

# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Ordering Information

## Control Relays

- Mounting on 35 mm DIN3 track or 4 screw direct mounting.
- Screws in open "ready-to-tighten" position.



**CA2KN40\*\***



**CA2KN403\*\***



**CA3KN407\*\***

Control Circuit		Type of Termination	Contact Configuration		Catalog Number ♦	Weight lb (kg)
Supply	Consumption		N/O	N/C		
AC	4.5 VA	Screw clamp	4	0	CA2KN40**	0.40 (0.180)
			3	1	CA2KN31**	0.40 (0.180)
			2	2	CA2KN22**	0.40 (0.180)
		Spring Termination	4	0	CA2KN403**	0.40 (0.180)
			3	1	CA2KN313**	0.40 (0.180)
			2	2	CA2KN223**	0.40 (0.180)
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA2KN407**	0.40 (0.180)
			3	1	CA2KN317**	0.40 (0.180)
			2	2	CA2KN227**	0.40 (0.180)
		Solder pins for printed circuit board	4	0	CA2KN405**	0.46 (0.210)
			3	1	CA2KN315**	0.46 (0.210)
			2	2	CA2KN225**	0.46 (0.210)
DC	3 W	Screw clamp	4	0	CA3KN40**	0.50 (0.225)
			3	1	CA3KN31**	0.50 (0.225)
			2	2	CA3KN22**	0.50 (0.225)
		Spring Termination	4	0	CA3KN403**	0.50 (0.225)
			3	1	CA3KN313**	0.50 (0.225)
			2	2	CA3KN223**	0.50 (0.225)
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA3KN407**	0.50 (0.225)
			3	1	CA3KN317**	0.50 (0.225)
			2	2	CA3KN227**	0.50 (0.225)
		Solder pins for printed circuit board	4	0	CA3KN405**	0.56 (0.255)
			3	1	CA3KN315**	0.56 (0.255)
			2	2	CA3KN225**	0.56 (0.255)

## Low Consumption Control Relays

- Compatible with programmable controller outputs.
- LED indicator incorporated.
- Wide range coil (70 to 130% U<sub>c</sub>), suppressor fitted as standard.
- Mounting on 35 mm DIN3 track or 4 screw direct mounting.
- Screws in open "ready-to-tighten" position.



**CA4KN405\*\*\***

DC	1.8 W	Screw clamp	4	0	CA4KN40***	0.52 (0.235)
			3	1	CA4KN31***	0.52 (0.235)
			2	2	CA4KN22***	0.52 (0.235)
		Spring Termination	4	0	CA4KN403***	0.52 (0.235)
			3	1	CA4KN313***	0.52 (0.235)
			2	2	CA4KN223***	0.52 (0.235)
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA4KN407***	0.52 (0.235)
			3	1	CA4KN317***	0.52 (0.235)
			2	2	CA4KN227***	0.52 (0.235)
		Solder pins for printed circuit board	4	0	CA4KN405***	0.58 (0.265)
			3	1	CA4KN315***	0.58 (0.265)
			2	2	CA4KN225***	0.58 (0.265)

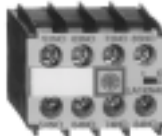


# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Ordering Informaiton

## Instantaneous Auxiliary Contact Blocks



LA1KN20



LA1KN40



LA1KN403



LA1KN407

Clip-on Front Mounting, 1 Block Per Control Relay					
Type of connection	Contact Configuration		Catalog Number	Weight lb (kg)	
	N/O	N/C			
Screw clamp	2	0	LA1KN20	0.10 (0.045)	
	0	2	LA1KN02	0.10 (0.045)	
	1	1	LA1KN11	0.10 (0.045)	
	4	0	LA1KN40 ▲	0.10 (0.045)	
	3	1	LA1KN31 ▲	0.10 (0.045)	
	2	2	LA1KN22 ▲	0.10 (0.045)	
	1	3	LA1KN13 ▲	0.10 (0.045)	
	0	4	LA1KN04 ▲	0.10 (0.045)	
	Spring Termination	2	0	LA1KN203	0.10 (0.045)
		1	1	LA1KN113	0.10 (0.045)
0		2	LA1KN023	0.10 (0.045)	
4		0	LA1KN403 ▲	0.10 (0.045)	
3		1	LA1KN313 ▲	0.10 (0.045)	
2		2	LA1KN223 ▲	0.10 (0.045)	
1		3	LA1KN133 ▲	0.10 (0.045)	
0		4	LA1KN043 ▲	0.10 (0.045)	
Faston 1 x 6.35 or 2 x 2.8		2	0	LA1KN207	0.10 (0.045)
		0	2	LA1KN027	0.10 (0.045)
	1	1	LA1KN117	0.10 (0.045)	
	4	0	LA1KN407 ▲	0.10 (0.045)	
	3	1	LA1KN317 ▲	0.10 (0.045)	
	2	2	LA1KN227 ▲	0.10 (0.045)	
	1	3	LA1KN137 ▲	0.10 (0.045)	
	0	4	LA1KN047 ▲	0.10 (0.045)	

▲ Not to be used on CA4KN relays

## Electronic Time Delay Attachment

- Relay output with common point changeover contact, 240 VAC or VDC, 2 A maximum.
- Control voltage: 85 to 110% U<sub>c</sub>.
- Maximum switching capacity: 250 VA or 150 W.
- Operating temperature: 14 to 140°F (-10 to 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 (s)	Contact Configuration	Catalog Number	Weight lb (kg)
24 to 48 Vac or Vdc	On-delay	1 to 30	1 N/O and 1 N/C with a common	LA2KT2E	0.09 (0.040)
110 to 240 Vac	On-delay	1 to 30	1 N/O and 1 N/C with a common	LA2KT2U	0.09 (0.040)

## Coil Voltages

### CA2K Control Relays

Volts ac 50/60 Hz	12	20	24	36	42	48	110	115	120	127	220/230	230	230/240	380/400	400	400/415	440	480	500	600	660/690
Code (85 to 110% U <sub>c</sub> )	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7		P7			V7		R7	T7	S7	X7	
Code (80 to 115% U <sub>c</sub> )											M7		U7	Q7		N7					Y7

Coils up through 240 V are available with built-in coil suppression. Add a 2 to the end of the appropriate voltage code. Example: **G72**.

### CA3K Control Relays (80 to 115% U<sub>c</sub>)

Volts dc	12	20	24	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

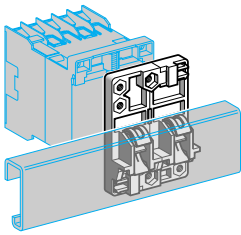
Coils are available with built-in coil suppression. Add a 3 to the end of the appropriate voltage code. Example: **JD3**.

### CA4K Low Consumption Control Relays (wide range coil: 70 to 130% U<sub>c</sub>)

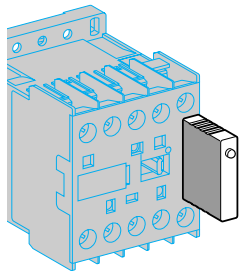
Volts dc	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3



# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Ordering Information



**LA9D973**



**LA4K•••**

Description	Application		Sold in Lots of	Catalog Number	Weight lb (kg)
Mounting Plates for Fixing	On 1 DIN1 track	Clip-on fixing	1	LA9D973	0.06 (0.025)
	On 2 DIN1 tracks	110/120 mm fixing centers	1	DX1AP25	0.14 (0.065)
Marker Holder	Clips onto Front of Relay		100	LA9D90	0.002 (0.001)
Clip-in Markers	See page 22				
Suppressor Modules Incorporating LED Indicator	Clips onto front of relay, with orientation device.  No tools required for connection.	For ac and dc voltages 12 to 24 V (varistor)	5	LA4KE1B ▲	0.02 (0.010)
		For ac and dc voltages 32 to 48 V (varistor)	5	LA4KE1E ▲	0.02 (0.010)
		For ac and dc voltages 50 to 129 V (varistor)	5	LA4KE1FC ▲	0.02 (0.010)
		For ac and dc voltages 130 to 250 V	5	LA4KE1UG ▲	0.02 (0.010)
		For dc voltages 12 to 24 V (diode + Zener diode)	5	LA4KC1B ※	0.02 (0.010)
		For dc voltages 32 to 48 V (diode + Zener diode)	5	LA4KC1E ※	0.02 (0.010)
		For ac voltages 220 to 250 V (RC)	5	LA4KA1U ▶	0.02 (0.010)

▲ Protection by limitation of the transient voltage to 2 Uc maximum.

Maximum reduction of the transient voltage peaks.

Slight time delay on drop-out (1.1 to 1.5 times normal).

※ No over voltage or oscillation frequency.

Polarized component.

Slight time delay on drop-out (1.1 to 1.5 times normal).

▶ Protection by limitation of the transient voltage to 3 Uc max. and limitation of the oscillation frequency.

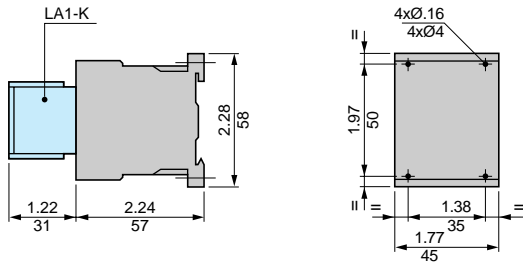
Slight time delay on drop-out (1.2 times to 2 times normal).



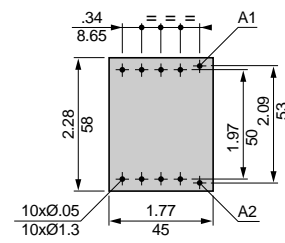
# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Dimensions, and Terminal Configurations

## CA2, CA3, CA4K Control Relays

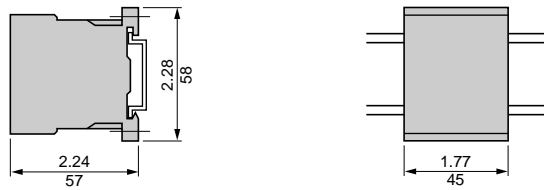
On Panel



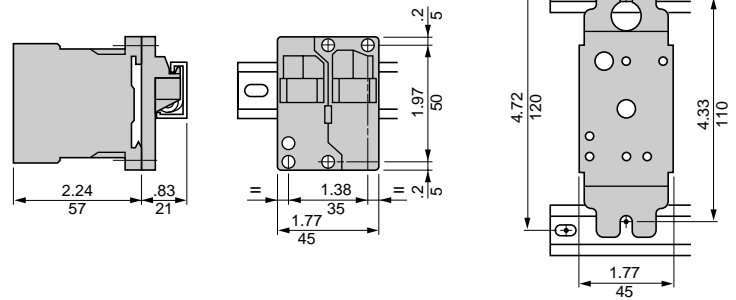
On Printed Circuit Board



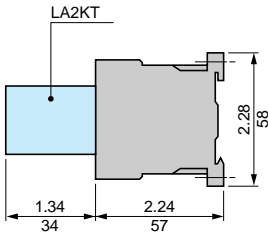
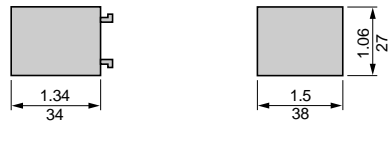
On AM1DP200 or AM1DE200 Track (35 mm DIN3)



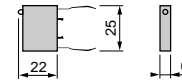
On Asymmetrical Rail with LA9D973 Clip-on Mounting Plate or DX1AP25 Mounting Plate (110/120 mm fixing centers)



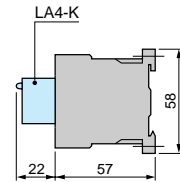
## LA2KT Electronic Time Delay Contact Blocks



## LA4K Suppressor Modules



## LA4K on Auxiliary Control Relay



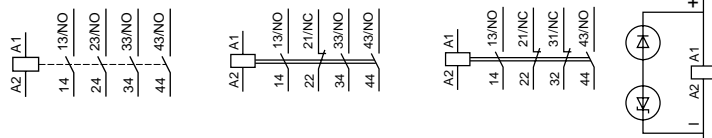
## CA2, CA3, CA4K Control Relays

4 N/O

3 N/O + 1 N/C

2 N/O + 2 N/C

CA4K Coil (suppressor scheme)



## LA1K Instantaneous Auxiliary Contact Blocks

For CA2, CA3, CA4K

2 N/O

2 N/C

1 N/O + 1 N/C

For CA2, CA3K

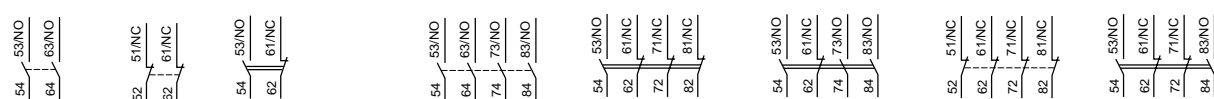
4 N/O

1 N/O + 3 N/C

3 N/O + 1 N/O

4 N/C

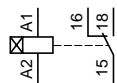
2 N/O + 2 N/C



## LA2KT Electronic Time Delay Contact Blocks

For CA2, CA3, CA4K

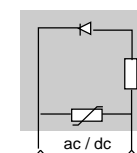
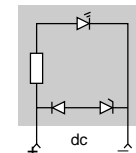
1 C/O



## LA4K Suppressor Modules

LA4KC Suppressor Module

LA4KE Suppressor Module



# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Application Data

## Environment

Conforming to Standards			IEC 60947-1-1, NF C 63-140, VDE 0660, BS 5424		
Approvals			UL File: E164353 CCN: NKCR CSA File: LR43364 Guide: 3211 03 CE		
Protective Treatment	Conforming to IEC 68 (DIN 50016)		"TC" (Climate proof) See page 23		
Degree of Protection	Conforming to VDE 0106		Protection against direct finger contact		
Ambient Air Temperature (around the device)	Storage	°F (°C)	-58 to 176 (-50 to 80)		
	Operation	°F (°C)	-13 to 122 (-25 to 50)		
Maximum Operating Altitude	Without derating	ft (m)	6562 (2000m)		
Operating Position	Vertical axis	Horizontal axis			
	Without derating		Without derating		With derating ▲
	Without derating		With derating ▲		With derating ▲
Flame Resistance	Conforming to UL 94		Self-extinguishing V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock Resistance (1/2 sine wave, 11 ms)	Control relay open		10 g		
	Control relay closed		15 g		
Vibration Resistance 5 to 300 Hz	Control relay open		2 g		
	Control relay closed		4 g		
Safe Circuit Separation	Conforming to VDE 0106 and IEC 536		VLSV ♦, up to 400 V		
Wire Range Screw Clamp Terminals	Solid wire	AWG (mm <sup>2</sup> )	Min. One #16 (1.5)	Max Two #12 (4)	Max to IEC 60947-1-1 One #12 (4) and One #14 (2.5)
	Stranded wire without cable end	AWG (mm <sup>2</sup> )	One #20 (0.75)	Two #12 (4)	Two #14 (2.5)
	Stranded wire with cable end	AWG (mm <sup>2</sup> )	One #22 (0.50)	One #16 (1.5) and One #14 (2.5)	One #16 (1.5) and One #14 (2.5)
Spring Terminal Connection	Solid Wire	AWG (mm <sup>2</sup> )	One #20 (0.75)	One #16 (1.5)	Two #16 (1.5)
	Stranded Wire without Cable End	AWG (mm <sup>2</sup> )	One #20 (0.75)	One #16 (1.5)	Two #16 (1.5)
Faston Connectors	Faston Connector	in (mm)	Two 0.110 (2.8) or one 0.250 (6.35)		
Solder Pins for Printed Circuit Board	With locating device between power circuit and control circuit		4 mm x 35 microns		
Tightening Torque	Phillips head n° 2 and Ø 6	lb-in (N•m)	7.1 - 11.5 (0.8 - 1.3)		
Terminal Referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		

- ▲ Very low safety voltage.
- ♦ Contact your local field sales office.

## Control Circuit Characteristics

Type			CA2K	CA3K	CA4K
Rated Control Circuit Voltage (Uc)		V	12 to 690 ac	12 to 250 dc	12 to 72 dc
Control Voltage Limits 122 °F (≤ 50 °C) single voltage coil	For operation		80 to 115% Uc	80 to 115% Uc	70 to 130% U
	For drop-out		≤ 20% Uc	≤ 10% Uc	≤ 10% Uc
Average Consumption at 68 °F (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 68 °F (20 °C) and at Uc	Between coil energization and - opening of the N/C contacts - closing of the N/O contacts ms ms	ms	5 to 15 10 to 20	25 to 35 30 to 40	25 to 35 30 to 40
	Between coil de-energization and - opening of the N/O contacts - closing of the N/C contacts	ms	10 to 20 15 to 25	10 15	10 to 20 15 to 25
Maximum Immunity to Micro Breaks		ms	2	2	2
Maximum Operating Rate	In operating cycles per hour		10,000	10,000	6000
Mechanical Durability ♦ at Uc In millions of operating cycles	50/60 Hz coil		10	–	–
	Standard dc coil		–	20	–
	Wide range dc coil		–	–	30

The product life expressed above is based on average usage and normal operating conditions. Actual operating life will vary with conditions. The above statements are not intended to, nor shall they create any expressed or implied warranties as to product operation or life. For information on the listed warranty offered on this product, refer to the Square D terms and conditions of sale found in the Square D Digest.



# IEC Type Industrial Control Relays; TeSys D-Line, K-Line, and SK-Line K-Line Application Data

## Contact Characteristics of Control Relays and Instantaneous Contact Blocks

Number of Contacts	On CA•K		4
	On LA1K		2 or 4
	CA2K		2 or 4
	CA3K		2 or 4
	CA4K		2
Rated Operational Voltage (Ue)	Up to	V	690
	Conforming to BS 5424	V	690
Rated Insulation Voltage (Ui)	Conforming to UL 508	V	600
	Conforming to IEC 60947-1-1	V	690
	Conforming to VDE 0110 group C	V	750
	Conforming to CSA C 22-2 n° 14	V	600
	For Ambient Temperature ≤ 122 °F (50 °C)	A	10
Frequency Limits of Operational Current		Hz	Up to 400
Minimum Switching Capacity	Minimum voltage (DIN 19 240)	V	17
	Minimum current	mA	5
Short-circuit Protection	Conforming to IEC 60947-1-1 and VDE 0660, gG (gl) fuse	A	10 (10 Amp Class J Time delay)
Rated Making Capacity	Conforming to IEC 60947-1-1	I rms	A 110
Overload Current	Permissible for	1 s	A 80
		500 ms	A 90
		100 ms	A 110
Impedance		MΩ	> 10
Non-overlap distance	Positively guided contacts ♦ as per INRS and BIA spec	mm	0.5
UL508 Contact Rating	See page 20 for details		A600, Q600

♦ Positively guided contacts: CNA approved.

### Operational Power of Contacts ♦

Conforming to IEC 60947-1-1

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 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).

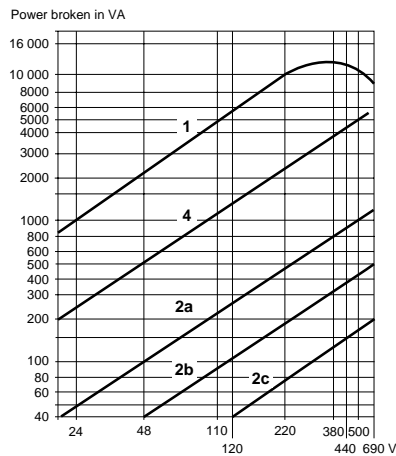
3 Breaking limit of contacts valid for:  
- maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit

### AC 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).

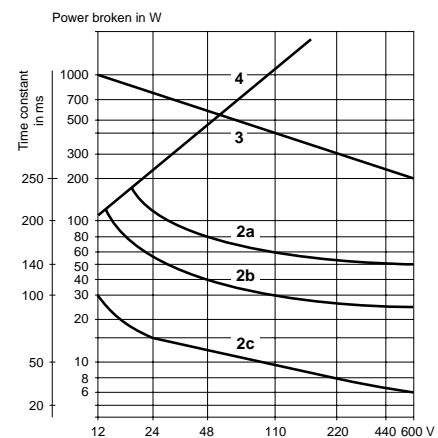
	110/	220/	380/	600/			
V	24	48	127	230	400	440	690
VA	48	96	240	440	800	880	1200
VA	17	34	86	158	288	317	500
VA	7	14	36	66	120	132	200
VA	1000	2050	5000	10 000	14 000	13 000	9000



### DC 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).

	24	48	110	220	440	600
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



♦ The product life expressed above is based on average usage and normal operating conditions. Actual operating life will vary with conditions. The above statements are not intended to, nor shall they create any expressed or implied warranties as to product operation or life. For information on the listed warranty offered on this product, refer to the Square D terms and conditions of sale found in the Square D Digest.

### Utilization Categories for Control Relays Conforming to IEC 60947-1-1

<b>AC Applications</b>	Category AC-15 (1)	This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is more than 72 VA. Application example: Switching the operating coil of contactors.
<b>DC Applications</b>	Category DC-13 (2)	This category applies to the switching of electromagnetic loads for which the time taken to reach 95% of the steady state current (T = 0.95) is equal to 6 times the power P drawn by the load (with P ≥ 50 W). Application example: Switching the operating coil of contactors without economy resistor.

- (1) Replaces category AC-11  
(2) Replaces category DC-13

