

## Characteristics

## Contactors

Mini-contactors types LC1-SK and LP1-SK

2

2.1

### Environment

<b>Rated insulation voltage (UI)</b>	Conforming to IEC/EN 60947-1, IEC/EN 60947-4-1, VDE 0110 gr C, CSA 22-2 n° 14, UL 508	<b>V</b>	690	
<b>Conforming to standards</b>			IEC/EN 60947-1, IEC/EN 60947-4-1, NF C 630110, VDE 0660	
<b>Approvals</b>			UL, CSA	
<b>Protective treatment</b>	Conforming to IEC/EN 60068 (DIN 50015)		"TC" (Klimafest, Climateproof)	
<b>Degree of protection</b>	Conforming to VDE 0106		Protection against direct finger contact	
<b>Ambient air temperature around the device</b>	Storage	<b>°C</b>	- 50...+ 70	
	Operation	<b>°C</b>	- 20...+ 50	
<b>Maximum operating altitude</b>	Without derating	<b>m</b>	2000	
<b>Operating position</b>	<b>Vertical axis</b>	<b>Horizontal axis</b>		
<b>Cabling, screw clamp terminals</b>			min	max
	Solid conductor	<b>mm<sup>2</sup></b>	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	<b>mm<sup>2</sup></b>	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
<b>Tightening torque</b>	Pozidriv n° 1 head	<b>N.m</b>	0.8	
<b>Terminal referencing</b>			Conforming to standards EN 50005	

References:  
pages 2/6 and 2/7

Dimensions:  
page 2/8

Schemes:  
page 2/9

## Characteristics

## Contactors

Mini-contactors types LC1-SK and LP1-SK

### Pole characteristics

<b>Conventional thermal current (I<sub>th</sub>)</b>	For ambient temperature ≤ 55 °C	<b>A</b>	12
<b>Rated operational frequency</b>		<b>Hz</b>	50/60
<b>Frequency limits of the operational current</b>		<b>Hz</b>	Up to 400
<b>Rated operational voltage (U<sub>e</sub>)</b>		<b>V</b>	690
<b>Rated making capacity</b>	I rms conforming to NF C 63-110 and IEC/EN 60947-4-1	<b>A</b>	66
<b>Rated breaking capacity (for U<sub>e</sub> ≤ 400 V)</b>	Conforming to NF C 63-110 and IEC/EN 60947-4-1 (I rms)	<b>A</b>	52
<b>Short time rating</b>	In free air for a time "t" from cold state (θ ≤ 55 °C)	<b>A</b>	50
<b>Short-circuit protection</b>	gG fuse U ≤ 440 V	<b>A</b>	16
<b>Average impedance per pole</b>	At I <sub>th</sub> and 50 Hz	<b>mΩ</b>	4
<b>Maximum rated operational current</b>	for a temperature ≤ 55 °C		
	AC-3 (1) (U <sub>e</sub> ≤ 400 V)	<b>A</b>	6
	AC-1	<b>A</b>	12
<b>Utilisation in category AC-1 resistive circuits, heating, lighting (U<sub>e</sub> ≤ 440 V)</b>	Increase in operational current by paralleling of poles	<b>A</b>	20

### Auxiliary contact characteristics of add-on blocks

<b>Rated operational voltage (U<sub>e</sub>)</b>	Up to	<b>V</b>	690
<b>Rated insulation voltage (U<sub>i</sub>)</b>	Conforming to IEC/EN 60947-1, VDE 0110 group C, CSA C 22-2 n° 14	<b>V</b>	690
<b>Conventional thermal current (I<sub>th</sub>)</b>	For ambient temperature ≤ 55 °C	<b>A</b>	10
<b>Frequency of operational current</b>		<b>Hz</b>	Up to 400
<b>Short-circuit protection</b>	To IEC/EN 60947-5-1 and VDE 0660, gG fuse	<b>A</b>	10

#### Operational power of contacts conforming to IEC/EN 60947-5-1

#### 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 the breaking current (cos φ 0.4).

	<b>V</b>	<b>24</b>	<b>48</b>	<b>110/127</b>	<b>220/230</b>	<b>380/400</b>	<b>440</b>
1 million operating cycles	<b>VA</b>	48	96	240	440	800	880
3 million operating cycles	<b>VA</b>	17	34	86	158	288	317
10 million operating cycles	<b>VA</b>	7	14	36	66	120	132
Occasional making capacity	<b>VA</b>	1000	2050	5000	10000	14000	13000

(1) For LC1 contactors

#### 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.

	<b>V</b>	<b>24</b>	<b>48</b>	<b>110</b>	<b>220</b>	<b>440</b>
1 million operating cycles	<b>W</b>	120	80	60	52	51
3 million operating cycles	<b>W</b>	55	38	30	28	26
10 million operating cycles	<b>W</b>	15	11	9	8	7
Occasional making capacity	<b>W</b>	720	600	400	300	230

References:  
pages 2/6 and 2/7

Dimensions:  
page 2/8

Schemes:  
page 2/9

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2/3

2

2.1



**Characteristics** (continued)

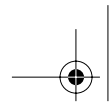
**Contactors**

Mini-contactors types LC1-SK and LP1-SK

**2**  
**2.1**

Control circuit characteristics				
Contactor type			LC1-SK06	LP1-SK06
<b>Rated control circuit voltage (Uc)</b>		<b>V</b>	~ 24...400	~ 12...72
<b>Control voltage limits</b> ( $\theta \leq 55^\circ\text{C}$ ) single voltage coil	For operation		0.85...1.1 Uc	0.85...1.1 Uc
	For drop-out		$\geq 0.20$ Uc	$\geq 0.10$ Uc
<b>Average coil consumption at 20 °C and at Uc</b>	Inrush		16 VA	2.2 W
	Sealed		4.2 VA	2.2 W
<b>Heat dissipation</b>		<b>W</b>	1.4	2.2
<b>Operating time at 20 °C and at Uc</b>	Between coil energisation and - opening of the N/C contacts - closing of the N/O contacts	<b>ms</b> <b>ms</b>	8...16 7...14	10...18 8...12
	Between coil de-energisation and - opening of the N/O contacts - closing of the N/C contacts	<b>ms</b> <b>ms</b>	6...8 8...10	4...6 6...8
<b>Maximum operating rate</b>	In operating cycles per hour		1200	1200
<b>Mechanical durability at Uc</b> In millions of operating cycles	50/60 Hz coil		10	-
	~ coil		-	10





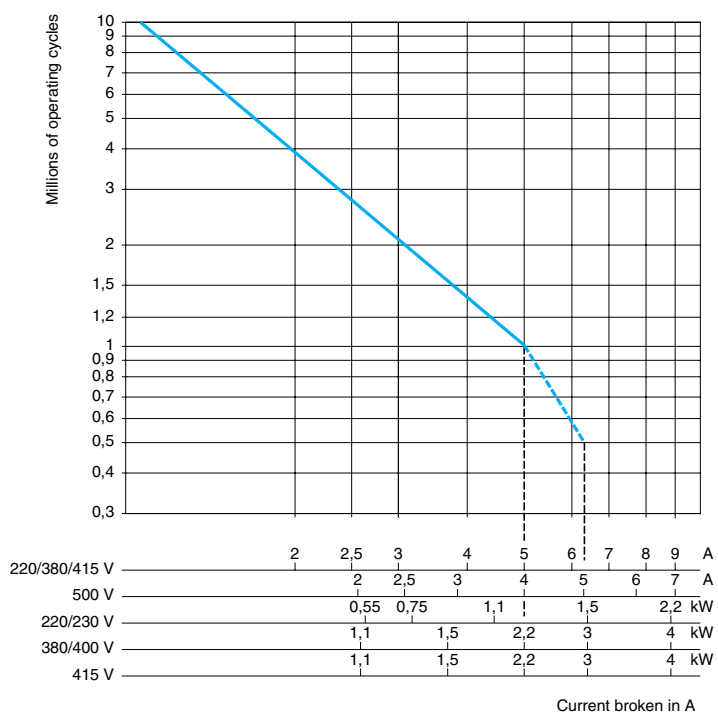
# Contactor selection according to required electrical durability

## Contactors

Mini-contactors types LC1-SK and LP1-SK

### Use in category AC-3 ( $U_e \leq 440$ V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.  
The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.

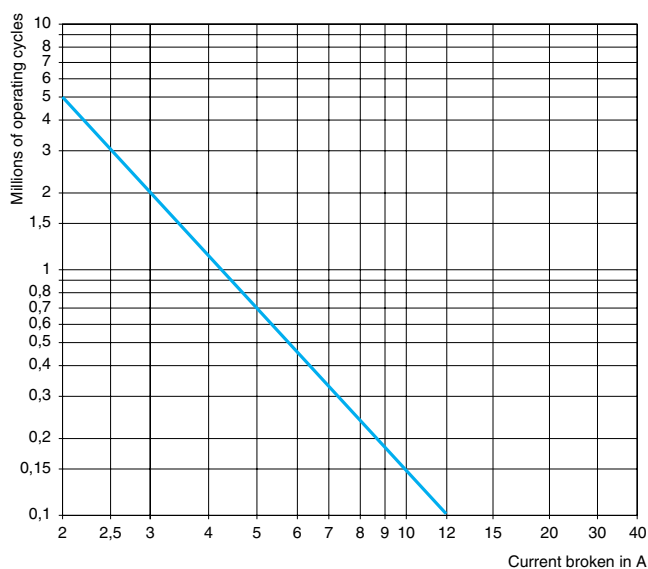


Current broken in A

----- only up to 415 V

### Use in category AC-1 ( $U_e \leq 440$ V)

Control of resistive circuits ( $\cos \varphi \geq 0.95$ ).  
The current broken ( $I_c$ ) in category AC-1 is equal to the current ( $I_e$ ) normally drawn by the load.



Current broken in A

2  
2.1

References:  
pages 2/6 and 2/7

Dimensions:  
page 2/8

Schemes:  
page 2/9

References

Contactors

Mini-contactors types LC1-SK and LP1-SK

2  
2.1



LC1-SK06

- Width of contactor 27 mm.
- Mounting on 35 mm rail.
- Screw clamp terminals.

Mini-contactors for motor control (AC-3)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 (1)				Rated operational voltage in AC-3 up to 400 V	Number of poles	Instantaneous auxiliary contacts	Basic reference. Complete with code indicating control circuit voltage (2)	Weight
220 V	280 V	660 V						
kW	kW	kW	A					kg
1.1	2.2	2.2	6	2	-	-	LC1-SK0600●●	0.132

Mini-contactors for use in category AC-1

Non inductive loads maximum current ( $\theta \leq 55^\circ\text{C}$ ) utilisation category AC-1	Control circuit supply	Number of poles	Instantaneous auxiliary contacts	Basic reference. Complete with code indicating control circuit voltage (2)	Weight
A					kg
12	a.c.	2	-	LC1-SK0600●●	0.132
	d.c.	2	-	LP1-SK0600●●	0.132

Add-on block with 1 power pole (for 3-phase circuits)

For use on contactor	Number of poles	Instantaneous auxiliary contacts	Reference	Weight
				kg
LC1-SK06 clip-on front mounting	1	1 -	LA1-SK10	0.022
	1	- 1	LA1-SK01	0.022



LA1-SK10

**Note:** Auxiliary contact blocks and coil suppressor module, see next page.  
 (1) For use in AC-3 category and 3-phase circuits, an LA1-SK●● auxiliary contact block should be ordered separately for mounting on the contactor.  
 (2) Standard control circuit voltages (for other voltages, please call our Customer information centre on 0870 608 8 608).

Mini-contactors LC1-SK									
Volts ~	24	48	110	120	220	230	240	380	400
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7
Mini-contactors LP1-SK									
Volts ---	12	24	36	48	72				
Code	JD	BD	CD	ED	SD				

Characteristics: pages 2/2 to 2/5

Dimensions: page 2/8

Schemes: page 2/9

## References

## Contactors

Mini-contactors types LC1-SK and LP1-SK  
Instantaneous auxiliary contacts and coil suppressor modules



LA1-SK11

### Instantaneous auxiliary contact blocks

#### Clip-on front mounting

For use on contactors	Maximum number of blocks per contactor	Composition	Reference	Weight
				kg
LC1-SK06	1	2 -	LA1-SK20	0.022
		- 2	LA1-SK02	0.022
		1 1	LA1-SK11	0.022

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### Coil suppressor module

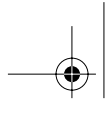
#### Clip-on fixing and electrical connection on right-hand side, without use of tools

For use on contactors	Type	For voltages	Sold in lots of	Unit reference	Weight
LC1-SK06 and LP1-SK06	Varistor (1)	~ and = 24 V...48 V	10	LA4-SKE1E	0.003
		~ and = 110 V...250 V	10	LA4-SKE1U	0.003
	Diode (2)	= 24 V...250 V	10	LA4-SKC1U	0.003



LA4-SK1

(1) Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).  
(2) No overvoltage or oscillating frequency. Slight increase in drop-out time (1.1 to 1.5 times the normal time).



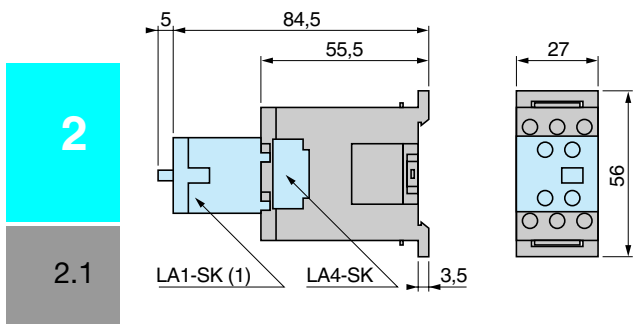
## Dimensions, mounting

## Contactors

Mini-contactors types LC1-SK and LP1-SK



### Dimensions Mini-contactors LC1, LP1-SK06



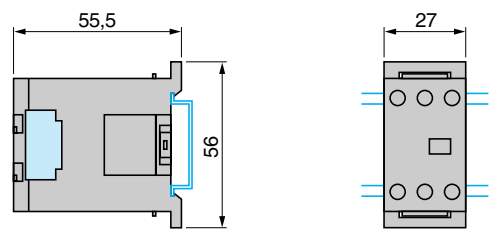
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(1) Only on LC1-SK06

### Mounting Mini-contactors LC1, LP1-SK06

on mounting rail AM1-DP200 or AM1-DE200 (~35 mm)



Characteristics:  
pages 2/2 to 2/5

References:  
pages 2/6 and 2/7

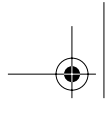
Schemes:  
page 2/9

2/8

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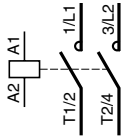


# Schemes

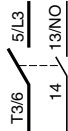
# Contactors

Mini-contactors types LC1-SK and LP1-SK

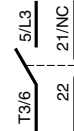
**2-pole mini-contactors  
LC1 and LP1-SK06**



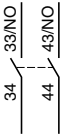
**Add-on power pole block  
1 pole + 1 N/O aux.  
LA1-SK10**



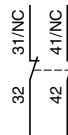
**1 pole + 1 N/C aux.  
LA1-SK01**



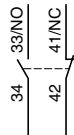
**Instantaneous auxiliary contacts  
2 N/O  
LA1-SK20**



**2 N/C  
LA1-SK02**



**1 N/O + 1 N/C  
LA1-SK11**



2  
2.1



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