

KaControl SmartBoard

from Rev. 1.024

► User Manual

Keep these instructions in a safe place for future use!

Kampmann.de/installation_manuals

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About these instructions

Carefully read these instructions in full prior to any assembly and installation work!

Anyone involved with the installation, commissioning and use of this product is obliged to pass these instructions on to tradespeople who are involved at the same time or subsequently, as well as to end users or operators. Retain these instructions until final decommissioning!

We reserve the right to make content or design-related changes without prior notice!

Key to symbols

Safety information



IMPORTANT! DANGER!

Non-compliance with this information can lead to serious personal injuries or damage to property.



DANGER FROM ELECTROCUTION

Non-compliance with this information can lead to serious personal injuries or damage to property by electrocution.



This symbol highlights useful hints, recommendations and information for efficient and trouble-free operation.

1 ▶ Correct use



Kampmann KaControllers and KaControl modules are built in line with the state of the art and recognised safety regulations. Nevertheless, their use can result in danger to people or damage to the units or other material property if they are not appropriately installed and operated or correctly and properly used.

Applications

The KaController should only be used as a room control unit in conjunction with Kampmann systems.

KaControllers should only be used

- indoors (for instance in residential properties and offices, showrooms etc.)

KaControllers should not be used

- outdoors,
- in humid areas, such as swimming pools, in wet rooms,
- in areas where there is a risk of explosion,
- in areas with a high dust content,
- in areas with an aggressive atmosphere

Protect the products from any moisture during installation. Check the use with the manufacturer in case of any doubt. Any use other than the use specified above is deemed not to be correct and proper.

The operator of the unit is solely responsible for any damage arising as a result of this. Correct use is deemed to include observing the installation instructions described in this manual.

Specialist knowledge

The installation of this product requires specialist knowledge of heating, cooling, ventilation and electrical engineering. This knowledge, generally learned in vocational training in one of the fields mentioned above, is not described separately. Damage caused by improper installation is the responsibility of the operator.

The installer of these units should have adequate knowledge of the following gained from specialist vocational training

- Safety and accident prevention regulations
- Guidelines and recognised technical regulations, such as Association of German Electricians (VDE) regulations, DIN and EN standards.

Purpose and scope of these instructions

This manual contains information on the commissioning, functionality and operation of the KaControl system. The information contained in these instructions can be changed without prior notification.

2 Important Information / Safety Information



Only allow a qualified electrician to perform installation, assembly and maintenance work on electrical units in compliance with Association of German Electricians VDE guidelines. Wiring should comply with the applicable Association of German Electricians VDE regulations and provisions laid down by the regional electricity providers.

Non-compliance with the regulations and operating instructions can result in the units malfunctioning with consequential damage and danger to people. There is a danger of fatal injury caused by wires being crossed due to incorrect wiring! Disconnect all parts of the system from the mains power supply and prevent them from being reconnected before starting any cabling and maintenance work!

Please read these instructions in full to ensure correct and proper installation and the correct operation of the KaControl system.

Please note the following safety-relevant information:

- Disconnect all parts of the system that are being worked on.
- Ensure that the system cannot be accidentally re-connected!
- Before commencing installation/maintenance work, wait until the fan has come to a standstill after the unit has been switched off.
- Caution! Pipes, casings and fittings can become very hot or very cold depending on the operating mode!
- Qualified personnel must have undergone training to provide them with adequate knowledge of the following:
 - Safety and accident prevention regulations
 - Guidelines and recognised technical regulations, such as Association of German Electricians (VDE) regulations
 - DIN and EN standards
 - Accident prevention regulations VBG, VBG4, VBG9a
 - DIN VDE 0100, DIN VDE 0105
 - EN 60730 (Part 1)
 - Technical wiring regulations (TABs) issued by the regional electricity providers

Protect the products from any moisture during installation. Check the use with the manufacturer in case of any doubt. Any use other than the use specified above is deemed not to be correct and proper. The operator of the unit is solely responsible for any damage arising as a result of this. Correct use is deemed to include observing the installation instructions described in this manual.

Modifications to the unit

Do not undertake any modifications or upgrades to the KaController or KaCool without discussing them with the manufacturer as they can impair the safety and operation of the unit.

Do not carry out any measures on the unit not described in this manual. Make sure that on-site systems and cabling are suitable for connection to the intended system!

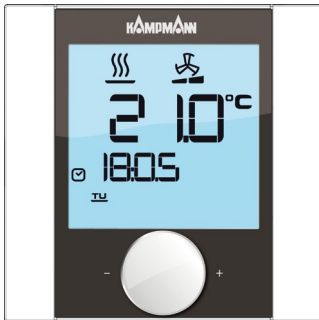
3 ▶ Operation of the KaController

The KaController is capable of controlling the wide range of Kampmann systems. KaControllers are equipped with state-of-the-art technology and offer users the option of adapting the air conditioning of buildings to individual needs.

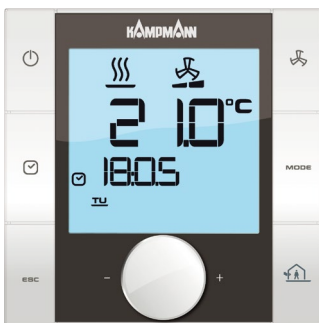
Up to two switching-on and switching-off times can be configured for every day of the week so that demand-led temperature control can be set by the user.

Product features:

- integral NTC temperature sensor for room temperature control
- large LCD multifunctional display with clearly arranged icons
- selection of the value to be displayed (room temperature, setpoint, offset setpoint)
- automatic LED background lighting
- large seven-segment display for visualisation of the value to be displayed
- real-time clock with integral timer programs
- 2 switching-on and 2 switching-off times per day
- ECO / Day changeover
- alarm display
- key lock (limited functions for offices, hotels..)
- manual or automatic mode
- press/turn navigator dial with endless turn/rest function
- one-touch operation of all functions
- connection of Kampmann system components via a bus connection
- password-protected service level
- language-independent display, ideal for international use



KaController without function keys, white

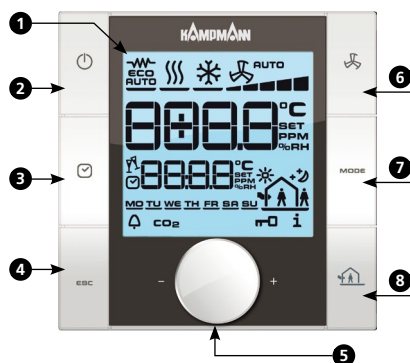


KaController with function keys, white



KaController without function keys, black

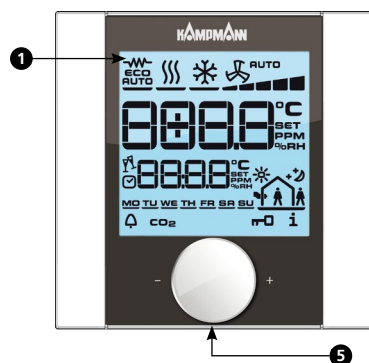
3.1 Function keys, display elements



KaController with function keys
Type 3210002
Type 3210004

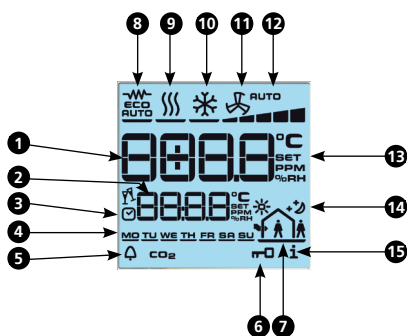
- 1 Display with LED background lighting
- 2 ON / OFF key (depending on setting)
 - ON / OFF (factory setting)
 - ECO mode / Day mode
- 3 TIMER key
 - set the time
 - set timer programs
- 4 ESC key
 - back to standard view
- 5 Navigator dial
 - change settings
 - call up menus
- 6 FAN key
 - set fan control
- 7 MODE key
 - set operating modes (disabled with 2-pipe applications)
- 8 HOUSE key
 - external ventilation ON / OFF

All menus can be selected and set using the navigator dial.



KaController without function keys
(one-dial operation)
Type 3210001
Type 3210003
Type 3210006

The LED background lighting is automatically switched off 5 seconds after the KaController is last used. The LED background lighting can be permanently disabled using a parameter setting.



Display

- 1 Display of room temperature setpoint
- 2 Current time
- 3 Timer program enabled
- 4 Weekday
- 5 Alarm
- 6 Selected function is locked
- 7 External ventilation operating mode enabled
- 8 Fan control setting Auto-0-1-2-3-4-5
- 9 Ventilation mode
- 10 Cooling mode
- 11 Heating mode
- 12 Automatic heating / cooling changeover mode
- 13 Setpoint setting enabled
- 14 ECO mode
- 15 Filter message

The symbols shown on the display depend on the application (2-pipe, 4-pipe etc.) and the parameters set.

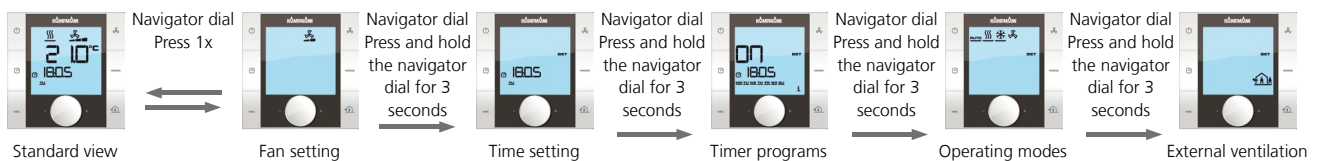
3.2 Operation

The KaController is operated by the navigator dial and the function keys.

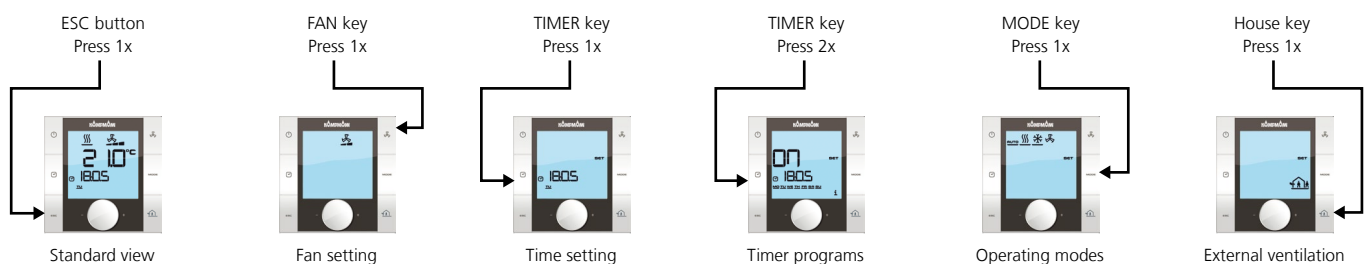
The functions that can be called up and set using the navigator dial are identical on both versions (with and without function keys at the side). An illustration of the KaController with the function keys at the side is used throughout these instructions for ease of understanding.

The navigator dial or side function keys are also used to select the various selection menus.

Menu selection using the navigator dial



Menu selection using function keys



If no action is carried out using the navigator dial or the function keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

3.2.1 Switching the control off and on

When the controller is switched on, the display shows the standard view with the current room temperature setpoint and the fan stage set.



Following initial commissioning of the KaController, the time is no longer shown in the standard view (see "Time setting" selection menu).



Standard view

Disabling the control:

There are 3 options for switching off the control:

1. Press the ON / OFF button.
2. Turn the navigator dial to the left until OFF appears.
3. Press and hold down the navigator dial until OFF appears.



Control OFF view

Enabling the control:

There are 2 options for switching on the control:

1. Press the ON / OFF button.
2. Press the navigator dial.

3.2.2 Activating and disabling the control (when ECO / Day changeover is enabled)

When the controller is switched on, the display shows the standard view with the current room temperature setpoint, the fan stage set and the operating mode set.

Following initial commissioning of the KaController, the time is no longer shown in the standard view (see "Time setting" selection menu).

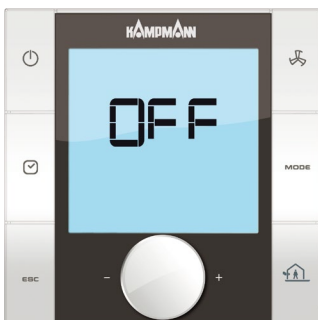


Standard view

Disabling the control:

There are 2 options for switching off the control:

1. Turn the navigator dial to the left until OFF appears.
2. Press and hold down the navigator dial until OFF appears.



Control OFF view

Enabling the control:

There are 2 options for switching on the control:

1. Press the ON / OFF button.
2. Press the navigator dial.



Standard view

Enabling ECO mode:

There are 3 options for enabling ECO mode

1. Press the ON / OFF button.
 2. Press and hold down the navigator dial until the ECO symbol appears.
- Set time switching programs have an effect on the ECO / Day changeover and not on ON / OFF changeover.



Standard view ECO mode enabled

Disabling ECO mode

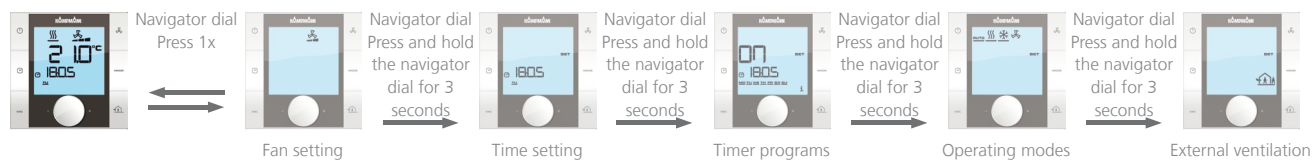
There are 3 options for enabling Day mode

1. Press the ON / OFF button.
 2. Press and hold down the navigator dial until the ECO symbol disappears.
- Set time switching programs have an effect on the ECO / Day changeover and not on ON / OFF changeover.

3.2.3 Temperature setting (absolute value)

The temperature setpoint is entered from the standard view.

To call up the standard view, press ESC or do not touch the KaController for 3 seconds.



Standard view

Setting the temperature setpoint:

A new temperature setpoint can be set by turning the navigator in the standard view.

Apply the set value by pressing the navigator dial and calling up the standard view.



If no action is carried out using the navigator dial or the function keys for longer than 3 seconds, the last change made is saved and the standard view is called up.



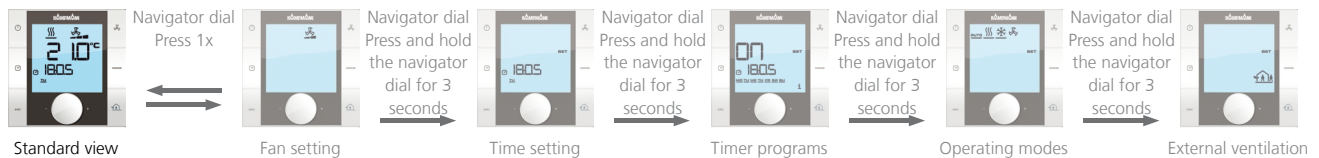
Setting the temperature setpoint

3.2.4 Temperature setting (relative value, comfort control enabled)

The temperature setpoint is entered from the standard view.

To call up the standard view, press ESC or do not touch the KaController for 3 seconds.

The setpoint was defined at installation, however with Comfort control, the user has the option of increasing or decreasing the setpoint by 3 °C to compensate for different perceptions of room temperature.



Standard view Comfort control



Temperature setpoint shift setting

Setting the temperature setpoint:

A new temperature setpoint can be set by turning the navigator in the standard view.

Apply the set value by pressing the navigator dial and calling up the standard view.

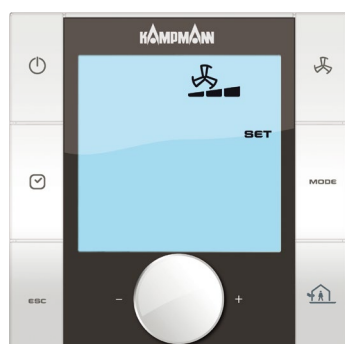
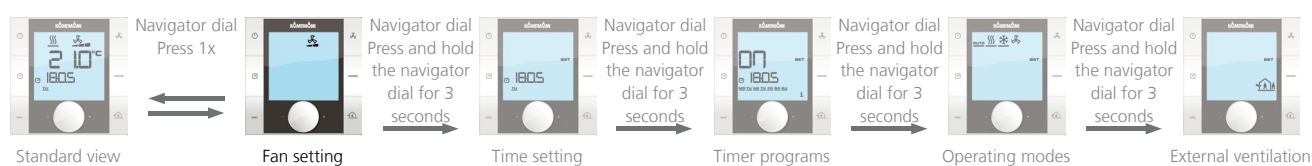


If no action is carried out using the navigator dial or the function keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

3.2.5 Fan setting

Press the FAN key (quick access) or use the navigator dial to call up the "Fan setting" selection menu.

Calling up the "Fan setting" menu using the navigator dial:



Fan stage 3

The room temperature is initially controlled with natural convection in automatic mode and then by continually adjusting the fan speed. Users also have the option of setting fan stages Auto-0-1-2-3-4-5 as required.

Pressing the navigator dial in the standard view switches the display to the "Fan setting" menu.

You can select the required fan stage Auto-0-1-2-3-4-5- by turning the navigator dial.

Pressing the navigator dial enables the selected fan stage.

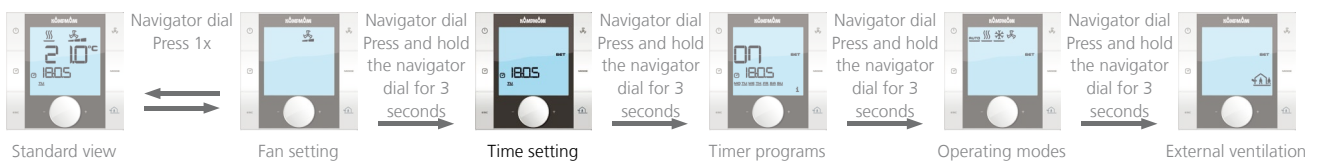


If no action is carried out using the navigator dial or the function keys for longer than 3 seconds, the last change made is saved and the standard view is called up.

3.2.6 Setting the time

Press the TIMER key (quick access) or use the navigator dial to call up the "Time setting" selection menu.

Calling up the "Time setting" menu using the navigator dial:



Time setting view

Setting the time:

Use the navigator dial to set the following:

1. Current hour
2. Current minute
3. Current day



The "Timer programs" selection menu is automatically called up once the current day has been confirmed by pressing the navigator dial.



If no action is carried out using the navigator dial or the function keys for longer than 7 seconds, the last change made is saved and the standard view is called up.



Following initial commissioning of the KaController, the time is no longer shown in the standard view. Only when the time has been set, is the current time shown in the standard view!
If "--:--" is entered for hours and minutes, the real-time clock is disabled and the time is hidden in the standard view.



Setting to hide the time in the standard view

3.2.7 Timer programs

Timer matrix

	ON1	OFF1	ON2	OFF2
MO	6 : 00	18 : 00	-- : --	-- : --
TU	6 : 00	18 : 00	-- : --	-- : --
WE	6 : 00	18 : 00	-- : --	-- : --
TH	6 : 00	18 : 00	-- : --	-- : --
FR	6 : 00	18 : 00	-- : --	-- : --
SA	8 : 00	14 : 00	-- : --	-- : --
SU	-- : --	-- : --	-- : --	-- : --

Example of a weekly timer program



Display elements in the "Timer programs" selection menu

- 1 ON = SWITCH ON timer program
OFF = SWITCH OFF timer program
- 2 1 = Timer program no. 1
2 = Timer program no. 2
- 3 Clock for switching-on/switching-off time
- 4 Weekday
- 5 If no switching-on or -off time is entered in the timer program matrix, the "Clock" symbol is hidden in the standard view.



Set the time in the "Time setting" selection menu before parametrising the switching-on and -off times.

The KaController can manage 2 switching-on and 2 switching-off times per day. The switching-on and -off times can be entered as a block or individually for each day.

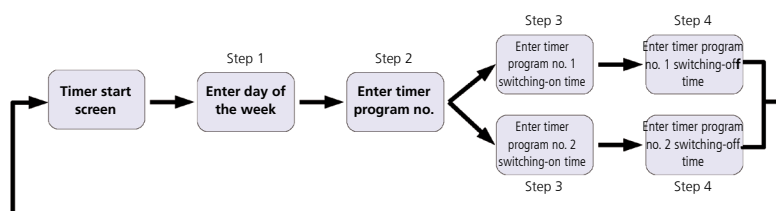


The timer program switches the controller on and off in accordance with the timer entries. After switching off the controller using the timer program, the user then has the option of switching the controller on using the ON / OFF key or the navigator dial.



If no switching-on or -off time is entered in the timer program matrix, the "Clock" symbol is hidden in the standard view.

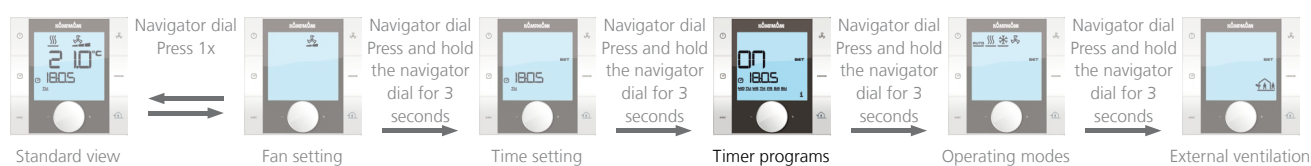
The diagram below shows the sequence for setting the timer program. Steps 1–4 are described in more detail in the next section.



To exit the "Timer programs" selection menu, press and hold down the navigator dial for 3 seconds in the timer program start screen or do not use the KaController for 15 seconds.

Press the TIMER key twice (quick access) or use the navigator dial to call up the “Timer programs” selection menu.

Use the navigator dial to call up the “Timer programs” menu:



Timer start screen

Step 1:

Turn the navigator dial to select a weekday for which you would like to program a switch-on or off time.

You have the option of selecting the days of the week as a block (MO–FR, SA–SU, MO–SU) or individually.

Press the navigator dial to apply the figure (for instance: MO–FR) and to call up the next input screen.



Enter timer program no.

Step 2:

Turn the navigator dial to select the number of the timer program (no. 1 or no. 2).

Press the navigator dial to apply the figure (for instance: Timer program no. 1) and to call up the next input screen.



Input screen for **switching-on time**

Step 3:

Set the **switching-on time** you require by turning the navigator dial.

Once the minutes have been set, the set **switching-on time** is carried over by pressing the navigator dial and the input screen for the switching-off time of the selected program no. is called up.

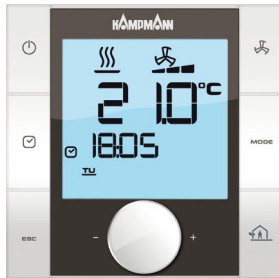
Input screen **for switching-off time****Step 4:**

Set the **switching-off time** you require by turning the navigator dial. Once the minutes have been set, press the navigator dial to apply the **switching-off time** and call up the timer start screen (⇒ Step 1).

IMPORTANT NOTE:

- Call up the respective weekday and associated timer program no. to delete the switching-on and switching-off times entered (Step 1 + Step 2). Replace the switching-on or -off time entered by " --:--: --" (Step 3 + Step 4).
- You can overwrite timer entries at any time either as a block or for each day
- Only request switching-on and -off times singly for each day. It is not possible to request switching-on and -off times as a block where there are differing time entries for the respective days of the week and the time is then shown by "--:--: --"!
- To exit the "Timer programs" selection menu, press and hold down the navigator dial for 3 seconds in the timer program start screen or do not use the KaController for 15 seconds.

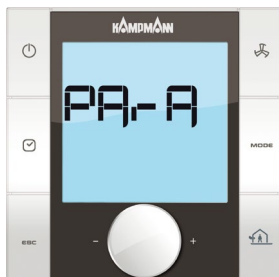
3.2.8 Deleting all timer programs and time



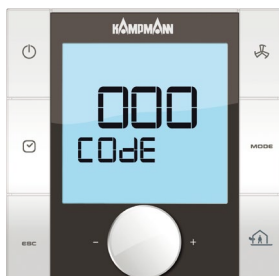
Standard view



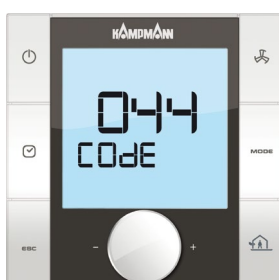
Control OFF view



Call up parameter level view



Call up parameter level password request view



Call up parameter level password entry view

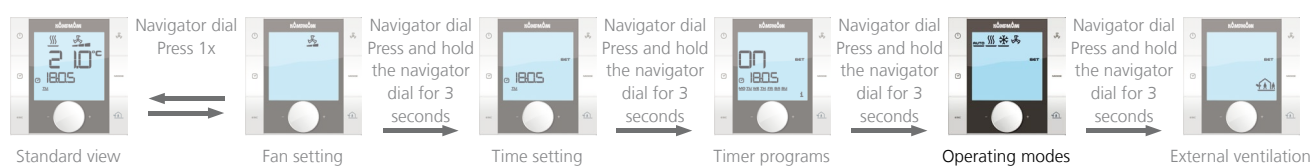
Perform the following steps to delete all timer programs and the time:

1. Switch off the KaController by:
 - Pressing the ON / OFF key
 - Pressing the navigator for a minimum of 5 seconds
 - Turn the navigator dial to the left until OFF appears.
2. Press the navigator dial for a minimum of 10 seconds to call up the Service menu. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the code 44 by turning the navigator dial and confirm by pressing the navigator dial. Now all timer programs and the time are deleted.
4. There are 3 options for exiting the Service menu and calling up the standard view:
 - If no action has been carried out using the navigator dial for longer than 2 minutes.
 - Holding down the navigator dial for 5 seconds.
 - Turning the navigator, selecting "ESC" on the display and confirming the selection by pressing the navigator.
5. Disconnect the unit for approx. 1 minute to apply the change.

3.2.9 Modes of operation (Mode key)

Press the MODE key (quick access) or use the navigator dial to call up the "Operating modes2 selection menu.

Calling up the "Operating modes" menu using the navigator dial:

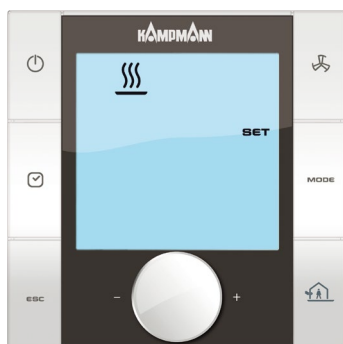


You can use the navigator dial to set the operating mode depending on the parameter setting.

- | | |
|-------------------|---|
| Automatic mode: | The control switches automatically between heating mode and cooling mode, while maintaining a neutral zone. |
| Heating mode: | The control only works in heating mode. |
| Cooling mode: | The control only works in cooling mode. |
| Ventilation mode: | The control only works in ventilation mode. |

The operating mode required can be selected by turning the navigator dial in the 'Operating mode' selection menu.

Pressing the navigator dial enables the selected operating mode.



Setting heating mode



The MODE key is locked with 2-pipe applications, as heating and cooling mode is specified by an external contact or clip-on sensor. As a rule, it is not possible to alter the operating mode using the KaController in 2-pipe applications.



If no action is carried out using the navigator dial for longer than 3 seconds, the last change made is saved and the standard view is called up.

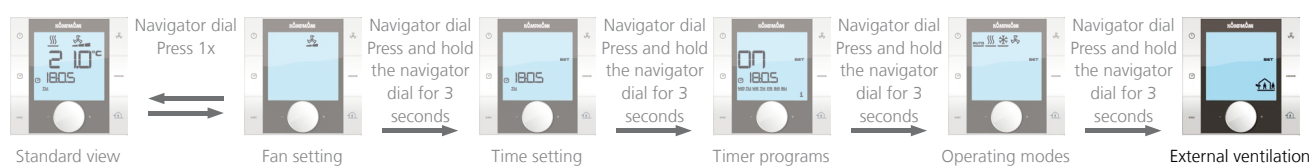


If the symbols for heating or cooling mode are flashing, it means that the water temperature to enable the selected operating mode has not yet been reached.

3.2.10 External ventilation

Press the MODE key (quick access) or use the navigator dial to call up "External ventilation".

Use the navigator dial to call up the "External ventilation" menu:



External ventilation not enabled

Setting external ventilation:

- Use the navigator dial or press the function keys to call up External ventilation.
- Turn the navigator dial so that the arrow is visible in the house symbol.
- Confirm by pressing the navigator dial.

The function is described in detail in point 11.3.24.

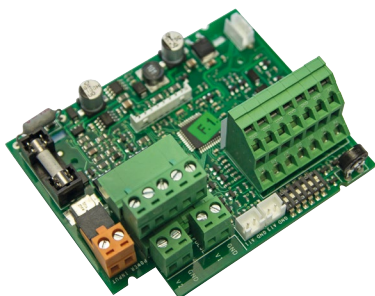
i External ventilation can only be enabled when the "External ventilation" function is enabled. The key symbol disappears if the function is not enabled.



External ventilation enabled

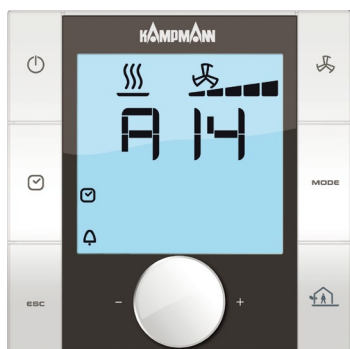
i If no action is carried out using the navigator dial for longer than 3 seconds, the last change made is saved and the standard view is called up.

4 ▶ Alarm messages



The KaController displays faults by means of the alarm messages listed in the table below. The alarm messages are displayed according to their priority. In the event of an alarm, note down the alarm message and contact the responsible member of staff (system administrator or installer/service technician) to fix the fault quickly.

4.1 SmartBoard alarm messages, display on the KaController



View of "Condensate alarm" (Alarm A14 shown)

SmartBoard alarm table

Code	Alarm	Priority
A11	Faulty control sensor	1
A12	Motor fault (local stop)	2
A13	Room frost protection	3
A14	Condensate alarm	4
A15	General alarm	5
A16	Sensor A11, A12 or A13 faulty	6
A17	Unit frost protection	7
A18	EEPROM error	8
A19	Offline slave in the CANbus network	9

4.2 KaController alarm messages



View "Real-time clock faulty in the KaController" (Alarm tAL3 shown)

KaController alarm table

Code	Alarm
Code	Alarm
tAL1	Temperature sensor in the KaController faulty
tAL3	Real-time clock in the KaController faulty
tAL4	EEPROM in the KaController faulty
Cn	Communication fault with the external control

Should more than one fault occur simultaneously in the KaController control electronics, the alarm messages are displayed alternately in the display.

5 ▶ Troubleshooting

General:

The faults of a slave unit are not shown on the KaController. Only a fault in the master unit is shown on the KaController.

5.1 A11 Control sensor faulty

The room temperature is regulated on the selected control sensor, that is to say that the external room sensor / air intake sensor can be faulty, depending on the DIP switch setting. If the room sensor in the KaController is faulty, this display alternates to tAL1.

Cause:

The RGB sensor, AI1 sensor or the virtual sensor measures a temperature of $\geq 90\text{ °C}$ or the input has short-circuited.

Effect of this alarm:

The fan is switched off and the valves close.

5.2 A12 Motor protection

The motor is continuously monitored and "A12" appears in the display of the KaController if a motor fault is detected.

Cause:

see 5.10

Effect of this alarm:

The fan is switched off and the cooling valve is closed.

5.3 A13 Room frost protection function

The room temperature is monitored at each phase in the system to the defined limit of 8 °C . The room frost protection function is enabled if the room temperature drops below 8 °C . The room frost protection function is disabled when the room temperature rises above the limit of 8.5 °C .

Cause:

The RGB sensor, AI1 sensor or the virtual sensor measures a temperature of $\leq 8\text{ °C}$.

Effect of this alarm:

The fan is switched on at stage 1 and the heating valve is opened.



The limit of 8 °C is fixed for the room frost protection function and cannot be changed.

5.4 A14 Condensate alarm

The parametrised input for detecting condensate is continuously monitored and "A14" appears in the display of the KaController if a condensate alarm is emitted.

Cause:

condensate produced

Effect of this alarm:

The fan is switched on at stage 1 and the cooling valve is closed.

5.5 A15 General alarm

The parametrised input for the general alarm is continuously monitored and "A15" appears in the display of the KaController if a general alarm is emitted.

Effect of this alarm:

The fan is switched off and the heating/cooling valve is closed.

5.6 A16 Sensor AI1, AI2 or AI3 faulty

The sensor alarm is displayed if one of the enabled sensors does not transmit any plausible measured values to the KaControl.

Cause:

The sensor AI1, AI2 or AI3 has to be parametrised as a sensor and detect a temperature of $\geq 90\text{ °C}$ or one of the inputs has short-circuited.

Effect of this alarm:

The fan is switched off and the heating and cooling valve is closed.

5.7.A17 Unit frost protection function

The temperature is monitored at each phase in the system by every parametrised or fitted sensor to the defined limit of 4 °C . The unit frost protection function is enabled if the room temperature drops below 4 °C . The unit frost protection function is disabled when the room temperature rises above the limit of 4.5 °C .

Cause:

The RGB sensor, AI1, AI2, AI3 sensor or the virtual sensor measures a temperature of $\leq 4\text{ °C}$.

Effect of this alarm:

The fan is switched off and the heating and cooling valve is opened.



The limit of 4 °C is fixed for the unit frost protection function and cannot be changed.

5.8 A18 EEPROM error

The EEPROM error is displayed if an error is detected in the internal memory on the KaControl SmartBoard.

Cause:

Value overflow, maximum read and write cycles reached.

Effect of this alarm:

Communication in the tLan network and control is interrupted.

5.9 A19 Slave offline in the CAN network

reserved for subsequent use.

5.10 Problem-solving

Problem	Solution
The fan of a slave unit does not start up.	<ol style="list-style-type: none"> 1. When a clip-on temperature sensor is fitted, the parametrised medium temperature is not reached. 2. The room temperature has already reached the setpoint. <p>⇒ Check parameter setting. ⇒ Inform Service personnel if the fan is not enabled despite the request to do so.</p>
The fan does not rotate at the set speed.	<ol style="list-style-type: none"> 1. When a clip-on temperature sensor is fitted, the parametrised medium temperature is not reached. 2. Ventilation cycle is in operation <p>⇒ Check parameter setting. ⇒ Inform Service personnel if the fan does not rotate at the desired fan speed despite the request to do so.</p>
The KaControl-SmartBoard was not switched on / off at the set time.	Possible power failure.
"Motor fault" message	<p>Check the fan for a blockage ==> Eliminate the cause of the fault. Disconnect the unit to eliminate the cause of the fault.</p>
"Condensate alarm" message	<p>Check the function of the condensate pump and the water level in the condensate tray. ⇒ Check the condensate pump should there be a fault. ⇒ Check the water drain should there be water standing in the condensate pump.</p>
"EEPROM" message	Reset the parameters to the default values.
Sensor AI1, AI2 or AI3 faulty	Check the sensor values and the electrical connection of the sensors.

6 ▶ Installation

6.1 Introduction to the SmartBoard and accessories

A high-performance parametrised microprocessor is designed to carry out all necessary functions. Each KaControl unit therefore is equipped with its own “intelligence” and can be operated in groups via Kampmann networks. The KaControl SmartBoard product range and its accessories are described below:







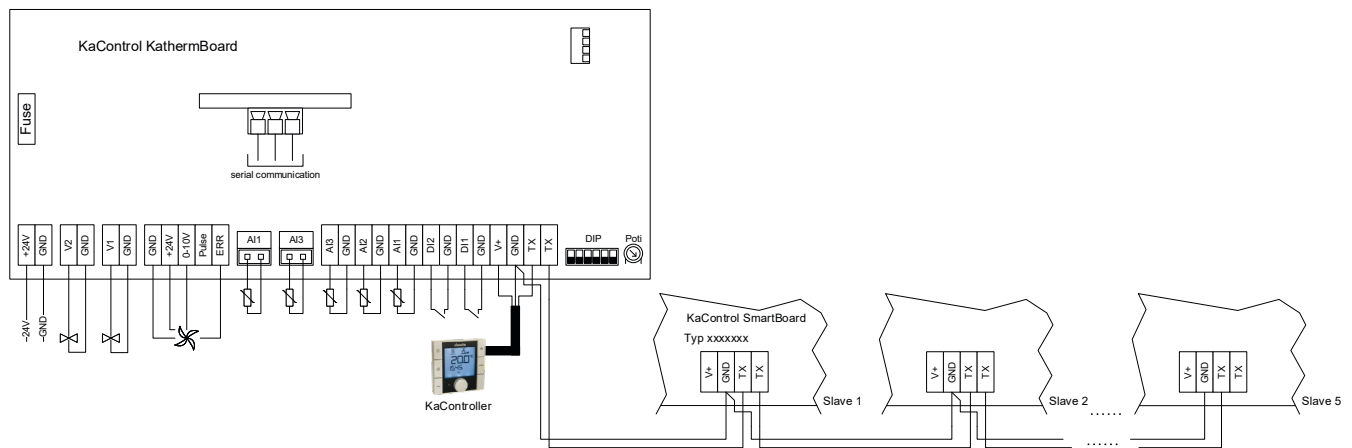
Figure	Article	Properties	Fits article group	Article number
	SmartBoard	<ul style="list-style-type: none"> - either: automatic fan, 5 manually selectable fan stages - valve control for 2-pipe and 4-pipe applications for thermoelectric valve actuators 24 V DC OPEN/CLOSE - integrated timer program for programming day and week switching functions in the KaController unit - motor monitoring with fault signal processing - network connection option via serial interface (interface cards available as optional accessories) 	all KaControl secondary units	000001065423
	KaController without function keys, white	<ul style="list-style-type: none"> - room control unit for wall mounting, high-quality design without side function keys - communication interface to the Kampmann T-LAN bus system - large display with automatic background lighting - integral room temperature sensor - push-turn navigator dial with endless turn/lock function - built-in weekly switching program - password-protected parameter level - plastic housing, pure white (similar to RAL 9010) or traffic black (similar to RAL 9017) - dimensions: W x L x D = 86 x 86 x 55 mm - installation height = 28 mm 	all KaControl secondary units	196003210001
	KaController with function keys, white	<ul style="list-style-type: none"> - for quick access to fan settings, operating modes, ECO mode, time and timer program, otherwise as art. no. 196003210001 	all KaControl secondary units	196003210002
	KaController without function keys, black	<ul style="list-style-type: none"> - room control unit for wall mounting, high-quality design, plastic housing, traffic black (similar to RAL 9017), otherwise as art. no. 196003210001 	all KaControl secondary units	196003210006
	Room temperature sensor	<ul style="list-style-type: none"> - home temperature sensor, surface-mounted - temperature measuring range from -35 °C to +70 °C - plastic housing, pure white (similar to RAL 9010) - dimensions: W x L x D = 84.5 x 84.5 x 25 mm - NTC sensor 10 K@25 °C, B3435 	all KaControl secondary units	196003250110
	Temperature sensor IP65	<ul style="list-style-type: none"> - outside temperature sensor, surface-mounted - temperature measuring range from -35 °C to +70 °C - plastic housing IP65, pure white (similar to RAL 9010) - dimensions: W x L x D = 50 x 65 x 45.5 mm - NTC sensor 10 K@25 °C, B3435 	all KaControl secondary units	196003250112

Figure	Article	Properties	Fits article group	Article number
	Cable sensor	<ul style="list-style-type: none"> - temperature measuring range from -20°C to +70 °C - 600 mm connecting cable with plug - NTC sensor 10 K@25 °C, B3435 	all KaControl secondary units	196003250114
	Clip-on temperature sensor	<ul style="list-style-type: none"> - temperature measuring range from -20°C to +70 °C - 3000 mm connecting cable without plug - sensor element with tensioning strap - NTC sensor 10 K@25 °C, B3435 	all KaControl secondary units	196003250115
		<ul style="list-style-type: none"> - temperature measuring range from -20°C to +70 °C - 3000 mm connecting cable with plug - sensor element with tensioning strap - NTC sensor 110 K@25 °C, B3435 	all KaControl secondary units	196003250116
	Intake air sensor	<ul style="list-style-type: none"> - to detect the entering air temperature - lance length 170 mm - lance diameter 8 mm - cable length 600 mm - NTC sensor 10 K@25 °C, B3435 	1.48 Venkon	196003250151
		<ul style="list-style-type: none"> - to detect the entering air temperature - lance length 50 mm - lance diameter 4 mm - cable length 1000 mm - NTC sensor 10 K@25 °C, B3435 	<ul style="list-style-type: none"> - 1.28 Powerkon NT - 1.53 TOP - 1.54 ULTRA - 1.57 TIP - 3.24 KaCool W - 3.25 KaCool D - 3.26 KaDeck 	000001066759
	RS485 card	for connection to Modbus RTU networks	all KaControl secondary units	196003260101
	CANbus card	to extend single-circuit control	all KaControl secondary units	196003260301
	Ethernet card	for connection to BACnet IP networks	all KaControl secondary units	196003260401
	LonWorks card	for connection to LON FTT10A networks	all KaControl secondary units	196003260501
	KNX card	for connection to a KNX network	all KaControl secondary units	196003260702
	Parameter key	with external power supply (including power supply unit)	all KaControl secondary units	197901189880
		with internal power supply unit (excluding battery)	all KaControl secondary units	197901189869

6.2 Installation and basic settings

6.2.1 SmartBoard connections

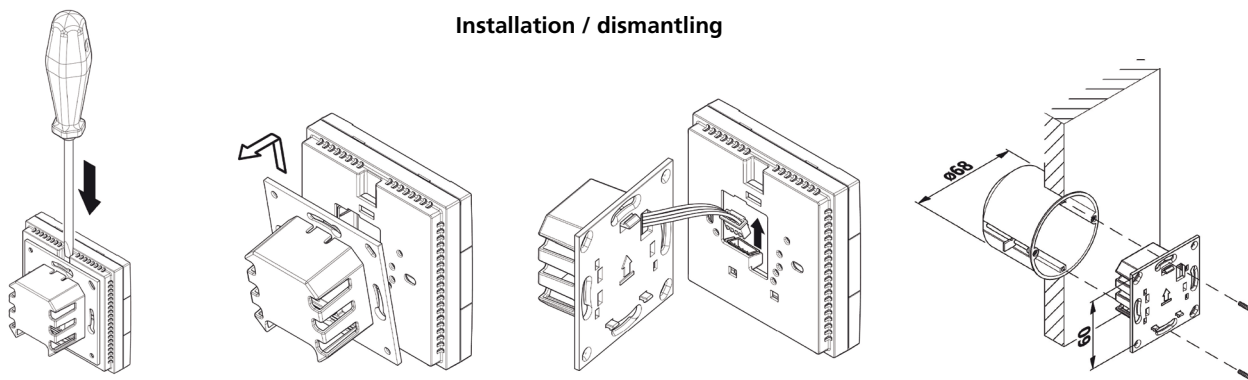
- 2 digital inputs (2 configurable)
- 3 multifunctional inputs (3 configurable)
- 1 fan voltage output (0-10 V limited by potentiometer or parameter)
- 1 motor fault alert input
- 2 digital outputs (1 configurable)
- serial tLAN connection for KaController
- serial tLAN connection (max. 5 slaves, max. 30 m)
- serial interface for extension cards (CANbus, Modbus, KNX etc.)
- serial interface for uploading parameters using a parameter key



Terminal	Type	Connection	Load	Parametrisable
+24 V	Power	Voltage supply 24 V DC	Max. 5 A	-
GND	GND	Power supply GND		-
GND	GND	GND power supply for fan motor		-
24 V	24 V	Power supply to fan motor		-
0-10	AO	Speed signal for fan motor	Max. 10 mA	-
Pulse	AI	Speed signal from fan motor	max. 13 V / 2 mA	-
Err	DI	Digital input	- Voltage: Contact open +5 V DC - Current: Contact closed 5 mA	-
GND	GND	GND for actuator		-
V1	DO	Output signal for actuator	24 V DC / 500 mA	-
GND	GND	GND for actuator		-
V2	DO	Output signal for actuator	24 V DC / 500 mA	P039
TX	Comm.	Serial communication - KaControl operation ↔ KaController	0/5 V tLan	-
V+	Comm.	Power supply for KaController	+13.75 V Max. 140 mA	-
DI1	DI	Digital input	- Voltage: Contact open +5 V DC - Current: Contact closed 5 mA	P043
DI2	DI	Digital input	- Voltage: Contact open +5 V DC - Current: Contact closed 5 mA	P044
AI1 GND	AI	Multifunctional input	- Analogue: NTC sensor 10 K@25°C, B3435 - Analogue: 0..10 V DC, Ri = 20 KΩ - Digital: open +5 V DC, closed 5 mA	P015
AI2 GND	AI	Multifunctional input	- Analogue: NTC sensor 10 K@25°C, B3435 - Analogue: 0..10 V DC, Ri = 20 KΩ - Digital: open +5 V DC, closed 5 mA	P016
AI3 GND	AI	Multifunctional input	- Analogue: NTC sensor 10 K@25°C, B3435 - Analogue: 0..10 V DC, Ri = 20 KΩ - Digital: open +5 V DC, closed 5 mA	P017
GND	GND	Common GND (6-pin terminal)		-

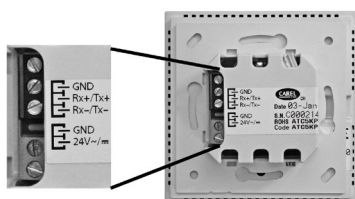
6.3 KaController

Installation / dismantling



Electrical connection

- Connect the KaController to the nearest KaControl as per the wiring diagram. The maximum bus length between the KaController and the KaControl is 30 m.
- Connecting a KaController to it automatically converts the respective KaControl into the master unit in the control circuit.



KaController terminals



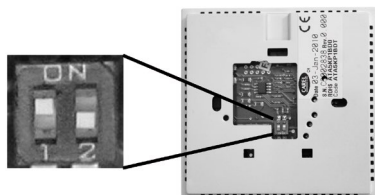
Disconnect the unit prior to embarking on "all" wiring work!



Only connect the bus lines to the KaControl when the unit is fully disconnected.

DIP switch setting

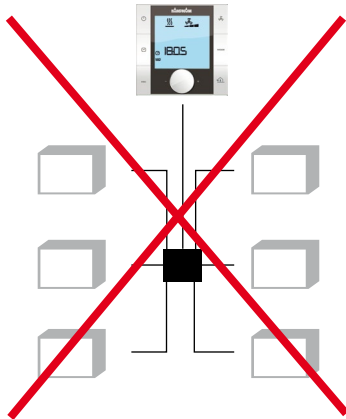
- The DIP switches on the rear of the KaController should be set according to the illustration at the side:
DIP switch no. 1: **ON** (factory setting)
DIP switch no. 2: **OFF** (factory setting)



DIP switch setting
KaController
DIP switch no. 1: **ON**
DIP switch no. 2: **OFF**

7 ► Cabling

7.1 General information

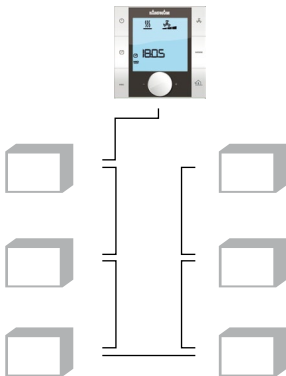


Wrong!
Star-shaped wiring of the bus lines.

- Route all low voltage cables along the shortest route.
- Ensure that low-voltage and power cables are separated, using metal partitions on cable harnesses.
- Use only shielded cables as low-voltage and bus cables.
- Lay all BUS cables in a linear pattern. Star-shaped wiring is not permitted (Figure on left).
- The KaController is connected via a bus connection to the respective SmartBoard of the unit.



Lay shielded, paired cables, e.g. UNITRONIC® BUS LD 2X2X0.22 or similar, separately from power cables!



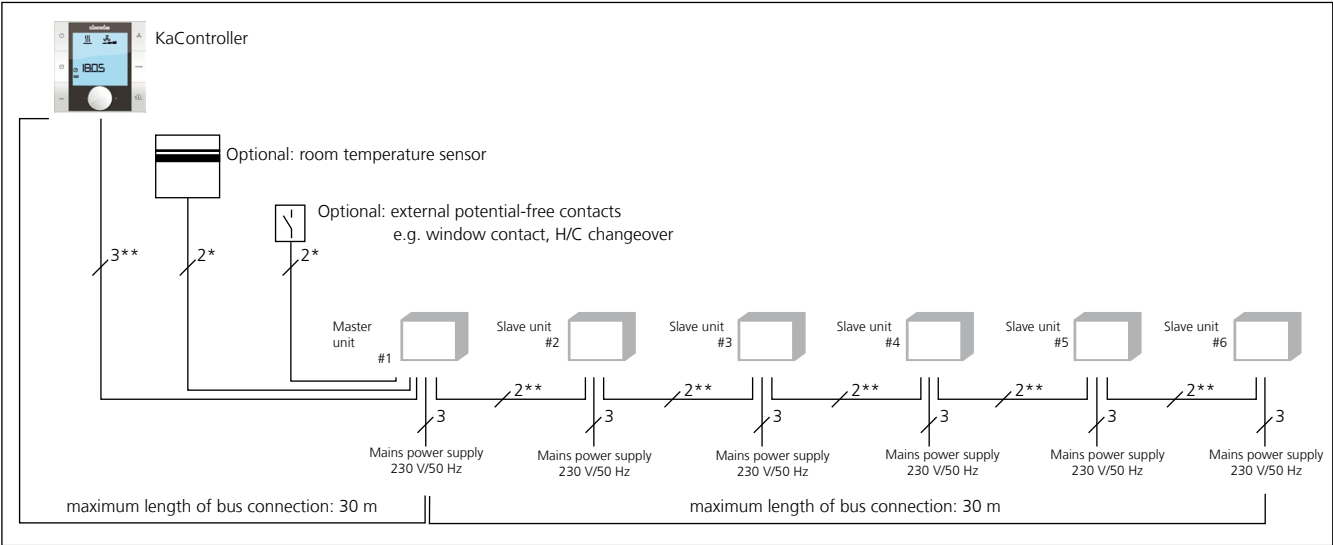
Right!
Linear wiring of the bus lines.



When laying bus cables, avoid the formation of star points, for instance in junction boxes. Loop the cables through to the units!

7.2 Single-circuit control of up to 6 units

With KaController.
Single-circuit control of up to 6 units



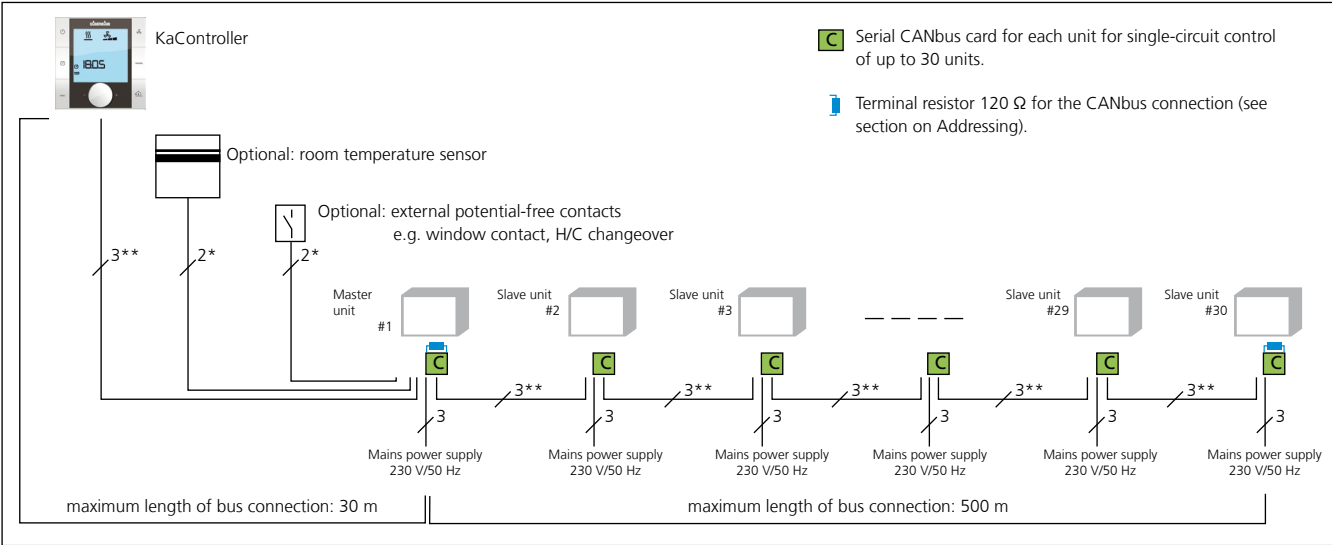
The number of connecting wires required including fuses is given on the individual control units. Wire the units in accordance with the wiring diagram for the unit.

- * Lay shielded cables (e.g. IY(ST)Y, 0.8 mm), separately from high-voltage cables.
- ** Lay shielded, paired cables, e.g. UNITRON-IC® BUS LD 2x2x0.22 or of the same value, separately from power cables!

Maximum permissible cable lengths	
Total length of Bus cables between the KaControl units	max. 30 m
Total length of Bus cable between the room control unit and master unit	max. 30 m
Total length between the KaControl unit and the external potential-free contacts e.g. window contact etc.	max. 30 m
Total length between the KaControl unit and the separate room temperature sensor	max. 30 m

7.3 Single-circuit control of up to 30 units

With KaController.
Single-circuit control of up to 30 units

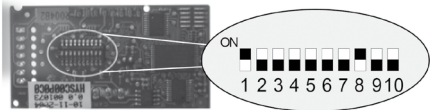


The number of connecting wires required including fuses is given on the individual control units. Wire the units in accordance with the wiring diagram for the unit.

- * Lay shielded cable (e.g. IY(ST)Y, 0.8 mm) separately from power lines.
- ** Lay shielded, paired cables, e.g. UNITRON-IC® BUS LD 2x2x0.22 or of the same value, separately from power cables!

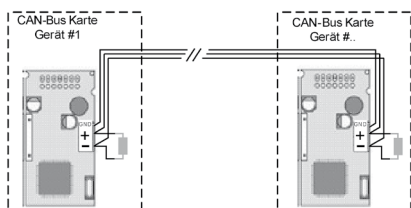
Maximum permissible cable lengths	
Total length of BUS cables between the KaControl units	max. 500 m
Total length of Bus cable between the room control unit and master unit	max. 30 m
Total length between the unit and the external potential-free contacts e.g. window contact, external ON / OFF etc.	max. 30 m
Total length between the unit and the separate room temperature sensor	max. 30 m

7.3.1 Addressing the CANbus card



The DIP switches on the CANbus cards must be set identically on each CANbus card as shown.

7.3.2 Terminal resistors in a CANbus system



- The bus cables between the CANbus cards must be linear.
- Disconnect the unit before adjusting the terminal resistors.
- A terminal resistor must be connected between terminals "+" and "-" on the first and last CANbus card in a bus line.
- Resistance of terminal resistor: 120 Ohm.

7.3.3 Bus connections between the units

- Bus communication between the units with CANbus cards is solely via the CANbus.
The tLAN bus communication between the units used in single-circuit controls is not connected.
- Refer to the technical data sheet for the CANbus cards for the connection conditions for the CANbus cards.

7.4 KaController

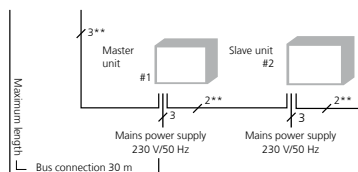
Flush-mounted back box



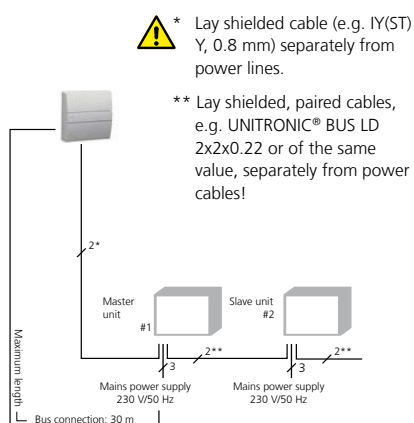
** Lay shielded, paired cables, e.g. UNITRONIC® BUS LD 2x2x0.22 or of the same value, separately from power cables!



- A flush-mounted back box is required for the KaController.
- Connect the KaController to the nearest KaControl as per the wiring diagram. The maximum bus length between the KaController and the KaControl unit is 30 m.
- Connecting a KaController to it automatically converts the respective KaControl into the master unit in the control circuit.

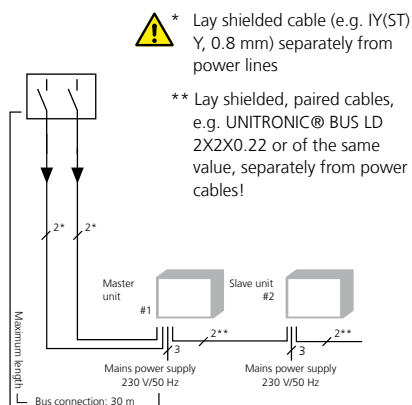


7.5 External room temperature sensor



- All KaControl master units have an analogue input to connect an external room temperature sensor.
- Connect up the cables in accordance with the wiring diagram and use the DIP switch or KaController to configure the functions.
- The maximum cable length between the master unit and the room temperature sensor is 30 m.

7.6 Inputs for processing external contacts (e.g. window contacts, card readers etc.)

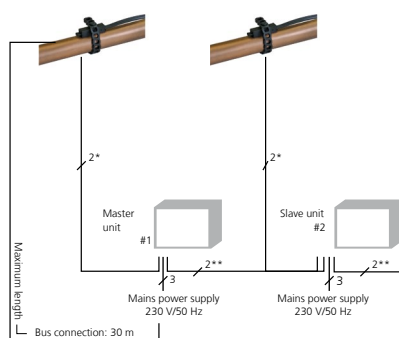


- All KaControl master units have multifunctional inputs that can be assigned different functions during commissioning.
- Connect up the cables in accordance with the wiring diagram and use the KaController to configure the functions.
- The maximum cable length between the master unit and the external potential-free contacts is 30 m.




No external contacts (e.g. window contact, card reader etc.) can be connected to the slave units.

7.7 Clip-on temperature sensor



- All KaControl units have multifunctional inputs that can be assigned different functions during commissioning.
- Connect up the cables in accordance with the wiring diagram and use the KaController to configure the functions.
- The maximum cable length between the master unit and the external potential-free contacts is 30 m.

 * Lay shielded cable (e.g. IY(ST)Y, 0.8 mm) separately from power lines

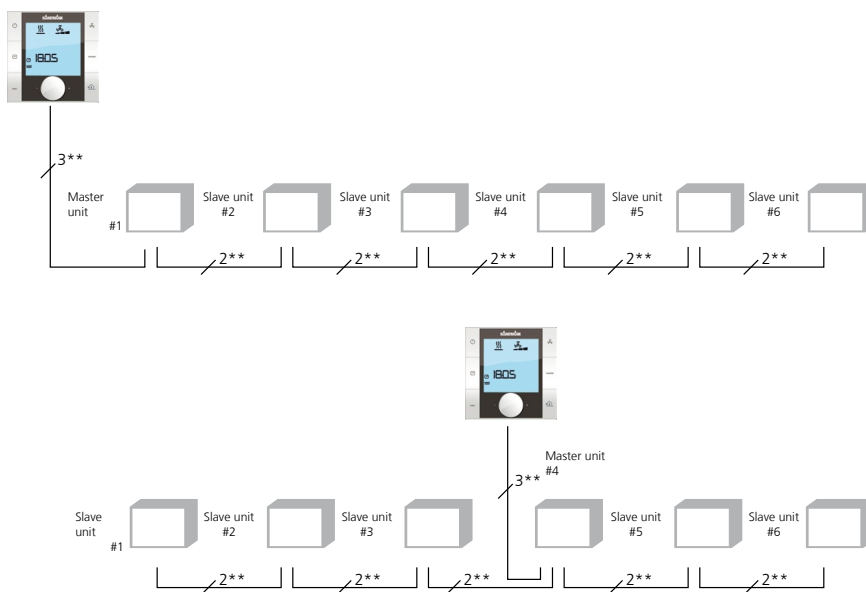
** Lay shielded, paired cables, e.g. UNITRONIC® BUS LD 2x2x0.22 or of the same value, separately from power cables!

8 ► Addressing

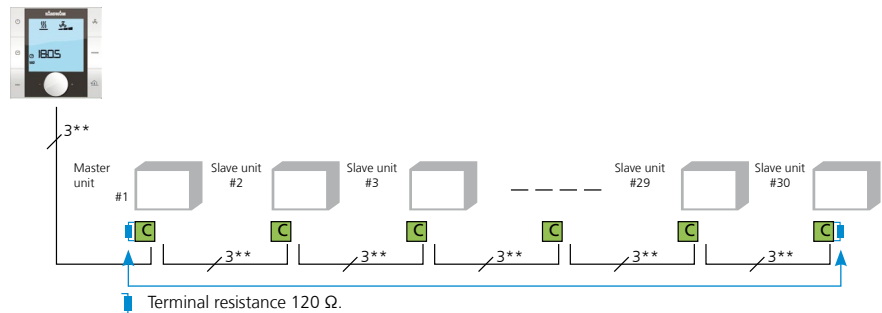
8.1 Single-circuit controls (broadcast network)

8.1.1 Maximum 6 KaControl units in one control zone

- KaControl units in single-circuit controls with a maximum of 6 units need not be addressed.
- The master unit/slave unit is automatically defined by connecting the KaController.
- The respective KaControl automatically becomes the master unit in the control circuit when a KaController is connected to it.
- A master unit need not necessarily be arranged at the end of a bus system.
- Lay all BUS cables in a linear pattern. Star-shaped wiring is not permitted.



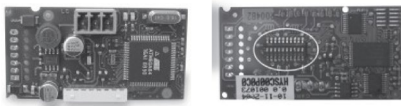
8.1.2 Maximum 30 KaControl units in one control zone (broadcast network)



CANbus card

Front view

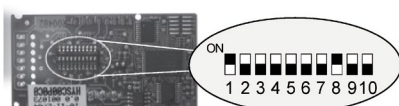
Rear view



- KaControl units in single-circuits with more than 6 units must be addressed.
- They are addressed by means of DIP switch settings on the CANbus card.
- The master unit/slave unit is automatically defined by connecting the KaC-controller.
- The respective KaControl automatically becomes the master unit in the control circuit when a KaController is connected to it.



All CANbus cards are given the same CAN address and work identically in a control zone with the configuration described below.



DIP switch on the rear of the CANbus card

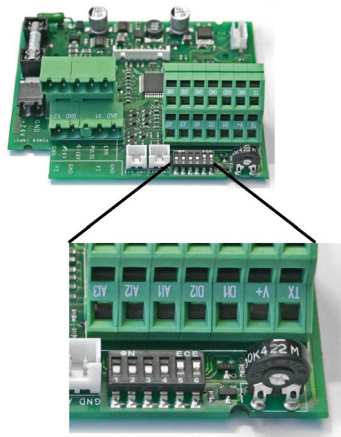
DIP1 = ON
 DIP2 = OFF
 DIP3 = OFF
 DIP4 = OFF
 DIP5 = OFF
 DIP6 = OFF
 DIP7 = OFF
 DIP8 = ON
 DIP9 = OFF
 DIP10 = OFF

Configuration of the CANbus card by means of DIP switch settings (identical for all CANbus cards):

1. Disconnect the KaControl unit.
2. Remove the CANbus card from the base board.
3. Set the DIP switch as per the diagram.
4. Refit the CANbus card to the base board.
5. Connect the BUS line.
6. Switch on the power supply to the KaControl unit.

- Set the DIP switches on all CANbus cards in a control circuit identically!
- Red LED flashing = CANbus communication master unit OK
- Yellow LED flashing = CANbus communication slave unit OK

9 Setting the unit configuration by means of DIP switches



Set the configuration of each KaControl unit via the DIP switches on the SmartBoard.

Once the DIP switches have been set, all the basic functions of the configuration have been parametrised and the KaControl can be operated immediately. Special setting options, such as lowering the temperature setpoint during ECO mode, must be parametrised in the Service menu. This parametrisation is possible using the KaController.

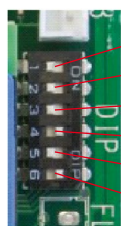
Open the control unit to check and possibly adjust the DIP switches.

The DIP switches are factory-set in accordance with the unit configuration!



Disconnect the control before starting to adjust the DIP switches.

Functional table of DIP switch settings on the SmartBoard



DIP1	OFF = --- ON = 0..10 V actuation by means of an on-site measurement and control system
DIP2	OFF = --- ON = actuation by potentiometer 0...100 kOhm
DIP3	OFF = no clip-on sensor fitted ON = clip-on sensor fitted
DIP4	OFF = 4-pipe or heating / cooling changeover via clip-on sensor ON = heating/cooling changeover via DI2
DIP5	OFF = 2-pipe system ON = 4-pipe system
DIP6	OFF = room control on intake air/ext. room sensor ON = room control on sensor in the KaController



With slave units, DIP switch no. 6 must be set to ON if the room temperature is detected via the external room sensor of the master unit or the KaController.

DIP switch no. 1

DIP switch no. 1 must be set to ON to actuate a KaControl by means of 0...10 V signals within a building management system provided by others.

The parameter settings required are described in section 10.3.17.

DIP switch no. 2

It is essential that DIP switch no. 2 is set to OFF.

DIP switch no. 3

Optionally install a clip-on sensor to monitor the water temperature. The following functions can be performed by a clip-on sensor:

1. Actuation of the fan stages when the hot or cold water is registered on the heating element (Auto-ECO function, see section 10.3.10)
2. Heating / cooling changeover function in a 2-pipe system (see section 10.3.7)

DIP switch no. 4

In a 2-pipe system, changeover between heating and cooling is enabled as standard by the switching of the digital input DI2, with the following operating modes being executed depending on the external contact:

DIP4 = ON + ext. contact open ⇒ heating mode

DIP4 = ON + ext. contact closed ⇒ cooling mode

Alternatively the changeover between heating and cooling in a 2-pipe system can also be enabled by a clip-on sensor. In this version, DIP switch no. 4 must be set to DIP4 = OFF (see section 10.3.7).

DIP switch no. 5

The convector configuration (2-pipe/ 4-pipe) is set by means of DIP switch no. 5.

DIP switch no. 6

There is an option of using the internal sensor of the KaController or an external room temperature sensor.

DIP switch no. 6 = OFF ⇒ room temperature control on an air intake / external room sensor

DIP switch no. 6 = ON ⇒ room temperature control on the internal sensor of the KaController or the selected sensor on the master unit



With slave units, DIP switch no. 6 must be set to ON if the room temperature is detected via the external room sensor of the master unit or the KaController.

9.2 Temporary start-up function

The temporary start-up function allows a KaControl device to be operated to heat or cool a room without a KaController being installed or an enabled control signal from an external building control system.

When the function is enabled, the valve connected to output V1 (heating or cooling) is opened, the fan is enabled and the fan speed is continuously variably adjusted (0..100%) via the potentiometer. This requires DIP switches 1 and 2 to be switched off and digital input DI1 to be closed.



The following is required to enable temporary start-up:

- There needs to be a power supply connected.
- No external signals or lines may be connected (e.g. control signal).
- No KaControl components may be connected (e.g. KaController, temperature sensor, communication card).
- DIP switch 1 and DIP switch 2 must be set to OFF.
- Digital input DI1 must be closed.



None of the control functions are effective (e.g. room temperature control) when temporary start-up is enabled.

10 Functional testing of the connected units



The KaController provides the option of checking the function of the external units connected independently of the software application. The function of individual units, such as the EC fan, can be directly enabled and checked by means of inputs on the KaController.

The functional checks of the connected units are called up and performed by the following operating steps:

1. Switch off the KaController by:
 - Pressing the ON / OFF key
 - or
 - Pressing the navigator dial for a minimum of 5 seconds
 - Turning the navigator dial to the left until OFF appears.
2. Call up the Parameter menu by pressing the navigator dial for a minimum of 10 seconds. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the password (Code) 77 by turning the navigator and confirm by pressing the navigator.
4. "LO1" appears on the display and the functional testing of the connected assemblies can start.

Note:

The individual test steps are called up by pressing the navigator dial. The standard view with "OFF" showing appears once the test has been completed (LO8).

Step	Input/Output	Display flashes	Display does not flash
L01*	Input AI1	Sensor faulty	Sensor OK
L02*	Input AI2	Sensor faulty	Sensor OK
L03*	Input AI3	Sensor faulty	Sensor OK
L04	Input DI1	Contact open	Contact closed
L05	Input DI2	Contact open	Contact closed
L06	Fan speed 0 – 10 V	--	Increased actuation Fan 0 V ⇒ 10 V
L07	Valve output V1	--	Output V1 enabled
L08	Valve output 2	--	Output V2 enabled

* The control automatically detects the requisite sensors on the analogue inputs AI1 - AI3 using the DIP switch settings. The respective display (L01-L03) flashes if sensors are faulty or not connected.



Pay attention to hardware-related locks during functional testing (refer to the respective wiring diagram!).

11 ▶ Parameter settings

11.1 General

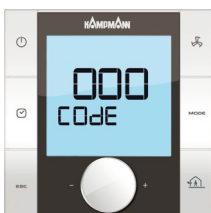
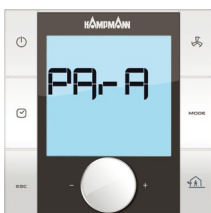
Special system requirements can be configured using parameter settings in the Service menu.

Special system requirements may include:

- Display: room temperature or setpoint temperature
- Locking of operating functions
- Setting absolute setpoint temperature or ± 3 K
- Setting parameters in ECO / Day mode
- Sensor calibration

The required settings can be made using the KaController.

11.2 Calling up the Service menu



The following steps are needed to set the parameters:

1. Switch off the KaControl unit by:
 - Pressing the ON / OFF key
 - or
 - Pressing the navigator for a minimum of 5 seconds
 - or
 - Turning the navigator dial to the left until OFF appears.
2. Press the navigator dial for a minimum of 10 seconds to call up the Service menu. The display shows "Para" and then "CODE" with the value 000 in sequence.
3. Select the password (Code) 22 by turning the navigator and confirm by pressing the navigator. You are now in service level 1 and the display shows the current software version (P000=...).
4. Parameters can now be set using the navigator dial.
5. Setting parameters:
 - Turn the navigator dial to select the parameter.
 - Press the navigator dial to call up Edit mode.
 - Set the required value by turning the navigator dial.
 - Press the navigator dial to save the new value.
6. There are 3 options for exiting the Service menu and calling up the standard view:
 - If no action has been carried out using the navigator dial for longer than 2 minutes.
 - Holding down the navigator dial for 5 seconds.
 - Turning the navigator dial, select "ESC" on the display and confirm the selection by pressing the navigator dial.



Parameter changes within the Service menu are only transmitted in the master unit.
Connect a KaController to the respective slave unit to change the parameters on slave units.

11.3 Parameter settings

11.3.1 Display of setpoint temperature/room temperature

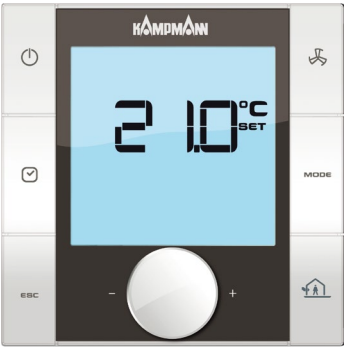
Parameter P37

Various values can be displayed using the large seven-segment display.

Function	P37=0	P37=1	P37=2	P37=3	P37=4	P37=5	P37=6	P37=7
No display	X							
Room temperature setpoint		X						
Current room temperature			X					
Temperature measurement AI1				X				
Temperature measurement AI2					X			
Temperature measurement AI3						X		
Fan actuation 0..100 %							X	
Reserved								X

X value is displayed, **factory setting P37=1**

11.3.2 Setting the absolute setpoint temperature or ± 3 K



Parameter P36=0
Setting of the “absolute” setpoint temperature

Parameter P36

It may be necessary in office or hotel applications for the system operator to specify a base setpoint. The user has the option of changing the setpoint temperature by ± 3 K to compensate for any different perception of room temperature.

Alternatively the setpoint can be set in absolute values.

Parameter P36 is used to configure the setpoint setting.

	Function
P36	Setpoint setting 0 = absolute setpoint setting 1 = setpoint setting ± 3 K



Parameter P36=1
Setpoint the temperature setting ± 3 K

Use parameter P01 to configure the base setpoint for the “Setpoint setting ± 3 K”.

	Function
P01	Base setpoint for setpoint setting ± 3 K

i

When the parameters are being set
P37=1 ⇔ display of setpoint temperature
P36=1 ⇔ setpoint setting ± 3K
no setpoint is shown in the standard display!

11.3.3 Locking function keys

Parameter P117

Certain functions and settings can be locked, for instance with office or hotel applications, to ensure that the system is easy to operate and energy is optimised.

Function	P117=0	P117=1	P117=2	P117=3	P117=4	P117=5	P117=6	P117=7
ON / OFF (Day / ECO) key					X		X	X
Fan setting						X	X	X
Time functions		X		X	X	X	X	X
Specification of operating modes (Mode)			X	X	X	X	X	X
Navigator dial								X

Example:

Set parameter P117 to the value = 1 to lock the timer function.



Set parameter P38 to use the ECO / Day functions with the KaController's timer programs.



The KaController connected cannot be operated once parameter 117 has been set to the value 7.

The KaController can only be operated again after the factory setting has been restored using the parameter key.

Parameter P136

Parameter P136 can be used to lock the external ventilation key. It is also possible to assign whether external ventilation can be enabled in Day mode and in ECO mode or only in Day mode.

Function	P136 = 0	P136 = 0	P136 = 0
External ventilation key disabled	X		
External valve key enabled		X	
External ventilation key only enabled during Day mode			X

11.3.4 Setting operating functions

Parameter P38 is used to specify the function of the ON / OFF key function and the timer programs. Use the ON / OFF button and the timer programs to switch the unit ON and OFF or between ECO and Day mode. Possible operating functions or functions are also blocked.

Option 1

The ON / OFF key and timer programs are used to switch between ECO mode and Day mode.

Option 2

Use the ON / OFF key and the timer programs to switch the KaControl units on and off.

	Function	Standard	Min	Max	Unit
P38	Locking operating options or functions 8 = ECO / Day mode changeover enabled 26 = ECO / Day mode changeover + heating/cooling changeover via clip-on sensor (2-pipe system) 72 = ON / OFF changeover enabled 90 = ON / OFF changeover + heating/cooling changeover via clip-on sensor (2-pipe system)	64	0	255	-

Parameter P38 can also be used to lock individual operating options or functions. Every operating option or function is assigned a defined value.

	Function	Value
P38	Automatic operating mode locked	1
	Cooling-only operating mode locked	2
	Real-time clock locked	4
	Ventilation-only operating mode locked	8
	Heating-only operating mode locked	16
	Automatic fan function locked	32
	ECO / Day function locked	64
	Time switching programs locked	128

The values of the locked operating options or functions must be added together and assigned to parameter P38.

Example: Locking of

- ECO / Day function
- Ventilation-only operating mode

	Function	Value	
P38	Automatic operating mode locked	1	
	Cooling-only operating mode locked	2	
	Real-time clock locked	4	
	Ventilation-only operating mode locked	8	8
	Heating-only operating mode locked	16	
	Automatic fan function locked	32	
	ECO / Day function locked	64	64
	Time switching programs locked	128	
	Setting parameter P38 (example)		72

Example: Locking of

- ECO / Day function
- Ventilation-only operating mode
- Cooling-only operating mode
- Heating-only operating mode

	Function	Value	
P38	Automatic operating mode locked	1	
	Cooling-only operating mode locked	2	2
	Real-time clock locked	4	
	Ventilation-only operating mode locked	8	8
	Heating-only operating mode locked	16	16
	Automatic fan function locked	32	
	ECO / Day function locked	64	64
	Time switching programs locked	128	
	Setting parameter P38 (example)		90



If ECO / Day function is locked, the ON / OFF function is automatically enabled.

11.3.5 Setpoint changeover to base setpoint

With office and hotel applications it makes sense to reset the setpoints to a base setpoint at the start of an operating phase for energy-saving operation. This function ensures that no unnecessarily high heating or low cooling setpoint is carried over into every operating phase. Parameter P57 allows users to set the temperature setpoint to be reset to the base setpoint (see P01) each time the operating phase changes.

Changes of operating phase include:

On ↔ Off

ECO ↔ Day

Heating ↔ Cooling

	Function
P57	Reset temperature setpoint to base setpoint after changing an operating phase 0 = function is disabled 1 = function is enabled

11.3.6 Temperature setpoint in ECO mode

Parameters P18, P19

Parameter P18 can be used to increase the temperature in cooling mode during ECO operating mode.

Parameter P19 can be used to lower the temperature in heating mode during ECO operating mode.

	Function
P18	Temperature increase of cooling setpoint in ECO mode
P19	Temperature decrease of heating setpoint in ECO mode

The cooling setpoint is raised by 3.0 °C during ECO mode.

The heating setpoint is lowered as standard by 3.0 °C during ECO mode.



Parameter P38 is used to set the ECO / Day function using the timer program in the KaController (ON / OFF, ECO / Day function).

11.3.7 Heating/cooling changeover via clip-on sensor in 2-pipe systems

The changeover between heating and cooling is performed as standard in 2-pipe systems via an external contact and the digital input DI2.

If there is no external contact to change over between heating and cooling, the changeover can be made via a clip-on sensor.

Order the clip-on sensor separately and, after installation, connect it to the analogue input AI2 of the SmartBoard (as per the wiring diagram). The configuration is documented in the following description.



The slave units in one control zone have to be fitted with a clip-on sensor to provide the function of "heating/cooling changeover using clip-on sensor".



The installation of a 3-way valve is recommended when using a clip-on sensor for heating/cooling changeover.

If the changeover between heating and cooling is performed by a clip-on sensor, then the DIP switches must be set to

DIP switch no. 3 = ON

DIP switch no. 4 = OFF

The functions of the DIP switches are described in Section 11 "Adjusting the unit configuration using DIP switches".

Parameters P10, P11, P12

Parameters P10, P11 and P12 can be used to set the limit values for switching on the fan stages in heating mode.

	Function
P10	Limit value temperature to activate fan stage 1 and 2 in heating mode
P11	Limit value temperature to activate fan stage 3 and 4 in heating mode
P12	Limit value temperature to activate fan stage 5 in heating mode



The control permanently monitors the water temperature and only enables heating mode and the fan stages when the water temperature has exceeded the set limit values (P10, P11, P12). If the limit temperature according to P10 is not reached after at most 5 minutes, the valve is closed and then reopened for 5 minutes after 4 hours (see Cyclic opening and closing of the valve).

The heating symbol flashes on the display if heating mode cannot be switched on because of the water temperature.

Parameter P13

Parameter P13 is used to set the hysteresis of the limit value temperatures (P10, P11, P12 and P14) to switch on the fan stages.

	Function	Standard	Min	Max	Unit
P13	Hysteresis of limit value temperatures	10	0	255	°C/10

Parameter P14

Parameter P14 is used to set the limit value for switching on the fan stages in cooling mode.

	Function
P14	Limit value temperature for enabling the fan stages in cooling mode



The control permanently monitors the water temperature and only enables cooling mode and the fan stages when the water temperature has fallen below the set limit value (P14). If the temperature according to P14 has not fallen below the limit value temperature after at most 5 minutes, the valve is closed and then reopened for 5 minutes after 4 hours (see Cyclic opening and closing of the valve).

The cooling symbol flashes on the display if cooling mode cannot be switched on because of the water temperature.

11.3.7.1 Cyclic opening and closing of the straight valve or 3-way valve

Parameters P107, P108

The clip-on sensor can only measure the water temperature correctly in 2-pipe systems with a straight valve if the straight valve is cyclically opened.

The use of a 3-way valve is recommended for optimum detection of the medium temperature.

Parameters P107 and 108 can be set to cyclically open and close the valve to check the water temperature.

	Function
P107	Duration of valve open to check water temperature
P108	Duration of valve closed



If the changeover between heating and cooling is enabled by a clip-on sensor in a 2-pipe system, then the parameters have to be set as follows: P107=5 and P108=240!

This setting opens the valve every 4 hours for 5 minutes to be able to measure the water temperature correctly in the pipe system.

11.3.8 Sensor calibration

Parameters P58, P61, P62, P64

Parameters P58, P61, P62 and P64 can be used to calibrate the sensor. Calibrate the temperature sensor during initial commissioning and at every service.

	Function
P58	Offset analogue input AI1 (ext. room temperature sensor)
P61	Offset sensor in the KaController
P62	Offset analogue input AI2 (clip-on sensor)
P64	Offset analogue input AI3 (clip-on sensor)



The temperature setpoint is shown as standard in the display. The measured room temperature must be displayed to calibrate the sensor. Parameter P37=2 must be set so that the room temperature can be displayed (Room temperature shown in the display, see section 10.3.1).

11.3.9 Fan actuation

Fan actuation can be adapted to the user's needs using various parameter settings.

11.3.9.1 Maximum fan speed using parameter P50

Parameter P50

The maximum fan speed is set and limited by parameter P50.

	Function
P50	Maximum fan speed



Alternatively, the maximum fan speed can be set using the potentiometer on the SmartBoard. The minimum set value from P50 and the potentiometer is executed as the maximum fan speed!

Example: P50 = 80 %
 Potentiometer = 50 %
 ⇒ maximum fan speed = 50 %

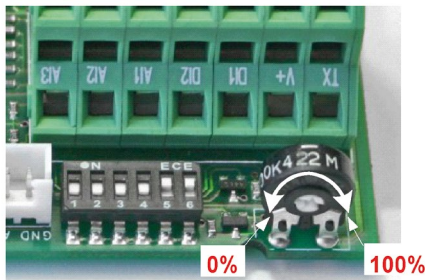


Fan speed restriction using the potentiometer restricts the speed to the set value. Fan speed restriction is only effective in the upper range.

Fan speed restriction via parameter P50 reduces the speed in a linear manner within the entire control range.

Example: Fan target speed = 100 % and P50 = 80 %
 ⇒ Fan output = 80 %
 Fan target speed = 70 % and P50 = 80 %
 ⇒ Fan output = 56 %

11.3.9.2 Maximum fan speed using a potentiometer



Potentiometer setting on the SmartBoard

The maximum fan speed can alternatively be prescribed by setting the potentiometer. The potentiometer setting is set by default to 100 %.

Potentiometer setting:

- Disconnect the control before setting the potentiometer.
- Remove the cover on the control unit to set the potentiometer. The potentiometer is located on the SmartBoard directly beside the DIP switches.
- The maximum fan speed can be restricted using the potentiometer (refer to parameter P50!).

11.3.9.3 Minimum fan speed

Parameter P51

The minimum fan speed is set and restricted by parameter P51.

	Function
P51	Minimum fan speed

11.3.9.4 Speed restriction in automatic and manual fan mode

Parameter P52

Parameter P52 can be used to limit the fan speed only for automatic fan mode or also for manual fan mode.

	Function
P52	Fan speed restriction 0 = fan speed restriction is enabled in automatic fan mode and in manual fan mode 1 = fan speed restriction is only enabled in automatic fan mode

11.3.9.5 Speed restriction in heating and cooling mode

The minimum fan speed, which can be set using parameter P51, can be enabled in the different operating modes.

Parameter P129

Parameter P129 is used to set the operating modes in which the minimum fan speed is enabled.

	Function	Standard	Min	Max	Unit
P129	0 = minimum fan speed enabled in heating, cooling, ventilation and automatic operating modes 1 = minimum fan speed enabled in cooling mode	0	0	1	

11.3.9.6 Maximum run time of manual fan mode

Parameter P27

Parameter P27 is used to set the maximum run time of manual fan mode. If manual fan mode is selected, the control switches back to automatic fan mode at latest on expiry of the time set in parameter P27.

	Function
P27	Maximum run time of manual fan mode 0 = function is disabled



Select the fan menu using the KaController and set automatic fan mode to end manual fan mode ahead of schedule.

11.3.9.7 Fan stage increase via switching contact

An external switching contact can be used to increase the fan stage by a relative value.

Parameters P43 / P44

Depending on the digital input DI1 or DI2 used, the function is enabled via parameter P43 or P44.

	Function	Standard	Min	Max	Unit
P43 / P44	17 = fan stage increase enabled when the switching contact is closed 18 = fan stage increase enabled when the switching contact is open	0	0	22	-
P122	Increase of the pre-set fan stage by the value set here	2	0	5	Fan stage

Note:

The function can only be enabled when manual fan stage pre-selection is enabled (not in automatic fan mode).

11.3.9.8 Fan stage increase function via the outside temperature

The fan stage can be increased depending on the outside temperature. The fan stage is increased when the outside temperature falls below a set value.

Parameters P15 / P16 / P17

The function is enabled via parameter P15, P16 or P17 depending on the multifunctional input AI1, AI2 or AI3 used for the outside temperature sensors connected, .

Parameter P63

Parameter P63 is used to set the outside temperature below which the fan stage is increased.

Parameter P122

Once the fan stage has been manually set, parameter P122 can be used to increase the fan stage. The increase is made by the value set in parameter P122.

	Function	Standard	Min	Max	Unit
P15	Setting of the multifunctional input 1 = outside air sensor connected	0	0	16	-
P16 / P17	See P15	0	0	19	-
P63	Outside temperature at which the fan stage is increased. Note: fixed hysteresis = 1 K	8	0	50	°C
P122	Increase of the pre-set fan stage by the value set here.	2	0	5	Fan stage

Note:

The function can only be enabled when manual fan stage pre-selection is enabled (not in automatic fan mode). Switch DIP switch 4 to OFF.

11.3.9.9 Continuous fan mode

Parameter P29 is used to enable continuous fan mode. In continuous fan mode, the fan remains switched on at the pre-set fan stage, even if the room temperature has reached the setpoint (in automatic fan mode stage 1 remains enabled).

Parameter P29

Parameter P29 is used to set continuous fan mode.

	Function
P29	0 = continuous fan mode disabled 1 = continuous fan mode enabled

11.3.9.10 Locking fan stages

Parameter P42

Parameter P42 is used to lock individual fan stages (0, 1, 2, 3, 4, 5, AUTO). Locked fan stages cannot be selected manually using the KaController.

	Function
P42	Parameters to lock the fan stages

Each fan stage is assigned a defined value.

Fan stage	Value	
Automatic fan mode	1	
Stage 0 (OFF)	2	
Stage 1	4	
Stage 2	8	
Stage 3	16	
Stage 4	32	
Stage 5	64	

Add the values of the locked fan stages together and assign them to parameter P42.

Fan stage	Value	
Automatic fan mode	1	
Stage 0 (OFF)	2	
Stage 1	4	
Stage 2	8	
Stage 3	16	
Stage 4	32	32
Stage 5	64	64
Setting parameter P42 (example)		96

Example: Locking fan stages 4 and 5.

11.3.10 Fan stage release via clip-on temperature

There is an option to lock the fan stages depending on the water temperature using the clip-on sensor. This application enables the central raising or lowering of the water temperatures in the building to be detected and processed on the respective KaControl unit.



When a clip-on sensor is used, set DIP switch no. 3 to ON (see Section 10 "Setting the unit configuration by means of DIP switches"). Slave units must be equipped with a clip-on sensor to implement the function.

Parameters P10, P11, P12

Parameters P10, P11 and P12 can be used to set the limit values for switching on the fan stages in heating mode.

	Function	Standard	Min	Max	Unit
P10	Limit value temperature to activate fan stage 1 and 2 in heating mode	26	0	255	°C
P11	Limit value temperature to activate fan stage 3 and 4 in heating mode	28	0	255	°C
P12	Limit value temperature to activate fan stage 5 in heating mode	30	0	255	°C

Parameter P14

Parameter P14 is used to set the limit value for switching on the fan stages in cooling mode.

	Function	Standard	Min	Max	Unit
P14	Limit value temperature for enabling the fan stages in cooling mode	18	0	255	°C

11.3.11 Display of heating symbol / cooling symbol

Parameter P55

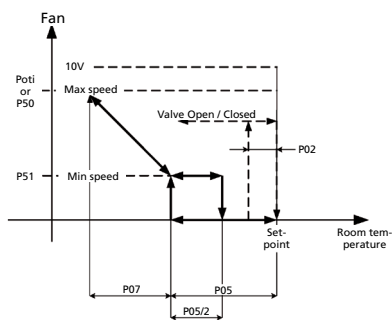
Parameter P55 can be switched on and off to display the heating and cooling system in automatic mode.

	Function	Standard	Min	Max	Unit
P55	0 = heating and cooling symbols are permanently hidden 1 = heating and cooling symbols are shown depending on requirements	1	0	1	

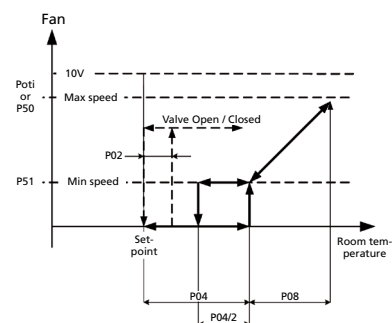
11.3.12 Automatic temperature setting

Parameters can be used to set automatic temperature mode.

Parameter setting for automatic temperature mode



Heating



Cooling

	Function	Standard	Min	Max	Unit
P02	Hysteresis valve OPEN / CLOSED	10	0	255	°C/10
P04	Natural convection cooling	0	0	255	°C/10
P05	Natural convection heating	3	0	255	°C/10
P07	P-band, heating	17	0	255	°C/10
P08	P-band, cooling	20	0	255	°C/10
P50*	Maximum fan speed	100	0	255	%
P51	Minimum fan speed	0	0	255	%

* Please note that the maximum fan speed is determined by the potentiometer setting or parameter P50!

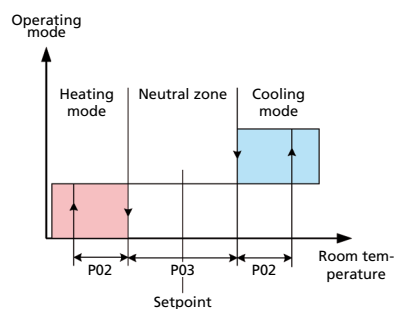
Parameter setting for PI controller

As an alternative to the P controller, a PI controller can be used to actuate the fan in automatic fan mode using parameter P41 for special applications. The PI controller is only enabled in automatic fan mode.

To prevent the PI controller from oscillating, adjust the P-band (heating (P07), the P-band (cooling) (P08) and the reset time (P41) to the behaviour of the control zone.

	Function	Standard	Min	Max	Unit
P41	Reset time of PI controller If P41=0 a P controller is enabled. Recommended reset time when using a PI controller: Reset time = 13 minutes	0	0	20	minutes

11.3.13 Automatic mode settings in 4-pipe systems



Automatic mode in 4-pipe systems

In 4-pipe systems, the controller automatically specifies the operating mode in automatic mode according to the room temperature and the set target value. Automatic mode can be set using parameters P02 and P03.

	Function	Standard	Min	Max	Unit
P02	Switching-on / off hysteresis for valves	10	0	255	°C/10
P03	Neutral zone in a 4-pipe system (only in automatic mode)	3	0	255	°C/10

11.3.14 Function of digital inputs DI1 and DI2

The function of digital inputs DI1 and DI2 can be configured using parameters settings.

11.3.14.1 Function of DI1

Parameter P43

Parameter P43 is used to set the function of the digital input DI1.

	Function	Standard	Min	Max	Unit
P43	Function of DI1 0 = no function 1 = ON / OFF (contact open ⇨ ON) 2 = Heating/cooling changeover (contact open ⇨ heating) 3 = ECO / Day mode (contact open ⇨ Day) 4 = No function (contact open ⇨ no function) 5 = Condensate alarm (contact open ⇨ no condensate) 6 = General Alarm (contact open ⇨ no alarm) 7 = External Frost protection monitor (contact open ⇨ no frost) 8 = ON / OFF (contact closed ⇨ ON) 9 = Heating/cooling changeover (contact closed ⇨ heating) 10 = ECO / Day mode (contact closed ⇨ Day) 11 = No function (contact closed ⇨ no function) 12 = Condensate alarm (contact closed ⇨ no condensate) 13 = General Alarm (contact closed ⇨ no alarm) 14 = External frost protection monitor (contact closed ⇨ no frost) 15 = Special mode (contact open ⇨ special mode enabled) 16 = Special mode (contact closed ⇨ special mode enabled) 17 = Fan stage increase (contact open ⇨ no fan stage increase) 18 = Fan stage increase (contact closed ⇨ no fan stage increase) 19 = Heating / ventilation changeover (contact open ⇨ heating) 20 = Heating / ventilation changeover (contact closed ⇨ heating) 21 = Cooling / ventilation changeover (contact open ⇨ cooling) 22 = Cooling / ventilation changeover (contact closed ⇨ cooling)	1	0	22	

11.3.14.2 Function of DI2

The digital input DI1 is predominantly used to execute specific functions. If the use of the digital input DI2 is needed, then the following settings have to be made:

1. Set DIP switch no. 4 to OFF
2. Configure the digital input DI2 using parameter settings P44



If DIP switch no. 4 is set to ON, digital input DI2 changes over from heating to cooling in a 2-pipe system.

Parameter P44

Parameter P44 is used to set the function of the digital input DI2 when DIP switch no. 4 = OFF.

	Function	Standard	Min	Max	Unit
P44	Function of DI2 0 = no function 1 = ON / OFF (contact open ⇨ ON) 2 = Heating/cooling changeover (contact open ⇨ heating) 3 = ECO / Day mode (contact open ⇨ Day) 4 = No function (contact open ⇨ no function) 5 = Condensate alarm (contact open ⇨ no condensate) 6 = General Alarm (contact open ⇨ no alarm) 7 = External Frost protection monitor (contact open ⇨ no frost) 8 = ON / OFF (contact closed ⇨ ON) 9 = Heating/cooling changeover (contact closed ⇨ heating) 10 = ECO / Day mode (contact closed ⇨ Day) 11 = No function (contact closed ⇨ no function) 12 = Condensate alarm (contact closed ⇨ no condensate) 13 = General Alarm (contact closed ⇨ no alarm) 14 = External frost protection monitor (contact closed ⇨ no frost) 15 = Special mode (contact open ⇨ special mode enabled) 16 = Special mode (contact closed ⇨ special mode enabled) 17 = Fan stage increase (contact open ⇨ no fan stage increase) 18 = Fan stage increase (contact closed ⇨ no fan stage increase) 19 = Heating / ventilation changeover (contact open ⇨ heating) 20 = Heating / ventilation changeover (contact closed ⇨ heating) 21 = Cooling / ventilation changeover (contact open ⇨ cooling) 22 = Cooling / ventilation changeover (contact closed ⇨ cooling)	0	0	22	

Parameter P56

The polarity of digital input DI2 is set using parameter P56 when setting DIP switch no. 4 to ON.

	Function	Standard	Min	Max	Unit
P56	Polarity of DI2 if DIP4 = ON (heating/cooling changeover via DI2) 0 = contact closed ⇨ heating contact open ⇨ cooling 1 = contact open ⇨ heating contact closed ⇨ cooling	1	0	2	

11.3.15 Function of digital outputs V1 and V2

The function of the digital output V1 is fixed depending on the system (2-pipe / 4-pipe).

The function of the digital output V2 can be configured using parameters.

11.3.15.1 Digital output V1

The digital output V1 is used for the following function, depending on the application:

2-pipe system \Rightarrow V1 = heating/cooling valve

4-pipe system \Rightarrow V1 = cooling valve

11.3.15.2 Digital output V2

The digital output V2 is used to control the heating valve in a 4-pipe system.

The digital output V2 can be configured using parameter P39 in a 2-pipe system.

	Function	Standard	Min	Max	Unit
P39	V2 function in a 2-pipe system 0 = no function 1 = heating demand 2 = cooling demand 3 = unit alarm 4 = 3-point actuator 5 = external ventilation enabled	0	0	5	



24 V DC is connected to digital output V2. The digital output is not a potential-free contact and can only be used with appropriate wiring!

11.3.15.3 Valve actuation via PWM

Parameters can be used to actuate the valves by means of pulse width modulation (PWM) to set outputs to intermediate values with natural convection. PWM actuation is not enabled by default.

	Function	Standard	Min	Max	Unit
P40	Valve actuation via pulse width modulation 0 = function is disabled 1 = function is enabled	0	0	1	
P53	Valve switching cycle	15	10	30	minutes
P101	P-band for controller valve actuation via PWM in heating mode	15	0	100	°C/10
P102	P-band for controller valve actuation via PWM in cooling mode	15	0	100	°C/10
P103	Reset time for PI controller valve actuation via PWM If P103 = 0 a P controller is enabled. Recommended reset time when using a PI controller: Reset time = 13 minutes	0	0	20	minutes
P104	Minimum switching-on time for the valves in PWM mode	3	0	20	minutes

11.3.16 Function of multifunctional inputs AI1, AI2 and AI3

The function of the multifunctional inputs AI1, AI2 and AI3 can be configured using parameter settings.

11.3.16.1 Function of AI1

Parameter P15

Parameter P15 is used to set the function of the multifunctional input AI1.



The multifunctional input AI1 can only be set using parameter P15 if DIP switch no. 6 is set to ON! The setting of DIP switches is described in section 10.

	Function	Standard	Min	Max	Unit
P15	Function of AI1 0 = not used (input disabled) 1 = NTC outside air sensor 2 = NTC cold / hot water sensor (clip-on sensor) 3 = NTC cold water sensor (clip-on sensor) 4 = NTC hot water sensor 5 = NTC external room temperature sensor / air intake sensor 6 = 0..100 kOhm fan actuation 7 = 0..100 kOhm temperature setpoint 8 = 0..100 V BMS control for heating/cooling 9 = 0..100 V BMS control for heating 10 = ECO / Day mode contact open ⇌ Day 11 = No function contact open ⇌ no function 12 = Condensate alarm contact open ⇌ no condensate 13 = General alarm contact open ⇌ no alarm 14 = External frost protection monitor contact open ⇌ no frost 15 = ECO / Day mode contact closed ⇌ Day 16 = No function contact closed ⇌ no function 17 = Condensate alarm contact closed ⇌ no condensate 18 = General alarm contact closed ⇌ no alarm 19 = External frost protection monitor contact closed ⇌ no frost	0	0	19	

11.3.16.2 Function of AI2

Parameter P16

Parameter P16 is used to set the function of the multifunctional input AI2.



The multifunctional input AI2 can only be set using parameter P16 if DIP switch no. 3 is set to OFF! The setting of DIP switches is described in section 10.

	Function	Standard	Min	Max	Unit
P16	Function AI2: see P15	0	0	19	

11.3.16.3 Function of AI3

Parameter P17

Parameter P17 is used to set the function of the multifunctional input AI3.



The multifunctional input AI3 can only be set using parameter P17 if DIP switch no. 3 is set to OFF! The setting of DIP switches is described in section 10.



The multifunctional input AI3 can only process analogue signals unlike inputs AI1 and AI2.

	Function	Standard	Min	Max	Unit
P17	Function of AI3 0 = not used (input disabled) 1 = NTC outside air sensor 2 = NTC cold / hot water sensor (clip-on sensor) 3 = NTC cold water sensor (clip-on sensor) 4 = NTC hot water sensor 5 = NTC external room temperature sensor / air intake sensor 6 = 0..100 kOhm fan actuation 7 = 0..100 kOhm temperature setpoint 8 = 0..100 V BMS control for heating/cooling 9 = 0..100 V BMS control for heating 10 = NTC supply air temperature sensor	0	0	10	

11.3.17 Special operation

Special operation can be enabled by means of an external switching contact. When the function is enabled, a switching-on and switching-off delay of the operating mode can be parametrised, for instance using a door contact switch or presence detector. The fan stage can also be increased.

Parameters P43 / P44

Depending on the digital input DI1 or DI2 used, the function is enabled via parameter P43 or P44.

Parameter P118

The switching-on delay starts once the external switching contact has been tripped (e.g. door open). Parameter P118 is used to specify the duration of the switching-on delay.

Parameter P119

The switching-off delay starts once the external switching contact has been tripped (e.g. door closed). Parameter P119 is used to specify the duration of the switching-off delay.

Parameter P130

Parameter P130 is used to specify the relative fan speed increase when the input is enabled.

	Function	Standard	Min	Max	Unit
P43 / P 44	15 = special mode enabled when the switching contact is open 16 = special mode enabled when the switching contact is closed	0	0	22	-
P118	Switching-on delay	0	0	255	sec.
P119	Switching-off delay	0	0	255	sec.
P130	Fan stage increase (relative)	0	0	5	Fan stage

Note:

The function can only be enabled in a 2-pipe system.

System behaviour in heating or cooling mode

Temperature detection	Fan operating mode	System status (after switching-on or off delay)	Fan function	Valve function
Temperature detection by an external temperature sensor (DIP6=OFF)	Automatic	Contact disabled	Room temperature-dependent (0..max. speed)	Room temperature-dependent (open/closed)
		Contact enabled	Room temperature-dependent (0..max. speed)	open
	Manual	Contact disabled	Room temperature-dependent (0/pre-selected fan stage)	depending on the operating status
		Contact enabled	Room temperature-dependent (0/pre-selected fan stage + fan stage increase)	open
Temperature detection by KaController (DIP6=ON)	Automatic	Contact disabled	Off	closed
		Contact enabled	Room temperature-dependent (0..max. speed)	open
	Manual	Contact disabled	Off	closed
		Contact enabled	Pre-selected fan speed plus additional fan stage increase	open

Note:

In ventilation mode, the function of the fan is identical to that in heating or cooling modes. The valve is closed in ventilation mode regardless of the status of the system.

Note:

This function is ideal for door contact control with door air curtains.

11.3.18 Purging

When a supply air temperature sensor is used, it may be useful to enable the purging function.

The fan is enabled within a parametrisable time to generate an air circulation through the unit and to measure the actual supply air temperature.

Parameter P34

Parameter P34 is used to define the operating modes in which the purging function is enabled.

Parameter P28

Parameter P28 is used to specify the fan stage during the purging function.

Parameter P32

Parameter P32 is used to set the time interval between purging operations.

Parameter P33

Parameter P33 is used to define the duration of the purging function.

	Function	Standard	Min	Max	Unit
P34	0 = function disabled 3 = function enabled in heating, cooling and automatic mode	3	0	3	-
P28	1 = fan stage 1 enabled during the purging function	1	1	5	-
P32	Time between the individual purging operations	240	0	255	minutes
P33	Duration of the purging function	5	0	255	seconds



When the purging function is enabled, the KaControl device is also switched on once the room temperature is reached.

11.3.19 Continuous heating or cooling

When the function is enabled, the valves can be opened continuously. The corresponding valve is also open when the set temperature is reached, depending on the heating or cooling operating mode.

Parameter P96

Parameter P96 is used to enable continuous operation of the valves.

	Function	Standard	Min	Max	Unit
P96	1 = continuous heating or cooling enabled	0	0	1	-

11.3.20 Supply air temperature control with 3-point actuator

In a 2-pipe system, supply air temperature control can be enabled and controlled in conjunction with a 3-point actuator.

Control of the supply air temperature is started automatically when the supply air temperature control is enabled and the actual room temperature deviates from the room setpoint temperature.

The room temperature setpoint is specified and displayed on the KaController. The setpoint for the supply air temperature is set at parameter level.

The 3-point actuator is opened all the more, the higher the deviation of the room temperature from the set temperature, or the longer the deviation lasts. Control of the supply air temperature is by a PI control algorithm, the proportional band and integration time of which can be adapted to the local situation.

Note:

Several tests should be carried out in the room to be air conditioned to avoid high or low load conditions and simulate typical load changes for correct adjustment of the proportional band and the integration time.

To prevent the PI controller from oscillating, adjust the heating proportional band (P101), the cooling proportional band (P102) and the integration time (P103) to the behaviour of the control zone.

Note:

A supply air temperature sensor must be connected to the SmartBoard at analogue input AI3 for activation.

Note:

Supply air temperature control is only possible in a 2-pipe system.

Parameter P17

Parameter P17 is used to enable the supply air temperature sensor at analogue input AI3.

Parameter P39

Parameter P39 is used to enable the 3-point actuator at digital outputs V1 and V2.

Parameter P101

Parameter P101 is used to set the proportional band for heating mode.

Note:

A high value for the proportional band results in a fast and intensive reaction as well as the stability of the system (overshoots can cause the valve to open and close continuously).

Parameter P102

Parameter P102 is used to set the proportional band for cooling mode.

Note:

A high value for the proportional band results in a fast and intensive reaction as well as the stability of the system (overshoots can cause the valve to open and close continuously).

Parameter P103

Parameter P103 is used to set the integration time, that is the reset time of the PI controller.

Important:

A low value for the integration time results in a fast control behaviour, but stability of the system. The integration time also compensates for possible misalignment between the theoretical and real valve positions, which 3-point actuators can have after numerous motion cycles (typical behaviour for 3-point actuators).

Parameter P59

Parameter P59 is used to specify the supply air temperature in heating mode.

Parameter P60

Parameter P60 is used to specify the supply air temperature in cooling mode.

Parameter P123

Parameter P123 is used to set the maximum valve travel time (0...100 %).

Parameter P124

Parameter P124 limits the minimum valve opening to reduce wear and to adapt the PI controller to the effective position of the actuator.

A minimum change value of the PI controller can be defined for this purpose before the actuator is moved.

Parameter P109

Parameter P109 is used to set the neutral zone for the supply air temperature control.

Minimal deviations of the control temperature are tolerated within the neutral zone to avoid instabilities of the control loop and travel cycles of the 3-point actuator.

	Function	Standard	Min	Max	Unit
P17	10 = Supply air temperature sensor enabled	0	0	10	-
P39	4 = 3-point actuator enabled	0	0	4	-
P101	P-band of the PI controller for the valve actuation in heating mode	15	0	100	°C/10
P102	P-band of the PI controller for valve actuation in cooling mode	15	0	100	°C/10
P103	Integration time of the PI controller for valve actuation	0	0	20	min
P59	Supply air temperature setpoint in heating mode	35	0	50	°C
P60	Supply air temperature setpoint in cooling mode	18	0	50	°C
P123	Maximum valve running time	150	0	255	sec.
P124	Minimum travel angle of the 3-point actuator	5	0	100	%
P109	Neutral zone of supply air temperature control	10	0	100	K/10

11.3.21 Heating / ventilation mode changeover

The heating/ventilation operating mode can be selected by an external switching contact or temperature-dependently by a connected external temperature sensor.

Heating / ventilation mode changeover via a switching contact

The operating mode can be switched between heating and ventilation by means of an external switching contact.

Parameters P43 / P44

Depending on the digital input DI1 or DI2 used, the function is enabled via parameter P43 or P44.

	Function	Standard	Min	Max	Unit
P43 / P44	19 = heating / ventilation changeover; ventilation mode enabled when switching contact is closed	0	0	22	-
	20 = heating / ventilation changeover; ventilation mode enabled when switching contact is open				

Note:

The function can only be enabled in a 2-pipe system.

Heating / ventilation mode changeover via outside temperature

The operating mode can be switched between heating and ventilation by means of an outside temperature sensor.

Parameters P15 / P16 / P17

The function is enabled via parameter P15, P16 or P17 depending on the analogue input AI1, AI2 or AI3 used for the outside temperature sensor.

Parameter P111

Parameter P111 is used to enable the function and set the outside temperature at which the operating mode is switched over.

Parameter P110

Parameter P110 is used to set the hysteresis between operating mode changeover.

	Function	Standard	Min	Max	Unit
P15 / P16 / P17*	1 = outside temperature sensor enabled	0	0	19 10*	-
P111	0 = operating mode changeover disabled	0	0	50	°C
P110	Hysteresis between heating / ventilation operating mode	50	0	255	K/10

Note:

The function can only be enabled in a 2-pipe system.

11.3.22 Cooling / ventilation mode changeover

The heating / ventilation operating mode can be selected by an external switching contact or temperature-dependently by a connected external temperature sensor.

Cooling / ventilation mode changeover via switching contact

An external switching contact can be used to change between cooling and ventilation operating mode.

Parameters P43 / P44

Depending on the digital input DI1 or DI2 used, the function is enabled via parameter P43 or P44.

	Function	Standard	Min	Max	Unit
P43 / P44	21 = cooling / ventilation changeover; ventilation mode enabled when switching contact is closed 22 = cooling / ventilation changeover; ventilation mode enabled when switching contact is open	0	0	22	-

Note: The function can only be enabled in a 2-pipe system.

Cooling / ventilation mode changeover via outside temperature

The operating mode can be switched between cooling and ventilation by means of an outside temperature sensor.

Parameters P15 / P16 / P17

The function is enabled via parameter P15, P16 or P17 depending on the analogue input AI1, AI2 or AI3 used for the outside temperature sensor.

Parameter P134

Parameter P134 is used to enable the function and set the outside temperature at which the operating mode is switched over.

Parameter P133

Parameter P133 is used to set the hysteresis between operating mode changeover.

	Function	Standard	Min	Max	Unit
P15 / P16 / P17*	1 = outside temperature sensor enabled	0	0	19 10*	-
P134	0 = operating mode changeover disabled	0	0	50	°C
P133	Hysteresis between cooling / ventilation operating mode	5	0	20	K/10

Note:

The function can only be enabled in a 2-pipe system.

11.3.23 Filter message

A filter message can be generated on the KaControl device. The filter message is generated by totalling the operating weeks and displayed on the KaController by means of the "I" information symbol. The frequency of the filter message can be set at between one and 255 weeks.

Parameter P127

Parameter P127 is used to enable the filter message function and the time cycle of the filter message is set weekly.

Parameter P128

Parameter P128 can be used to reset the filter message.

Parameter P126

Parameter P126 can be used to view the value of the operating week counter.

	Function	Standard	Min	Max	Unit
P127	Activation of the function and setting of the time until the filter message 0 = function disabled 1 = filter message after one week of operation 52 = filter message after 255 weeks of operation	0	0	255	Week
P128	1 = reset the operating week counter	0	0	1	°C
P126	Readout of the operating week counter				Week

11.3.24 External ventilation

The function can be used to enable a separate ventilation system or a ventilation function, which, for example, activates a supply air flap and supplies the control circuit with fresh air.

External ventilation can be enabled using the ventilation key ('house' key) on the KaController or via the bus communication.

Parameter P136

Parameter P136 can be used to enable external ventilation. It is also possible to assign whether external ventilation can be enabled in Day mode and ECO mode or only in Day mode.

Parameter P39

Parameter P39 can be used to enable the function and assign digital output V2 to the function.

Parameter P131

Parameter P131 is used to set the duration of external ventilation. After this time, the external ventilation is automatically disabled.

Register I117

The register I117 contains the data for the parameter P136. The contents of this register can be written to and read from the register via a communication card.

Register I94

The register I94 contains data about whether external ventilation is enabled or disabled. The contents of this register can be written to and read from the register via a communication card.

	Function	Standard	Min	Max	Unit
P136	0 = external ventilation disabled in Day mode and ECO mode 1 = external ventilation enabled in Day mode and ECO mode 2 = external ventilation only enabled in Day mode	0	0	2	-
P39	Function of the digital output V2 in a 2-pipe system 5 = external ventilation determined	0	0	5	-
P131	Duration of external ventilation	0	0	254	min
I117	Register for parameter P136		0	2	
I94	Shows the current status of the external ventilation (read / write) 0 = enabled 1 = disabled		0	1	

Note:

Parameter P39 can only be used for external ventilation in a 2-pipe system.

11.3.25 Password management

Access to the parameter level and the service level can be protected by a three-digit freely selectable code. Activation and modification of functions can therefore be restricted to an authorised group of people.

Parameter P132

Parameter P132 is used to specify the password for access to the parameter level. (Factory setting P132 = 22)

	Function	Standard	Min	Max	Unit
P132	Password (three-digit code)	22	0	999	



Keep a modified password safe!
After changing the password, access to the parameter level and the service level is no longer possible using the factory value of "22"!
An altered password can only be reset in person by a factory technician!

11.3.26 Reset to factory settings

The parameters of the SmartBoard can be reset to factory settings. Access to the service level is needed for this. The default parameters for each item group are also reset. Parameter P132 (password management) is not reset.

Parameter P92

Access to the Service level is provided by setting parameter P92 to 66.

Parameter P91

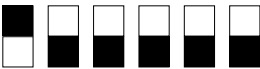
Factory settings are reset by setting parameter P91 to 44 and confirming this by pressing the navigator dial.

The default parameters for each item group are also reset.



11.3.27 External actuation via 0..10 Volts


ON



1 2 3 4 5 6

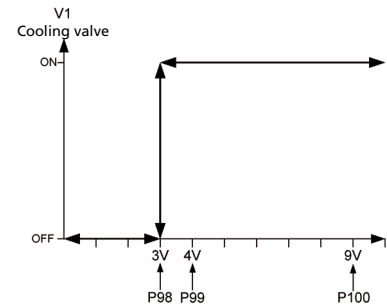
Setting of DIP switches in a 2-pipe system
Actuation via 0..10 V

ON

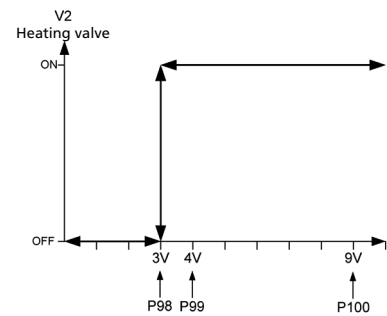


1 2 3 4 5 6

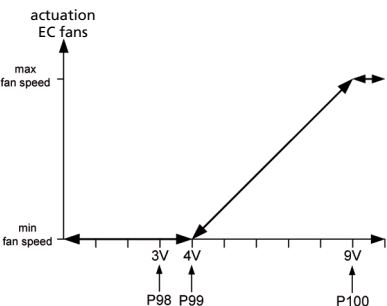
Setting of DIP switches in a 4-pipe system
Actuation via 0..10 V



Cooling valve actuation



Heating valve actuation



Valve actuation


The analogue inputs AI2 and AI3 offer the option of actuating the valves and the EC fan by means of 0..10 volt signals.
Set the DIP switches in accordance with the diagram with actuation using 0...10 volt signals.
Connect the 0..10 V control signals to the analogue inputs AI2 and AI3.

- 2-pipe system:
Heating/cooling 0..10 V ⇒ analogue input AI2
- 4-pipe system:
Cooling 0..10 V ⇒ analogue input AI2
Heating 0..10 V ⇒ analogue input AI3

Parameter setting for actuation of the KaControl unit using an 0..10 V signal by others

	Function	Standard	Min	Max	Unit
P98	Switching-on limit of valve	30	0	100	V/10
P99	Starting point fan speed (min)	40	0	100	V/10
P100	End point fan speed (max)	90	0	100	V/10

- Function of standard setting:
- 0 V...3 V valve CLOSED, fan OFF
- 3 V...4 V valve OPEN, fan OFF
- 4 V...9 V valve OPEN, fan speed min ⇒ max



Connect a KaController to configure the parameters.

11.4 Connection to a building management system function

The SmartBoard has a card slot for optional interface cards for connection to a higher-level building management system.

Connections to Modbus, BACnet, KNX, and LON systems are possible by inserting the interface cards.

The protocol needs to be parametrised for the SmartBoard for communication using an interface card. Access to the service level is needed for this.

Parameter P92

Access to the Service level is provided by setting parameter P92 to 66.

Parameter P54

Parameter p54 is used to select the bus protocol.

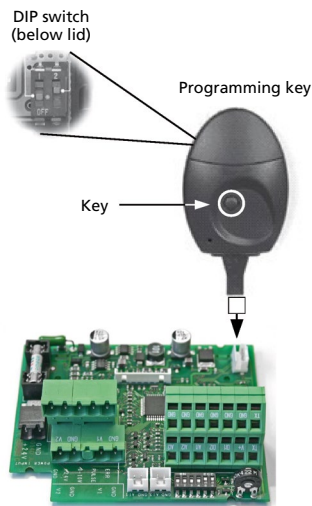
Parameter P69

The connection to a higher-level building control system may require the assignment of the static addresses of the bus nodes. Parameter P69 is used to assign the bus address.

	Function	Standard	Min	Max
P92	Service level	0	0	254
P54	Bus system communication 0 = CANbus/BACnet (default) 1 = Modbus/KNX 2 = LON	0	0	2
P69	Network address	1	1	207

Refer to the installation instructions for a detailed description for installation and commissioning of the interface cards.

11.5 Programming key



Note:
Disconnect the SmartBoard (unit) before connecting the programming key!

After the parameters have been set, the set-up can be simply copied to other SmartBoard with the help of the programming key. Please follow the following steps to copy the set-up:

1. De-energise the SmartBoard previously programmed.

Read the parameters

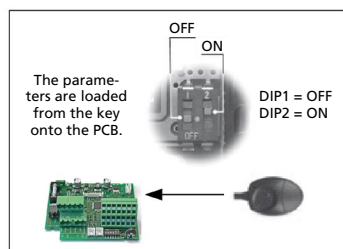
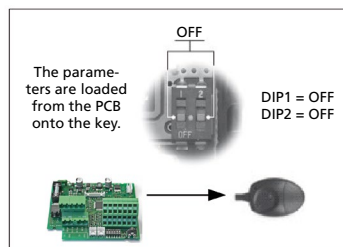
2. Set the DIP switch for the programming key to Read mode (DIP1 = OFF, DIP2 = OFF).
The DIP switches are located underneath the cover!
3. Plug the key into the 4-pin plug on the SmartBoard.
4. Press the button on the programming key.
If the copy is successful, the red LED will light up followed by the green LED.

Loading parameters

5. Remove the programming key and set the internal DIP switches of the programming key to Write mode (DIP1 = OFF, DIP2 = ON)
6. Repeat steps 3 and 4 to write the parameters to the new SmartBoard.

Important note:

The new SmartBoard also needs to be disconnected before writing the parameters.



The programming key is not supplied as standard with the unit and can be ordered from Kampmann Customer Service as a non-standard accessory.



The software versions (see parameter P000) of the SmartBoards must be identical when reading and writing the parameter sets. It is not possible to read parameters from a SmartBoard with a software version, e.g. "P000 = 10", and then write the parameters to a SmartBoard with software version, e.g. "P000 = 15".

12 ▶ SmartBoard parameter list

The parameters can be called up in the Service menu and adapted to meet the needs of the system.

The steps to call up the Service menu are described in section 10.2.

Code level	
Code 11	Access to KaController parameter level
Code 22	Access to SmartBoard parameter level
Code 44	RBG KaController to factory setting
Code 77	SmartBoard I/O test

SmartBoard alarms			
Operating unit display	Alarm	Priority	Effect
A11	Faulty control sensor ≥ 90°C, input bridged, RBG sensor, AI1 sensor, virtual room sensor	1	Disables the fan, closes the heating/cooling valves.
A12	Local stop (motor fault)	2	
A13	Room frost protection ≤ 8°C enabled; ≥ 8.5°C disabled RBG sensor, AI1 sensor, virtual room sensor	3	Fan stage 1, heating valve open
A14	Condensate alarm	4	Fan stage 1, cooling valve closes
A15	General alarm (parametrisable)	5	Disables the fan of the heating/cooling valves.
A16	Sensor AI1, AI2 or AI3 wrongly parametrised as sensors, terminals open	6	
A17	Unit frost protection ≤ 4°C enabled; ≥ 4.5°C disabled RBG sensor, AI1/AI2/AI3 sensors, virtual room sensor	7	Fan off, heater / cooling valves open
A18	EEPROM error	8	Disables the fan Closes the heating / cooling valves.
A19	Slave offline in the CAN network (no communication between edrofan and CAN card)	9	

Reset parameters to the default factory setting V1.024

1. Open parameter level using code 22
2. Set parameter 92 = 66 (Password 2nd Service level)
3. Set parameter 91 = 44 (Triggers reset)

Parameter	Function / Description	"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)				KNX-DCA (3260702)				Comment	
								"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor	B-factor		Flags
P000	Software version	18	19	24	0	255	-	I_1	short	RO	129	40130	Register	uint_16	RO	1/10	5.005	unsigned 8 bit	10	---T-	5.005	1	0	CR-TU	
P001	Base setpoint for setpoint input ± 3K	22	22	22	8	32	°C	A_1	short	RW	1	40002	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	0.1	0	CRWTU	
P002	Switching-on / off hysteresis for valves	3	3	3	0	255	K/10	A_2	short	RW	2	40003	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P003	Neutral zone in a 4-pipe system (only in automatic mode)	3	3	3	0	255	K/10	A_3	short	RW	3	40004	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P004	Cooling without fan assistance (natural convection)	5	0	0	0	255	K/10	A_4	short	RW	4	40005	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P005	Heating without fan assistance (natural convection)	3	5	5	0	255	K/10	A_5	short	RW	5	40006	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P006	Fan On/Off hysteresis (only in ventilation mode)	5	5	5	0	255	K/10	A_6	short	RW	6	40007	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P007	P-band, heating	30	15	20	0	100	K/10	A_7	short	RW	7	40008	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P008	P-band, cooling	30	20	20	0	100	K/10	A_8	short	RW	8	40009	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P009	Offset to the base setpoint for setpoint input ± 3K	3	3	3	0	10	C	A_9	short	RW	9	40010	Register	int_16	RW	1:1	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P010	CliP-on sensor: limit value temperature to enable fan stages 1 and 2 in heating mode	29	29	26	0	255	°C	A_10	short	RW	10	40011	Register	int_16	RW	1:1	9.001	float 16 bit	10	--WT-	9.001	0.1	0	CRWTU	
P011	CliP-on sensor: limit value temperature to enable fan stages 3 and 4 in heating mode	33	31	28	0	255	°C	A_11	short	RW	11	40012	Register	int_16	RW	1:1	9.001	float 16 bit	10	--WT-	9.001	0.1	0	CRWTU	
P012	CliP-on sensor: Limit value temperature to activate fan stage 5 in heating mode	37	33	30	0	255	°C	A_12	short	RW	12	40013	Register	int_16	RW	1:1	9.001	float 16 bit	10	--WT-	9.001	0.1	0	CRWTU	
P013	CliP-on sensor: Hysteresis for limit value temperatures P010, P011, P012, P014	10	10	10	0	255	K/10	A_13	short	RW	13	40014	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P014	CliP-on sensor: Limit value temperature for enabling the fan stages in cooling mode	18	18	18	0	255	°C	A_14	short	RW	14	40015	Register	int_16	RW	1:1	9.001	float 16 bit	10	--WT-	9.001	0.1	0	CRWTU	
P015	Function of input AI1	0	0	0	0	19	-	I_2	short	RW	130	40131	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P016	Function of input AI2	0	0	0	0	19	-	I_3	short	RW	131	40132	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P017	Function of input AI3	0	0	0	0	9	-	I_4	short	RW	132	40133	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P018	Temperature increase of cooling setpoint in ECO mode	30	30	30	0	255	K/10	A_15	short	RW	15	40016	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P019	Temperature decrease of heating setpoint in ECO mode	30	30	30	0	255	K/10	A_16	short	RW	16	40017	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P020	ADC limit coefficient	6	6	6	0	15	-	I_5	short	RW	133	40134	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P021	ADC average coefficient	6	6	6	0	15	-	I_6	short	RW	134	40135	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P022	Activation/disabling of sun symbol in Comfort mode	0	0	0	0	1	-	I_7	short	RW	135	40136	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	
P023	Difference for compensation during cooling	0	0	0	-99	127	K/10	A_17	short	RW	17	40018	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P024	Coefficient for compensation during heating	0	0	0	-20	20	1/10	A_18	short	RW	18	40019	Register	int_16	RW	1/10	6.010	signed 8 bit	1	--WT-	6.010	1	0	CRWTU	
P025	Difference for compensation during heating	0	0	0	-99	127	K/10	A_19	short	RW	19	40020	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P026	Coefficient for compensation during heating	0	0	0	-20	20	1/10	A_20	short	RW	20	40021	Register	int_16	RW	1/10	6.010	signed 8 bit	1	--WT-	6.010	1	0	CRWTU	
P027	Fan setting: maximum run-time for manual fan mode	0	0	0	0	255	min	I_8	short	RW	136	40137	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P028	Purging function: fan stage during the purging function	2	2	2	1	5	-	I_9	short	RW	137	40138	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P029	Activation of continuous fan mode	0	0	0	0	1	-	I_10	short	RW	138	40139	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	
P030	Vent temperature enable	12	12	12	0	255	°C	A_21	short	RW	21	40022	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P031	Vent interval	27	27	27	0	255	°C	A_22	short	RW	22	40023	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P032	Flushing function: maximum idle time of fan	2	15	15	0	255	min	I_11	short	RW	139	40140	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P033	Purging function: Duration of the purging function	90	240	120	0	255	s	I_12	short	RW	140	40141	Register	int_16	RW	1:1	7.005	signed 16bit	1	--WT-	7.005	1	0	CRWTU	
P034	Purging function: activation in operating modes	0	0	0	0	3	-	I_13	short	RW	141	40142	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P035	Fan run-on time after operating mode is switched to stage 1	30	0	0	0	255	s	I_14	short	RW	142	40143	Register	int_16	RW	1:1	7.005	signed 16bit	1	--WT-	7.005	1	0	CRWTU	
P036	Type of setpoint	0	0	0	0	1	-	I_15	short	RW	143	40144	Register	uint_16	RW	1:1	1.012	boolean	1	--WT-	1.012	1	0	CRWTU	
P037	Display	1	1	1	0	7	-	I_16	short	RW	144	40145	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P038	Lock/disable function on control unit	0	64	72	0	255	-	I_17	short	RW	145	40146	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P039	Function of digital output V2 (in a 2-pipe system)	0	0	0	0	5	-	I_18	short	RW	146	40147	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	

Parameter	Function / Description	"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)				KNX-Kset (3260701)			KNX-DCA (3260702)				Comment			
								"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX		A-factor	B-factor	Flags
P040	Valve actuation via pulse width modulation	0	0	0	0	1	-	I_19	short	RW	147	40148	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	
P041	Reset time of PI controller to enable the fan in automatic fan mode	0	0	0	0	20	min	I_20	short	RW	148	40149	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P042	Fan setting: lock and enable fan stages	0	0	0	0	127	-	I_21	short	RW	149	40150	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P043	Function of digital input DI1	0	1	0	0	22	-	I_22	short	RW	150	40151	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P044	Function of digital input DI2	1	0	0	0	22	-	I_23	short	RW	151	40152	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P045	Threshold voltage for potentiometer, which switches on unit	10	10	10	0	100	kOhm	I_24	short	RW	152	40153	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P046	Temperature setting corresponds to minimum resistance value = 10 kOhm in potentiometer	18	18	18	12	34	°C	A_23	short	RW	23	40024	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P047	Temperature setting corresponds to maximum resistance value = 100 kOhm in potentiometer	24	24	24	13	35	°C	A_24	short	RW	24	40025	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P048	Threshold voltage for potentiometer for starting up fans	10	10	10	0	100	kOhm	I_25	short	RW	153	40154	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P049	Threshold voltage for potentiometer for maximum fan speed*	90	90	90	0	100	kOhm	I_26	short	RW	154	40155	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P050	Fan setting: max. fan speed	100	100	100	0	100	%	I_27	short	RW	155	40156	Register	uint_16	RW	1:1	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P051	Fan setting: min. fan speed	0	0	0	0	90	%	I_28	short	RW	156	40157	Register	uint_16	RW	1:1	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P052	Fan setting: enable speed limit	0	0	0	0	1	-	I_29	short	RW	157	40158	Register	uint_16	RW	1:1	1.002	boolean	1	--WT-	1.002	1	0	CRWTU	
P053	Valve activation via pulse width modulation of valve switching cycle	15	15	15	10	30	min	I_30	short	RW	158	40159	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P054	Configuration of bus system	0	0	0	0	2	-	I_31	short	RW	159	40160	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CRWTU	
P055	Display of heating/cooling symbols in automatic mode	0	0	0	0	1	-	I_57	short	RW	185	40186	Register	uint_16	RW	1:1	1.003	boolean	1	--WT-	1.003	1	0	CRWTU	
P056	DI2 setting (polarity) when DIP 4 = ON	1	1	1	0	1	-	I_58	short	RW	186	40187	Register	uint_16	RW	1:1	1.012	boolean	1	--WT-	1.012	1	0	CRWTU	
P057	Reset setpoint to the value of P01 (after changing an operating program)	0	0	0	0	1	-	I_59	short	RW	187	40188	Register	uint_16	RW	1:1	1.003	boolean	1	--WT-	1.003	1	0	CRWTU	
P058	Sensor calibration: sensor AI1	0	0	0	-99	127	K/10	A_25	short	RW	25	40026	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P059	Supply air temperature setpoint in heating mode	-	-	35	0	50	°C	A_26	short	RW	26	40027	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P060	Supply air temperature setpoint in cooling mode	-	-	18	0	50	°C	A_27	short	RW	27	40028	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P061	Sensor calibration: sensor in the KaController	0	0	0	-99	127	K/10	A_28	short	RW	28	40029	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P062	Sensor calibration: sensor AI2	0	0	0	-99	127	K/10	A_29	short	RW	29	40030	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P063	Outside temperature <P63 fan increase by P122	-	-	0	-99	127	°C	A_30	short	RW	30	40031	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P064	Sensor calibration: sensor AI3	0	0	0	-99	127	K/10	A_31	short	RW	31	40032	Register	int_16	RW	1/10	9.002	float 16 bit	10	--WT-	9.002	0.1	0	CRWTU	
P065	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P066	Master/Slave assignment in CANbus	0	0	0	0	1	-	I_32	short	RO	160	40161	Register	uint_16	RO	1:1	1.001	boolean	1	---T-	1.001	1	0	CR-TU	
P067	Serial CANbus address	1	1	1	1	125	-	I_33	short	RO	161	40162	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P068	Logic of hydronic algorithms	0	0	0	0	7	-	I_34	short	RO	162	40163	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P069	Network address	1	1	1	0	207	-	I_35	short	RW	163	40164	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CRWTU	
P070	Dependence of the hydronic algorithms (on Slaves)	0	0	0	0	7	-	I_36	short	RO	164	40165	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P071	Serial address of Slave 1	0	0	0	0	207	-	I_37	short	RO	165	40166	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P072	Serial address of Slave 2	0	0	0	0	207	-	I_38	short	RO	166	40167	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P073	Serial address of Slave 3	0	0	0	0	207	-	I_39	short	RO	167	40168	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P074	Serial address of Slave 4	0	0	0	0	207	-	I_40	short	RO	168	40169	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P075	Serial address of Slave 5	0	0	0	0	207	-	I_41	short	RO	169	40170	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P076	Serial address of Slave 6	0	0	0	0	207	-	I_42	short	RO	170	40171	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P077	Serial address of Slave 7	0	0	0	0	207	-	I_43	short	RO	171	40172	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P078	Serial address of Slave 8	0	0	0	0	207	-	I_44	short	RO	172	40173	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P079	Serial address of Slave 9	0	0	0	0	207	-	I_45	short	RO	173	40174	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P080	Serial address of Slave 10	0	0	0	0	207	-	I_46	short	RO	174	40175	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P081	Dependence of the hydronic algorithms, Slave 1	0	0	0	0	7	-	I_47	short	RO	175	40176	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P082	Dependence of the hydronic algorithms, Slave 2	0	0	0	0	7	-	I_48	short	RO	176	40177	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P083	Dependence of the hydronic algorithms, Slave 3	0	0	0	0	7	-	I_49	short	RO	177	40178	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P084	Dependence of the hydronic algorithms, Slave 4	0	0	0	0	7	-	I_50	short	RO	178	40179	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	

Parameter	Function / Description	"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)			KNX-DCA (3260702)				Comment		
								"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor		B-factor	Flags
P085	Dependence of the hydronic algorithms, Slave 5	0	0	0	0	7	-	L_51	short	RO	179	40180	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P086	Dependence of the hydronic algorithms, Slave 6	0	0	0	0	7	-	L_52	short	RO	180	40181	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P087	Dependence of the hydronic algorithms, Slave 7	0	0	0	0	7	-	L_53	short	RO	181	40182	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P088	Dependence of the hydronic algorithms, Slave 8	0	0	0	0	7	-	L_54	short	RO	182	40183	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P089	Dependence of the hydronic algorithms, Slave 9	0	0	0	0	7	-	L_55	short	RO	183	40184	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P090	Dependence of the hydronic algorithms, Slave 10	0	0	0	0	7	-	L_56*	short	RO	184	40185	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P091	Load default values	0	0	0	0	255	-	L_60	short	RO	188	40189	Register	uint_16	RO	1:1	5.005	unsigned 8 bit	1	---T-	5.005	1	0	CR-TU	
P092	Password management	0	0	0	0	255	-	L_61	short	RW	189	40190	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P093	Type of pre-comfort (room occupancy)	0	0	0	0	3	-	L_62	short	RW	190	40191	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P094	Pre-comfort timer	60	60	60	1	255	min	L_63	short	RW	191	40192	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P095	Disable DIP switch settings	0	0	0	0	1	-	L_64	short	RW	192	40193	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	
P096	Digital outputs continuously enabled	-	-	0	0	1	-	L_65	short	RW	193	40194	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	
P097	Read DIP switch	-	-	-	0	63	-	L_66	short	RW	194	40195	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CR-TU	
P098	Activation 0..10V: switch on limit for valves	10	30	30	0	100	V/10	L_67	short	RW	195	40196	Register	uint_16	RW	1/10	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P099	Activation 0..10V: switch on limit for min. fan speed	20	40	40	0	100	V/10	L_68	short	RW	196	40197	Register	uint_16	RW	1/10	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P100	Activation 0..10V: switch on limit for max. fan speed	90	90	90	0	100	V/10	L_69	short	RW	197	40198	Register	uint_16	RW	1/10	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P101	Valve activation by pulse width modulation of P-band in heating mode	15	15	15	0	100	K/10	A_33	short	RW	33	40034	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P102	Valve activation by pulse width modulation of P-band in cooling mode	15	15	15	0	100	K/10	A_34	short	RW	34	40035	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P103	Valve activation by pulse width modulation of reset time of PI controller	0	0	0	0	20	min	L_99	short	RW	227	40228	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P104	Minimum ON time with valve activation PWM	3	3	3	0	20	min	L_100	short	RW	228	40229	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P105	Compensation: max. negative delta setpoint	50	50	50	0	150	K/10	A_35	short	RW	35	40036	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P106	Compensation: max. positive delta setpoint	50	50	50	0	150	K/10	A_36	short	RW	36	40037	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P107	Duration of valve open to check water temperature	5	5	5	0	255	min	L_101	short	RW	229	40230	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P108	Duration of valve closed	240	240	240	35	255	min	L_102	short	RW	230	40231	Register	int_16	RW	1:1	7.006	signed 16bit	1	--WT-	7.006	1	0	CRWTU	
P109	Dead zone PI control for 3-way valve	-	-	10	0	100	K/10	A_37	short	RW	37	40038	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P110	Hysteresis to switch between heating/ fan operation	-	-	50	0	255	K/10	A_38	short	RW	38	40039	Register	int_16	RW	1:1	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P111	Threshold for switching between heating/fan operation	-	-	0	0	50	°C	A_39	short	RW	39	40040	Register	int_16	RW	1:1	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P112	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P113	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P114	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P115	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P116	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P117	Lock function buttons on KaController	0	0	0	0	7	-	L_103	short	RW	231	40232	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P118	On delay time	-	-	0	0	255	sec	L_104	short	RW	232	40233	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P119	Off delay time	-	-	0	0	255	sec	L_105	short	RW	233	40234	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P120	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P121	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P122	Relative fan speed increase via contact	-	-	2	0	5	-	L_106	short	RW	234	40235	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P123	Maximum valve running time	-	-	150	0	255	sec	L_107	short	RW	235	40236	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P124	Minimum P + I output variation for valve motion (0 to 10)	-	-	5	0	100	%	L_108	short	RW	236	40237	Register	uint_16	RW	1:1	5.004	unsigned 8 bit	1	--WT-	5.004	1	0	CRWTU	
P125	reserved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P126	Operating weeks	-	-	0	0	255	week	L_109	short	RW	237	40238	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P127	Info weeks of operation reached (filter message)	-	-	0	52	255	week	L_110	short	RW	238	40239	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P128	Reset weeks of operation counter	-	-	0	0	1	-	L_111	short	RW	239	40240	Register	uint_16	RW	1:1	1.001	boolean	1	---T-	1.001	1	0	CRWTU	
P129	Fan speed limiter activation in certain operating modes	-	-	0	0	1	-	L_112	short	RW	240	40241	Register	uint_16	RW	1:1	1.001	boolean	1	--WT-	1.001	1	0	CRWTU	

Parameter	Function / Description	"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)			KNX-DCA (3260702)				Comment		
								"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor		B-factor	Flags
P130	Absolute fan speed increase via contact	-	-	2	0	5	-	I_113	short	RW	241	40242	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P131	External ventilation, delay time	-	-	0	0	255	min	I_114	short	RW	242	40243	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P132	Operating level, master password	-	-	22	0	255	-	I_115	short	RW	243	40244	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	
P133	Hysteresis for outside temperature for switching between heating/fan mode	-	-	0	0	255	K/10	A_48	short	RW	48	40049	Register	int_16	RW	1/10	9.002	float 16 bit	1	--WT-	9.002	1	0	CRWTU	
P134	Threshold for outside temperature for switching between heating/fan mode	-	-	0	0	50	°C	A_49	short	RW	49	40050	Register	int_16	RW	1:1	9.001	float 16 bit	1	--WT-	9.001	1	0	CRWTU	
P135	enable virtual sensor	-	-	0	0	1	-	I_116	short	RW	244	40245	Register	uint_16	RW	1:1	1.001	boolean	1	---T-	1.001	1	0	CRWTU	
P136	Enable external ventilation	-	-	0	0	2	-	I_117	short	RW	245	40246	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	1	--WT-	5.005	1	0	CRWTU	

Parameter	Function / Description		"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)				KNX-DCA (3260702)				Comment	
									"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor	B-factor		Flags
SV01	AI1	NTC sensor A value is displayed if an NTC sensor is connected to AI1, otherwise the minimum value is displayed.	-	-	-	-	-	°C/10	A_70	short	RO	70	40071	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV02	OU	NTC sensor OU = operating unit-sensor, value of operating unit sensor	-	-	-	-	-	°C/10	A_71	short	RO	71	40072	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV03	AI2	NTC sensor A value is displayed if an NTC sensor is connected to AI2, otherwise the minimum value is displayed.	-	-	-	-	-	°C/10	A_72	short	RO	72	40073	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV04	AI3	NTC sensor A value is displayed if an NTC sensor is connected to AI3, otherwise the minimum value is displayed.	-	-	-	-	-	°C/10	A_73	short	RO	73	40074	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV05	Control sensor	The KaControl control board regulates this value	-	-	-	-	-	°C/10	A_74*	short	RO	74	40075	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV06	virtual sensor	set via CANbus/monitoring device Do not use with PlantVisor and Modbus	-	-	-	-	-	°C/10	A_75*	short	RW	75	40076	Register	int_16	RW	1/10	9.001	float 16 bit	10	--WT-	9.001	0.1	0	CRWTU	
SV07	Control setpoint	the setpoint to which the KaControl works	-	-	-	-	-	°C/10	A_76*	short	RO	76	40077	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	0.1	0	CR-TU	
SV08	Fan output	Fan output (writable)	-	-	-	0	100	V/10	A_77	short	RW	77	40078	Register	uint_16	RW	1/10	5.004	unsigned 8 bit	10	--WT-	5.004	1	0	CRWTU	
SV09	AI1, kOhm	AI1 if it is as 0-100 kOhm	-	-	-	-	-	kOhm	A_78	short	RO	78	40079	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV10	AI2, kOhm	AI2 if it is as 0-100 kOhm	-	-	-	-	-	kOhm	A_79	short	RO	79	40080	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV11	reserved	reserved (relative humidity)	-	-	-	-	-	%RH	A_80*	short	RO	80	40081	Register	uint_16	RO	1:1	5.004	unsigned 8 bit	-	---T-	5.004	1	0	CR-TU	
SV12	reserved	reserved (temperature)	-	-	-	-	-	°C/10	A_81*	short	RO	81	40082	Register	int_16	RO	1/10	9.001	float 16 bit	10	---T-	9.001	1	0	CR-TU	
SV13	AI3, kOhm	AI3 if it is as 0-100 kOhm	-	-	-	-	-	kOhm	A_82	short	RO	82	40083	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV14	AI1, V	AI1 if this is as 0-10 V	-	-	-	-	-	V/10	A_83	short	RO	83	40084	Register	uint_16	RO	1/10	5.004	unsigned 8 bit	10	---T-	5.004	1	0	CR-TU	
SV15	AI2, V	AI2 if this is as 0-10 V	-	-	-	-	-	V/10	A_84	short	RO	84	40085	Register	uint_16	RO	1/10	5.004	unsigned 8 bit	10	---T-	5.004	1	0	CR-TU	
SV16	AI3, V	AI3 if this is as 0-10 V	-	-	-	-	-	V/10	A_85	short	RO	85	40086	Register	uint_16	RO	1/10	5.004	unsigned 8 bit	10	---T-	5.004	1	0	CR-TU	
SV17	Operating mode	Operating mode: 0 = Automatic 1 = not used (for e-drofan → automatic + electric heating coil) 2 = cooling 3 = not used (for e-drofan → dry) 4 = ventilation 5 = heating 6 = not used (for heating e-drofan → + electric heating coil)	-	-	-	0	6	-	I_70*	short	RW	198	40199	Register	uint_16	RW	1:1	5.010	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	
SV18	Fan	Fan: 0 = Fan OFF 1 = Stage 1 2 = Stage 2 3 = Stage 3 4 = Stage 4 5 = Stage 5 6 = Automatic	-	-	-	0	6	-	I_71*	short	RW	199	40200	Register	uint_16	RW	1:1	5.010	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	
SV19	Flap	not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SV20	ON / OFF	0 = OFF 1 = ON	-	-	-	0	1	-	I_73*	short	RW	201	40202	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV21	Sensor selection	Sensor selection for room temperature detection: 0 = BT → operating unit sensor 1 = AI1 → sensor connected to AI1 (room or air intake sensor)	-	-	-	0	1	-	I_74*	short	RW	202	40203	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.002	1	0	CRWTU	
SV22	Continuous ventilation	Continuous ventilation	0	0	0	0	1	-	I_75*	short	RW	203	40204	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV23	Master alarms	Unit malfunction: 0 = no malfunction 1 = control sensor faulty 2 = local stop (motor fault) 3 = room frost protection 4 = condensate alarm 5 = general alarm 6 = sensor AI1, AI2, or AI3 faulty 7 = unit frost protection 8 = EEPROM faulty 9 = no function	0	0	0	-	-	-	I_76*	short	RO	204	40205	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV24	Slave alarms		-	-	-	-	-	-	I_77*	short	RO	205	40206	Reaister	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	

Parameter	Function / Description	"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)			KNX-DCA (3260702)				Comment			
								"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor		B-factor	Flags	
SV25	Key lock	Lock keys on operating unit: 0 = all enabled 1 = time function 2 = specification of operating modes 3 = time function + operating modes 4 = ON / OFF(ECO/DAY) key + timer function + operating modes 5 = fan setting + time function + operating modes 6 = ON / OFF(ECO/DAY) key + fan setting + time function + operating modes 7 = all operating functions including navigator dial are locked	0	0	0	0	7	-	I_78*	short	RW	206	40207	Register	uint_16	RW	1:1	5.010	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	
SV26	General flags 1	General flags 1: 1 = heating element fitted 2 = reserved 4 = reserved 8 = remote control 16 = broadcasting enabled 32 = reserved 64 = lock function 128 = hydronic enabled	-	-	-	-	-	-	I_79*	short	RO	207	40208	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV27	General flags 2	General flags 2: 1 = cooling activation enabled 2 = heating activation enabled 4 = comfort function enabled 8 = economy function enabled 16 = reserved 32 = reserved 64 = reserved 128 = reserved	-	-	-	-	-	-	I_80*	short	RO	208	40209	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV28	Digital inputs and messages	Digital inputs: Bit 0 → 1 = value of input DI1 (I89, bit 4) Bit 1 → 2 = value of input DI2 (I89, bit 5) Bit 2 → 4 = value of input AI1 (multifunctional) (I89, bit 6) Bit 3 → 8 = value of input AI2 (multifunctional) (I89, bit 7) Bit 4 → 16 = value of input AI3 (multifunctional) Bit 5 → 32 = heating demand Bit 6 → 64 = cooling demand Bit 7 → 128 = occupied room (see Occupancy function)	-	-	-	-	-	-	I_81*	short	RO	209	40210	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV29	day / ECO	0 = Day 1 = ECO	0	0	0	0	1	-	I_82*	short	RW	210	40211	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV30	set setpoint	Note increments of 1 K!	-	-	-	0	32	°C/10	I_83*	short	RW	211	40212	Register	int_16	RW	1/10	9.001	float 16 bit	10	--WT-	9.001	1	0	CRWTU	
SV31	Comfort controller	Offset by the setpoint when the comfort function is enabled. Note: This parameter may have a maximum value of 3 if the CANbus board is connected to the SmartBoard.	0	0	0	-3	P009	C	I_84*	short	RW	212	40213	Register	int_16	RW	1:1	9.002	float 16 bit	-	--WT-	9.002	1	0	CRWTU	
SV32	General flags 3	General flags 3: 1 = reserved 2 = reserved 4 = reserved 8 = display of setpoint/sensor	-	-	-	-	-	-	I_85	short	RO	213	40214	Register	uint_16	RO	1:1	5.010	unsigned 8 bit	-	---T-	5.005	1	0	CR-TU	
SV33	Activate write	Activate write: 0 = direct setting of the outputs is not enabled 1 = direct setting of the fan control voltage is enabled 2 = direct setting of outputs V1 and V2 2 = direct setting of all outputs is enabled V1, V2 and 0-10 V This variable is managed as bietfield: bit 0 = override 0..10V bit 1 = override V1 and V2 bit 2 = disable filtering of AI1, AI2 and AI3 probes Note: Writing is deleted after 10 seconds if the serial interface fails.	0	0	0	0	3	-	I_86	short	RW	214	40215	Register	uint_16	RW	1:1	5.010	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	

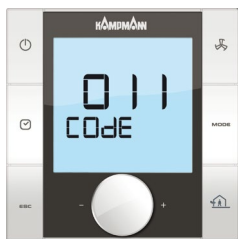
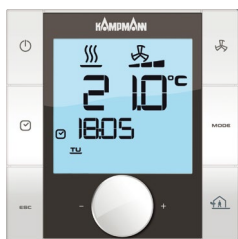
Parameter	Function / Description		"Standard – Rev.1.018 until June 2011"	"Standard – Rev.1.019 from July 2011"	"Standard – Rev.1.024 from 01.02.2018"	Min. rev.1.024	Max. rev.1.024	Unit	Carel bus			Modbus RTU (3260101)					KNX-Kset (3260701)			KNX-DCA (3260702)				Comment		
									"Protocol address (Index)"	DPT Carel	Management	"Protocol address (Index)"	Register address	Coil/REG	DPT Modbus	Management	Resolution	DPT KNX	"DPT KNX-Kset"	Factor	Flags	DPT KNX	A-factor		B-factor	Flags
SV34	enable virtual sensor	Activation of the control with virtual sensor: 0 = virtual sensor disabled 1 = virtual sensor enabled	0	0	0	0	1	-	I_87*	short	RW	215	40216	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV35	Reset alarms		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SV36	DIP switch settings and digital inputs	DIP switch positions and digital inputs: 1 = operating unit is connected 2 = not used (0) 4 = not used (0) 8 = ERR input closed 16 = DI1 input closed 32 = DI2 input closed 64 = AI1 input closed (if used as a digital input) 128 = AI2 input closed (if used as a digital input) 256 = not used (0) 512 = DIP switch 1 → ON 1024 = DIP switch 2 → ON 2048 = DIP switch 3 → ON 4096 = DIP switch 4 → ON 8192 = DIP switch 5 → ON 16384 = DIP switch 6 → ON Note: Each digital input contributes to the final value of these variables	-	-	-	-	-	-	I_89	short	RO	217	40218	Register	uint_16	RO	1:1	7.001	unsigned 16 bit	-	---T-	7.001	1	0	CR-TU	
SV37	digital outputs overwritten	Outputs V1 and V2 (overwritten): 0 = output V1 not set and output V2 not set 1 = output V1 set and output V2 not set 2 = output V1 not set and output V2 set 3 = output V1 set and output V2 not	0	0	0	-	-	-	I_90	short	RW	218	40219	Register	uint_16	RW	1:1	5.010	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	
SV38	Potentiometer value	Potentiometer value, mounted on the SmartBoard (setting value)	-	-	-	-	-	%	I_91	short	RO	219	40220	Register	uint_16	RO	1:1	5.004	unsigned 8 bit	-	---T-	5.004	1	0	CR-TU	
SV39	Tachometer	Fan speed (PULSE)	-	-	-	-	-	Hz	I_92	short	RO	220	40221	Register	uint_16	RO	1:1	7.001	unsigned 16 bit	-	---T-	7.001	1	0	CR-TU	
SV40	Operating hour counter Increment 4 h intermediate counter for filter message	Operating hours counter in increments of 4 h used as a sub-quantity for filter message	-	-	-	-	-	-	I_93	short	RO	221	40222	Register	uint_16	RO	1:1	5.004	unsigned 8 bit	-	---T-	5.004	1	0	CR-TU	
SV41	Enable external ventilation	for filter maintenance counter	-	-	0	0	1	-	I_94	short	RW	222	40223	Register	uint_16	RW	1:1	1.003	boolean	-	--WT-	1.003	1	0	CRWTU	
SV42	Heating/ cooling operating mode	0 = cooling 1 = heating	-	-	-	0	1	-	I_95	short	RW	223	40224	Register	uint_16	RW	1:1	1,100	boolean	-	--WT-	1,100	1	0	CRWTU	
SV43	Fan stage manual mode or automatic mode	0 = automatic 1= manual	-	-	0	0	1	-	I_96	short	RW	224	40225	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV44	Fan stage selection for manual mode	0 = Fan OFF 1 = Stage 1 2 = Stage 2 3 = Stage 3 4 = Stage 4 5 = Stage 5	-	-	0	0	5	-	I_97	short	RW	225	40226	Register	uint_16	RW	1:1	5.005	unsigned 8 bit	-	--WT-	5.005	1	0	CRWTU	
SV45	V1 and output 0-10 V Activation of output combination	0 = V1 actuation via normal control mode >0 = V1 On -- Control and / or overcontrol 0 = actuation via normal control mode 1..100 = 0.1 V-10 V actuation and/or overcontrol higher value SV45/SV46	-	-	0	0	100	-	A_86	short	RW	86	40087	Register	uint_16	RW	1:1	5.004	unsigned 8 bit	-	--WT-	5.004	1	0	CRWTU	
SV46	V2 and output 0-10 V Activation of output combination	0 = V2 actuation via normal control mode >0 = V2 On -- Control and / or overcontrol 0 = actuation via normal control mode 1..100 = 0.1 V-10 V actuation and/or overcontrol higher value SV45/SV46"	-	-	0	0	100	-	A_87	short	RW	87	40088	Register	uint_16	RW	1:1	5.004	unsigned 8 bit	-	--WT-	5.004	1	0	CRWTU	
SV47	Activation of output V1	0 = V1 actuation via normal control mode 1 = V1 On actuation and / or overcontrol	-	-	0	0	1	-	A_88	short	RW	88	40089	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	
SV48	Activation of output V2	0 = V2 actuation via normal control mode 1 = V2 On actuation and / or overcontrol	-	-	0	0	1	-	A_89	short	RW	89	40090	Register	uint_16	RW	1:1	1.001	boolean	-	--WT-	1.001	1	0	CRWTU	

13 ▶ KaController parameters

13.1 General

Specific user requirements can be enabled and disabled by means of parameter settings in the KaController, for instance the minimum and maximum set-point temperature can be set using parameters in the KaController.

13.2 Calling up the Parameter menu



The following steps are needed to set the parameters:

- Switch off the KaControl unit by:
 - Pressing the ON / OFF key
 - or
 - Press the navigator dial for a minimum of 5 seconds
 - or
 - Turning the navigator dial to the left until OFF appears.
- Call up the Parameter menu by pressing the navigator dial for a minimum of 10 seconds. The display shows "Para" and then "CODE" with the value 000 in sequence.
- Select the password (Code) 11 by turning the navigator and confirm by pressing the navigator. You are now in the KaController's Parameter menu.
- Parameters can now be set using the navigator dial.

Setting parameters:

- Turn the navigator dial to select the parameter.
- Press the navigator dial to call up Edit mode.
- Set the required value by turning the navigator dial.
- Press the navigator dial to save the new value.

There are 3 options for exiting the Parameter menu and calling up the standard view:

- If no action has been carried out using the navigator dial for longer than 2 minutes.
- Holding down the navigator dial for 5 seconds.
- Turning the navigator dial, select "ESC" on the display and confirm the selection by pressing the navigator dial.

13.3 KaController parameter list

	Function	Standard	Min	Max	Unit	Comment
t001	Serial address	1	0	207	-	
t002	Baud rate 0 = Baud rate 4800 1 = Baud rate 9600 2 = Baud rate 19200	2	0	2	-	
t003	Background lighting function 0 = Slow fade in, fast fade out 1 = Slow fade in, slow fade out 2 = Fast fade in, fast fade out	0	0	2	-	
t004	Strong background lighting	4	0	5	-	
t005	Sensor calibration of KaController sensor	0	-60	60	°C	
t006	LCD display contrast	15	0	15	-	
t007	BEEP setting 0 = BEEP ON 1 = BEEP OFF	0	0	1	-	
t008	Password for KaController Parameter menu	11	0	999	-	
t009	Minimum settable setpoint temperature	8	0	20	°C	
t010	Maximum settable setpoint temperature	35	10	40	°C	
t011	Interval of setpoint setting 0 = automatic setting based on SmartBoard (parametrisable, freely programmable) 1 = Increment of 1 ° (parametrisable PCBs) 2 = Increment of 0.5 ° (freely programmable PCBs)	0	0	2	-	
t012	Date/Time setting: Year	9	0	99	-	
t013	Date/Time setting: Month	1	1	12	-	
t014	Date/Time setting: Day	1	1	31	-	
t015	Date/Time setting: Weekday	1	1	7	-	
t016	Date/Time setting: Hour	0	0	23	-	
t017	Date/Time setting: Minute	0	0	59	-	

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