



Electronic speed controller

recirculating air with digital timer and room temperature control type 30515

► Assembly and installation instructions

Keep these instructions in a safe place for future use!

1.96 Electronic continuously variable speed controller

recirculating air with digital timer and room temperature control, type 30515

Assembly and installation instructions

Key to symbols:



Caution! 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.

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 trades people 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!

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Carefully read this manual in full prior to installing the electronic continuously variable speed controller!

1. Intended use

The Kampmann electronic speed controller type 0-10 V, type 30515 has been designed in compliance with the state of the art and recognised safety regulations. Nevertheless its use can result in danger to people or damage to the unit or other material property if they are not properly installed or properly used.

The Kampmann electronic continuously variable speed controller 0-10 V, type 30515, is exclusively intended for use indoors (e.g. industrial buildings and warehouses, business premises, showrooms etc.). It is not suitable for use in wet rooms, in hazardous areas, in rooms with aggressive atmosphere or outdoors. Protect the products from any moisture during installation. Check the application 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 and proper use is also deemed to include compliance with the information on assembly and installation described in this manual. The assembly and installation of this product requires specialist knowledge of heating, cooling, ventilation and electrical engineering. This knowledge, generally learned in vocational training, is not described separately. Damage caused by improper installation is the responsibility of the operator.

The following Kampmann air handling units can be combined with the electronic continuously variable speed controller 0-10 V type 30515 can be combined:

Series: - TOP and Ultra (ending 33 and 34)
- Planeck (ending in 60)

Scope of these instructions

Installation
Electrical installation
Commissioning and operation

Regulations

Ordinance on Industrial Safety and Accident Prevention Regulations (BetrSichV), BGV A3, TRBS

DIN VDE 0100, DIN VDE 0105

EN 60730 (Part 1)

Technical wiring regulations (TABs) issued by the regional electricity providers and generally recognised technical rules and regulations

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2. Safety information

This electronic continuously variable speed controller 0-10 V type 30515 has been developed and produced in accordance with the state of the art and current statutory standards and guidelines. Note the contents of this manual for proper installation and operation of the equipment.

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 stated, is not described separately here. Damage caused by improper installation is the responsibility of the operator.

Qualified personnel must have undergone technical training to provide them with adequate knowledge to include the following:

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



Safety-conscious working

- Disconnect all parts of the system that are being worked on!
- Ensure that the system cannot be accidentally re-connected! Wait until the fan comes to a standstill!
- Only use safe lifting platforms and scaffolding for installation!
- Wire the units in accordance with the attached wiring diagrams!
- Only connect the unit to fixed cables!
- During operation, the unit must be enclosed or installed in a control cabinet!



Modifications to the unit

Do not undertake any modifications or upgrades on the unit without discussing these with the manufacturer as these can impair the safety and operation of the unit. Modifications to the unit will lead to the termination of the warranty!

Errors caused by connection or modifications can lead to the unit being damaged! The manufacturer shall not be liable for any damage due to the wrong connection and/or improper handling!

Caution! As the unit automatically switches on again after power failure, switch the speed controller to Off before connecting to mains voltage!

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3. Assembly and installation

Assembly of the control



Fig. 1: Assembly of the control

- Disconnect all parts of the system that are worked on and prevent from unauthorised reconnection!
 - Take into consideration the enclosure class of the controller (cf. Technical data) when selecting the position of the unit
 - Only fix the unit (wall mounting) onto flat, solid and vibration-free surfaces.
 - Protect the unit from direct sunlight.
 - Make sure that you have a proper heat dissipation. Allow a clearance of 15 cm at the side of the unit and a minimum of 20 cm above the unit.
 - Loosen the mounting screws highlighted in Figure 1. The spacing between the holes is marked on the rear of the housing.
- Important:** The cover installations are cabled to plug into the basic unit.
- Screw the unit to the wall.

Assembling the room temperature sensor

The room temperature sensor detects the temperature at the installation site. Therefore select the installation site so that the temperature measurement is not adversely affected.

Position at a height of 1.5–2 metres above the floor. Do **not** install the sensor

- on badly insulated external walls,
- directly adjacent to doors and windows (draught), behind curtains, blinds or furnishings,
- in direct sunlight,
- in the air flow of heating equipment,
- above or beside other external heat sources, such as radiators, TVs, lamps etc.



Fig. 2: Assembly of the room temperature sensor
part no.: 1035642

Note the permitted length of the sensor cable!
(see page 7: Cabling)

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3.1 Cabling

General information

- Lay all low voltage cables along the shortest route (room temperature sensor, digital inputs).
- Separate low voltage and power lines, for example, by a distance of at least 20 cm, possibly using metallic partitions on cable harnesses etc.

3.2 Cabling diagram

Air heaters with EC fans, types ending in 33, 34, 60
illustrated: Ultra, (see page 7, Figure 4)

3.3 Fuse

The unit has a fuse 5x20 mm fuse, T5AL, fitted in the mains power supply input circuit.

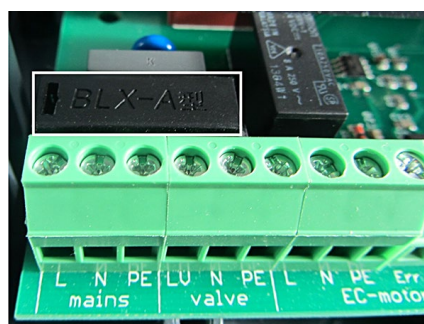


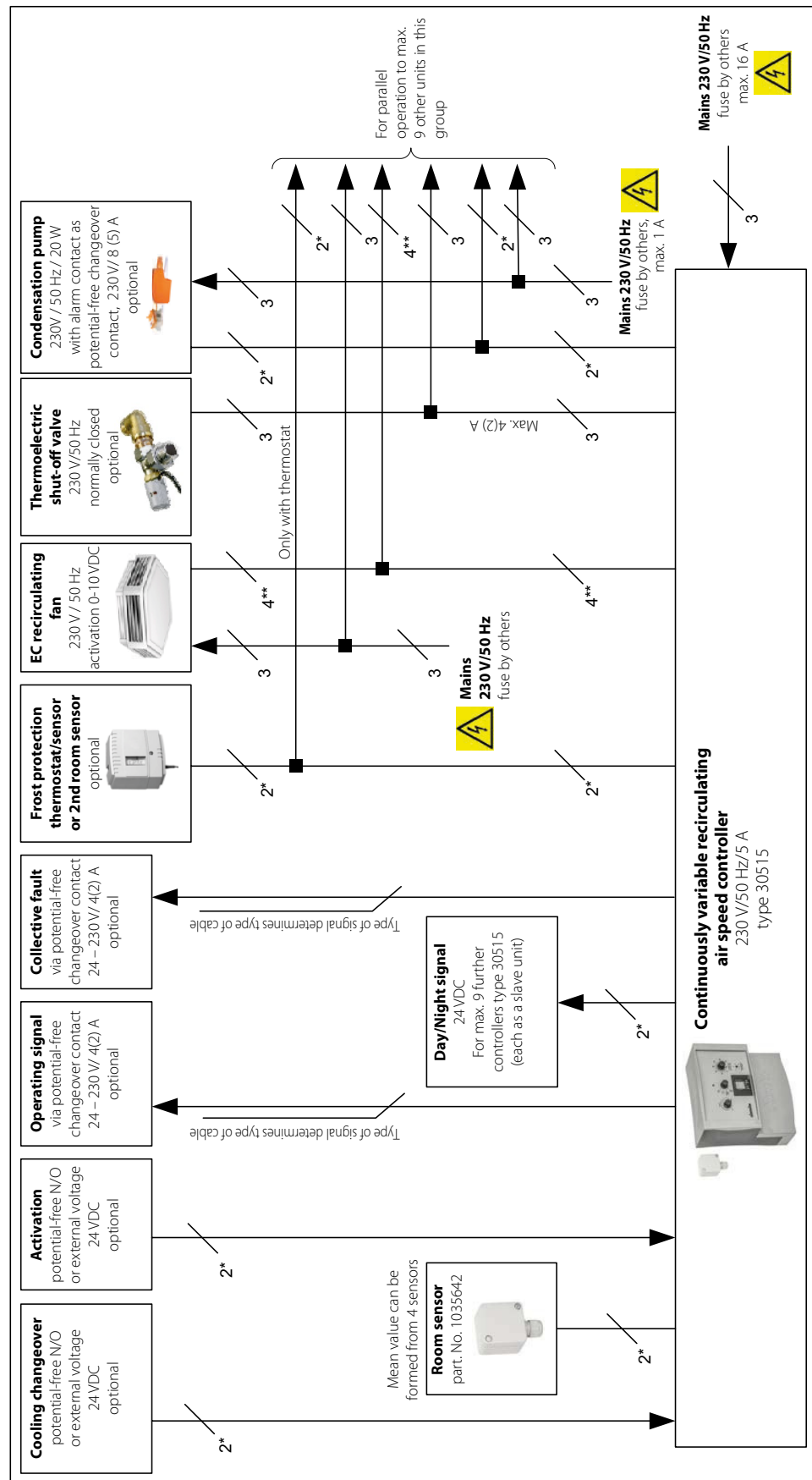
Fig. 3: Unit fuse in the mains power supply (main board)

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Fig. 4: Cabling diagram



*) Lay shielded cables (e.g. J-Y(ST)Y, 0.8 mm), max. 100 m, separately from power cables!

**) Lay shielded cables (e.g. J-Y(ST)Y, 0.8 mm), separately from power cables!

Max. 100 m from the speed controller to the last ventilation unit, fit a shield to one side of the speed controller with cables longer than 20 m (PE).

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3.4 Electrical wiring

Safety information

The wiring of this product requires expert knowledge of electrical engineering. This knowledge, generally learned in vocational training in the field stated, is not described separately here. The following safety information should be checked and observed before starting any work on the controllers and units:

- Disconnect the system and prevent it from unauthorised reconnection.
- Only wire the unit in accordance with currently applicable VDE and EN guidelines, as well as Technical Wiring Regulations stipulated by the regional energy supply companies.
- Only connect the unit to fixed cables.
- Only use the wiring diagrams enclosed to carry out the electrical connection.

Caution! Errors with the wiring can lead to the unit being damaged! The manufacturer is not liable for any damage to people and materials caused by the wrong wiring and/or improper handling!

Wiring

- Remove the terminal cover (Figure 5; see also p. 5, Chapter 3, Installation of the controller)
- Route all electrical cables in line with the wiring diagram supplied.

Parallel operation of several units

Adherence to the following instructions enables multiple air heaters to be operated in parallel by an electronic continuously variable speed controller 0-10 V type 30515:

- only units with the same motor wiring configuration can be switched in parallel (types ending as follows, Top: 33 or 34 / Ultra: 33 or 34 / Planeck: 60). The electrical power consumption may differ.
- Do not exceed the maximum current load of the controller (see Technical data).
- Switch all motor windings in parallel (see diagram).
- Switch the alarm signal contacts of all motors in series (see wiring diagram).



Fig. 5: Opening the unit

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3.5 Inputs and outputs

Digital inputs		
External release	Release	Input DI1 GND closed
	no activation	Input DI1 GND open
Heating/cooling changeover	Heating	Input DI2 GND open
	Cooling	Input DI2 GND closed
Condensation alarm	Fault	Input DI3 GND open
	No fault	Input DI3 GND closed
Fan fault	Fault	Input Err-GND open
	No fault	Input Err-GND closed
Time (alternatively as output)* ¹⁾	Day mode	Input IO-GND closed
	Night mode	Input IO-GND open

Analogue inputs		
Room temperature sensor* ²⁾		AI1-GND
Multifunctional input * ²⁾		MI1-GND

Digital outputs		
Valve drive Open/Closed	Digital	0 - 230 V AC
Operating message	Potential-free contact	24 V AC/DC - 230 V AC 4(2)A
Fault message* ³⁾	Potential-free contact	24 V AC/DC - 230 V AC 4(2)A
Time (alternatively as input)	Digital	0 - 24 VDC

Analogue outputs		
Speed signal	Analogue	0 - 10 VDC

*1) Necessary setting of internal clock: duration of night mode!

*2) Averaging over four-room sensors is possible

*3) In normal operating mode, the relay is switched on. Contact the relay drops out when / if:

- there is no mains voltage.
- Frost alarm.
- Temperature sensor line breakage or short-circuit.
- Condensation alarm.
- EC motor error message.
- Room cooling down prevention.

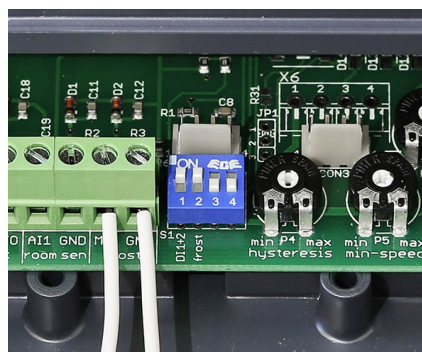
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4. Function and settings

4.1. DIP switch



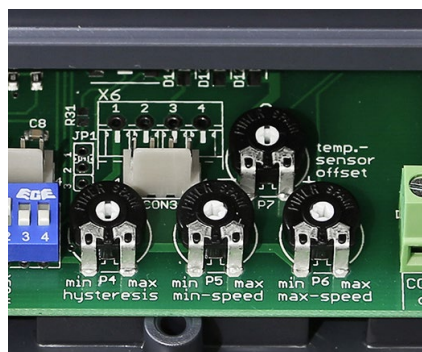
DIP 1		Digital input 1 and 2 (DI1, DI2)
ON		Potential-free N/O (factory setting)
OFF		active 24 V DC
DIP 2	DIP 3	Multifunctional input (MI1)
OFF	OFF	Frost protection sensor
ON	OFF	Frost protection contact (factory setting)*
---	ON	Room sensor 2
DIP 4		Room cooling down prevention
ON		disabled
OFF		active (factory setting)

* Jumper is factory-fitted (frost protection contact therefore disabled)

4.2 Potentiometer

Fan speed restriction

Setting or limiting the minimum and maximum output voltage at the analogue output U_c , in the range of 2 V to 10 V. The default factory settings have the potentiometer "min Speed" in the minimum and "max Speed" in the maximum position. The minimum speed limit can be set in advance for the safe start-up of the motor.



Sensor - Offset

Calibration and adjustment of the room sensor to its installation position. The adjustment range is $\pm 3K$. (Default setting = centre position = neutral)

Hysteresis

The adjustable hysteresis in automatic speed mode lies between 1K (min. position) and 5K (max. position). The speed of the fan changes in relation to the temperature difference depending on the hysteresis set. The fan speed reaches its maximum value (default setting approximately 3K, centre position) at the value set on the potentiometer.

4.3 Room cooling down prevention

The room cooling down function is superior to all operating modes and works independently of the external enable contact. The feature is enabled using the "OFF" position on the speed controller if it is enabled by DIP switch 4 = OFF. At a room temperature below 5°C, the room cooling down protection function is active and inactive at a room temperature above 7°C (the system resumes its original operating mode). When this function is active, the fan is activated at the maximum speed set and the valve is opened.

The function is not active if / when:

- there is a motor fault.
- Frost alarm.
- Condensation alarm.
- Temperature sensor line breakage or short-circuit.

4.4 Frost alarm

On delivery the frost alarm is disabled by DIP switch positions 2 and 3 and a jumper between MI1/GND. The DIP switch allows the multifunctional input to be enabled, among other things, for a frost protection sensor or a frost protection contact. Frost protection is superior to all operating modes.

Frost protection contact: The frost protection contact is enabled when DIP switch 2 is set to ON and DIP switch 3 is set to OFF. The frost alarm is inactive if the contact is closed. The frost alarm is active if the contact is open.

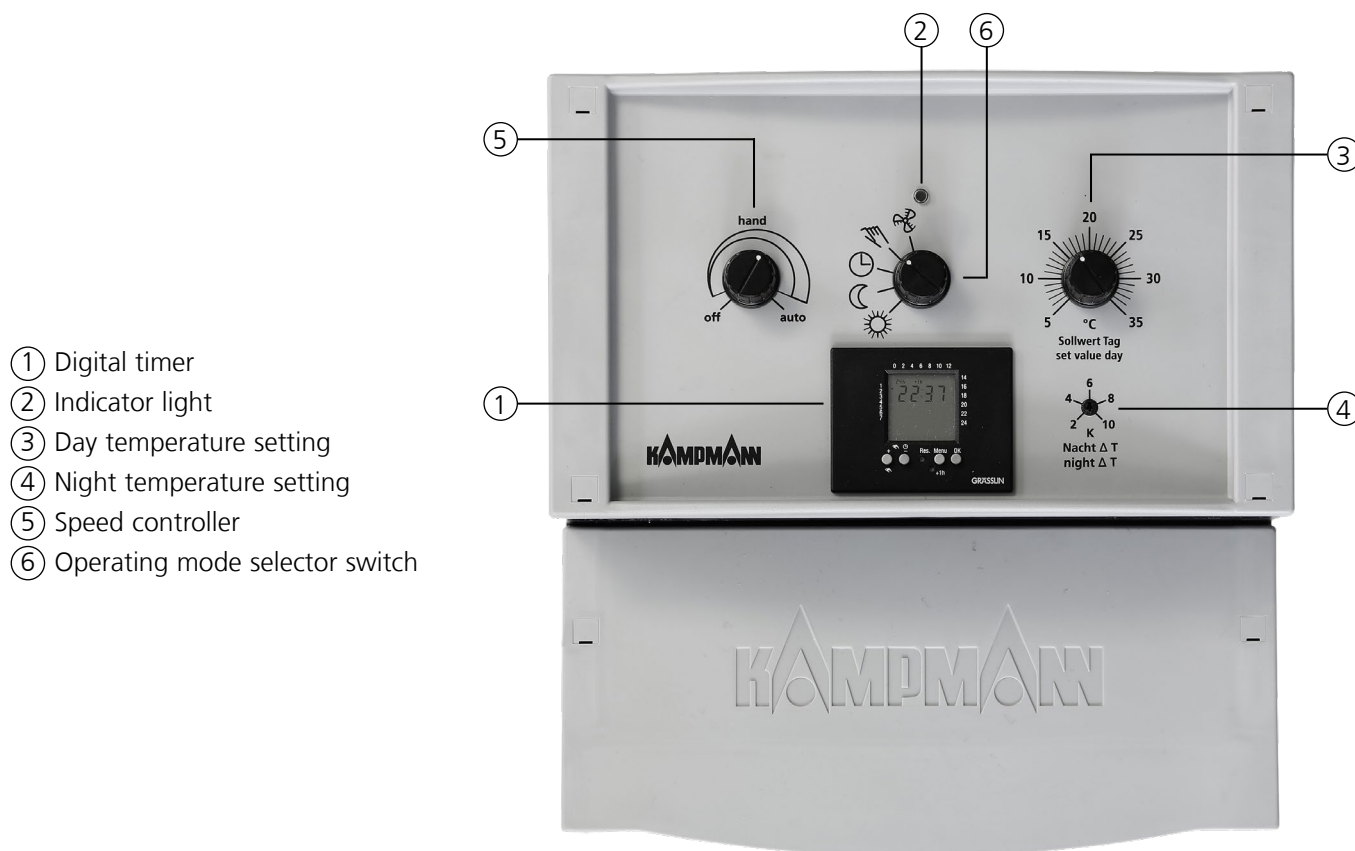
Frost protection sensor: The frost protection sensor is enabled when DIP switch 2 is set to OFF and DIP switch 3 is set to OFF. The switching threshold for the frost protection sensor is 8°C.

When the frost alarm is active, the valve is open in heating and cooling mode and the fan is switched off. The fault must be reset by turning the speed controller to Off or by switching off the mains power supply. If the error is not rectified, the fault cannot be acknowledged. As soon as the fault has been successfully acknowledged, the system returns to its original operating mode.

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5. Operation



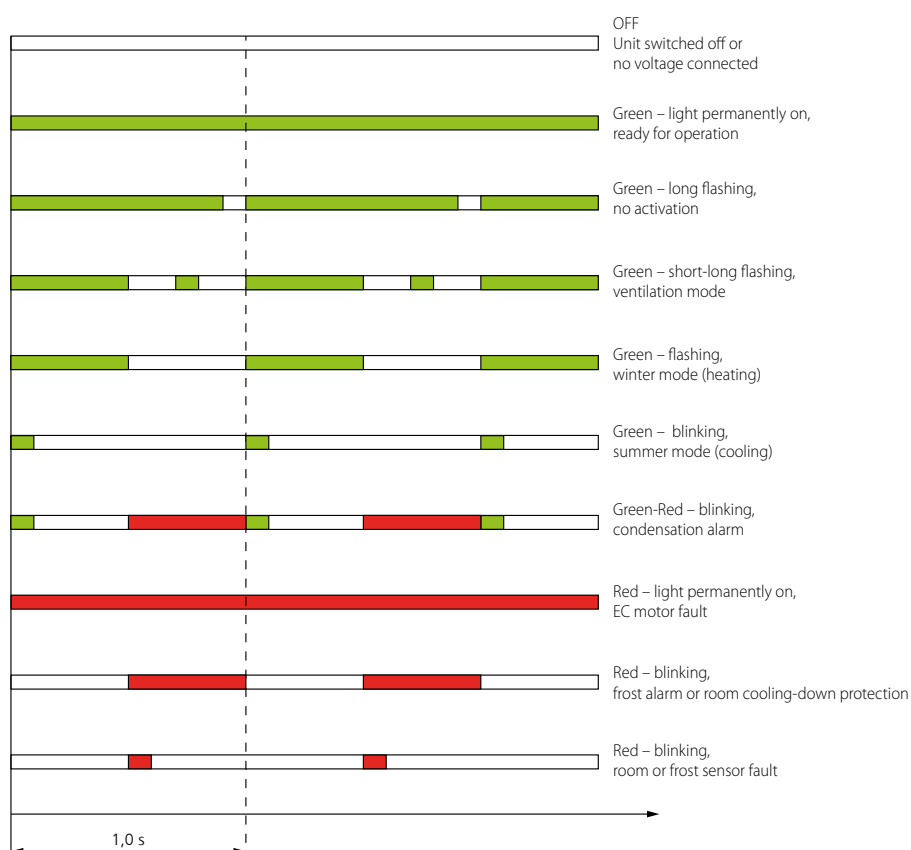
① Digital timer

Determines the times for switching between day/night operation; for a description, see Timer operation (Chapter 5.1 ff)

② Indicator light

The indicator light shows the unit's current operating mode. The various errors are shown in Figure 6.

- In the event of the error "Room and frost sensor error", check the cable for short-circuiting or line breakage. In both cases, the fan is off and the valve is open. Once the fault has been eliminated, the system returns to its original operating mode.
- The error "Frost alarm or room cooling down protection" must be acknowledged, if necessary, by turning the speed controller switch to Off (when triggering the frost alarm).
- The error "EC motor fault" indicates that there is a fan fault. This needs to be reset by switching the speed controller to Off or by disconnecting the mains power supply. If the error is not rectified, the fault cannot be acknowledged.



**Fig. 6: Indicator light
flashing code**

Important: After a power failure with the fan, a fault message will continue to appear for approx. 10 seconds after the power has been re-established. This can only be acknowledged after this time has expired. A motor fault is only issued if there is a fault for longer than 1 minute or at least 3 times within a minute.

③ Day mode temperature setting

Setting the required room temperature during the day mode phase.

④ Night mode temperature setting

Setting the required room temperature night setback in heating mode or night step-up in cooling mode during the night mode phase.

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⑤ and ⑥ Speed controller and operating mode selector switch

Function		Speed controller		
		Off*	Manual	Auto
Operating mode selector switch	Day	off	On/Off depending on the day setpoint with manually set speed within the set minimum and maximum limits	Speed depending on the deviation of the actual temperature from the day setpoint within the set minimum and maximum limits
	Night	off	On/Off depending on the night setpoint with manually set speed within the set minimum and maximum limits	Speed depending on the deviation of the actual temperature from the night setpoint within the set minimum and maximum limits
	Time	off	On/Off depending on the timer program depending on the day or night setpoint with manually set speed within the set minimum and maximum limits	Speed depending on the deviation of the actual temperature depending on the timer program from the day or night setpoint within the set minimum and maximum limits
	Manual	off	Continuous operation (independent of temperature control) with open valve with manually set speed within the set minimum and maximum limits	Continuous operation (independent of temperature control) with open valve at maximum speed within the set minimum and maximum limits
	Ventilation	off	In continuous day mode (independent of temperature control) with closed valve with manually set speed within the set minimum and maximum limits	In continuous day mode (independent of temperature control) with closed valve at maximum speed within the set minimum and maximum limits

*) The unit is switched off if the speed controller is switched to "OFF". The unit frost protection functions remain depending on the DIP switch settings (DIP switch 2 and 3) and room cooling down protection (DIP switch 4) active.

Motor fault unlocking

The engine fault is unlocked either by the Out position on the speed controller or by switching off the mains voltage.

A motor fault is only issued if there is a fault for longer than 1 minute or at least 3 times within a minute.

Important: The valve is closed during the engine fault!

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5.1 Operation of the timer



Safety information

A fault on the timer needs to be repaired and inspected by a specialist. The repair can also be carried out under the guidance and supervision of a specialist.

Information for installation:

The unit is suitable for use in ambient conditions with usual contamination.

Information for operation:

In developing our products, we place very high demands on the electromagnetic compatibility (EMC) of the electronics. The interference immunity achieved significantly exceeds the demands of the relevant EN standards currently applicable. In individual cases, check whether further protection measures may be required, for example, the installation of components (varistor, anti-surge diode, RC element).

In extreme cases, the installation of an additional module is recommended, including a cut-off relay, contactor, mains interference filter.

Information for operation:

No metallic, sharp objects (such as needles) can be used for keys that are operated with an external means.

1 = +3,4 V (red)
2 = 0 V
3 = Channel 1 output
4 = Channel 2 output
(Channel 2 is not used)

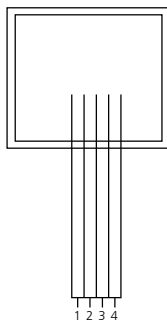
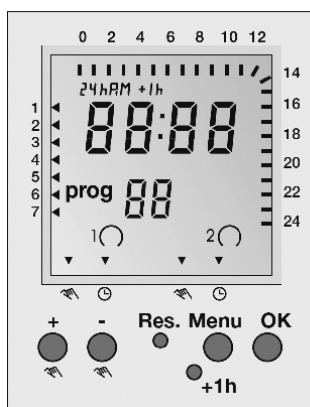


Fig. 7: connection

5.2 Wiring

see Fig. 7

5.3 Display/control elements (Figure 8)



24hAM
+1h

◀

●

⚡

⌚

+/-

Res.

menu

OK

Overview of daily switching programme

Setting to 24 hour or AM/PM display format

Switchover to summer/winter time

Weekday display

ON / OFF display

Manual operation / constantly ON / constantly OFF

Automatic operation

Setting keys: Set the timer by pressing the key (for longer than 2 seconds).

Reset

End programming by pressing the menu key and the system returns to automatic mode

Confirmation of programming

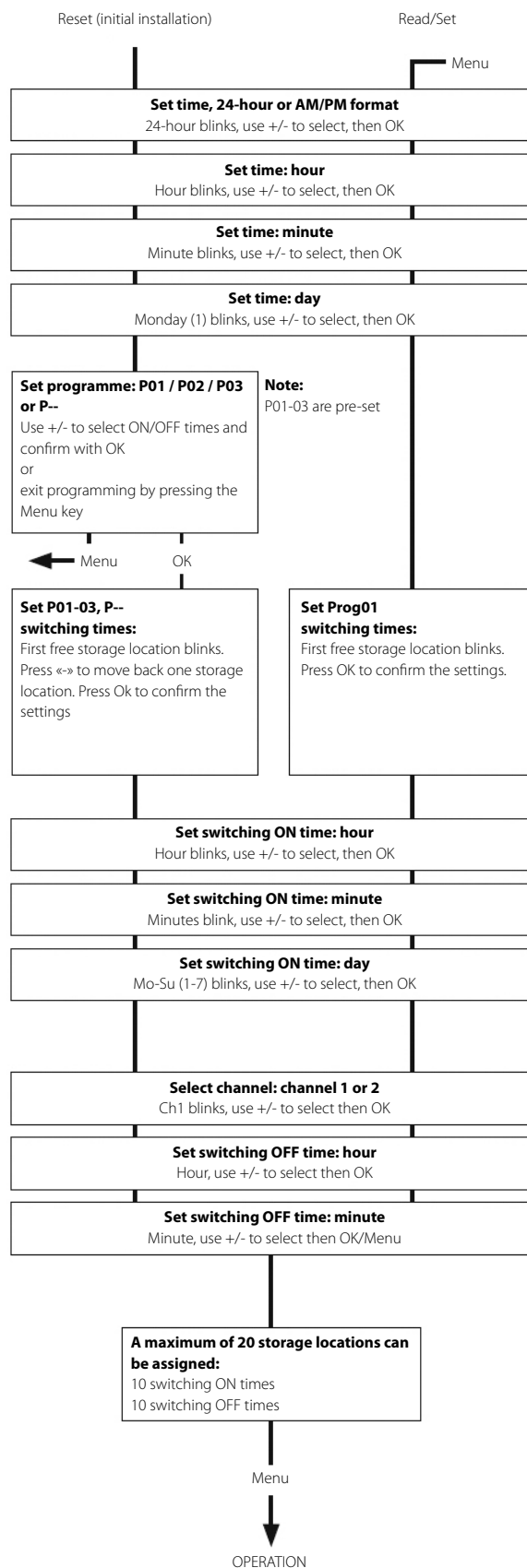
Fig. 8: Operating interface

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5.4 Program structure



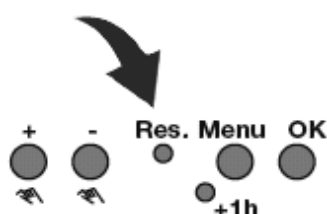
5.5 Setting the timer

The procedure for programming the timer depends on whether the default and individual programs are to be used. The procedure is different for each.

Default programs (initial installation):

You can set the following values. Use the **Reset** button to enter the settings:

- 24-hour or AM/PM format
 - Time (in hours and minutes)
 - Weekday
 - Default programs P01 to P03
- Settings, see chapters 5.6 and 5.7



Individual programs (Menu mode):

You can set the following values. Use the Menu key to enter the settings:

- 24-hour or AM/PM format
 - Time (in hours and minutes)
 - Weekday
 - Programs P- -
- Settings, see chapters 5.6 and 5.8



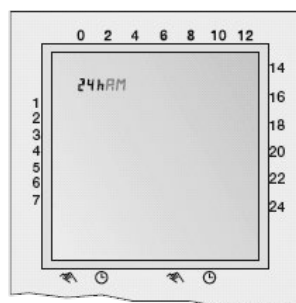
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5.6 Setting the time format, time, day of the week

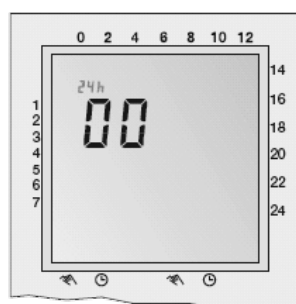
- First, select the programming procedure, i.e. Reset or Menu mode (see chapter ?? above), then proceed as follows:



Display format 24-hour or AM/PM setting



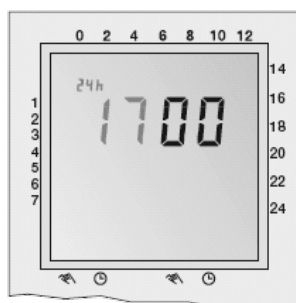
- Select 24-hour or AM/PM (+/-) and confirm with OK.



Setting hours



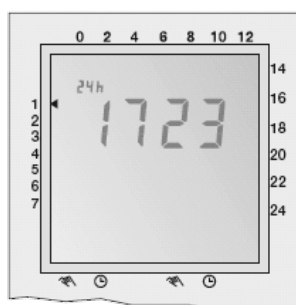
- Select the hour (+/-) and confirm with OK.



Setting the minutes



- Select the minutes (+/-) and confirm with OK.



Setting the day



- Select the day (+/-) and confirm with OK.

1 = Monday 5 = Friday
2 = Tuesday 6 = Saturday
3 = Wednesday 7 = Sunday
4 = Thursday

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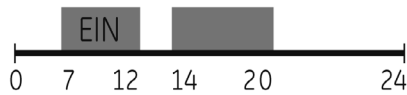
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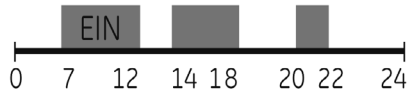
P01: Mo - So, 1 x EIN/AUS



P01: Mo - So, 2 x EIN/AUS



P01: Mo - So, 3 x EIN/AUS



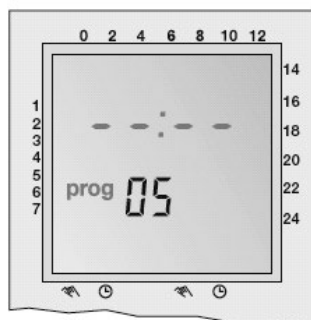
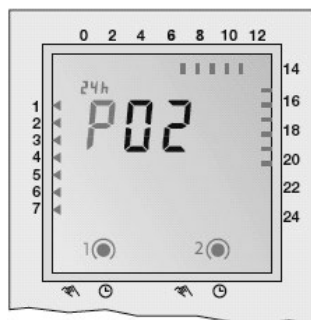
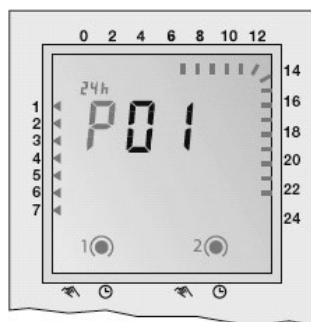
5.7 Default programs

Programs P01-03:

The on and off times for programs P01 to P03 are pre-set (PRE). The user can change these programs.

Individual program, P- -:

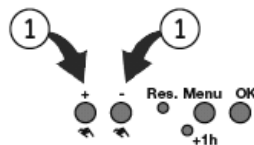
An individual program can be entered under menu option P--. This program can be changed at any time. A total of 20 memory locations for 10 OFF and 10 ON switching commands are available. A day or week block can be allocated to every memory location.



Selection of default programs:

Procedure after setting the time in Reset mode:

- Select a default program.



The following options are available after selecting the desired program:

Menu: Exit Programming

OK: Press the OK button to call up default programs to change the selection (programmed ON or OFF switching commands can be changed with the '+' or '-' keys and be confirmed with OK) or by pressing OK. You can then also move to the next free memory location to add new individual programs (see following page).

After selecting P02, program:

Sa-Su 22:30 ON (prog05)
23:00 OFF (prog06)

P0x
prog

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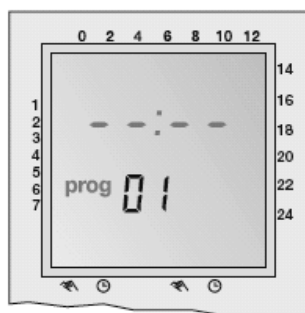
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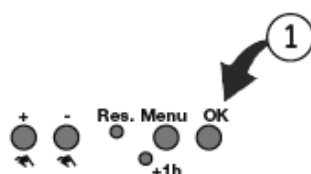
5.8 Individual programs

P--
prog

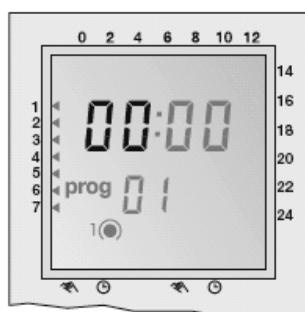
Procedure after entering the time and day in Menu mode or after adding programs to the default programs P01 to P03:



Setting program ON



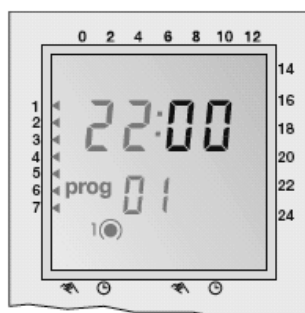
- Set the program and confirm with OK.



Setting hours



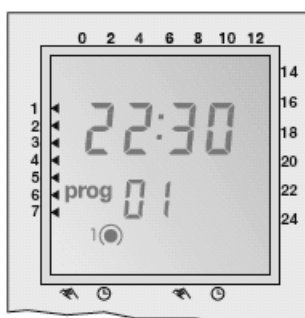
- Select the hour (+/-) and confirm with OK.



Setting the minutes



- Select the minutes (+/-) and confirm with OK.



Setting the day



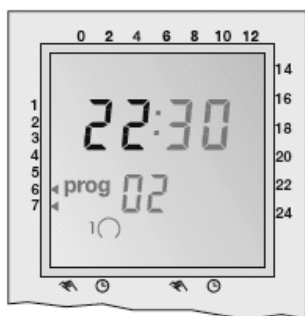
	↓	↓	↓	↓	↓
1	←	←	←	←	←
2	←	←	←	←	←
3	←	←	←	←	←
4	←	←	←	←	←
5	←	←	←	←	←
6	←	←	←	←	←
7	←	←	←	←	←

- Select the day (+/-) and confirm with OK.

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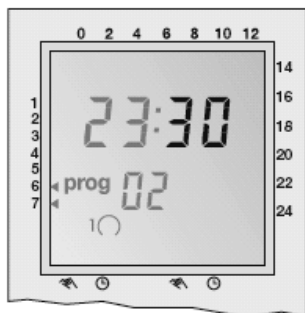
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Setting hours OFF



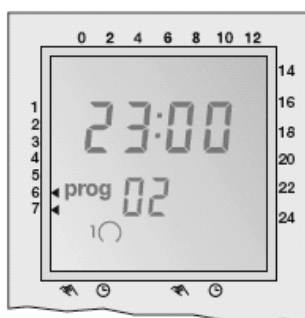
- Select the hour (+/-) and confirm with **OK**.



Setting minutes OFF



- Select the minutes (+/-) and confirm with **OK**.



Setting days OFF



- If **OFF** and **OFF** are switched on the same day, you can either exit programming using the **Menu** key or enter new **ON** switching programming with **OK**.

Offset

- If **OFF** is switched the next day, first press "+", then press the **Menu** or **OK** key.

Example:

Mon - Fri

20:00 - 03:00 **ON**

03:00 - 20:00 **OFF**

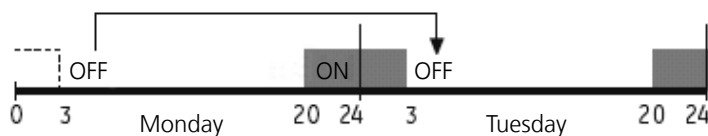


Mon - Fri

20:00 - 03:00 **ON**

Tu - Sa

03:00 - 20:00 **OFF**



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5.9 Deleting programs

- First, press the Menu key and then OK until the program's ON switching time to be deleted appears.

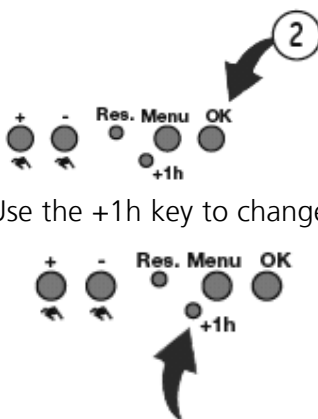


- Then select "--" (+/-) and confirm with OK.



Important: Switching programs are deleted in ON/OFF pairs. When you delete an ON command, the associated OFF command is also deleted.

5.10 Summer/winter time changeover

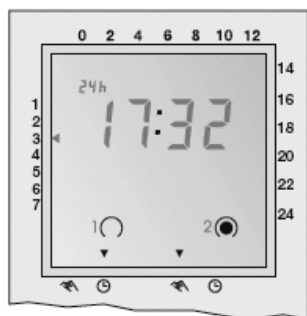
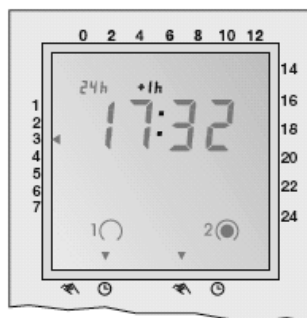
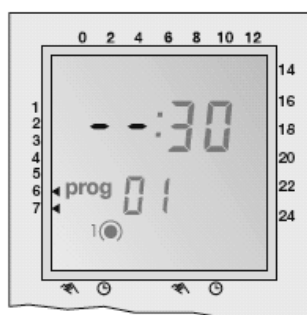
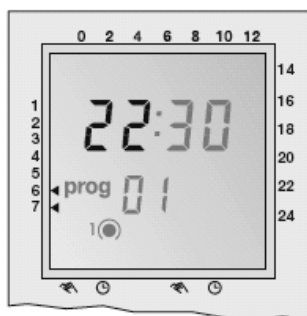
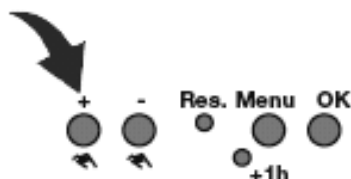


- Use the +1h key to change the clock to summer and winter time.

- Pressing the +1h key moves the clock 1 hour forward.
- +1 h appears in the display.
- Pressing the +1h key again moves the clock back 1 hour.

5.11 Automatic mode/Continuous mode

- Use the "+" key to switch between automatic mode (⌚), constant ON (🔌) – constant OFF (Ch1).



5.12 Technical data for timer

Dimensions W x H x D	32.4 x 41.6 x 14.9 mm
Installation depth	12 mm
Approx. weight	22 g
Nominal voltage	3.4 - 6 V DC
Current consumption without load	0.015 mA at 3.4 V DC
Switching output -Transistor	CMOS
DC switching power -CMOS	0.1 mA at 3.4 V DC
Power reserve ⁸	3 years ex-factory at 20°C
Gear accuracy	type. ± 2.5 s/day at 20°C
Ambient temperature ^{**}	-10 °C to + 55 °C
Shortest switching time	1 min
Shortest switching distance	1 min
Number of channels	1
Number of storage locations	20
Switch pre-selection (override)	Yes
Switching status display	Yes
Summer/winter time changeover	± 1 h key
Type of connection	4-pin flat cable
Approvals in accordance with	EN 60730-1 EN 60730-2-7

* Battery is not rechargeable

** - 25°C with reduced display function



6. Commissioning

You have to work on live parts of the system during testing. The tested should only be performed by technicians at the same time as complying with safety precautions.

Caution!

As the unit automatically switches on again after power failure, switch the speed selector switch to Off before switching on mains voltage!

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Fig. 9: Speed controller

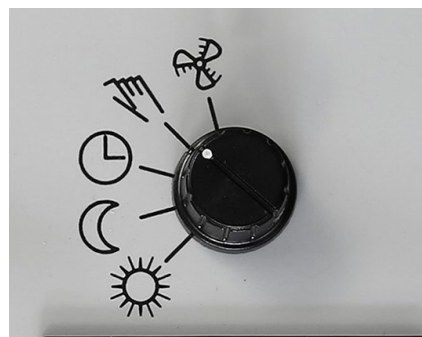


Fig. 10: Operating mode selector switch

Before commissioning, undertake the following:

- Are all the components connected properly as per the wiring diagrams?
- Is the protective conductor (PE) connected properly on all components?
- Are the fan motor fault signal contacts correctly connected? (All fault message contacts of a fan group are connected in series?) In the event of a fault which cannot be corrected, check the input voltage, fan motor and fault message contacts!
- Are the condensation pump condensation pump contacts correctly connected? (Are all the condensation alarm contacts in a fan group connected in series?) In the event of a fault which cannot be corrected, check the condensate pumps and their alarm contacts.
- Is the supply voltage line (230 V) connected to the air heaters and terminals L1 and N
- Is the external enable contact connected correctly?
- Is the room temperature sensor connected correctly? In the event of a short circuit or wire break in the sensor cable, the valve is opened and an error message appears. (See also p. 13, Chapter 5 Operation, indicator lamp). Once the fault has been eliminated, the motor starts up automatically.

Caution! Only start up the system after all the system components have been properly installed and all connections have been checked!

Commissioning

- Check the factory setting of DIP switches 1 to 4.

DIP 1 = ON	DI 1 and DI 2 as potential-free N/O
DIP 2 = ON	MI 1 as frost protection contact (factory setting)
DIP 3 = OFF	
DIP 4 = OFF	Room cooling down function active (factory setting)

- First set the speed controller to Off.
- Switch on the mains voltage. If there is no fault, the indicator light is solid green (operationally ready).
- Turn the operating mode selector switch and speed controller to "Manual". The fan is runs at the pre-selected speed in continuous mode. Indicator light display depending on the operating status: Heating mode (flashing green) or Cooling mode (fast flashing green). See also p. 13, Chapter 5, Operation, indicator lamp.

Inspections during ongoing operation

- Check that the fault signal contacts of the connected motors are working correctly by disconnecting one of the wires on terminals Err/GND in the controller. Carry out this check on each unit heater singly and in turn.
- Switch off all the motors in the corresponding unit heater group after disconnecting one of the wires to the terminals for the motor fault on the unit heaters or on the terminals Err/GND on the controller.
- Indicator light is constantly red.
- Unlocking by turning the speed controller to Off or by switching off the mains voltage is not possible in this state.

Important: Valve remains closed during the motor fault.

- Reconnect the wire to the terminal.
 - Despite being connected, do not allow the motors to start and the indicator light is continuously red again.
- Unlock the error message either by turning the speed controller to Off or by switching off the mains power.
 - When required, the fans start up again and the valves re-open.

Important: A motor fault is only issued if there is a fault for longer than 1 minute or at least 3 times within a minute.

Important: After a power failure on the unit heater, a motor fault remains for approx. 10 seconds after power has been re-applied. This fault can only be acknowledged after this time.

- To restart after a power failure on the control, it returns to its original status in every operating mode.
- Check the function of the condensation alarm of the condensation pumps, by disconnecting the wired on terminal DI3. Carry out this check on each condensation pump singly and in turn.
- After disconnecting one of the wires to terminals DI3/GND and/or the terminals for the condensation alarm on the condensate pumps, all valves of the corresponding unit heater should close and the fans run at maximum speed.
- The indicator light must flash red/green (heating mode) or green/off/red (cooling mode).

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- Then re-connect the wire.
- Rectify the fault and return the system to its original operating mode.
- Check the room temperature control (PI controller). To do this, turn the speed controller to "Auto", the operating mode selector switch to "Day", the Day temperature setpoint in heating mode (DI input open) to Maximum and the Night temperature difference to Minimum. At a much lower temperature setpoint than the day temperature setpoint set, the fan runs with a temperature difference corresponding to the speed. Display indicator light heating mode (flashing green) see also p. 13, Chapter 5 Operation, indicator light.
Then turn the Day temperature setpoint in heating mode to Minimum. The fan switches off in the event of a significantly higher temperature setpoint than the Day temperature setpoint entered. Indicator light display ready for operation (continuous green light).
- Check further operating and control functions in accordance with the instructions (Operation p. 12, Chapter 5 et seq.).

7. Operating fault

Fault	possible cause	Remedy
Despite the demand for heat or cooling, the indicator light is permanently green (ready for operation)	N/O or cable jumper for cooling switchover connected and DIP switch 1 set to OFF.	Set DIP switch 1 to ON. Note that the external enable contact also changes.
	24 V DC applied to cooling changeover contact and DIP switch 1 set to ON.	Set DIP switch 1 to OFF. Note that the external enable contact also changes.
Indicator light flashes red/green	Condensation alarm in heating mode	Check condensation drain; Check heating/cooling changeover
Frost alarm/room cooling down protection cannot be acknowledged.	DIP switch settings do not correspond to the component connected to the multifunctional input.	Check DIP switches 2 and 3 Frost protection sensor: OFF, OFF Frost protection contact: ON; OFF 2. Room sensor: ---; ON

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8. Technical data

Nominal voltage	V	100 - 240 V +/- 10%
Max. fuse	A	16
Max. total nominal current for unit heaters and valve actuators	A	4A
Max. wire cross-section per terminal: Control, valve, power supply to EC motor All other terminals:	mm ²	4.0 2.5
Maximum switching load of potential-free contacts	V/A	24 - 230 / 1
permitted ambient temperature	°C	-10 to +40
Day temperature setpoint setting range	°C	5-35
Night temperature difference setting range	K	2-10
Temperature control switching differential setting range	K	± 0.5
Enclosure type	-	IP 40
Dimensions W x H x D	mm	262 x 277 x 153
Room temperature sensor		
Enclosure type	-	IP 66
Dimensions W x H x D	mm	50 x 50 x 35
Colour	-	grey, similar to RAL 7047

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