

TECHNICAL DATA

# ABB i-bus<sup>®</sup> KNX

## FCC/S 1.4.1.1

### Fan Coil Controller, PWM, MDRC



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### Device description

The device is a modular installation device (MDRC) in *proM* design. It is designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (to EN 60715).

The device is KNX-certified and can be used as a product in a KNX system → EU declaration of conformity.

The device is powered via the bus (ABB i-bus® KNX) and requires no additional auxiliary voltage supply. The connection to the bus is made via a bus connection terminal on the front of the housing. The loads are connected to the outputs using screw terminals → terminal designation on the housing.

The software application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

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## **Device functions**

The following device functions are available for controlling a fan coil unit:

- Controller
- Actuator device

### **Controller**

The internal controller is activated in the function as a controller unit. The controller is used to process the data received at the inputs (actual values) or via the bus (ABB i-bus® KNX) (actual values, setpoints and operating mode changes). The control values are calculated from the data received and transmitted to the outputs.

### **Actuator device**

The internal controller is deactivated in the function as an actuator. The control values for activating the outputs are calculated by an external controller and received via the bus (ABB i-bus® KNX).

## Connections

The devices possess the following connections, depending on the product variant:

- 4 inputs for sensors or an analog room control unit (SAF/A or SAR/A)
- 2 valve outputs for activating valve drives (FCC/S 1.4.1.1: 1 valve output)
- 1 fan output
- 1 relay output (FCC/S 1.4.1.1 : no relay output)
- 1 bus connection

The tables below provide an overview of the maximum number of devices that can be connected to the individual product variants.

### Fan output

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Discrete speed fans (1 ... 3-speeds)	1	1	1	1	–	–	1	–	–
Continuous fans (0 ... 10 V)	–	–	–	–	1	1	–	1	1

### Relay output 16 A

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Electric heater	1	1	1	1	1	1	–	1	1

### Valve outputs

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Thermoelectric valve drives (PWM)	2	2	–	–	–	–	1	2	2
Motor-driven valve drives (3-point)	1	1	–	–	–	–	–	1	1
Magnetic valve drives (open/closed)	2	2	–	–	–	–	1	2	2
Analog valve drives (0 ... 10 V)	–	–	2	2	2	2	–	–	–
6-way valve	–	–	1	1	1	1	–	–	–
VAV damper drive	–	–	2	2	2	2	–	–	–

### Physical inputs

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Analog room control unit	1	1	1	1	1	1	1	1	1
Binary sensors (floating)	4	4	4	4	4	4	4	4	4
Temperature sensors	4	4	4	4	4	4	4	4	4

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## Inputs

Function	a	b	c	d
Temperature sensor				
PT100	x	x	x	x
PT1000	x	x	x	x
KT/KTY	x	x	x	x
KT/KT user-defined	x	x	x	x
NTC10k	x	x	x	x
NTC20k	x	x	x	x
NI-1000	x	x	x	x
Analog room control unit	x			
Binary sensor (floating)	x	x	x	x
Dew point sensor (floating)	x	x	x	x
Fill level sensor (floating)	x	x	x	x
Window contact (floating)	x	x	x	x

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## Outputs

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### Valve outputs

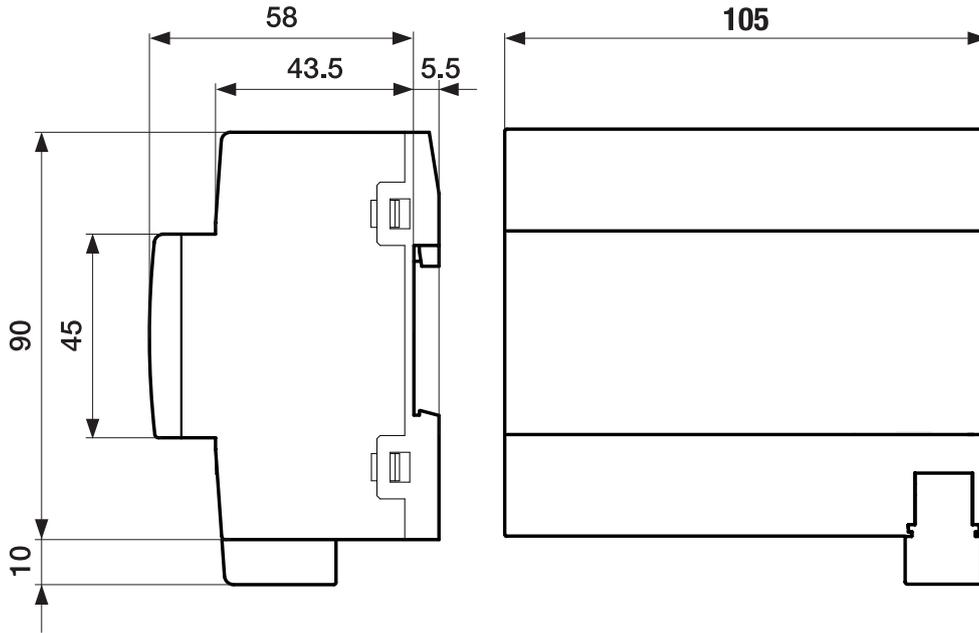
Function	A
Thermoelectric valve drives (PWM)	x
Magnetic valve drives (open/closed)	x
Fault detection (overload/short circuit)	x

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### Fan output

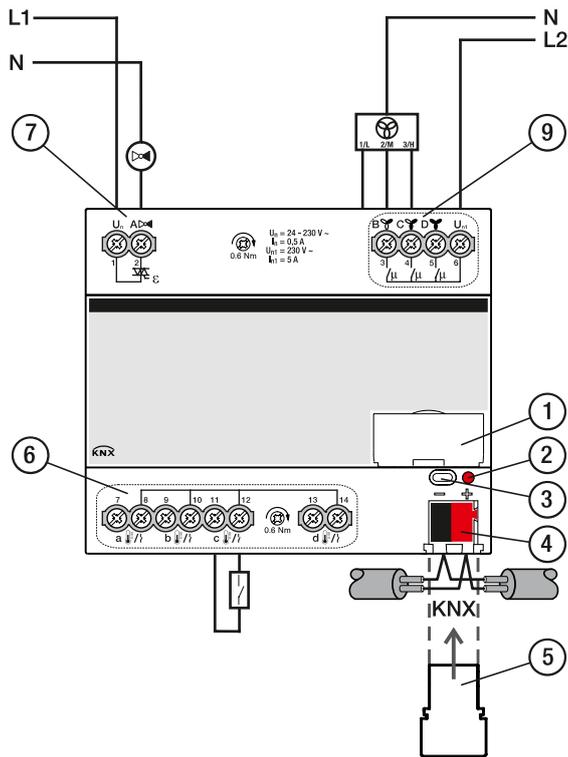
Function	Fan output
Number of fan speeds (5 A)	
1	x
2	x
3	x
Changeover switching	x
Step switching	x

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Dimension drawing



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**Connection diagram**



**Legend**

- |                             |                |
|-----------------------------|----------------|
| 1 Label carriers            | 5 Cover cap    |
| 2 <i>Programming</i> LED    | 7 Valve output |
| 3 <i>Programming</i> button | 9 Fan output   |
| 4 Bus connection terminal   | 6 Input        |

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**Operating and display elements**

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

## General technical data

<b>Device</b>	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.22 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
<b>Materials</b>	Housing	Polycarbonate, Makrolon FR6002, halogen free
<b>Material note</b>	Fire classification	Flammability V-0
<b>Electronics</b>	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
<b>Connections</b>	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm <sup>2</sup> ) / 2 × (0.2 ... 2.5 mm <sup>2</sup> )
	Conductor cross section, rigid	1 × (0.2 ... 6 mm <sup>2</sup> ) / 2 × (0.2 ... 4 mm <sup>2</sup> )
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm <sup>2</sup> )
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm <sup>2</sup> )
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm <sup>2</sup> )
Length, wire end ferrule contact pin	≥ 10 mm	
<b>Certificates and declarations</b>	Declaration of conformity CE	→ 2CDK508227D2701
<b>Ambient conditions</b>	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

## Inputs

<b>Rated values</b>	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
<b>Contact scanning</b>	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
<b>Resistance</b>	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
	NTC	10k, 20k
<b>Cable length</b>	Between sensor and device input, one-way	≤ 100 m

## Valve outputs – thermoelectric, PWM

<b>Rated values</b>	Number of outputs	1
	Non-floating	Yes
	Rated voltage $U_n$	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current $I_n$	0.5 A
	Continuous current at $T_u$ Up to 20 °C	0.25 A resistive load per output
	Continuous current at $T_u$ Up to 45 °C	0.15 A resistive load per output
	Inrush current at $T_u$ Up to 45 °C	≤ 1.6 A (for 10 s)
		$T_u$ = Ambient temperature
	Minimum load (per output)	1.2 W

## Fan outputs – relays 5 A

<b>Rated values</b>	Number of outputs	3
	Rated voltage $U_n$	230 V AC
	Rated current $I_n$ (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
<b>Switching currents</b>	AC-1 operation ( $\cos \varphi = 0.8$ )	≤ 5 A
	Switching current at 24 V AC	≥ 0.01 A
	Switching current at 24 V DC (resistive load)	≤ 5 A
	Switching current at 5 V AC	≥ 0.02 A
	Switching current at 12 V AC	≥ 0.01 A
	Switching current at 24 V AC	≥ 0.007 A
<b>Service life</b>	Mechanical service life	≥ 10 <sup>7</sup> switching operations
	AC-1 operation ( $\cos \varphi = 0.8$ )	≥ 10 <sup>5</sup> switching operations
<b>Switching operations</b>	Switching operations per minute when one relay switches	≤ 500

## Device type

<b>Device type</b>	Fan Coil Controller	FCC/S 1.4.1.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	104
	Maximum number of group addresses	255
	Maximum number of assignments	255

### Note

Observe software information on the website

→ [www.abb.com/knx](http://www.abb.com/knx).

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**Ordering details**

Description	MW	Type	Order no.	Packaging [pcs.]	Weight (incl. packaging) [kg]
Fan Coil Controller	6	FCC/S 1.4.1.1	2CDG110209R0011	1	0.22



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