

Telemecanique  
 Control relays  
 CA2-D and CA3-D  
 Characteristics

CA3DN31BD 214-449  
 CA3DN40BD 214-450  
 LA1-DN22 214-474

Farnell order codes

References:  
 pages 1/498 and 1/499  
 Dimensions:  
 page 1/506  
 Schemes:  
 page 1/507

1

Type	CA2-DN, DK, DC		CA3-DN, DK, DC
<b>Environment</b>			
<b>Conforming to standards</b>	IEC 947-1, IEC 947-5-1, NF C 63-140, VDE 0660, EN 60947-1, EN 60947-5-1		
<b>Product approvals</b>	ASE, UL, CSA, DEMKO, NEMKO, SEMKO, FI, (1), SNCF approval, CA3-DN		
<b>Protective treatment</b>	"TH"		
<b>Degree of protection</b>	Protection against direct finger contact	Conforming to VDE 0106	Conforming to VDE 0106
<b>Ambient air temperature around the device</b>	Storage	°C - 60...+ 80	- 60...+ 80
	Operation, Conforming to IEC 255 (0.8...1.1 Uc)	°C - 5...+ 55	- 5...+ 55
	For operation at Uc	°C - 40...+ 70	- 40...+ 70
<b>Maximum operating altitude</b>	Without derating	m 3000	3000
<b>Operating positions</b>	Operation without derating in the following positions		
<b>Shock resistance (2)</b> semi-sinusoidal wave for 11 ms	Control relay open	10 gn	8 gn
	Control relay closed	15 gn	11 gn
<b>Vibration resistance (2)</b> 5...300 Hz	Control relay open	2 gn	2 gn
	Control relay closed	4 gn	3 gn
<b>Cabling</b>	Flexible or rigid cable with or without cable end	mm <sup>2</sup> Min: 1 x 1; max: 2 x 2.5	Min: 1 x 1; max: 2 x 2.5

(1) Conforming to INRS requirements in association with auxiliary contacts LA1-D.  
 (2) In the least favourable direction, without change of contact state, with coil supplied at Uc.

**Control circuit characteristics**

<b>Rated insulation voltage (Ui)</b>	Conforming to IEC 947-1, IEC 947-5-1, EN 60947-1 and EN 60947-5-1	V 690	690		
	Conforming to VDE 0110 group C	V 750	750		
	Conforming to CSA C22-2 n° 14	V 600	600		
<b>Rated control circuit voltage (Uc)</b>		V 12...660	12...600		
<b>Permissible voltage variation</b>	Operational	With 50 or 60 Hz coil: 0.8...1.1 Uc With 50/60 Hz coil: 0.85...1.1 Uc	With standard coil: 0.8...1.1 Uc With wide range coil: 0.7...1.25 Uc		
<b>Voltage limits</b>	Drop-out	0.3...0.6 Uc	0.1...0.65 Uc		
<b>Average consumption at 20 °C</b>	~ 50 Hz	VA Inrush: 60; Holding: 7	-		
	~ 60 Hz	VA Inrush: 70; Holding: 7.5	-		
	~ 50/60 Hz (at 50 Hz)	VA Inrush: 70; Holding: 8	-		
	With standard coil	W -	Inrush or Holding: 9		
With wide range coil	W -	Inrush or Holding: 11			
<b>Operating time</b> (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		
<b>Minimum pulse time</b>	For latching or unlatching of the CA-DK	ms 40	100		
<b>Short supply failures</b>	Max. duration without affecting hold-in of device	ms 2	2		
<b>Maximum operating rate</b>	In operating cycles per second	3	3		
<b>Mechanical life at Uc</b> (mechanical durability)	In millions of operating cycles With: 50 or 60 coil 50/60 Hz (at 50 Hz) standard --- coil wide range == coil	CA2-DN,DC	CA2-DK	CA3-DN, DC	CA3-DK
		20	10	-	-
		30	10	-	-
		-	-	30	10
		-	-	30	10

# Control relays

CA2-D and CA3-D

## Characteristics

References:  
pages 1/498 and 1/499  
Dimensions:  
page 1/506  
Schemes:  
page 1/507

### Instantaneous contact characteristics

<b>Number of contacts</b>	On CAe-D		4
<b>Rated operational voltage (Ue)</b>	Up to	V	660
<b>Rated insulation voltage (Ui)</b>	Conforming to IEC 947-1, IEC 947-5-1, EN 60947-1 and EN 60947-5-1	V	690
	Conforming to VDE 0110 group C	V	750
	Conforming to CSA C22-2 n° 14	V	600
<b>Rated thermal current (Ith)</b>	For ambient temperature ≤ 40 °C	A	10
<b>Operating current frequency</b>		Hz	25...400
<b>Minimum switching capacity</b>	U min	V	17
	I min	mA	5
<b>Short-circuit protection</b>	gG fuse	A	10
<b>Rated making capacity</b>	I rms	A	~ : 140, = : 250
<b>Short time rating</b>	Permissible for	1 s	A 100
		500 ms	A 120
		100 ms	A 140
<b>Insulation resistance</b>		MΩ	> 10
<b>Non-overlap time</b>	Guaranteed between N/C and N/O contacts	ms	1.5 (on energisation and on de-energisation)
<b>Tightening torques</b>		N.m	1.2

**Rated operating power of contacts**  
Conforming to IEC 947-5

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

Electrical life (up to 3600 operating 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).

**d.c. supply, category DC-13**

Electrical life (up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

	24	48	110/127	220/230	380/400	440	500	600	V	24	48	110	220	440	600
VA	150	300	400	480	500	500	500	500	W	120	90	75	68	61	58
VA	80	170	250	290	320	320	320	320	W	70	50	38	33	28	27
VA	30	65	90	120	130	130	130	130	W	25	18	14	12	10	9
VA	1200	2600	7000	13 000	15 000	13 000	9000	9000	W	1000	700	400	260	220	170

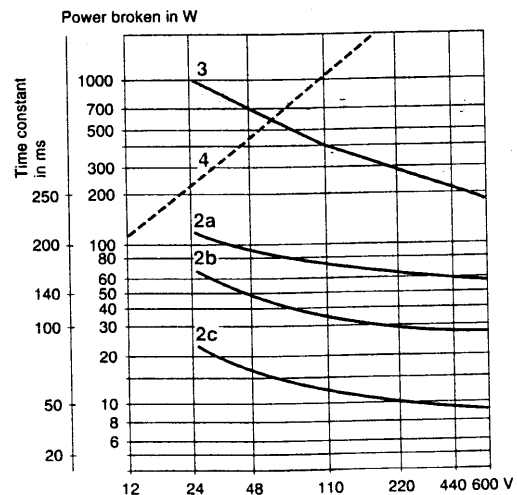
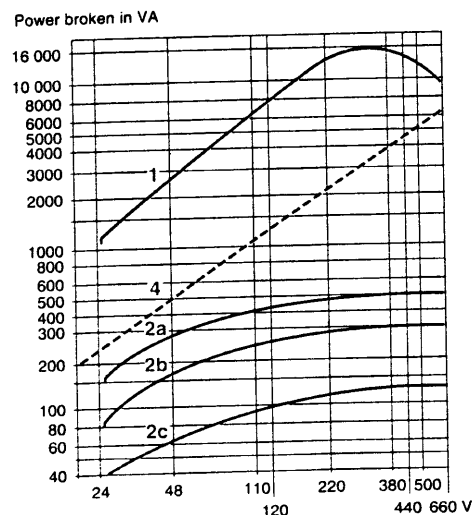
1 million operating cycles  
3 million operating cycles  
10 million operating cycles  
Occasional making capacity

1 Breaking limit of contacts valid for: maximum of 50 operating cycles at 10s 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.



# Control relays

CA2-D and CA3-D

Auxiliary contact blocks (without dust and damp protected contacts)

References :  
pages 1/500 and 1/501  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## Characteristics

### Environment

<b>Conforming to standards</b>			IEC 947-1, IEC 947-5-1, NF C 63-140, VDE 0660, EN 60947-1, EN 60947-5-1
<b>Product approvals</b>			ASE, UL, CSA, DEMKO, NEMKO, SEMKO, FI (1)
<b>Protective treatment</b>			"TH"
<b>Degree of protection</b>	Conforming to VDE 0106		Protection against direct finger contact
<b>Ambient air temperature around the device</b>	Storage	°C	- 60...+ 80
	Operation. Conforming to IEC 255 (0.8...1.1 Uc)	°C	- 5...+ 55
	Permissible for operation at Uc	°C	- 40...+ 70
<b>Maximum operating altitude</b>	Without derating	m	3000
<b>Cabling</b>	Flexible or rigid cable, with or without cable end	mm <sup>2</sup>	Min : 1 x 1; max : 2 x 2.5
<b>Tightening torque</b>		N.m	1.2

### Instantaneous and time delay contact block characteristics

Types of contact block			LA1-D	LA2-D	LA3-D	LA8-D
<b>Number of contacts</b>			2 or 4	2	2	2
<b>Rated operating voltage (Ue)</b>	Up to	V	660			
<b>Rated insulation voltage (Ui)</b>	Conforming to IEC 947-1, IEC 947-5-1, EN 60947-1 and EN 60947-5-1	V	690			
	Conforming to VDE 0110 group C	V	750			
	Conforming to CSA C22-2 n° 14	V	600			
<b>Rated thermal current (Ith)</b>	Ambient temperature ≤ 40 °C	A	10			
<b>Operating current frequency</b>		Hz	25...400			
<b>Minimum switching capacity</b>	U min	V	17			
	I min	mA	5			
<b>Short-circuit protection</b>	gG fuse	A	10			
<b>Rated making capacity</b>	I rms	A	~ : 140 ; ∞ : 250			
<b>Short time rating</b>	Permissible for	A	100			
	1 s	A	120			
	500 ms	A	140			
	100 ms	A				
<b>Insulation resistance</b>		MΩ	>10			
<b>Non-overlap time</b>	Guaranteed between N/C and N/O contacts	ms	1.5 (on energisation and on de-energisation)			
<b>Overlap time</b>	Guaranteed between N/C and N/O contacts on LA1-DC22	ms	1.5	-	-	-
<b>Time delay (LA2-D and LA3-D contact blocks) Accuracy only valid for setting range indicated on front face</b>	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	-
<b>Mechanical life</b>	In millions of operating cycles		30	5	5	30
<b>Operational power of contacts</b>	The same as that of the control relay : see page 1/491.					

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

# Control relays

## CA2-D and CA3-D Mechanical latch blocks

References :  
pages 1/500 and 1/501  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

### Characteristics

#### Environment

Conforming to standards			IEC 947-1, IEC 947-5-1, NF C 63-140, VDE 0660, EN 60947-1, EN 60947-5-1
Product approvals			ASE, UL, CSA, DEMKO, NEMKO, 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	- 60...+ 80
	Operation. Conforming to IEC 255 (0.8...1.1 Uc)	°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	mm <sup>2</sup>	Min : 1 x 1; max : 2 x 2.5
Tightening torque		N.m	1.2

#### Mechanical latch block characteristics

Types			LA6-DK1 50-60 Hz		LA6-DK2 50-60 Hz	
			---	---	---	---
Rated insulation voltage (Ui)		V	660	660	660	660
Rated control circuit voltage (Uc)		V	12...660	12...220	12...660	12...220
Power required for unlatching		VA	160	-	275	-
		W	-	190	-	330
Maximum operating rate	In operating cycles/hour		1200	1200	1000	1000
Mechanical life (at Uc)	In millions of operating cycles		1	1	1	1
Unlatching control	Pulsed or holding		Manual or electrical			
Operating precautions			LA6-DK and CA-D must not be energised or held simultaneously			

Auto cut-out of the coil after 15 ms. Duration of control signal > 10 ms.  
Block LA6-DK2 also has 1 N/C contact which automatically cuts the supply to the contactor coil.  
Signal duration = contactor operating time + 20 ms.

# Control relays

## CA2-D and CA3-D

Auxiliary contact blocks (with dust and damp protected contacts)

References :  
pages 1/500 and 1/501  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

### Characteristics

Types of contact block			LA1-DX	LA1-DZ	LA1-DY
<b>Environment</b>					
Conforming to standards			NF C 63-140, VDE 0660		
Product approvals			UL, CSA		
Protective treatment			"TH"	"TH"	"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact		
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 <sup>2</sup>	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 (U <sub>e</sub> )	Up to	V	50	50	24
Rated insulation voltage (U <sub>i</sub> )	Conforming to VDE 0110 gr C	V	250	250	250
Maximum operational current (I <sub>e</sub> )		mA	500	500	50
Minimum switching capacity	U min	V	17	17	3
	I min	mA	4	4	0.3
Insulation resistance		MΩ	> 10	> 10	> 10
Mechanical life	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 (U <sub>e</sub> )	Up to	V	-	660	-	
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 947-1, IEC 947-5-1, EN 60947-1 and EN 60947-5-1	V	-	690	-	
	Conforming to VDE 0110, group C	V	-	750	-	
	Conforming to CSA C22-2, n° 14	V	-	600	-	
Rated thermal current (I <sub>th</sub> )	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	gG fuse	A	-	10	-	
Rated making capacity	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	-	
Operating power of contacts	The same as those of control relay contacts : see page 1/491.					

# Control relays

CA2-D and CA3-D  
Electronic serial timers

## Characteristics

References :  
page 1/502  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

Type			LA4-DT (On-delay)	LA4-DR (Off-delay)
<b>Environment</b>				
Conforming to standards			IEC 255-5	
Product approvals			UL, CSA	
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	°C	- 25...+ 55	
	Operation at U <sub>c</sub>	°C	- 25...+ 70	
Rated insulation voltage (U <sub>i</sub> )	Conforming to VDE 0110 group C	V	250	
Cabling	Flexible or rigid cable with or without cable end	mm <sup>2</sup>	Min : 1 x 1 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 (U <sub>c</sub> )		V	~ or = 24...250	~ 24...250
Permissible variation			0.8...1.1 U <sub>c</sub>	0.8...1.1 U <sub>c</sub>
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

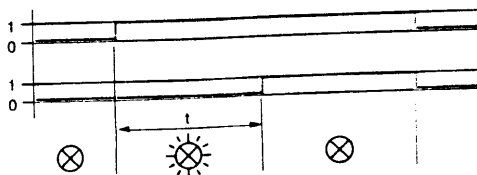
## Switching characteristics (solid state type)

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

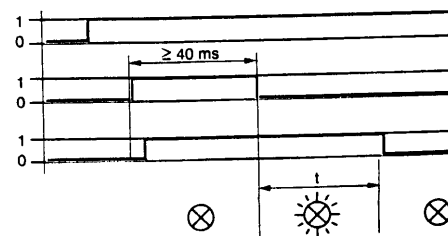
### LA4-DT "on-delay" electronic timers

U supply (A1-A2)  
Time delay output  
Control relay coil



### LA4-DR "off-delay" electronic timers

U supply (A1-A2)  
Control (A2-B2)  
Time delay output  
Control relay coil



Red LED

Red LED

# Control relays

CA2-D and CA3-D  
Interface modules

References :  
page 1/502  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## Characteristics

Types of contact block			LA4-DFB	LA4-DFE	LA4-DLB	LA4-DLE	LA4-DWB
<b>Environment</b>							
Conforming to standards			IEC 255-5				
Product approvals			UL, CSA				
Protective treatment	Standard version		"TH"				
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact				
Ambient air temperature around the device	Storage	°C	- 40...+ 80				
	Operation	°C	- 25...+ 55				
	Operation at U <sub>c</sub>	°C	- 25...+ 70				
Rated insulation voltage	Conforming to VDE 0110 group C	V	250				
Cabling	Flexible or rigid cable with or without cable end	mm <sup>2</sup>	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)		●	●	●	●	●	
	CA3-D (≡ 24...250 V)		●	●	●	●	-	

● possible combination

## 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	
Load factor	A 20 °C	W	0.6	0.6	0.6	0.6	0.4	
Total operating time at U <sub>c</sub> (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 modules, coil suppressor modules and indicators

References :  
pages 1/502 and 28105/5  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## Characteristics

### Environment

Conforming to standards			IEC 337-1
Product approvals			UL, CSA
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	°C	- 25...+ 55
	For operation at U <sub>c</sub>	°C	- 25...+ 70

### Control modules "Auto-Man-Stop"

Type			LA4-DM
Protection	Against electrical shocks	kV	2
Built-in protection	Contacteur coil suppressor	•	By varistor
Indication	By integral LED		Illuminates when the contactor is energised
Electrical life	In operating cycles		20 000
Contact block characteristics	Rated insulation voltage (U <sub>i</sub> ) (To VDE 0110 group C)	V	250
	Rated operational voltage (U <sub>e</sub> )	V	250
Cabling	Flexible or rigid cable with or without cable end	mm <sup>2</sup>	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			LA4-DA1●	LA4-DE1●	LA4-DC1U	
Type of protection			RC circuit	Varistor	Diode	
Rated operating voltage (U <sub>e</sub> )		V	~ 24...250	~ or ≡ 24...250	≡ 24...250	
Maximum peak voltage			3 U <sub>c</sub>	2 U <sub>c</sub>	No overvoltages	
Natural RC frequency		V	24/ 48	50/ 127	110/ 240	-
		Hz	400	200	150	-
Rated insulation voltage	Conforming to VDE 0110 group C	V	250		250	

### Indicators

Type			LA4-DVE	LA4-DVM	LA4-DVR
Indication			Red LED		
Operating range	~ or ≡	V	12...72	72...250	250...440
Cable	Colour		White	Blue	Red
Type of connection			By pre-stripped flexible wire		



# Control relays

CA2-D and CA3-D

Characteristics :  
pages 1/490 and 1/491  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## References

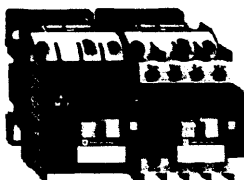


## Control circuit: a.c.

Type	Number of contacts	Composition		Basic reference. Complete with code indicating control circuit voltage (2)	Weight
Instantaneous	4	4	-	<b>CA2-DN40●●</b>	0.320
		3	1	<b>CA2-DN31●●</b>	0.320
		2	2	<b>CA2-DN22●●</b>	0.320
		2	2 including 1 N/O and 1 N/C make before break	<b>CA2-DC22●●</b>	0.320
Mechanical latch/memory	4	2	2	<b>CA2-DK22●●</b>	0.680



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).

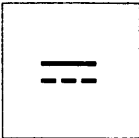
Volts ~	24	42	48	110	220/230	230	240	380/400	400	415	440	500	680
50 Hz	B5	D5	E5	F5	M5	P5	U5	Q5	V5	N5	R5	B5	Y5
60 Hz	B6	-	E6	F6	M6	-	U6	Q6	-	N6	R6	B6	Y6
50/60 Hz	B7	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7	-	-

### Other versions

Control relays CA2-D for other c voltages between 24 and 680 V. Please consult your Regional Sales Office.

# Control relays

CA2-D and CA3-D



Characteristics:  
pages 1/490 and 1/491  
Dimensions:  
page 1/506  
Schemes:  
page 1/507

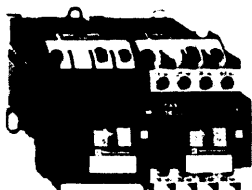
## References

Control circuit: d.c.

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



CA3-DN31●●



CA3-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).

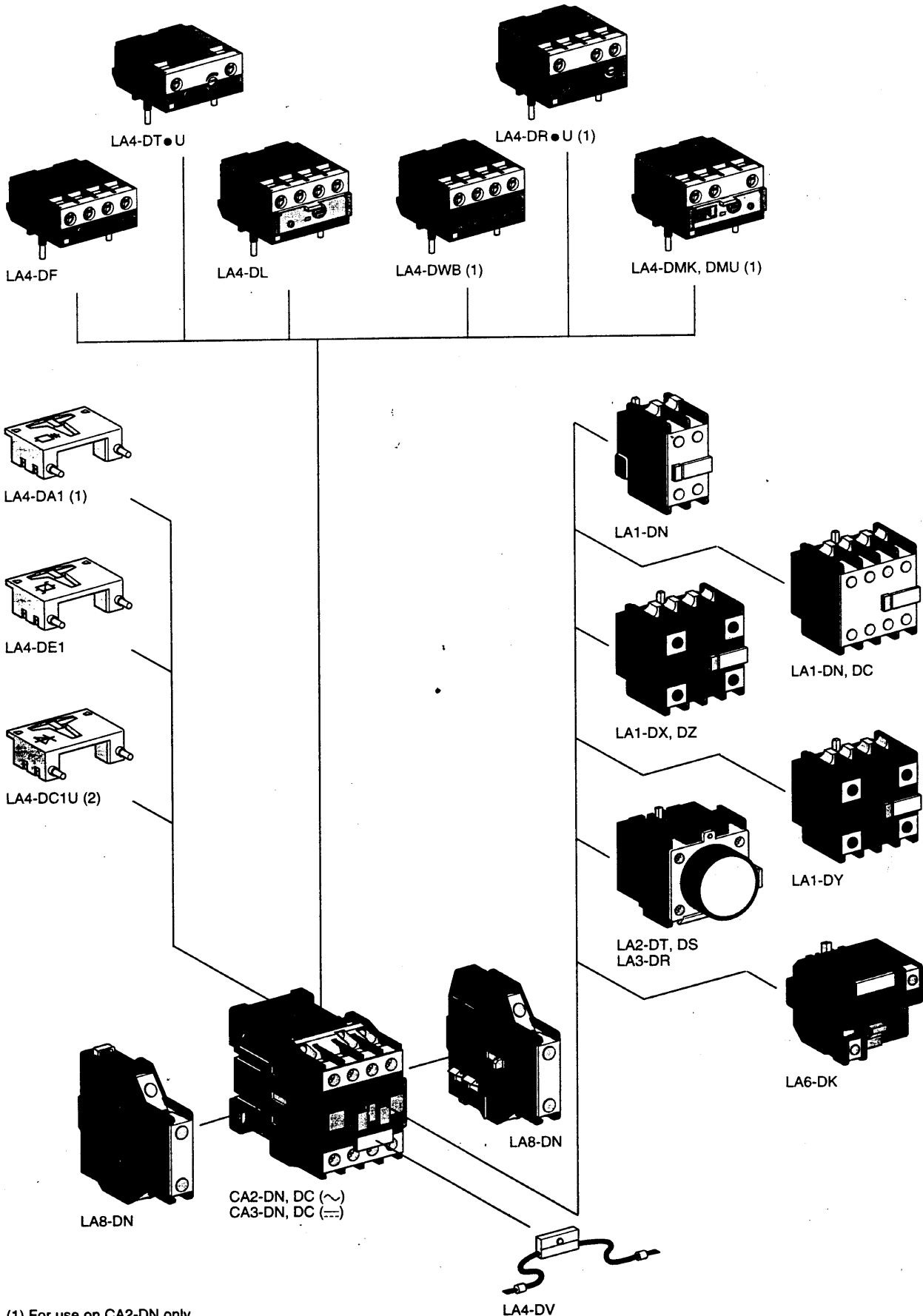
(2) Standard control circuit voltages (for variable time delay, please consult your Regional Sales Office).

Volts	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



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

# Control relays



Characteristics :  
pages 1/492 and 1/494  
Illustrations :  
page 1/500  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## 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)		Composition		Reference	Weight kg
	Clip-on mounting front	side				
<b>For standard applications</b>						
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

214-474.

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

<b>For use in particularly harsh industrial environments</b>							
Number of contacts	Maximum number per relay (1) Front mounting	Composition				Reference	Weight kg
							
protected (4)							
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
			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
			10...180 s	LA3-DR4	0.060

(Sealing kit : see page 1/503)

#### Mechanical latch blocks

Tripping control	Maximum number per relay (1) Front mounting	Contact for automatic cut-out or relay-coil	Basic reference Complete with voltage code (2)	Weight kg
Manual or electric	1	Without	LA6-DK1●	0.070
		With	LA6-DK2●	0.090

(1) Maximum mounting possibility (see below).

Type of device	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	2
		0.85...1.1 Uc	1	2
CA3-D	---	0.8...1.1 Uc	1	2
	---	0.7...1.25 Uc	1	2
	(wide range)		1	2

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

Volts ~ 50/60 Hz	24	32	48	-	-	-	110/115	120/127	208	220
Volts ---	24	-	36	48	60	72	100	110	125	200
Code letters	B	C	CD	E	ND	SD	K	F	G	L
Volts ~ 50/60 Hz	230/240	256	277	380	400	415	440	480	500	575/600
Code letters	U	W5	W6	Q	V	N	R	T	S	X

(3) Including 1 N/O and 1 N/C make before break.

(4) Device 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.

# Control relays

Characteristics :  
1/495 to 1/497  
Illustrations :  
page 1/500  
Dimensions :  
page 1/506  
Schemes :  
page 1/507

## CA2-D and CA3-D

Interface, control modules and delayed capacitive opening devices

## References

### Electronic serial timer modules

Type	Mounted at top on	Time delay	Reference	Weight kg
On-delay	CA2-D, CA3-D	0.1...2 s	LA4-DT0U	0.040
		1.5...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
		1.5...30 s	LA4-DR2U	0.050
		25...500 s	LA4-DR4U	0.050

### Amplifier interface modules

Type	Mounted at top on	Supply voltage (1) of module	Reference of control relay	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

### "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

### Indicators

Type	Clips into legend plate location on	Control relay supply voltage	Sold in lots of	Unit reference	Weight kg
Red LED	CA2-D, CA3-D	12/72 V	5	LA4-DVE	0.010
		72/250 V	5	LA4-DVM	0.010
		250/440 V	5	LA4-DVR	0.010

### 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) Non adjustable	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

### Accessories (to be ordered separately)

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

(1) For 24 V, the control relay must be fitted with a 20 V coil.

(2) See page 1/499.

(3) Replace ● in reference with required voltage code; this will be the same as the code for the delayed opening device.

1



LA4-DR0U



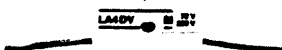
LA4-DFE



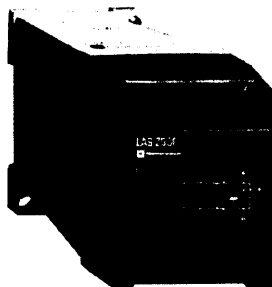
LA4-DLE



LA4-DMU



LA4-DVM



LA9-Z90F

# Control relays

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

Characteristics :  
page 1/497  
Illustrations :  
page 1/500  
Dimensions :  
page 1/506

### References

#### Coil suppressor modules

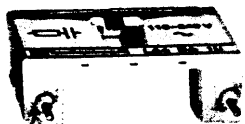
These modules clip onto the top of the control relay and the electrical connection is instantly made.  
Fitting of an input module is still possible.

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
Diode (4)			
CA3-DN (2)	= 24/250 V	LA4-DC1U	0.012

#### Accessories (to be ordered separately)

For connection			
Description	For mounting on	Reference	Weight kg
4-pole connector for connection of 10 mm <sup>2</sup> cables	CA2-DN, CA3-DN	LA9-D1260	0.030
For marking			
For mounting on	Description	Sold in lots of	Unit reference
CA2-DN, CA3-DN and add-on blocks except LA1-DN (2 contacts)	Clip-in marker holder 8 x 22 mm	100	LA9-D92
	Bad of 300 blank self-adhesive labels 7 x 21 mm	1	LA9-D93
LA1-DN (2 contacts)	Clip-in marker holder 8 x 17 mm	100	LA9-D90
	Bag of 400 blank self-adhesive labels 7 x 16 mm	1	LA9-D91
For sealing			
Description	For mounting on	Reference	Weight kg
Sealing kit	LA2-D, LA3-D	LA9-D901	0.005

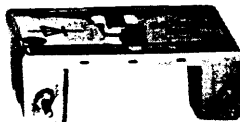
- (1) An RC circuit provides effective protection for circuits highly sensitive to high frequency interference. Voltage limited to 3 Uc maximum, oscillating frequency limited to 400 Hz maximum. Slight increase in drop-out time (1.2 to 2 times the usual time).  
 (2) For satisfactory protection, a suppressor 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).



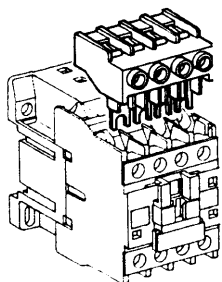
LA4-DA1E



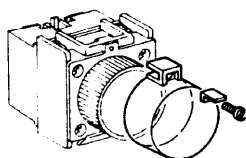
LA4-DE1U



LA4-DC1U



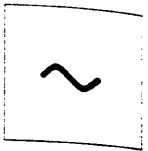
LA9-D1260



LA9-D901

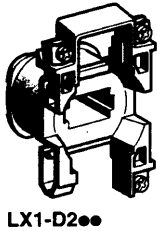
# Control relays

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



## References

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
				Ω	H	Ω	H		
				50 Hz		60 Hz			
V	Ω	H		Ω	H				kg
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
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

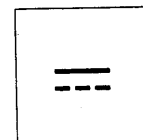
## Specifications

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

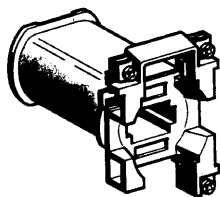
Coils for CA3-D, d.c. control supply



## References

Control circuit voltage Uc	Average resistance at 20 °C ± 10 %	Inductance of closed circuit	Reference (1)	Weight
V	Ω	H		kg

### Standard coils



LX4-D2\*\*

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 ( $\theta \leq 55$  °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 ( $\theta \leq 55$  °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.



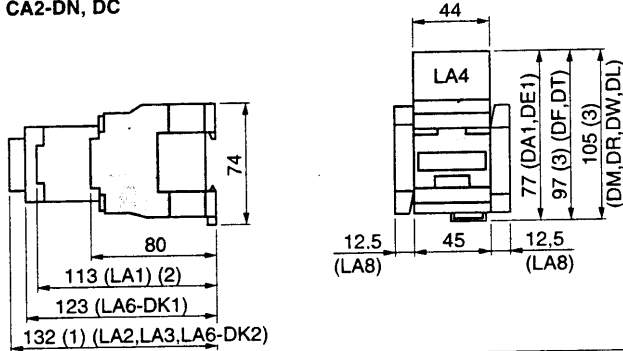
# Control relays

## CA2-D and CA3-D

### Dimensions, mounting

Characteristics :  
pages 1/490 to 1/497  
Illustrations :  
page 1/500  
References :  
pages 1/498 to 1/503  
Schemes :  
page 1/507

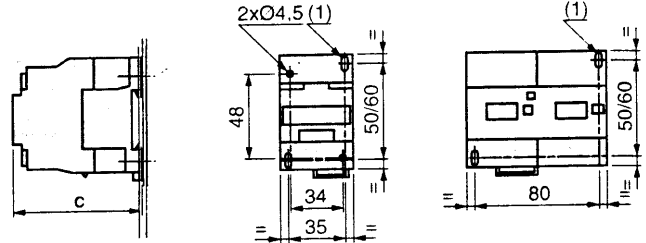
#### CA2-DN, DC



- (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-DK22

#### CA2, CA3-DN, DC, DK Panel mounting

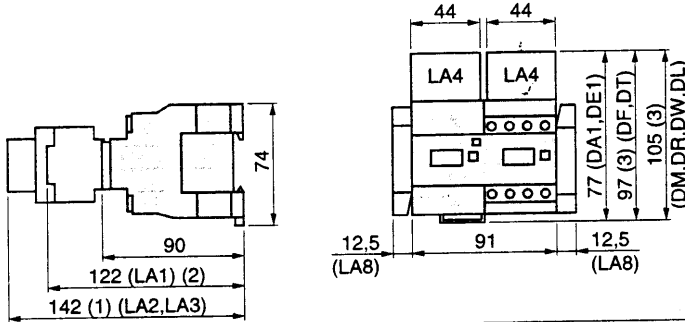


	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c	80	80	90	115	115	125

(1) 2 elongated holes 4.5 x 9

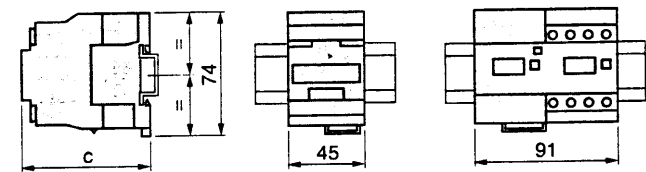
#### CA2, CA3-DN, DC, DK

Mounting on rail AM1-DP200 or DE200



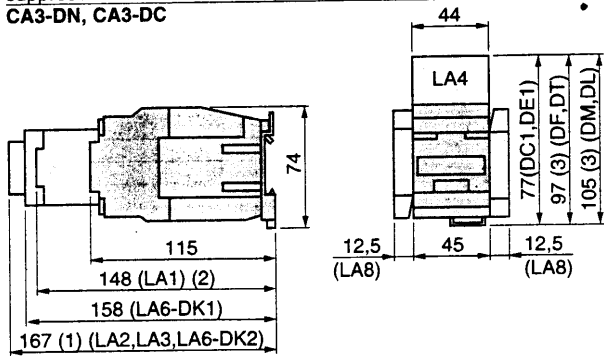
- (1) + 4 mm with lead sealing kit LA9-D901
- (2) With 2 or 4 contacts
- (3) With or without combined use of coil suppressor module LA4-DA1●, DE1●

CA3-DN, CA3-DC



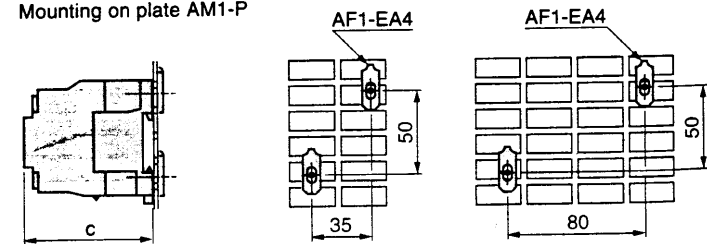
	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c (AM1-DP200)	82	82	91	117	117	127
c (AM1-DE200)	89	89	98	124	124	134

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



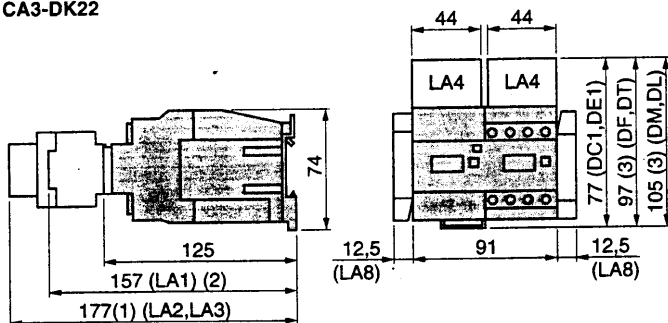
- (1) + 4 mm with lead sealing kit LA9-D901
- (2) With 2 or 4 contacts
- (3) With or without combined use of coil suppressor module LA4-DC1●, DE1●

CA3-DK22

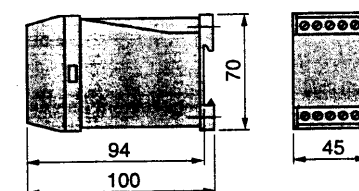


	CA2-			CA3-		
	DN	DC	DK	DN	DC	DK
c (AM1-P)	80	80	90	115	115	125

#### Delayed capacitive opening devices LA9-Z90●



- (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●



# Control relays

Characteristics :  
pages 1/490 to 1/497  
Illustrations :  
page 1/500  
References :  
pages 1/501 to 1/503  
schemes :  
page 1/507

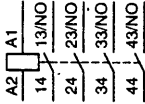
## CA2-D and CA3-D

### Schemes

#### Control relays instantaneous

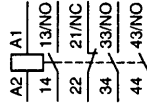
4 N/O

CA2-DN40●●  
CA3-DN40●●



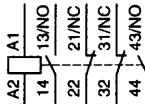
3 N/O + 1 N/C

CA2-DN31●●  
CA3-DN31●●



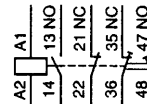
2 N/O + 2 N/C

CA2-DN22●●  
CA3-DN22●●



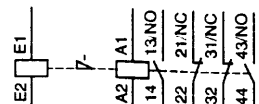
2 N/O + 2 N/C including  
1 N/O + 1 N/C make before break

CA2-DC22●●  
CA3-DC22●●



Mechanical latch  
2 N/O + 2 N/C

CA2-DK22●●  
CA3-DK22●●



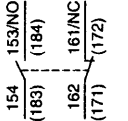
#### Instantaneous auxiliary contact blocks

1 N/O + 1 N/C

LA1-DN11



LA8-DN11 (1)



2 N/O

LA1-DN20

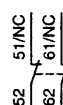


LA8-DN20 (1)



2 N/C

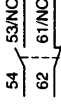
LA1-DN02



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

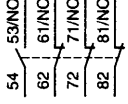
2 N/O + 2 N/C

LA1-DN22



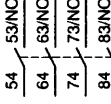
1 N/O + 3 N/C

LA8-DN13



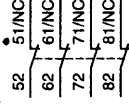
4 N/O

LA1-DN40



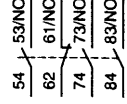
4 N/C

LA1-DN04



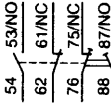
3 N/O + 1 N/C

LA1-DN31



2 N/O + 2 N/C including  
1 N/O + 1 N/C make before break

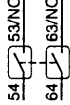
LA1-DC22



With protected contacts

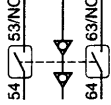
2 N/O protected

LA1-DX20



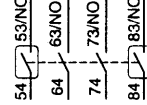
2 N/O protected (2)

LA1-DY20



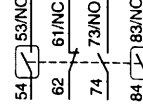
2 N/O protected +  
2 N/O non protected

LA1-DZ40



2 N/O protected +  
1 N/O + 1 N/C non protected

LA1-DZ31

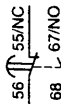


(2) Device fitted with 4 screening continuity terminals.

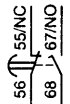
#### Time delay auxiliary contact blocks

On-delay 1 N/O + 1 N/C

LA2-DT●

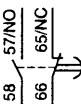


LA2-DS2



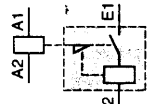
Off-delay 1 N/O + 1 N/C

LA3-DR●

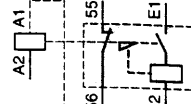


#### Mechanical latch blocks

LA6-DK1●



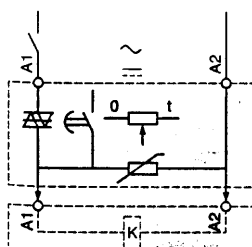
LA6-DK2●



#### Electronic serial timer modules

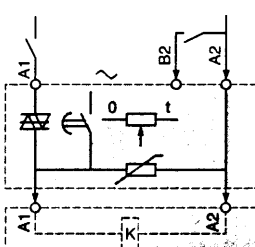
On-delay

LA4-DT●U



Off-delay

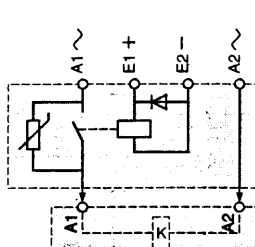
LA4-DR●U



#### Interface modules

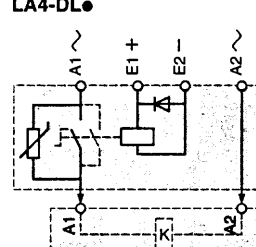
Relay interface

LA4-DF●



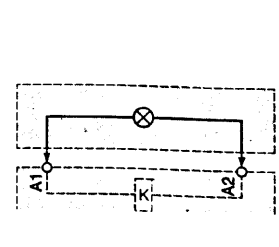
Relay interface and manual  
override switch "Auto-I"

LA4-DL●



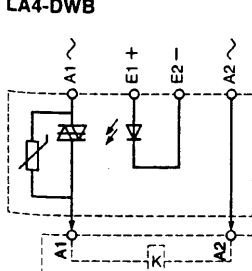
Indicator

LA4-DV●



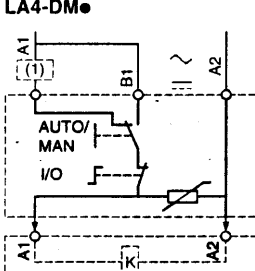
#### Solid state interface module

LA4-DWB



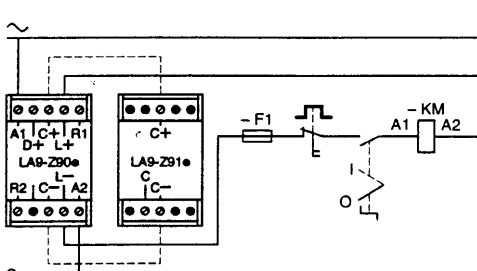
#### "Auto-Man-Stop" control module

LA4-DM●



#### Delayed capacitive opening devices

LA9-Z90●



(1) PLC

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

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