Control relays and plug-in control relays

Applications		Equipment based on control relays	
		control relays	Mini-control relays
			
Control voltages	**a**	24…660 V	12…690 V
	c	12…440 V	12…250 V
Functions			
Instantaneous relays		**p**	**p**
On-delay or Off-delay relays		**p**	**p**
Latching relays		**p**	–
Fleeting contact relays		–	–
Flashing relays		–	–
Features		Low consumption version for **c**	
		Linked contacts (in accordance with INRS and BIA specifications)	
		–	
		–	
Number of contacts	On basic device	4 N/C or N/O combined double break	4 N/C or N/O combined double break
	On auxiliary contact blocks	8 N/C or N/O combined double break	4 N/C or N/O combined double break
Rated conventional thermal current		10 A	
Operational voltage		Up to 660 V	
Durability			
	1 A/230 V, AC-15	3 million operating cycles	2 million operating cycles
	1 A/24 V, DC-13	10 million operating cycles	6 million operating cycles
Device type references		CA**p**-D	CA**p**-K
Pages		28103/2 and 28103/3	22003/2

p *Applicable*

Equipment based on plug-in control relays

Plug-in control relays	Universal type plug-in control relays	Miniature plug-in control relays
		
12…240 V	24…230 V (other voltages available on request)	24…230 V (other voltages available on request)
5…240 V	24 or 48 V (other voltages available on request)	12, 24, 48 or 110 V (other voltages available on
p	p	p
p	p	–
p	–	–
p	p	–
p	p	–

Low consumption as standard, for **a** and **c**

–

Version with low level contacts (gold flashed contacts)	–
–	Other functions and connections available on request
4 C/O (Off-delay, On-relay)	2 or 3 C/O (Off-delay, On-relay)	2 or 4 C/O (Off-delay, On-relay)
–	–	–
5 A	10 A (RUN-21 and RUN-31), 4 A (RUN-33)	5 A

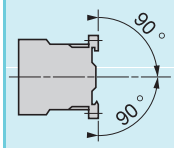
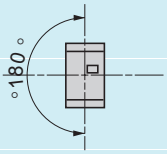
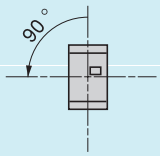
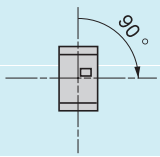
Up to 250 V

400 000	500 000	300 000
–	–	–
RH	**RU**	**RX**
28003/2 to 28003/5	28031/6	28021/5

Control relays

K control relays

Environment

Conforming to standards			IEC 947, NF C 63-140, VDE 0660, BS 5424		
Approvals			UL, CSA		
Operating position	**Vertical axis**	**Horizontal axis**			
					
	Without derating	Without derating	Possible positions for **CA2-K** only, with derating, please consult your Regional Sales Office.		
Connection			Min	Max	Max to IEC 947
Screw clamp connections	Solid conductor	**mm²**	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible cable without cable end	**mm²**	1 x 0.75	2 x 4	2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminal connections	Solid conductor	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible conductor without cable end	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
Faston connectors	Clip	**mm**	2 x 2.8 or 1 x 6.35		
Solder pins for printed circuit board	With locating device between power circuit and control circuit		4 mm x 35 microns		
Tightening torque	Philips head n° 2 and Ø 6	**N.m**	0.8…1.3		
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		
Protective treatment	Conforming to IEC 68 (DIN 50016)		"TC" (Klimafest, Climateproof)		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact (devices with screw clamp terminals or pins for printed circuit board)		
Ambient air temperature around the device	Storage	**°C**	- 50...+ 80		
	Operation	**°C**	- 25...+ 50		
Maximum operating altitude	Without derating	**m**	2000		
Vibration resistance 5...300 Hz	Control relay open		2 g		
	Control relay closed		4 g		
Flame resistance	Conforming to UL 94		Self-extinguishing material V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock resistance (half sine wave, 11 ms)	Control relay open		10 g		
	Control relay closed		15 g		
Safe circuit separation	Conforming to VDE 0106 and IEC 536		VLSV (Very Low Safety Voltage), up to 400 V		

Control circuit characteristics

Type of control relay			**CA2-K**	**CA3-K**	**CA4-K**
Rated control circuit voltage (Uc)		**V**	∿ 12...690	⎓ 12...250	⎓ 12...120
Control voltage limits (≤ 50 °C) single-voltage coil	For operation		0.8...1.15 Uc	0.8...1.15 Uc	0.7...1.3 Uc
	For drop-out		≤ 0.2 Uc	≤ 0.1 Uc	≤ 0.1 Uc
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–	–
	Standard ⎓ coil		–	20	–
	Wide range, low consumption ⎓ coil		–	–	30
Maximum operating rate	In operating cycles per hour		10 000	10 000	6000
Average consumption at 20 °C and at Uc	Inrush		30 VA	3 W	1.8 W
	Sealed		4.5 VA	3 W	1.8 W
Heat dissipation		**W**	1.3	3	1.8
Operating time at 20 °C and at Uc	Between coil energisation and - opening of the N/C contacts	**ms**	5...15	25...35	25...35
	Between coil energisation and - closing of the N/O contacts	**ms**	10...20	30...40	30...40
	Between coil de-energisation and - opening of the N/O contacts	**ms**	10...20	10	10...20
	Between coil de-energisation and - closing of the N/C contacts	**ms**	15...25	15	15...25
Maximum immunity to micro breaks		**ms**	2	2	2

References : pages 22003/2 and 22003/3 Dimensions : page 22004/2 Schemes : page 22004/3

Control relays
K control relays

Contact characteristics of control relays and instantaneous contact blocks

Number of contacts	On **CA●-K**			4
	On **LA1-K**			2 or 4 for CA2-K and CA3-K: 2 for CA4-K
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to BS 5424		**V**	690
	Conforming to IEC 947		**V**	690
	Conforming to VDE 0110 group C		**V**	750
	Conforming to CSA C 22-2 n° 14		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C		**A**	10
Operational current frequency			**Hz**	Up to 400
Minimum switching capacity	U min (DIN 19 240)		**V**	17
	I min		**mA**	5
Short-circuit protection	Conforming to IEC 947 and VDE 0660, gG fuse		**A**	10
Rated making capacity	Conforming to IEC 947	I rms	**A**	110
Overload current	Permissible for	1 s	**A**	80
		500 ms	**A**	90
		100 ms	**A**	110
Insulation resistance			**MΩ**	> 10
Make before break distance	**CA●-K and LA1-K**: linked contacts as per INRS, BIA and CNA specifications		**mm**	0.5 (see schemes, page 22004/3)

Operational power of contacts
Conforming to IEC 947

a.c. supply, category AC-15
Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times breaking current (cos φ 0.4).

V	**24**	**48**	**110/ 127**	**220/ 230**	**380/ 400**	**440**	**600/ 690**
1 million operating cycles **VA**	48	96	240	440	800	880	1200
3 million operating cycles **VA**	17	34	86	158	288	317	500
10 million operating cycles **VA**	7	14	36	66	120	132	200
Occasional making capacity **VA**	1000	2050	5000	10,000	14,000	13,000	9000

d.c. supply, category DC-13
Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

V	**24**	**48**	**110**	**220**	**440**	**600**
W	120	80	60	52	51	50
W	55	38	30	28	26	25
W	15	11	9	8	7	6
W	720	600	400	300	230	200

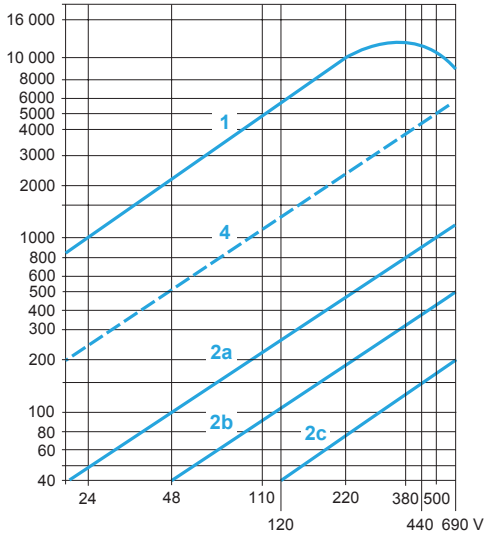
1 Breaking limit of contacts valid for:
- maximum of 50 operating cycles at 10 s intervals (breaking current = making current x cos φ 0.7).

2 Electrical durability of contacts for:
- 1 million operating cycles (2a),
- 3 million operating cycles (2b),
- 10 million operating cycles (2c).

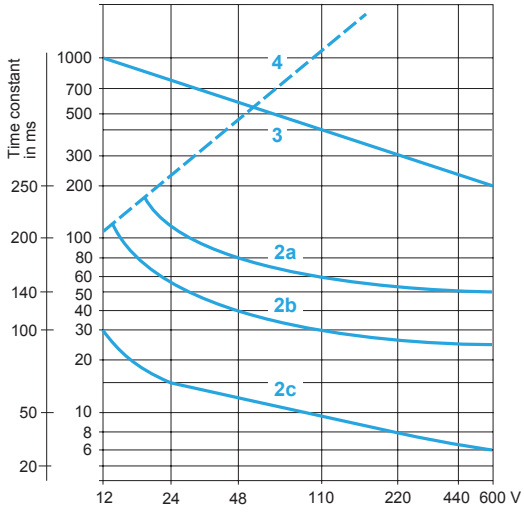
3 Breaking limit of contacts valid for:
- maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit.

Power broken in VA



Power broken inW



References : page 22003/4
Dimensions : page 22004/2
Schemes : page 22004/3

Control relays

K control relays
For control circuit: a.c. or d.c.

a or c

CA2-KN40pp

Control relays for a.c. control circuit

- Mounted on 35 mm ⊽ rail or Ø 4 screw fixing.
- Screws in open “ready-to-tighten” position.

Control circuit Consumption	Auxiliary contacts		Basic reference. Complete with code indicating control circuit voltage (2)	Weignt kg
Screw clamp connections				
4.5 VA	4	–	**CA2-KN40pp**	0.180
	3	1	**CA2-KN31pp**	0.180
	2	2	**CA2-KN22pp**	0.180
Spring terminal connections				
4.5 VA	4	–	**CA2-KN403pp**r	0.180
	3	1	**CA2-KN313pp**r	0.180
	2	2	**CA2-KN223pp**r	0.180
Faston connectors, 1 x 6.35 or 2 x 2.8				
4.5 VA	4	–	**CA2-KN407pp**	0.180
	3	1	**CA2-KN317pp**	0.180
	2	2	**CA2-KN227pp**	0.180
Solder pins for printed circuit boards				
4.5 VA	4	–	**CA2-KN405pp**	0.210
	3	1	**CA2-KN315pp**	0.210
	2	2	**CA2-KN225pp**	0.210

CA2-KN403pp

CA3-KN407pp

Control relays for d.c. control circuit

- Mounted on 35 mm ⊽ rails or Ø 4 screw connections.
- Screws in open “ready-to-tighten” position.

Screw clamp connections				
3 W	4	–	**CA3-KN40pp**	0.225
	3	1	**CA3-KN31pp**	0.225
	2	2	**CA3-KN22pp**	0.225
Spring terminal connections				
3 W	4	–	**CA3-KN403pp**r	0.225
	3	1	**CA3-KN313pp**r	0.225
	2	2	**CA3-KN223pp**r	0.225
Faston connectors, 1 x 6.35 or 2 x 2.8				
3 W	4	–	**CA3-KN407pp**	0.225
	3	1	**CA3-KN317pp**	0.225
	2	2	**CA3-KN227pp**	0.225
Solder pins for printed circuit boards				
3 W	4	–	**CA3-KN405pp**	0.255
	3	1	**CA3-KN315pp**	0.255
	2	2	**CA3-KN225pp**	0.255

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

Control relays CA2-K (0.8...1.15 Uc) (*0.85...1.1 Uc*)

Volts a 50/60 Hz	**12**	**20**	**24**(3)	**36**	**42**	**48**	**110**	**115**	**127**	***220/ 230***	**230**	***230/ 240***	***380/ 400***	**400**	***400/ 415***	**440**	**500**	***660/ 690***
Code	J7	Z7	B7	C7	D7	E7	F7	FE7	FC7	*M7*	P7	*U7*	Q7	V7	*N7*	R7	S7	*Y7*

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**

Control relays CA3-K (0.8...1.15 Uc)

Volts c	**12**	**20**	**24**(3)	**36**	**48**	**60**	**72**	**100**	**110**	**125**	**200**	**220**	**230**	**240**	**250**
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

r Available 2nd half of 1999

(3) When connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (a control voltage code Z7, c control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

Characteristics : pages 22002/2 and 22002/3
Dimensions : page 22004/2
Schemes : page 22004/3

Control relays

K control relays
For control circuit: a.c. or d.c.

a or c

CA4-KN40ppp

Low consumption control relays (a.c. control circuit)

- Mounted on 35 mm ⊽ rail or Ø 4 screw fixing.
- Screws in open “ready-to-tighten” position.

Control circuit Consumption	Auxilliary contacts		Basic reference. Complete with code indicating control circuit voltage (2)	Weight kg
Screw clamp connections				
1.8 W	4	–	**CA4-KN40pp**	0.235
	3	1	**CA4-KN31pp**	0.235
	2	2	**CA4-KN22pp**	0.235
Spring terminal connections				
1.8 W	4	–	**CA4-KN403ppr**	0.235
	3	1	**CA4-KN313ppr**	0.235
	2	2	**CA4-KN223ppr**	0.235
Faston connectors, 1 x 6.35 or 2 x 2.8				
1.8 W	4	–	**CA4-KN407pp**	0.235
	3	1	**CA4-KN317pp**	0.235
	2	2	**CA4-KN227pp**	0.235
Solder pins for printed circuit boards				
1.8 W	4	–	**CA4-KN405pp**	0.265
	3	1	**CA4-KN315pp**	0.265
	2	2	**CA4-KN225pp**	0.265

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

Control relays CA4-K (Wide range coil: 0.7...1.3 Uc)

Volts c	**12**	**20**	**24**	**48**	**72**	**110**	**120**
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

r Available
2nd half of 1999

Characteristics : pages 22002/2 and 22002/3
Dimensions : page 22004/2
Schemes : page 22004/3

Control relays

K control relays
Instantaneous and time delay auxiliary contact blocks

LA1-KN20

LA1-KN40

Instantaneous auxiliary contact blocks

Clip-on front mounting, 1 block per control relay

Type of connection	Composition		Reference	Weight
				kg
Screw clamp	2	–	**LA1-KN20**	0.045
	–	2	**LA1-KN02**	0.045
	1	1	**LA1-KN11**	0.045
	4	–	**LA1-KN40** (1)	0.045
	3	1	**LA1-KN31** (1)	0.045
	2	2	**LA1-KN22** (1)	0.045
	1	3	**LA1-KN13** (1)	0.045
	–	4	**LA1-KN04** (1)	0.045
Spring terminal	2	–	**LA1-KN203** ◤	0.045
	–	2	**LA1-KN023** ◤	0.045
	1	1	**LA1-KN113** ◤	0.045
	4	–	**LA1-KN403** (1) ◤	0.045
	3	1	**LA1-KN313** (1) ◤	0.045
	2	2	**LA1-KN223** (1) ◤	0.045
	1	3	**LA1-KN133** (1) ◤	0.045
	–	4	**LA1-KN043** (1) ◤	0.045
Faston connectors 1 x 6.35 or 2 x 2.8	2	–	**LA1-KN207**	0.045
	–	2	**LA1-KN027**	0.045
	1	1	**LA1-KN117**	0.045
	4	–	**LA1-KN407** (1)	0.045
	3	1	**LA1-KN317** (1)	0.045
	2	2	**LA1-KN227** (1)	0.045
	1	3	**LA1-KN137** (1)	0.045
	–	4	**LA1-KN047** (1)	0.045

Electronic time delay contact blocks

LA2-KT2p

- Relay output with common point changeover contact, a or c 240 V, 2 A maximum
- Control voltage: 0.85...1.1 Uc
- Maximum switching capacity: 250 VA or 150 W
- Operating temperature: - 10...+ 60 °C
- Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period

Clip-on front mounting, 1 block per control relay

Voltage	Type	Timing range	Composition	Reference	Weight
V		**s**			kg
a or c 24...48	On-delay	1...30	1	**LA2-KT2E**	0.040
a 110...240	On-delay	1...30	1	**LA2-KT2U**	0.040

For other electronic timers type RE4, see pages 28402/2 to 28402/7.

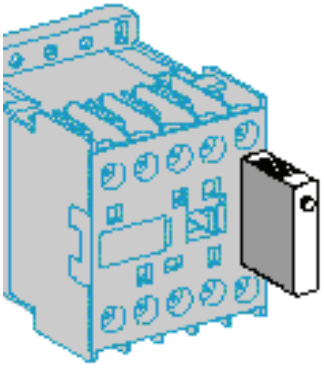
(1) Block of 4 contacts for use only on CA2-K and CA3-K

◤ Available
2nd half of 1999

Characteristics : page 22002/3
Dimensions : page 22004/2
Schemes : page 22004/3

Control relays

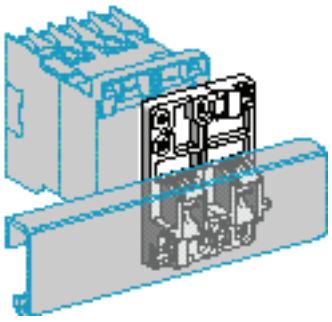
K control relays
Mounting and marking accessories



LA4-Kppp

Suppressor modules incorporating LED indicator

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference	Weight kg
Clips onto front of relay with locating device. No tools required for connection.	Varistor (1)	a and c 12...24 V	5	**LA4-KE1B**	0.010
		a and c 32...48 V	5	**LA4-KE1E**	0.010
		a and c 50...129 V	5	**LA4-KE1FC**	0.010
		a and c 130...250 V	5	**LA4-KE1UG**	0.010
	Diode + Zener diode (2)	c 12...24 V	5	**LA4-KC1B**	0.010
		c 32...48 V	5	**LA4-KC1E**	0.010
	RC (3)	a 220...250 V	5	**LA4-KA1U**	0.010



LA9-D973

Mounting accessories

Description	Application		Sold in lots of	Unit reference	Weight kg
Mounting plates	On 1 4 rail	Clip-on fixing	1	**LA9-D973**	0.025
	On 2 4 rails	110/120 mm fixing centres	10	**DX1-AP25**	0.065

Marking accessories

Description	Application		Sold in lots of	Unit reference	Weight kg
Marker holder	Clip-on fixing on front face	–	100	**LA9-D90**	0.001
Clip-in markers	4 maximum per relay	Strips of 10 identical numbers 0 to 9	25	**AB1-Rp** (4)	0.002
		Strips of 10 identical capital letters A to Z	25	**AB1-Gp** (4)	0.002

(1) Protection by limitation of the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight time delay on drop-out (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillation frequency.
Polarised component.
Slight time delay on drop-out (1.1 to 1.5 times the normal time).
(3) Protection by limitation of the transient voltage to 3 Uc max and limitation of the oscillation frequency.
Slight time delay on drop-out (1.2 to 2 times the normal time).
(4) Complete the reference by replacing the **p** with the required character.

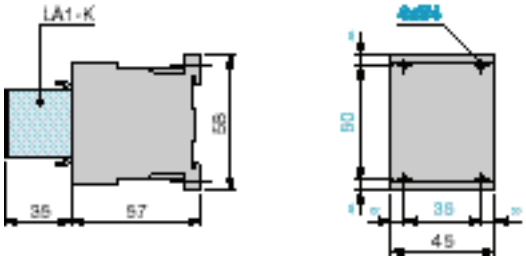
Dimensions :
page 22004/2

Auxiliary control relays

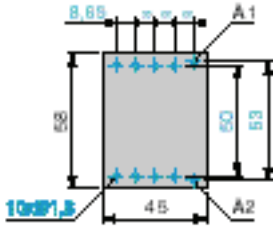
K auxiliary control relays

Auxiliary control relays
CA2-K, CA3-K, CA4-K

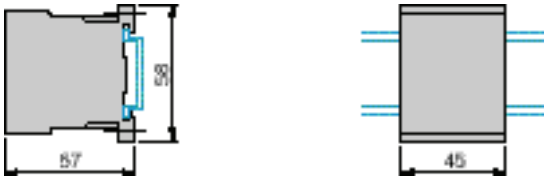
On panel



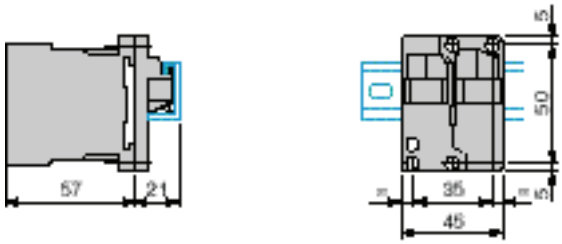
On printed circuit board



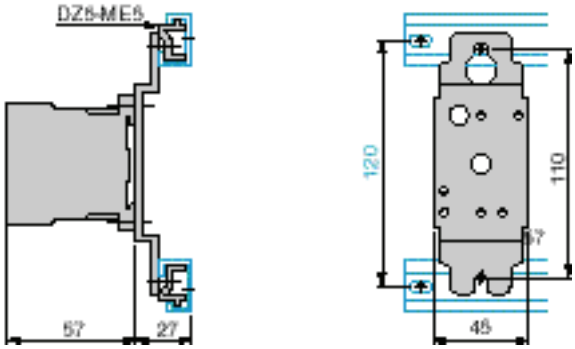
On mounting rail AM1-DP200 or AM1-DE200 (▼ 35 mm)



On asymmetrical rail with clip-on mounting plates
LA9-D973

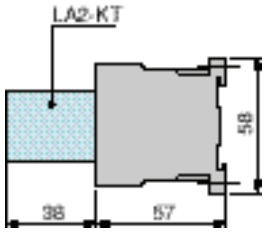


DX1-AP25



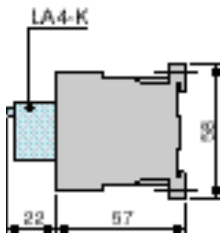
Electronic time delay contact blocks
LA2-KT

On auxiliary control relay



Suppressor modules
LA4-K

On auxiliary control relay



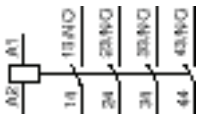
Characteristics : pages 22002/2 and 22003/3
References : pages 22003/2 to 22003/5
Schemes : page 22004/3

Auxiliary control relays

K auxiliary control relays

Auxiliary control relays
CA2-K, CA3-K, CA4-K

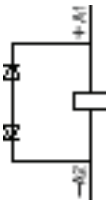
4 N/O



3 N/O + 1 N/C

2 N/O + 2 N/C

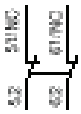
With integral suppression device
CA4-K



Instantaneous auxiliary contact blocks LA1-K
for CA2-K, CA3-K, CA4-K

2 N/O
LA1-KN20
LA1-KN207

2 N/C
LA1-KN02
LA1-KN027



1 N/O + 1 N/C
LA1-KN11
LA1-KN117

for CA2-K, CA3-K

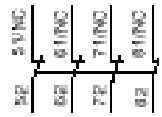
4 N/O
LA1-KN40
LA1-KN407

3 N/O + 1 N/C
LA1-KN31
LA1-KN317

2 N/O + 2 N/C
LA1-KN22
LA1-KN227

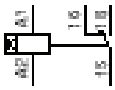
1 N/O + 3 N/C
LA1-KN13
LA1-KN137

4 N/C
LA1-KN04
LA1-KN047

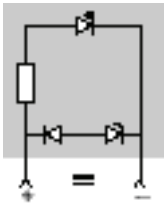


Electronic time delay contact blocks LA2-KT
for CA2-K, CA3-K, CA4-K

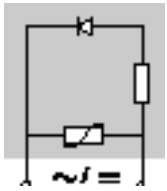
1 C/O
LA2-KT2



Suppressor modules
LA4-KC



LA4-KE



Characteristics :
pages 22002/2 and 22002/3

References :
pages 22003/2 to 22003/5

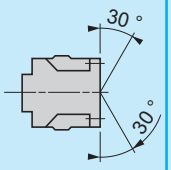
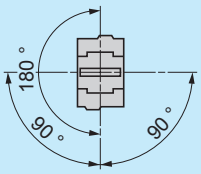
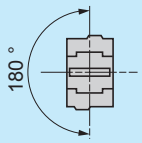
Dimensions :
page 22004/2

Control relays

CA2-D and CA3-D control relays

References :
pages 28103/2 and 28103/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Type of control relay			CA2-DN, DK, DC	CA3-DN, DK, DC
Environment				
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1 Overvoltage category III and degree of pollution 3	**V**	690	690
	Conforming to UL, CSA	**V**	600	600
Rated shock resistance voltage (Uimp)	Conforming to IEC 947	**kV**	8	8
Separation of electric circuits	Conforming to IEC 536 and VDE 0106		Reinforced insulation up to 400 V	
Conforming to standards			IEC 947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 68		"TH"	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	**°C**	- 60…+ 80	- 60…+ 80
	Operation	**°C**	- 5…+ 55	- 5…+ 55
	Operation at Uc	**°C**	- 40…+ 70	- 40…+ 70
Maximum operating altitude	Without derating	**m**	3000	3000
Operating positions	Without derating in the following positions				
Shock resistance (1) semi-sinusoidal wave for 11 ms	Control relay open		10 gn	8 gn
	Control relay closed		15 gn	11 gn
Vibration resistance (1) 5…300 Hz	Control relay open		2 gn	2 gn
	Control relay closed		4 gn	3 gn
Cabling	Flexible or rigid cable with or without cable end	**mm²**	Min : 1 x 1; max : 2 x 2.5	Min : 1 x 1; max : 2 x 2.5

(1) In the least favourable direction, without change of contact state, with coil supplied at Uc.

Control circuit characteristics

Rated control circuit voltage (Uc)		**V**	12…660		12…600	
Control circuit voltage limits	Operational		With 50 or 60 Hz coil : 0.8…1.1 Uc With 50 or 60 Hz coil : 0.85…1.1 Uc at 60 Hz 0.8…1.1 Uc at 50 Hz		With standard coil : 0.8…1.1 Uc With wide range coil : 0.7…1.25 Uc	
	Drop-out		0.3…0.6 Uc		0.1…0.25 Uc	
Average consumption at 20 °C and at Uc	∿ 50 Hz	**VA**	Inrush : 60 ; sealed : 7		–	
	∿ 60 Hz	**VA**	Inrush : 70 ; sealed : 7.5		–	
	∿ 50/60 Hz (at 50 Hz)	**VA**	Inrush : 70 ; sealed : 8		–	
	With standard coil	**W**	–		Inrush or sealed : 9	
	With wide range coil	**W**	–		Inrush or sealed : 11	
Operating time (at rated control circuit voltage and at 20 °C)	Between coil energisation and					
	- opening of the N/C contacts	**ms**	6…20		35…43	
	- closing of the N/O contacts	**ms**	12…22		40…48	
	Between coil de-energisation and					
	- opening of the N/O contacts	**ms**	4…12		6…14	
	- closing of the N/C contacts	**ms**	6…17		11…19	
Minimum pulse time	For latching or unlatching of the **CA●-DK**	**ms**	40		100	
Short supply failures	Max. duration without affecting hold-in of device	**ms**	2		2	
Maximum operating rate	In operating cycles per second		3		3	
			CA2-DN,DC	**CA2-DK**	**CA3-DN, DC**	**CA3-DK**
Mechanical life In millions of operating cycles	With 50 or 60 Hz coil		20	10	–	–
	50/60 Hz (at 50 Hz)		30	10	–	–
	standard ⎓		–	–	30	10
	wide range ⎓		–	–	30	10

Control relays

CA2-D and CA3-D control relays

References :
pages 28103/2 and 28103/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Instantaneous contact characteristics

Number of contacts	On **CA●-D**			4
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1		**V**	690
	Conforming to UL, CSA		**V**	600
Rated thermal current (Ith)	For ambient temperature ≤ 40 °C		**A**	10
Operating current frequency			**Hz**	25…400
Minimum switching capacity	U min		**V**	17
	I min		**mA**	5
Short-circuit protection	Conforming to IEC 947-5-1			gI fuse : 10 A
Rated making capacity	Conforming to IEC 947-5-1 I rms		**A**	∼ : 140, ⎓ : 250
Short time rating	Permissible for	1 s	**A**	100
		500 ms	**A**	120
		100 ms	**A**	140
Insulation resistance			**MΩ**	> 10
Non-overlap time	Guaranteed between N/C and N/O contacts		**ms**	1.5 (on energisation and on de-energisation)
Tightening torque	Crosshead screws no.2 and Ø 6			**N.m** 1.2
Non-overlap distance				Contacts to be used with LA1-D control relays

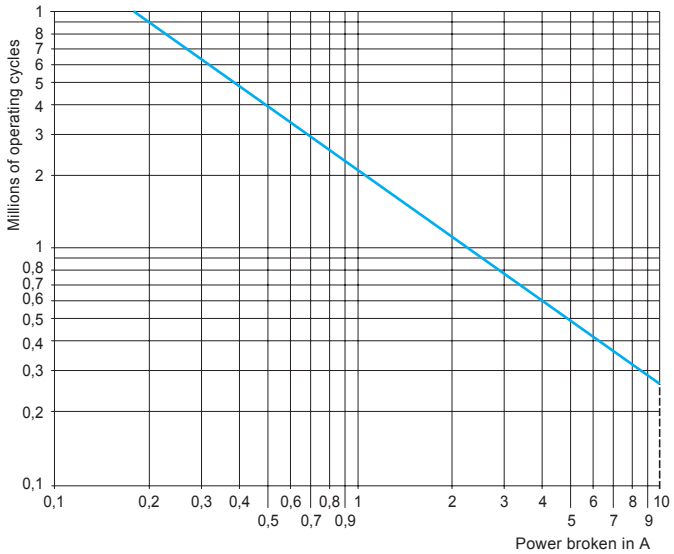
Rated operating power of contacts
conforming to IEC 947-5

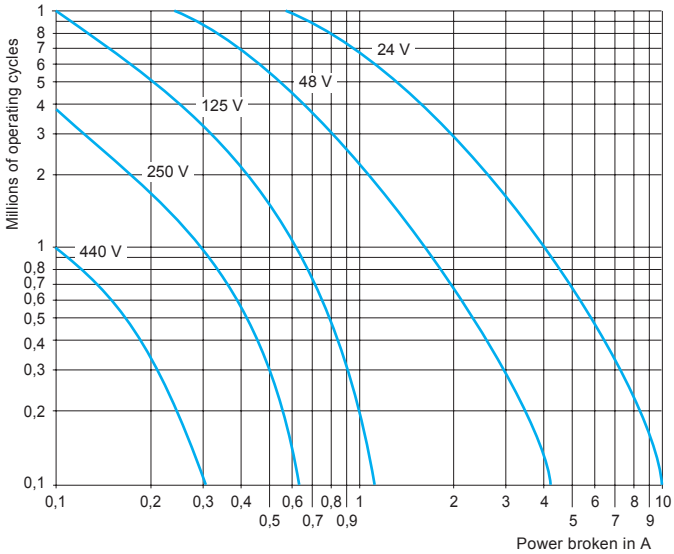
a.c. supply, categories AC-14 and AC-15
Electrical life (up to 3600 cycles/hour) on an inductive load such as the coil of an electromagnet : making power (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

	V	**24**	**48**	**115**	**230**	**400**	**440**	**600**
1 million operating cycles	**VA**	60	120	280	560	960	1050	1440
3 million operating cycles	**VA**	16	32	80	160	280	300	420
10 million operating cycles	**VA**	4	8	20	40	70	80	100

d.c. supply, category DC-13
Electrical life (up to 3600 cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

	V	**24**	**48**	**125**	**250**	**440**
1 million operating cycles	**W**	96	76	76	76	44
3 million operating cycles	**W**	48	38	38	32	–
10 million operating cycles	**W**	14	12	12	–	–





Control relays

CA2-D and CA3-D control relays
Auxiliary contact blocks (without dust and damp protected contacts)

References :
pages 28104/2 and 28104/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Environment

Conforming to standards			IEC 947-5-1, NF C 63-140, VDE 0660, BS 4794
Product certifications			UL, CSA (1)
Protective treatment	Conforming to IEC 68		"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	**°C**	- 60…+ 80
	Operation	**°C**	- 5…+ 55
	Permissible for operation at Uc	**°C**	- 40…+ 70
Maximum operating altitude	Without derating	**m**	3000
Cabling	Flexible or rigid cable, with or without cable end	**mm²**	Min : 1 x 1; max : 2 x 2.5
Tightening torque		**N.m**	1.2

Instantaneous and time delay contact block characteristics

Type of contact block			**LA1-D**	**LA2-D**	**LA3-D**	**LA8-D**
Number of contacts			2 or 4	2	2	2
Rated operating voltage (Ue)	Up to	**V**	660			
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1	**V**	690			
	Conforming to UL, CSA	**V**	600			
Rated thermal current (Ith)	Ambient temperature 40 °C	**A**	10			
Operating current frequency		**Hz**	25…400			
Minimum switching capacity	U min	**V**	17			
	I min	**mA**	5			
Short-circuit protection	Conforming to 947-5-1	**A**	10 gG fuse			
Rated making capacity	Conforming to IEC 947-5-1 I rms	**A**	∼ : 140 ; ⎓ : 250			
Short time rating	Permissible for 1 s	**A**	100			
	500 ms	**A**	120			
	100 ms	**A**	140			
Insulation resistance		**M**	>10			
Non-overlap time	Guaranteed between N/C and N/O contacts	**ms**	1.5 (on energisation and on de-energisation)			
Overlap time	Guaranteed between N/C and N/O contacts on **LA1-DC22**	**ms**	1.5	–	–	–
Time delay (LA2-D and LA3-D contact blocks) Accuracy only valid for setting range indicated on front face	Ambient air temperature for operation	**°C**	–	- 40…+ 70	- 40…+ 70	–
	Repeat accuracy		–	± 2 %	± 2 %	–
	Drift up to 0.5 million operating cycles		–	+ 15 %	+ 15 %	–
	Drift depending on ambient air temperature		–	0.25 % per °C	0.25 % per °C	–
Mechanical durability	In millions of operating cycles		30	5	5	30
Operational power of contacts	The same as that of the control relay : see page 28101/3.					

(1) LA1-D conforms to INRS requirements in association with a control relay CA●-D.

CA2-D and CA3-D control relays
Mechanical latch blocks

References :
pages 28104/2 and 28104/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Environment

Conforming to standards			IEC 947-5-1, NF C 63-140, VDE 0660, BS 4794
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 68		"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	**°C**	- 60…+ 80
	Operation	**°C**	- 5…+ 55
	Permissible for operation at Uc	**°C**	- 40…+ 70
Maximum operating altitude	Without derating	**m**	3000
Cabling	Flexible or rigid cable, with or without cable end	**mm²**	Min : 1 x 1; max : 2 x 2.5
Tightening torque		**N.m**	1.2

Mechanical latch block characteristics

Product certifications			UL, CSA
Type of mechanical latch block			**LA6-DK10** 50-60 Hz and ⎓
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1	**V**	690
Rated control circuit voltage (Uc)		**V**	24…415
Power required for unlatching	on unlatching	**VA**	25
		W	30
Maximum operating rate	In operating cycles/hour		1200
Load factor		**%**	10
Mechanical durability (at Uc)	In millions of operating cycles		0.5
Unlatching control	Pulsed		Manual or electrical
Operating precautions			**LA6-DK** and **CA●-D** must not be energised or held simultaneously

Duration of control signal ≥ 100 ms.

CA2-D and CA3-D control relays
Auxiliary contact blocks (with dust and damp protected contacts)

References :
pages 28104/2 and 28104/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Type of contact block			LA1-DX	LA1-DZ	LA1-DY
Environment					
Conforming to standards			IEC 947-5-1, VDE 0660		
Product certifications			UL, CSA		
Protective treatment	Conforming to IEC 68		"TH"	"TH"	"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X		
Ambient air temperature around the device	Storage	°C	- 25…+ 70	- 25…+ 70	- 25…+ 70
	Operation	°C	- 25…+ 70	- 25…+ 70	- 25…+ 70
Cabling	Flexible or rigid cable with or without cable end	mm^2	Min : 1 x 1 Max : 2 x 2.5	Min : 1 x 1 Max : 2 x 2.5	Min : 1 x 1 Max : 2 x 2.5
Number of contacts			2	4 (2 not dust & damp protected)	2
Characteristics of dust and damp protected contacts					
Rated operational voltage (Ue)	Up to	V	50	50	24
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1	V	250	250	250
Maximum operational current (Ie)		mA	500	500	50
Minimum switching capacity	U min	V	17	17	3
	I min	mA	4	4	0.3
Insulation resistance		M	> 10	> 10	> 10
Mechanical durability	In millions of operating cycles		5	5	5
Materials and technology used for dust and damp protected contacts			Silver Single break	Silver Single break	Gold Single break with crossed bars
Characteristics of non dust and damp protected contacts					
Rated operational voltage (Ue)	Up to	V	–	660	–
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1	V	–	690	–
	Conforming to UL, CSA	V	–	600	–
Rated thermal current (Ith)	Ambient temperature 40 °C	A	–	10	–
Operating current frequency		Hz	–	25…400	–
Minimum switching capacity	U min	V	–	17	–
	I min	mA	–	5	–
Short-circuit protection	Conforming to IEC 947-5-1	A	–	10 gG fuse	–
Rated making capacity	Conforming to IEC 947-5-1 I rms	A	–	~ : 140, ⎓ : 250	–
Short time rating	Permissible for 1 s	A	–	100	–
	500 ms	A	–	120	–
	100 ms	A	–	140	–
Insulation resistance		M	–	> 10	–
Operating power of contacts	The same as those of control relay contacts : see page 28101/3.				

CA2-D and CA3-D control relays
Electronic serial timer modules

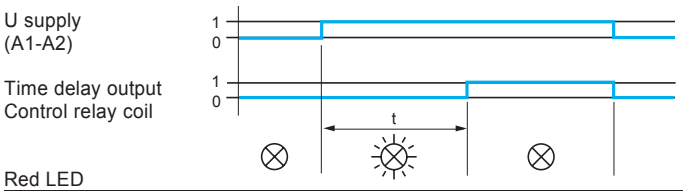
References :
page 28104/4
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

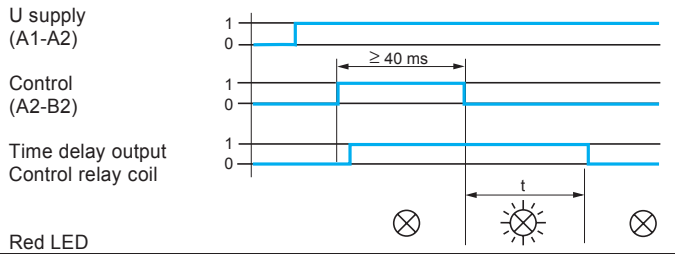
Type of module			LA4-DT (On-delay)	LA4-DR (Off-delay)
Environment				
Conforming to standards			IEC 255-5	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 68		"TH"	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	°C	- 40…+ 80	
	Operation	°C	- 25…+ 55	
	Operation at Uc	°C	- 25…+ 70	
Rated insulation voltage (Ui)	Conforming to IEC 947-1	V	250	
Cabling	By screwdriver		Crosshead screws no.2 and ø 6 mm	
	Flexible or rigid cable	mm^2	Min : 1 x 1	
	with or without cable end		Max : 2 x 2.5	
Control circuit characteristics				
Built-in protection	On input		By varistor	By varistor
	Suppression		By varistor	By directional peak limiting diode
Rated control circuit voltage (Uc)		V	∼ or ⎓ 24…250	∼ 24…250
Permissible variation			0.8…1.1 Uc	0.8…1.1 Uc
Type of control			By mechanical contact only	By mechanical contact only, connecting cable < 10 m
Time delay characteristics				
Timing ranges		s	0.1…2 ; 1.5…30 ; 25…500	0.1…2 ; 1.5…30 ; 25…500
Repeat accuracy	0…40 °C		± 3 % (10 ms minimum)	± 3 % (10 ms minimum)
Reset time	During the time delay	ms	100	225
	After the time delay	ms	50	–
Immunity to micro-breaks	During the time delay	ms	10	20
	After the time delay	ms	2	–
Minimum control pulse duration		ms	–	40
Indication of time delay	By LED		Illuminates during the time delay	Illuminates during the time delay
Switching characteristics (solid state type)				
Maximum power dissipated		W	2	3.5
Leakage current		mA	< 5	< 5
Residual voltage		V	3.3	3.3
Overvoltage protection			3 kV ; 0.5 joule	3 kV ; 0.5 joule
Electrical life	In millions of operating cycles		30	30

Operating diagrams

LA4-DT "on-delay" electronic timers



LA4-DR "off-delay" electronic timers



CA2-D and CA3-D control relays
Interface modules

References :
page 28104/4
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Type of module			LA4-DFB	LA4-DFE	LA4-DLB	LA4-DLE	LA4-DWB
Environment							
Conforming to standards			IEC 255-5				
Product certifications			UL, CSA				
Protective treatment	Conforming to IEC 68		"TH"				
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X				
Ambient air temperature	Storage	°C	- 40…+ 80				
	Operation	°C	- 25…+ 55				
	Operation at Uc	°C	- 25…+ 70				
Rated insulation voltage	Conforming to IEC 947-1	V	250				
Cabling	Flexible or rigid cable with or without cable end	mm^2	Min : 1 x 1 Max : 2 x 2.5				
Control circuit characteristics							
Type			With relay		With relay + override		Solid state
Built-in protection	Of the input		By diode				
	Against reversed polarity		By diode				
Display of input state	By integral LED which illuminates when the control relay coil is energised						
Input signals	Rated control circuit voltage (E1-E2)	V	⎓ 24	⎓ 48	⎓ 24	⎓ 48	⎓ 24
	Permissible variation	V	17…30	33…60	17…30	33…60	5…30
	Current consumption at 20 °C	mA	25	15	25	15	8.5 for 5 V 15 for 24 V
	State "0" guaranteed for U	V	< 2.4	< 4.8	< 2.4	< 4.8	< 2.4
	I	mA	< 2	< 1.3	< 2	< 1.3	< 2
	State "1" guaranteed for U	V	17	33	17	33	5
Association with control relay	**CA2-D** (∿ 24…250 V)		●	●	●	●	●
● Possible combination	**CA3-D** (⎓ 24…250 V)		●	●	●	●	–
Operational characteristics							
Electrical durability at 220/230 V	In millions of operating cycles		10	10	3	3	20
Load factor			100 %	100 %	100 %	100 %	100 %
Immunity	To micro-breaks (E1-E2)	ms	4	4	4	4	1
Power dissipated	At 20 °C	W	0.6	0.6	0.6	0.6	0.4
Total operating time at Uc (1)	**CA2-D** N/O	ms	20…30	20…30	20…30	20…30	12…22
	N/C	ms	16…24	16…24	16…24	16…24	4…12
	CA3-D N/O	ms	48…56	48…56	48…56	48…56	–
	N/C	ms	18…26	18…26	18…26	18…26	–

(1) Operating times depend on the type of electromagnet in the relay and its control mode. The closing time "C" is measured from the moment the coil supply circuit is switched on to the moment the main contacts first make contact. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main contacts separate.

Control relays

CA2-D and CA3-D control relays
Control modules and suppressor modules

References :
pages 28104/4 and 28104/5
Dimensions :
page 28106/2
Schemes :
page 28106/3

Characteristics

Environment

Conforming to standards			IEC 947-5-1
Product certifications			UL, CSA
Protective treatment			"TH"
Degree of protection	Conforming to IEC 68		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	**°C**	- 40…+ 80
	Operation	**°C**	- 25…+ 55
	For operation at Uc	**°C**	- 25…+ 70

Control modules "Auto-Man-Stop"

Type of module			**LA4-DM**
Protection	Against electrical shocks	**kV**	2
Built-in protection	Contactor coil suppressor		By varistor
Indication	By integral LED		Illuminates when the contactor is energised
Electrical durability	In operating cycles		20,000
Contact block characteristics	Rated insulation voltage (Ui) (conforming to IEC 947-5-1)	**V**	250
	Rated operational voltage (Ue)	**V**	250
Cabling	Flexible or rigid cable with or without cable end	**mm²**	Min : 1 x 1 Max : 2 x 2.5
Recommendation	The "Auto-Man" selector switch must only be operated with the start-stop switch in position "O"		

Coil suppressor modules

Type of module			**LA4-DA1●**			**LA4-DE1●**	**LA4-DC1U**
Type of protection			RC circuit			Varistor	Diode
Rated operational voltage (Ue)		**V**	∼ 24…250			∼ or ⎓ 24…250	⎓ 24…250
Maximum peak voltage			3 Uc			2 Uc	No overvoltages
Natural RC frequency		**V**	24/ 48	50/ 127	110/ 240	–	–
		Hz	400	200	150	–	–
Rated insulation voltage	Conforming to IEC 947-1	**V**	250	250	250	250	250

Control relays

CA2-D and CA3-D control relays

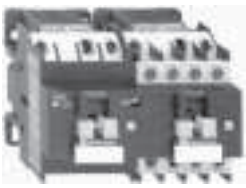
Characteristics :
pages 28101/2 and 28101/3
Dimensions :
page 28106/2
Schemes :
page 28106/3

References

Control circuit: a.c.

Type	Number of contacts	Composition		Basic reference. Complete with code indicating control circuit voltage (2)	Normal voltages					Weight kg
Instantaneous	4	4	–	**CA2-DN40●●**	**B7**	**E7**	**FE7**	**P7**	**V7**	0.320
		3	1	**CA2-DN31●●**	**B7**	**E7**	**FE7**	**P7**	**V7**	0.320
		2	2	**CA2-DN22●●**	**B7**	**E7**	**FE7**	**P7**	**V7**	0.320
		2 including 1 N/O and 1 N/C make before break	2	**CA2-DC22●●**	**B7**	**E7**	**FE7**	**P7**	**V7**	0.320
Mechanical latch/memory	4	2	2	**CA2-DK22●●**	**B7**	**E7**	**FE7**	**P7**	**V7**	0.580

CA2-DN31●●



CA2-DK22●●

Specifications

Protective treatment	"TH" as standard
Fixing	On 35 mm ⎓ rail or screw fixing
Cabling	By screw clamp terminals
Terminals	Protected against direct finger contact with ready-to-tighten captive screws (1)

Marking and contact positions conforming to CENELEC EN 50005, EN 50011.

(1) Telemecanique patented system which prevents screws from tightening themselves (eg due to vibrations during transport).

(2) Standard control circuit voltages (for variable time delay, please consult your Regional Sales Office).

Volts ∿	**24**	**42**	**48**	**110**	**115**	**220/230**	**230**	**240**	**380/400**	**400**	**415**	**440**	**500**	**660**
50 Hz	B5	D5	E5	F5	–	M5	P5	U5	Q5	V5	N5	R5	S5	Y5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	N6	R6	–	–
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–	–

Other versions

Control relays CA2-D for other ∿ voltages between 24 and 660 V.
Please consult your Regional Sales Office.

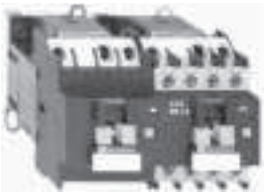
Control relays

CA2-D and CA3-D control relays

Characteristics:
pages 28101/2 and 28101/3
Dimensions:
page 28106/2
Schemes:
page 28106/3

References

CA3-DN31●●



CA3-DK22●●

Control circuit: d.c.

Type	Number of contacts	Composition		Basic reference. Complete with code indicating control circuit voltage (2)	Normal voltages	Weight kg
Instantaneous	4	4	–	**CA3-DN40●●**	**BD ED FD**	0.580
		3	1	**CA3-DN31●●**	**BD ED FD**	0.580
		2	2	**CA3-DN22●●**	**BD ED FD**	0.580
		2 Inc. 1 N/O and 1 N/C make before break	2	**CA3-DC22●●**	**BD ED FD**	0.580
Mechanical latch memory	4	2	2	**CA3-DK22●●**	**BD ED FD**	1.100

Specifications

Protective treatment	"TH" as standard
Fixing	On 35 mm ⎓ rail or screw fixing
Cabling	By screw clamp terminals
Terminals	Protected against direct finger contact with ready-to-tighten captive screws (1)

Marking and contact positions conforming to CENELEC EN 50005, EN 50011.

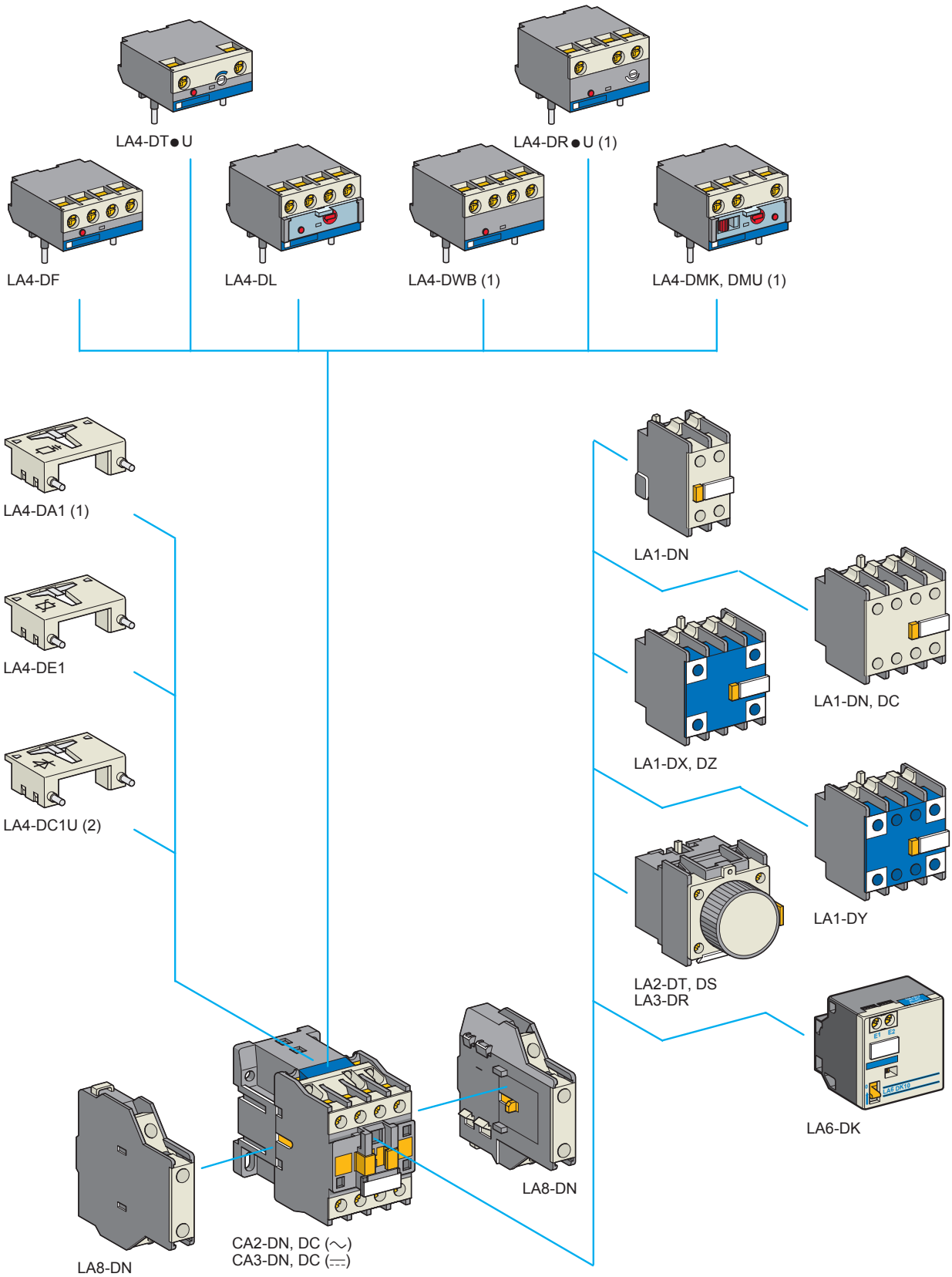
(1) Telemecanique patented system which prevents screws from tightening themselves (eg due to vibrations during transport).

(2) Standard control circuit voltages (for variable time delay, please consult your Regional Sales Office).

Volts ⎓	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
U from 0.8 to 1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
U from 0.7 to 1.25 Uc	JW	BW	CW	EW	–	SW	FW	–	MW	–	–

Other versions

Control relays CA3-D for other ⎓ voltages between 12 and 660 V.
Please consult your Regional Sales Office



(1) For use on CA2-DN only.
(2) For use on CA3-DN only.

Control relays

Characteristics :
pages 28102/2 and 28102/4
Illustrations :
page 28104/2
Dimensions :
page 28106/2
Schemes :
page 28106/3

CA2 and CA3-D
Add-on auxiliary contact blocks and mechanical latch blocks

References

Instantaneous auxiliary contact blocks

Number of contacts	Maximum number per relay (1) Clip-on mounting front	side	Composition		Reference	Weight kg
For standard applications						
2	1	–	1	1	**LA1-DN11**	0.030
	–	2	1	1	**LA8-DN11**	0.030
	1	–	2	–	**LA1-DN20**	0.030
	–	2	2	–	**LA8-DN20**	0.030
	1	–	–	2	**LA1-DN02**	0.030
4	1	–	2	2	**LA1-DN22**	0.050
			1	3	**LA1-DN13**	0.050
			4	–	**LA1-DN40**	0.050
			–	4	**LA1-DN04**	0.050
			3	1	**LA1-DN31**	0.050
			2	2 (3)	**LA1-DC22**	0.050

Instantaneous auxiliary contact blocks (with dust and damp protected contacts)

For use in particularly harsh industrial environments

Number of contacts	Maximum number per relay (1) Front mounting	Composition protected	(4)			Reference	Weight kg
2	1	2	–	–	–	**LA1-DX20**	0.040
		2	2	–	–	**LA1-DY20**	0.040
4	1	2	–	2	–	**LA1-DZ40**	0.050
		2	–	1	1	**LA1-DZ31**	0.050

Time delay auxiliary contact blocks

Number and type of contacts	Maximum number per relay (1) Front mounting	Time delay Type	Range	Reference	Weight kg
1N/C and 1N/O	1	On-delay	0.1…3 s (5)	**LA2-DT0**	0.060
			0.1…30 s	**LA2-DT2**	0.060
			10…180 s	**LA2-DT4**	0.060
			1…30 s (6)	**LA2-DS2**	0.060
		Off-delay	0.1…3 s (5)	**LA3-DR0**	0.060
			0.1…30 s	**LA3-DR2**	0.060
(Sealing kit : see page 28104/5)			10…180 s	**LA3-DR4**	0.060

Mechanical latch blocks

Tripping control	Maximum number per relay (1) Front mounting	Basic reference. Complete with voltage code (2)	Usual voltages	Weight kg
Manual or electric	1	**LA6-DK10●**	**B E F M Q**	0.070

(1) Maximum mounting possibility (see below).

Type of relay	Type of coil	For guaranteed operation from	Maximum number of add-on blocks Clip-on mounting front		side
CA2-D	50 or 60 Hz	0.8…1.1 Uc	1	+	2
	50/60 Hz	0.8…1.1 Uc	1	or	2
		0.85…1.1 Uc	1	+	2
CA3-D	⎓	0.8…1.1 Uc	1	or	2
	⎓ (wide range)	0.7…1.25 Uc	1	or	2

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

Volts ∿ and ⎓	**24**	**32/36**	**42/48**	**60/72**	**100**	**110/127**	**220/240**	**256/277**	**380/415**
Code	B	C	E	EN	K	F	M	U	Q

(3) Including 1 N/O and 1 N/C make before break.
(4) Contact block fitted with 4 screening continuity terminals.
(5) With extended scale from 0.1 to 0.6 s.
(6) With switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.

Characteristics :
pages 28102/5 to 28102/7
Illustrations :
page 28104/2
Dimensions :
page 28106/2
Schemes :
page 28106/3

CA2-D and CA3-D
Serial timer, interface and control modules. Delayed capacitive opening devices

References

Electronic serial timer modules

LA4-DR0U

Type	Mounted at top on	Time delay	Reference	Weight kg
On-delay	CA2-D, CA3-D	0.1…2 s	**LA4-DT0U**	0.040
		15…30 s	**LA4-DT2U**	0.040
		25…500 s	**LA4-DT4U**	0.040
Off-delay	CA2-D	0.1…2 s	**LA4-DR0U**	0.050
		15…30 s	**LA4-DR2U**	0.050
		25…500 s	**LA4-DR4U**	0.050

Interface modules

LA4-DFE

Type	Mounted at top on	Supply voltage (1) of module	Supply voltage (1) of control relay	Reference	Weight kg
Relay interface	CA2-D, CA3-D	⎓ 24 V	24…250 V	**LA4-DFB**	0.050
		⎓ 48 V	24…250 V	**LA4-DFE**	0.050
	CA2-D	⎓ 24 V	380…415 V	**LA4-DFBQ**	0.055
Relay interface with manual override switch (output forced "ON")	CA2-D, CA3-D	⎓ 24 V	24…250 V	**LA4-DLB**	0.045
		⎓ 48 V	24…250 V	**LA4-DLE**	0.045
Solid state	CA2-D	⎓ 24 V	–	**LA4-DWB**	0.045

LA4-DLE

"Auto-Manual-Stop" control modules

For local override operation tests with 2-position "Auto-Man" switch and "O-I" switch

Description	Mounted at top on	Control relay supply voltage	Reference	Weight kg
With "O-I" switch and 2-position "Auto-Man" switch	CA2-D, CA3-D	24…100 V	**LA4-DMK**	0.040
	CA2-D	100…250 V	**LA4-DMU**	0.040

LA4-DMU

Delayed capacitive opening devices

For use on control relays CA3-D to prevent inadvertent opening in the event of a brief volt drop or momentary supply failure

Supply voltage 50/60 Hz	Control relay reference. To be completed (2)	Replacement coil reference	Corresponding delayed opening device: Delay time (Tr)	Corresponding delayed opening device: Reference	Weight kg
110…115 V	CA3-DN●●PD	LX4-D2PD	1…3 s	**LA9-Z90F**	0.215
120…127 V	CA3-DN●●QD	LX4-D2QD	1.5…3 s	**LA9-Z90F**	0.215
220 V	CA3-DN●●TD	LX4-D2TD	2.5…5 s	**LA9-Z90M**	0.215
240 V	CA3-DN●●VD	LX4-D2VD	3…6 s	**LA9-Z90M**	0.215
380 V	CA3-DN●●WD	LX4-D2WD	2.5…5 s	**LA9-Z90Q**	0.215
415…440 V	CA3-DN●●XD	LX4-D2XD	3.5…8 s	**LA9-Z90Q**	0.215

LA9-Z90F

Accessory (to be ordered separately)

Description	Reference	Weight kg
Add-on block for doubling the time delay	**LA9-Z91●** (3)	0.215
Example : LA9-Z90F = 1 to 3 s LA9-Z90F + LA9-Z91F = 1 to 6 s		

(1) For 24 V, the control relay must be fitted with a 20 V coil.
(2) See page 28103/3.
(3) Complete the reference with the control voltage code. This will be the same code as for the delayed opening device.

CA2-D and CA3-D
Coil suppressor modules and accessories

Characteristics :
page 28102/7
Illustrations :
page 28104/2
Dimensions :
page 28106/2

References

Coil suppressor modules

These modules clip onto the top of the control relay and the electrical connection is instantly made.
Fitting of an input module is still possible.

LA4-DA1●

RC circuits (Resistor-Capacitor) (1)

For mounting on	Operational voltage	Reference	Weight kg
CA2-DN (2)	∿ 24/48 V	**LA4-DA1E**	0.012
	∿ 50/127 V	**LA4-DA1G**	0.012
	∿ 110/240 V	**LA4-DA1U**	0.012

Varistors (peak limiting) (3)

CA2-DN, CA3-DN (2)	∿ or ⎓ 24/48 V	**LA4-DE1E**	0.012
	∿ or ⎓ 50/127 V	**LA4-DE1G**	0.012
	∿ or ⎓ 110/250 V	**LA4-DE1U**	0.012

LA4-DE1●

Diode (4)

CA3-DN (2)	⎓ 24/250 V	**LA4-DC1U**	0.012

Bidirectional peak limiting diodes

CA3-DN	⎓ 24 V	**LA4-DB1B**	0,012
	⎓ 72 V	**LA4-DB1S**	0,012

Accessories (to be ordered separately)

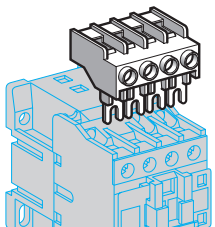
LA4-DC1U

For connection

Description	For mounting on	Reference	Weight kg
4-pole connector for connection of 10 mm² cables	CA2-DN, CA3-DN	**LA9-D1260**	0.030

For marking

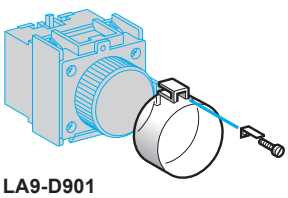
For mounting on	Description	Sold in lots of	Unit reference	Weight kg
CA2-DN, CA3-DN and add-on blocks except LA1-DN (2 contacts)	Clip-in marker holder 8 x 22 mm	100	**LA9-D92**	0.001
	Bag of 300 blank self-adhesive labels 7 x 21 mm	1	**LA9-D93**	0.001
LA1-DN (2 contacts)	Clip-in marker holder 8 x 17 mm	100	**LA9-D90**	0.001
	Bag of 400 blank self-adhesive labels 7 x 16 mm	1	**LA9-D91**	0.001



LA9-D1260

For sealing

Description	For mounting on	Reference	Weight kg
Sealing kit	LA2-D, LA3-D	**LA9-D901**	0.005



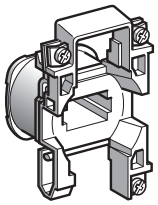
LA9-D901

(1) An RC circuit provides effective protection for circuits highly sensitive to high frequency interference.
Voltage limited to 3 Uc maximum, oscillating frequency limited to 400 Hz maximum.
Slight increase in drop-out time (1.2 to 2 times the usual time).
(2) For satisfactory protection, a suppressor module must be fitted across the coil of each control relay.
(3) Protection is provided by limiting the transient voltage value to 2 Uc maximum.
Maximum reduction of transient voltage peaks.
Slight increase in drop-out time (1.1 to 1.5 times the usual time).
(4) Protection is provided by a polarised component; no overvoltage or oscillating frequency.
Slight increase in drop-out time (6 to 10 times the usual time).

Control relays

Coils
for control relays CA2-D, a.c. supply

References



LX1-D2●●

Control circuit voltage Uc	Average resistance at 20 °C ± 10 %	Inductance of closed circuit	Reference (1)	Average resistance at 20 °C ± 10 %	Inductance of closed circuit	Reference (1)	Weight
V		**H**			**H**		kg
			50 Hz			**60 Hz**	
21 (2)	6.3	0.26	**LX1-D2Z5**	4.98	0.21	**LX1-D2Z6**	0.070
24	6.82	0.3	**LX1-D2B5**	5.45	0.25	**LX1-D2B6**	0.070
32	12.26	0.48	**LX1-D2C5**	–	–	–	0.070
42	21.32	0.93	**LX1-D2D5**	–	–	–	0.070
48	28.05	1.22	**LX1-D2E5**	22.09	1.02	**LX1-D2E6**	0.070
110	148.2	5.7	**LX1-D2F5**	116.6	4.5	**LX1-D2F6**	0.070
120	–	–	–	139.2	5.1	**LX1-D2G6**	0.070
127	192.5	7.5	**LX1-D2G5**	–	–	–	0.070
208	–	–	–	417.8	16.6	**LX1-D2L6**	0.070
220	–	–	–	490.2	18.5	**LX1-D2M6**	0.070
220/230	613.3	23	**LX1-D2M5**	–	–	–	0.070
230	649.7	25	**LX1-D2P5**	–	–	–	0.070
240	726.6	25	**LX1-D2U5**	587.4	21	**LX1-D2U6**	0.070
256	816	31	**LX1-D2W5**	–	–	–	0.070
277	–	–	–	781.5	30	**LX1-D2W6**	0.070
380	–	–	–	1486	55	**LX1-D2Q6**	0.070
380/400	1848	67	**LX1-D2Q5**	–	–	–	0.070
400	2069	68	**LX1-D2V5**	–	–	–	0.070
415	2219	78	**LX1-D2N5**	1826	69	**LX1-D2N6**	0.070
440	2549	82	**LX1-D2R5**	1892	71	**LX1-D2R6**	0.070
480	–	–	–	2304	85	**LX1-D2T6**	0.070
500	3285	107	**LX1-D2S5**	–	–	–	0.070
575	–	–	–	3482	119	**LX1-D2S6**	0.070
600	–	–	–	3678	135	**LX1-D2X6**	0.070
660	5631	190	**LX1-D2Y5**	–	–	–	0.070

Specifications

Average consumption at 20 °C :
- inrush (cos φ = 0.75) 50 Hz : 60 VA; 60 Hz : 70 VA,
- holding (cos φ = 0.3) 50 Hz : 7 VA; 60 Hz : 7.5 VA.

Operating range (θ 55 °C) : 0.8 to 1.1 Uc

						50/60 Hz	
21 (2)	–	–	–	5.6	0.24	**LX1-D2Z7**	0.070
24	–	–	–	6.19	0.26	**LX1-D2B7**	0.070
42	–	–	–	19.15	0.77	**LX1-D2D7**	0.070
48	–	–	–	25	1	**LX1-D2E7**	0.070
110	–	–	–	130	5.5	**LX1-D2F7**	0.070
115	–	–	–	–	–	**LX1-D2FE7**	0.070
120	–	–	–	159	6.7	**LX1-D2G7**	0.070
220/230	–	–	–	539	22	**LX1-D2M7** (3)	0.070
230	–	–	–	595	21	**LX1-D2P7**	0.070
230/240	–	–	–	645	25	**LX1-D2U7** (4)	0.070
380/400	–	–	–	1580	60	**LX1-D2Q7**	0.070
400	–	–	–	1810	64	**LX1-D2V7**	0.070
415	–	–	–	1938	74	**LX1-D2N7**	0.070
440	–	–	–	2242	79	**LX1-D2R7**	0.070

Specifications

Average consumption at 20 °C :
- inrush (cos φ = 0.75) 50/60 Hz : 70 VA at 50 Hz,
- holding (cos φ = 0.3) 50/60 Hz : 8 VA at 60 Hz.

Operating range (θ 55 °C) : 0.85 to 1.1 Uc

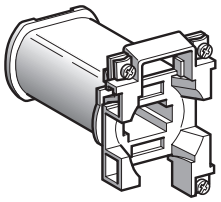
(1) The last two digits in the reference represent the voltage code.
(2) Voltage for special coils fitted in contactors with serial timer modules, with 24 V supply.
(3) This coil can be used on 240 V at 60 Hz.
(4) This coil can be used on 230/240 V at 50 Hz and on 240 V only at 60 Hz.

Control relays

Coils
for control relays CA3-D, d.c. supply

⎓

References



LX4-D2●●

Control circuit voltage Uc	Average resistance at 20 °C ± 10 %	Inductance of closed circuit	Reference (1)	Weight
V		**H**		kg
Standard coils				
12	17	0.79	**LX4-D2JD**	0.175
21 (2)	45.4	2.16	**LX4-D2ZD**	0.175
24	71	3.1	**LX4-D2BD**	0.175
36	149.7	7.1	**LX4-D2CD**	0.175
48	267	11.9	**LX4-D2ED**	0.175
60	422	19	**LX4-D2ND**	0.175
72	609	26	**LX4-D2SD**	0.175
96	1049	46	**LX4-D2DD**	0.175
100	1105	49.6	**LX4-D2KD**	0.175
110	1411	61.8	**LX4-D2FD**	0.175
125	1781	77.8	**LX4-D2GD**	0.175
155	2763	119	**LX4-D2PD**	0.175
174	3480	152	**LX4-D2QD**	0.175
200	4280	184	**LX4-D2LD**	0.175
220	5235	221	**LX4-D2MD**	0.175
250	6433	271	**LX4-D2UD**	0.175
305	9778	401	**LX4-D2TD**	0.175
348	12 479	512	**LX4-D2VD**	0.175
440	19 785	793	**LX4-D2RD**	0.175
543	31 785	1261	**LX4-D2WD**	0.175
600	38 982	1393	**LX4-D2XD**	0.175

Specifications

Average consumption at 20 °C : 9 W
Operating range (θ 55 °C) : 0.8 to 1.1 Uc

Wide range coils

12	15.6	0.71	**LX4-D2JW**	0.175
24	58.7	2.49	**LX4-D2BW**	0.175
36	122.6	5.3	**LX4-D2CW**	0.175
48	234	9.9	**LX4-D2EW**	0.175
72	530	21.4	**LX4-D2SW**	0.175
96	886	36.6	**LX4-D2DW**	0.175
110	1105	44.4	**LX4-D2FW**	0.175
220	4593	185	**LX4-D2MW**	0.175

Specifications

Average consumption 20 °C : 11 W
Operating range (θ 55 °C) : 0.7 to 1.25 Uc

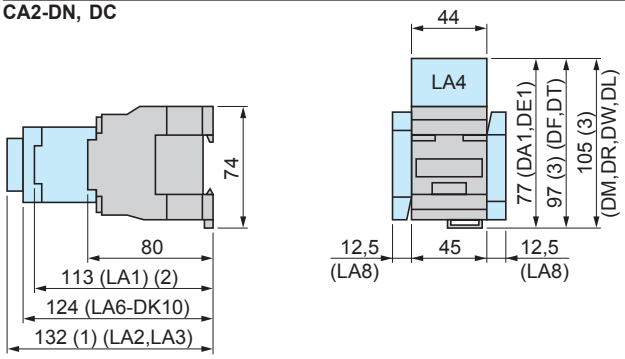
(1) The last two digits in the reference represent the voltage code.
(2) Voltage for special coils fitted in contactors with serial timer modules, with 24 V supply.

Characteristics :
pages 28101/2 to 28102/7
Illustrations :
page 28104/2
References :
pages 28103/2 to 28104/5
Schemes :
page 28106/3

Control relays CA2-D and CA3-D and accessories

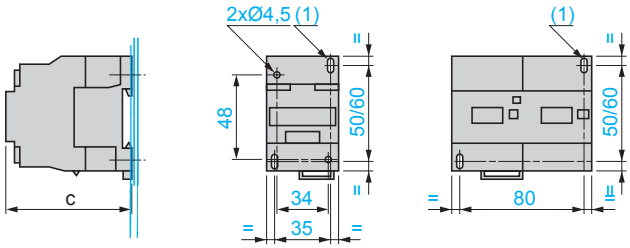
Dimensions, mounting

CA2-DN, DC



(1) + 4 mm with lead sealing kit LA9-D901
(2) With 2 or 4 contacts
(3) With or without combined use of coil suppressor module : LA4-DA1●, DE1●

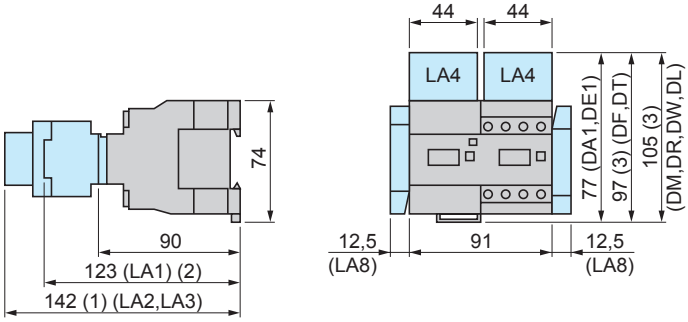
CA2, CA3-DN, DC, DK
Panel mounting



	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c	80	80	90	115	115	125

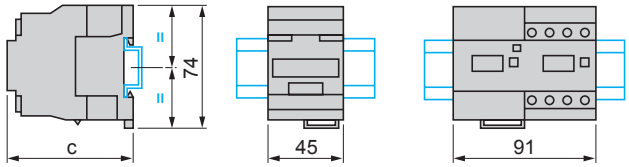
(1) 2 elongated holes 4.5 x 9

CA2-DK22



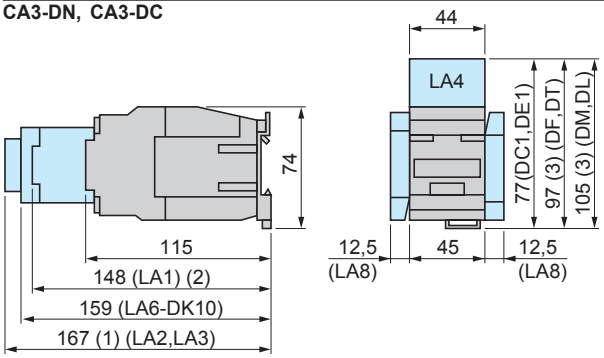
(1) + 4 mm with lead sealing kit LA9-D901
(2) With 2 or 4 contacts
(3) With or without combined use of coil suppressor module LA4-DA1●, DE1●

CA2, CA3-DN, DC, DK
Mounting on rail AM1-DP200 or DE200



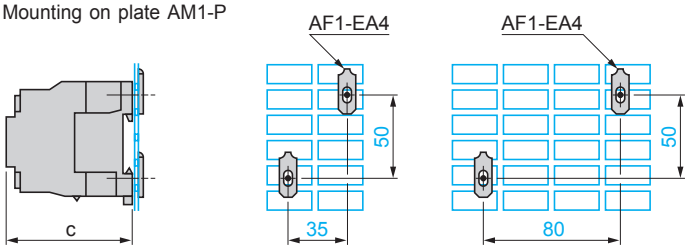
	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c (AM1-DP200)	82	82	91	117	117	127
c (AM1-DE200)	89	89	98	124	124	134

CA3-DN, CA3-DC



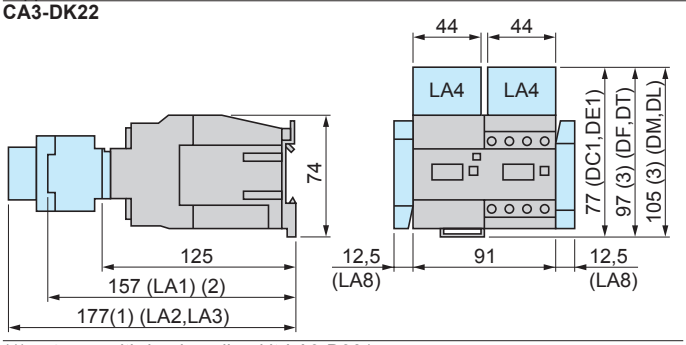
(1) + 4 mm with lead sealing kit LA9-D901
(2) With 2 or 4 contacts
(3) With or without combined use of coil suppressor module LA4-DC1●, DE1●

CA2, CA3-DN, DC, DK
Mounting on plate AM1-P



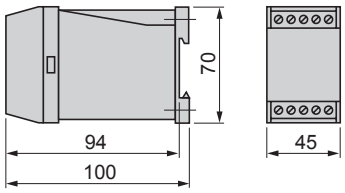
	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c (AM1-P)	80	80	90	115	115	125

CA3-DK22



(1) + 4 mm with lead sealing kit LA9-D901
(2) With 2 or 4 contacts
(3) With or without combined use of coil suppressor module LA4-DC1●, DE1●

Delayed capacitive opening devices
LA9-Z90●



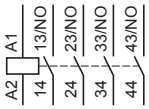
Characteristics :
pages 28101/2 to 28102/7
Illustrations :
page 28104/2
References :
pages 28104/3 to 28104/5
schemes :
page 28106/3

Control relays CA2-D and CA3-D and accessories

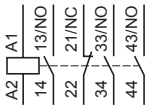
Schemes

Control relays
instantaneous

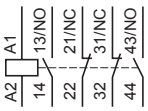
4 N/O
CA2-DN40●●
CA3-DN40●●



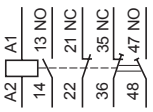
3 N/O + 1 N/C
CA2-DN31●●
CA3-DN31●●



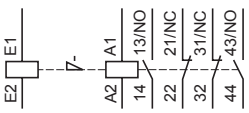
2 N/O + 2 N/C
CA2-DN22●●
CA3-DN22●●



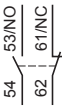
2 N/O + 2 N/C including
1 N/O+1 N/C make before break
CA2-DC22●●
CA3-DC22●●



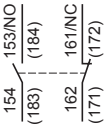
Mechanical latch
2 N/O + 2 N/C
CA2-DK22●●
CA3-DK22●●



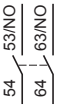
Instantaneous auxiliary contact blocks
1 N/O + 1 N/C
LA1-DN11



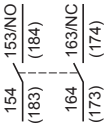
LA8-DN11 (1)



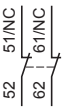
2 N/O
LA1-DN20



LA8-DN20 (1)

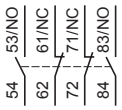


2 N/C
LA1-DN02

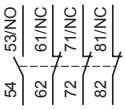


(1) The figures in brackets are for the device mounted on the RH side of the contactor.

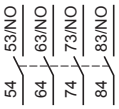
2 N/O + 2 N/C
LA1-DN22



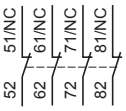
1 N/O + 3 N/C
LA1-DN13



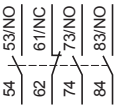
4 N/O
LA1-DN40



4 N/C
LA1-DN04

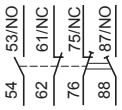


3 N/O + 1 N/C
LA1-DN31

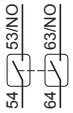


With protected contacts

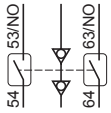
2 N/O + 2 N/C including
1 N/O+1 N/C make before break
LA1-DC22



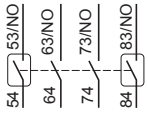
2 N/O protected
LA1-DX20



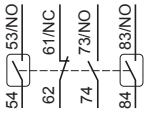
2 N/O protected (2)
LA1-DY20



2 N/O protected+
2 N/O non protected
LA1-DZ40

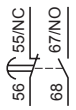


2 N/O protected+
1 N/O + 1 N/C non protected
LA1-DZ31



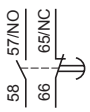
(2) Device fitted with 4 screening continuity terminals.

Time delay auxiliary contact blocks
On-delay 1 N/O + 1 N/C
LA2-DT●

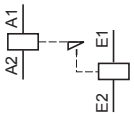


LA2-DS2

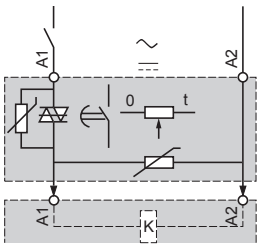
Off-delay 1 N/O + 1 N/C
LA3-DR●



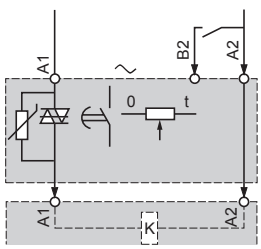
Mechanical latch blocks
LA6-DK1●



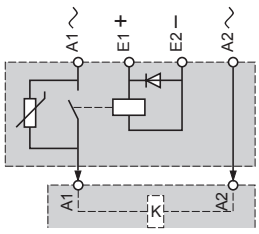
Electronic serial timer modules
On-delay
LA4-DT●U



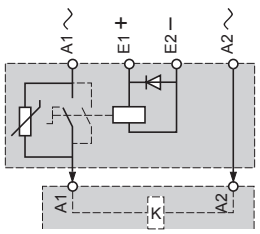
Off-delay
LA4-DR●U



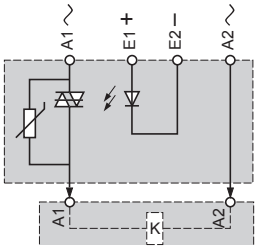
Interface modules
Relay interface
LA4-DF●



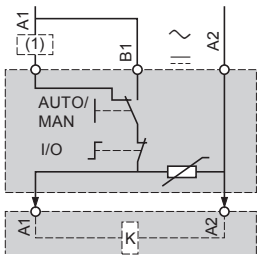
Relay interface and manual
override switch “Auto-I”
LA4-DL●



Solid state
interface module
LA4-DWB

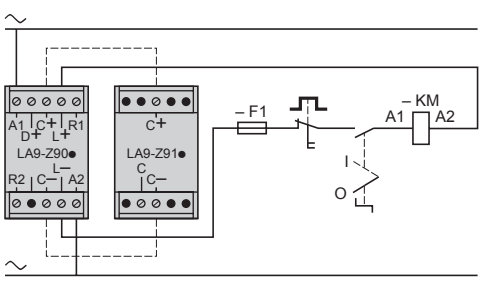


“Auto-Man-Stop”
control module
LA4-DM●



(1) PLC

Delayed capacitive opening devices
LA9-Z90●



Terminal C + : ≥ 380 V
Terminal C - : < 380 V

Characteristiques :
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References :
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Dimensions :
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Schemes :
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Low consumption control relays type CA4-D

Presentation

Presentation

CA4-D control relays operate on d.c. supply and require no interface. Their low consumption allows direct control from solid state outputs.

They are available in 4 versions :

- Control relays with standard coil (consumption 1.2 W).
- Control relays with built-in suppression as standard (consumption 1.2 W) via bi-directional peak limiting diode. This version provides a perfect working combination between power and electronic components.
- Control relays with wide range coil (consumption 1.6 W), allowing correct operation between 0.7 and 1.25 of the control voltage Uc. These are essential where solid state components are connected in series with the control circuit or on machines based on dedicated electronic cards.
- Control relays with wide range coil (consumption 1.6 W) with built-in suppression as standard via bi-directional peak limiting diode, allowing correct operation between 0.7 and 1.25 of the control voltage Uc.

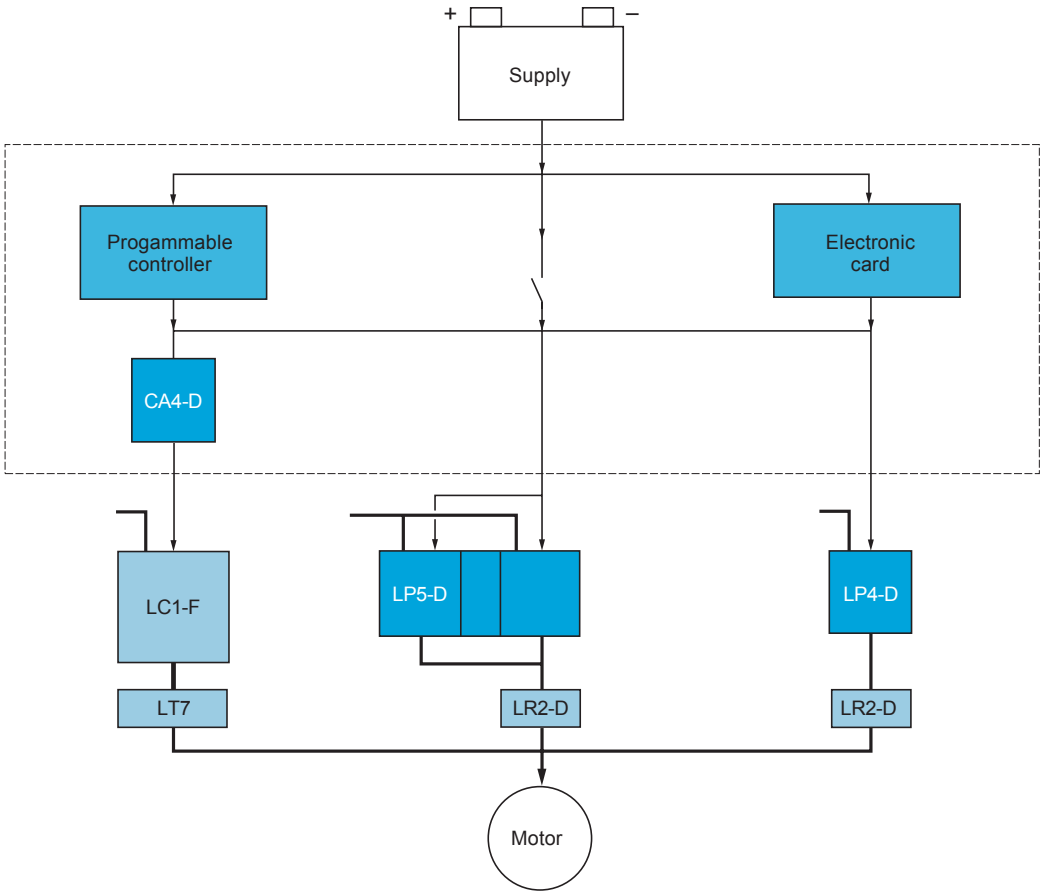
CA4-DN31

Advantages

Low heat dissipation: allowing higher component density in control panels.

Use on battery supplies : for on-board equipment, use on battery supplies allows ease of integrity and an independent supply shared with programmable controllers.

Variable composition : low consumption control relays can be fitted with a special front-mounting auxiliary block. CA4-D control relays can also be fitted with electronic serial timer modules LA4-DT and Auto-Man-Stop interface modules LA4-DM.



Control relays

Presentation : page 28111/2
References : page 28111/5
Dimensions : page 28111/7
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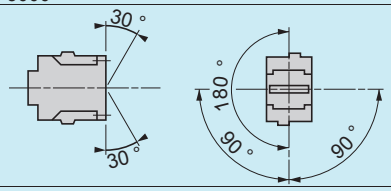
Low consumption control relays type CA4-D

Characteristics

Environment

Conforming to standards				IEC 158-1, IEC 255-1, IEC 337-1, IEC 947-1 and 947-5, VDE 0660, NF C 63-110 and 45-250, BS 5424, JIS C 8325, JEM 1038
Approvals				ASE, UL, CSA, SEMKO, FI
Protective treatment				"TH"
Degree of protection	Conforming to VDE 0106			Protection against direct finger contact
Ambient air temperature around the device	Storage		**°C**	- 40…+ 80
	Operation, conforming to IEC 255 (0.8…1.1 Uc)		**°C**	- 5…+ 55
	For operation at Uc		**°C**	- 25…+ 70
Maximum operating altitude	Without derating		**m**	3000
Operating positions for ambient temperature 45 °C	Without derating in the following positions			
Shock resistance (1) 1/2 sine wave for 11 ms	Control relay open			10 g
	Control relay closed			12 g
Vibration resistance (1) 5…300 Hz	Control relay open			5 g
	Control relay closed			10 g
	(1) In the least favourable direction without change of contact state, with coil supplied at Uc			
Cabling	Flexible conductor	without cable end	**mm²**	1 x 1…4
				2 x 1…4
		with cable end	**mm²**	1 x 1…4
				2 x 1…2.5
	Rigid conductor	without cable end	**mm²**	1 x 1…4
				2 x 1…4
Tightening torque			**N.m**	1.2

Control circuit characteristics

Rated insulation voltage (Ui)	Conforming to VDE 0110 (group C)		**V**	250
	Conforming to IEC 158-1, BS 5424		**V**	250
	Conforming to CSA C22-2 n° 14		**V**	300
Rated control circuit voltage (Uc)			**V**	⎓ 5…72
Permissible voltage variation	Operating	with standard coil		0.8…1.1 Uc
		with wide range coil		0.7…1.25 Uc
Voltage limits	Drop out			0.1…0.3 Uc
Average consumption		with standard coil	**W**	Inrush : 1.2
				Sealed : 1.2
		with wide range coil	**W**	Inrush : 1.5
				Sealed : 1.5
Operating time (at rated voltage and at 20 °C)	Between coil energisation & opening of the N/C contacts		**ms**	55
	Between coil energisation & closing of the N/O contacts		**ms**	60
	Between coil de-energisation & opening of the N/O contacts		**ms**	15
	Between coil de-energisation & closing of the N/C contacts		**ms**	20
Time constant L/R			**ms**	10
Maximum operating rate	In operating cycles/hour (Ambient temperature 55 °C)			3600
Mechanical life (to Uc)	In millions of operating cycles			30

Control relays

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Low consumption control relays type CA4-D

Characteristics

Type			CA4-DN	LN1-DN11
Instantaneous auxiliary contact characteristics (add-on or integral)				
Number of contacts			4	2
Rated operational voltage	Conforming to IEC 947-1; up to	**V**	690	690
Rated insulation voltage (Ui)	Conforming to IEC 947-5	**V**	690	690
	Conforming to VDE 0110 C	**V**	660	660
	Conforming to CSA 22-2 n° 14 and UL 508	**V**	600	600
Rated thermal current (Ith)	For ambient temperature 40 °C	**A**	10	6
Minimum switching capacity	U	**V**	17	17
	I	**mA**	5	5
Short-circuit protection	Conforming to IEC 337-1 and VDE 0660. gI fuse	**A**	10	10
Rated making capacity	I rms conforming to IEC 337-1.	**A**	140	80
Permissible short time rating	For 1 s	**A**	100	40
	500 ms		120	60
	100 ms		140	80
Insulation resistance		**M**	> 10	> 10
Non-overlap time	Guaranteed between N/C and N/O contacts	**ms**	2	1.5
Mechanical durability	In millions of operating cycles		30	30

Control relay CA4-DN

a.c. supply, categories AC-14 and AC-15

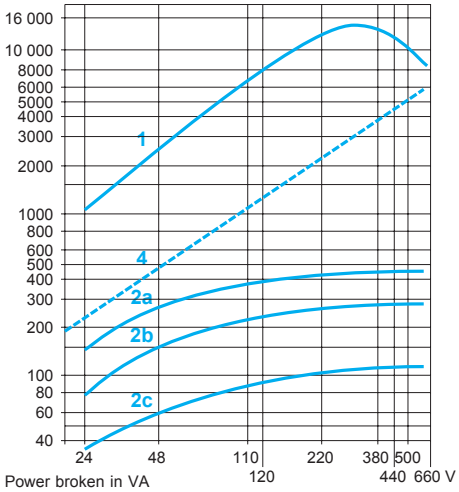
1 Breaking limit of contacts valid for : Maximum of 50 operating cycles at 10 s intervals (breaking power = making power x cos φ 0.7)

2 Electrical life of contacts
- for 1 million operating cycles **(2a)**
- for 3 million operating cycles **(2b)**
- for 10 million operating cycles **(2c)**

3 Breaking limit of contacts valid for : Maximum of 20 operating cycles at 10 s intervals and with current passing for 0.5 s per operating cycle.

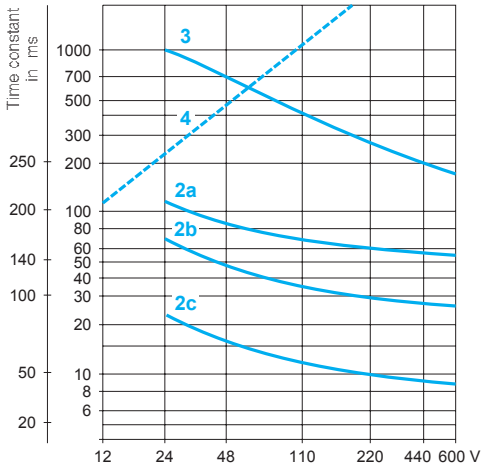
4 Thermal limit.

Power broken in VA



d.c. supply, category DC-13

Power broken in W



Control relay LN1-DN11

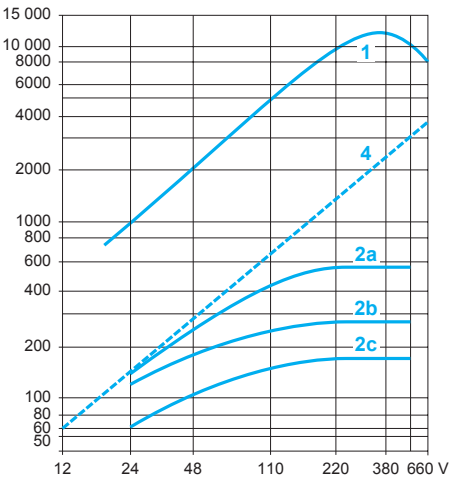
1 Breaking limit of contacts valid for : Maximum of 50 operating cycles at 10 s intervals (breaking power = making power x cos φ 0.7)

2 Electrical life of contacts
- for 1 million operating cycles **(2a)**
- for 3 million operating cycles **(2b)**
- for 10 million operating cycles **(2c)**

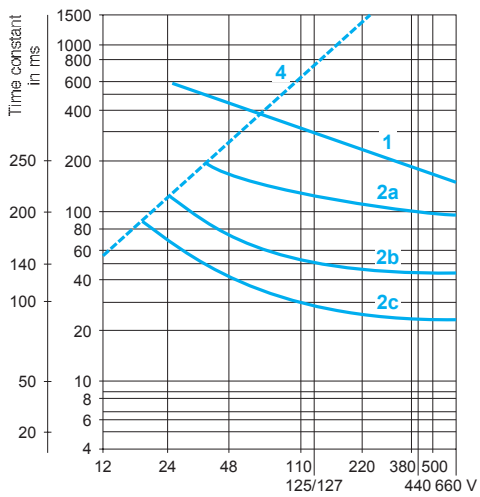
3 Breaking limit of contacts valid for : Maximum of 20 operating cycles at 10 s intervals and with current passing for 0.5 s per operating cycle.

4 Thermal limit.

Power broken in VA



Power broken in W



Control relays

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pages 28111/3 and 28111/4
Dimensions :
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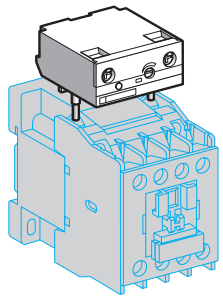
Low consumption control relays type CA4-D
Input module, indicators and accessories

References

Electronic serial timer modules

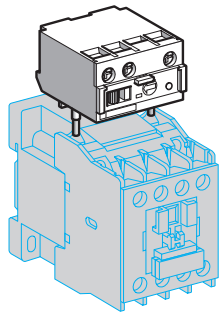


LA4-DT●U

For use on low consumption control relays with coils from 24 to 72 V (1).

Type	Mounting	Time delay	Reference	Weight kg
On-delay	At top of CA4-D	0.1…2 s	**LA4-DT0U**	0.040
		1.5…30 s	**LA4-DT2U**	0.040
		25…500 s	**LA4-DT4U**	0.040

"Automatic-Manual-Stop" module



LA4-DMK

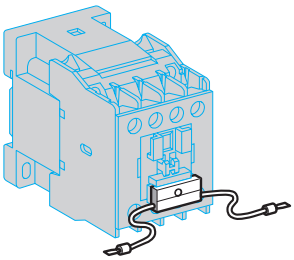
For use on low consumption control relays with coils from 24 to 72 V

Description	Mounting	Reference	Weight kg
With "O-I" switch and 2-position "Auto-Man" knob	At top of CA4-D	**LA4-DMK**	0.040

Accessories (to be ordered separately)

For cabling

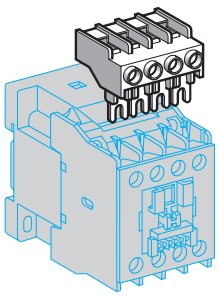
Description	Reference	Weight kg
4-pole connector For connection of 10 mm² cable	**LA9-D1260**	0.030



LA4-DVE

For marking

Mounting on	Description	Sold in lots of	Unit reference	Weight kg
CA4-DN	Clip-in marker holder 8 x 22 mm	100	**LA9-D92**	0.001
	Bag of 300 blank self-adhesive labels 7 x 21 mm	1	**LA9-D93**	0.001
LN1-DN11	Clip-in marker holder 8 x 17 mm	100	**LA9-D90**	0.001
	Bag of 400 blank self-adhesive labels 7 x 16 mm	1	**LA9-D91**	0.001



LA9-D1260

(1) When used with a 24 V supply, the control relay must be fitted with a 24 V wide range coil (code BW).

Control relays

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Dimensions :
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Schemes :
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Low consumption control relays type CA4-D

References

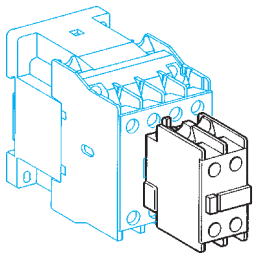
Instantaneous control relays for use with ⎓ control circuit

CA4-DN31●●

Number of contacts	Composition		Basic reference. Complete with code indicating control circuit voltage (1) (2)	Usual voltage	Weight kg
4	4	–	**CA4-DN40●●**	**BD**	0.315
	3	1	**CA4-DN31●●**	**BD**	0.315
	2	2	**CA4-DN22●●**	**BD**	0.315

Specifications

Protective treatment	"TH" as standard
Fixing	On 35 mm ⎍ rail or screw fixing
Cabling	Screw clamp terminals
Terminals	Protected against direct finger contact; supplied with ready-to-tighten captive screws (3)
Consumption of standard coil	1.2 W
Consumption of wide range coil	1.6 W



LN1-DN11

Instantaneous auxiliary contact blocks (front-mounted, clip-on)

Number of contacts	Composition		Reference	Weight kg
2	**1**	**1**	**LN1-DN11**	0.030

Specifications

Treatment	"TH" as standard
Connection	Screw clamp terminals
Terminals	Protected against direct finger contact; supplied with ready-to-tighten captive screws (3)

(1) Coil not interchangeable.
(2) Standard control circuit voltages (variable delivery times, please consult your Regional Sales Office).

Standard coil (0.8…1.1 Uc) (1)

Volts ⎓	**5**	**12**	**24**	**48**	**72**
Code	AD	JD	BD	ED	SD

Coil with built-in interference suppression diode (0.8…1.1 Uc) (1)

Volts ⎓	**5**	**12**	**24**	**48**	**72**
Code	AD3	JD3	BD3	ED3	SD3

Wide range coil (0.7…1.25 Uc) (1)

Volts ⎓	–	–	**24**	**48**	**72**
Code	–	–	BW	EW	SW

Wide range coil with built-in interference suppression diode (0.7…1.25 Uc) (1)

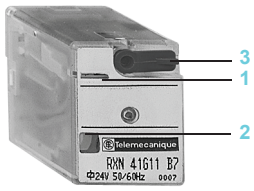
Volts ⎓	–	–	**24**	**48**	**72**
Code	–	–	BW3	EW3	SW3

(3) Telemecanique patented system which prevents screws from tightening themselves (e.g. due to vibration during transport).

Plug-in relays
Miniature relays type RXN

Presentation

Relay

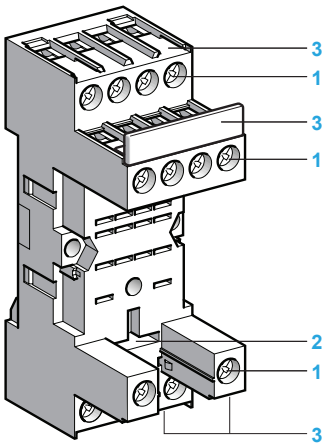


1 Mechanical indicator showing contact position. Indicator orange when contacts tripped.

2 Non polarised LED “Power on” indicator (applicable to one version of relay).

3 A lockable lever with pushbutton function allows the contacts to be overridden; this condition is displayed by the mechanical indicator 1.
- green lever: d.c. relay
- orange lever: a.c. relay

Socket



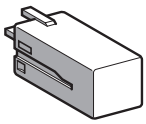
Suitable for mounting on 35 mm ⎓ rail or fixing by two 3 mm diameter screws.

1 Screw connector terminations.

2 Location designed to take add-on protection module RXW.

3 A customer legend plate can be clipped onto the socket.

Add-on protection module



Plugs into the socket and is automatically connected in parallel to the coil terminals (A1+/A2-).

RXN relays characteristics

Conforming to standards	Standard version		IEC 255-1-00, VDE 0435 part 201
Product approvals (pending)	Standard version		UL
Protective treatment	Standard version		“TC”
Rated insulation voltage (Ui)	Conforming to IEC 947	**V**	250
Insulation class	Conforming to VDE 0110		B 250
Dielectric strength (rms voltage)	Between coil and contact	**V**	2000
	Between poles	**V**	2000
	Between contacts	**V**	1000
Ambient air temperature around the device	Storage	**°C**	- 40…+ 85
	Operation ∿	**°C**	- 20…+ 70
	⎓	**°C**	- 20…+ 70
Vibration resistance	Conforming to IEC 68-2-6		> 5 gn (10…150 Hz)
Degree of protection			IP 40

Characteristics : page 28021/3 **References :** Page 28021/4 **Dimensions, schemes :** page 28021/5 **Setting-up :** page 28021/5

Plug-in relays
Miniature relays type RXN

RXN relays characteristics

Mechanical durability at rated voltage at 20 °C and at 2 operations/s	In millions of operating cycles ~		20
	In millions of operating cycles ⎓		20
Maximum operating rate In operating cycles/hour	No load		18 000
	Under load		1200
Operating time (response time) at rated voltage and at 20 °C	Between energisation of the coil and making of the on-delay contact ~	**ms**	10 approx.
	Between energisation of the coil and making of the on-delay contact ⎓	**ms**	13 approx.
	Between de-energisation of the coil and making of the off-delay contact ~	**ms**	8 approx.
	Between de-energisation of the coil and making of the off-delay contact ⎓	**ms**	3 approx.

RXN relays control circuit characteristics

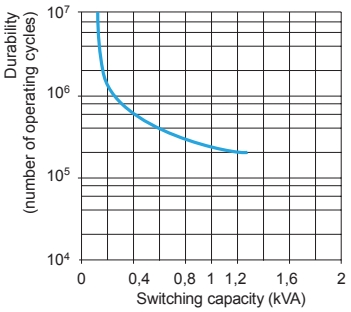
Nominal voltage (Un)	~	**V**	24, 48, 110/115, 230, 50/60 Hz (Other voltages on request)
	⎓	**V**	12, 24, 48, 110 (Other voltages on request)
Average consumption	~	**VA**	1.9 at 60 Hz and 1.6 at 50 Hz
	⎓	**W**	0.9
Permissible voltage variation			0.8...1.1 Un (50/60 Hz or ⎓)
Drop-out voltage threshold	~		> 0.2 Un
	⎓		> 0.1 Un

RXN relays contact characteristics

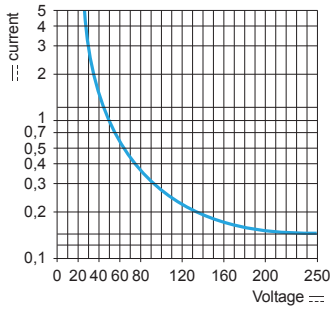
Type of relay			**RXN-21**	**RXN-41**
Number and type of contacts			2 C/O	4 C/O
Contact material	Single contact		Nickel silver (Ag Ni)	
Conventional thermal current (Ith)	For temperature ≤ 40 °C	**A**	5	
Minimum switching power			10 mA - 17 V	
Bounce time		**ms**	2 approx.	

Electrical durability of contacts

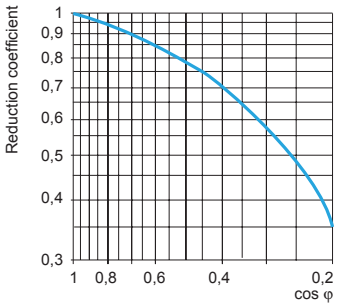
Resistive load ~



Breaking capacity on a resistive load ⎓



Reduction coefficient for inductive load (related to power factor cos φ).



Durability (inductive load) = durability (resistive loads) x reduction coefficient.

Characteristics of socket RXZ-7G

Conventional thermal current (Ith)		**A**	6
Insulation class	Conforming to VDE 0110		C 250
Degree of protection			IP 20
Cabling to screw connectors	Solid cable without cable end	**mm²**	2 x 2.5
	Flexible cable without cable end	**mm²**	2 x 1.5
	Flexible cable with cable end	**mm²**	2 x 1.5

Caracteristics of protection module RXW-040MD

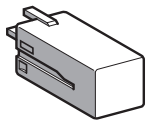
Operational voltage	Freewheel diode	**V**	⎓ 12…250

Presentation : page 28021/2 References : page 28021/4 Dimensions, schemes : page 28021/5 Setting-up : page 28021/5

Plug-in relays
Miniature relays type RXN

RXN-41G11P7

RXZ-1G
+
RXN-41G11FD
+
RXW-040MD
+
RXZ-300



RXW-040MD

RXZ-200

Miniature plug-in control relays, without socket

Standard applications

Contact position indication	"Power on" indication	Number of poles	Sold in lots of	Unit reference. Complete with code indicating control circuit voltage (1)	Weight kg
By mechanical indicator on front face of relay	Without	2	10	**RXN-21E11●●**	0.034
		4	10	**RXN-41G11●●**	0.034
	By LED on front face of relay	2	10	**RXN-21E12●●**	0.034
		4	10	**RXN-41G12●●**	0.034

Socket (2)

Description	Sold in lots of	Unit reference	Weight kg
Socket (14-pin) (3) With locations for add-on protection modules	10	**RXZ-7G**	0.060

Add-on protection module

Description	Relay coil voltage	Sold in lots of	Unit reference	Weight kg
Diode module	12…250 V	10	**RXW-040MD**	0.010

Accessories

Description	Sold in lots of	Unit reference	Weight kg
Maintaining clamp	10	**RXZ-200**	0.001
Customer legend plate (3) Can be clipped onto socket	10	**RXZ-300**	0.010
Can be clipped onto socket in place of module RXW-040MD	10	**RXZ-310**	0.011

(1) Standard control circuit voltages.

Volts	**12**	**24**	**48**	**110**	**110/115**	**230**
	JD	BD	ED	FD	–	–
	–	B7	E7	–	F7	P7

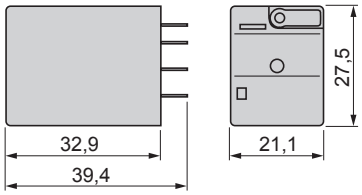
(2) The same socket can be used irrespective of the type of relay (2 or 4-pole).
(3) Sachet, **RX2-300**, containing 10 labels is suppled with each **RXZ-7G** socket.

Presentation : page 28021/2 | Characteristics : pages 28021/2 and 28021/3 | Dimensions, schemes : page 28021/5 | Setting-up : page 28021/5

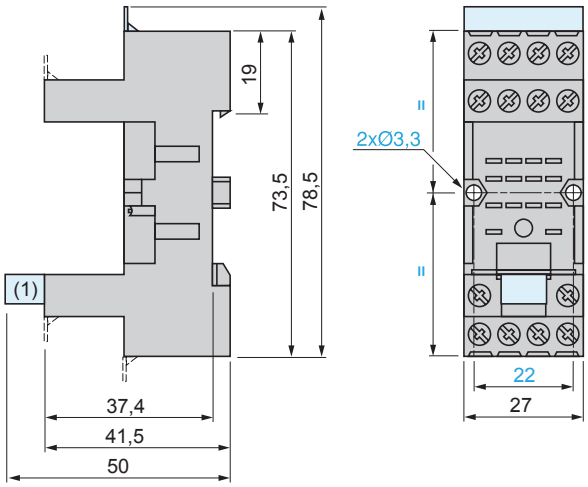
Plug-in relays
Miniature relays type RXN

Dimensions

Relays
RXN-21E1●●●, RXN-41G1●●●



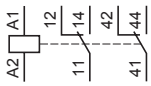
Socket
RXZ-7G



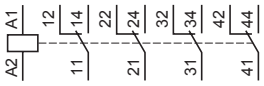
(1) Add-on protection module RXW

Schemes

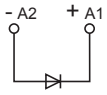
Relays
RXN-21E1●●●



RXN-41G1●●●

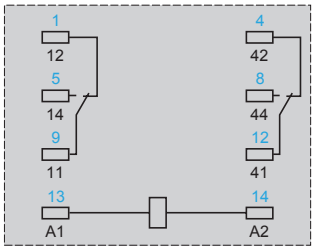


Add-on protection module
RXW-040MD

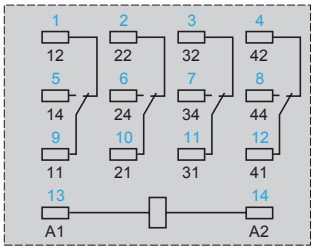


Relay pin and contact referencing

RXN-21E●●●

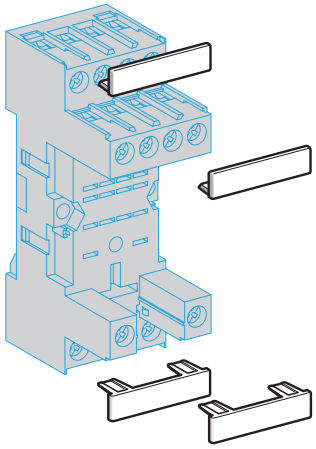


RXN-41G●●●

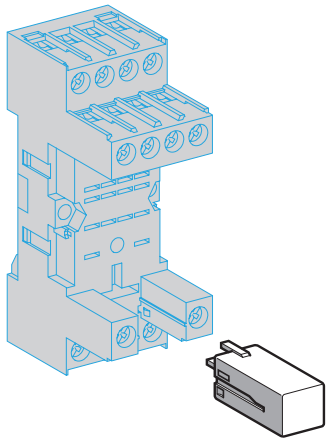


Setting-up

Customer legend plate RXZ-300



Add-on module RXW-040MD



Presentation : page 28021/2
Characteristics : pages 28021/2 and 28021/3
References : page 28021/4

Plug-in relays
Universal relays type RU

Relay

1 Mechanical indicator showing contact position. Indicator orange when contacts tripped.

2 “Power on” LED indicator (applicable to one version of relay).

3 Spring return pushbutton, enabling contacts to be forced. This in turn activates the mechanical indicator.

4 When the pivoting cover is in the open position, the pushbutton is held down. This position is clearly evident. In use, the cover must always be closed.

5 Slot for relay identification label. The label is blank and intended for marking by the user, to suit the requirements of the application.

Sockets

Two standard sockets : 8-pin and 11-pin.

Suitable for mounting on 35 mm ⊓ rail or fixing by two 3 mm diameter screws.

Screw connector terminations.

Slot for socket identification label.

One socket with attachment carrier : 11-pin.
The attachment carrier enables the simple plugging-in of either an LED display module, a protection module or a timer module.

Characteristics : pages 28031/3 to 28031/5
References : pages 28031/6 and 28031/7
Dimensions, schemes : page 28031/8
Setting-up : page 28031/9

Plug-in relays
Universal relays type RU

Environment

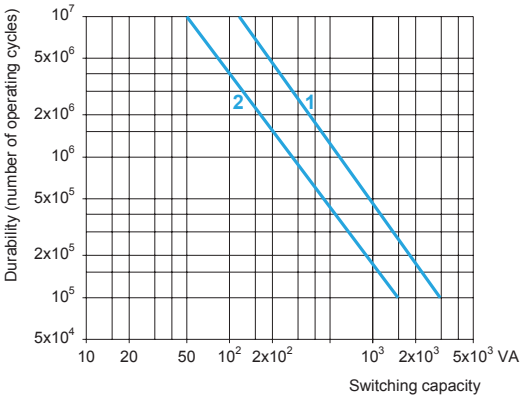
Conforming to standards	Standard version		IEC 255-1-00, VDE 0435 - part 201
Product certifications (pending)	Standard version		Relays : CSA, UL
Protective treatment	Standard version		"TC"
Rated insulation voltage	Conforming to IEC 947	**V**	250
Insulation class	Conforming to VDE 0110		C 250, B 380
Dielectric strength (rms voltage)	Between coil and contact	**V**	2500
	Between poles	**V**	2500
	Between contacts	**V**	1000
Ambient air temperature around the device	Storage	**°C**	- 40…+ 70
	Operation ~	**°C**	- 20…+ 50
	Operation ⎓	**°C**	- 20…+ 50
Vibration resistance	Conforming to IEC 68-2-6		5 gn (30…100 Hz)
Degree of protection			IP 40

Contact characteristics

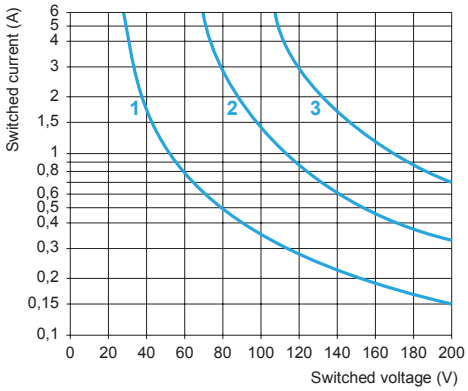
Type of relay			**RUN-21**	**RUN-31**	**RUN-33**
Number and type of contacts			2 single C/O	3 single C/O	3 bifurcated C/O
Contact material	Single contact		Hard silver, gold flashed		Hard silver, gold plated 10 µ
Conventional thermal current	For temperature ≤ 40 °C	**A**	10		4
Minimum switching power			10 mA - 17 V		3 mA - 5 V
Bounce time		**ms**	5 approx.		

Switching capacity on a for ⎓ minimum durability : 10^6 operating cycles (résistive or inductive load with diode RUW-040BD).

Durability on ~ (230 V - 50 Hz)



1 Resistive load
2 Inductive load



1 1 contact
2 2 contacts in series
3 3 contacts in series

Presentation : page 28031/2
References : pages 28031/6 and 28031/7
Dimensions, schemes : page 28031/8
Setting-up : page 28031/9

Plug-in relays
Universal relays type RU

Control circuit characteristics

Nominal voltage (Un)	~		**V**	24, 48, 110, 230, 50/60 Hz (Other voltages on request)
	⎓		**V**	12, 24, 48, 110 (Other voltages on request)
Average consumption	~	Inrush	**VA**	3.5
		Sealed	**VA**	2.3
	⎓		**W**	1.2
Permissible voltage variation				0.8…1.1 Un (50 Hz and ⎓), 0.85…1.1 Un (60 Hz)
Drop-out voltage threshold	~			> 0.15 Un
	⎓			> 0.05 Un

Other characteristics

Mechanical durability at nominal voltage Un, at 20 ° C and at 2 operations/s	In millions of operating cycles	~		20
		⎓		20
Maximum operating rate	In operating cycles/s	No load		4
		Full load		1
Operating time (response time) at nominal voltage and at 20 °C	Between energisation of the coil and making of the on-delay contact	~	**ms**	15
		⎓	**ms**	15
	Between de-energisation of the coil and making of the off-delay contact	~	**ms**	15
		⎓	**ms**	15

Socket characteristics

Conventional thermal current (Ith)		**A**	10
Insulation class	Conforming to VDE 0110		C 250
Degree of protection			IP 20
Cabling	Type		Screw connector
	Solid cable without cable end	**mm²**	2 x 2.5
	Flexible cable without cable end	**mm²**	2 x 1.5
	Flexible cable with cable end	**mm²**	2 x 1.5

Presentation : page 28031/2 | References : pages 28031/6 and 28031/7 | Dimensions, schemes : page 28031/8 | Setting-up : page 28031/9

Plug-in relays
Universal relays type RU

Accessories - common characteristics

Conforming to standards		IEC 255-1-00, VDE 0435
Protective treatment		"TC"
Ambient air temperature around the device Storage	**°C**	- 40…+ 70
Operation	**°C**	- 5…+ 40
Vibration resistance Conforming to IEC 68-2-6		4 gn (30…100 Hz)
Insulation class Conforming to VDE 0110		C 250, B380
Degree of protection		IP 20

RUW-101 MW multi-function time delay module characteristics

Operating voltage	**V**	≂ 24…240 Connection in series with RU relay coil
Permissible voltage variation		0.85…1.1 Un
Permissible frequency variation	**Hz**	45…65
Load factor		100%
Functions		On-delay timer Off-delay timer Monostable with maintained control (on energisation) Monostable with pulse control (on energisation) Monostable (starting on de-energisation) Flashing relay (starting on-delay phase) Flashing relay (starting off-delay phase)
Time delay range 8 ranges	**s**	0.1…1 1…10
	min	0.1…1 1…10
	h	0.1…1 1…10
	day	0.1...1 1...10
Accuracy		1 %
LED indicators Power on		Green LED illuminated
Energised (applicable to RU relays)		Green LED flashing
Input B1		To be controlled by low level contact

Presentation : page 28031/2 | References : pages 28031/6 and 28031/7 | Dimensions, schemes : page 28031/8 | Setting-up : page 28031/9

Plug-in relays
Universal relays type RU

RUN-31A21●●

Universal plug-in control relays, without socket (1)

For normal use

Contact position indication	"Power on" indication	Number of poles	Sold in lots of (3)	Unit reference. Complete with code indicating control circuit voltage (2)	Weight kg
By mechanical indicator on front face of relay	Without	2	10	**RUN-21D21●●**	0.105
		3	10	**RUN-31A21●●**	0.105
	By LED on front face of relay	2	10	**RUN-21D22●●**	0.105
		3	10	**RUN-31A22●●**	0.105

RUZ-1A

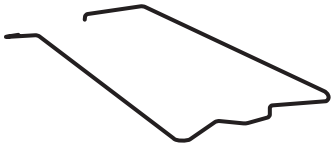
With gold plated contacts

By mechanical indicator on front face of relay	By LED on front face of relay	3	10	**RUN-33A22●●**	0.105

Sockets and accessory

Description		Sold in lots of (3)	Unit reference	Weight kg
Standard sockets	8-pin for RUN-21	10	**RUZ-1D**	0.067
	11-pin for RUN-31 and RUN-33	10	**RUZ-1A**	0.067
Socket with attachment carrier	11-pin for RUN-31 and RUN-33	10	**RUZ-7A**	0.069
Maintaining clamp	–	25	**RUZ-200**	0.001

RUZ-7A
+
RUW-101MW



RUZ-200

(1) Socket and maintaining clamp (if required) to be ordered separately.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

For	Volts	12	24	48	110	230
RUN-21	⎓	JD	BD	ED	FD	–
RUN-31	∿ 50/60 Hz	–	B7	E7	F7	P7
For	Volts	–	**24**	**48**	**110**	**230**
RUN-33	⎓	–	BD	–	–	–
	∿ 50/60 Hz	–	–	–	–	P7

(3) These products are sold in lots, in bulk packs.

Presentation : page 28031/2
Characteristics : pages 28031/3 to 28031/5
Dimensions, schemes : page 28031/8
Setting-up : page 28031/9

Plug-in relays
Universal relays type RU

Add-on modules for RUN-3

LED display modules, protection modules and the timer module, necessitate the use of the RUZ-7A socket with attachment carrier (see page 28031/6). This socket enables the module to be simply and quickly plugged-in, either :
- in parallel for LED display modules and protection modules, or
- in series for the timer module.

RUW-042P7

RUW-101MW

RUZ-7A
+
RUN-31A2●●●
+
RUW-101MW

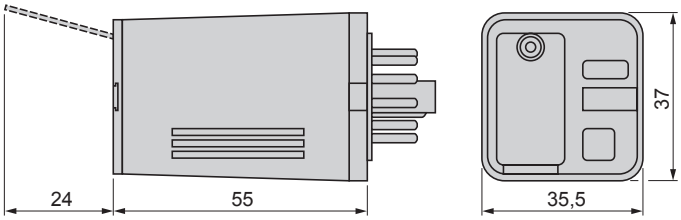
Description		Sold in lots of (1)	Unit reference	Weight kg
LED display modules				
"Power on" indication	∿ 230 V	20	**RUW-010P7**	0.006
	With protection diode ⎓ 24 V	20	**RUW-030BD**	0.006
Protection modules				
Diode	⎓ 24 V and ⎓ 12…250 V	20	**RUW-040BD**	0.006
Varistor	∿ 24 V	20	**RUW-042B7**	0.006
	∿ 230 V	20	**RUW-042P7**	0.006
RC circuit	∿ 110…230 V	20	**RUW-041P7**	0.006
Timer module				
Multi-function	⎓ 24…240 V	1	**RUW-101MW**	0.020

(1) These products are sold in lots, in bulk packs.

Plug-in relays
Universal relays type RU

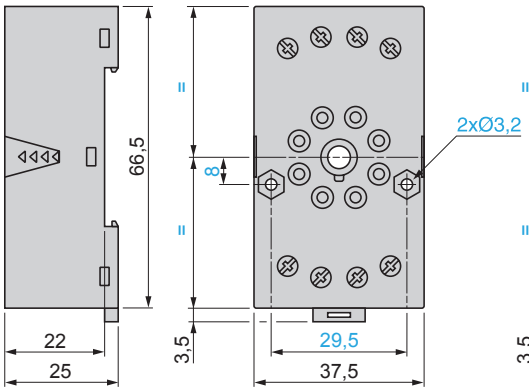
Dimensions

Relays
RUN-2●D21●●, RUN-3●A2●●●

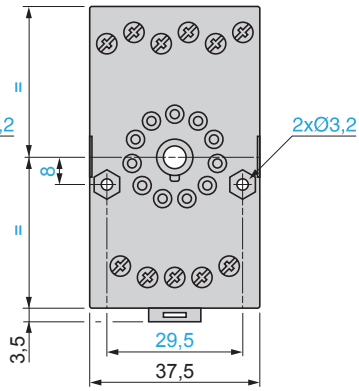


Sockets (8 and 11-pin)

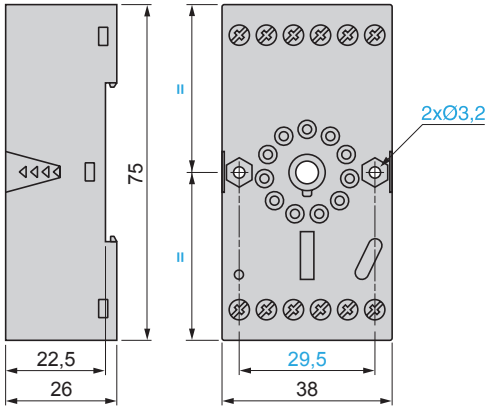
RUZ-1D



RUZ-1A



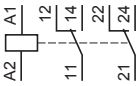
RUZ-7A



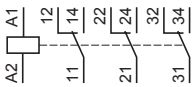
Common side view

Schemes

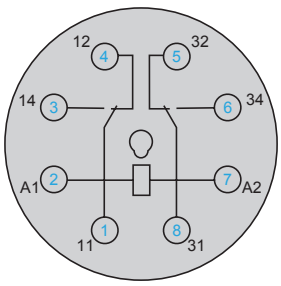
RUN-2●D21●●



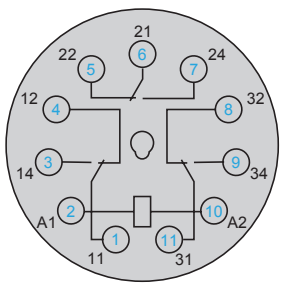
RUN-3●A2●●●



Pin and contact referencing
RUN-2●D21●●



RUN-3●A2●●●

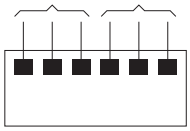


Presentation : page 28031/2
Characteristics : pages 28031/3 to 28031/5
References : pages 28031/6 and 28031/7
Setting-up : page 28031/9

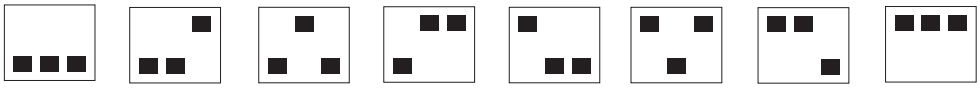
Plug-in relays
Universal relays type RU

Multi-function timer module
RUW-101MW
Programming

Function selection / Time delay selection

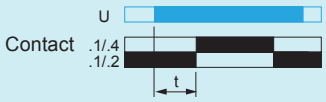
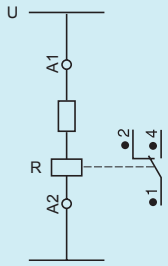
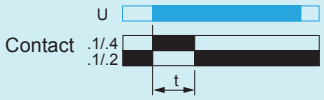
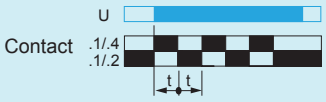
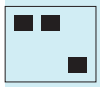
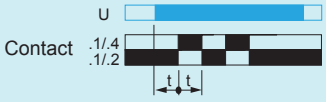
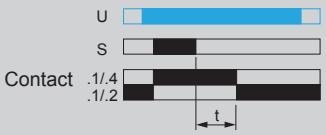
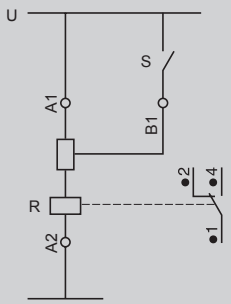
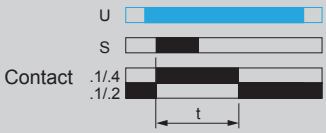
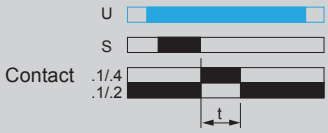
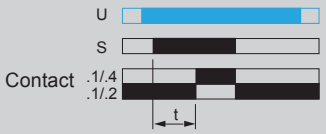


Selecting time delay range



0,1…1 s | 1…10 s | 0,1…1 min | 1…10 min | 0,1…1h | 1…10 h | 0,1…1jour | 1…10 jour

Selecting function

Selection	Function	Control	Function diagram	Series control
	On-delay timer	Series control		
	Monostable with maintained control	Series control		
	Flashing relay, starting on-delay phase	Series control		
	Flashing relay, starting off-delay phase	Series control		
	Off-delay timer	Control by external contact (S)		
	Monostable with pulse control	Control by external contact (S)		
	Monostable starting on de-energisation	Control by external contact (S)		
	On-delay timer	Control by external contact (S)		

Power off / Power on

Contact open / Contact closed

U: Voltage
R relay RUN●●●

S: external control
t : adjustable time delay

Presentation : page 28031/2
Characteristics : pages 28031/3 to 28031/5
References : pages 28031/6 and 28031/7
Dimensions, schemes : page 28031/8