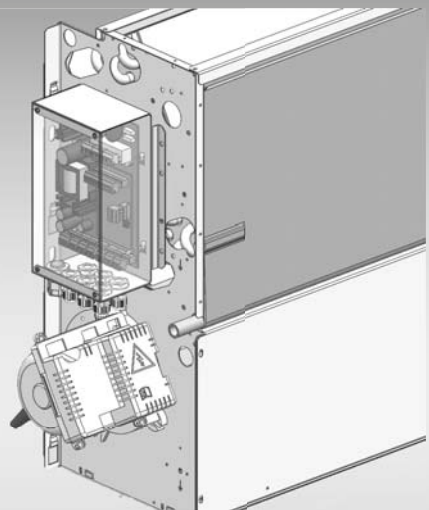
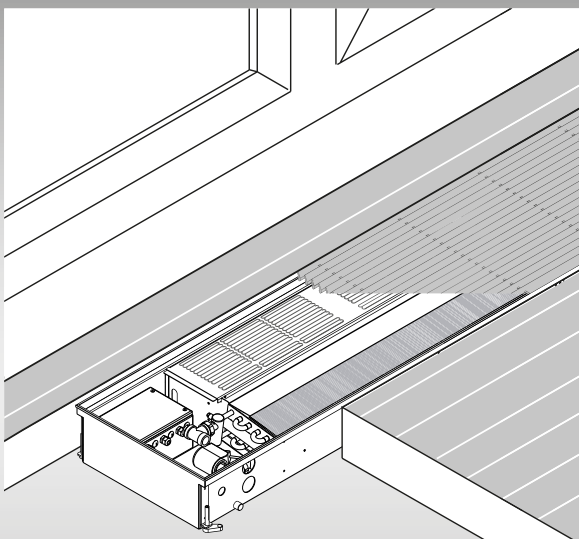


Operating instructions 07/2022 – 6917623

KNX control board for fan coil units



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1. About this manual

This manual describes how to safely and properly install and initially operate the KNX control board.

This manual must be read carefully and understood before use and before starting any work.

1.1 Permissible use

The room temperature can be efficiently controlled using the fan coil unit. When combined with the KNX control technology, the standardised KNX bus technology allows quick and easy integration into the building management system. This means that the fan coil unit can be controlled by both the energy-efficient PI-controller principle and using an external controller via the building management system.

- Fast PI control – fast room temperature control integrated in the fan coil unit
- Normal PI control – normal room temperature control integrated in the fan coil unit
- Slow PI control – slow room temperature control integrated in the fan coil unit
- External control – room temperature control using a room thermostat, for example
- Ascotherm algorithm – energy efficient room temperature control

The unit may only be assembled, installed, and operated as described in this manual. Any other use is contrary to the intended purpose and therefore not permissible. The operator will bear sole responsibility for any damages resulting from this; the warranty/guarantee provided by the manufacturer will be void. Unauthorised changes and modifications are not allowed.

1.2 Applicable documentation

Apart from this manual, you must also comply with the corresponding instructions for the components installed on site or also being supplied. Technical specifications subject to change.

2. Safety information

- Safe use is only warranted if this manual is complied with in full.
- The product must be installed properly by qualified experts and must be commissioned according to the law, regulations, and standards.
- Work on electronic devices may only be carried out by an electrical specialist.
- If the mains lead of this product is damaged, it must be replaced by the manufacturer or its after-sales service or a similarly qualified person in order to avoid hazards.
- Prevent tampering by children or underage persons. Playing with the product is prohibited.
- All repairs must be carried out by specialist personnel.

3. Functional test – First Open





























The KNX function board carries out an initial functional test once voltage has been applied for the first time and when the voltage is reset. To do so, the fan is operated twice at 100 % speed for 5 seconds each time and the connected valves are completely opened for 6 minutes. Afterwards, the fan coil unit starts controlling the room temperature.









4. Overview of communication objects



Note

All communication objects with the “Transferred” flag are transmitted cyclically. The cycle time can be set in the parameters.

Object	Function	Name	Type	Flag
 1	On/Off	Switch	1 bit	K, S
 2	Heating/cooling changeover	Switch	1 bit	K, S
 3	Temperature setpoint	Temperature value	2 bytes	K, S
 4	Current temperature setpoint	Temperature value	2 bytes	K, L, Ü
 5	Room temperature	Temperature value	2 bytes	K, S,
 6	Heating/cooling setpoint	Percentage	1 byte	K, S
 7	Heating setpoint	Percentage	1 byte	K, S
 8	Cooling setpoint	Percentage	1 byte	K, S
 9	Fan heating/cooling setpoint	Percentage	1 byte	K, S
 10	Fan heating setpoint	Percentage	1 byte	K, S
 11	Fan cooling setpoint	Percentage	1 byte	K, S
 12	Switch valve heating/cooling	Switch	1 bit	K, S
 13	Switch valve heating	Switch	1 bit	K, S
 14	Switch valve cooling	Switch	1 bit	K, S
 15	Valve heating/cooling setpoint	Percentage	1 byte	K, S
 16	Valve heating setpoint	Percentage	1 byte	K, S
 17	Valve cooling setpoint	Percentage	1 byte	K, S
 18	Boost	Switch	1 bit	K, S
 19	Fan speed status	Percentage	1 byte	K, L, Ü
 20	Valve position status	Percentage	1 byte	K, L, Ü
 21	On/Off status	Switch	1 bit	K, L, Ü
 22	Heating/cooling changeover status	Switch	1 bit	K, L, Ü
 23	Boost status	Switch	1 bit	K, L, Ü
 24	Dew point status	Switch	1 bit	K, L, Ü
 25	Valve protection status	Switch	1 bit	K, L, Ü
 26	Operating mode	Text message	14 bytes	K, L, Ü
 27	Digital input 1 status	Switch	1 bit	K, L, Ü
 28	Temperature sensor 1 status	Temperature value	2 bytes	K, L, Ü

Object	Function	Name	Type	Flag
 29	Digital input 2 status	Switch	1 bit	K, L, Ü
 30	Temperature sensor 2 status	Temperature value	2 bytes	K, L, Ü
 31	Digital input 3 status	Switch	1 bit	K, L, Ü
 32	Temperature sensor 3 status	Temperature value	2 bytes	K, L, Ü
 33	Alarm bit	Switch	1 bit	K, L, Ü
 34	Alarm message text	Text message	14 bytes	K, L, Ü
 35	Manual ventilation	Switch	1 bit	K, S
 36	Manual ventilation	Percentage	1 byte	K, S


5. Parameter overview

Parameters	Factory setting	Value range
Basic settings		
Pipe system	2-pipe system	2-pipe system 4-pipe system
Changeover mechanism	Building management system	Building management system Flow temperature sensor Digital input signal NO Digital input signal NC
Additional electric heating	No	No Yes
Changeover temperature heating/cooling	23 °C	15 ... 35 °C
Hysteresis heating/cooling changeover	3 °C	1 ... 10 °C
Type of actuators	On/Off	On/Off continuous (0–10 V)
Use of condensation pump/monitor	No	No Yes, NC Yes, NO
Valve protection	Yes	No Yes
Cyclical transmission, status	10 min	0 = Off 1 ... 255 min
Cyclical transmission, setpoints or actual values	5 min	0 = Off 1 ... 255 min
Configuration of inputs/outputs		
Input 1/2/3 configuration	Digital input	Digital input Temperature sensor Motor fault digital input Motor fault hall sensor Eco mode external On/Off
Purpose of input 1/2/3	Normally Open (NO)	Normally Open (NO) Normally Closed (NC)

Parameters	Factory setting	Value range
Reduced temperature 1/2/3	3 °C	1 ... 10 °C
Fan setting		
Fan support	Heating and cooling	Heating Cooling Heating and cooling
Min. fan speed	0 %	0 ... 90 %
Max. fan speed	100 %	10 ... 100 %
Controller setting		
Type of control	PI control normal	PI control slow PI control normal PI control fast Ascotherm algorithm External control
Power class	Power class 4	Power class 1 Power class 2 Power class 3 Power class 4 Power class 5 Power class 6 Power class 7
Fan/valve setpoint	combined	combined separate
Heating/cooling setpoint	combined	combined separate


6. Object description

On/Standby — switch

Object	Function	DPT	Factory setting	Value range
 1	On/Off	1.001	A	A Off

Object to switch the fan coil unit on and off. When switched off, valve protection is active if selected at the “Valve protection” parameter. Frost and heat protection are also active with the PI controls and the Ascotherm algorithm (see Alarm message text object).


Heating/cooling changeover — switch

Object	Function	DPT	Factory setting	Value range
 2	Heating/cooling changeover	1.100	Cooling	Heating Cooling

Object to change over between heating and cooling operating modes. With external control, the building management system is used to change over and with other controls, via the heating/cooling parameter in the 2-pipe system, or automatically with the fan in the 4-pipe system.


- **Cooling:** When a condensation pump/monitor is used, frost and heat protection are active, as well as protection from condensation. The appropriate alarms then activate with protective measures.
- **Heating:** Frost and heat protection are active.

Temperature setpoint – temperature value

Object	Function	DPT	Factory setting	Value range
 3	Temperature setpoint	9.001	20 °C	8 - 40 °C


Object for writing the temperature setpoint of the fan coil unit. The temperature setpoint of the fan coil unit only needs to be written if one of the PI controllers or the Ascotherm algorithm is selected.

Current temperature setpoint – temperature value

Object	Function	DPT	Factory setting	Value range
 4	Current temperature setpoint	9.001	-	-


Object for reading the current temperature setpoint of the fan coil unit. The room temperature is regulated to this temperature.

Room temperature – temperature value

Object	Function	DPT	Factory setting	Value range
 5	Room temperature	9.001	-	-


Object for writing the current room temperature. The room temperature of the fan coil unit only needs to be written cyclically if one of the PI controllers or the ascotherm algorithm is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Heating/cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 6	Heating/cooling setpoint	5.001	0 %	0 - 100 %


Object for writing the control value 0–100 % for heating and cooling which applies to fan and valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Heating setpoint – percent

Object	Function	DPT	Factory setting	Value range
 7	Heating setpoint	5.001	0 %	0 - 100 %

Object for writing the 0–100 % setpoint for heating which applies to fan and valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".


Cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 8	Cooling setpoint	5.001	0 %	0 - 100 %

Object for writing the 0–100 % setpoint for cooling which applies to


fan and valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Fan heating/cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 9	Fan heating/cooling setpoint	5.001	0 %	0 - 100 %


Object for writing the 0–100 % setpoint for heating and cooling which only applies to the fan. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Fan heating setpoint – percent

Object	Function	DPT	Factory setting	Value range
 10	Fan heating setpoint	5.001	0 %	0 - 100 %


Object for writing the 0–100 % setpoint for heating which only applies to the fan. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Fan cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 11	Fan cooling setpoint	5.001	0 %	0 - 100 %


Object for writing the control value 0–100 % cooling which only applies to the fan. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Switch valve heating/cooling — switch

Object	Function	DPT	Factory setting	Value range
 12	Switch valve heating/cooling	1.001	Off	Off A


Object for switching the On/Off valve when heating and cooling. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Switch valve heating – switch

Object	Function	DPT	Factory setting	Value range
 13	Switch valve heating	1.001	Off	Off A


Object for switching the On/Off valve only when heating. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values".

Switch valve cooling – switch

Object	Function	DPT	Factory setting	Value range
 14	Switch valve cooling	1.001	Off	Off A


Object for switching the On/Off valve only when cooling. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter “Cyclical transmission, setpoint or actual values”.

Valve heating/cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 15	Valve heating/cooling setpoint	5.001	0 %	0 - 100 %


Object for writing the control value 0–100 % for heating and cooling which only applies to the continuous valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter “Cyclical transmission, setpoint or actual values”.

Valve heating setpoint – percent

Object	Function	DPT	Factory setting	Value range
 16	Valve heating setpoint	5.001	0 %	0 - 100 %


Object for writing the control value 0–100 % for heating which only applies to the continuous valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter “Cyclical transmission, setpoint or actual values”.

Valve cooling setpoint – percent

Object	Function	DPT	Factory setting	Value range
 17	Valve cooling setpoint	5.001	0 %	0 - 100 %


Object for writing the control value 0–100 % for cooling which only applies to the continuous valve. The object only has to be written cyclically if external control is selected. The cycle time can be set in the parameter “Cyclical transmission, setpoint or actual values”.

Boost – switch

Object	Function	DPT	Factory setting	Value range
 18	Boost	1.001	Off	Off A


Object to switch on the Boost function. With the Boost function, the fan coil unit is immediately switched to 100 % speed and the valve also opens completely. This deactivates the control functions. If the object is written once, then the Boost function is activated for an indefinite time period until it is deactivated again. After being deactivated, the fan speed adjusts step by step back to its original speed.

Fan speed status – percent

Object	Function	DPT	Factory setting	Value range
 19	Fan speed status	5.001	-	0 - 100 %


Object for reading the current speed of the fan in percent. The object is active in all types of control.

Valve position status – percent

Object	Function	DPT	Factory setting	Value range
 20	Valve position status	5.001	-	0 - 100 %

Object for reading the current valve position in percent. The object is active in all types of control.


On/Off status – switch

Object	Function	DPT	Factory setting	Value range
 21	On/Off status	1.001	-	A Off

Object for reading the On/Off status. The object is active in all types of control.


- **Off:** The fan coil unit is not operating, i.e. actuator is closed and fan is off.
- **On:** The fan coil unit is operating.

Heating/cooling status – switch

Object	Function	DPT	Factory setting	Value range
 22	Heating/cooling changeover status	1.001	-	Heating Cooling


Object for reading the heating/cooling changeover status. The object is active in all types of control.

Boost status- switch

Object	Function	DPT	Factory setting	Value range
 23	Boost status	1.001	-	Off A


Object for reading the boost status. The object is active in all types of control.

Dewpoint status – switch

Object	Function	DPT	Factory setting	Value range
 24	Dew point status	1.001	-	Inactive Active


Object for reading the dewpoint status. The object is active in all types of control.

Valve protection status – switch

Object	Function	DPT	Factory setting	Value range
 25	Valve protection status	1.001	-	Inactive Active

Object for reading the valve protection status. The object is active in all types of control.


Operating mode – signs

Object	Function	DPT	Factory setting	Value range
 26	Operating mode	16.000	-	Off Heating Cooling Dew Valve Kick Ventilation Boost First Open

Object for reading the operating mode. The object is active in all types of control.

- **Off:** The fan coil unit is off.
- **Heating:** The fan coil unit is in heating operating mode. The “Heating/Cooling changeover” parameter is set to heating.
- **Cooling:** The fan coil unit is in cooling operating mode. The “Heating/Cooling changeover” parameter is set to cooling.
- **Dew:** The fan coil unit dries off condensation if the “Use condensation pump/monitor” parameter has been selected. The actuator is closed and the fan rotates at a constant speed of 50 %.
- **Valve Kick:** The fan coil unit is switched off. The “On/Off” object is set to off. In a 2-pipe system, once a week, the valve is opened for 10 min and in the 4r-pipe system, the valves are opened one after the other for 10 min each, at a time interval of 10 min.
- **Ventilation:** The “Manual ventilation” object is active.
- **Boost:** The “Boost” object is active.
- **First Open:** The functional test is carried out. (see Chapter 3)


Input 1 status – switch

Object	Function	DPT	Factory setting	Value range
 27	Input 1 status	1.001	-	Inactive Active

Object for reading the status of input 1 that is configured in the “Input 1 configuration” parameter.

- **Inactive:** No signal at input 1.
- **Active:** A signal is being received from the digital input or motor fault.


Temperature sensor 1 status – temperature value

Object	Function	DPT	Factory setting	Value range
 28	Temperature sensor 1 status	9.001	-	-

Object for reading the status of temperature sensor 1.

- Temperature value of input 1, if the temperature sensor was selected in the “Input 1 configuration” parameter.
- If the display is showing 999.9 °C, then there is a broken cable and if it is showing -999.9 °C, there is a short circuit.


Input 2 status – switch

Object	Function	DPT	Factory setting	Value range
 29	Input 2 status	1.001	-	Inactive Active

Object for reading the status of input 2 that is configured in the “Input 1 configuration” parameter.

- **Inactive:** No signal at input 2.
- **Active:** A signal is being received from the digital input or motor fault.


Temperature sensor 2 status – temperature value

Object	Function	DPT	Factory setting	Value range
 30	Temperature sensor 2 status	9.001	-	-

Object for reading the status of temperature sensor 2.

- Temperature value of input 2, if the temperature sensor was selected in the “Input 2 configuration” parameter.
- If the display is showing 999.9 °C, then there is a broken cable and if it is showing -999.9 °C, there is a short circuit.


Input 3 status – switch

Object	Function	DPT	Factory setting	Value range
 31	Input 3 status	1.001	-	Inactive Active

Object for reading the status of input 3 that is configured in the “Input 3 configuration” parameter.

- **Inactive:** No signal at input 3.
- **Active:** A signal is being received from the digital input or motor fault.


Temperature sensor 3 status – temperature value

Object	Function	DPT	Factory setting	Value range
 32	Temperature sensor 3 status	9.001	-	-

Object for reading the status of temperature sensor 3.

- Temperature value of input 3, if the temperature sensor was selected in the “Input 3 configuration” parameter.
- If the display is showing 999.9 °C, then there is a broken cable and if it is showing -999.9 °C, there is a short circuit.


Alarm bit – switch

Object	Function	DPT	Factory setting	Value range
 33	Alarm bit	1.005	-	No Alarm Alarm

Object for reading the status of input 3 that is configured in the “Input 3 configuration” parameter.

- **No Alarm:** No alarm has been triggered.
- **Alarm:** The object becomes active as soon as an alarm has been triggered. Meanwhile, the fan coil unit performs the action corresponding to the respective alarm (see Alarm message object). Once the fault or cause has been rectified, the alarm bit switches to “No Alarm” again.


Alarm message text – characters

Object	Function	DPT	Factory setting	Value range
	34	Alarm message text	16.000	-
				No Alarm TO Roomtemp Settemp Error TO Control Control Error Anti Freeze Heat Protect Sensor Error Fan Error Dew

Object for reading the alarm messages. All important alarm messages of the fan coil unit can be read via this object. The object is active in all types of control.


- **No Alarm:** No alarm is active.
- **TO (Time Out) Roomtemp:** The “Room temperature” object has not been sent for a longer time that set in the “Send cyclically, setpoint or actual values” parameter while internal control has been selected. The fan and the actuator(s) are switched off.
- **Settemp Error:** The “temperature setpoint” object is outside the range 8–40 °C. The fan and the actuator(s) are switched off.
- **TO (Time Out) Control:** The “FanCoil setpoint” object has not been sent for a longer time that set in the “Send cyclically, setpoint or actual values” parameter while external control has been selected. The fan and the actuator(s) are switched off.
- **Control Error:** The “FanCoil setpoint” object is outside the range 0–100 %. The fan and the actuator(s) are switched off.
- **Anti Freeze:** Frost protection is triggered if the room temperature falls below 8 °C. The fan is switched off, as is the cooling valve in the 4-pipe system. The heating valve is fully opened. With the 2-pipe system, the fan is switched off and the valve closed if the “Heating/Cooling changeover” object is set to cooling, otherwise it is completely open.
- **Heat Protect:** Heat protection is triggered once the room temperature exceeds 40 °C. Both the fan and the heating valve in the 4-pipe system are switched off. The cooling valve is completely open. With a 2-pipe system, the fan is switched off and the valve closed if the “Heating/Cooling changeover” object is set to heating, otherwise it is also completely open.
- **Sensor Error:** There is a broken cable or short circuit on one of the connected sensors. The fan is switched off and the valve closed in the 2-pipe system.
- **Fan Error:** A motor fault for the fan is triggered if one of the selected motor faults becomes active at the “freely configurable input 1–3” parameter.
- **Dew:** The fan coil unit dries off condensation if the “Use condensation pump/monitor” parameter has been selected. The actuator is closed and the fan rotates at a **constant** speed of 50%.

Manual ventilation – switch

Object	Function	DPT	Factory setting	Value range
	35	Manual ventilation	1.001	Inactive Active

Object to switch to activate manual ventilation. The fan then rotates according to the set speed (see Manual ventilation – percent object) and the valves remain closed. The object is active in the PI controls and the Ascotherm algorithm.

Manual ventilation – percent

Object	Function	DPT	Factory setting	Value range
	36	Manual ventilation	5.001	0 % 0 - 100 %

Object for writing the fan speed if the “Manual ventilation – switch” object has been activated. The object is active in the PI controls and the Ascotherm algorithm.

7. Parameter description

7.1 Basic settings

Pipe system

Parameters	Factory setting	Value range
Pipe system	2-pipe system	2-pipe system 4-pipe system

Parameters for selecting the pipe system available.

- **2-pipe system:** Fan coil unit with 2-pipe system and an actuator.
- **4-pipe system:** Fan coil unit with 4-pipe system and two actuators.

Changeover mechanism

Parameters	Factory setting	Value range
Changeover mechanism	Building management system	Building management system Flow temperature sensor Digital input signal NO Digital input signal NC

Parameter for selecting changeover mechanism, which in the 2-pipe system, is exclusively responsible for the Heating/Cooling changeover. This can be defined via the following four points.

- **Building management system:** The building management system sends the signal for the “Heating/Cooling changeover” object.
- **Flow temperature sensor:** A contact sensor which must always be connected to terminal X2 measures the flow temperature.
- **Digital input signal NO:** A digital “normally open” input signal can be connected to the fan coil unit instead of the contact sensor.
Heating: contact open.
Cooling: contact closed.
- **Digital input signal NC:** A digital “normally closed” signal can be connected to the fan coil unit instead of the contact sensor.
Heating: contact closed.
Cooling: contact open.

Additional electric heating

Parameters	Factory setting	Value range
Additional electric heating	No	No Yes

Parameter for activating the additional electric heating, if heating is connected and the following conditions occur.

- **No:** No additional electric heating connected.
- **Yes:** Additional electric heating is used if the room temperature is 3 K below the setpoint. The heating will radiate warmth until the room temperature reaches 2 K below the temperature setpoint again. However, the heating only becomes active if it is a 2-pipe system with PI control and the "Heating/Cooling changeover" object is set to cooling.

Changeover temperature heating/cooling

Parameters	Factory setting	Value range
Changeover temperature heating/cooling	23 °C	15 ... 35 °C

Parameter for writing the changeover temperature between heating and cooling. The parameter becomes active when the flow temperature sensor is selected in the "Changeover mechanism" parameter. You can choose a flow temperature in the range from 10 °C to 30 °C.

Hysteresis heating/cooling changeover

Parameters	Factory setting	Value range
Hysteresis heating/cooling changeover	3 °C	1 ... 10 °C

Parameter for writing the hysteresis for the changeover temperature, at which the Heating/Cooling changeover occurs in the 2-pipe system. The hysteresis is added to and subtracted from the switchover temperature. It can be set from 2–6 Kelvin.

Example: Changeover temperature = 23 °C and hysteresis = 3 K
From a flow temperature of 26 °C, the "Heating/Cooling changeover" object is set to heating and below 20 °C, to cooling.

Changeover temperature heating/cooling

Parameters	Factory setting	Value range
Changeover temperature heating/cooling	23 °C	15 ... 35 °C

Parameter for writing the changeover temperature between heating and cooling. The parameter becomes active when the flow temperature sensor is selected in the "Changeover mechanism" parameter. You can choose a flow temperature in the range from 10 °C to 30 °C.

Actuator type

Parameters	Factory setting	Value range
Actuator type	On/Off	On/Off continuous (0–10 V)

Parameter for selecting the actuator connected.

- **On/Off:** The actuator can only be in an opened or closed state.
- **0–10 V:** The actuator can accept values from 0–100 %.

Use of condensation pump/monitor

Parameters	Factory setting	Value range
Use of condensation pump/monitor	No	No Yes, NC Yes, NO

Parameter for selecting the connected condensation pump or condensation monitor respectively.

- **No:** Condensation pump/monitor is not used.
- **Yes, NC:** Yes, the condensation pump/monitor is connected and due to an excessive water level in the condensation collection tray, the actuator is closed when the NC contact of the condensation pump/monitor opens. The fan runs at a constant speed of 50 %.
- **Yes, NO:** Yes, the condensation pump/monitor is connected and due to an excessive water level in the condensation collection tray, the actuator is closed when the NO contact of the condensation pump/monitor closes. The fan runs at a constant speed of 50 %.



Note

Condensation pump

- If the condensation does not dissipate in sufficient quantity when cooling, it is advisable to use a condensation pump. The condensation pump is then factory assembled and wired.



Note

Condensation monitor

- Using a dew point sensor is recommended to prevent condensation in cooling mode. The sensor detects incipient development of condensation at the place of installation.

Valve protection

Parameters	Factory setting	Value range
Valve protection	Yes	No Yes

Parameter for activating valve protection.

- **No:** Valve protection is not activated.
- **Yes:** Valve protection is activated and the valve protection status is displayed in the "Operating mode" object. The actuator opens the valve when switched off to prevent it sticking. As an option, the protection can also be switched on.

Cyclical transmission

Parameters	Factory setting	Value range
Cyclical transmission, status	10 min	0 = Off 1 ... 255 min
Cyclical transmission, setpoint or actual values	5 min	0 = Off 1 ... 255 min

Parameter for setting the cyclical transmission time of status/setpoint or actual values.

7.2 Configuration of inputs/outputs

Configuration of inputs/outputs

Parameters	Factory setting	Value range
Input 1–3 configuration	Digital input	Digital input Temperature sensor Motor fault digital input Motor fault hall sensor Eco mode external On/Off

Parameter for configuring the input. There are six different options to choose from. A digital input, a temperature sensor, or a hall sensor can be connected to terminal X2, X3, or X4 of the power supply board. The parameter is active in all types of control. The status is displayed in the “Digital input 1–3 status” object or when selecting temperature sensor, in the “Temperature sensor 1–3 status” object.

- **Digital input:** A digital signal is connected.
- **Temperature sensor:** A temperature sensor NTC10k is connected.
- **Motor fault digital input:** A digital input from the EC fan is connected, which signals a motor fault. The motor fault status is displayed in the “Alarm message” object.
- **Motor fault Hall sensor:** The hall sensor integrated in the fan to record a motor fault is connected.
- **Eco mode:** A digital signal is connected to activate a reduced temperature.
- **External On/Off:** A digital input is connected and when activated, switches the device off.

Purpose of input 1–3

Parameters	Factory setting	Value range
Purpose of input 1	Normally Open (NO)	Normally Open (NO)
Purpose of input 2		Normally Closed (NC)
Purpose of input 3		

Parameter for configuring the digital input 1–3, regardless of whether it is a Normal Open or Normal Close contact.

Reduced temperature 1–3

Parameters	Factory setting	Value range
Reduced temperature 1	3 °C	1 ... 10 °C
Reduced temperature 2		
Reduced temperature 3		

Parameter for setting the required reduced temperature is Eco mode has been selected in the “Input 1–3 configuration” parameter. The reduced temperature is subtracted from the temperature setpoint and this results in a new lower temperature setpoint that the control is then set at.

7.3 Fan setting

Fan support

Parameters	Factory setting	Value range
Fan support	Heating and cooling	Heating Cooling Heating and cooling

Parameter for selecting the fan support at which operating mode is to become active.

- **Heating:** The fan is only active if heating is active on “Heating/Cooling changeover”.
- **Cooling:** The fan is only active if cooling is active on “Heating/Cooling changeover”.
- **Heating and cooling:** The fan is active when either heating or cooling.

Minimum fan speed

Parameters	Factory setting	Value range
Min. fan speed	0 %	0 ... 90 %

Parameter for determining the minimum fan speed. Setting a lower speed limit of 0–90 % is also possible. Please note that the min. speed may not be greater than the maximum speed.

Maximum fan speed

Parameters	Factory setting	Value range
Max. fan speed	100 %	10 ... 100 %

Parameter for determining the maximum fan speed. It is possible to set an upper speed limit of 10–100 %. Make sure that if the speed is limited, the maximum heating and cooling output of the fan coil unit is not reached.

7.4 Controller setting

Type of control

Parameters	Factory setting	Value range
Type of control	PI control normal	PI control slow PI control normal PI control fast Ascotherm algorithm External control

PI control slow: The fan coil unit is controlled as described in the following point. For slower control, other parameters are now used for the P and I proportions.

- **PI control algorithm – normal:** The fan coil unit is controlled by the difference between the temperature setpoint and the room temperature. To do this, the “Room temperature” object must sent cyclically. The cycle time can be set in the parameter “Cyclical transmission, setpoint or actual values”. It is also important whether the fan coil unit is in heating or cooling mode. This switchover does not happen automatically. The P and I proportion have fixed parameters which remain unchanged.
- **PI control fast:** The fan coil unit is controlled as described in the previous point. For faster PI control, only other parameters are used for the P and I proportion.

- **Ascotherm algorithm:** Fan coil units can reach unrivalled efficiency with the Ascotherm control algorithm, attaining hitherto unknown cost-efficiency. This is made possible with the innovative synchronous control of fan coil unit (air flow) and valve opening (water flow) based on the valve opening being matched with the fan speed.
- **External control:** If an internal controller cannot be used due to the application, then internal controller can be completely deactivated. An external controller can be selected via the object as well as the "Type of control" parameter. Here, the fan coil unit must be controlled by the building management system via objects 6–17 which must be transmitted cyclically. The cycle time can be set in the parameter "Cyclical transmission, setpoint or actual values". Change over the operating mode using the "Heating/cooling change over" object.

Power class

Parameters	Factory setting	Value range
Power class	Power class 4	Power class 1 Power class 2 Power class 3 Power class 4 Power class 5 Power class 6 Power class 7

Parameters for selecting the power class. Every fan coil unit has its own power class that it has to be assigned to, depending on its size. The power class is only important for the "Ascotherm algorithm" type of control parameter, as this is the only way the fan coil unit can control the room energy efficiently.



Note

- The power class can be found on the nameplate on the housing.

Fan/valve setpoint

Parameters	Factory setting	Value range
Fan/valve setpoint	combined	combined separate

Parameter for configuring the setpoint with reference to fan and valve.

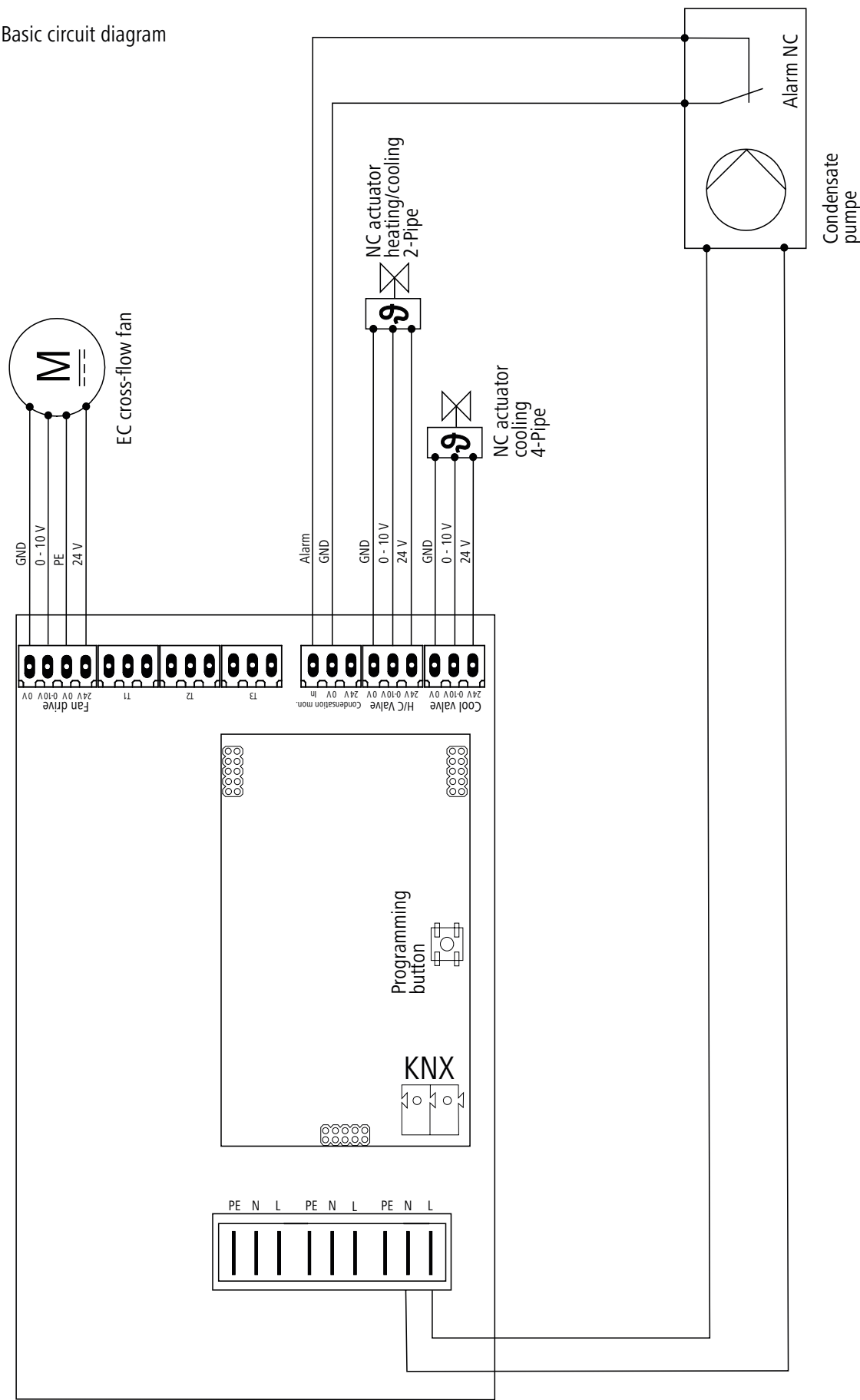
- **Combined:** Fan and valve have the same setpoint.
- **Separate:** Fan and valve can be assigned different setpoints.

8. Technical data

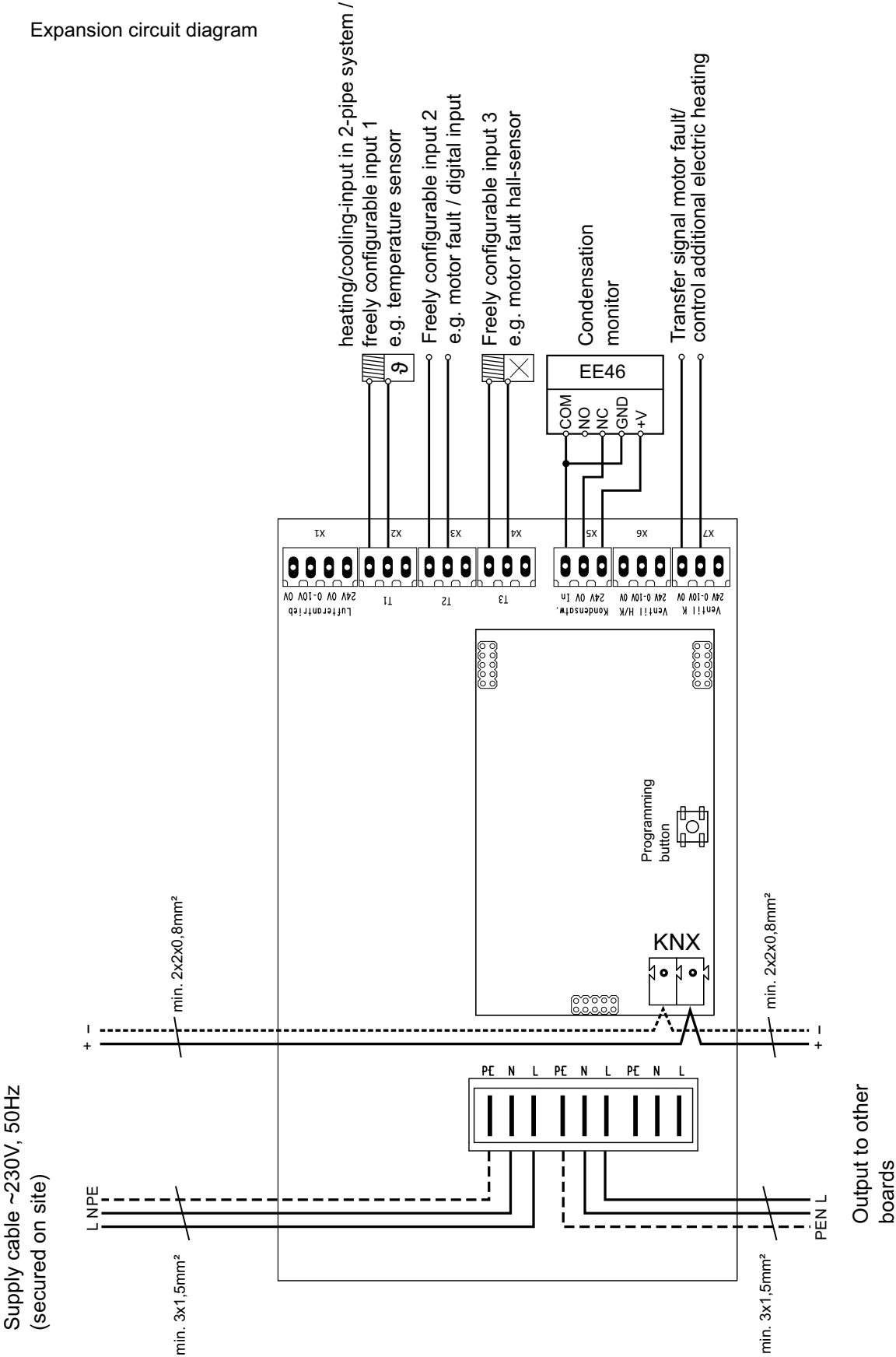
Criterion	Property
Degree of protection	I
Bus technology	EIB/KNX
Bus medium	TP (twisted pair)
Initial operation	S-mode
Ambient temperature	0 °C to +45 °C
Storage temperature	-10 °C to +60 °C
KNX supply voltage	21 – 32 V DC
KNX power consumption	20 mA
External supply	220–240 V AC
Temperature sensor	NTC 10 k
Sensor measurement range	0 - 100 °C
Sensor accuracy	± 2 % (precision class 1)
Beta value	3435

9. Appendix

Basic circuit diagram



Expansion circuit diagram





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