KNX LED actuator / dimmer

KAA-4R4V-S

User's Manual
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Indoor | LED | Household | Building Automation

■ Features

- Dimming and switching LED driver and conventional electronic ballast
- LED indicator for each channel
- Linear or logarithmic dimming curve programable via ETS software
- Support KNX Data Secure
- Manual control via Push button on panel
- Programmable various time and scene function
- 3 years warranty

■ Applications

- Building Automation
- Lighting switch / dimming control
- Shutter/Blind control

■ GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

■ Description

The KAA-4R4V-S dimming actuator is a 4 channels device with high quality independent latching relay to turn on or off ,which is suitable for MEANWELL all kinds of LED drivers. The product specification indicate the maximum number of recommended LED drivers per channel which is easy for building planning.Based on the KNX architecture, KNX system engineers can easily program through the ETS systemas needed during planning or use, or manually through the physical buttons on the panel. KAA-4R4V-S is independently configured with a green LED on each channels to indicate the status of the switch. The compact design with 4 units(72mm) wide modular makes it suitable for installation in the distributionboard on 35mm mounting rails in the EIB/KNX application. The connection to the KNX bus is implemented via a bus connection terminal. The new version also supports KNX Data Secure function. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project.In addition to the basic switch function, a DC 0(1)-10V interface by current sinking is provided for dimming the connected LED driver or ballast. The dimming curve can be adjusted to linear or logarithmic mode, so that the end user has excellent dimming experience. It can also be used with motion sensors in the buildings to save energy. The dimmer are powered viathe EIB/KNX and do not require any additional power supply. As result, KAA-4R4V-S is featuring bothreliability and multi functionality to meet various needs in a modern building.

■ Model Encoding

KAA - 4R4V - □ S

- S: Built-in with KNX Secure function
- □: -10: 10A per channel / Blank: 16A per channel
- 4R4V: R:Relay on/off for 4-channel(4 fold) V: 0(1)-10V dimming for 4-channel(4 fold)
- KAA: Series name

Type	Function	Note
-10	4 channel actuator, 10A per channel	In stock
Blank	4 channel actuator, 16A per channel	by request

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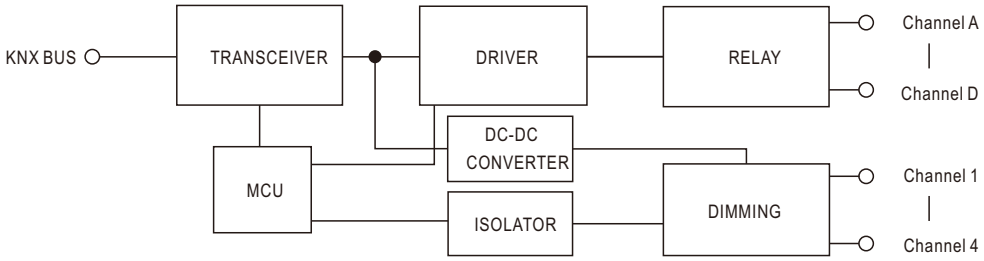
SPECIFICATION

MODEL			KAA-4R4V-10S
SUPPLY	KNX BUS VOLTAGE		21~31V
	CURRENT CONSUMPTION		<14mA
	POWER CONSUMPTION		<250mW
OUTPUT CONTROL	VOLTAGE RANGE		0-10V
	NO. OF CONTROL OUTPUT		4
	TYPE OF CONTROL		passive
	MAX. CURRENT PER OUTPUT		50mA
	MAX. CABLE LENGTH AT FULL LOAD		100m with cable cross-section 1.5mm^2
OUTPUT RELAY OUTPUT SWITCHING RATINGS	Nr. OF RELAY		4
	Nr. OF SHUTTER OUTPUT		2
	INDEPENDENT & POTENTIAL-FREE PER RELAY		Yes
	CURRENT	OHMIC LOAD	10A
		CAPACITIVE LOAD	220 μ F(See Note.2)
	MAX. INRUSH CURRENT		400A(max. 200 μ s),80A(max. 20ms)
	EN60947-4-1 AC1(COS θ =0.8)		10A
	EN60947-4-1 AC5a(COS θ =0.45)		8A
	EN60947-4-1 AC5b		10A
	MAX. TOTAL CURRENT OF THE ACTUATOR		40A
OUTPUT SERVICE LIFE	MECHANICAL SERVICE LIFE		>10^6
	ELECTRICAL ENDURANCE EN60669-1 19.1		4*10^4(See Note.2)
	EN60669-1 19.2 , FLOURSCENT LAMP(AX)		10^4(See Note.2)
OPERATING & DISPLAY	PROGRAMMING BUTTON/LED		For set the individual address
	MANUAL BUTTON/LED		For manually control the relay and dimming
ENVIRONMENT	WORKING TEMP.		-30 ~ +45℃(3K5)
	STORAGE TEMP.		-35 ~ +70℃
	WORKING HUMIDITY		10 ~ 95% RH non-condensing
	PROTECTION CLASS		Ⅱ , According to EN61140
	OVER VOLTAGE CATEGORY		Ⅲ ,According to EN60664-1
	POLLUTION DEGREE		2, According to EN60664-1
	DEGREE OF PROTECTION		IP20,According to EN60529
SAFETY & EMC	SAFETY STANDARDS		BS EN/EN50491-3, BS EN/EN60669-1, BS EN/EN60669-2-1, BS EN/EN60669-2-5(See Note.2), EAC TP TC 004 approved
	EMC EMISSION		Compliance to BS EN/EN50491-5-1,-2,-3, BS EN/EN50090-2-2, BS EN/EN60669-2-1, BS EN/EN60669-2-5, BS EN/EN63044-5-1,-2,-3(See Note.2), EAC TP TC 020
	EMC IMMUNITY		Compliance to BS EN/EN50491-5-1,-2,-3, BS EN/EN50090-2-2, BS EN/EN60669-2-1, BS EN/EN60669-2-5, BS EN/EN63044-5-1,-2,-3(See Note.2), EAC TP TC 020
	WITHSTAND VOLTAGE		Between switching and SELV control circuit： 3.5KVAC
CONNECTIONS	SCREW TERMINAL		0.5 – 4.0mm² solid core 0,5 - 2,5mm² finely stranded
	KNX BUS CONNECTION TERMINAL		0.8mm ϕ , solid core
OTHERS	MTBF		686.9K hrs min. Telcordia SR-332 (Bellcore) ; 302.3K hrs min. MIL-HDBK-217F (25℃)
	DIMENSION		72*90*57mm (W*H*D)
	MOUNTING WIDTH IN UNITS		4
	DIN RAIL MOUNTING		35mm mounting rail according to DIN EN60715
	PACKING		0.247Kg ; 48pcs/12.53Kg/1.02CUFT
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Notified Body test report is provided. ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx		

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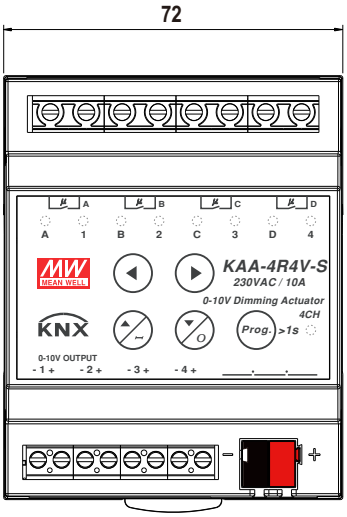
KAA-4R4V-S

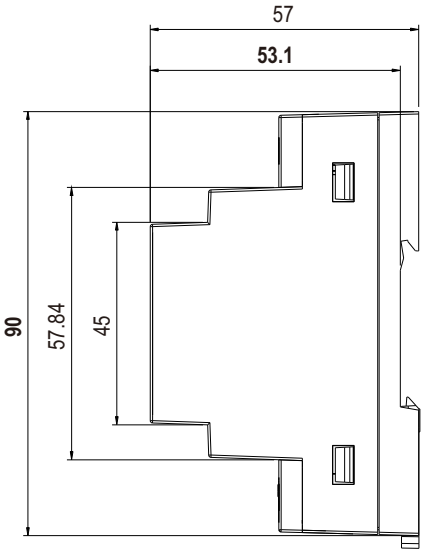
■ Block Diagram

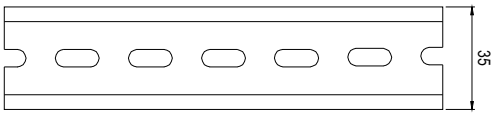


■ Mechanical Specification

Case No. KAA Unit:mm Tolerance:±1







ADMISSIBLE DIN-RAIL:TS35/7.5 OR TS35/15

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■ Max. output load per channel

Maximum load	KAA-4R4V-10S
Resistive load	2300 W
LED driver	refer to table below
Incandescent lamps	2300 W
Halogen lamps 230V	2300 W
Halogen lamps, electronic transformer	1300 W
Fluorescent lamps, not compensated	2000W
Fluorescent lamps, parallel comp.	1200W
Max. number of electronic transformers	15
Shutter motor	600W

■ Nr. of driver per control output channel

The maximum number of driver is 500 pcs per channel in case current from each driver is sourcing 0.1mA.
The actual number of driver is subject to applications. i.e. total cable length in system.

■ Nr. of driver per relay channel

The maximum number of the LED PSUs that can be connected to each relay channel at 230V is shown as below	
Suggested model	KAA-4R4V-10S
APC-8	22
APC-12	11
APC-16	18
APC-25	11
APC-35	11
APC-8E	22
APC-12E	18
APC-16E	15
APV-8	22
APV-12	11
APV-16	18
APV-25	11
APV-35	11
APV-8E	22
APV-12E	18
APV-16E	15
LCM-25	25
LCM-40	25
LCM-60	25
LCM-25DA	25
LCM-40DA	25
LCM-60DA	25
LPC-20	11
LPC-35	9
LPC-60	8

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The maximum number of the LED PSUs that can be connected to each relay channel at 230V is shown as below	
Suggested model	KAA-4R4V-10S
LPC-100	7
LPC-150	5
LPF-16	18
LPF-25	16
LPF-40	16
LPF-60	9
LPF-90	7
LPF-16D	18
LPF-25D	16
LPF-40D	16
LPF-60D	9
LPF-90D	7
LPH-18	16
LPHC-18	16
LPV-20	11
LPV-35	9
LPV-60	8
LPV-100	7
LPV-150	8
NPF-40	10
NPF-60	10
NPF-90	8
NPF-120	8
NPF-40D	10
NPF-60D	10
NPF-90D	8
NPF-120D	8
PCD-16B	80
PCD-25B	53
PCD-40B	45
PCD-60B	26
PLC-30	23
PLC-45	23
PLC-60	23
PLC-100	13
PLD-16B	40
PLD-25	32
PLD-40B	32
PLD-60B	32
PLM-12	53
PLM-25	53
PLM-40	53

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The maximum number of the LED PSUs that can be connected to each relay channel at 230V is shown as below	
Suggested model	KAA-4R4V-10S
PLN-20	23
PLN-30	23
PLN-45	23
PLN-60	23
PLN-100	13
PLP-30	32
PLP-45	27
PLP-60	23
PWM-40	10
PWM-60	10
PWM-90	8
PWM-120	8
HLN-40H	10
HLN-60H	9
HLN-80H	7
HLP-40H	7
HLP-60H	9
HLP-80H	7
CEN-60	22
CEN-75	22
CEN-100	22
CLG-60	23
CLG-100	13
CLG-150	8
ELG-75	10
ELG-100	8
ELG-150	8
ELG-75-C	10
ELG-100-C	13
ELG-150-C	8
HBG-100	8
HBG-160	8
HBG-240	7
HBG-60	18
HLG-40H	16
HLG-60H	9
HLG-80H	7
HLG-100H	8
HLG-120H	8
HLG-150H	8
HLG-185H	8
HLG-240H	5

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The maximum number of the LED PSUs that can be connected to each relay channel at 230V is shown as below	
Suggested model	KAA-4R4V-10S
HLG-320H	6
HLG-600H	3
HLG-60H-C	8
HLG-80H-C	8
HLG-120H-C	10
HLG-185H-C	9
HLG-240H-C	7
HLG-320H-C	6
HSG-70	9
HVG-65	20
HVG-100	8
HVG-150	8
HVG-240	5
HVG-320	4
HVGC-65	20
HVGC-100	8
HVGC-150	8
HVGC-240	5
HVGC-320	4

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■ Communication Object Table

Num	Name	Object function	Length	DPT	Priority	Flag
1	Central Function	Manual control	1bit	Enable	Low	CW
2	Central Function	Switch On/Off	1bit	Switch	Low	CW
3	Central Function	Dim absolutely	1byte	Percentage	Low	CW
4	Central Function	Operation	1bit	State	Low	CRT
5	Channel 1	Switch On/Off	1bit	Switch	Low	CW
6	Channel 1	Switch State	1bit	State	Low	CRT
7	Channel A	Additional Switch On/Off	1bit	Switch	Low	CW
8	Channel A	Additional Switch state	1bit	State	Low	CRT
9	Channel 1	Dim relatively	4bit	Dimming control	Low	CW
10	Channel 1	Dim absolutely	1byte	Percentage	Low	CW
11	Channel 1	State Dimming Value	1byte	Percentage	Low	CRT
12	Channel 1	Scene	1byte	scene number	Low	CW
			1byte	scene control	Low	CW
13	Channel 1	Automatic 1	1bit	Switch	Low	CW
14	Channel 1	Automatic 2	1bit	Switch	Low	CW
15	Channel 1	Automatic 3	1bit	Switch	Low	CW
16	Channel 1	Automatic 4	1bit	Switch	Low	CW
17	Channel 1	Block I	1bit	Enable	Low	CW
18	Channel 1	Block II	1bit	Enable	Low	CW
19	Channel 1	Staircase light	1bit	Switch	Low	CW
20	Channel 1	Staircase light with time	2byte	time(0-65535)s	Low	CW
21	Channel 1	Prewarning	1bit	Alarm	Low	CRT
22	Channel 1	Permanent ON	1bit	Switch	Low	CW
23	Channel 2					
	……					
41	Channel 3					
	……					
59	Channel 4					
	……					

The priority of the particular communication objects as well as the flags can be adjusted. The flag control the function of the objects in the programming where C stands for communication, R for Read, W for write, T for transmit and U for update.

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■ Configuration and Commissioning

The application program(database) can be downloaded via Online Catalogs from ETS or via http://www.meanwell.com/productCatalog.aspx

※ KNXInterface

・Apply KNX signal between KNX+ and KNX-.
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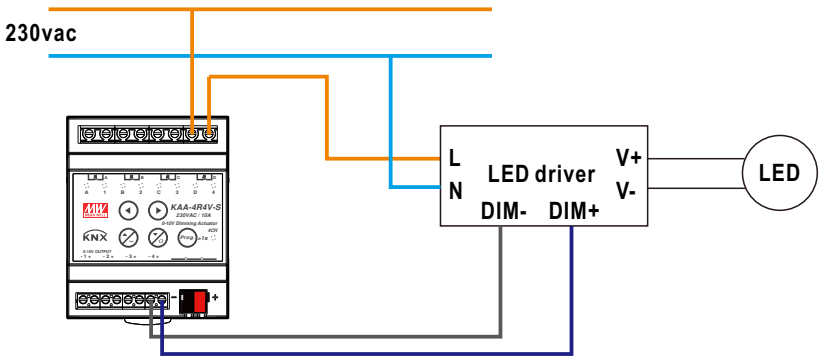
The device is equipped with KNX Data Secure. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed specialist knowledge is required. A device certificate, which is attached to the device, is required for the first configuration. After configuration and ready for runtime (daily) operation, it is recommended to remove the certificate from the device and to store it securely. For details, please refer to the instruction manual.

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Device Certificate

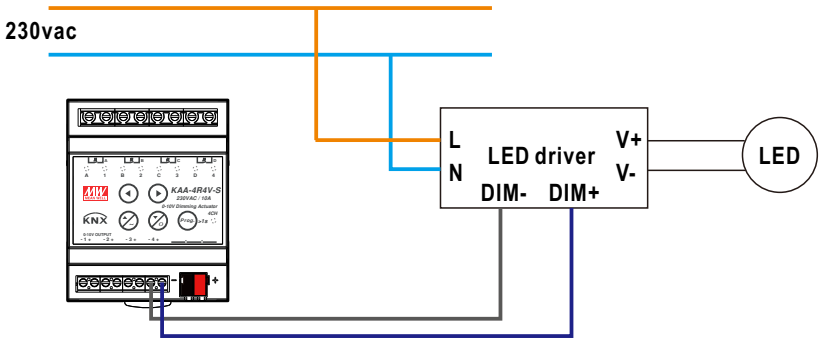
■ Typical application

◎ **Application 1:Work with DC 1-10V LED driver**

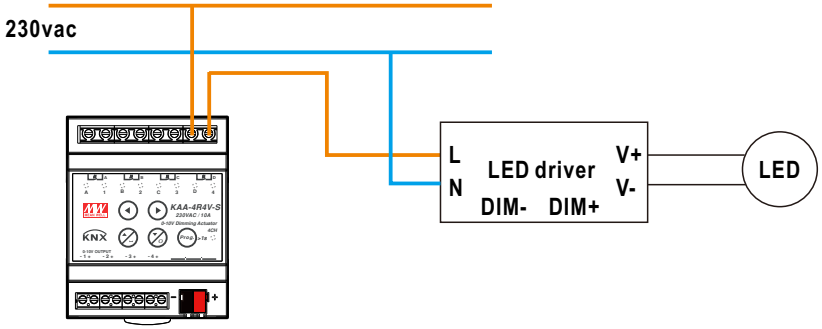


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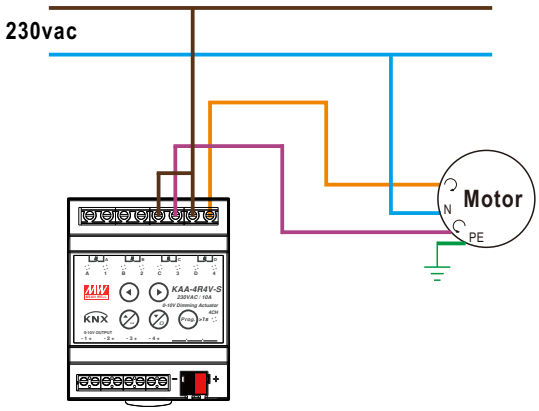
◎ **Application 2:Work with DC 0-10V LED driver**



◎ **Application 3:Work with non-dimmable driver**



◎ **Application 4:Work with shutter/blind control**



Note:Check installation manual of shutter motor for wiring.

■ Recommended Screwdriver, Wire and Torque Setting

1.Screwdriver(Width*Thick):Slotted screwdriver 2.5*0.4~3.5*0.6
2.Wire:0.5~4.0mm^2 solid core or 0.5~2.5mm^2 finely stranded
3.Torque:0.8Nm

■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html

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