Dual fan coil actuator

Safety instructions

Electrical equipment must be installed and fitted by qualified electricians only. Observe the current accident prevention regulations.

Failure to observe the instructions may cause damage to the device and result in fire or other hazards.

The device is not suited for safe disconnection of the mains supply.

Do not connect consumers for SELV / PELV voltages.

Do not connect three-phase AC motors.

These operating instructions are part of the product and must be left with the final customer.

Device layout

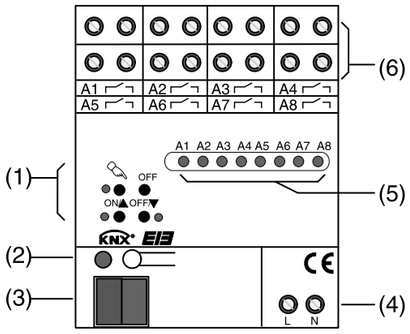

Fig. 1: Device layout

(1) keypad for manual control
(2) programming button and LED
(3) KNX connection
(4) mains supply connection
(5) status LED outputs
(6) connection of fan coil unit

Function

System information

This device is a product of the KNX system and complies with KNX directives. Detailed technical knowledge obtained in KNX training courses is a prerequisite to proper understanding.

The functionality of this device depends on the software. Detailed information on loadable software and attainable functionality as well as the software itself can be obtained from the manufacturer's product database.

Planning, installation and commissioning of the unit is effected by means of KNX-certified software. The full functionality is available with KNX commissioning software from version ETS3.0d onwards.

The product database, technical descriptions, conversion programs and other utilities are available in their latest version on our Internet page.

Designated use

- Switching of electrical fan coil units
- Switching of electrical AC 230 V consumers, e.g. fans
- Mounting on DIN rail in fixed installations (power distributions or small boxes).

Product features

- Connection of a fan coil unit with up to 6 fan stages or connection of fan coil units with up to 3 fan stages respectively
- Manual output control, provisional operation
- Control options for heating, cooling or combined heating/cooling operation
- 2-pipe or 4-pipe operation
- individual or hierarchical switching of fan stages
- Feedback
- Output state indication
- Disable function for each channel

Operation

Controls

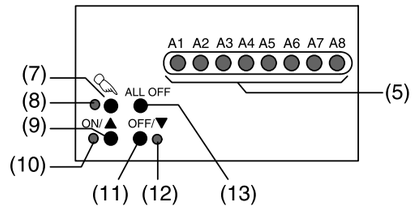

Fig.2: Controls – layout

(5) status LED outputs
(7) key : manual control
(8) LED : permanent manual control indicator
(9) key **ON**/▲: switching on
(10) LED **ON**/▲: on, manual control
(11) key **OFF**/▼: switching off
(12) LED **OFF**/▼: off, manual control
(13) key **ALL OFF**: all outputs are off

Status indication

The status LEDs **A1...A8** (Fig. 2, 5) indicate the output states.

- Off: output is off
- On: output is on
- Flashing slowly: output in manual control mode
- Flashing fast: output disabled by permanent manual control mode

Modes of operation

- Bus operation: operation via touch sensors or other bus devices
- Temporary manual control: manual operation locally with keypad, automatic return to bus operation
- Permanent manual control mode: only manual operation locally on device

i Bus operation in manual control mode disabled.

i Manual operation in the event of bus failure enabled.

i After failure and return of bus voltage, the device switches over to bus operation.

i After failure and return of mains voltage, the device switches over to bus operation.

i Manual control mode can be disabled in operation via bus telegram.

Activating the temporary manual control mode

Keypad operation has been programmed beforehand and is not disabled.

- Press the key.
  LED **A1** flashing, LED remains off.

i After 5 s without key-press, the actuator returns automatically to the bus mode.

Deactivating the temporary manual control mode

The device must be in the temporary manual control mode.

- No key-press for 5 s.
  - or -
- press the key repeatedly until the actuator quits the temporary manual control mode.

  LEDs **A1...A8** are no longer flashing, but indicating the output status.

  Heating/cooling outputs: On deactivation of the manual mode, the outputs switch into the position then active, e.g. forced control (depending on programming).

  Fan outputs: On deactivation of the manual mode, the outputs switch into the position then active, e.g. forced control (depending on programming).

  Switching outputs: On deactivation of the manual mode, the output relays remain in their current position.

Activating the permanent manual control mode

Keypad operation has been programmed beforehand and is not disabled.

- Press the key for at least 5 s.

  LED is on, LED **A1** is flashing, permanent manual control mode is activated.

Deactivating the permanent manual control mode

The device is in the permanent manual control mode.

- Press the key for at least 5 s.

  The LED is off, the bus mode is on.

  Heating/cooling outputs: On deactivation of the manual mode, the outputs switch into the position then active, e.g. forced control (depending on programming).

  Fan outputs: On deactivation of the manual mode, the outputs switch into the position then active, e.g. forced control (depending on programming).

  Switching outputs: On deactivation of the manual mode, the output relays remain in their current position.

Operating the outputs

In the manual control mode, the outputs can be operated directly. Depending on programming, the operation of switching one output may also affect other outputs.

The device must in the permanent or temporary manual control mode.

- Press the key repeatedly until the desired output is selected.

  The LED of the selected output **A1...A8** is flashing.

  The **ON** /▲ and the **OFF** / ▼ LEDs indicate the status.

- Output operation with the **ON**/▲ or the **OFF**/▼ key.

  Heating/cooling outputs: opening or closing the valve.

  Fan outputs: selecting the fan stage.

  Switching outputs: switching on or off.

  The selected output switches on or off.

  The **ON**/▲ and the **OFF**/▼ LEDs indicate the status.

i Depending on programming and selected output, several outputs are switched at the same time.

i Heating and cooling of a fan coil output are never activated at the same time.

i When the heating or the cooling output is active, at least the first fan stage is active as well.

i Temporary manual control: after all outputs have been selected one after another, the device quits the manual control mode with the next brief press.

Switching off all outputs

The device must in the permanent manual control mode.

- Press the **ALL OFF** key.
  All outputs are switched off.

Disabling individual outputs

The device must in the permanent manual control mode.

- Press the key repeatedly until the desired output is selected.

  The LED of the selected output **A1...A8** flashes.

- Press the keys **ON**/▲ and **OFF**/▼ simultaneously for at least 5 s.

  The selected output is disabled.

  All status LEDs of the selected output **A1...A8** are flashing fast.

- Activate the bus mode (deactivate the permanent manual control mode).

i A disabled output can be operated in the manual control mode.

i If a disabled output is selected in the manual control mode, the LEDs are flashing twice briefly at intervals.

Re-enabling the outputs

The device must in the permanent manual control mode.

- Press the key repeatedly until the desired output is selected.

  The status LEDs of the selected output **A1...A8** flashes twice briefly at intervals.

- Press the keys **ON**/▲ and **OFF**/▼ simultaneously for at least 5 s.

  The selected output **A1...A8** is enabled.

  The LED of the selected output **A1...A8** is flashing slowly.

- Activate the bus mode (deactivate the permanent manual control mode).

Information for qualified electricians

DANGER!

Electric shock in case of accidental contact with live parts. Electric shocks can be fatal.

Before working on the device, cut out the mains supply and cover up live parts in the surroundings.

Fitting and electrical connection

Installing the device

Observe the admissible temperature range. Ensure sufficient cooling.

- Snap the device onto a mounting rail in acc. with EN 60715. The connecting terminals must be at the top.

Connecting the device

Observe the admissible loads.

i Assignment of the outputs depends on the projected mode of operation (tables 1, 2 and 3).

Mode	Function
1	2-pipe heating only
2	2-pipe cooling only
3	2-pipe heating/cooling, switch-over object
4	4-pipe heating/cooling, switch-over object
5	4-pipe heating/cooling, actuating variable preset

Table 1: Control options

i Outputs that are not used for fan stage control can be used for simple switching. Assignment of output terminals see project design data.

- Connect the bus line to the bus terminal (Fig. 1, 3).
- Connect the mains supply (Fig. 1, 4).
- Connect the fan coil units to the actuator outputs as provided for in the project design.

i One fan coil output with up to six fan stages: connection example in Fig. 3; output assignment information in table 2, Fig. 4 and Fig. 5.

i Two fan coil outputs with up to three fan stages respectively: connection example in Fig. 6; output assignment information in table 3, Fig. 7 and Fig. 8.

i Connection details for fan coil units can be found in the documentation of these devices.

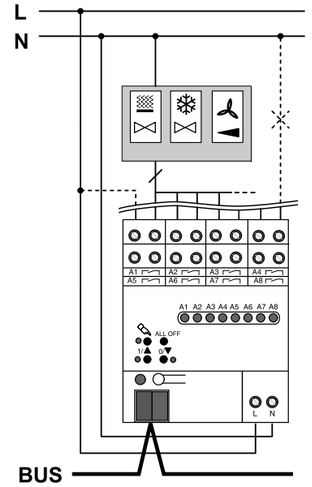

Fig. 3: connection of the load for 1 fan coil output

Mode	A1	A2	A3…A8
1	Heating valve	–	Fan stages
2	Cooling valve	–	Fan stages
3	Heating/ cooling valve	–	Fan stages
4	Cooling valve	Heating valve	Fan stages
5	Cooling valve	Heating valve	Fan stages

Table 2: Output connection for 1 fan coil output

Berker
instabus® KNX EIB

Dual fan coil actuator

Order no. 7531 20 12

Operating Instructions

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Berker Schalter und Systeme

825 655 01_11 03.2008

	A3	A4	A5	A6	A7	A8
1	1	0	0	0	0	0
2	1	1	0	0	0	0
3	1	1	1	0	0	0
4	1	1	1	1	0	0
5	1	1	1	1	1	0
6	1	1	1	1	1	1

Fig. 4: Single-channel fan stage pattern with hierarchical switching – current-sourcing outputs

	A3	A4	A5	A6	A7	A8
1	1	0	0	0	0	0
2	0	1	0	0	0	0
3	0	0	1	0	0	0
4	0	0	0	1	0	0
5	0	0	0	0	1	0
6	0	0	0	0	0	1

Fig. 5: Single-channel fan stage pattern with individual switching – current-sourcing outputs

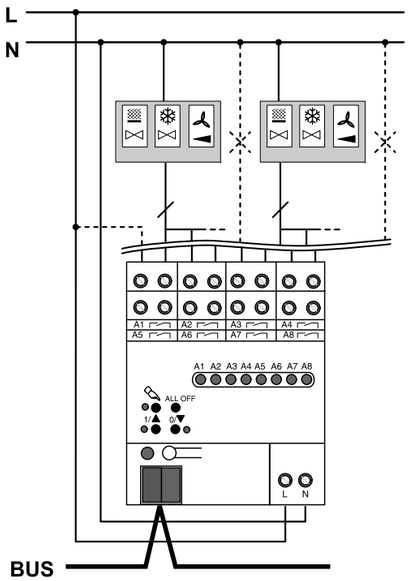

Fig. 6: connection of the load for 2 fan coil outputs

Mode	A1 / A5	A2-4 / A6-8
1	Heating valve	Fan stages
2	Cooling valve	Fan stages
3	Heating/ cooling valve	Fan stages

Table 3: Output assignment for 2 fan coil outputs

	A2	A3	A4	A6	A7	A8
1	1	0	0	1	0	0
2	1	1	0	1	1	0
3	1	1	1	1	1	1

Fig. 7: Dual-channel fan stage pattern with hierarchical switching – current-sourcing outputs

	A2	A3	A4	A6	A7	A8
1	1	0	0	1	0	0
2	0	1	0	0	1	0
3	0	0	1	0	0	1

Fig. 8: Dual-channel fan stage pattern with individual switching – current-sourcing outputs

Sliding on the cap

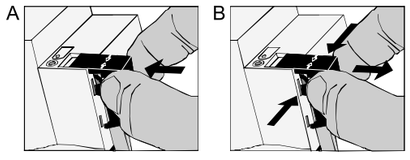

Fig. 9: Protective cap

To protect the bus against dangerous voltages at the connecting terminal, slide on the protective cap.

- Lead bus lines towards the rear of the device.
- Slide the cap over the bus terminal (Fig. 9, A) until it is heard to engage.

Removing the cap

- Press the sides and pull out the cap (Fig. 9, B).

Commissioning

- Switch on the bus voltage.
- Assign a physical address and download the application software (with commissioning software).
- Switch on the mains voltage at the outputs.

Annex

Technical data

KNX medium	TP1
Commissioning mode	S mode
KNX supply	21...32 V DC
KNX power consumption	max. 150 mW
Rated voltage	AC 110...240 V ~
Mains frequency	50/60 Hz
Total dissipated power	max. 3 W
Ambient temperature	-5 °C...+45 °C
Storage temperature	-25 °C...+70 °C
Fitting width	72 mm (4 modules)
Weight	approx. 290 g
Connection	
KNX	connecting terminals
230 V supply and outputs	Screw terminals
solid wire	1.5...4 mm²
stranded wire without ferrule	0.75...4 mm²
stranded wire with ferrule	0.5...2,5 mm²
Output contact type	potential-free n.o. contact (µ-contact)
Switching voltage AC	230/240 V
Switching capacity AC1	10 A
Switching capacity AC3 (cos φ = 0.65)	10 A
Loads per output	
Resistive load	2300 W
Capacitive load	10 A, max. 140 µF
Motors	1380 VA
max. inrush current 200 µs	800 A
max. inrush current 20 ms	165 A
Lamp loads	
Incandescent lamps	2300 W
230 V halogen lamps	2300 W
LV halogen lamps with TRONIC transformers	1500 W
LV halogen lamps with inductive transformers	1200 W
Fluorescent lamps T5/T8	
non-compensated	1000 W
parallel compensated	1160 W / 140 µF
Lead-lag circuit	2300 W / 140 µF
Compact fluorescent lamps non-compensated	1000 W
parallel compensated	1160 W / 140 µF
Mercury vapour lamps non-compensated	1000 W
parallel compensated	1160 W / 140 µF
Electronic Ballasts	see product documentation

Help in case of trouble

Manual control with keypad not possible

Cause 1: manual control mode not programmed.
Program the device for manual control.

Cause 2: manual control mode disabled via the bus.
Enable the manual control mode.

Cause 3: no mains voltage.
Switch on the mains voltage.
Check the fuses.

Output control not possible

Cause: Output disabled.
Undo disabling.

None of the outputs operational

Cause 1: all outputs are disabled.
Undo disabling.

Cause 2: permanent manual control mode active.
Deactivate the permanent manual control mode (switch this mode off).

Cause 3: application software stopped, programming LED flashing.
Make a reset: Disconnect the device from the bus, reconnect after 5 seconds.

Operation via the bus impossible

Cause 1: no bus voltage.
Switch on the bus voltage; have the installation checked by a qualified electrician.

Cause 2: application software stopped, programming LED flashing.
Disconnect the device from the bus, reconnect after 5 seconds.

Cause 3: no or faulty application software.
Check programming and rectify.

Warranty

We reserve the right to make technical and formal changes to the product in the interest of technical progress.

Our products are under guarantee within the scope of the statutory provisions.

If you have a warranty claim, please contact the point of sale or ship the device postage free with a description of the fault to the appropriate regional representative.