TECHNICAL DATA

ABB i-bus® KNX

JRA/S x.x.4.2, x.x.7.2
Blind/Shutter Actuator

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1 Device description

The devices are modular installation devices (MDRC) in pro*M* design. They are designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (according to EN 60715).

The devices are KNX-certified and can be used as products in a KNX system
→ EU declaration of conformity.

The devices are powered via the bus (ABB i-bus® KNX) and require no additional auxiliary voltage.

The connection to the bus (ABB i-bus® KNX) is made via a KNX bus connection terminal on the front of the housing.

The connections at the inputs or outputs are made via screw terminals
→ terminal designation on the housing.

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

1.1 Membrane keypad

Depending on the product variant, the devices can be operated manually using the membrane keypad.

Note
The safety functions as well as operation using the i-bus® Tool have a higher priority than the *Manual operation* mode. An output cannot be operated using the membrane keypad if it is blocked by a safety function or can be operated using the i-bus® Tool. If the safety function is canceled in *Manual operation* operating mode, the output reacts corresponding to its parameterization.

2 Device functions

The devices have mutually electromechanically interlocked switching relays with which the following functions can be implemented:

- Activation of 230 V AC blind or shutter drives (JRA/S x.230.4.2, JRA/S x.230.7.2)

The inputs are used for coupling floating binary signals (signal contacts).

Device type JRA/S x.230.7.2 only:
On-site operation of the outputs is possible by manual operation. The status of the outputs is indicated via LEDs.

2.1 Overview

Functions	JRA/S x.x.4.2	JRA/S x.x.7.2
Manual operation		
Membrane keypad		x
Enable/block manual operation		x
Automatically reset manual operation		x
Drive activation		
Blind	x	x
Shutter	x	x
Ventilation flap		
Travel detection	x	x
Reversing time	x	x
Run time delay & minimum run time	x	x
Change direction of rotation	x	x
Dead times	x	x
Reference movement	x	x
Calibration movement	x	x
Separate activation of two lower end positions		x
Function Safety		
Weather alarms & central safeties	x	x
Forced operation	x	x
Individual safeties	x	x
Function Automatic sun protection		
Block direct commands	x	x
Anti-glare protection	x	x
Heating/cooling	x	x
Overheating protection	x	x
Function Scenes		
Recall and save KNX scenes	x	x
Special functions		
Function Sector control	x	x
Function Working position	x	x
Function Logic	x	x
Function Threshold	x	x
Sending and switching delay	x	x
Reaction on KNX voltage failure/recovery	x	x
Status messages	x	x
i-bus® Tool	x	x
Binary inputs	x	x

Tab. 1: Functional overview JRA/S x.x.4.2, JRA/S x.x.7.2

3 Connections

The devices have the following connections:

- depending on the device type, 4 or 8 outputs for activating 230 V AC blind or shutter drives
- depending on the device type, 8 or 16 inputs for the acquisition of floating binary signals (two physical binary inputs per device input)
- 1 KNX bus connection

3.1 Inputs

Note
The largest and most extensive device in the product family is described below as an example.

Function	a1	a2	b1	b2	c1	c2	d1	d2	e1	e2	f1	f2	g1	g2	h1	h2
Blind/shutter (2-button)	x		x		x		x		x		x		x		x	
Blind/shutter	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Switch	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Scenes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Tab. 2: Functions of the inputs

3.2 Outputs

Note
The largest and most extensive device in the product family is described below as an example.

Function	A	B	C	D	E	F	G	H
Blind	x	x	x	x	x	x	x	x
Shutter	x	x	x	x	x	x	x	x

Tab. 3: Functions of the outputs

4 Product family

The product family described in this document includes the following devices:

Device type	Name	Features
JRA/S 4.230.4.2	Blind/Shutter Actuator	travel detection, binary input, 4-fold, 230 V AC, MDRC
JRA/S 8.230.4.2	Blind/Shutter Actuator	travel detection, binary input, 8-fold, 230 V AC, MDRC
JRA/S 4.230.7.2	Blind/Shutter Actuator	3 limit switches, travel detection, binary input, manual operation, 4-fold, 230 V AC, MDRC

Tab. 4: Product family

4.1 Dimension drawing

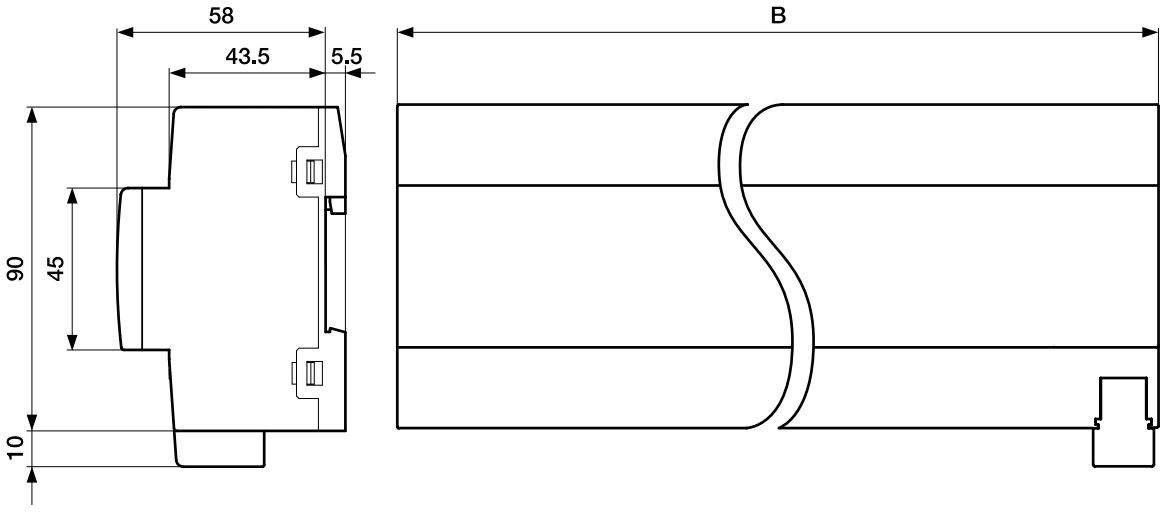

Fig. 1: Dimension drawing for product family

Device type	B
JRA/S 4.230.4.2	6 space units, 105 mm
JRA/S 8.230.4.2	12 space units, 210 mm
JRA/S 4.230.7.2	8 space units, 140 mm

Tab. 5: Device width (space units/millimeters)

4.2 Connection diagram

Note
The connection variants are explained in the following based on examples.

4.2.1 JRA/S x.230.4.2 connection variant

The connection diagram below applies by way of example to the following devices:

Device type	Name	Features
JRA/S 4.230.4.2	Blind/Shutter Actuator	travel detection, binary input, 4-fold, 230 V AC, MDRC
JRA/S 8.230.4.2	Blind/Shutter Actuator	travel detection, binary input, 8-fold, 230 V AC, MDRC

Tab. 6: Product family

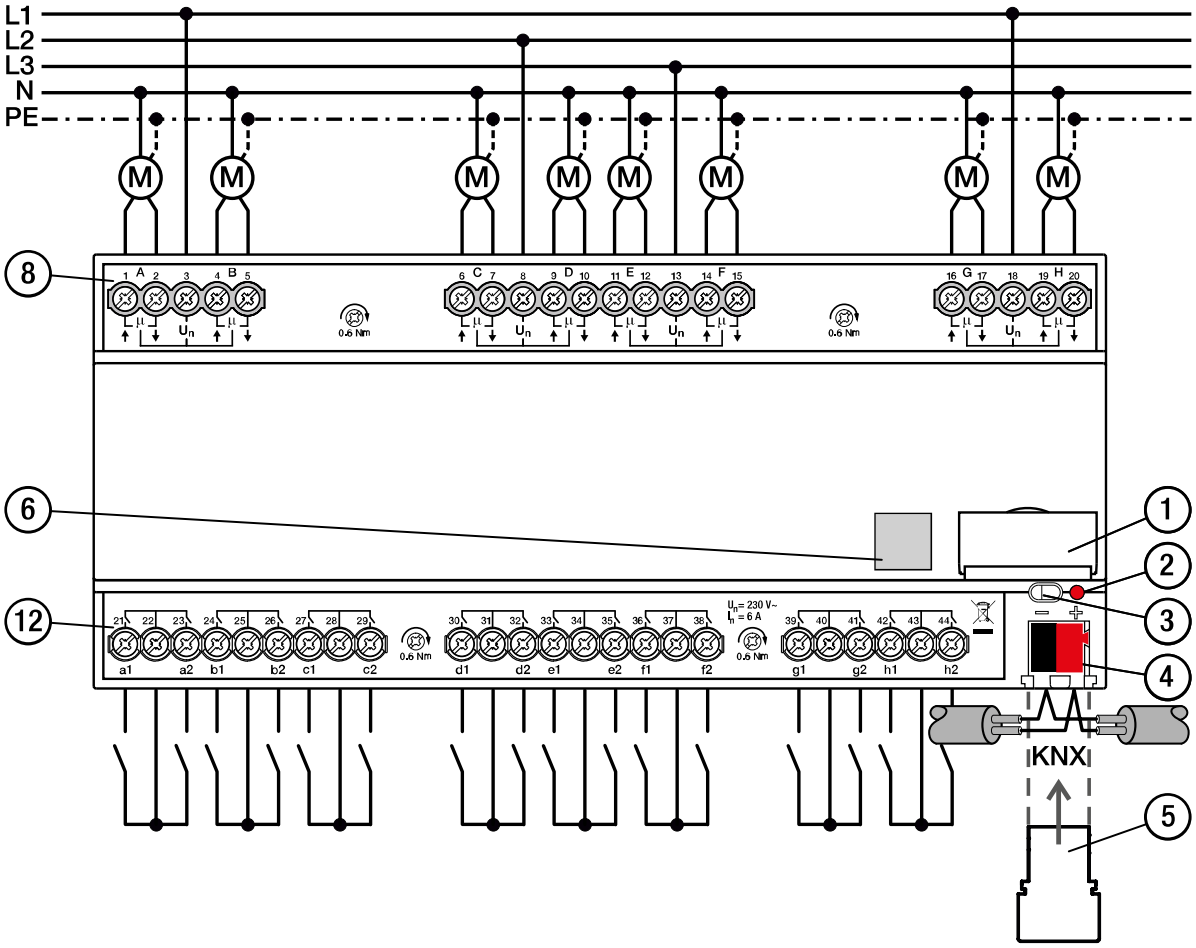

Fig. 2: JRA/S x.230.4.2 connection variant

Legend

1 Labeling field
2 *Programming* LED
3 *Programming* button
4 KNX bus connection terminal
5 Cover cap
6 2D code
8 Output
12 Binary Input

4.2.2 JRA/S 4.230.7.2 connection variant

The connection diagram below applies by way of example to the following devices:

Device type	Name	Features
JRA/S 4.230.7.2	Blind/Shutter Actuator	3 limit switches, travel detection, binary input, manual operation, 4-fold, 230 V AC, MDRC

Tab. 7: Product family

Note
Relay output for activation of first lower end position: Terminal 3, 8, 11, 16
Relay output for activation of second lower end position: Terminal 2, 7, 10, 15

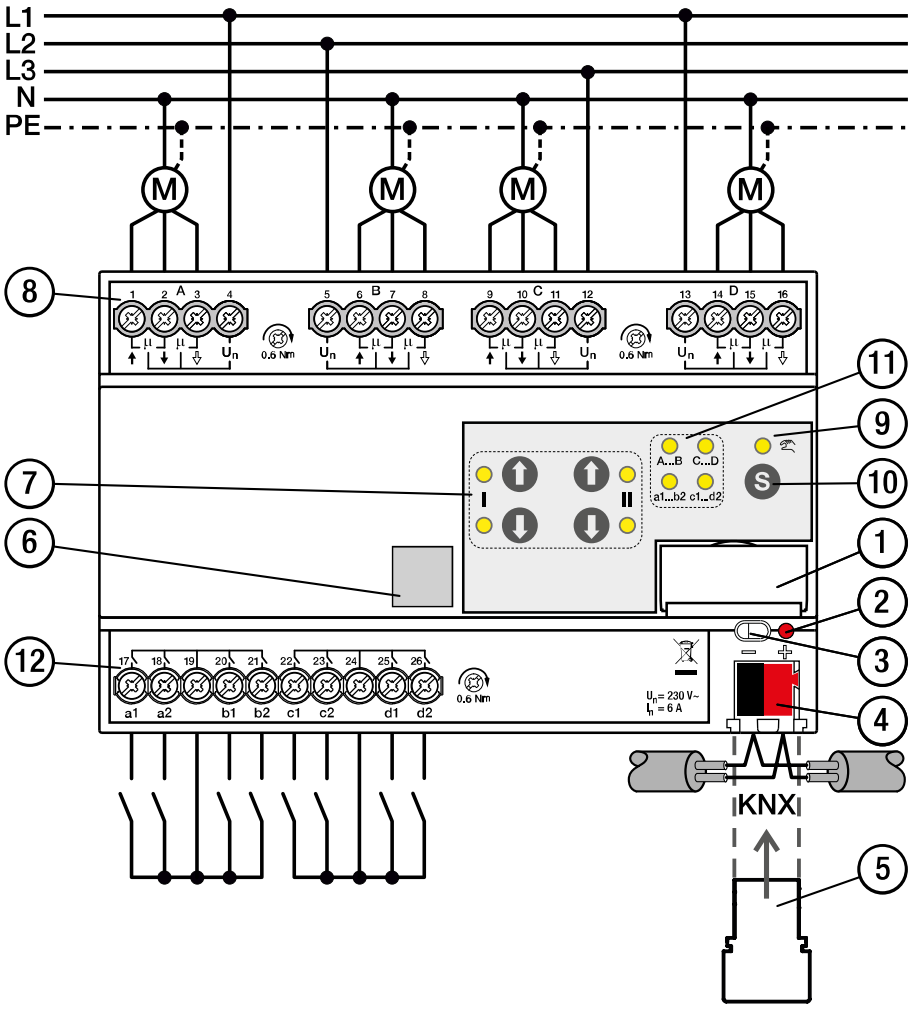

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Fig. 3: JRA/S 4.230.7.2 connection variant

Legend

1 Labeling field
2 *Programming* LED
3 *Programming* button
4 KNX bus connection terminal
5 Cover cap
6 2D code
7 *Input* Button/LED
8 Output
9 *Manual operation* LED
10 *S* button
11 *Group* LED
12 Binary Input

4.3 Operating and display elements

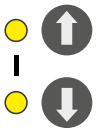
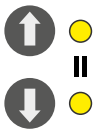
Note
The largest and most extensive device in the product family is described below as an example.

Operating control/LED	Description/function	Display
Programming button/LED	Assignment of the physical address	LED on: Device in programming mode

Tab. 8: Operating and display elements

4.3.1 Manual mode

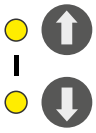
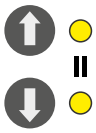
Note
Device type x.230.4.2 has no membrane keypad.

Operating control/LED	Description/function	Display
 S button / *Manual operation* LED	Short button push < 2 s: Selection of group Button push 2 … 5 s: Changeover to *KNX operation* Long button push > 5 s: Selection of all outputs Central operation via membrane keypad	LED on: *Manual operation* active LED off: *KNX operation* active
 X...Y *Output group* LED		LED on: Group selected LED off: Group not selected
 x...y *Input group* LED		LED on: Group selected LED off: Group not selected
 *Output I* button/LED	First output of group (A/C) Top button: • Long button push > 1 s: up • Short button push < 1 s: stop/slat adjustment Bottom button: • Long button push > 1 s: down • Short button push < 1 s: stop/slat adjustment	Top LED on and bottom LED off: upper end position Top LED off and bottom LED on: lower end position Top and bottom LEDs off: Intermediate position Top LED flashing (1 Hz) and bottom LED off: Up movement Top LED off and bottom LED flashing (1 Hz): Down movement Top LED flashing (1 Hz) and bottom LED flashing (1 Hz): Output blocked Top LED flashing (5 Hz) and bottom LED flashing (5 Hz): Output active (after the group is changed or after change to *Manual operation* operating mode)
 *Output II* button/LED	Second output of group (B/D) Top button: • Long button push > 1 s: up • Short button push < 1 s: stop/slat adjustment Bottom button: • Long button push > 1 s: down • Short button push < 1 s: stop/slat adjustment	Top LED on and bottom LED off: upper end position Top LED off and bottom LED on: lower end position Top and bottom LEDs off: Intermediate position Top LED flashing (1 Hz) and bottom LED off: Up movement Top LED off and bottom LED flashing (1 Hz): Down movement Top LED flashing (1 Hz) and bottom LED flashing (1 Hz): Output blocked Top LED flashing (5 Hz) and bottom LED flashing (5 Hz): Output active (after the group is changed or after change to *Manual operation* operating mode)
 Input button/LED	Button without function	Binary contact status indicator (depending on selected group) Top LED I on: Contact to input a1/c1 closed Bottom LED I on: Contact to input a2/c2 closed Top LED II on: Contact to input b1/d1 closed Bottom LED II on: Contact to input b2/d2 closed LED flashing (1 Hz): Input blocked

Tab. 9: Operating and display elements

4.3.2 KNX operation

Note
Device type x.230.4.2 has no membrane keypad.

Operating control/LED	Description/function	Display
 S button / *Manual operation* LED	Short button push < 2 s: Selection of group Button push 2 … 5 s: Change to *Manual operation*	LED on: *Manual operation* active LED off: *KNX operation* active LED flashing (1 Hz): Device connected to i-bus® Tool, *Manual operation* blocked LED flashing (1 Hz) while button pressed: *Manual operation* not enabled or blocked
 Output group LED		LED on: Group selected LED off: Group not selected
 Input group LED		LED on: Group selected LED off: Group not selected
 *Output I* button/LED	First output of group (A/C) Button without function	Top LED on and bottom LED off: upper end position Top LED off and bottom LED on: lower end position Top and bottom LEDs off: Intermediate position Top LED flashing (1 Hz) and bottom LED off: Up movement Top LED off and bottom LED flashing (1 Hz): Down movement Top LED flashing (1 Hz) and bottom LED flashing (1 Hz): Output blocked, or controlled by i-bus® Tool Top LED flashing (5 Hz) and bottom LED flashing (5 Hz): Output active (after the group is changed or after change to *KNX operation*)
 *Output II* button/LED	Second output of group (B/D) Button without function	Top LED on and bottom LED off: upper end position Top LED off and bottom LED on: lower end position Top and bottom LEDs off: Intermediate position Top LED flashing (1 Hz) and bottom LED off: Up movement Top LED off and bottom LED flashing (1 Hz): Down movement Top LED flashing (1 Hz) and bottom LED flashing (1 Hz): Output blocked, or controlled by i-bus® Tool Top LED flashing (5 Hz) and bottom LED flashing (5 Hz): Output active (after the group is changed or after change to *KNX operation*)
 Input button/LED	Button without function	Binary contact status indicator (depending on selected group) Top LED I on: Contact to input a1/c1 closed Bottom LED I on: Contact to input a2/c2 closed Top LED II on: Contact to input b1/d1 closed Bottom LED II on: Contact to input b2/d2 closed LED flashing (1 Hz): Input blocked

Tab. 10: Operating and display elements

4.4 Technical data

4.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D) 90 × 210 × 63.5 mm (H x W x D)	90 × 140 × 63.5 mm (H x W x D)
	Mounting width in space units	4 modules, 17.5 mm each 8 modules, 17.5 mm each	8 modules, 17.5 mm each
	Weight	0.275 kg 0.525 kg	0.378 kg
	Mounting position	Any	Any
	Mounting variant	35 mm mounting rail	35 mm mounting rail
	Design	pro*M*	pro*M*
	Degree of protection	IP 20	IP 20
	Protection class	II	II
	Overvoltage category	III	III
	Overload protection	Yes	Yes
	Reverse voltage protection	Yes	Yes
	Short-circuit proof	Yes	Yes
	Pollution degree	2	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0	Flammability V-0
Electronics	Rated voltage, bus	30 V DC	30 V DC
	Voltage range, bus	21 … 31 V DC	21 … 31 V DC
	Current consumption, bus	< 12 mA	< 12 mA
	Power loss, device	≤ 3.85 W ≤ 7.45 W	≤ 3.85 W
	Power loss, bus	≤ 0.25 W	≤ 0.25 W
	Power loss, relay output 6 A	≤ 0.9 W	≤ 0.9 W
	KNX safety extra low voltage	SELV	SELV
Connections	Connection type, KNX bus	Plug-in terminal	Plug-in terminal
	Cable diameter, KNX bus	0.6 … 0.8 mm, solid	0.6 … 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm	6.35 mm
	Tightening torque, screw terminals	0.5 … 0.6 Nm	0.5 … 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 … 4 mm²) / 2 × (0.2 … 1.5 mm²)	1 × (0.2 … 4 mm²) / 2 × (0.2 … 1.5 mm²)
	Conductor cross section, rigid	1 × (0.2 … 6 mm²) / 2 × (0.2 … 1.5 mm²)	1 × (0.2 … 6 mm²) / 2 × (0.2 … 1.5 mm²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 … 4 mm²) / 2 × (0.25 … 0.75 mm²)	1 × (0.25 … 4 mm²) / 2 × (0.25 … 0.75 mm²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 … 2.5 mm²)	1 × (0.25 … 2.5 mm²)
	Dimensions of wire end ferrule plastic sleeve	≤ 4.4 × 8 mm	≤ 4.4 × 8 mm
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 … 2.5 mm²)	1 × (0.5 … 2.5 mm²)
	Length, (TWIN) wire end ferrule contact pin	8 mm	8 mm
	Stripping length for KNX terminal	6 mm	6 mm
	Stripping length for load terminal	8 mm	8 mm
Certificates and declarations	CE declaration of conformity	→ 9AKK108468A8276	→ 9AKK108468A8276
Ambient condition	Operation	−5 … +45 °C	−5 … +45 °C
	Transport	−25 … +70 °C	−25 … +70 °C
	Storage	−25 … +55 °C	−25 … +55 °C
	Humidity	≤ 95%	≤ 95%
	Condensation allowed	No	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

4.4.2 Outputs Blind Shutter 6 A

Rated values	Number of outputs	4 8	4
	Rated voltage U_n	230 V AC	230 V DC
	Rated current I_n (per group)	6A	6A
	Rated frequency	50 / 60 Hz	50 / 60 Hz
	Relay type	Bi-stable	Bi-stable
Switching currents	AC-1 operation (cos φ = 0.8) at 230 V	≤ 6 A	≤ 6 A
	AC-3 operation (cos φ = 0.45) at 230 V	≤ 6 A	≤ 6 A
	AC-1 operation (cos φ = 0.8) at 400 V	≤ 6 A	≤ 6 A
	AC-3 operation (cos φ = 0.45) at 400 V	≤ 6 A	≤ 6 A
	Switching current at 5 V AC	≥ 100 mA	≥ 100 mA
	Switching current at 12 V AC	≥ 10 mA	≥ 10 mA
	Switching current at 24 V AC	≥ 1 mA	≥ 1 mA
	Switching current at 24 V DC (resistive load)	≤ 6 A	≤ 6 A
Switching capacity	Switching capacity at min. 5 V AC	≤ 0.5 W	≤ 0.5 W
	Switching capacity at min. 12 V AC	≤ 0.12 W	≤ 0.12 W
	Switching capacity at min. 24 V AC	≤ 0.024 W	≤ 0.024 W
Service life	Mechanical service life	≥ 10^7 switching operations	≥ 10^7 switching operations
	AC-1 operation (cos φ = 0.8)	≥ 10^5 switching operations	≥ 10^5 switching operations
	AC-3 operation (cos φ = 0.45)	≥ 10^5 switching operations	≥ 10^5 switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 1000	≤ 700
	Switching operations per minute when all relays switch	≤ 250 ≤ 125	≤ 175
Inrush current	Inrush current I_{peak} (150 µs)	≤ 100 A	≤ 100 A
	Inrush current I_{peak} (250 µs)	≤ 80 A	≤ 80 A
	Inrush current I_{peak} (600 µs)	≤ 50 A	≤ 50 A

4.4.2.1 Load table

Load type	Symbol	Max. load
Rated motor power	Ⓜ	1,380 W

Tab. 11: Load table

4.4.3 Inputs - contact scanning

Rated values	Number of inputs	8 16	8
Contact scanning	Scanning current	≤ 1 mA	≤ 1 mA
	Scanning voltage	≤ 35 V DC	≤ 35 V DC
Cable length	Between sensor and device input, one-way	≤ 100 m	≤ 100 m

5 Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight (incl. packaging) [kg]
Blind/Shutter Actuator	4	JRA/S 4.230.4.2	2CDG110292R0011	1	0.368
Blind/Shutter Actuator	8	JRA/S 8.230.4.2	2CDG110293R0011	1	0.638
Blind/Shutter Actuator	4	JRA/S 4.230.7.2	2CDG110294R0011	1	0.477

Tab. 11: Ordering details

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