	Network	DHCP mode
		IP address
		Subnet
		Gateway
		MAC address
	Network (USB)	USB interface
		IP address
		Subnet
		Gateway
		MAC address
		WLAN status
		Signal quality
		Network (BSSID)
	Licence information	---

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Solar	Pump A01	
	Pump control signal A40	
	Collector temperature S01	
	Storage tank temperature, bottom S02	
	Storage tank charging status	
	Current output	
	Solar yield	
	Inlet temperature S03	
	Return temperature S04	
	Medium flow rate S23	
	Stored energy	

Level 2 menu item	Level 3 menu item
Hot water	Hot water demand
	Hot water storage tank target temperature
	Hot water storage tank actual temperature S08
	Changeover valve A10
	Hot water energy
	Hygiene function
	Medium flow rate S27
	Tap volume
	Circulation request S05
	Circulation set temperature
	Circulation actual temperature S05
	Circulation pump A04
Stored energy	Stored energy
	Buffer tank temperature S09
	Hot water temperature (setpoint)

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Sources Buffer tank	Operating mode
	Set temperature
	Actual temperature
	Temperature of buffer tank
Unmixed cycle	Operating mode
	Set temperature
	Actual temperature
	Inlet temperature
	Return temperature
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
	Pump speed rel. A42
	Medium flow rate
	Current output
	Heating energy
	Cooling energy
	Status
	Setpoint adjustment
	Mode
	Status
	Setpoint adjustment

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
1st mixed cycle	Operating mode
	Set temperature
	Actual temperature
	Inlet temperature S12
	Return temperature S11
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
	Pump speed rel. A41
	Heating cycle mixer position A20/A21
	Medium flow rate
	Current output
	Heating energy
	Cooling energy
	Status
	Setpoint adjustment
	Mode
	Status
	Setpoint adjustment

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
2nd mixed cycle	Operating mode
	Set temperature
	Actual temperature
	Inlet temperature S06
	Return temperature S14
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
	Pump speed rel. A46
	Heating cycle mixer position A24/A25
	Medium flow rate
	Current output
	Heating energy
	Cooling energy
	Status
	Setpoint adjustment
	Mode
	Status
	Setpoint adjustment

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
3rd mixed cycle *)	Operating mode
	Set temperature
	Actual temperature
	Inlet temperature S12.2
	Return temperature S11.2
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
	Pump speed rel. A41.2
	Heating cycle mixer position A20/A21.2
	Medium flow rate
	Current output
	Heating energy
	Cooling energy
	Status
	Setpoint adjustment
	Mode
	Status
	Setpoint adjustment

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
4th mixed cycle *)	Operating mode
	Set temperature
	Actual temperature
	Inlet temperature S06.2
	Return temperature S14.2
	Room set temperature
	Room actual temperature
	Room humidity
	Dew point
	Mixed outside temperature
	Pump speed rel. A46.2
	Heating cycle mixer position A24/A25.2
	Medium flow rate
	Current output
	Heating energy
	Cooling energy
	Status
	Setpoint adjustment
	Mode
	Status
	Setpoint adjustment
Screed drying function	Screed drying mode
	Momentary set temperature
	Remaining time
	Elapsed time
Hydraulics	Demand
	Hot water temperature (setpoint)
	Hot water temperature (actual value)
	Power, thermal
	Inlet temperature S13 (HP 1)
	Inlet temperature S13.2
	Inlet temperature (HP 2)
	Inlet temperature mixed

*) This menu item may differ from your display depending on the type and model of the heat pump.

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"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Hydraulics (continued)	Return temperature S15 (HP 1)
	Return temperature S15.2
	Return temperature (HP 2)
	Return temperature, mixed
	Set medium flow rate
	Actual medium flow rate S24 (HP 1)
	Setpoint medium flow rate I/O 2
	Actual medium flow rate S24.2 *)
	Actual medium flow rate (HP 2)*)
	Pump speed rel. A43 (HP 1)
	Pump speed rel. A43.2 *)
	Pump speed rel. (HP 2)*)
	Changeover valve 2nd heat generator A11
	Changeover valve A14
	Bypass valve position
	Inlet temperature source
	Outlet temperature source
	Actual medium flow rate
	Valve source
	Source flow switch
	Pump speed rel.
	Passive cooling
	Passive cooling
	Changeover valve, cooling
	Min. PV surplus
	PV current usage
	Cont. Hot water offset
	Cont. heating offset
	Short-term hot water offset
	Short-term heating offset

*) Only LWM and WKF Duo

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Heat pump (I/O/HP 1)	Heat pump status
	Remaining idle time
	Defrost status
	Compressor status
	Fault status
	Target temperature
	Enable signal
	Disable compressor
	Heat pump mode
	Disable signal
	Suction gas temperature
	Heat gas temperature
	Power, electrical
	Power, thermal
	Max. inlet temperature
	Compressor starts
	Run-time (hours)
Heat pump (I/O 2/HP 2)*)	Heat pump status
	Sub-status
	Remaining idle time
	Defrost status
	Compressor status
	Fault status
	Error code
	Fault code (outside)
	Fault code (inside)
	Target temperature
	Enable signal
	Disable compressor
	Heat pump mode
	Disable signal
	Max. frequency
	Compressor frequency
	Max. inlet temperature

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*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Heat pump (I/O 2/HP 2)*) (continued)	Fan status
	Fan speed
	Fan speed
	Fan speed
	Source pump
	Source pump speed
	Air temperature, outdoor unit
	Water inlet temperature
	Water outlet temperature
	Inlet temperature source
	Outlet temperature source
	Liquid temperature
	Suction gas temperature
	Matrix temperature
	Heat gas temperature
	Liquid temperature
	Inverter temperature
	Evaporation temperature
	Evaporation pressure
	Condenser temperature
	Condenser pressure
	4-way valve
	Test mode, outdoor unit
	Current consumption
	Inverter power consumption
	Inverter power consumption
	Expansion valve position
	Degree of opening of the expansion valve
	Overheating
	Overheating setpoint

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Heat pump (I/O 2/HP 2)*) (continued)	Compressor starts
	Run-time (hours)
	Last inverter error
	Envelope status
	Inverter status
	Inverter status
	Anti-freeze protection status

Level 2 menu item	Level 3 menu item	Level 4 menu item
Auxiliary heat generator	Heat generator status	
	Heat generator stage	
	Enable 2nd heat generator	
	Potential-free output A32	
	Potential-free output A33	
	Potential-free output A33.2	
	Enable electric heater (HP 1)	
	Enable electric heater (HP 2)*)	
	Enable	
	Enable time (hours)	

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Meter readings *) **) *) This menu item may differ from your display depending on the type and model of the heat pump. **) Activation only with supplementary soft-ware	Solar	Current output
		Solar yield, day
		Solar yield, week
		Solar yield, month
		Solar yield, year
		Solar yield
	Heat pump	Thermal power, heat pump
		Thermal energy (day)
		Thermal energy (week)
		Thermal energy (month)
		Thermal energy (year)
		Thermal energy, heat pump
		Output, environment
		Environmental energy (day)
		Environmental energy (week)
		Environmental energy (month)
		Environmental energy (year)
		Environmental energy
		Electrical power, heat pump
		Electrical energy (day)
		Electrical energy (week)
		Electrical energy (month)
		Electrical energy (year)
		Electrical energy, heat pump
		Coefficient of performance

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Meter readings (continued)	Household	Current household output
		Household energy (day)
		Household energy (week)
		Household energy (month)
		Household energy (year)
		Household energy
	Photovoltaic	Photovoltaic output
		PV yield (day)
		PV yield (week)
		PV yield (month)
		PV yield (year)
		Photovoltaic yield
		Feed-in power
		Feed-in (day)
		Feed-in (week)
		Feed-in (month)
		Feed-in (year)
		Feed-in
		Private consumption power
		Private consumption (day)
		Private consumption (week)
		Private consumption (month)
		Private consumption (year)
		Energy consumption
	Heating & hot water	Heating energy
		Cooling energy
		Hot water energy
		Hot water meter
	CO_2 savings	CO_2 savings
		Equivalent in trees

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Checklist	Collector temp. S01
	Lower storage tank temp. S02
	Inlet temperature S03
	Return temp. S04
	Circulation actual temperature S05
	Circulation request S05
	Inlet temperature S06
	Inlet temperature source
	Inlet temperature source
	Refrigerant temperature S07 *)
	Refrigerant temperature S07.2 *)
	Hot water storage tank actual temperature S08
	Buffer tank temperature S09
	Outside temperature S10
	KNX outside temperature
	Return temperature S11
	Return temperature S11.2 *)
	Inlet temperature S12
	Inlet temperature S12.2 *)
	Inlet temperature S13 (HP 1)
	Inlet temperature S13.2 *)
	Return temperature S14
	Return flow temperature S14.2 *)
	Return temperature S15 (HP 1)
	Return temperature S15 (HP 2)*)
	Disable signal S16
	Fault status S20
	Compressor status S21
	Defrost status S22
	Medium flow rate S23
	Actual medium flow rate S24 (HP 1)
	Actual medium flow rate S24.2 *)

*) Only LWM and WKF Duo

"Information" menu item (continued) - Expert

Level 2 menu item	Level 3 menu item
Checklist (continued)	Impulse counter status S25
	Impulse counter status S26
	Medium flow rate S 27
	Impulse counter S 28
	Impulse counter S 29
KNXnet/IP *)	IP of the KNX interface
	MAC for the KNX interface
	Address of the interface
	Physical address
	KNX connection status
	Programming mode
	Programming mode interface
	Application version

*) Activation only with supplementary software

REMKO Smart-Control Touch

"Settings" menu item ⚙ - Expert

In this menu you can configure the settings. For example, you can adjust hot water and heating temperatures or change time settings.

Depending on the heat pump installed and the design, individual parameters may vary from version to version.

Level 2 menu item	Level 3 menu item	Level 4 menu item	Level 5 menu item
Basic settings	Language/Time	Time synchronisation	
		Date	
		Time	
		Date format	
		Time format	
		Language	
		Temperature unit	
		Decimal separator	
		Volume unit	
		Power unit	
		Time zone	
		Mains frequency	
	Display	Display brightness	
		Display off	
		Default screen	
		Expert password	
		Address	
		Unit	
		Restart	
		Empty cache	

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item	Level 5 menu item
Basic settings	Interfaces	Network	DHCP via input
			Use DHCP
			Local IP address
			Subnet mask
			Gateway address
		Network (USB)	USB Ethernet
			Authentication
			SSID
			Password
			Status
			Use DHCP
			Local IP address
			Subnet mask
			Gateway address

REMKO Smart-Control Touch

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item	Level 5 menu item
Basic settings (continued)	Interfaces (continued)	KNXnet/IP	Smart Com
			Protocol
			Interface search
			IP of the KNX interface
			Re-couple interface
			Physical address
			Address of the interface
			Tunnel address 1
			Tunnel address 2
			Tunnel address 3
			Tunnel address 4
			Tunnel address 5
			Programming mode
		Serial interface 2	Search indoor units
			Indoor units search
			Reset malfunction
		Automatic mode	Normal room temperature
			Difference from cooling limit
			Difference from heating limit
		System configuration	Emergency heating operation
			Heat pump
			Source configuration
			Auxiliary heat generator
			Auxiliary heat generator
			PV current usage
			Smart-Heating mode
			Graduated tariffs
			Domestic hot-water heating
			Hot water circulation
			Hygiene function
			Hygiene function
			Passive cooling

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item	Level 5 menu item
Basic settings (continued)	Interfaces (continued)	System configuration (continued)	Buffer tank sources
			Unmixed circuit
			1st mixed cycle
			2nd mixed cycle
			3rd mixed cycle *)
			4th mixed cycle *)
			System separation FBH
			Setpoint increase
			Separate cooling buffer *)
			Solar plant
			Solar collector cooling function
			Solar pump kick function
			Solar HM
			Stored energy
			Potential-free inputs
			Enable
			Heating/cooling
			Use of photovoltaics
			Anti-freeze protection primary circuit
			Mixing ratio
			Anti-freeze protection secondary circuit
			Mixing ratio

*) This menu item may differ from your display depending on the type and model of the heat pump.

REMKO Smart-Control Touch

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Solar	Collector	Max. temperature
		Max. temperature hysteresis
		Min. temperature
		Min. temperature hysteresis
		Switch-on difference
		Switch-off difference
	Storage tank	Solar set temperature
		Solar set temperature hysteresis
		Collector cooling function ON temp.
		Storage tank max. temp.
	Pump setting	Pump type
		Solar speed control system
		Asynchronous speed control system
		Min. pump speed A01
		Max. pump speed A01
		Min. pump speed A40
		Max. pump speed A40
		Min. pump speed (%)
		Max. pump speed (%)
	Heat meter	Heat carrier medium
		Mixing ratio
		Impulse rate for medium flow rate
		Manual medium flow rate
	Pump kick function	Time program

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Hot water	Domestic hot-water heating	Compressor restriction
		Storage tank set temperature
		Mode
		Time program A
		Time program B
		Time program C
		Tolerance during ECO operation
		Speed in hot water A43
		Pump parallel operation
		Switch-off delay Hot water valve
		1 x hot water heating
	Circulation	Circulation type
		Circulation set temperature
		Target temperature hysteresis
		Time program
		Running time
		Disable switch-on
	Hygiene function	Set temperature
		Day of activation
		Time of activation
		Inspection time
		Storage tank volume
		Pulse valency
		Max. duration until cancellation
		Circulation pump
		2. Heat generator

"Settings" menu item ⚙ (continued) - Expert

Factory-set circulation switching times

Designation	Value range	Factory setting	Customer system
Time program	Mon-Sun	Mon-Sun	00:00-24:00

Hygiene function

Designation	Value range	Factory setting	Customer system
Set temperature	"60 °C - 75 °C"	60 °C	
Day of activation	Mon-Sun	Monday	
Time of activation	Hrs/Mins	20:00	
Inspection time	24 h - 72 h	72 h	
Storage tank volume	0 - 1000 l	300 l	
Pulse valency	0.0 - 20.0 l/imp	3.1 l/imp	
Max. duration until cancella-tion	15 - 120 min	60 min	
Circulation pump	Activated / Deactivated	Deactivated	

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Heating/cooling	Heat requirement calculation	Pump speed A43
	Building adaptation	Building time constant
		Standard heating load
		Standard outside temp. (Heating)
		Standard outside temp. (Cooling)
		Max. cooling down (outside temperature ref.)
		Inertia of the heating curve
	Mode	Room climate mode
		User profile (time program A,B,C)
		Stand-By time program
		Away mode
		Party mode
		Difference from heating limit
		Difference from cooling limit
		Heating temperature reference
		Heating temperature reference
	Screed drying function **After the screed function we recommend ending this function manually by deactivating it!**	Floor screed function status
		Start/end temperature
		Max. temperature
		Heating phase increment
		Drying time
		Time at high temperature
		Incremental cooling phase
		Time at low temperature

Floor screed function

Designation	Value range	Factory setting	Customer syst.
Floor screed function status	Activated / Deactivated	Deactivated	
Start/end/max/temp.	"10 °C-50 °C"/"20 °C-50 °C"	20 °C/35 °C	
Incremental heating phase	0.0 K - 10.0 K	5.0 K	
Drying time	0.0 h - 192 h	24 h	
Time at high temp.	0.0 h - 192 h	96 h	
Incremental cooling phase	0.0 K - 10.0 K	5.0 K	
Time at low temp.	0.0 h - 192 h	24 h	

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item
Stored energy	Excessive temperature in the heating buffer
	Excessive temperature in the hot water buffer
	Internal pump A43
Buffer tank sources	Operating mode
	Fixed value
	Increase defrost period
	Switching hysteresis
	Switching hysteresis mode
Unmixed cycle	Operating mode
	Heating circuit mode
	Fixed value
	Heating curve adjustment
	Cooling cycle mode
	Fixed value
	Cooling curve adjustment
	Time program A
	Time program B
	Time program C
	Time program function
	Room temperature reduction
	Room temperature increase
	Room unit
	Room sensor address
	Easy Control 1 address
	Room temperature influence
	Dew point monitoring
	Dew point distance
	Pump type
	Min. pump speed A42 (%)
	Max. pump speed A42 (%)
	Min. pump speed A42 (rpm)
	Max. pump speed A42 (rpm)
	Pump during cooling

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item
1st mixed cycle	Operating mode
	Heating circuit mode
	Fixed value
	Heating curve adjustment
	Cooling cycle mode
	Fixed value
	Cooling curve adjustment
	Time program A
	Time program B
	Time program C
	Time program function
	Room temperature reduction
	Room temperature increase
	Room unit
	Room sensor address
	Easy Control 1 address
	Room temperature influence
	Dew point monitoring
	Dew point distance
	Max. inlet temperature
	Delta T regulation
	Delta T setpoint
	Pump type
	Min. pump speed A41 (%)
	Max. pump speed A41 (%)
	Min. pump speed A41 (rpm)
	Max. pump speed A41 (rpm)
	Mixing valve running time

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item
2nd mixed cycle	Operating mode
	Heating circuit mode
	Fixed value
	Heating curve adjustment
	Cooling cycle mode
	Fixed value
	Cooling curve adjustment
	Time program A
	Time program B
	Time program C
	Time program function
	Room temperature reduction
	Room temperature increase
	Room unit
	Room sensor address
	Easy Control 1 address
	Room temperature influence
	Dew point monitoring
	Dew point distance
	Max. inlet temperature
	Delta T regulation
	Delta T setpoint
	Pump type
	Min. pump speed A46 (%)
	Max. pump speed A46 (%)
	Min. pump speed A46 (rpm)
	Max. pump speed A46 (rpm)
	Mixing valve running time

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item
3rd mixed cycle *)	Operating mode
	Heating circuit mode
	Fixed value
	Heating curve adjustment
	Cooling cycle mode
	Fixed value
	Cooling curve adjustment
	Time program A
	Time program B
	Time program C
	Time program function
	Room temperature reduction
	Room temperature increase
	Room unit
	Room sensor address
	Easy Control 1 address
	Room temperature influence
	Dew point monitoring
	Dew point distance
	Max. inlet temperature
	Delta T regulation
	Delta T setpoint
	Pump type
	Min. pump speed A41.2 (%)
	Max. pump speed A41.2 (%)
	Min. pump speed A41.2 (rpm)
	Max. pump speed A41.2 (rpm)
	Mixing valve running time

*) This menu item may differ from your display depending on the type and model of the heat pump.

REMKO Smart-Control Touch

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item
4th mixed cycle *)	Operating mode
	Heating circuit mode
	Fixed value
	Heating curve adjustment
	Cooling cycle mode
	Fixed value
	Cooling curve adjustment
	Time program A
	Time program B
	Time program C
	Time program function
	Room temperature reduction
	Room temperature increase
	Room unit
	Room sensor address
	Easy Control 1 address
	Room temperature influence
	Dew point monitoring
	Dew point distance
	Max. inlet temperature
	Delta T regulation
	Delta T setpoint
	Pump type
	Min. pump speed A46.2 (%)
	Max. pump speed A46.2 (%)
	Min. pump speed A46.2 (rpm)
	Max. pump speed A46.2 (rpm)
	Mixing valve running time

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Unmixed & mixed circuit switching times

Designation	Factory setting	Customer system
Time program A	Mo-Su 00:00-24:00	
Time program B	Mo-Fr 05:00-23:00	
	Sa-Su 06:00-23:00	
Time program C	Mo-Fr 05:00-23:00	
	Sa-Su 06:00-23:00	

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Heat pump	Basic settings	Activating DT regulation
		Temperature difference setpoint
		Min. pump speed A43
		Max. pump speed A43
		Cooling pump actuation
		Oil return function
		Oil return timer
		Min. medium flow rate source
		Manual defrosting
		Manual defrosting
		Oil return function
		Oil return timer
		Manual defrosting (HP 1)
		Manual defrosting (HP 2/µ PC2)
		Reset counter
		Reset malfunction
	Bivalence point	Bivalence point, heating
		Bivalence point, hot water
	Output restriction	Time program
		Output restriction heating (normal)
		Output restriction heating (reduced)
		Output restriction cooling (normal)
		Output restriction cooling (reduced)
		Output restriction hot water (normal)
		Output restriction hot water (reduced)
		Compressor restriction hot water (normal)
		Compressor restriction hot water (reduced)

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Heat pump (continued)	Graduated tariff	Number of power tariffs
		Time field Tariff 1-9
		Power tariff 1-9
		Continuous hot water influence
		Short-term hot water influence
		Short-term heating influence
		Continuous heating influence
	PV current usage	PV personal use variant
		Power tariff 1
		Feed-in tariff
		Personal use tariff
		Factor for PV power surplus
		Damping electrical power
		Hot water setpoint
		Setpoint heating
		Setpoint cooling
		Continuous heating influence
		PV cooling limit distance
		Minimum running time for cooling (PV)
		Target feed-in
		Hysteresis
	SG-Ready *)	Setpoint heating (Status 3)
		Setpoint heating (Status 4)
		Setpoint cooling (Status 3)
		Setpoint cooling (Status 4)
		Hot water setpoint (Status 3)
		Hot water setpoint (Status 4)
		Enable E-heater (Status 4)

*) SG-Ready parameters from software version 4.28

"Settings" menu item ⚙ (continued) - Expert

Level 2 menu item	Level 3 menu item	Level 4 menu item
Auxiliary heat generator	Operating mode	
	3-speed heating element	
	Electrical heating element output	
	Response to disable signal S16	
	Min. pump speed A 43 (%)	
	Max. pump speed A 43 (%)	
	Internal pump A43	
	Supply changeover valve A11	
Energy meter	Heat pump (electrical)	Meter constant S25
	Domestic supply meter (elec.)	Meter constant S26
	Reference meter (electrical)	Meter constant S26
	Feed meter (electrical)	Meter constant S29
	Photovoltaics (yield)	Meter constant S28
Probe correction	Outdoor temp. S10	
	Inlet temp. S13 (HP 1)	
	Inlet temp. S13.2 (HP 2)*)	
	Return temp. S15 (HP 1)	
	Return temp. (HP 2)*)	
Program output	Alarm messages selection	

*) This menu item may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Manual mode - actuator relay test

With this menu item, you can control the individual actuators (pumps, mixing valves, etc.) manually or specify values of probes for checking.

Parameter		Selection parameter
Manual mode		Permanent / Deactivated / 15 minutes
Solar cycle pump	A 01	Auto / On / Off
Speed	A 01	10 % - 100 %
Pump 1st mixed heating cycle	A 02	Auto / On / Off
Pump 3rd mixed heating cycle *)	A 02.2	Auto / On / Off
Pump unmixed heating cycle	A 03	Auto / On / Off
Hot water circulation pump	A 04	Auto / On / Off
Changeover valve, hot water	A 10	Auto / On / Off
Changeover valve heat generator	A 11	Auto / On / Off
Pump 2nd mixed heating cycle	A13	Auto / On / Off
Pump 4th mixed heating cycle *)	A13.2	Auto / On / Off
Changeover valve, cooling	A14	Auto / On / Off
Mixing valve 1st mixed heating cycle	A20/A21	Open / Stop / Close / Auto
Mixing valve 3rd mixed heating cycle *)	A20.2/21.2	Open / Stop / Close / Auto
Bypass valve	A22/A23 and A22.2/A23.2	Open / Stop / Close / Auto
Mixing valve 2nd mixed heating cycle	A24/A25	Open / Stop / Close / Auto
Mixing valve 4th mixed heating cycle *)	A24.2/A25.2	Open / Stop / Close / Auto
Compressor forced off	A30	Auto / On / Off
Heat pump operating mode	A31	Auto / On / Off
Auxiliary heat generator	A32 and A32.2	Auto / On / Off
Enable heat pump	A33	Auto / On / Off
Alarm signal	A34	Auto / Closed / Open
Solar cycle pump status	A40	Auto / On / Off
Speed	A40	Auto / On / Off
Pump 1st mixed heating cycle	A41	Auto / On / Off
Speed	A41	Auto / On / Off
Pump 3rd mixed heating cycle *)	A41.2	Auto / On / Off
Speed	A41.2	Auto / On / Off
Pump unmixed heating cycle	A42	Auto / On / Off
Speed	A42	Auto / On / Off

*) This parameter may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Manual mode - actuator relay test (continued)

Parameter		Selection parameter
Pump indoor unit (top - HP 1)	A43	Auto / On / Off
Speed (HP 1)	A43	Auto / On / Off
Pump indoor unit (bottom - HP 2)*)	A43.2	Auto / On / Off
Speed (HP 2)*)	A43.2	Auto / On / Off
Heat pump request		Auto / On / Off
Target temperature	A44	Auto / On / Off
Pump 2nd mixed heating cycle	A46	Auto / On / Off
Speed	A46	Auto / On / Off
Pump 4th mixed heating cycle *)	A46.2	Auto / On / Off
Speed	A46.2	Auto / On / Off

Manual mode - probes

Parameter		Selection parameter
Manual mode		Permanent / Deactivated / 15 minutes
Collector temperature	S01	Probe value / stipulated value
Temperature	S01	-60°C - 250°C
Storage tank temperature, lower	S02	Probe value / stipulated value
Temperature	S02	-60°C - 250°C
Solar inlet temperature	S03	Probe value / stipulated value
Temperature	S03	-60°C - 250°C
Solar return temperature	S04	Probe value / stipulated value
Temperature	S04	-60°C - 250°C
Circulation temperature	S05	Probe value / stipulated value
Temperature	S05	-60°C - 250°C
Circulation paddle switch	S05	Off / On / Auto
2nd mixed heating cycle inlet temperature	S06	Probe value / stipulated value
Temperature	S06	-60°C - 250°C
4th mixed heating cycle inlet temperature *)	S06.2	Probe value / stipulated value
Temperature	S06.2	-60°C - 250°C
Refrigerant temperature *)	S07	Probe value / stipulated value
Temperature	S07	-60°C - 250°C
Refrigerant temperature *)	S07.2	Probe value / stipulated value
Temperature	S07.2	-60°C - 250°C

"Settings" menu item ⚙ (continued) - Expert

Manual mode - probes (continued)

Parameter		Selection parameter
Storage tank temperature, upper	S08	Probe value / stipulated value
Temperature	S08	-60°C - 250°C
Storage tank temperature, centre	S09	Probe value / stipulated value
Temperature	S09	-60°C - 250°C
Outside temperature	S10	Probe value / stipulated value
Temperature	S10	-60°C - 250°C
1st mixed heating cycle return temperature	S11	Probe value / stipulated value
Temperature	S11	-60°C - 250°C
3rd mixed heating cycle return temp. *)	S11.2	Probe value / stipulated value
Temperature	S11.2	-60°C - 250°C
1st mixed heating cycle inlet temperature	S12	Probe value / stipulated value
Temperature	S12	-60°C - 250°C
3rd mixed heating cycle inlet temp. *)	S12.2	Probe value / stipulated value
Temperature	S12.2	-60°C - 250°C
Heat generator (indoor unit) inlet temperature (HP 1)	S13	Probe value / stipulated value
Temperature (HP 1)	S13	-60°C - 250°C
Heat generator (indoor unit) inlet temperature (HP 2)*)	S13.2	Probe value / stipulated value
Temperature (HP 2)*)	S13.2	-60°C - 250°C
2nd mixed heating cycle return temperature	S14	Probe value / stipulated value
Temperature	S14	-60°C - 250°C

*) This parameter may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Manual mode - probes (continued)

Parameter		Selection parameter
4th mixed heating cycle return temp. *)	S14.2	Probe value / stipulated value
Temperature *)	S14.2	-60°C - 250°C
Heat generator return temperature (HP 1)	S15	Probe value / stipulated value
Temperature (HP 1)	S15	-60°C - 250°C
Heat generator return temperature (HP 2)*)		Probe value / stipulated value
Temperature (HP 2)*)		-60°C - 250°C
Energy supplier (public utility) external block	S16	On / Off / Auto
Heat pump fault	S20	On / Off / Auto
Compressor active	S21	On / Off / Auto
Defrosting (thawing) active	S22	On / Off / Auto
Medium flow rate solar	S23	Probe value / stipulated value
Medium flow rate	S23	0 l/min - 100 l/min"
Medium flow rate (indoor unit) (HP 1)	S24	Probe value / stipulated value
Medium flow rate (HP 1)	S24	0 l/min - 100 l/min"
Medium flow rate (indoor unit) (HP 2)*)	S24.2	Probe value / stipulated value
Medium flow rate (HP 2)	S24.2	0 l/min - 100 l/min"
Medium flow rate flow sensor	S27	Probe value / stipulated value
Medium flow rate flow sensor	S27	0 l/min - 100 l/min"

*) This parameter may differ from your display depending on the type and model of the heat pump.

"Settings" menu item ⚙ (continued) - Expert

Commissioning

Information on the "Commissioning" menu item is described in the separate "Commissioning wizard" chapter on the next pages.

"Settings" menu item ⚙ (continued) - Expert

Chimney sweep *)

Level 2 menu item	Level 3 menu item
Mode	Normal operation/test mode
Hot water valve	Deactivated/activated
Running time	15 - 90 minutes

*) Function is only activated in "bivalent alternative" operating mode!

"Messages" menu item ⚠ ⚠ ⚠ - Expert

This menu displays warnings, warning information and error messages.

If this "Messages" symbol should light up in red or yellow in the basic display, it is necessary to check which fault, warning or note is displayed on the message level. In order to call up the message level, it is only necessary to touch the symbol.

5.2 Commissioning wizard

When starting the controller for the first time the commissioning assistant is started in order to implement the basic programming of the existing system. After commissioning has been fully completed, the default set of parameters is enabled. During the first heating period, the thermal characteristics of the system should be observed, and the parameters optimised as necessary.

The following parameters are enabled according to the installed heat pump and components.
The parameters of the installation level must be enabled on the heat pump and a number of these must be adjusted to the site configuration.

Setting the country

Please confirm this parameter in order to load the country-specific settings. The selection of the country determines the setting for the date format, units of measurement and temperature limits. All settings can be modified at a later date.

Setting country and country-specific settings

Menu item	Parameter	Factory setting
Country	Germany	**Germany**
	Österreich	
	Schweiz	
	United States	
	United Kingdom	
	Nederland	
	Belgique	
	Luxembourg	
	France	
	Espana	
	Portugal	
	Italia	
	Greece	
	Danmark	
	Norge	
	Sverige	
	Suomi	
	Polska	
	Cesko	
	Slovensko	

Setting the language

All menu entries, commands and parameters are displayed in plain language in the language selected.

Menu item	Parameter	Factory setting
Language setting	Deutsch	**Deutsch**
	English	
	Francais	
	Italiano	
	Espanol	
	Portugues	
	Nederlands	
	Polski	
	Čeština	

Setting the time zone for the winter time

Selecting the time zone for the winter time allows the switch to daylight savings time to occur automatically. The respective time zone in winter must be specified.

Central Europe (GER, FR, IT, ES, PL)

-CET (Central European Time, Berlin, Paris)

If UTC (Universal Time Coordinated) is selected, no automatic switch to daylight savings time occurs.

Menu item	Parameter	Factory setting
Time zone (winter)	Time zones from "Winter -12" to "Winter +12 (PETT)" can be set	**Winter +1 (CET)**

Setting the date

When setting the date, first the four-digit year is selected, then the month, and finally the day.

Menu item	Parameter	Factory setting
Date setting	Year	**Current date entry**
	Month	
	Day	

Setting the time

From here, you can set the current time. The controller has automatic summertime switching, which can also be activated from the menu "Language/Time" (+1 CET).

When setting the time, first the hours are selected, and then the minutes.

Menu item	Parameter	Factory setting
Time setting	Hours	**Current time entry**
	Minutes	

Restore counter readings

When first installing the controller, this parameter is confirmed with "NO".

Confirm this parameter with “YES” if you have performed a software update and wish to restore the previous counter readings.

Menu item	Parameter	Factory setting
Restore counter readings	YES	**NO**
	NO	

Load user settings

When first installing the controller this parameter is confirmed with "NO".

If a new software status is installed after the initial installation, it is possible to confirm this with "YES" and all existing parameters will be accepted anew. This means a complete new installation is unnecessary.

Menu item	Parameter	Factory setting
Load user settings	YES	**NO**
	NO	

Additional functions, such as Smart-Web, are enabled again when the user settings are activated with "YES". It is then not necessary to install the add-on software again!

Activating the heat pump

The controller detects automatically that a heat pump has been connected. If necessary, activate the heat pump.

Menu item	Parameter	Factory setting
Activating the heat pump	Activated	**Activated**
	Deactivated	

Operating mode

Two operating modes are available:

1. Bivalent alternative
2. Monoenergetic

Menu item	Parameter	Factory setting
Operating mode selection	Monoenergetic	**Monoenergetic**
	Bivalent alternative	

Selection of the auxiliary heat generator:

- Bivalent alternative (heat pump or oil/gas-fired boiler or wall heating)

- Monoenergetic (heat pump and/or Smart Serv electric heating element) according to usable limits

The operating mode of the internal pump in the indoor unit must be defined here in the level “Expert → Settings → Auxiliary heat generator → Internal pump".

Source buffer tank

Optionally, the "Source buffer tank" function can be activated. Activation must take place when the heat pump is used as a heat source of the buffer tank for supplying the REMKO MWL heat pumps. If the heat pump is not required as a heat source for the MWL heat pumps, activation of this function is not necessary and remains deactivated!

Menu item	Parameter	Factory setting
Source buffer tank	Activated	**Deactivated**
	Deactivated	

Storage tank set temperature

Desired temperature for the domestic hot water.

If there is a solar yield, the storage tank can become substantially warmer. The maximum temperature for solar charging can be modified under Settings/Solar/Storage tank.

For efficiency reasons, the lowest possible set temperature should be selected. If the available quantity of hot water is insufficient, the value should be increased. Pay attention to the maximum temperature of the heat pump.

Menu item	Parameter	Factory setting
Storage tank set temp.	40 °C - 65 °C	**45 °C**

Hot water circulation

If there is a hot water circulation pump in the building, which you are intending to operate in an energy-saving manner using the controller, this function must be activated.

Menu item	Parameter	Factory setting
Hot water circulation	Deactivated	**As required**
	Activated	

Circulation type

(dependent on which probes are used)

Impulse circulation: (Only in conjunction with the REMKO impulse generator)

If briefly dispensing water triggers an impulse on the flow-operated safety device, this is registered by the controller and the circulation pump is started up. This means that the circulation is also active when it is required.

Temperature-guided circulation: (Only in conjunction with the REMKO S05 probe)

Temperature-guided circulation keeps the hot water temperature at the set temperature.

Select the circulation type.

Menu item	Parameter	Factory setting
Circulation type	Impulse circulation	**As required**
	Temperature-guided circulation	

Circulation set temperature - temperature-guided circulation

Desired set temperature for temperature-guided circulation.

This should be set at least 5 °C below the set temperature for the hot water storage tank, or even lower for efficiency reasons.

Then set the desired temperature.

Menu item	Parameter	Factory setting
Temperature-guided circulation	25 °C - 65 °C	**35 °C**

Impulse-guided circulation - Running time of the circulation

Switch-on time of the circulation pump after a dispensing impulse.

If the circulation line is very short, a shorter running time may suffice. If the time is not sufficient to pump hot water to a remote dispensing point, the running time must be extended.

Then select the desired temperature.

Menu item	Parameter	Factory setting
Impulse-guided circulation - Running time of the circulation	1 min - 15 mins	**5 min.**

Impulse-guided circulation - Disable switch-on

After the running time of the circulation pump, the pump cannot be started again while disable switch on is active. This prevents unnecessary permanent operation of the pump in the case of continuous dispensing. If the hot water cools too much while disable switch-on is active, the time should be shortened.

Then select the desired time.

Menu item	Parameter	Factory setting
Impulse-guided circulation - Disable switch-on	1 min - 15 mins	**5 min.**

Unmixed cycle

Optionally, you can activate or deactivate the "Unmixed circuit" function.

Menu item	Parameter	Factory setting
Unmixed cycle	Deactivated	**Deactivated**
	Activated	

Operating mode

Select the operating mode for the unmixed circuit.

Setting heating circuit mode

This is where you can select between the different **heating circuit modes**. The choice is between control according to the set **"heating curve"** and **"fixed value regulation"**.

Menu item	Parameter	Factory setting
Operating mode unmixed circuit	Heating	**As required**
	Cooling	
	Heating and cooling	

After activating the unmixed mixed heating cycle, the 1st mixed heating cycle is enabled, and after activating the 1st mixed heating cycle, the 2nd, 3rd and 4th mixed heating cycles are enabled.

The descriptions of the mixed heating cycles are identical to the unmixed heating cycle.

The mixed heating circuits each require a supply and return probe! These probes are included in the scope of supply of the mixed REMKO heating circuit groups.

Standard outside temperature (heating)

The standard outside temperature must be set to the appropriate value for the region. After setting the correct temperature, this is stored for all activated heating circuits that are to be controlled in accordance with a heating curve.

Menu item	Parameter	Factory setting
Standard outside temperature (heating)	0 °C - -20 °C	**-10 °C**

Standard outside temperature (cooling)

The standard outside temperature must be set to the appropriate value for the region. After setting the correct temperature, this is stored for all activated cooling circuits that are to be controlled in accordance with a cooling curve.

Menu item	Parameter	Factory setting
Standard outside temperature (cooling)	+30 °C - +40 °C	**+36 °C**

System separation underfloor heating

If system separation (heat exchanger) is used for panel heater operation, the heat loss via the heat exchanger can be compensated via the activation.

Menu item	Parameter	Factory setting
System separation underfloor heating	Deactivated	**As required**
	Activated	

Setting the building time constant

The building time constant specifies the ability of the building to retain heat. The building time constant is dependent upon the type of building (see table). The value is also dependent on individual temperature perception, and so the information in the table should only be treated as a guide.

Recommended are:

Building type	Heat retention ability	Recom-mended value
Light	Low heat retention ability, e.g. prefab/wood-frame houses	approx. 10 h
Medium	Moderate heat retention ability, e.g. house made from hollow blocks	approx. 20 h
Heavy	High heat retention ability, e.g. brick house	approx. 30 h
Very heavy	Very high heat retention ability, e.g. exterior and interior walls > 30 cm	approx. 60 h
Passive	Well-insulated, e.g. zero-energy housing	approx. 100 h

Menu item	Parameter	Factory setting
Building time constant	0 - 100 h	**According to design! - 10 h**

Setting the standard heating load

The standard heating load is obtained by multiplying the specific heating load by the living area to be heated. You can calculate the standard heating load from the following table.

This method is only estimated and should be set to the values defined by an expert.

Building performance requirements	
Year of construction	**Specific heating load**
Up to 1970, uninsulated	120... 180 W/m^2
1977 to 1984	70... 100 W/m^2
1985 to 1995	50... 70 W/m^2
New build, EnEv	40... 50 W/m^2
New build, KfW 40/60	20... 30 W/m^2
Zero-energy house	10... W/m^2

Menu item	Parameter	Factory setting
Standard heating load	0 - 50 kW	**Dependent on unit (outdoor unit) detected**

Solar plant

Deactivation if no solar plant is available. It can be activated again at a later date.

Activation if a solar plant is available.

Menu item	Parameter	Factory setting
Solar plant	Deactivated	**Deactivated**
	Activated	

Selecting the pump system

Select the pump system for the speed controller. The speed control system is available for a solar cycle with asynchronous pump (controlled by an A01 with "wave packets"), as well as for one or two solar cycles with high-efficiency pump (controlled by an A01 with "PWM").

We recommend activating an EC pump. The solar pump adapts automatically to solar capacity. If the temperature difference increases due to increased solar capacity, the speed of the solar pump is increased. (This results in a higher degree of efficiency of the solar plant as well as lower power consumption of the solar pump).

Menu item	Parameter	Factory setting
Pump type (solar cycle)	Asynchronous pump EC pump	**Asynchronous pump**

Solar speed control system

Activate the solar speed regulation if you want the solar cycle pump to modulate according to solar capacity.

Activation of the speed control system for the pump in the solar cycle. the pump can be activated according to demand, for efficiency reasons; as solar radiation increases, the speed of the pump increases.

When using a pump which is not suitable for the speed control system, the system should be deactivated.

(We recommend use of a speed-controlled pump).

Menu item	Parameter	Factory setting
Solar speed control system	Deactivated	**Deactivated**
	Activated	

Asynchronous speed control system

Menu item	Parameter	Factory setting
Asynchronous speed control system	On	**Off**
	Off	

Solar heat meter - medium flow rate probe

The amount of heat delivered from solar yields is recorded continuously, and can be called up in the form of a daily or cumulative value.

If no medium flow rate probe is installed, a manual medium flow rate can be selected. The heat meter can also be deactivated, if desired.

Menu item	Parameter	Factory setting
Solar heat meter	Deactivated	**Deactivated**
	Manual medium flow rate	
	Medium flow rate probe	

Setting the impulse rate of the solar medium flow rate probe

The impulse rate must only be changed if the impulse rate in the customer-provided system must be adapted.

Menu item	Parameter	Factory setting
Impulse rate for medium flow rate (if activated)	0 - 10 ml/Imp	**5.7 ml/Imp**

Manual medium flow rate

If no medium flow rate probe is installed in the solar station, a manual medium flow rate can be selected. The heat meter can also be deactivated, if desired.

The medium flow rate is specified in order to calculate the amount of solar heat.

The value can be viewed on the flow meter when the solar pump is running.

Then set the value.

Recommendation:

adjust the medium flow rate to suit the hydraulic system provided by the customer

Set temperature of the storage tank during solar charging

Once the solar set temperature is reached, the solar cycle pump is switched off. With the collector cooling function activated, the temperature of the storage tank can continue to rise as far as the set maximum temperature.

The solar set temperature should be reduced if the hot water temperature is regularly too high or if there is no thermostatic mixing valve installed. At the same time, when the collector cooling function is activated, the max. temperature of the storage tank must be reduced.

Menu item	Parameter	Factory setting
Solar set temperature	5 °C - 95 °C	**85 °C**

REMKO recommends installing a domestic hot water mixer with solar hot water preparation.

WARNING!

Implement measures on site to ensure sufficient scalding protection!

Heat carrier medium

Selection of the filled solar liquid for calculation of the amount of solar heat.

Menu item	Parameter	Factory setting
Heat carrier medium	Water	**TYFOCOR-L**
	DOWCAL 10	
	DOWCAL 20	
	TYFCOR	
	TYFOCOR-L	
	TYFOCOR-LS	
	ANTIFROGEN-N	
	ANTIFROGEN-SOL	
	Temper-10	
	Temper-15	
	Temper-20	
	Temper-30	
	Temper-40	
	Temper-55	
	GLYTHERMIN P44	

Acquisition of the stored energy via the S 09 probe

If heating is to be provided from the available solar yield (if required), this parameter must be activated.

If another heat generator is connected to the system hydraulically, e.g. water-based chimney heat exchanger, this parameter must be activated and the S 09 probe must be installed.

Menu item	Parameter	Factory setting
Acquisition of the stored energy	Combination storage tank	**Deactivated**
	Heating buffer	

5.3 Hygiene function/ legionella circuit

You have the option of activating a hygiene function.

The hygiene function can only be performed with an active additional heat generator, e.g. with a REMKO Smart-Serv auxiliary heat generator.

This hygiene/legionella function can be activated on a static basis, i.e. always on the same weekday at the set time.

The "Static" operating mode is possible without flow sensor. The hygiene function is purely activated after a time program. To do so, you must set the day and time as well as the desired temperature.

You can also activate a dynamic hygiene function that is aligned with your requirement and storage tank capacity.

The precondition for the dynamic hygiene function is that a REMKO flow sensor (e.g. EDP no. 254070) has been installed. The dynamic hygiene function can be individually adjusted to the user and the installed storage tank size.

Activation of the hygiene function is only possible in the expert level. Accessing the expert level is described in chapter "Operation - Expert level - Menu structure".

The hygiene function is not activated ex works. In order to install this function, select the following parameters consecutively in the expert level:

Expert level	
↓	
Settings	
↓	
Basic settings	
↓	
System configuration	
↓	
Hygiene function (OFF)	
↓	
Static	**Dynamic**

After selecting the function, the hygiene function is enabled and can be adjusted in the "Settings" level under the point "Hot water". You can find the description for activation and setting in the following.

Parameter settings for the hygiene function

In order to access the setting parameters for the hygiene function, select the following parameters consecutively:

Expert level	
↓	
Settings	
↓	
Hot water	
↓	
Hygiene function	
↓	
Static	**Dynamic**
Set temperature	
Day of activation	-
Time of activation	-
-	Inspection time
-	Storage tank volume
-	Pulse valency
Max. duration until cancellation	
Circulation pump	
2nd heat generator	

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Overview of all of the parameters relevant for the static or dynamic hygiene function.

Static	Dynamic	Description
Set temperature		Setting the target temperature
Day of activation	-	Setting the first weekday
Time of activation	-	Setting the starting time
-	Inspection time	The hygiene function is only active if the tank contents of the hot water storage tank have not been changed for 72 hours. The test time can be shortened here if the customer wishes
-	Storage tank volume	Setting of the hot water storage tank between 0 and 1000 l. Factory setting: 300 litres
-	Pulse valency	Setting dependent on the flow sensor installed (DN15/ DN25, see "Flow sensor" operating instructions)
Max. duration until cancellation		After the set time has elapsed, the hygiene function is interrupted if it has not already been switched off via normal operation
Circulation pump		If a circulation pump has been installed in the factory system, this must be operational when the hygiene function is activated. If the circulation pump is installed on the I/O module (terminal A04) of the heat pump, this is activated via the circulation pump function
2nd heat generator		If the second heat generator in this level is deactivated, it is enabled in accordance with the set bivalency point after the hygiene function has been enabled. If value for hot water does not fall below the set bivalency point, the second heat generator is enable as required. If value for hot water does fall below the set bivalency point, it is enabled immediately after the hygiene function is called up. The definitive bivalency point for your system can be found in the Smart-Control Touch controller instructions in the expert level under "Settings/ Heat pump". If the second heat generator is activated in this level, the second heat generator is immediately enabled with activation of the hygiene function. With bivalent systems (wall heating device/ oil/gas boiler), the hygiene function is exclusively activated via the second heat generator.

After the parameters described above, activation of the hygiene function is completed. To return to the basic display, exit the parameter levels via the arrow at the bottom left.

5.4 Activate heating and cooling cycle, examples

Example for activating a heating cycle

1. Retrospective enabling of a heating cycle.

Fig. 15: Activate heating cycle

Activation of further heating cycles is only possible in the expert level. To do so, activate the expert level with the password "0321" and select the following parameters:

Settings → Basic settings → System configuration

In the "System configuration" level, set the required heating cycle from "deactivated" to "activated". After activation, the cycle is now enabled and can be set in the "User" level and in the "Expert" level of the connected heating cycle configuration. For this purpose, implement the changes with the grey slide controls as described in the chapter "Setting the heating/cooling operating mode".

Example for activating a cooling function

Change operating mode of a heating/cooling cycle.

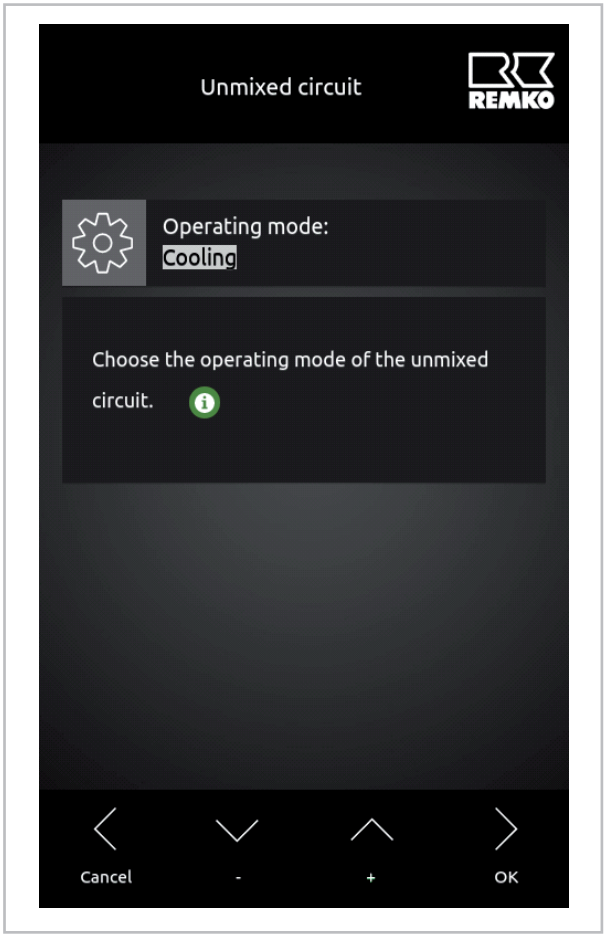

Fig. 16: Activating cooling cycle

The operating mode

- Heating
- Cooling
- Heating/cooling

can be changed at any time in the respective activated heating cycles under the parameter "Operating mode".

The REMKO Smart-Control Touch controller can control one unmixed and two mixed heating/cooling circuits. REMKO heat pumps with two I/O modules, such as the WKF Duo variant, can control one unmixed and four mixed heating circuits.

6 Template hydraulics with installation parameters

NOTICE!

The sample hydraulic schematic shown below is only to be used as a planning aid, and does not replace an installation drawing! Technical modifications reserved!

The design and planning of customer-provided hydraulic systems must be performed by a specialist installer!

We recommend adapting plant-specific parameters, such a heating limits and bivalence point, to the design data!

You can find further hydraulics examples at www.remko.de

Hydraulic circuit diagram

Functions: Heating and hot water incl. Smart-Serv emergency heating coil

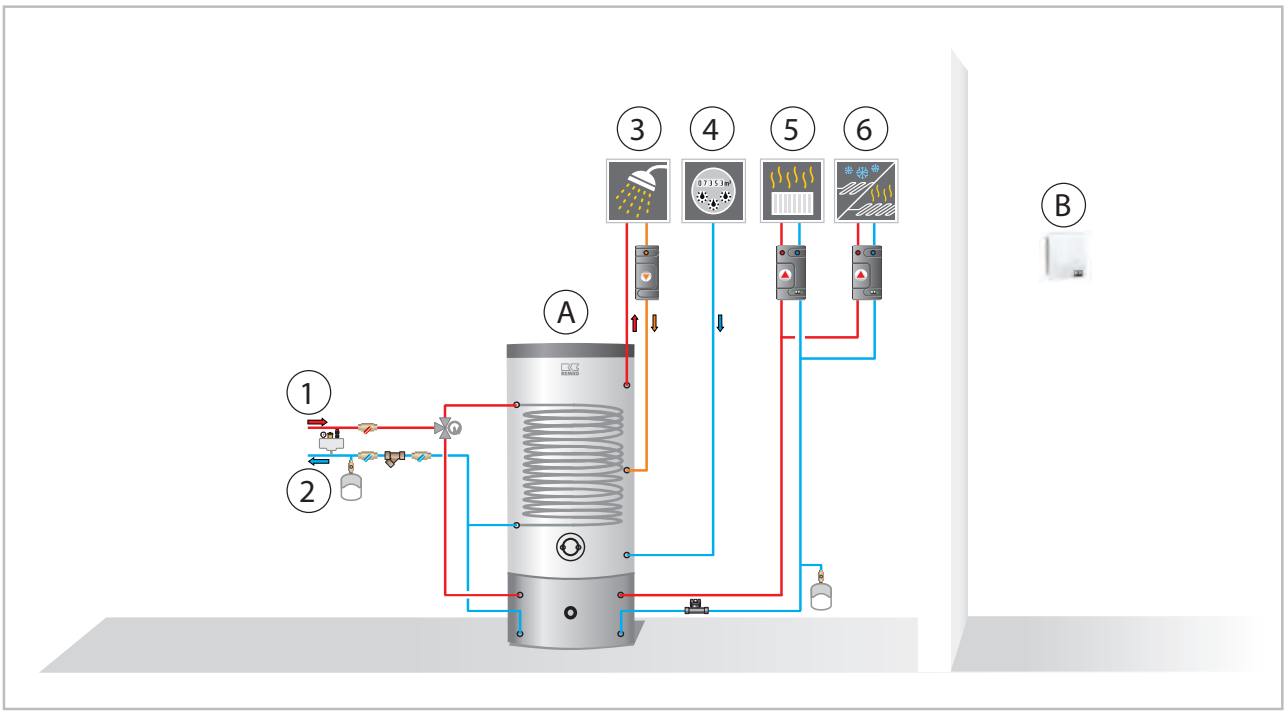

Fig. 17: Example hydraulic diagram

A: Combination buffer tank
B: Room temperature/humidity probe
1: Heat pump inlet line
2: Heat pump return flow
3: Hot water
4: Cold water
5: Unmixed cycle
6: Mixed cycle

Basic settings for the hydraulic diagram

Menu item	Parameter	Factory setting
Country	Deutschland - Slovensko	Germany
Load setting	Accept the parameters	Saving process
Language	Deutsch - Polski	Deutsch
Time zone	Var. time zones possible	Winter + 1(CET)
Date	Year/Month/Day	Basic settings
Time	Hours/Minutes	Basic settings
Restore counter readings?	YES/NO	NO
Load user settings?	YES/NO	NO
Activate heat pump	Activated/Deactivated	Activated
Source buffer tank	Activated/Deactivated	Deactivated
Operating mode	Monoenergetic/bivalent alternative	Monoenergetic
Domestic hot-water heating	Activated/Deactivated	Activated
Storage tank set temperature	"40°C - 65°C"	45 °C
Hot water circulation	Activated/Deactivated	Activated
Circulation type	Impulse/Temperature	Impulse
Circulation set temp.	"25 °C - 65°C"	Deactivated
Circulation running time	1 min - 15 mins	5 min
Disable switch-on	1 min - 15 mins	5 min
Unmixed heating cycle	Activated/Deactivated	Activated
Operating mode	Heating/cooling Heating and cooling	Heating
Heating cycle mode	Heating curve/Fixed value	Heating curve
Heating curve adjustment	Base point/standard inlet temperature/ standard outside temperature	According to design
Fixed value	"10 °C - 50 °C"	Deactivated
Cooling cycle mode	Cooling curve/Fixed value	Deactivated
Fixed value	"8 °C - 35 °C"	Deactivated
Cooling curve adjustment	Base point/standard inlet temperature/ standard outside temperature	Deactivated
1st mixed cycle	Activated/Deactivated	Activated
Operating mode	Heating/cooling Heating and cooling	Heating/cooling
Heating cycle mode	Heating curve/Fixed value	Heating curve
Heating curve adjustment	Base point/standard inlet temperature/ standard outside temperature	According to design
Fixed value	"10 °C - 60 °C"	Deactivated
Cooling cycle mode	Cooling curve/Fixed value	Cooling curve
Fixed value	"8 °C - 35 °C"	Deactivated

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Menu item	Parameter	Factory setting
Cooling curve adjustment	Base point/standard inlet temperature/ standard outside temperature	According to design
2nd mixed heating cycle	Activated/Deactivated	Deactivated
Operating mode	Heating/cooling Heating and cooling	Deactivated
Heating cycle mode	Heating curve	Deactivated
Heating curve adjustment	Heating curve/Fixed value	Deactivated
Fixed value	"10 °C - 60 °C"	Deactivated
Cooling cycle mode	Cooling curve/Fixed value	Deactivated
Fixed value	"8 °C - 35 °C"	Deactivated
Cooling curve adjustment	Base point/standard inlet temperature/ standard outside temperature	Deactivated
System separation FBH	Activated/Deactivated	Deactivated
Setpoint increase	0 - 10 K	Deactivated
Building time constant	"0 h - 100 h"	10 h
Standard heating load	"0 kW - 25 kW"	As required
Solar plant	Activated/Deactivated	Deactivated
Pump type	Asynchronous/EC pump	Deactivated
Solar speed control system	Activated/Deactivated	Deactivated
Asynchronous speed control system	On/Off	Deactivated
Solar HM	Deactivated	Deactivated
Impulse rate for medium flow rate	0 l/min - 10 l/min	Deactivated
Manual medium flow rate	2 l/min - 30 l/min	Deactivated
Heat carrier medium	As required	Deactivated
Solar set temperature	"5 °C - 95 °C"	Deactivated
Stored energy	Separate heating buffer/ combination storage tank	Separate heating buffer

7 Error messages on the Smart Control

Operating messages, warnings and error display on the Smart-Control

Operating messages

ID	Description	Desig.	Details
ID6000	Storage tank 1: Max. temperature reached		The temperature on one of the probes in storage tank 1 is higher than the maximum permitted storage tank temperature
ID6001	HW request		There is an active requirement to charge the storage tank
ID6002	Heat pump compressor start		Heat pump compressor start
ID6003	Switching cycle disabled (I/O2)		The heat pump was disabled in order to reduce the compressor's switching cycles
ID6004	Low pressure difference	µPC2	The pressure difference is too low
ID6005	Internal pump lead time		The internal pump runs at reduced speed during the pump lead time
ID6006	Switching cycle disabled		The heat pump was disabled in order to reduce the compressor's switching cycles
ID6007	Min. holding time		The heat pump is disabled due to a min. holding time
ID6008	Disable signal	S16	The heat pump is disabled due to a disable signal
ID6009	Disable signal (I/O 2)		The heat pump is disabled due to a disable signal
ID6010	Heat pump compressor start (I/O 2)		Heat pump compressor start
ID6011	Maximum defrosting period	µPC2	Maximum defrosting period
ID6012	Defrosting HP (I/O 2)		Defrost heat pump
ID6020	Pump internal after-run time		The internal pump runs at a reduced speed during the pump after-run time
ID6022	Min. holding time (I/O2)		The heat pump is disabled due to a min. holding time
ID6100	Maintenance 1 year interval		Check solar circuit medium
ID6103	Heat demand HP		Heat demand, heat pump
ID6104	Cooling demand HP		Cooling demand, heat pump
ID6105	Defrost heat pump		Defrost heat pump
ID6107	Standby mode active		Standby mode active
ID6108	Random delay after power failure		Random delay after power failure (up to 200 seconds after power returns) - the purpose of the random delay is to avoid a system overload due to many consumers being switched on at the same time
ID6109	Outdoor temp. Heat pump usable limit		Outdoor temp. Heat pump usable limit - the heat pump is disabled due to the usable limits being exceeded or not being reached

ID	Description	Desig.	Details
ID6111	Heat pump bivalence temperature		Heat pump bivalence temperature - the heat pump is disabled because the temperature has dropped below the bivalence temperature
ID6113	Solar heating		Solar heating - heat generators are disabled
ID6114	Temperature dropped below dew point		Compressor is disabled for cooling function
ID6115	Low pressure differ-ence		The pressure difference is too low to start the compressor
ID6116	Maximum defrosting period		Maximum defrosting period
ID6122	Heat pump compressor stop		Heat pump compressor stop

Error

ID	Description	Desig.	Details
ID7001	General inverter fault	µPC2	General inverter fault - please contact an authorised service technician
ID7002	Device offline	µPC2	Device offline - please check the data connection between the controller board and the inverter
ID7003	Envelope fault	µPC2	Envelope fault - the compressor operates outside the pro-grammed curve. Please contact an authorised service techni-cian
ID7004	Compressor start error	µPC2	Compressor start error
ID7005	Maximum hot gas tem-perature	µPC2	Maximum hot gas temperature - the compressor is blocked by having reached the maximum hot gas temperature
ID7006	High pressure malfunc-tion	µPC2	High pressure malfunction. If this fault occurs frequently, please contact an authorised service technician
ID7007	High pressure malfunc-tion transducer	µPC2	The compressor is disabled due to a high pressure malfunction
ID7008	Outside temperature probe error	µPC2	Outside temperature probe error - please check the outside temperature sensor on the inverter board and its connection
ID7009	Low pressure malfunc-tion	µPC2	The compressor is disabled due to a low pressure malfunction
ID7010	Fan overload	µPC2	The compressor is disabled due to a fan overload
ID7011	Inlet temperature probe error	µPC2	Inlet temperature probe error - please check the inlet tempera-ture probe on the inverter board and its connection.
ID7012	Outlet temperature probe error	µPC2	Outlet temperature probe error - please check the outlet tem-perature probe on the inverter board and its connection
ID7013	EEPROM error	µPC2	EEPROM error. Please contact an authorised service techni-cian
ID7014	Hot gas temperature probe error	µPC2	Hot gas temperature probe error - please check the hot gas temperature probe on the inverter board and its connection.

ID	Description	Desig.	Details
ID7015	Suction gas temperature probe error	µPC2	Suction gas temperature probe error - please check the suction gas temperature probe on the inverter board and its connection
ID7016	High pressure probe error	µPC2	High pressure probe error - please check the high pressure probe on the inverter board and its connection
ID7017	Low pressure probe error	µPC2	Low pressure probe error - please check the low pressure probe on the inverter board and its connection.
ID7018	EEV motor fault	µPC2	EEV motor fault. Please contact an authorised service technician
ID7019	Low overheating	µPC2	The compressor is disabled due to overheating being too low
ID7020	Low suction gas temperature	µPC2	The compressor is disabled due to the suction gas temperature being too low
ID7021	Low evaporation temperature	µPC2	The compressor is disabled due to the evaporation temperature being too low
ID7022	High evaporation temperature	µPC2	The compressor is disabled due to the evaporation temperature being too high.
ID7023	High condensation temperature	µPC2	The compressor is disabled due to the condensation temperature being too high
ID7024	Anti-freeze protection - primary cycle	µPC2	The anti-freeze protection in the heat pump's heat exchanger was triggered due to a system temperature that is too low. After rectifying the cause of the error, reset the error in (Expert/ Settings/Heat pump/Basic settings) and, if necessary, de-energise the outdoor unit
ID7025	Negative temperature difference	µPC2	The temperature difference when the heat generator is active is implausible
ID7026	Incorrect phase sequence (rotating field)	µPC2	Incorrect phase sequence (rotating field) or missing phase conductor - please check the phase sequence (the rotating field) of the power supply.
ID7028	Low pressure difference	µPC2	The pressure difference in the cooling cycle is too low
ID7032	Open contact - internal return temp. probe	S15.2	Open contact - internal return temperature probe
ID7033	Short circuit - internal return temp. probe	µPC2	Short circuit - internal return temperature probe
ID7036	External safety chain		Fault in the external safety chain (high pressure or low pressure switch)
ID7037	Low pressure		Low pressure malfunction
ID7038	High pressure		High pressure malfunction
ID7039	AC current fault		AC current consumption is not plausible
ID7040	EEPROM error		The EEPROM settings for the motherboard (outdoor unit) are not plausible
ID7041	Compressor overload malfunction		The compressor’s maximum current consumption was exceeded
ID7042	Inverter fault		Check the winding resistances and the connection lines of the compressor

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ID	Description	Desig.	Details
ID7043	Suction gas temperature probe fault		Short circuit or open contact – probe for suction gas temperature, outdoor unit
ID7044	Register temperature probe fault		Short circuit or open contact – probe register temperature, outdoor unit
ID7045	High-pressure probe error		Check the high pressure sensor of the outdoor unit and its connection
ID7046	Low-pressure probe error		Check the low pressure sensor of the outdoor unit and its connection
ID7047	Power supply malfunction		Malfunction from over- or undervoltage
ID7048	Medium flow rate probe error		Medium flow rate probe error
ID7049	Humidity probe error		Humidity probe error
ID7050	Anti-freeze protection		The anti-freeze protection in the heat pump's heat exchanger was triggered due to an inlet temperature that is too low. After rectifying the cause of the error, reset the error in (Expert/ Settings/Heat pump/Basic settings) and, if necessary, de-energise the outdoor unit
ID7051	Fan malfunction	HP 1	Fan malfunction
ID7052	Low pressure	HP 1	Low pressure malfunction - pressure transducer P1
ID7053	Overheating point undershot	HP 1	Temperature below overheating point for too long
ID7054	Overheating point exceeded	HP 1	Temperature above overheating point for too long
ID7055	High pressure malfunction	HP 1	High pressure malfunction - pressure transducer P2
ID7056	Envelope alarm	HP 1	The compressor ran outside its usable limits for too long
ID7057	High heat gas temperature	HP 1	The maximum hot gas temperature has been exceeded
ID7058	4-way valve fault	HP 1	Pressure difference too low
ID7059	Expansion valve fault	HP 1	The expansion valve was not detected
ID7060	Fault with probe P1	HP 1	Pressure transducer P1 was not detected.
ID7061	Fault with probe P2	HP 1	Pressure transducer P2 was not detected
ID7062	Fault with probe T1	HP 1	Temperature probe T1 was not detected
ID7063	Fault with probe T2	HP 1	Temperature probe T2 was not detected
ID7064	Fault with probe T3	HP 1	Temperature probe T3 was not detected
ID7065	Fault with probe T4	HP 1	Temperature probe T4 was not detected
ID7066	Fault with probe T5	HP 1	Temperature probe T5 was not detected
ID7067	Fault with probe T6	HP 1	Temperature probe T6 was not detected
ID7068	Fault with probe T7	HP 1	Temperature probe T7 was not detected
ID7069	Inverter communication error	HP 1	Communication with the inverter was interrupted

ID	Description	Desig.	Details
ID7070	High pressure switch	HP 1	The high pressure switch was triggered
ID7071	Inverter interlocked	HP 1	Inverter interlocked
ID7072	Inverter malfunction	HP 1	Inverter malfunction
ID7073	DLT probe fault	HP 1	Temperature probe DLT was not detected
ID7074	Fan malfunction	HP 2	Fan malfunction
ID7075	Low pressure	HP 2	Pressure transducer P1
ID7076	Overheating point undershot	HP 2	Temperature below overheating point for too long
ID7077	Overheating point exceeded	HP 2	Temperature above overheating point for too long
ID7078	High pressure malfunction	HP 2	Pressure transducer P2
ID7079	Envelope alarm	HP 2	The compressor ran outside its usable limits for too long
ID7080	High heat gas temperature	HP 2	The maximum hot gas temperature has been exceeded
ID7081	4-way valve fault	HP 2	Pressure difference too low
ID7082	Expansion valve fault	HP 2	The expansion valve was not detected
ID7083	Fault with probe P1	HP 2	Pressure transducer P1 was not detected
ID7084	Fault with probe P2	HP 2	Pressure transducer P2 was not detected
ID7085	Fault with probe T1	HP 2	Temperature probe T1 was not detected
ID7086	Fault with probe T2	HP 2	Temperature probe T2 was not detected
ID7087	Fault with probe T3	HP 2	Temperature probe T3 was not detected
ID7088	Fault with probe T4	HP 2	Temperature probe T4 was not detected
ID7089	Fault with probe T5	HP 2	Temperature probe T5 was not detected
ID7090	Fault with probe T7	HP 2	Temperature probe T7 was not detected.
ID7091	Inverter communication error	HP 2	Communication with the inverter was interrupted
ID7092	High pressure switch	HP 2	The high pressure switch was triggered
ID7093	Inverter interlocked	HP 2	Inverter interlocked
ID7094	Inverter malfunction	HP 2	Inverter malfunction
ID7095	DLT probe fault	HP 2	Temperature probe DLT was not detected
ID7096	Anti-freeze protection	HP 2	The anti-freeze protection in the heat pump's heat exchanger was triggered due to a return temperature that is too low. After rectifying the cause of the error, reset the error in (Expert/ Settings/Heat pump/Basic settings) and, if necessary, de-energise the outdoor unit
ID7097	Flow switch (contact open)		Open contact of the flow switch (jumper plug) during defrost / cooling mode
ID7098	Logic error source circuit		Logic error source circuit - medium flow rate in the source circuit with closed valve

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ID	Description	Desig.	Details
ID7099	Communication mal-function		Communication malfunction - I/O module
ID7100	Signal line reversed		Temperatures in the cooling cycle implausible, check the cor-rect connection of the signal lines of outdoor unit A
ID7101	Short circuit - cooling buffer tank probe		Short circuit - cooling buffer tank probe
ID7102	Open contact - cooling buffer tank probe		Open contact - cooling buffer tank probe
ID7103	Incorrect phase sequence	µPC	Incorrect phase sequence (rotating field) - please check the phase sequence (the rotating field) of the power supply
ID7104	Open contact - unmixed circuit inlet temperature probe		Open contact - unmixed circuit inlet temperature probe
ID7105	Short circuit - unmixed circuit inlet temperature probe		Short circuit - unmixed circuit inlet temperature probe
ID7106	Open contact - mixed circuit return tempera-ture probe		Open contact - mixed circuit return temperature probe
ID7107	Short circuit - mixed cir-cuit return temperature probe		Short circuit - mixed circuit return temperature probe
ID7108	Anti-freeze protection		The anti-freeze protection in the heat pump's heat exchanger was triggered due to a return temperature that is too low. After rectifying the cause of the error, reset the error in (Expert/ Settings/Heat pump/Basic settings) and, if necessary, de-ener-gise the outdoor unit
ID7110	Short circuit - supply air temp.		Short circuit - supply air temp.
ID7111	Probe fault - outside air temp.		Probe fault - outside air temp.
ID7112	Probe fault - exhaust air temp.		Probe fault - exhaust air temp.
ID7113	Probe fault - outside air humidity		Probe fault - outside air humidity
ID7114	Probe fault - exhaust air humidity		Probe fault - exhaust air humidity
ID7115	Short circuit - inlet temp. probe Source		Short circuit - inlet temp. probe Source
ID7116	Open contact - inlet temp. probe Source		Open contact - inlet temp. probe Source
ID7117	Short circuit - outlet temp. probe Source		Short circuit - outlet temp. probe Source
ID7118	Open contact - outlet temp. probe Source		Open contact - outlet temp. probe Source
ID7119	Short circuit - suction gas temp. probe		Short circuit - suction gas temp. probe

ID	Description	Desig.	Details
ID7120	Open contact - suction gas temp. probe		Open contact - suction gas temp. probe
ID7121	Short circuit - heat gas temp. probe		Short circuit - heat gas temp. probe
ID7122	Open contact - heat gas temp. probe		Open contact - heat gas temp. probe
ID7151	Room sensor offline		Room sensor offline - The room sensor for the unmixed circuit was not detected
ID7152	Room sensor offline		Room sensor offline - The room sensor for the 1st mixed circuit was not detected
ID7153	Room sensor offline		Room sensor offline - The room sensor for the 2nd mixed circuit was not detected
ID7154	Room sensor offline		Room sensor offline - The room sensor for the 3rd mixed circuit was not detected
ID7155	Room sensor offline		Room sensor offline - The room sensor for the 4th mixed circuit was not detected
ID7156	Room thermostat offline		Room thermostat offline - The room thermostat for the unmixed circuit was not detected
ID7157	Room thermostat offline		Room thermostat offline - The room thermostat for the 1st mixed circuit was not detected
ID7158	Room thermostat offline		Room thermostat offline - The room thermostat for the 2nd mixed circuit was not detected
ID7159	Room thermostat offline		Room thermostat offline - The room thermostat for the 3rd mixed circuit was not detected
ID7160	Room thermostat offline		Room thermostat offline - The room thermostat for the 4th mixed circuit was not detected
ID7161	Modbus address conflict		Modbus address conflict - Make sure that a room sensor and room thermostat never have the same Modbus address
ID7170	Communication malfunction	HP 2	2nd Heat pump
ID7200	Open contact - storage tank 1 bottom probe	S02	Open contact - storage tank 1 bottom probe
ID7201	Short circuit - storage tank 1 bottom probe	S02	Short circuit - storage tank 1 bottom probe
ID7202	Open contact - storage tank 1 middle probe	S09	Open contact - storage tank 1 middle probe
ID7203	Short circuit - storage tank 1 middle probe	S09	Short circuit - storage tank 1 middle probe
ID7204	Open contact - storage tank 1 top probe	S08	Open contact - storage tank 1 top probe
ID7205	Short circuit - storage tank 1 top probe	S08	Short circuit - storage tank 1 top probe
ID7206	Open contact - external probe	S10	Open contact - external probe

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ID	Description	Desig.	Details
ID7207	Short circuit - external probe	S10	Short circuit - external probe
ID7208	Open contact - refrigerant probe	S07	Open contact - refrigerant probe
ID7209	Short circuit - refrigerant probe	S07	Short circuit - refrigerant probe
ID7210	Open contact - circulation temp. probe	S05	Open contact - drinking water circulation temperature probe
ID7211	Short circuit - circulation temp. probe	S05	Short circuit - drinking water circulation temperature probe
ID7212	Open contact - inlet temp. probe	S13	Open contact - inlet temp. probe
ID7213	Short circuit contact - inlet temp. probe	S13	Short circuit contact - inlet temp. probe
ID7214	Min. refrigerant temp.	S07	The minimum refrigerant temperature was not reached - anti-freeze protection in the heat exchanger
ID7215	Min. refrigerant temp. (I/O2)	S07.2	The minimum refrigerant temperature (I/O2) was not reached - anti-freeze protection in the heat exchanger
ID7218	Open contact - collector 1 probe	S01	Open contact - collector 1 probe
ID7219	Short circuit - collector 1 probe	S01	Short circuit - collector 1 probe
ID7222	Open contact - Temp. probe inlet collector circuit	S03	Open contact - Temperature probe inlet collector circuit
ID7223	Short circuit - Temp. probe inlet collector circuit	S03	Short circuit - Temp. probe inlet collector circuit
ID7224	Open contact - Temp. probe return flow collector circuit	S04	Open contact - Temperature probe return flow collector circuit
ID7225	Short circuit - Temp. probe return flow collector circuit	S04	Short circuit - Temperature probe return flow collector circuit
ID7228	Open contact - inlet temp. probe	S13.2	Open contact - inlet temp. probe
ID7229	Short circuit contact - inlet temp. probe	S13.2	Short circuit contact - inlet temp. probe
ID7231	Anti-freeze protection (I/O 2)		The anti-freeze protection in the heat pump's heat exchanger was triggered due to an inlet temperature of less than 5 °C. After eliminating the cause of the error, the controller must be restarted to reset the error
ID7236	Open contact - mix. heating cycle inlet temp. probe	S12	Open contact - mixed heating cycle inlet temperature probe
ID7237	Short circuit - mix. heating cycle inlet temp. probe	S12	Short circuit - mixed heating cycle inlet temperature probe

ID	Description	Desig.	Details
ID7238	Open contact - mix. heating cycle return temp. probe	S11	Open contact - mixed heating cycle return temperature probe
ID7239	Short circuit - mix. heating cycle return temp. probe	S11	Short circuit - mixed heating cycle return temperature probe
ID7240	Connection to the KNX interface	KNX	Connection to the KNX IP interface lost
ID7241	Negative temp. differential	µPC	The temperature difference when the heat generator is active is implausible
ID7245	Tunnel occupied	KNX	The tunnel with the physical address (IA of the SMT) set on the controller is already taken by another KNXnet/IP unit (e.g.: ETS PC) or is not available on the interface
ID7246	Low pressure	µPC	The compressor is disabled due to a low pressure malfunction
ID7247	Device offline	µPC	Device offline - please check the data connection between the controller board and the inverter
ID7248	Interface is not supported	KNX	The KNXnet/IP tunnelling protocol is not supported by the detected KNX interface
ID7249	Incorrect interface detected	KNX	The physical address of the detected KNXnet/IP interface is not consistent with the parameter settings of the SMT controller
ID7250	Min. medium flow rate (I/O 2)		The medium flow rate fell below the heat pump's minimum medium flow rate due to defrosting or in cooling mode. After eliminating the cause of the error, the controller must be restarted to reset the error
ID7251	Min. medium flow rate		The medium flow rate fell below the heat pump's minimum medium flow rate due to defrosting or in cooling mode. After eliminating the cause of the error, the indoor and outdoor units must be restarted to reset the error
ID7252	Heat pump malfunction code	S20	Heat pump malfunction code
ID7253	Heat pump 2 malfunction code	S20.2	Heat pump 2 malfunction code
ID7254	General inverter fault	µPC	General inverter fault - please contact an authorised service technician
ID7255	EEPROM error	µPC	EEPROM error. Please contact an authorised service technician
ID7256	Envelope fault	µPC	Envelope fault - the compressor operates outside the programmed curve. Please contact an authorised service technician
ID7257	Fan overload	µPC	The compressor is disabled due to a fan overload
ID7258	Maximum hot gas temperature	µPC	Maximum hot gas temperature - the compressor is blocked by having reached the maximum hot gas temperature
ID7259	High pressure malfunction	µPC	High pressure malfunction. If this fault occurs frequently, please contact an authorised service technician
ID7260	High pressure malfunction transducer	µPC	The compressor is disabled due to a high pressure malfunction

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ID	Description	Desig.	Details
ID7261	Fault with probe B1		Please check probe and the connection to the inverter board
ID7262	Outside temperature probe error	µPC	Outside temperature probe error - please check the outside temperature sensor on the inverter board and its connection
ID7263	Error brine outlet temp. Probe	µPC	Error brine outlet temp. Probe - please check the brine outlet temperature probe on the inverter board and its connection
ID7264	Inlet temperature probe error	µPC	Inlet temperature probe error - please check the inlet temperature probe on the inverter board and its connection
ID7265	Fault with probe B5		Please check probe B5 and the connection to the inverter board
ID7266	Fault with probe B6		Please check probe B6 and the connection to the inverter board
ID7267	Outlet temperature probe error	µPC	Outlet temperature probe error - please check the outlet temperature probe on the inverter board and its connection
ID7268	Fault with probe B8		Please check probe B8 and the connection to the inverter board
ID7269	Hot gas temperature probe error	µPC	Hot gas temperature probe error - please check the hot gas temperature probe on the inverter board and its connection
ID7270	Suction gas temperature probe error	µPC	Suction gas temperature probe error - please check the suction gas temperature probe on the inverter board and its connection
ID7271	High pressure probe error	µPC	High pressure probe error - please check the high pressure probe on the inverter board and its connection
ID7272	Low pressure probe error	µPC	Low pressure probe error - please check the low pressure probe on the inverter board and its connection
ID7273	WKF fault code E101		Communication error between com. kit and outdoor unit. F1/F2 twisted or cable break
ID7274	WKF fault code E177		Compressor stopped due to an emergency stop signal. After eliminating the cause of the error, the indoor and outdoor units must be restarted to reset the error
ID7275	WKF fault code E221		Short circuit or open contact - probe ambient air temperature motherboard outdoor unit CN43 Pin 1&2
ID7276	Restart required		Due to the changed system (setting / coding resistor), the controller has to be restarted - disconnect it from the power supply for around 10 seconds
ID7278	Low overheating		The compressor is disabled due to overheating being too low
ID7282	Low pressure difference	µPC	The pressure difference in the cooling cycle is too low.
ID7283	Open contact - internal return temp. probe	S15	Open contact - internal return temperature probe
ID7284	Short circuit - internal return temperature probe	S15	Short circuit - internal return temperature probe
ID7285	Low suction gas temperature	µPC	The compressor is disabled due to the suction gas temperature being too low
ID7286	Coding error	Rc	A unique unit identifier could not be assigned using the coding resistor at the Rc terminal

ID	Description	Desig.	Details
ID7287	Low evaporation temperature	µPC	The compressor is disabled due to the evaporation temperature being too low
ID7288	High evaporation temperature	µPC	The compressor is disabled due to the evaporation temperature being too high
ID7289	High condensation temperature	µPC	The compressor is disabled due to the condensation temperature being too high
ID7290	WKF fault code E102		Communication error between com. kit and outdoor unit. F1/F2 twisted or cable break
ID7291	WKF fault code E201		Communication error between com. kit and outdoor unit - communication could not be established or incorrect board version
ID7292	WKF fault code E231		Short circuit or open contact - evaporator temperature probe motherboard outdoor unit CN43 Pin 3&4
ID7293	WKF fault code E251		Short circuit or open contact - hot gas temperature probe motherboard outdoor unit CN43 Pin 5&6
ID7294	WKF fault code E320		Short circuit or open contact - overload switch probe (OLP) motherboard outdoor unit CN43 Pin 7&8
ID7295	WKF fault code E416		Compressor stopped by overheating protection
ID7296	Open contact - 2nd mixed heating cycle return flow temp.	S14	Open contact - 2nd mixed heating cycle return flow temp.
ID7297	Short circuit - 2nd mixed heating cycle return flow temp.	S14	Short circuit - 2nd mixed heating cycle return flow temp.
ID7298	Open contact - 3rd mixed heating cycle inlet temp.	S12.2	Open contact - 3rd mixed heating cycle inlet temp.
ID7299	Short circuit - 3rd mixed heating cycle inlet temp.	S12.2	Short circuit - 3rd mixed heating cycle inlet temp.
ID7300	Open contact - 3rd mixed heating cycle return flow temp.	S11.2	Open contact - 3rd mixed heating cycle return flow temp.
ID7301	Short circuit - 3rd mixed heating cycle return flow temp.	S11.2	Short circuit - 3rd mixed heating cycle return flow temp.
ID7302	Open contact - 4th mixed heating cycle inlet temp.	S06.2	Open contact - 4th mixed heating cycle inlet temp.
ID7303	Short circuit - 4th mixed heating cycle inlet temp.	S06.2	Short circuit - 4th mixed heating cycle inlet temp.
ID7304	Open contact - 4th mixed heating cycle return flow temp.	S14.2	Open contact - 4th mixed heating cycle return flow temp.
ID7305	Short circuit - 4th mixed heating cycle return flow temp.	S14.2	Short circuit - 4th mixed heating cycle return flow temp.

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ID	Description	Desig.	Details
ID7306	Open contact - refrigerant probe (I/O 2)	S07.2	Open contact - refrigerant probe (I/O 2)
ID7307	Short circuit - refrigerant probe (I/O 2)	S07.2	Short circuit - refrigerant probe (I/O 2)
ID7308	WKF fault code E464		Overcurrent at the inverter module IPM (IGBT transistor module). Check software status for the motherboard
ID7309	WKF fault code E425		Phase fault malfunction. A phase conductor is missing at the frequency converter (can only occur with WKF 180 - otherwise, check motherboard version)
ID7310	WKF fault code E203		Communication error between motherboard (7-segment display) and inverter board
ID7311	WKF fault code E466		Under-voltage or over-voltage in the intermediate DC circuit of the inverter.
ID7312	WKF fault code E469		Voltage probe fault in the intermediate DC circuit of the inverter. Replace inverter board if necessary
ID7313	WKF fault code E458		Implausibly high current at the current probe or fault at the BLDC motor for fan 1.
ID7314	WKF fault code E475		Malfunction at the BLDC motor for fan 2
ID7315	WKF fault code E461		Implausibly low current at the current probe or malfunction on the inverter board at compressor start (can occur with compressor damage)
ID7316	WKF fault code E467		Missing phase conductor on the compressor
ID7317	WKF fault code E462		Overcurrent fault (primary side) - check power supply / fuse for the EMI board
ID7318	WKF fault code E463		Compressor overtemperature (OLP). Probe value greater than 115 °C (below 12.7 kΩ). Can be caused by a jammed expansion valve
ID7319	WKF fault code E554		Refrigerant quantity / refrigerant loss malfunction
ID7320	WKF fault code E556		Power ratings for the com. kit board (IM) and the motherboard (AM) differ - check board versions.
ID7323	Open contact - brine inlet probe	S07	Open contact - brine inlet probe
ID7324	Short circuit - brine inlet probe	S07	Short circuit - brine inlet probe
ID7325	Compressor start error	µPC	Compressor start error
ID7328	Open contact - 2nd mixed heating cycle inlet temp.	S06	Open contact - 2nd mixed heating cycle inlet temp.
ID7329	Short circuit - 2nd mixed heating cycle inlet temp.	S06	Short circuit - 2nd mixed heating cycle inlet temp.
ID7332	Anti-freeze protection	µPC	The anti-freeze protection in the heat pump's heat exchanger was triggered due to an inlet temperature that is too low. After eliminating the cause of the error, the controller must be restarted to reset the error.

ID	Description	Desig.	Details
ID7333	Negative temp. differ-ential		The temperature difference when the heat generator is active is implausible
ID7334	Comm. signal		Communication between operating unit SMT 1 and power unit SMT 1 I/O was interrupted.

Warnings

ID	Description	Desig.	Details
ID8001	Driver offline	µPC2	EVD EVO probe fault
ID8002	Driver offline	µPC2	Driver offline
ID8100	System temperature too low		The system temperature is too low to start the heat pump.
ID8101	Medium flow rate too low		The medium flow rate is too low to start the heat pump
ID8102	Temperature discrep-ancy in solar cycle		The collector temperature is at least 60K higher than the storage tank temperature
ID8103	Overnight collector temperature		A collector temperature of at least 45°C occurred overnight
ID8104	Medium flow rate too low	HP 2	The medium flow rate is too low to start the heat pump
ID8105	Set medium flow rate	HP1	The flow rate has dropped below the set medium flow rate
ID8107	Compressor status		The active operating mode is safety mode because the com-pressor is active without demand
ID8108	Compressor start error	µPC	Compressor start error
ID8109	EVD EVO probe fault	µPC	EVD EVO probe fault
ID8110	Driver offline	µPC	Driver offline
ID8111	Room sensor offline		The room sensor for the unmixed circuit was not detected
ID8112	Room sensor offline		The room sensor for the 1st mixed circuit was not detected
ID8113	Room sensor offline		The room sensor for the 2nd mixed circuit was not detected
ID8114	Room sensor offline		The room sensor for the 3rd mixed circuit was not detected
ID8115	Room sensor offline		The room sensor for the 4th mixed circuit was not detected.
ID8132	Anti-freeze protection active		The anti-freeze protection function is currently active - check the room climate mode set
ID8138	HW storage tank set temp.		The hot water storage tank set temperature was reduced due to low outside temperatures
ID8139	Lower application area (heating)		The temperature has currently dropped below the guaranteed application area of the external unit in heating mode
ID8140	Upper application area (heating)		The guaranteed application area of the external unit in heating mode is currently exceeded
ID8141	Lower application area (cooling)		The temperature has currently dropped below the guaranteed application area of the external unit in cooling mode

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ID	Description	Desig.	Details
ID8142	Upper application area (cooling)		The guaranteed application area of the external unit in cooling mode is currently exceeded
ID8144	Target flow rate (I/O 2)		The flow rate has dropped below the set medium flow rate
ID8150	Max. defrost duration	HP1	The maximum duration for the defrost has been exceeded
ID8151	Max. defrost duration	HP2	The maximum duration for the defrost has been exceeded.
ID8223	SD card error (host)		SD card error (host): The SD card is either not inserted correctly or an error has occurred
ID8224	SD card error		SD card error (CP): The SD card is not inserted or an error has occurred
ID8225	Dew point monitoring	CP	Dew point monitoring was activated but no control panel (with integrated humidity and temperature probe) was assigned to the cooling cycle to calculate the dew point
ID8226	Temp. dropped below min. inlet temp.		Temp. dropped below min. inlet temp. (or dew point) - cooling request is suppressed
ID8227	Hygiene function: Setpoint not reached		The hygiene function was cancelled due to the maximum runtime being reached before attaining the set temperature
ID8228	Coding resistor fault		A fault has occurred at the Rc terminal. Check the coding resistor and the connection at the Rc terminal.
ID8229	2nd heat generator active		Due to the return temperature being too low during defrosting, the 2nd heat generator activated

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