Energy Actuator, 3F, 16/20 A, REG
SE/S 3.16.1, 2CDG 110 136 R0011

The Energy Actuator is a modular installation device in Pro *M* design for installation in the distribution board. The device is especially suitable for switching loads with high peak inrush currents such as lighting equipment with compensation capacitors or fluorescent lamp loads (AX) to EN 60 669. Manual operation is possible on the device.
This simultaneously indicates the switching state. The Energy Actuator can switch up to 3 independent electrical loads via floating contacts. The maximum load current per output is 20 A.

The connection of the outputs is implemented using universal head screw terminals. Each output is controlled separately via the KNX. Individual outputs can be copied or exchanged to reduce the programming effort.
The parameterization is undertaken via the ETS. The connection to the KNX is implemented using the bus connection terminal on the front.

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Technical data

Supply	Bus voltage	21…30 V DC
	Current consumption via bus	< 12 mA
	Power consumption via bus	maximum 250 mW
	Mains power consumption	≤ 0.7 W
Output rated value	Number of load outputs (floating)	3
	U_n rated voltage	250/440 V AC (50/60 Hz)
	I_n rated current	16/20 AX, C-Load A
	Leakage loss per device at max. load 16 A	3.0 W
	Leakage loss per device at max. load 20 A	4.2 W
Output switching current	AC3[1)] operation (cos φ = 0.45) EN 60 947-4-1	16 A/230 V AC
	AC1[1)] operation (cos φ = 0.8) EN 60 947-4-1	16/20 A/230 V AC
	C-Load switching capacity	20 A
	Fluorescent lighting load to EN 60 669-1	16/20 AX/250 V AC (200 µF)[2)]
	Minimum switching performance	100 mA/12 V AC 100 mA/24 V AC
	DC current switching capacity (resistive load)	20 A/24 V DC
Output service life	Mechanical service life	> 10^6 switching operations
	Electric endurance to IEC 60 947-4-1	
	AC1[1)] (240 V/cos φ 0.8)	> 10^5 switching operations
	AC3[1)] (240 V/cos φ 0.45)	> 3 x 10^4 switching operations
	AC5a[1)] (240 V/cos φ 0.45)	> 3 x 10^4 switching operations

Active consumption/active power[4]	Measuring range	5.7 W…4,600 W (U_n = 230 V) 2.8 W…2,300 W (U_n = 115 V)
	Accuracy (250…500 mA)	± 6 % measuring value
	Accuracy (500 mA…5 A)	± 3 % measuring value
	Accuracy (5…20 A)	± 2 % measuring value
	Starting current	25 mA
Current[4]	Measuring range (AC)	0.025…20 A
	Accuracy (0.025…20 A))	± 1 % of actual value and ± 10 mA
Voltage[4]	Measuring range (AC)	95…265 V
	Accuracy (95…265 V))	± 1 % of actual value
Frequency[4]	Measuring range	45…65 Hz
	Accuracy (45…65 Hz)	± 1 % of actual value
Output switching times[3]	Maximum relay position change of output and minute if all relays are switched simultaneously. The position changes should be distributed equally within the minute.	15
	Maximum relay position changes per output and minute if only one relay is switched.	60
Connections	KNX	Via bus connection terminals 0.8 mm Ø, solid
	Load current circuits (1 terminal per contact)	Universal head screw terminal (PZ 1) 0.2… 4 mm² stranded, 2 x 0.2…2.5 mm² 0.2… 6 mm² solid, 2 x 0.2…4 mm²
	Ferrules without/with plastic sleeves	0.25…2.5/4 mm²
	TWIN ferrules	0.5…2.5 mm² Contact pin length at least 10 mm
	Tightening torque	Maximum 0.8 Nm
Operating and display elements	Programming button/LED	For assignment of the physical address
	Switch position display	Relay operator
Enclosure	IP 20	To EN 60 529
Safety class	II, in the installed state	To EN 61 140
Isolation category	Overvoltage category	III to EN 60 664-1
	Pollution degree	2 to EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	
Temperature range	Operation	-5 °C…+45 °C
	Storage	-25 °C…+55 °C
	Transport	-25 °C…+70 °C
Ambient conditions	Maximum air humidity	93 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device, Pro *M*
	Dimensions	90 x 72 x 64.5 mm (H x W x D)
	Mounting width in space units (modules at 18 mm)	4
	Mounting depth in mm	64.5

Weight	in kg	0.26
Installation	On 35 mm mounting rail	To EN 60 715
Mounting position	As required	
Housing/colour	Plastic housing, grey	
Approvals	KNX to EN 50 090-1, -2	Certification
CE mark	In accordance with the EMC guideline and low voltage guideline	

[1] Further information concerning electric endurance to IEC 60 947-4-1 can be found in the Product Manual: AC1, AC3, AX, C-Load specifications, page 16

[2] The maximum peak inrush current may not be exceeded, see Product Manual: Lamp load output, page 11.

[3] The specifications apply only after the bus voltage has been applied to the device for at least 30 seconds. Typical delay of the relay is approx. 20 ms.

[4] The stated values apply only if no DC components are present. A DC component causes additional distortion of the measurement result.

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Lamp load output

Lamps	Incandescent lamp load	3680W
Fluorescent lamps T5 / T8	Uncorrected	3680W
	Parallel compensated	2500W
	DUO circuit	3680W
Low-voltage halogen lamps	Inductive transformer	2000 W
	Electronic transformer	2500W
Halogen lamps 230 V		3680W
Dulux lamps	Uncorrected	3680W
	Parallel compensated	3000W
Mercury-vapour lamps	Uncorrected	3680W
	Parallel compensated	3680W
Switching performance (switching contact)	Maximum peak inrush-current I_p (150 µs)	600A
	Maximum peak inrush-current I_p (250 µs)	480A
	Maximum peak inrush-current I_p (600 µs)	300A
Number of electronic ballasts (T5/T8, single element)[1]	18 W (ABB EVG 1 x 18 SF)	26[2]
	24 W (ABB EVG-T5 1 x 24 CY)	26[2]
	36 W (ABB EVG 1 x 36 CF)	22
	58 W (ABB EVG 1 x 58 CF)	12[2]
	80 W (Helvar EL 1 x 80 SC)	10[2]

[1] For multiple element lamps or other types, the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.

[2] The number of ballasts is limited by the protection with B16 circuit-breakers.

Device designation

Device designation	Application program	Maximum number of communication objects	Maximum number of group addresses	Maximum number of associations
SE/S 3.16.1	Switch Measure 3f/1.0	183	254	254

Note

For a detailed description of the application program see the “Energy Actuator SE/S 3.16.1” product manual.
It is available free-of-charge at www.ABB.de/KNX.

ETS from version ETS3.0f is required for programming. A *.VD3 or higher type file must be imported.

The application program is available in the ETS3 at ABB/Output/Energy Actuator.

The device does not support the closing function of a KNX device in the ETS. If you inhibit access to all devices of the project with a BCU code, it has no effect on this device. Data can still be read and programmed.

Note

Current values less than 25 mA are indicated as a 0 mA value on the KNX (starting current). For small load currents that are just above the minimum detection threshold of 25 mA, it is possible that a value of 0 mA is displayed due to the inaccuracies, even though a current is flowing.

The Energy Actuator is only suitable for recording measured values of Loads, i.e. the meters only record positive energy. Negative power values are discarded with load control, and negative instrument and power values (feedback) cannot be monitored with thresholds.

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Note

Threshold value monitoring should not be used for safety-relevant applications. The Energy Actuator cannot assume the function of a circuit-breaker or RCD (earth-leakage circuit breaker).

With communication objects that can be written via the bus (e.g. threshold value limits), the range of values is not limited, i.e. even if the values that can be entered in the ETS for a threshold value or load limit can only be entered within defined limits, any value can be written by a communication object sent on the bus.

It is therefore necessary to ensure that only permitted and useful values can be written to the communication object.

If the threshold value monitoring is to be used for equipment fault

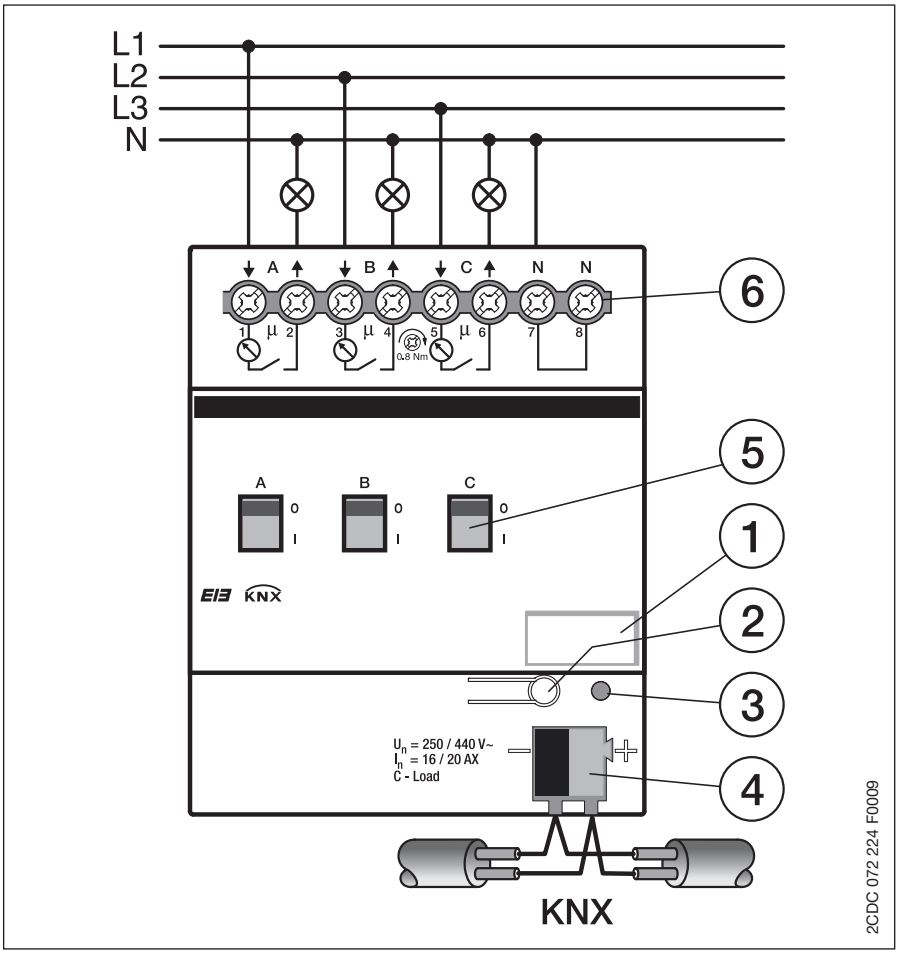
(e.g. lighting equipment failure) detection that only causes a slight change of less than 30 mA (7 W), mains voltage and current fluctuations due to ambient influences (e.g. temperature) and natural ageing of the load play a significant role. Even when the current changes are detected by the Energy Actuator, the detected current changes do not necessarily mean that a device has malfunctioned.

The outputs are electrically isolated from each other, i.e. they can switch on different phase conductors within the voltage ranges permitted in the technical data. There may not be potential differences between the neutral conductor connection of the load and the neutral conductor connection on the Energy Actuator to ensure that useful measured values are delivered. (Also refer to the note under Circuit diagram, page 13.)

⚠ Danger

In order to avoid dangerous touch voltages, which originate through feedback from differing phase conductors, all-pole disconnection must be observed when extending or modifying the electrical connections.

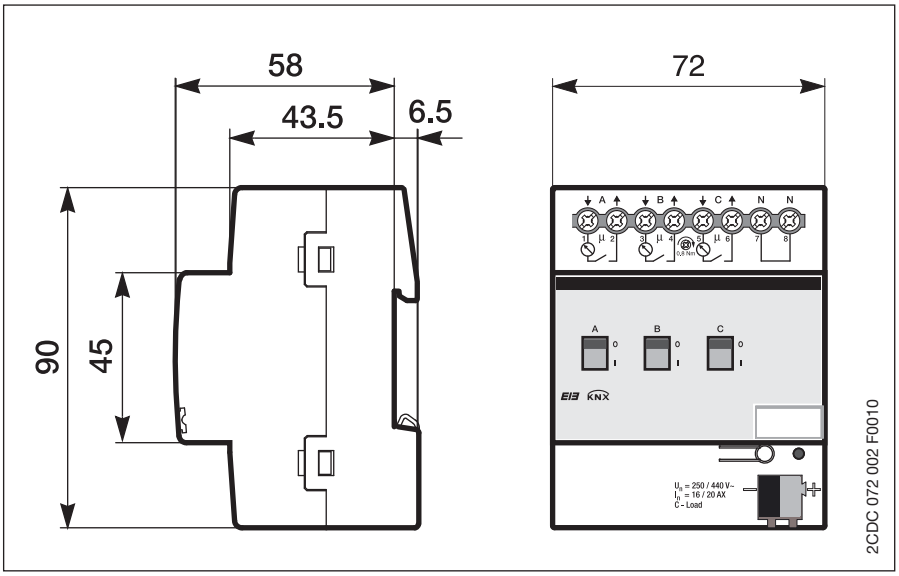
Circuit diagram



1 Label carrier
2 Programming button
3 Programming LED
4 Bus connection terminal
5 Switch position display and manual operation
6 Load circuits (A…C) each with 2 screw terminals, neutral conductor (N)

Important
Mains voltage must be present on at least one output, and the neutral conductor must be connected for supplying power to the measurement section.
No load currents may be conducted via the N terminal on the device.
The switched load must be connected directly to the N rail.
Terminals 7 or 8 should be connected directly to the N busbar.
The second N terminal can be used to loop to further Energy Actuators

Dimension drawing



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