Load capacity - explanation of terms and product applications

Explanations

	**El. bulbs loads:** (R) el. bulb, halogen light		(L) Elektronic ballasts for fluorescent
	**Dimmer with defined load:** R - resistive, L - inductive, C - capacitive		**Inductive loads (transformers):** feromagnetic and toroid transformers for lights with various voltage.
	**Fluorescent light:** fluorescent lights uncompensated		**Switch:** switch - control contact of various device
	**Fluorescent light:** fluorescent light compensated in series		**Button:** control button
	**Fluorescent light:** fluorescent light compensated in parallel		**Control module:** analog control module 0 - 10 V
	**Fluorescent light:** fluorescent light economical		Motor

Category of use	Typical use
AC current, cosφ = P/S (-)	
AC-1	Non-inductive or slightly inductive load, resistance furnace. Includes all appliances supplied by AC current with power factor (cos φ) ≥ 0.95. Examples of usage: resistance furnace, industrial loads.
AC-2	Motors with slip-ring armature, switching off.
AC-3	Motors with short-circuit armature, motor switching when in operation. This category applies to switching off motors with short-circuit armature while in operation. While switching, contactor switches current. which is 5 up to 7 times rated current of motor.
AC-5a	Switching of electrical gas-filled lights, fluorescent lights.
AC-5b	El. bulb switching. Enables low contact loading due to resistance of cold fi ber is many times smaller that the one of hot fi ber.
AC-6a	Switching of transformers.
AC-7b	Load of motors for home appliances.
AC-12	Switching of semiconductor loads with separation transformers.
AC-13	Switching of semiconductor loads with separation transformers.
AC-14	Switching of low electro-magnetic loads (max. 72 VA).
AC-15	Management of alternating electro-magnetic loads. This category applies to switching inductive loads with input for closed electro-magnetic circuit higher than 72 VA. Use: switching coils of contactors.
	Note: Category AC 15 replaces formerly used category AC 11.
DC current, t = L/R (s)	
DC-1	Non-inductive or low inductive load, resistive furnaces.
DC-3	Shunt motors: start-up, braking by backset, reversion, resistive braking.
DC-5	Series motor: start-up, braking by backset, reversion, resistive braking.
DC-12	Management of resistive loads and fixed loads with insulation by opto-electric element.
DC-13	Switching of electromagnets.
DC-14	Switching of electromagnetic loads in circuits with limiting resistor.

How can you distinguish for which load is our product (relay) designated?
Our company record this information on a products and also in our catalogue, instruction manual and other promotional and technical material (website etc.). It is important to realize that it is not always possible to point out load because of lack of information about the device (user cannot measure cos) or it is not possible because of inconstancy of parameters of switched device. Manufacturer of relays records always guaranteed parameters in ideal conditions which are done by a norm (temperature, pressure, humidity, etc.) and reality can be in a lot of cases different. Category of use (classification) of a particular relay is done by material of output contacts.
Basic types of materials which are used for production of contacts for high-performance relay are:

a) AgCd – suitable for switching ohmic loads. Before of harmfulness of Cd, this type of contact is remitted.
b) AgNi –designated for switching resistive loads, good quality switching and conducting (contact doesn't oxidate) small currents/voltages, it is not designated for surge currents and loads with inductive component.
c) AgSn or $AgSnO_2$ –suitable for switching loads with inductive component, not suitable for switching small currents/voltages, it is more resistive to surge currents, suitable for DC voltage switching, less suitable for switching loads of ohmic type.
d) Wf (wolfram)-special contact designated for switching surge currents with inductive component.
e) with gold (AgNi/Au)- Used for "improving" contacts for low currents/ voltages , prevents oxidation.

Load capacity of Wireless switching elements

RFJA-32B-SL; RFSA-62B-SL; RFSAI-62B-SL; RFSA-66M; RFSAI-11B-SL; RFSAI-62B-SL/TH; RFSW-62; RFSW-262; RFSTI-11B-SL; RFSAI-61B-SL

Load type	cos φ ≥ 0.95 AC1	AC2	AC3	AC5a without compensation	AC5a with compensation	HAL 230V AC5b	AC6a	AC7b	AC12
Contact material $AgSnO_2$, Contact 8 A	250 V/8 A	250 V/2,5 A	250 V/1,5 A	230 V/1,5 A (345 VA)	230 V/1,5 A (345 VA) up to max input C=14uF	250 W	250 V/2 A	250 V/1 A	250 V/1 A
Load type	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material $AgSnO_2$, Contact 8 A	250V/3 A	250 V/3 A	250 V/3 A	30 V/4 A	24 V/2 A	24 V/1,5 A	24 V/4 A	24 V/1 A	24 V/1 A

RFSA-61M; RFSC-61N; RFSA-61MI; RFSA-61B; RFUS-61**

Load type	cos φ ≥ 0.95 AC1	AC2	AC3	AC5a without compensation	AC5a with compensation	HAL 230V AC5b	AC6a	AC7b	AC12
Contact material $AgSnO_2$, Contact 16 A	250 V/16 A	250 V/3 A	250 V/2 A	230 V/3 A (690 VA)	230 V/3 A (690 VA) up to max input C=14uF	1000 W	x	250 V/3 A	250 V/10 A
Load type	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material $AgSnO_2$, Contact 16 A	250 V/6 A	250 V/6 A	250 V/6 A	24 V/8 A	24 V/3 A	24 V/2 A	24 V/6 A	24 V/2 A	x

** RFUS-61 - AC1=250 V/12 A

Load capacity of dimmers Wireless

	LED bulb				LED spot lights						LED panels				LED / RGB strip											
	DLB-E27-806-2K7		DLB-E-27-806-5K		DLSL-GU10-350-3K		LSL-GU10-350-3K		LSL-GU10-350-5K		LP-6060-3K		LP-6060-6K		LED strip 7.2W		LED strip 14.4W		LED strip 19.2W		LED strip 28.8W		RGB strip 7.2W		RGB strip 14.4W	
		number		number		number		number		number		number		number		number		number		number		number		number		number
RFDSC-71N	✓	21	✓	21	✓	45	✓	25	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RFDEL-71B-SL	✓	11	✓	11	✓	25	✓	13	✓	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RFDA-73M/RGB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	3x8m	✓	3x4m	✓	3x3m	✓	3x2m	✓	20m	✓	10m
RFDALI-32B-SL	-	-	-	-	-	-	-	-	-	-	✓	50	✓	50	-	-	-	-	-	-	-	-	-	-	-	-

WARNING!

May lead to different results based on the state of network cable length and other factors.

This table contains the results of tests that were conducted internally and therefore is ONLY for customers only informative. The products were tested in test laboratories ELKO EP, and therefore the company assumes no responsibility for any imitation test environment.

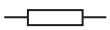
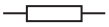
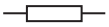
Inductive and capacitive loads must not be connected simultaneously!

Load capacity:

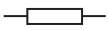
* Due to the huge amount of type of light sources, the maximum load depends on internal construction of dimmable LED and ESL bulbs and their power factor cos φ, capacity for power factor cos φ=1. The power factor of dimmable LEDs and ESL bulbs ranges from cos φ= 0.95 up to 0.4. An approximate value of maximum load may be obtained by multiplying the load capacity of the dimmer by the power factor of the connected light source.

Load capacity of relay

COS-2; CRM-2H; CRM-2HE; CRM-2T; CRM-181J; CRM-91H; CRM-111H; CRM-91HE; CRM-101; CRM-183J / CRM-93H / CRM-93H-SL / CRM-113H (1. kontakt); CRM-121H; CRM-131H; HRH-8; HRN-31; HRN-31/2; HRN-32/2; HRN-36; HRN-36/2; HRN-39; HRN-39/2; HRN-41; HRN-42; HRN-43; HRN-43N; HRN3-70; HRN3-80; HRN3-81; PMR1-31; PMR1-31/2; PMR1-36; PMR1-36/2; PMR1-39; PMR1-39/2; PMR3-70; PDR-2; PRI-34; PRI-35; PRI-41; PRI-42; PTRM-216K; PTRM-216T; PTRM-216KP; PTRM-216TP; PTRA-216K; PTRA-216T; SJR-2; TER-4; TEV-1; TEV-2; TEV-3

type of load	 AC1	 AC2	 AC3	 AC5a uncompensated	 AC5a compensated	 AC5b	 AC6a	AC7b	 AC12
Material of contact **AgNi, 16A**	250V/16A	250V/5A	250V/3A	230V/3A (690VA)	x	800W	x	250V/3A	250V/10A
type of load	 AC13	 AC14	 AC15	 DC1	 DC3	 DC5	 DC12	 DC13	 DC14
Material of contact **AgNi, 16A**	250V/6A	250V/6A	250V/6A	24V/16A	24V/6A	24V/4A	24V/16A	24V/2A	24V/2A

CRM-71TO; CRM-4; CRM-47; HRH-7; MR-41; MR-42; SHT-1; SHT-1/2; SHT-13; SHT-13/2; SMR-B; SOU-1; RHT-1; TER-3A; TER-3B; TER-3C; TER-3D; TER-3E; TER-3F; TER-3G; TER-3H ; VS116K; VS116U; VS316/24V; VS316/230V; VS116B / 230V

type of load	 AC1	 AC2	 AC3	 AC5a uncompensated	 AC5a compensated	 AC5b	 AC6a	AC7b	 AC12
Material of contact **$AgSnO_2$, 16A**	250V/16A	250V/5A	250V/3A	230V/3A (690VA)	230V/3A (690VA) till max output C=14UF	1 000W	x	250V/3A	x
type of load	 AC13	 AC14	 AC15	 DC1	 DC3	 DC5	 DC12	 DC13	 DC14
Material of contact **$AgSnO_2$, 16A**	x	250V/6A	250V/6A	24V/16A	24V/3A	24V/2A	24V/16A	24V/2A	x

CRM-72TO; CRM-183J / CRM-93H / CRM-93H-SL / CRM-113H (2. + 3. kontakt); TER-7; VS308K; VS308U; CRM-161; HRH-5; HRN-54; HRN-54N; HRN-55; HRN-55N; HRN-56; HRN-57; HRN-57N; PRI-32; PRI-51; PRI-52; PRI-53; HRF-10; TER-9

type of load	 AC1	 AC2	 AC3	 AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Material of contact **AgNi, 8A**	250V/8A	250V/3A	250V/2A	230V/1.5A (345VA)	x	300W	x	250V/1A	250V/1A
type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Material of contact **AgNi, 8A**	x	250V/3A	250V/3A	24V/8A	24V/3A	24V/2A	24V/8A	24V/2A	x

RHV-1; SOU-3; TEV-4

type of load	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Material of contact **$AgSnO_2$, 12A**	250V/12A	250V/3.7A	250V/2.2A	230V/2.2 (510VA)	230V/2.2A (510VA) till max output C=14UF	1 120W	x	250V/2.2A	250V/7.5A
type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Material of contact **$AgSnO_2$, 12A**	250V/4.5A	250V/4.5A	250V/4.5A	24V/12A	24V/4.5A	24V/3A	24V/12A	24V/1.5A	24V/1.5A

HRH-6

type of load	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Material of contact **AgNi, 10A**	250V/10A	250V/3A	250V/2A	230V/2A (460VA)	x	500W	x	250V/2A	250V/6A
type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Material of contact **AgNi, 10A**	250V/3.8A	250V/3.8A	250V/3.8A	24V/10A	24V/3.8A	24V/2.5A	24V/10A	24V/1.3A	24V/1.3A

Load capacity of relay

SOU-2

type of load	 cos φ ≥ 0.95 AC1	 AC2	 AC3	 AC5a uncompensated	 AC5a compensated	 AC5b	 AC6a	AC7b	AC12
Material of contact **$AgSnO_2$, 8A**	250V/8A	250V/5A	250V/4A	x	x	250W	250V/4A	250V/1A	250V/1A
type of load	 AC13	AC14	 AC15	DC1	 DC3	 DC5	DC12	DC13	DC14
Material of contact **$AgSnO_2$, 8A**	x	250V/4A	250V/3A	30V/8A	30V/3A	30V/2A	30V/8A	30V/2A	x

HRH-9

type of load	 cos φ ≥ 0.95 AC1	 AC2	 AC3	 AC5a uncompensated	 AC5a compensated	 AC5b	 AC6a	AC7b	AC12
Material of contact **$AgSnO_2$, 10A**	250V/10A	250V/5A	250V/4A	x	x	250W	250V/4A	250V/1A	250V/1A
type of load	 AC13	AC14	 AC15	DC1	 DC3	 DC5	DC12	DC13	DC14
Material of contact **$AgSnO_2$, 10A**	x	250V/4A	250V/3A	24V/10A	24V/3A	24V/2A	24V/10A	24V/2A	x

VS120; VS220; VSM220

type of load	AC-1, AC-7a, AC-21	AC-2	AC-3, AC-3e, AC-7b, AC23	AC-5a (230V)	AC-5b (230V)	AC-6a (230V)	AC-15 (230V)	DC-1 (24V, 48V)	DC-3 (24V, 48V)	DC-5 (24V, 48V)	DC-13 (24V, 48V)	LED	AC-6b, AC-7c (230V)
rated current	20A	12A	NO:9A NC:6A	8,8A	8,8A	4A	6A	20A, 15A	10A, 5A	10A, 4A	6A	2,4A per contact	switching capacity 30 uF

VS420

type of load	AC-1, AC-7a, AC-21	AC-2	AC-3, AC-3e, AC-7b, AC23	AC-5a (230V)	AC-5b (230V)	AC-6a (230V)	AC-15 (230V)	DC-1 (24V, 48V)	DC-3 (24V, 48V)	DC-5 (24V, 48V)	DC-13 (24V, 48V)	LED	AC-6b, AC-7c (230V)
rated current	20A	10A	5A	8,8A	8,8A	4A	6A	20A, 12A	10A, 5A	10A, 4A	6A	2,4A per contact	switching capacity 30 uF

VS425; VSM425

type of load	AC-1, AC-7a, AC-21	AC-2	AC-3, AC-3e, AC-7b, AC23	AC-5a (230V)	AC-5b (230V)	AC-6a (230V)	AC-15 (230V)	DC-1 (24V, 48V)	DC-3 (24V, 48V)	DC-5 (24V, 48V)	DC-13 (24V, 48V)	LED	AC-6b, AC-7c (230V)
rated current	25A	14A	8,5A	11,2A	8,8A	2,8A	6A	25A, 20A	15A, 8A	15A, 5A	6A	3,8A per contact	switching capacity 36 uF

VS440

type of load	AC-1, AC-7a, AC-21	AC-2	AC-3, AC-3e, AC-7b, AC23	AC-5a (230V)	AC-5b (230V)	AC-6a (230V)	AC-15 (230V)	DC-1 (24V, 48V)	DC-3 (24V, 48V)	DC-5 (24V, 48V)	DC-13 (24V, 48V)	LED	AC-6b, AC-7c (230V)
rated current	40A	25A	22A	20A	17,6A	10,8A	6A	40A, 25A	22A, 10A	20A, 8A	6A, 4A	11A per contact	switching capacity 220 uF

VS463

type of load	AC-1, AC-7a, AC-21	AC-2	AC-3, AC-3e, AC-7b, AC23	AC-5a (230V)	AC-5b (230V)	AC-6a (230V)	AC-15 (230V)	DC-1 (24V, 48V)	DC-3 (24V, 48V)	DC-5 (24V, 48V)	DC-13 (24V, 48V)	LED	AC-6b, AC-7c (230V)
rated current	63A	32A	30A	32A	22A	17,2A	6A	63A, 26A	25A, 11A	25A, 10A	6A, 4A	18A per contact	switching capacity 330 uF

Load capacity of switching elements iNELS - BUS

Minimum load		
Relay contact	mV	V/mA
$AgSnO_2$	1000	10/100

Minimum load		
Relay contact	mV	V/mA
AgNi	300	5/10

GCR3-11, GCH3-31, SA3-02B, SA3-06M, WMR3-21, SA3-014M, JA3-014M, RC3-610M/DALI, IOU3-108M

Type of load									
	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material $AgSnO_2$, contact 8 A	250 V/8 A	250 V/2.5 A	250 V/1.5 A	230 V/1.5 A (345 VA)	230 V/1.5 A (345 VA) till max output C=14uF	250 W	X	250 V/1 A	250 V/1 A
Type of load									
	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material $AgSnO_2$, contact 8 A	250 V/3 A	250 V/3 A	250 V/3 A	24 V/4 A	24 V/2 A	24 V/1.5 A	24 V/4 A	24 V/1 A	24 V/1 A

SA3-04M, SA3-022M (RE7 - RE-10), SA3-01B

Type of load									
	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material $AgSnO_2$, contact 16 A	250 V/16 A	250 V/3 A	250 V/2 A	230 V/3 A (690 VA)	230 V/3 A (690 VA) till max output C=14uF	1500 W	x	250 V/3 A	250 V/10 A
Type of load									
	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material $AgSnO_2$, contact 16 A	250 V/6 A	250 V/6 A	250 V/6 A	24 V/8 A	24 V/4 A	24 V/3 A	24 V/8 A	24 V/2 A	24 V/2 A

SA3-02B/Ni*, SA3-06M/Ni*

Type of load									
	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material AgNi contact 8 A	250 V/8 A	250 V/1.5 A	250 V/1 A	230 V/1.5 A (345 VA)	x	400 W	x	250 V/0.5 A	250 V/5 A
Type of load									
	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material AgNi contact 8 A	250 V/2 A	250 V/2 A	250 V/2 A	24 V/4 A	24 V/2 A	24 V/1.5 A	24 V/4 A	24 V/1 A	24 V/0.5 A

SA3-04M/Ni*

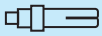
Type of load									
	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material AgNi contact 16 A	250 V/16 A	250 V/2.25 A	250 V/1.5 A	230 V/3 A (690 VA)	x	800 W	x	250 V/1 A	250 V/10 A
Type of load									
	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material AgNi contact 16 A	250 V/4 A	250 V/4 A	250 V/4 A	24 V/8 A	24 V/4 A	24 V/3 A	24 V/8 A	24 V/2 A	24 V/1 A

SA3-022M (RE1 - RE6, OUT1 - OUT2, RE11 - RE16, SHUTTER), EA3-022M (RE1 - RE6, OUT1 - OUT2, RE11 - RE16, SHUTTER), FA3-612M (FAN1 - FAN3, RE)

Type of load				
	AC1	AC3	AC15	DC1
Contact material AgNi contact 6 A	250 V/6 A	230 V/0.8 A	230 V/1.3 A	30 V/3 A 110 V/0.2 A 220 V/0.12 A

Demonstrated symbols are informative.
*Products with AgNi contact only up on request for extra charge.

Load capacity of switching elements iNELS - BUS

Load	bulbs, halogen bulbs	12–24 V low-voltage bulbs, coil transformers	12–24 V low-voltage bulbs, electric transformers	LEDs/LED strip*	energy-saving fluorescent tubes	control method	
							
	R	L	C	dimmable	dimmable	entering edge	trailing edge
DA3-22M	•	•	•	•	•	•	•
DA3-66M	•	•	•	•	•	•	•
DA3-03M/RGBW	–	–	–	•	–	–	–