

Technical Data for Designers

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Modular Impulse relay:

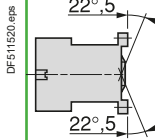
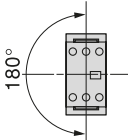
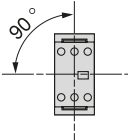
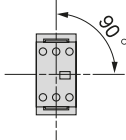
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Standard IEC tests - Contactors
conforming to UL/CSA.....B8/128

TeSys Control

SK Contactors

Characteristics

Environment				
Rated insulation voltage (Ui)	Conforming to 60947	V	690	
Conforming to standards			IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1	
Approvals			cULus, EAC, UKCA, CB certification	
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2x	
Ambient air temperature around the device	Storage	°C	-50...+70	
	Operation	°C	-20...+50	
Maximum operating altitude	Without derating	m	2000	
Operating position		<div><div><div><div>Vertical axis</div><div></div><div>Without derating</div></div><div><div><div>Horizontal axis</div><div></div><div>Without derating</div></div><div></div><div></div></div></div></div>		
Cabling, screw clamp terminals		Min	Max	
	Solid conductor	mm²	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	mm²	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	mm²	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	N.m	0.8	
Terminal referencing			Conforming to standards En 50005	



Pole characteristics			
Conventional thermal current (Ith)	For ambient temperature $\leq 55^{\circ}\text{C}$	A	12
Rated operational frequency		Hz	50/60
Frequency limits of the operational current		Hz	Up to 400
Rated operational voltage (Ue)		V	690
Rated making capacity	I rms conforming to IEC 60947-1	A	66
Rated breaking capacity (for Ue $\leq 400\text{ V}$)	Conforming to IEC 60947-1	A	52
Short time rating	In free air for a time "t" from cold state ($\theta \leq 55^{\circ}\text{C}$)	A	50
Short-circuit protection	gl fuse U $\leq 440\text{ V}$	A	16
Average impedance per pole	At Ith and 50 Hz	mΩ	4
Maximum rated operational current			
For a temperature $\leq 55^{\circ}\text{C}$	AC-3 ⁽¹⁾ (Ue $\leq 400\text{ V}$)	A	6
	AC-1	A	12
Utilisation in category AC-1 resistive circuits, heating, lighting (Ue $\leq 440\text{ V}$)	Increase in operational current by paralleling of poles	A	20
Auxiliary contact characteristics of add-on blocks			
Rated operational voltage (Ue)	Up to	V	690
Rated insulation voltage (Ui)	Conforming to IEC 60947, IEC 60947-1	V	690
Conventional thermal current (Ith)	For ambient temperature $\leq 55^{\circ}\text{C}$	A	10
Frequency of operational current		Hz	Up to 400
Short-circuit protection	Conforming to IEC 60947 and IEC 60947-1, gl fuse	A	10

Operational power of contacts conforming to IEC 60947

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 ($\cos \phi 0.7$) = 10 times the breaking current ($\cos \phi 0.4$).

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

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	440
1 million operating cycles	W	120	80	60	52	51	880
3 million operating cycles	W	55	38	30	28	26	317
10 million operating cycles	W	15	11	9	8	7	132
Occasional making capacity	W	720	600	400	300	230	13000

⁽¹⁾ For LC1 contactors.

Control circuit characteristics				
Type			LC1SK06	LP1SK06
Rated control circuit voltage (Uc)		V	~ 24...400	~ 12...72
Control voltage limits (q ≤ 50 °C)	For operation		0.85...1.1 Uc	0.85...1.1 Uc
	For drop-out		≥ 0.20 Uc	≥ 0.10 Uc
Average coil consumption at 20 °C and at Uc	Inrush		16 VA	2.2 W
	Sealed		4.2 VA	2.2 W
Heat dissipation		W	1.4	2.2
Operating time at 20 °C and at Uc				
Between coil energisation and	opening of the N/C contacts	ms	8...16	10...18
	closing of the N/O contacts	ms	7...14	8...12
Between coil de-energisation and	opening of the N/O contacts	ms	6...8	4...6
	closing of the N/C contacts	ms	8...10	6...8
Maximum operating rate	In operating cycles per hour		1200	1200
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–
	~ coil		–	10

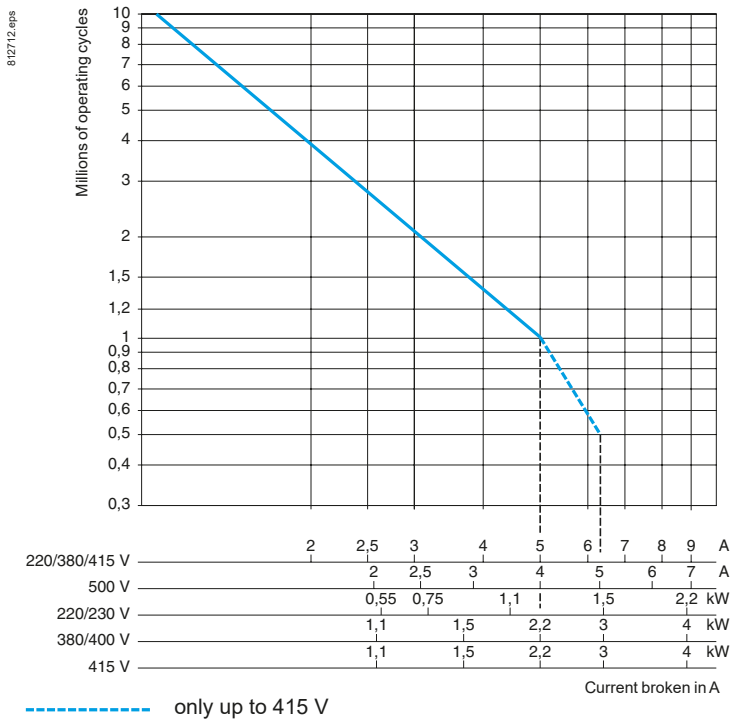
Ref.



Use in category AC-3 ($U_e \leq 440\text{ V}$)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.

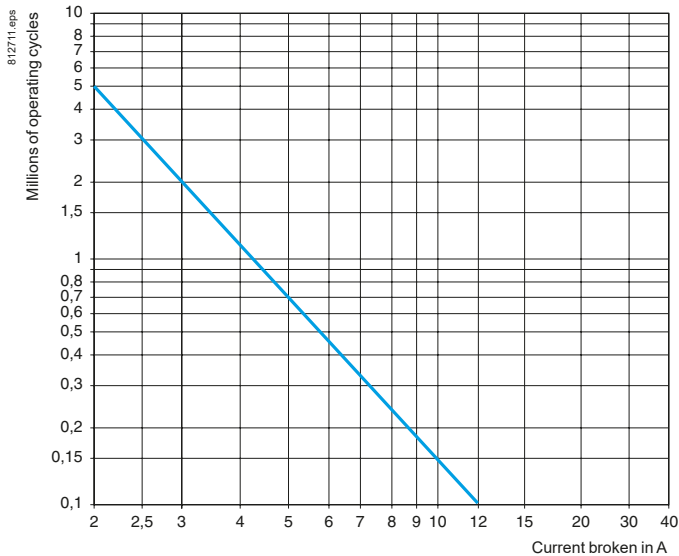
The current broken (I_c) in category AC-3 is equal to the rated operational current (I_e) of the motor.



Use in category AC-1 ($U_e \leq 440\text{ V}$)

Control of resistive circuits ($\cos \varphi \geq 0.95$).

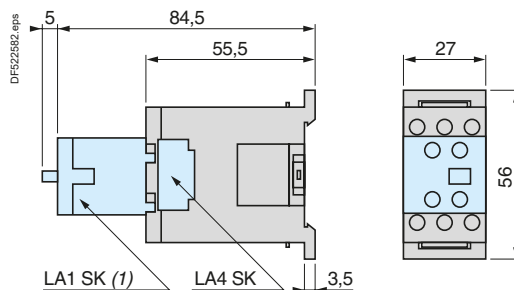
The current broken (I_c) in category AC-1 is equal to the current (I_e) normally drawn by the load.



Dimensions

Mini-contactors

LC1 and LP1SK06



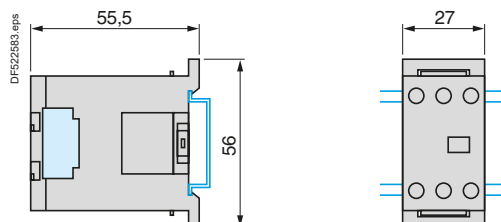
(1) Only on LC1SK06.

Mounting

Mini-contactors

LC1 and LP1SK06

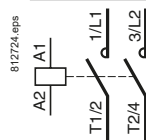
On mounting rail NSYSR200BD or NSYSR200 (└ 35 mm)



Schemes

2-pole mini-contactors

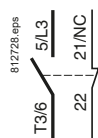
LC1 and LP1SK06



Add-on power pole block

1 pole + 1 "N/C" aux.

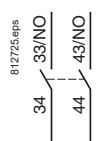
LA1SK01



Instantaneous auxiliary contacts

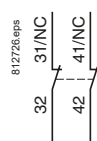
2 "N/O"

LA1SK20



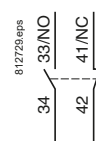
2 "N/C"

LA1SK02



1 "N/O" + 1 "N/C"

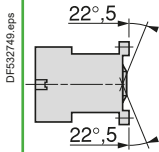
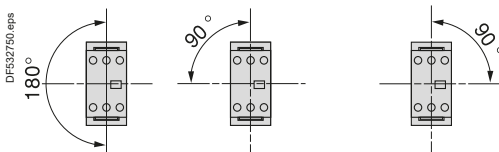
LA1SK11



TeSys Control

SKGC Contactors

Characteristics

Environment				
Rated insulation voltage (Ui)	Conforming to IEC 60947	V	690	
Conforming to standards			IEC 60947, UL 60947-4-1, CSA C22.2 n° 60947-4-1	
Approvals			cULus, UKCA	
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact	
Ambient air temperature around the device	Storage	°C	-50...+70	
	Operation	°C	-20...+50	
Maximum operating altitude	Without derating	m	2000	
Operating position		<div><div><div>DF532749 eps</div><div></div><div>Without derating</div></div><div><div><div>DF532750 eps</div><div></div><div>Without derating</div></div></div></div>		
Cabling, connectors		Min.	Max.	
	Solid conductor	mm²	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	mm²	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	mm²	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	N.m	0.8	
Terminal referencing			Conforming to standards EN 50005	

Ref.



Contactors

Ref.



Contactors

Pole characteristics

Mini-contactor type			LC1SKGC2	LC1SKGC3 and LC1SKGC4	
Conventional thermal current (I _{th})	For ambient temperature ≤ 55 °C	A	20	20	
Rated operational frequency		Hz	50/60		
Frequency limit of the operational current		Hz	up to 400		
Rated operational voltage (U _e)		V	690		
Rated making capacity	I rms conforming to IEC 60947	A	50	85	
Rated breaking capacity (for U _e ≤ 400 V)	Conforming to IEC 60947 (I rms)	A	40	68	
Permissible short time rating	In free air for a time “t” from cold state (θ ≤ 55 °C)	A	40	60	
Short-circuit protection	gl fuse U ≤ 440 V	A	20	20	
Average impedance per pole	At I _{th} and 50 Hz	mΩ	4	4	
Maximum rated operational current	For temperature ≤ 55 °C	AC-3 (U _e ≤ 400 V)	A	5	9
		AC-1	A	20	20
Use in category AC-1 resistive circuits, heating, lighting (U _e ≤ 440 V)	Increase in rated operational current by paralleling of 2 poles	A	32	32	

Auxiliary contact characteristics of mini-contactors

Rated operational voltage (U _e)	Up to	V	690
Rated insulation voltage (U _i)	Conforming to IEC 60947	V	690
Conventional thermal current (I _{th})	For ambient temperature ≤ 55 °C	A	10
Frequency of the operational current		Hz	Up to 400
Short-circuit protection	Conforming to IEC 60947, gl fuse	A	10

Operational power of contacts conforming to IEC 60947

a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

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

d.c. supply, category DC-13

Electrical durability (valid for 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 load.

	V	24	48	110	220	440	440
1 million operating cycles	W	120	80	60	52	51	880
3 million operating cycles	W	55	38	30	28	26	317
10 million operating cycles	W	15	11	9	8	7	132
Occasional making capacity	W	720	600	400	300	230	13000

Control circuit characteristics				
Mini-contactor type			LC1SKGC2	LC1SKGC3 and LC1SKGC4
Rated control circuit voltage (Uc)		V	~ 24...400	
Control voltage limits ($\theta \leq 55\text{ }^{\circ}\text{C}$)		Operation	0.85...1.1 Uc	
		For drop-out	$\geq 0.20\text{ }U_c$	
Average coil consumption at 20 °C and at Uc				
Inrush		VA	16	23
Sealed		VA	4.2	4.9
Heat dissipation		W	1.4	1.5
Operating time at 20 °C and at Uc				
Between coil energisation and	opening of the N/C contacts	ms	8...16	
	closing of the N/O contacts	ms	7...14	
Between coil de-energisation and	opening of the N/O contacts	ms	6...8	
	closing of the N/C contacts	ms	8...10	
Maximum operating rate	In operating cycles per hour		1200	
Mechanical durability at Uc 50/60 Hz coil in millions of operating cycles			10	

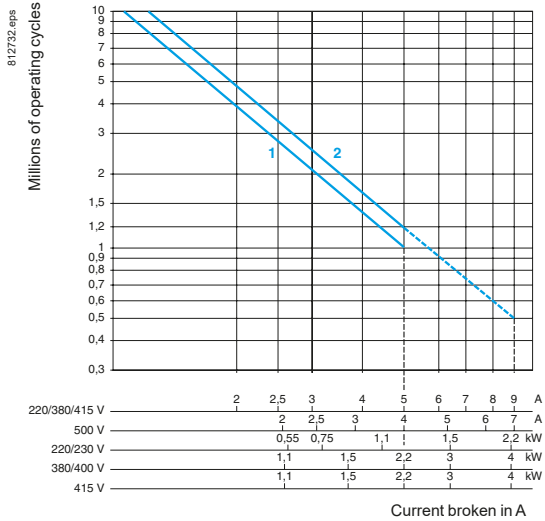
Ref.



Contactors

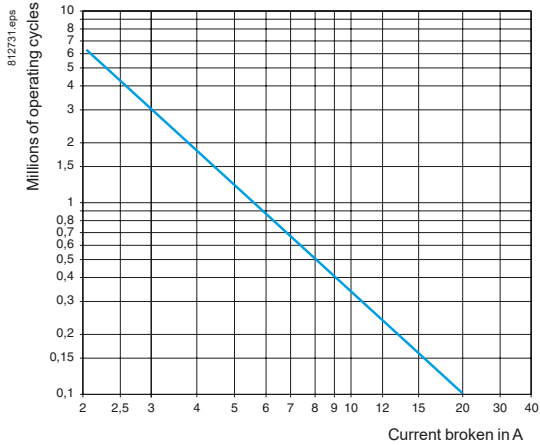
Use in category AC-3 ($U_e \leq 440\text{ V}$)

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 of the motor.



Use in category AC-1 ($U_e \leq 440\text{ V}$)

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.



Ref.

Contactors

TeSys Control

SKGC Contactors

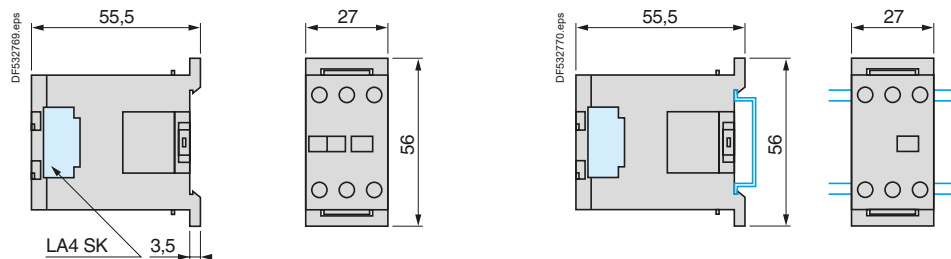
Dimensions, mounting and schemes

Dimensions

Mini-contactors LC1SKGC2

Mounting

On mounting rail NSYSR200BD or NSYSR200 (└ 35 mm)



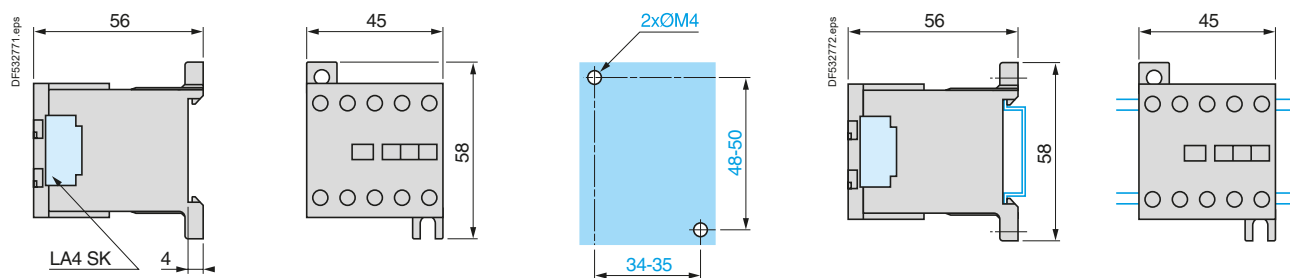
Dimensions

Mini-contactors LC1SKGC3 and SKGC4

Mounting

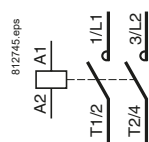
On panel

On mounting rail NSYSR200BD or NSYSR200 (└ 35 mm)



2-pole mini-contactors

LC1SKGC2



3-pole mini-contactors

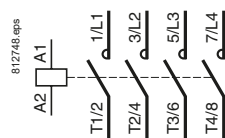
LC1SKGC310

LC1SKGC301



4-pole mini-contactors

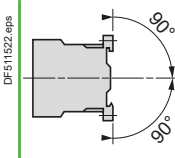
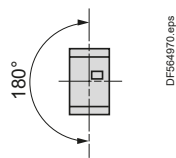
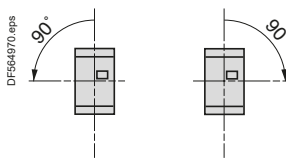
LC1SKGC400



TeSys Control

K Contactors and reversing contactors

Characteristics

Environment characteristics					
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4		
Product certifications		LC● and LP●K06 to K12 LC● and LP●K16	UL, CSA, CCC, EAC, UKCA, CB certification UKCA, CB certification, CCC, EA		
Operating positions			<div> <div> Vertical axis  Without derating </div> <div> Horizontal axis  Without derating </div> <div> Possible positions for LC●K only. Contactor pull-in voltage: 0.85 U_c  </div> </div>		
Connection			Min.	Max.	Max. to IEC 60947
Screw clamp terminals	Solid conductor	mm ²	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible conductor without cable end	mm ²	1 x 0.75	2 x 4	2 x 2.5
	Flexible conductor with cable end	mm ²	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminals	Solid conductor	mm ²	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible conductor without cable end	mm ²	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 and control circuits pins length 5 mm Recommended minimum width and thickness layer for power printed circuit board track : 4mm x 35 microns		
Tightening torque	of screw-clamp terminals only Philips head n° 2 and Ø6	N.m	0.8		
Terminal referencing	Conforming to standards EN 50005 and EN 50012		Up to 5 contacts, depending on model		
Rated insulation voltage (U _i)	Conforming to IEC 60947-4-1	V	690		
	Conforming to CSA 22-2 n° 60947-4-1, UL 60947-4-1	V	600		
Rated impulse withstand voltage (U _{imp})		kV	8		
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2x		
Ambient air temperature around the device	Storage	°C	-50...+80		
	Operation	°C	-25...+50 in AC3, -25...+60 in AC1		
Maximum operating altitude	Without derating	m	2000		
Vibration resistance 5 ... 300 Hz Conforming to IEC/EN 60068-2-27	Contacteur open		2 gn		
	Contacteur closed		4 gn		
Flame resistance	according to IEC 60695-2-10	°C	850		
Shock resistance (1/2 sine wave, 11 ms) Conforming to IEC/EN 60068-2-6	Contacteur open		On X axis: 6 gn On Y and Z axes: 10 gn		
	Contacteur closed		On X axis: 10 gn On Y and Z axes: 15 gn		

TeSys Control

K Contactors and reversing contactors

Characteristics

Pole characteristics							
Type	LC● or LP●			K06	K09	K12	K16
Conventional thermal current (I _{th})	For ambient temperature ≤ 60 °C		A	20 ⁽¹⁾			
Rated operational frequency			Hz	50/60			
Frequency limits of the operational current			Hz	Up to 400			
Rated operational voltage (U _e)			V	690			
Rated making capacity	I rms conforming to IEC 60947		A	110	110	144	160
Rated breaking capacity	I rms conforming to IEC 60947	220/230 V	A	110	110	—	—
		380/400 V	A	110	110	—	—
		415 V	A	110	110	—	—
		440 V	A	110	110	110	110
		500 V	A	80	80	80	80
		660/690 V	A	70	70	70	70
Permissible short time rating	In free air for a time "t" from cold state (θ ≤ 50 °C)	1 s	A	90	90	115	115
		5 s	A	85	85	105	105
		10 s	A	80	80	100	100
		30 s	A	60	60	75	75
		1 min	A	45	45	55	55
		3 min	A	40	40	50	50
		≥ 15 min	A	20	20	25	25
Short-circuit protection	gG fuse U ≤ 440 V (aM fuse, see page 22009/2)		A	25			
Average impedance per pole	At I _{th} and 50 Hz		mΩ	3			
Use in category AC-1 resistive circuits, heating, lighting (U _e ≤ 440 V)	Maximum rated operational current for a temperature ≤ 50 °C		A	20			
			A	16 for U _e only			
				On-load factor	90 %	60 %	30 %
			A	300 operating cycles/hour	13	15	18
	Maximum rated operational current for a temperature ≤ 70 °C		A	120 operating cycles/hour	15	18	19
			A	30 operating cycles/hour	19	20	20
Use in category AC-3 squirrel cage motors	Operational power according to the voltage. Voltage 50 or 60 Hz	115 V single-ph.	kW	0.37	0.55	—	—
		220 V single-ph.	kW	0.75	1.1	—	—
		220/230 V 3-ph.	kW	1.5	2.2	3	4
		380/415 V 3-ph.	kW	2.2	4	5.5	7.5
		440/480 V 3-ph.	kW	3	4	5.5/4 (480)	5.5/4 (480)
		500/600 V 3-ph.	kW	3	4	4	4
		660/690 V 3-ph.	kW	3	4	4	4
	Maximum operating rate (in operating cycles/hour in relation to % of rated power)			Op. cycles/h	600	900	1200
				Power	100 %	75 %	50 %

(1) For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I_{th} max = 10 A.

Characteristics

(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50...129 V) or **LA4KE1UG** (130...250 V), see page B8/14.

(2) **LC1K12, LC1K16...**: 0.85...1.15 U_c.

Contractors

TeSys Control

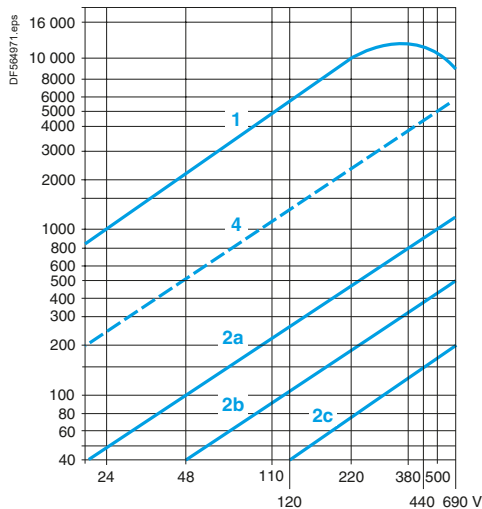
K Contactors and reversing contactors

Characteristics and durability curves

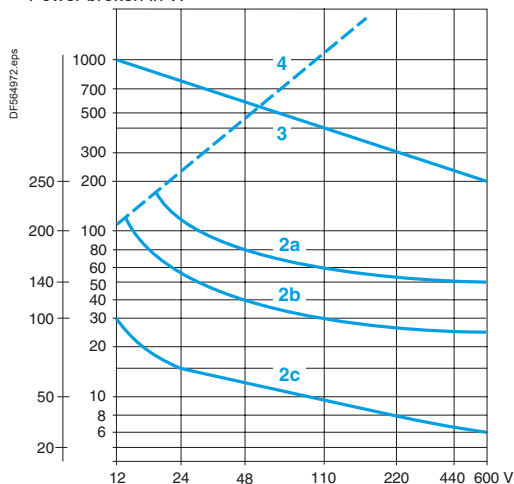
Auxiliary contact characteristics of contactors and instantaneous contact blocks

Number of auxiliary contacts	On LC●K or LP●K 3-pole		1	
	On LA1K		2 or 4	
Rated operational voltage (Ue)	Up to	V	690	
Rated insulation voltage (Ui)	Conforming to IEC 60947	V	690	
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1	V	600	
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C	A	10	
Frequency of the operational current		Hz	Up to 400	
Minimum switching capacity	U min	V	17	
	I min	mA	5	
Short-circuit protection	Conforming to IEC 60947, gG fuse	A	10	
Rated making capacity	Conforming to IEC 60947	I rms	A	110
Short-time rating	Permissible for	1 s	A	80
		500 ms	A	90
		100 ms	A	110
Insulation resistance		MΩ	> 10	
Non-overlap distance	LA1K: linked contacts conforming to INRS, BIA and CNA specifications	mm	0.5 (see schemes pages B8/77 and B8/79)	

Power broken in VA



Power broken in W



Operational power of contacts conforming to IEC 60947

a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ($\cos \phi 0.7$) = 10 times the power broken ($\cos \phi 0.4$).

Operating cycles	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	10000	14000	13000	9000

d.c. supply, category DC-13

Electrical durability (valid for 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 load.

Operating cycles	V	24	48	110	220	440	600
1 million operating cycles	W	120	80	60	52	51	50
3 million operating cycles	W	55	38	30	28	26	25
10 million operating cycles	W	15	11	9	8	7	6
Occasional making capacity	W	720	600	400	300	230	200

1. Breaking limit of contacts valid for:
 - maximum of 50 operating cycles at 10 s intervals (power broken = making current x $\cos \phi 0.7$).
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.

TeSys Control

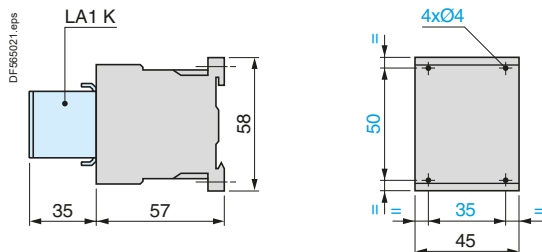
K Contactors

Dimensions and mounting

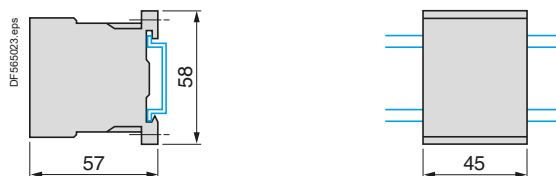
Contactor

LC1K, LC7K, LP1K, LP4K

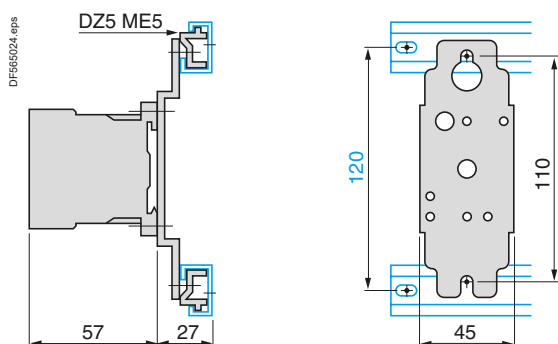
On panel



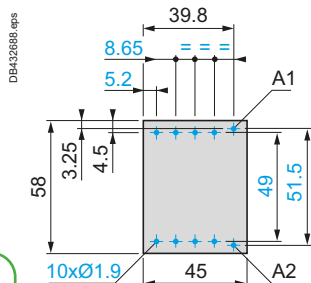
On mounting rail NSYSDR200BD or NSYSDR200 (≥ 35 mm)



DX1AP25



On printed circuit board

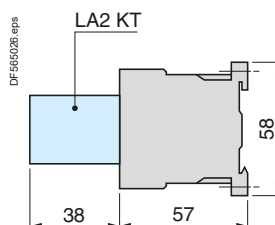


Electronic time delay contact blocks

LA2KT



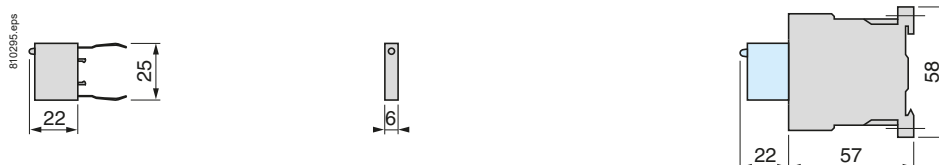
On contactor



Suppressor modules

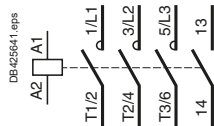
LA4K●

On contactor LC1K or LP1K

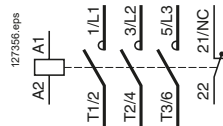


3-pole contactors

3 P + N/O

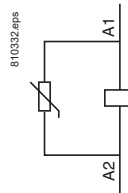


3 P + N/C

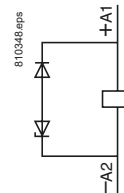


With integral suppression device

LC7K

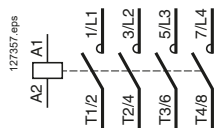


LP4K

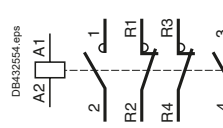


4-pole contactors

4 P

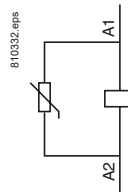


2 P N/O + 2 P N/C

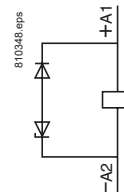


With integral suppression device

LC7K



LP4K



Instantaneous auxiliary contacts LA1K

LA1KN20, KN207, KN203

2 N/O



LA1KN02, KN027, KN023

2 N/C



LA1KN11, KN117, KN113

1 N/O + 1 N/C



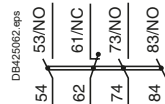
LA1KN40, KN407, KN403

4 N/O



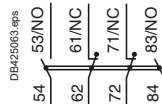
LA1KN31, KN317, KN313

3 N/O + 1 N/C



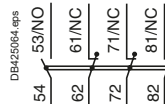
LA1KN22, KN227, KN223

2 N/O + 2 N/C



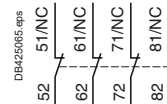
LA1KN13, KN137, KN133

1 N/O + 3 N/C



LA1KN04, KN047, KN043

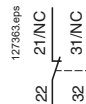
4 N/C



Terminal referencing conforming to standard EN 50012

LA1KN02M

2 N/C



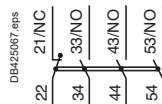
LA1KN11M

1 N/O + 1 N/C



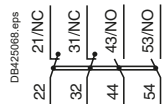
LA1KN31M

3 N/O + 1 N/C



LA1KN22M

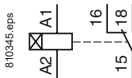
2 N/O + 2 N/C



Electronic time delay contact blocks

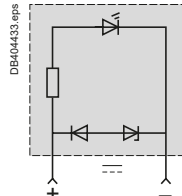
LA2KT

1 C/O

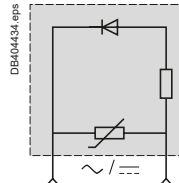


Suppressor modules

LA4KC



LA4KE



TeSys Control

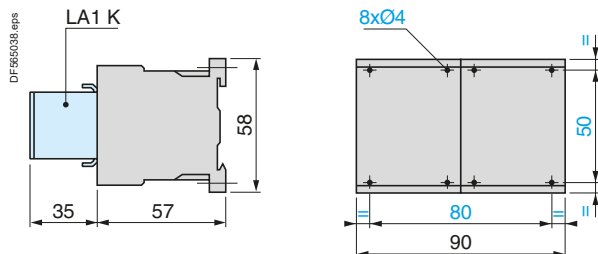
K Reversing contactors

Dimensions and mounting

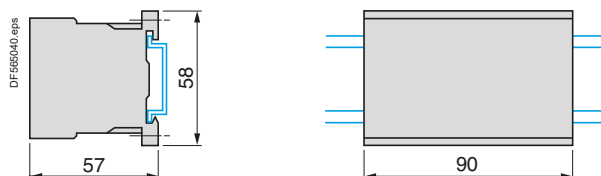
Reversing contactors

LC2K, LC8K, LP2K, LP5K

On panel

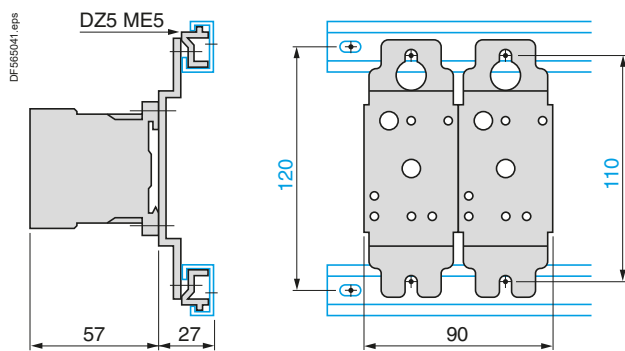


On mounting rail NSYSR200BD or NSYSR200 (≥ 35 mm)

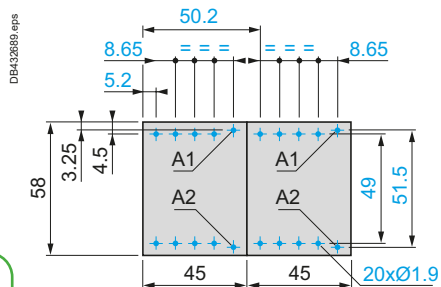


2 x DX1AP25

On one asymmetrical mounting rail DZ5MB on 2 mounting plates DX1AP25.



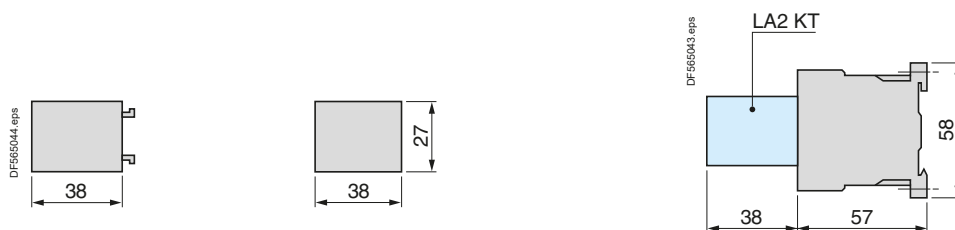
On printed circuit board for reversing contactors or 2 contactors mounted side by side.



Electronic time delay contact blocks

LA2KT

On reversing contactors



Suppressor modules

LA4K●

On reversing contactors LC2K or LP2 K



TeSys Control

K Reversing contactors

Schemes

3-pole reversing contactors

With screw clamp connections

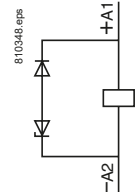
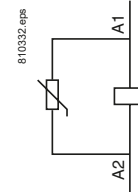
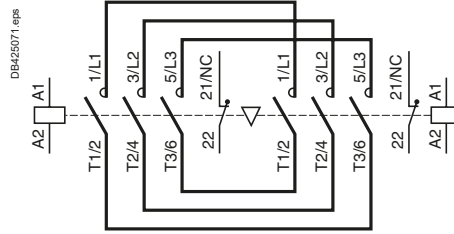
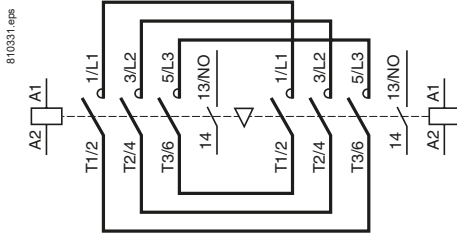
With integral suppression device

LC8K

LP5K

3 P + N/O

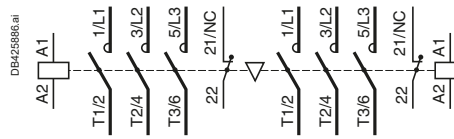
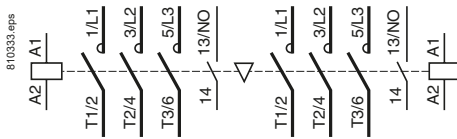
3 P + N/C



With Faston connectors or solder pins (printed circuit board)

3 P + N/O

3 P + N/C



4-pole reversing contactors

With screw clamp connections

With Faston connectors or solder pins (printed circuit board)

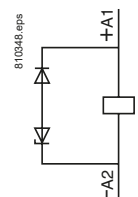
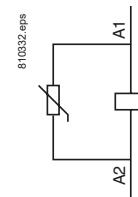
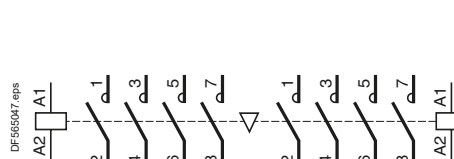
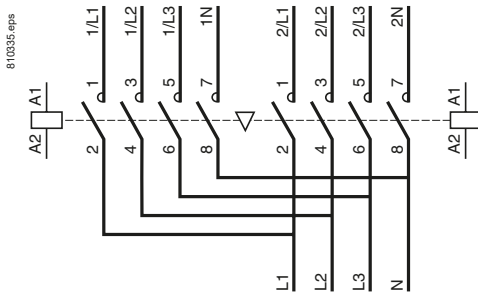
Integral suppression device

LC8K

LP5K

4 P

4 P



Instantaneous auxiliary contacts LA1K

Terminal referencing conforming to standard EN 50012

LA1KN20, KN207, KN203

LA1KN02, KN027, KN023

LA1KN11, KN117, KN113

LA1KN02M

LA1KN11M

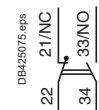
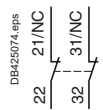
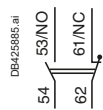
2 N/O

2 N/C

1 N/O + 1 N/C

2 N/C

1 N/O + 1 N/C



LA1KN40, KN407, KN403

LA1KN31, KN317, KN313

LA1KN22, KN227, KN223

LA1KN13, KN137, KN133

LA1KN04, KN047, KN043

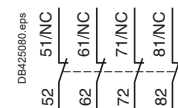
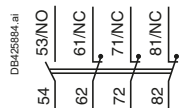
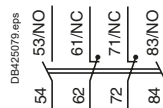
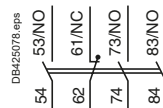
4 N/O

3 N/O + 1 N/C

2 N/O + 2 N/C

1 N/O + 3 N/C

4 N/C



Electronic time delay contact blocks

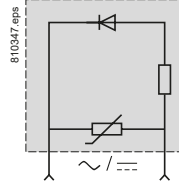
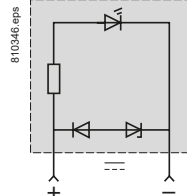
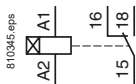
Suppressor modules

LA2KT

LA4KC

LA4KE

1 C/O



References:
pages B8/8 to B8/11

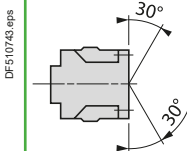
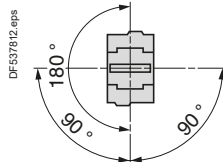
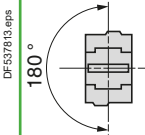

Characteristics:
pages B8/72 to B8/75

Dimensions:
page B8/78

TeSys Control

Deca green, Deca Contactors

Characteristics

Environment								
Contactor type LC1			D09...D18 DT20 and DT25	D25...D38 DT32 and DT40	D40A...D80A DT60A and DT80A	D80...D95 ⁽¹⁾	D115 and D150	
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1, overvoltage category III, degree of pollution: 3	V	690			1000		
	Conforming to UL, CSA	V	600					
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947	kV	6			8		
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4					
Product certifications ⁽¹⁾			UL, CSA, CCC, EAC, UKCA, CB certification, EU-RO-MR by DNV-GL			UL, CSA, CCC, EAC, UKCA, CB certification, DNV-GL, RINA, BV, LRoS		
Degree of protection ⁽²⁾ (front face)	Conforming to IEC 60529							
	Power circuit connections		Protection against direct finger contact IP20					
	Coil connection		Protection against direct finger contact IP20					
Climatic withstand			According to IACS E10 and IEC 60947-1 Annex Q category D			According to IACS E10		
Ambient air temperature around the device	Storage	°C	-60...+80					
	Operation ⁽³⁾	°C	-40...+60					
	Allowed with derating ^{(3) (4)}	°C	+60...+70 at Uc to 1.●● x Uc					
Maximum operating altitude	Without derating	m	3000					
Operating positions ⁽⁵⁾	Without derating in the following positions		AC and DC coils AC/DC and "BBE" coils 			AC coils AC/DC and "BBE" coils 		DC coils 
	Positions that are not allowed		For --- contactors LC1D09 to LC1D150. 					
Flame resistance	Conforming to IEC 60695-2-11	°C	850					
Shock resistance ⁽⁶⁾ 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27	Contactor open		10 gn	8 gn	10 gn	8 gn	6 gn	
	Contactor closed		15 gn	15 gn	15 gn	10 gn	15 gn	
Vibration resistance ⁽⁶⁾ 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactor open		2 gn					
	Contactor closed		4 gn	4 gn	4 gn	3 gn	4 gn	

⁽¹⁾ Contactor **LC1D95** with d.c. coil is not UL/CSA certified.

⁽²⁾ Protection provided for the cabling c.s.a.'s indicated on the next page and for connection by cable. For lug type: add a protective cover.

⁽³⁾ As per IEC60947-4-1, operating time and drop out voltage given and tested for -5...+40 °C.

⁽⁴⁾ Refer to operational current in AC1 (page A5/40).

⁽⁵⁾ When mounting on a vertical rail, use a stop.

⁽⁶⁾ Without modifying the power contact states, in the most unfavourable direction (coil energised at U_e).

In case of vibration, it is recommended to mount the devices separately by screws on metal plate.

TeSys Control

Deca green, Deca Contactors

Characteristics

Pole characteristics Deca, Deca green contactors

Contactor type		LC1	D09 (3P)	DT20 D098	D12 (3P)	DT25 D128	D18 (3P)	DT32 D188	D25 (3P)	DT40 D258
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 60 °C	A	9		12		18		25	
	In AC-1, θ ≤ 60 °C	A	25 ⁽¹⁾	20	25 ⁽¹⁾	25	32 ⁽¹⁾	32	40 ⁽¹⁾	40
Rated operational voltage (Ue)	Up to	V	690		690		690		690	
Frequency limits	Of the operational current	Hz	25...400		25...400		25...400		25...400	
Conventional thermal current (Ith)	θ ≤ 60 °C	A	25 ⁽¹⁾	20	25 ⁽¹⁾	25	32 ⁽¹⁾	32	40 ⁽¹⁾	40
Rated making capacity (440 V)	Conforming to IEC 60947	A	250		250		300		450	
Rated breaking capacity (440 V)	Conforming to IEC 60947	A	250		250		300		450	
Permissible short time rating No current flowing for preceding 15 minutes with θ ≤ 40 °C	For 1 s	A	210		210		240		380	
	For 10 s	A	105		105		145		240	
	For 1 min	A	61		61		84		120	
	For 10 min	A	30		30		40		50	
Fuse protection against short-circuits (U ≤ 690 V)	Without thermal overload relay, gG fuse	type 1 type 2	A	25 20	40 25		50 35		63 40	
	With thermal overload relay	A	See pages B11/4 and B11/5, for aM or gG fuse ratings corresponding to the associated thermal overload relay							
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5		2.5		2.5		2	
Power dissipation per pole for the above operational currents	AC-3	W	0.20		0.36		0.8		1.25	
	AC-1	W	1.56		1.56		2.5		3.2	

Control circuit characteristics, a.c. supply Deca contactors

Rated control circuit voltage (Uc)		50/60 Hz		V	12...690	
Control voltage limits						
50 or 60 Hz coils	Operation			–		
	Drop-out			–		
50/60 Hz coils	Operation			0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C		
	Drop-out			0.3...0.6 Uc at 60 °C		
Average consumption at 20 °C and at Uc	~ 50 Hz	Inrush	50 Hz coil	VA	–	
			Cos φ		0.75	
			50/60 Hz coil	VA	70	
		Sealed	50 Hz coil	VA	–	
			Cos φ		0.3	
			50/60 Hz coil	VA	7	
	~ 60 Hz	Inrush	60 Hz coil	VA	–	
			Cos φ		0.75	
			50/60 Hz coil	VA	70	
			Sealed	60 Hz coil	VA	–
				Cos φ		0.3
				50/60 Hz coil	VA	7.5
Heat dissipation	50/60 Hz		W	2...3		
Operating time ⁽²⁾		Closing "C"	ms	12...22		
		Opening "O"	ms	4...19		
Mechanical durability in millions of operating cycles		50 or 60 Hz coil		–		
		50/60 Hz coil on 50 Hz		15		
Maximum operating rate at ambient temperature ≤ 60 °C		In operating cycles per hour			3600	

(1) Versions with spring terminal connections:

16 A for LC1D093 and LC1D123 (20 A possible with 2 x 2.5 mm² in parallel),

25 A for LC1D183 to LC1D323 (32 A possible for LC1D183 connected with 2 x 4 mm² cables in parallel; 40 A possible for LC1D253 and LC1D323 connected with 2 x 4 mm² in parallel).

(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

(3) The opening time is 40...75 ms for LX1D8•7 coils and 6...20 ms for LX1D8•5 and LX1D8•6 coils.

(4) 2400 for LX1D8•5 and LX1D8•6 coils and 1200 for LX1D8•7 coils (refer to page B8/48 for list of coil references).

D32	D38	D40A	DT60A	D50A	D65A	D80A	DT80A	D80	D95	D115	D150
32	38	40	—	50	65	66	—	80	95	115	150
50 ⁽¹⁾	50	60	60	80	80	80	80	125	125	200	200
690	690	690	690	690	690	690	690	1000	1000	1000	1000
25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
50	50	60	60	80	80	80	80	125	125	200	200
550	550	800	800	900	1000	1000	1000	1100	1100	1260	1660
550	550	800	800	900	1000	1000	1000	1100	1100	1100	1400
430	430	720	720	810	900	900	900	990	1100	1100	1400
260	310	320	320	400	640	640	640	640	800	950	1200
138	150	165	165	208	260	260	260	320	400	550	580
60	60	72	72	84	110	110	110	135	135	250	250
63	63	80	80	100	125	125	125	200	200	250	315
63	63	80	80	100	125	125	125	160	160	200	250

See pages B11/4 and B11/5 for aM or gG fuse ratings corresponding to the associated thermal overload relay

2	2	1.5	1.6	1.5	1.5	1.5	1.6	0.8	0.8	0.6	0.6
2	3	2.4	—	3.7	6.3	6.3	—	5.1	7.2	7.9	13.5
5	5	5.4	5.8	9.6	9.6	9.6	10.2	12.5	12.5	24	24

12...690	12...690							24...500			
—	—							0.85...1.1 Uc at 55 °C			
—	—							0.3...0.6 Uc at 55 °C		0.3...0.5 Uc at 55 °C	
0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C	0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C							0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 55 °C		0.8...1.15 Uc on 50/60 Hz at 55 °C	
0.3...0.6 Uc at 60 °C	0.3...0.6 Uc at 60 °C							0.3...0.6 Uc at 55 °C		0.3...0.5 Uc at 55 °C	
—	—							200		300	—
0.75	0.75							0.75		0.8	0.9
70	160							245		280...350	280...350
—	—							20		22	—
0.3	0.3							0.3		0.3	0.9
7	15							26		2...18	2...18
—	—							220		300	—
0.75	0.75							0.75		0.8	0.9
70	140							245		280...350	280...350
—	—							22		22	—
0.3	0.3							0.3		0.3	0.9
7.5	13							26		2...18	2...18
2...3	4...5							6...10		3...8	3...4.5
12...22	12...26	12...26	12...26	12...26	12...26	12...26	12...26	20...35	20...35	20...50	20...35
4...19	4...19	4...19	4...19	4...19	4...19	4...19	4...19	6...20	6...20	6...20 ⁽³⁾	40...75
—	—	—	—	—	—	—	—	10	10	8	—
15	6	6	6	6	6	6	6	4	4	8	8
3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	2400 ⁽⁴⁾	1200

TeSys Control

Deca Contactors

Characteristics

d.c. control circuit characteristics Deca contactors

Contactor type				LC1D09...D38 LC1DT20...DT40	LC1D40A...D80A LC1DT60A and DT80A	LC1 or LP1D80 LC1D95	LC1D115 and LC1D150
Rated control circuit voltage (Uc) ---		V		12...440	12...440		24...440
Rated insulation voltage	Conforming to IEC 60947-1	V		690			
	Conforming to UL, CSA	V		600			
Control voltage limits	Operation	Standard coil		0.7...1.25 Uc at 60 °C	0.75...1.25 Uc at 60 °C	0.85...1.1 Uc at 55 °C	0.75...1.2 Uc at 55 °C
		Wide range coil		—	—	0.75...1.2 Uc at 55 °C	—
	Drop-out			0.1...0.25 Uc at 60 °C	0.1...0.3 Uc at 60 °C	0.1...0.3 Uc at 55 °C	0.15...0.4 Uc at 55 °C
Average consumption at 20 °C and at Uc	---	Inrush	W	5.4	19	22	270...365
		Sealed	W	5.4	7.4	22	2.4...5.1
Operating time ⁽¹⁾ average at Uc	Closing	"C"	ms	63 ±15 %	50 ±15%	95...130	20...35
	Opening	"O"	ms	20 ±20 %	20 ±20%	20...35	40...75
				Note: The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.			
Time constant (L/R)			ms	28	34	75	25
Mechanical durability at Uc	In millions of operating cycles			30	10	10	8
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour			3600	3600	3600	1200

Low consumption control circuit characteristics Deca contactors

Rated insulation voltage	Conforming to IEC 60947-1	V	690	—
	Conforming to UL, CSA	V	600.	—
Maximum voltage	Of the control circuit on ---	V	250	—
Average consumption d.c. at 20 °C and at Uc	Wide range coil (0.8...1.25 Uc)	Inrush	W	2.4
		Sealed	W	2.4
Operating time ⁽¹⁾ at Uc and at 20 °C	Closing	"C"	ms	77 ±15 %
	Opening	"O"	ms	25 ±20 %
Voltage limits (θ ≤ 60 °C) of the control circuit	Operation			0.8 to 1.25 Uc
	Drop-out			0.1...0.3 Uc
Time constant (L/R)			ms	40
Mechanical durability	In millions of operating cycles			30
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour			3600

⁽¹⁾ The operating times depend on the type of contactor electromagnet and its control mode.

The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.

The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

TeSys Control

Deca green Contactors

Characteristics

Wide band Deca green contactors AC/DC coil circuit characteristics										
Rated control circuit voltage (Uc)			V	AC/DC 24...250						
	Operation	V	0.85 Uc mini...1.1 Uc maxi at 60 °C in AC or DC (BNE coil: 0.8 Uc mini at 24 VDC, 0.85 Uc mini in AC).							
	Drop-out	V	0.1 Uc maxi (e.g. 100 to 250 V = 25 V at 60 °C)							
Contactor type			LC1D09...D38			LC1D40A...D80A, LC1DT60A, LC1DT80A				
Coil code			BNE	EHE	KUE	BBE	BNE	EHE	KUE	
Rated control circuit voltage (Uc)				24-60	48-130	100-250	24 DC	24-60	48-130	100-250
AC supply at 20°C	Consumption inrush	VA	15	25	25	-	15	23	18	
	Consumption sealed	VA	0.9	1.3	1.6	-	1	1.4	1.8	
	Consumption sealed	mA	28	15	9	-	35	17	9.5	
	Heat dissipation	W	0.6	0.8	1.1	-	0.8	0.9	1.3	
DC supply at 20°C	Consumption inrush	W	14	24	18	11	16	19	14	
	Consumption sealed	mA	23	13	7	20	30	15	7.7	
	Heat dissipation	W	0.6	0.8	1.1	0.5	0.7	0.9	1.2	
Max operating time ⁽²⁾	Closing "C"	ms	50 ±5 ms			60 ±5 ms				
	Opening "O"	ms	20...90 ms			20...80 ms				
EMC immunity			Meets IEC 60947-4-1 standard, table 12							
EMC emission			IEC 60947-4-1 §9.4.3	Environment A ⁽¹⁾						
Maximum operating rate at ambient temperature ≤ 60°C			cycle/h	3600						
Mechanical durability at Uc In millions of operating cycles				15			6			

⁽¹⁾ Use of this product in EMC environment B may require mitigation measures to avoid unwanted disturbance.

⁽²⁾ The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separates.

Ref.



Contactors

TeSys Control

Deca green, Deca Contactors

Characteristics

Power circuit connections

Screw clamp terminal connections Deca, Deca green contactors

Contactor type			LC1	D09 and D12 DT20 and DT25	D18 (3P)	D25 (3P)	D32	D38	D18 and D25 (4P) DT32 and DT40	D40A to D80A DT60A and DT80A ⁽¹⁾	D80 and D95	D115 and D150
Tightening				Screw clamp terminals					Connector 2 inputs	Screw clamp terminals	Connector 1 input	Connector 2 inputs
Flexible cable without cable end	1 conductor	mm ²	1...4	1...4	1.5...6	2.5...10			2.5...10	1...35	4...50	10...120
	2 conductors	mm ²	1...4	1...4	1.5...6	2.5...10			2.5...10	1...25 and 1...35	4...25	10...120 + 10...50
Flexible cable with cable end	1 conductor	mm ²	1...4	1...6	1...10				2.5...10	1...35	4...50	10...120
	2 conductors	mm ²	1...2.5	1...4	1.5...6				2.5...10	1...25 and 1...35	4...16	10...120 + 10...50
Solid cable without cable end	1 conductor	mm ²	1...4	1.5...6	1.5...10				2.5...16	1...35	4...50	10...120
	2 conductors	mm ²	1...4	1.5...6	2.5...10				2.5...16	1...25 and 1...35	6...25	10...120 + 10...50
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2				N° 2	—	—	—
	Flat screwdriver Ø		Ø6	Ø6	Ø6				Ø6	—	Ø6...Ø8	—
Hexagonal key			—	—	—				—	4	4	4
Tightening torque			N.m	1.7	1.7	2.5			1.8	5: ≤ 25 mm ² 8: 35 mm ²	12	12

Spring terminal connections ⁽²⁾ Deca contactors

Flexible cable without cable end	1 conductor	mm ²	2.5 (4: DT25)	4	4	4	—	10	—	—
	2 conductors	mm ²	2.5 (except DT25)	4	4	4	—	—	—	—

Connection by bars or lugs Deca contactors

Bar c.s.a.			—	—	—	—	—	—	3 x 16	5 x 25
Lug external Ø		mm	8	8	10	10	8	16.5	17	25
Ø of screw		mm	M3.5	M3.5	M4	M4	M3.5	M6	M6	M8
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	—	—	—
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	—	Ø8	—
Key for hexagonal headed screw			—	—	—	—	—	10	10	13
Tightening torque		N.m	1.7	1.7	2.5	2.5	1.8	6	9	12

Control circuit connections

Connection by cable (tightening via screw clamps) Deca, Deca green contactors

Flexible cable without cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Flexible cable with cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5	1...2.5
	2 conductors	mm ²	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5
Solid cable without cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6
Tightening torque			N.m	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.2

Spring terminal connections ⁽²⁾ Deca contactors

Flexible cable without cable end	1 conductor	mm ²	2.5	2.5	2.5	2.5	—	2.5	0.75...2.5	—	—
	2 conductors	mm ²	2.5	2.5	2.5	2.5	—	2.5	0.75...2.5	—	—

Connection by bars or lugs Deca contactors

Lug external Ø			mm	8	8	8	8	8	8	8	8
Ø of screw			mm	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6
Tightening torque			N.m	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.2

(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).

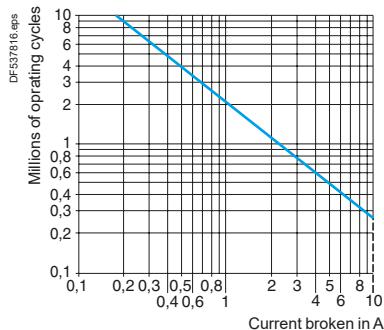
(2) If cable ends are used, choose the next size down (example: for 2.5 mm², use 1.5 mm²) and square crimp the cable ends using a special tool.

TeSys Control

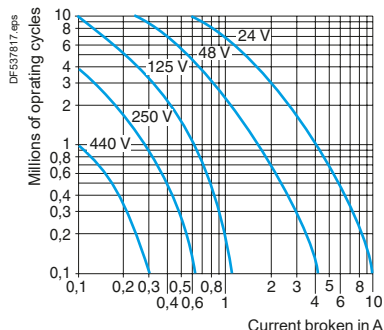
Deca green, Deca Contactors

Characteristics

Characteristics of auxiliary contacts incorporated in the contactor				
Mechanically linked contacts	Conforming to IEC 60947-5-1		Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder	
Mirror contact	Conforming to IEC 60947-4-1		The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module	
Rated operational voltage (Ue)	Up to	V	690	
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690	
	Conforming to UL, CSA	V	600	
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C	A	10	
Frequency of the operational current		Hz	25...400	
Minimum switching capacity λ = 10 ⁻⁸	U min	V	17	
	I min	mA	5	
Short-circuit protection	Conforming to IEC 60947-5-1		gG fuse: 10 A	
Rated making capacity	Conforming to IEC 60947-5-1, 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	Pozidriv / Philips head n° 2 and Ø6	N.m	1.7	



AC-15



DC-13

Operational power of contacts conforming to IEC 60947-5-1

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

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ($\cos \phi 0.7$) = 10 times the power broken ($\cos \phi 0.4$).

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

d.c. supply, category DC-13

Electrical durability (valid for 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 load.

Operating cycles	V	24	48	125	250	440
1 million	W	96	76	76	76	44
3 million	W	48	38	38	32	—
10 million	W	14	12	12	—	—

Environment						
Contact block type (not dust/damp protected)			LADN or LADC	LADT and LADS	LADR	LAD8
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5			
Product certifications			UL, CSA, CCC, EAC, UKCA, CB certification			
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X			
Ambient air temperature around the device	Storage	°C	-60...+80			
	Operation	°C	-5...+60			
Maximum operating altitude	Without derating	m	3000			
Connection by cable	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5			
Tightening torque		N.m	1.7			
Spring terminal connections	Flexible or solid cable without cable end	mm²	Max: 2 x 2.5			
Instantaneous and time delay contact characteristics						
Number of contacts			1, 2 or 4	2	2	2
Rated operational voltage (Ue)	Up to	V	690			
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V	690			
	Conforming to UL, CSA	V	600			
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C	A	10			
Frequency of the operational current		Hz	25...400			
Minimum switching capacity	U min	V	17			
	I min	mA	5			
Short-circuit protection	Conforming to IEC 60947-5-1 gG fuse	A	10			
Rated making capacity	Conforming to IEC 60947-5-1	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)			
Overlap time	Guaranteed between N/C and N/O contacts on LADC22	ms	1.5	–	–	–
Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the 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			See page B8/90			

Ref.



Contactors

Environment						
Contact block type (dust/damp protected)			LA1DX	LA1DZ (4 contacts: 2 protected + 2 non protected)		LA1DY
			Protected	Protected	Non protected	Protected
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5			
Product certifications			UL, CSA, CCC, EAC, UKCA, CB certification			
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X			
Ambient air temperature	Storage and operation	°C	-25...+70			
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5			
Tightening torque		N.m	1.7			
Number of contacts			2	2	2	2
Contact characteristics						
Rated operational voltage (Ue)	Up to	Vac	125	125	690	125
		Vdc	30	30		30
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V	250	250	690	250
	Conforming to UL, CSA	V	—	—	600	—
Conventional thermal current (Ith)	For ambient temperature ≤ 40 °C	A	—	—	10	—
Maximum operational current (Ie)		mA	100	100	—	100
Frequency of the operational current		Hz	—	—	25...400	—
Minimum switching capacity	U min	V	5	5	17	5
	I min	mA	1	1	5	1
Short-circuit protection	Conforming to IEC 60947-5-1 gG fuse	A	—	—	10	—
Rated making capacity	Conforming to IEC 60947-5-1	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	> 10	> 10	> 10
Mechanical durability	In millions of operating cycles		5	5	30	5
Materials and technology used for dust and damp protected contacts			Gold alloy - Single break	Gold alloy - Single break	—	Gold alloy - Single break with crossed bars

Ref.



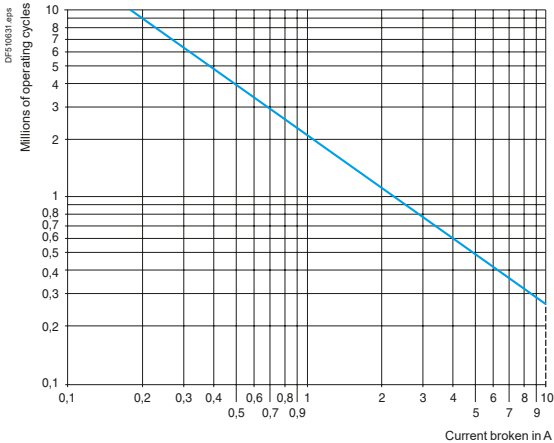
Contactors

Rated operational power of not dust/damp protected contacts (conforming to IEC 60947-5-1)

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

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ($\cos \varphi \ 0.7$) = 10 times the power broken ($\cos \varphi \ 0.4$).

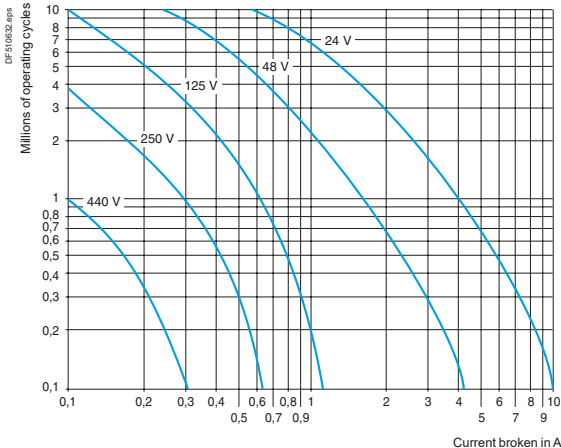
Operating cycles	V	24	48	115	230	400	440	600
1 million	VA	60	120	280	560	960	1050	1440
3 million	VA	16	32	80	160	280	300	420
10 million	VA	4	8	20	40	70	80	100



d.c. supply, category DC-13

Electrical durability (valid for 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 load.

Operating cycles	V	24	48	125	250	440
1 million	W	96	76	76	76	44
3 million	W	48	38	38	32	—
10 million	W	14	12	12	—	—



Characteristics

Environment			
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5
Product certifications			UL, CSA
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation	°C	-25...+55
	Permissible for operation at Uc	°C	-25...+70

Suppressor modules Deca contactors						
Module type			LA4DA, LAD4RC, LAD4RC3	LA4DB, LAD4T, LAD4T3	LA4DC, LAD4D3	LA4DE, LAD4V, LAD4V3
Type of protection			RC circuit	Bidirectional peak limiting diode	Diode	Varistor
Rated control circuit voltage (Uc)		V	~ 24...415	~ or --- 24...440	--- 12...250	~ or --- 24...250
Maximum peak voltage			3 Uc	2 Uc	Uc	2 Uc
Natural RC frequency	24/48 V	Hz	400	—	—	—
	50/127 V	Hz	200	—	—	—
	110/240 V	Hz	100	—	—	—
	380/415 V	Hz	150	—	—	—

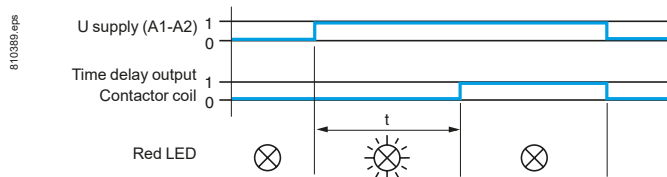
Mechanical latch blocks ⁽¹⁾ Deca, Deca green contactors					
Mechanical latch block type			LAD6K10	LA6DK20	
For use on contactor			LC1D09...D80A DT20...DT80A	LC1D80...D150 LP1D80 and LC1D115	
Product certifications			UL, CSA	UL, CSA	
Rated insulation voltage	Conforming to IEC 60947-5-1	V	690	690	
Rated control circuit voltage	~ 50/60 Hz and ---	V	24...415	24...415	
Power required	For unlatching ~	VA	25	25	
	---	W	30	30	
Maximum operating rate	In operating cycles/hour		1200	1200	
On-load factor			10 %	10 %	
Mechanical durability at Uc	In millions of operating cycles		0.5	0.5	

⁽¹⁾ Unlatching can be manually operated or electrically controlled (pulsed).

The **LA6DK** or **LAD6K** latch coil and the **LC1D** operating coil must not be energised simultaneously.

The duration of the **LA6DK** or **LAD6K** and **LC1D** control signals must be ≥ 100 ms.

Environment Deca, Deca green contactors			
Module type		LA4DT (On-delay)	
Conforming to standards			IEC 60255-5
Product certifications			UL, CSA
Degree of protection	Conforming to IEC 60529		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
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	250
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5
Tightening torque		N.m	1.7
Control circuit characteristics			
Built-in protection	Of the input		By varistor
	Contactor coil suppression		By varistor
Rated control circuit voltage (Uc)		V	~ or ≡: 24...250
Permissible variation			0.8...1.1 Uc
Type of control			By mechanical contact only
Timing characteristics			
Timing ranges		s	0.1...2; 1.5...30; 25...500
Repeat accuracy	0...40 °C		±3 % (10 ms minimum)
Reset time	During time delay period	ms	150
	After time delay period	ms	50
Immunity to microbreaks	During time delay period	ms	10
	After time delay period	ms	2
Minimum control pulse duration		ms	–
Time delay signalling	By LED		Illuminates during time delay period
Switching characteristics (solid state type)			
Maximum power dissipated		W	2
Leakage current		mA	< 5
Residual voltage		V	3.3
Overvoltage protection			3 kV; 0.5 joule
Electrical durability	In millions of operating cycles		30
Function diagram			
Electronic on-delay timer LA4DT			



TeSys Control

Deca green, Deca Contactors - Interface modules

Characteristics

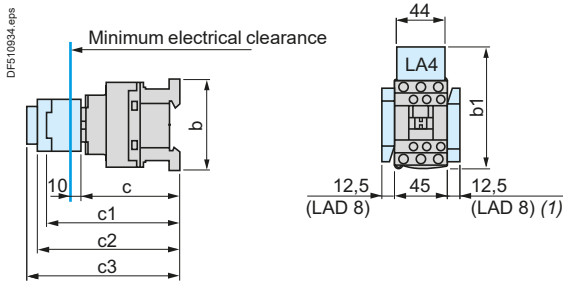
Environment Deca, Deca green contactors								
Conforming to standards			IEC 60255-5					
Product certifications			UL, CSA					
Degree of protection	Conforming to IEC 60529			Protection against direct finger contact IP 2X				
Ambient air temperature around the device	Storage	°C	-40...+80					
	Operation	°C	-25...+55					
	Permissible for operation at Uc	°C	-25...+70					
Other characteristics								
Module type			LA4DFB for Deca contactors With relay		LA4DWB for Deca, Deca green contactors Solid state			
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C	A	8					
Rated insulation voltage	Conforming to IEC 60947-5-1	V	250					
Rated operational voltage	Conforming to IEC 60947-5-1	V	250					
Indication of input state			By integral LED which illuminates when the contactor coil is energised					
Input signals	Control voltage (E1-E2)	V	~ 24		~ 24			
	Permissible variation	V	17...30		5...30			
	Current consumption at 20 °C	mA	25		8.5 for 5 V 15 for 24 V			
	State "0" guaranteed for U	V	< 2.4		< 2.4			
	I	mA	< 2		< 2			
	State "1" guaranteed for U	V	17		5			
Built-in protection	Against reversed polarity		By diode		By diode			
	Of the input		By diode		By diode			
Electrical durability at 220 A/240 V	In millions of operating cycles		10		20			
Maximum immunity to microbreaks		ms	4		1			
Power dissipated	At 20 °C	W	0.6		0.4			
Direct mounting on contactor	With coil	~ 24...250 V	LC1D80...D150		—			
		~ 100...250 V	—		LC1D80...D115			
		~ 380...415 V	—		—			
Mounting with cabling adapter LAD4BB	With coil	~ 24...250 V	LC1D09...D38, LC1DT20...DT40		LC1D09...D38, LC1DT20...DT40			
		~ 380...415 V	—		—			
Mounting with cabling adapter LAD4BB3	With coil	~ 24...250 V	LC1D40A...D80A		LC1D40A...D80A			
		~ 380...415 V	LC1D40A...D80A		LC1D40A...D80A			
Total operating time at Uc (of the contactor)		The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.						
			LC1D09...D38, LC1DT20...DT40	LC1D40A...D80A	LC1D80 and D95	LC1D115	LC1D150	
		With LA4DFB	"C"	ms	20...30	28...34	28...43	28...43
			"O"	ms	16...24	20...24	18...32	18...32
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5					
Tightening torque		N.m	1.7					

TeSys Control

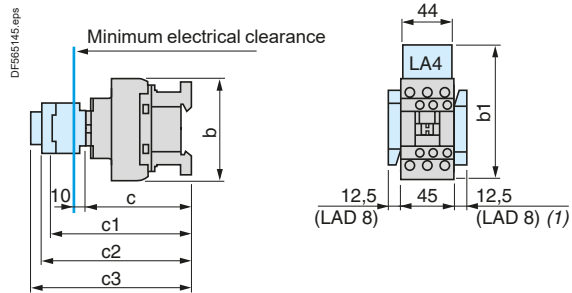
Deca Contactors - a.c. coil

Dimensions

LC1D09...D18 (3-pole)



LC1D25...D38 (3-pole), LC1DT20...DT40 (4-pole)

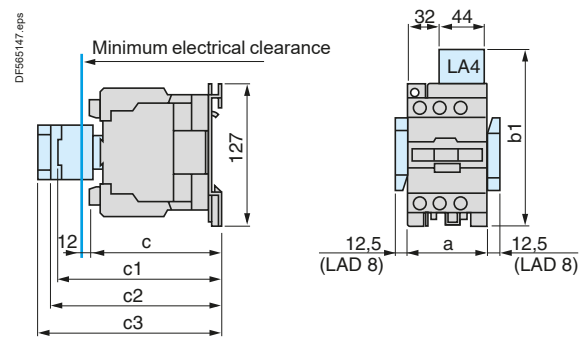
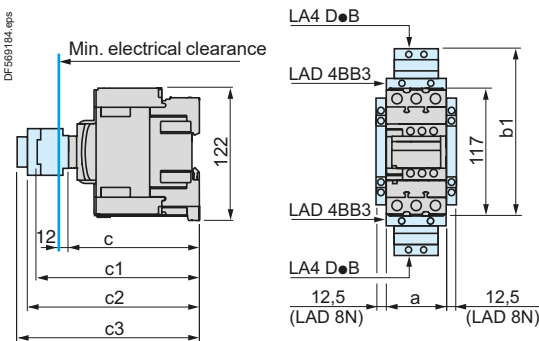


LC1	D09...D18	D093... D123	D099... D129	D25... D38	D183... D323	D098, D128, DT20 and DT25	DT203 and DT253	DT32 and DT40	D188, D258, DT323 and DT403
b without add-on blocks	77	99	80	85	99	85	99	91	105
b1 with LAD4BB	94	107	95,5	98	107	98	—	—	—
with LA4D●2	110 ⁽¹⁾	123 ⁽¹⁾	111,5 ⁽¹⁾	114 ⁽¹⁾	123 ⁽¹⁾	114	—	—	—
with LA4DF, DT	119 ⁽¹⁾	132 ⁽¹⁾	120,5 ⁽¹⁾	123 ⁽¹⁾	132 ⁽¹⁾	129	—	—	—
with LA4DW, DL	126 ⁽¹⁾	139 ⁽¹⁾	127,5 ⁽¹⁾	130 ⁽¹⁾	139 ⁽¹⁾	190	—	—	—
c without cover or add-on blocks	84	84	84	90	90	90	90	97	97
with cover, without add-on blocks	86	86	86	92	92	92	92	99	99
c1 with LADN or C (2 or 4 contacts)	117	117	117	123	123	123	123	131	131
c2 with LAD6K10	129	129	129	135	135	135	135	143	143
c3 with LADT, R, S	137	137	137	143	143	143	143	151	151
with LADT, R, S and sealing cover	141	141	141	147	147	147	147	155	155

(1) Including LAD4BB.

LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole)

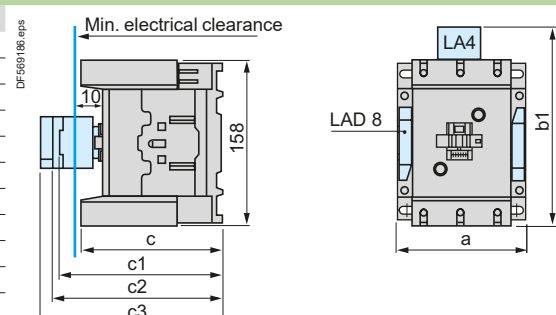
LC1D80 and D95 (3-pole), LC1D80004 and D80008 (4-pole), D40008 and D65008 (4-pole)



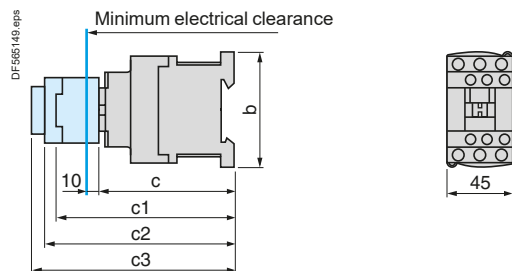
LC1	D40A...D80A	DT60A...DT80A	D40008	D80	D95, D65008	D80004	D80008
a	55	70	85	85	85	96	96
b1 with LA4D●2	—	—	135	135	135	135	135
with LA4DB3 or LAD4BB3	136	—	—	135	—	—	—
with LA4DF, DT	157	—	142	142	142	142	142
with LA4DM, DW, DL	166	—	150	150	150	150	150
c without cover or add-on blocks	118	118	125	125	125	125	140
with cover, without add-on blocks	120	120	—	130	130	—	—
c1 with LADN (1 contact)	—	—	139	150	150	150	150
with LADN or C (2 or 4 contacts)	150	150	147	158	158	158	158
c2 with LAD6K10 or LA6DK	163	163	159	170	170	170	170
c3 with LADT, R, S	171	171	167	178	178	178	178
with LADT, R, S and sealing cover	175	175	171	182	182	182	182

LC1D115 and D150 (3-pole), LC1D115004 (4-pole)

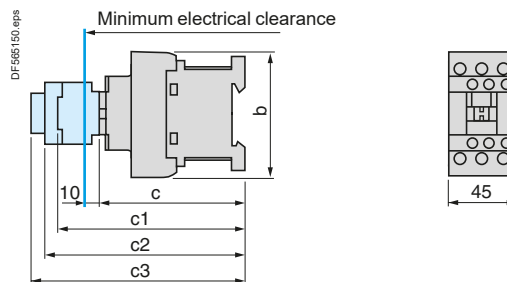
LC1	D115, D150	D115004	D1150046
a	120	150	155
b1 with LA4DA2	174	174	174
with LA4DF, DT	185	185	185
with LA4DM, DL	188	188	188
with LA4DW	188	188	188
c without cover or add-on blocks	132	132	115
with cover, without add-on blocks	136	—	—
c1 with LADN or C (2 or 4 contacts)	150	150	150
c2 with LA6DK20	155	155	155
c3 with LADT, R, S	168	168	168
with LADT, R, S and sealing cover	172	172	172



LC1D09...D18 (3-pole)

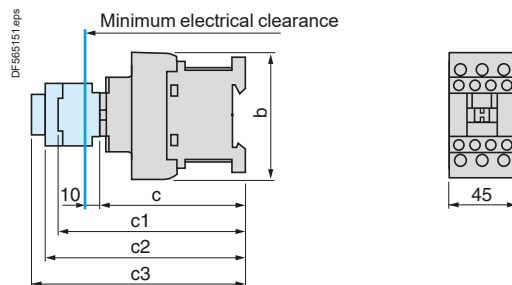


LC1D25...D38 (3-pole)



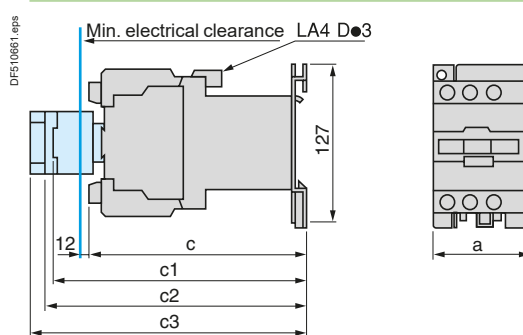
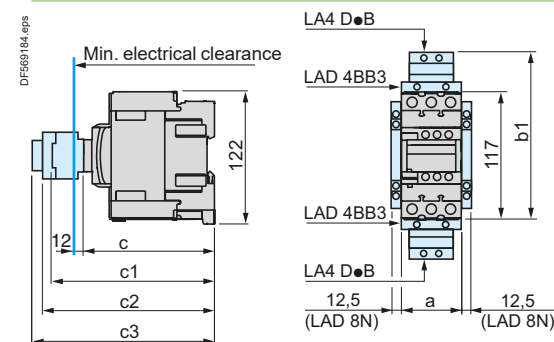
LC1	D09...D18	D093...D123	D099...D129	D25...D38	D183...D323
b	77	99	80	85	99
c without cover or add-on blocks	93	93	93	99	99
with cover, without add-on blocks	95	95	95	101	101
c1 with LADN or C (2 or 4 contacts)	126	126	126	132	132
c2 with LAD6K10	138	138	138	144	144
c3 with LADT, R, S	146	146	146	152	152
with LADT, R, S and sealing cover	150	150	150	156	156

LC1DT20...DT40 (4-pole)



LC1	DT20 and DT25 D098 and D128	DT203 and DT253 D0983 and D1283	DT32 and DT40 D188...D258	DT323 and DT403 D1883 and D2583
b	85	99	91	105
c with cover	102	102	107	107
c1 with LADN or C (2 or 4 contacts)	123	123	131	131
c2 with LAD6K10	135	135	143	143
c3 with LADT, R, S	143	143	151	151
with LADT, R, S and sealing cover	147	147	155	155

LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole)



	LC1D40A ... D80A	LC1 DT60A...DT80A	LP1D40008 and D65008	LC1 D80 and D95	LP1D80004	LP1D80008
a	55	72	85	85	96	96
b1 with LAD4BB3	136	136	—	—	—	—
with LA4DF, DT	157	157	—	—	—	—
c without cover or add-on blocks	118	118	182	181	181	196
with cover, without add-on blocks	120	120	—	186	—	—
c1 with LADN (1 contact)	—	—	196	204	204	204
with LADN or C (2 or 4 contacts)	150	150	202	210	210	210
c2 with LAD6K10 or LA6DK20	163	163	213	221	221	221
c3 with LADT, R, S	171	171	221	229	229	229
with LADT, R, S and sealing cover	175	175	225	233	233	233

LC1D115... and LC1D150... with coil: see page B8/94.

References:
pages B8/22 to B8/28

Characteristics:
pages B8/80 to B8/87

Schemes:
pages B8/101 and B8/102

Ref.

Ref.

Ref.

Contactors

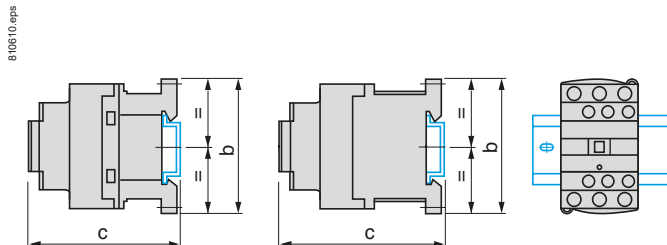
TeSys Control

Deca Contactors

Mounting

LC1D09...D38, DT20...DT40

On mounting rail NSYSR200BD, NSYSR200BD or NSYSR200 (width 35 mm)



Control circuit: a.c.

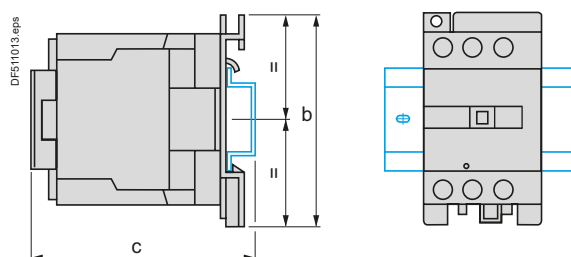
LC1	D09... D18	D25... D38	DT20 and DT25	DT32 and DT40
b	77	85	85	100
c (NSYSR200BD or NSYSR200BD) ⁽¹⁾	88	94	94	109
c (NSYSR200) ⁽¹⁾	96	102	102	117

Control circuit: d.c.

LC1	D09... D18	D25... D38	DT20 and DT25	DT32 and DT40
b	77	85	94	109
c (NSYSR200BD or NSYSR200BD) ⁽¹⁾	97	103	103	118
c (NSYSR200) ⁽¹⁾	105	110	111	126

LC1D40A...D80A, LC1DT60A and DT80A, LC1D80 and D95, LC1D40008 and D65008

On mounting rail AM1DL201 (width 75 mm) ⁽²⁾
On mounting rail NSSDPR●● or NSYSR200 (width 35 mm)



Control circuit: a.c.

LC1	D40A...D80A DT60A...DT80A	D80 and D95	D40008 and D65008
b	122	127	127
c	—	147	143
c (AM1DL201) ⁽¹⁾	—	137	133
c (NSSDPR●● or NSYSR200) ⁽¹⁾	128	137	133

Control circuit: d.c.

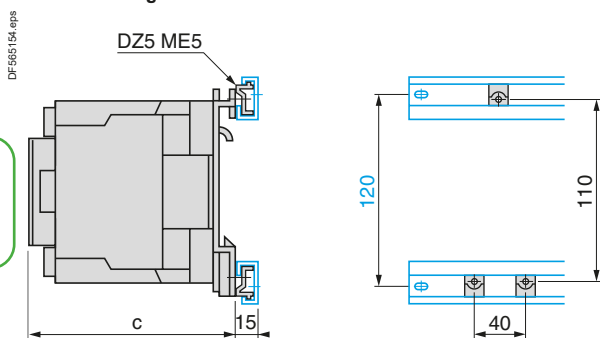
LC1	D40A...D80A DT60A...DT80A	D80 and D95	D40008 and D65008
b	—	205	200
c (AM1DL201) ⁽¹⁾	—	195	190
c (NSSDPR●● or NSYSR200) ⁽¹⁾	128	—	190

⁽¹⁾ With safety cover.

⁽²⁾ Except for LC1D40A...D80A, LC1DT60A and DT80A.

LC1D80 and D95, LP1D80

On 2 mounting rails DZ5MB on 120 mm centres



Control circuit: a.c.

LC1	D80 and D95
c with cover	130

Control circuit: d.c. ⁽³⁾

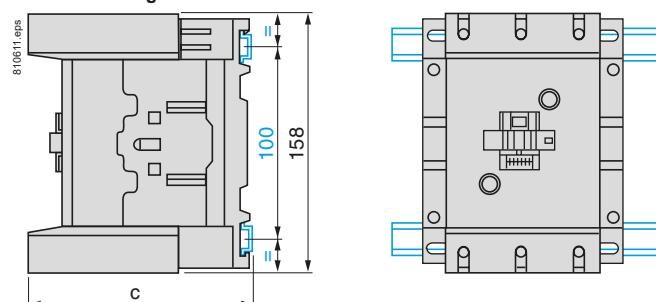
LC1	D80 and D95
c with cover	186

LP1	D80
c	181

⁽³⁾ Leave a 9 mm gap between 2 contactors if left on for more than 4 hours.

LC1D115, D150

On 2 mounting rails DZ5MB on 120 mm centres



Control circuit: a.c. or d.c.

LC1	D115 and D150	D1156 and D1506
c (NSYSR200BD or NSYSR200BD)	134.5	117.5
c (NSYSR200 or ED●●●)	142.5	125.5

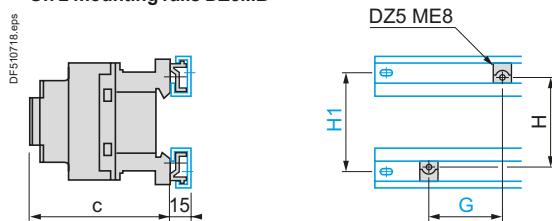
TeSys Control

Deca Contactors

Mounting

LC1D09...D38 and LC1DT20...DT40

On 2 mounting rails DZ5MB



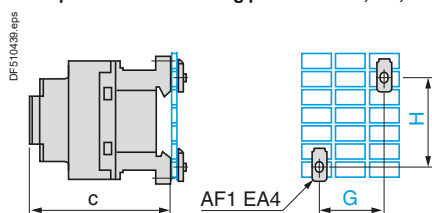
Control circuit:	a.c.		d.c.	
LC1	D09...D18	D25...D38	D09...D18	D25...D38
c with cover	86	92	95	101
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

4-pole contactors

LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c	92	100	101	109
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

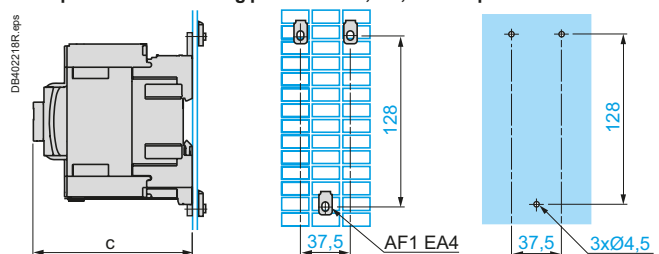
LC1D09...D38 and LC1DT20...DT40

On pre-slotted mounting plate AM1 PA, PB, PC



LC1D40A...D80A, LC1DT60A...DT80A

On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted

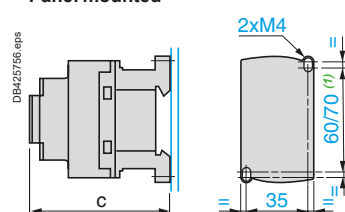


Control circuit:	a.c.		d.c.	
LC1	D09...D18	D25...D38	D09...D18	D25...D38
c with cover	86	92	95	101
G	35	35	35	35
H	60/70	60/70	70	70
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c with cover	80	93	118	132
G	35	35	35	35
H	60	60	70	70

Control circuit:	a.c.	d.c.
LC1	D40A...D80A, DT60A...DT80A	D40A...65A, DT60A...DT80A
c with cover	120	120

LC1D09...D38, LC1DT20...DT40

Panel mounted

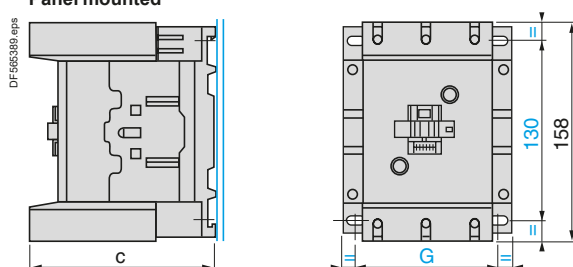


(1) for DC coil: 70 mm only.

Control circuit:	a.c.		d.c.	
LC1	D09...D18	D25...D38	D09...D18	D25...D38
c with cover	86	92	95	101
4-pole contactors				
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c with cover	90	98	90	98

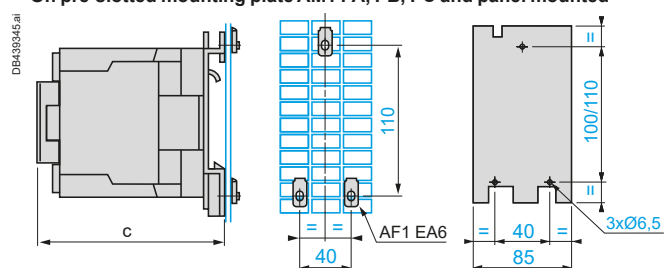
LC1D115, D150

Panel mounted



LC1D80 and D95, LC1D40008 and D65008, LP1D80

On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



Control circuit:	a.c.	d.c.
LC1	D80 and D95, D40008 and D65008	D80 and D95 D40008 and D65008
c with cover	130	186
LP1	—	D80
c without cover	—	181

LC1	D115	D1156	D150	D1506
c	132	115	132	115
G (3-pole)	96/110	96/110	96/110	96/110
G (4-pole)	130/144	130/144	—	—

References:
pages B8/22 to B8/28

Characteristics:
pages B8/80 to B8/87

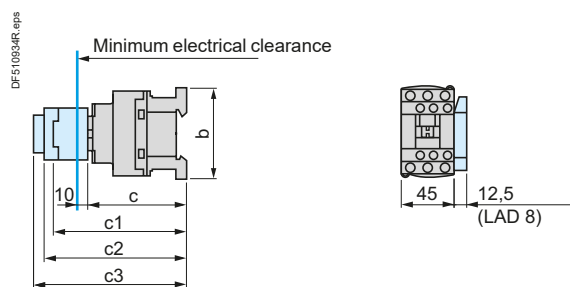
Schemes:
pages B8/101 and B8/102

TeSys Control

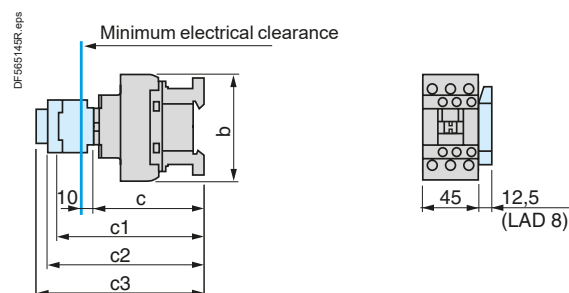
Deca green Contactors

Dimensions

LC1D09...D18 (3-pole), with AC/DC compatible coil

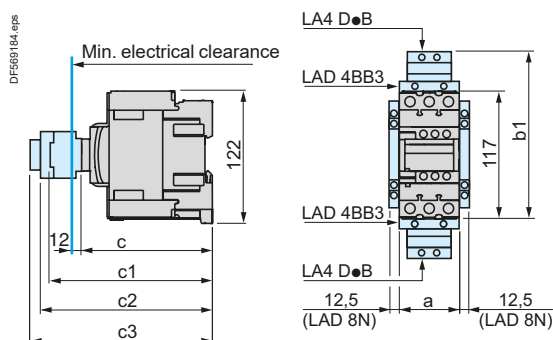


LC1D25...D38 (3-pole), with AC/DC compatible coil



LC1	D09...D18	D25...D38
b without add-on blocks	77	85
c without cover or add-on blocks	84	90
with cover, without add-on blocks	86	92
c1 with LADN or C (2 or 4 contacts)	117	123
c2 with LAD6K10	129	135
c3 with LADT, R, S	137	143
with LADT, R, S and sealing cover	141	147

LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole), with AC/DC compatible coil



LC1	D40A...D80A	DT60A...DT80A
a	55	70
b1 LAD4BB3	136	—
with LAD4DWB	166	—
c without cover or add-on blocks	118	118
with cover, without add-on blocks	120	120
c1 with LADN (1 contact)	—	—
with LADN or C (2 or 4 contacts)	150	150
c2 with LAD6K10	163	163
c3 with LADT, R, S	171	171
with LADT, R, S and sealing cover	175	175

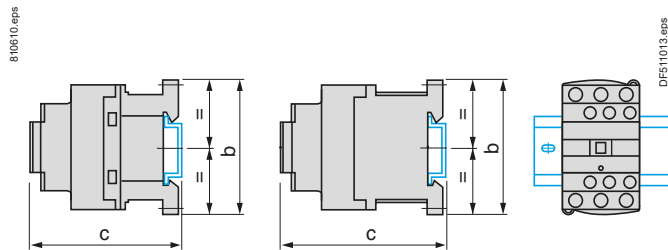
TeSys Control

Deca green Contactors

Mounting

LC1D09...D38 (3-pole), with AC/DC compatible coil

On mounting rail NSYSR200BD, NSYSR200BD or NSYSR200 (width 35 mm)

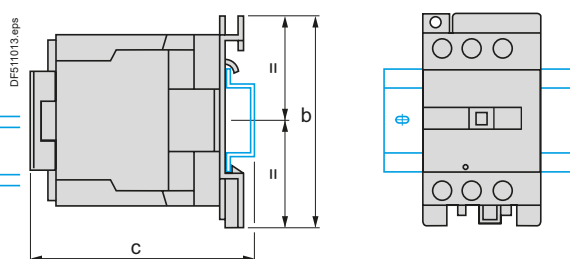


LC1	D09...D18	D25...D38
b	77	85
c (NSYSR200BD or NSYSR200BD)	88	94
c (NSYSR200)	96	102

LC1D40A...D80A (3-pole), LC1DT60A and DT80A (4-pole), with AC/DC compatible coil

On mounting rail AM1DL201 (width 75 mm) ⁽²⁾

On mounting rail NSSDPR●● or NSYSR200 (width 35 mm)



LC1	D40A...D80A DT60A...DT80A
b	122
c	—
c (AM1DL201)	—
c (NSSDPR●● or NSYSR200)	128

Ref.



Contactors

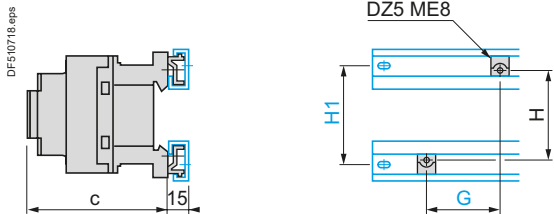
TeSys Control

Deca green Contactors

Mounting

LC1D09...D38 (3-pole), with AC/DC compatible coil

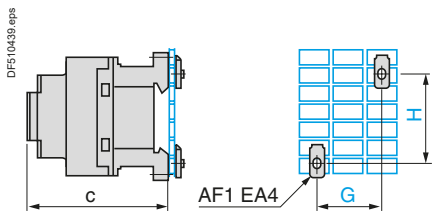
On 2 mounting rails DZ5MB



LC1	D09...D18	D25...D38
c with cover	86	92
G	35	35
H	60	60
H1	70	70

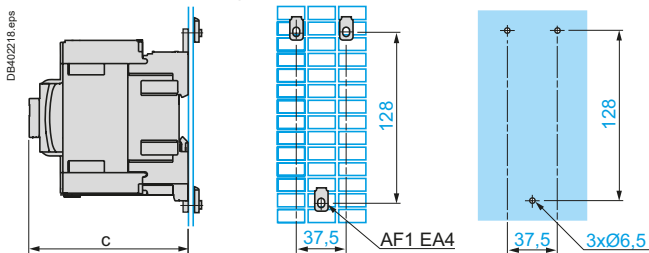
LC1D09...D38 (3-pole), with AC/DC compatible coil

On pre-slotted mounting plate AM1PA, PB, PC



LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole), with AC/DC compatible coil

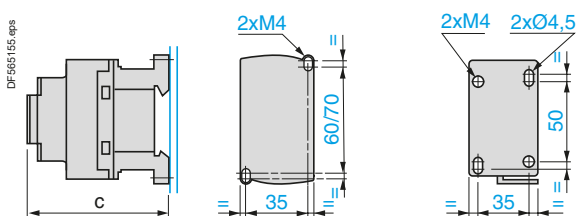
On pre-slotted mounting plate AM1PA, PB, PC and panel mounted



Ref.	LC1	D09...D18	D25...D38
	c with cover	86	92
	G	35	35
	H	60/70	60/70

LC1D09...D38 (3-pole), with AC/DC compatible coil

Panel mounted



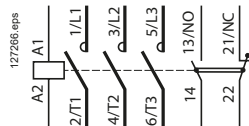
LC1	D09...D18	D25...D38
c with cover	86	92

LC1	D40A...D80A , DT60A...DT80A
c with cover	120

Contactors

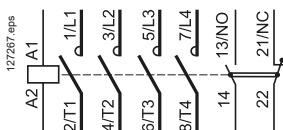
Deca, Deca green 3-pole contactors (References: pages B8/22 to B8/25)

LC1D09 to D150

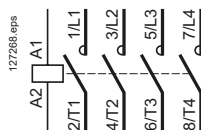


Deca 4-pole contactors (References: pages B8/26 and B8/27)

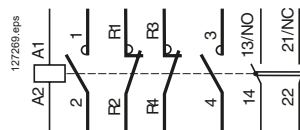
LC1DT20 to DT80A



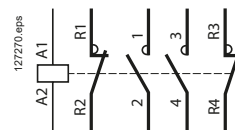
LC1D115004



LC1D098 to D258



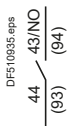
LC1 and LP1D40008 to D80008



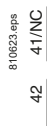
Front mounting add-on contact blocks

Instantaneous auxiliary contacts for Deca, Deca green contactors (References: page B8/36)

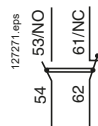
1 N/O LADN10 ⁽¹⁾



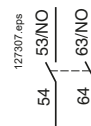
1 N/C LADN01 ⁽¹⁾



1 N/O + 1 N/C LADN11



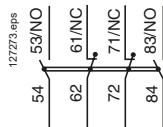
2 N/O LADN20



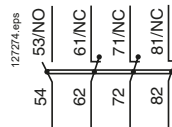
2 N/C LADN02



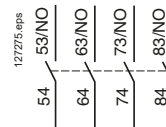
2 N/O + 2 N/C LADN22



1 N/O + 3 N/C LADN13



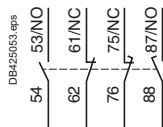
4 N/O LADN40



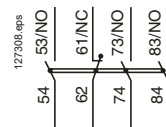
4 N/C LADN04



2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LADC22

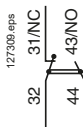


3 N/O + 1 N/C LADN31

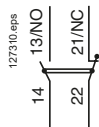


Instantaneous auxiliary contacts conforming to standard EN 50012 for Deca, Deca green contactors (References: page B8/36)

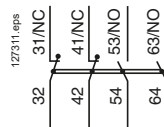
1 N/O + 1 N/C LADN11G



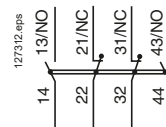
1 N/O + 1 N/C LADN11P



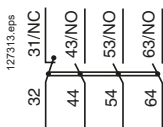
2 N/O + 2 N/C LADN22G



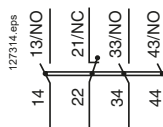
2 N/O + 2 N/C LADN22P



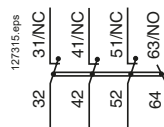
3 N/O + 1 N/C LADN31G



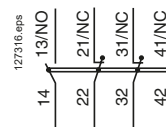
3 N/O + 1 N/C LADN31P



1 N/O + 3 N/C LADN13G



1 N/O + 3 N/C LADN13P



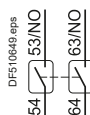
⁽¹⁾ Items in brackets refer to blocks mounted on right-hand side of contactor.

Front mounting add-on contact blocks for Deca, Deca green contactors

Dust and damp protected instantaneous auxiliary contacts (References: page B8/36)

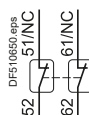
2 N/O (24-50 V)

LA1DX20

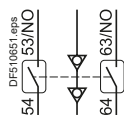


2 N/C (24-50 V)

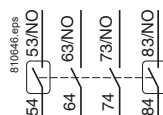
LA1DX02



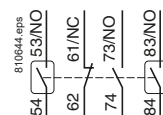
2 N/O (5-24V) with 2 cable screen terminals
LA1DY20



2 N/O protected (24-50 V)
2 N/O standard
LA1DZ40

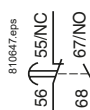


2 N/O protected (24-50 V)
+ 1 N/O + 1 N/C standard
LA1DZ31

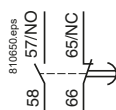


Time delay auxiliary contacts (References: page B8/37)

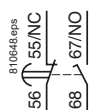
On-delay 1 N/O + 1 N/C
LADT



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

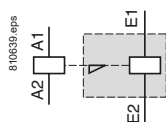


On-delay 1 N/C + 1 N/O break before make
LADS



Mechanical latch blocks for Deca, Deca green contactors

LAD6K10 and LA6DK20



Ref.

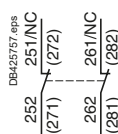
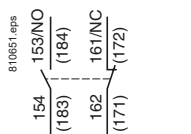
Side mounting add-on contact blocks for Deca, Deca green contactors

Instantaneous auxiliary contacts (References: page B8/36)

1 N/O + 1 N/C LAD8N11 ⁽¹⁾

2 N/O LAD8N20 ⁽¹⁾

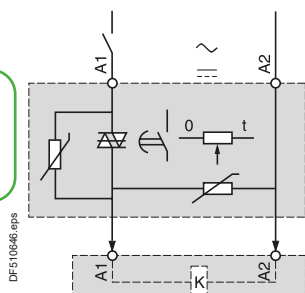
2 N/C LAD8N02 ⁽¹⁾



⁽¹⁾ Items in brackets refer to blocks mounted on right-hand side of contactor.

Electronic serial timer modules for Deca, Deca green contactors

On-delay LA4DTeU

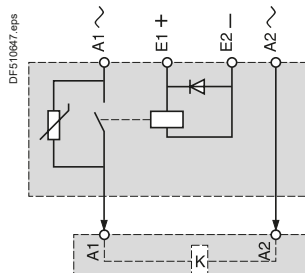


Contactors

Interface modules

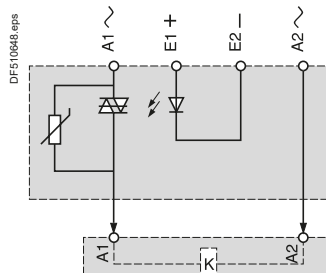
Relay output for Deca contactors

LA4DFB



Solid state for Deca, Deca green contactors

LA4DWB



References: page B8/85.

References:
pages B8/36 to B8/40

Characteristics:
pages B8/88 to B8/92

Dimensions:
pages B8/94 and B8/95, B8/98

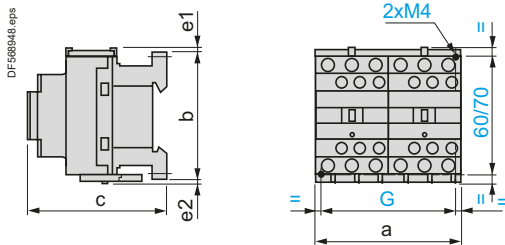
TeSys Control

Deca green, Deca Reversing and changeover contactors

Dimensions

LC2D09 to D38 Deca, Deca green contactors

2 x LC1D09 to D38



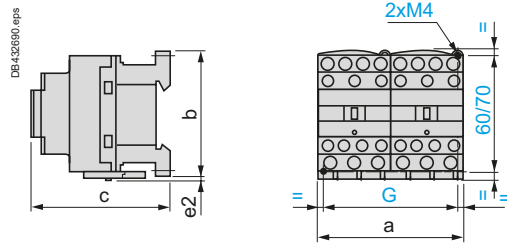
LC2 or 2 x LC1	a	b	c ⁽¹⁾	e1	e2	G
D09 to D18 AC, AC/DC	90	77	86	4	1.5	80
D093 to D123 AC	90	99	86	—	—	80
D09 to D18 DC	90	77	95	4	1.5	80
D093 to D123 DC	90	99	95	—	—	80
D25 to D38 AC, AC/DC	90	85	92	9	5	80
D183 to D383 AC	90	99	92	—	—	80
D25 to D32 DC	90	85	101	9	5	80
D183 to D383 DC	90	99	101	—	—	80

e1 and e2: including cabling.

(1) With safety cover, without add-on block.

LC2DT20 to DT40 Deca contactors

2 x LC1DT20 to DT40

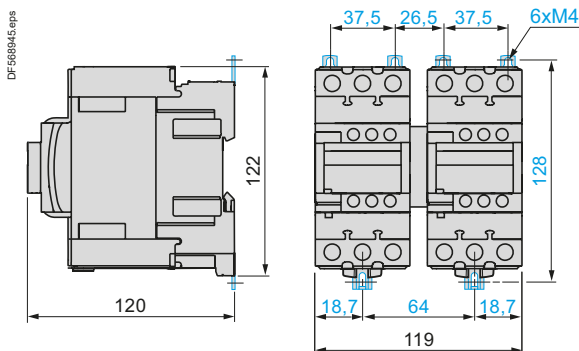


LC2 or 2 x LC1	a	b	c	G	e2
DT20 and DT25 AC	90	85	92	80	20
DT32 and DT40 AC	90	91	99	80	22
DT20 and DT25 DC	90	85	102	80	20
DT32 and DT40 DC	90	91	109	80	22

c, e: including cabling.

LC2D40A to D80A for Deca, Deca green contactors

2 x LC1D40A to D80A



Ref.



Contactors

TeSys Control

Deca Reversing and changeover contactors

Dimensions

LC2D80 and D95

2 x LC1D80 and D95 ~

2 x LC1D80 and D95 ---

LC2 or 2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95 ~	182	127	158	13	—	56	96
D80004 ~	207	127	158	—	20	71	111

c, e1 and e2: including cabling.

2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95	182	127	215	13	20	56	96

c, e1 and e2: including cabling.

LC2D115 and D150

2 x LC1D115 and D150

LC2 or 2 x LC1	a	c	e1	e2	G
D115 and D150	266	148	56	18	242/256
D115004	334	148	—	60	310/324

c, e1 and e2: including cabling.

TeSys Control

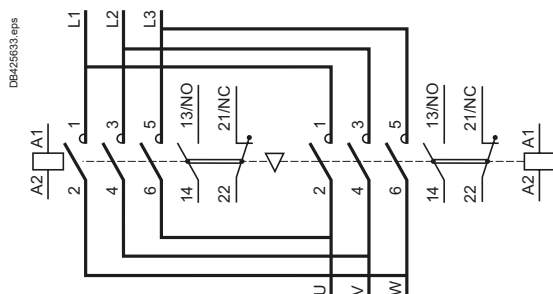
Deca green, Deca Reversing and changeover contactors

Schemes

Reversing contactors for motor control

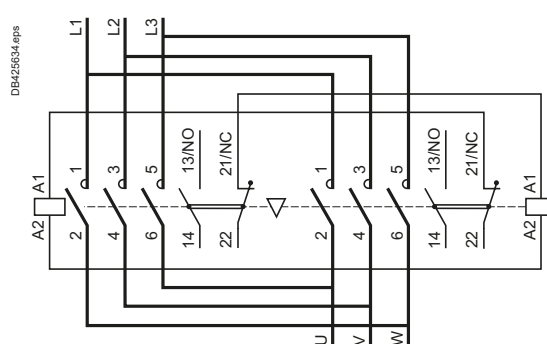
LC2D09...D80A Deca, Deca green contactors LC2D80...D150 Deca contactor

Horizontally mounted



LAD9R1V D, Deca green contactors

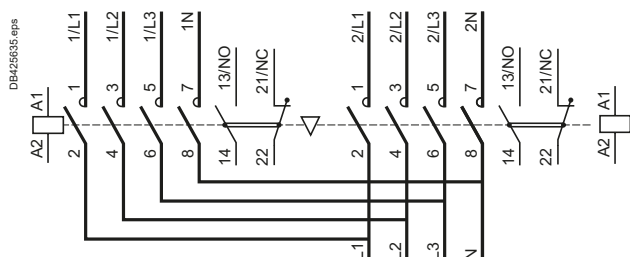
With integral electrical interlocking



Changeover contactor pairs Deca contactors

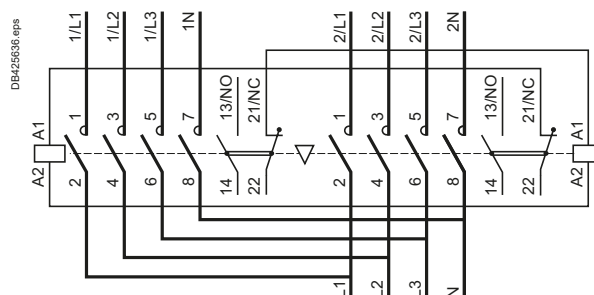
LC2DT20...DT40

Horizontally mounted



LADT9R1V

With integral electrical interlocking



Ref.



Contactors

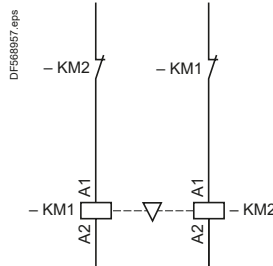
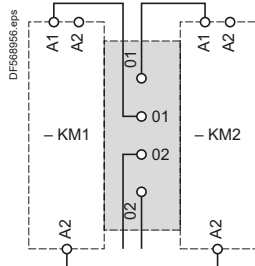
Electrical interlocking of Deca, Deca green reversing contactors fitted with:

Mechanical interlock with integral electrical contacts

LA9D4002, LA9D8002 and LA9D11502

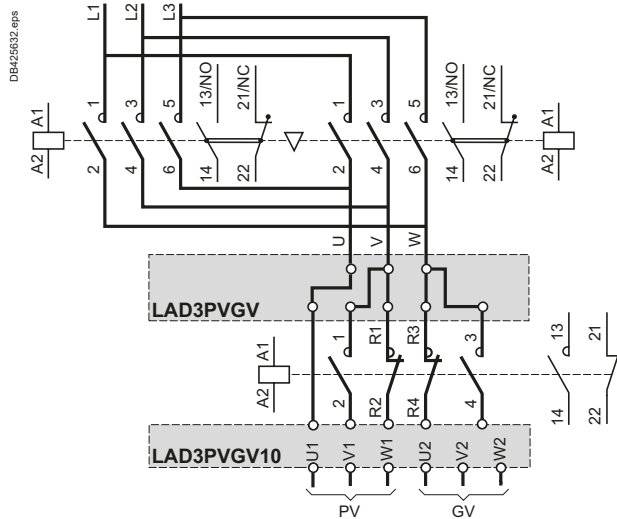
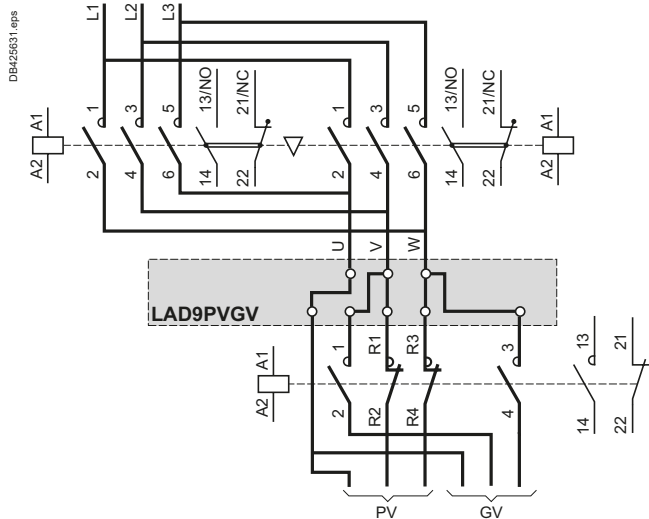
Mechanical interlock without integral electrical contacts

LAD9V2, LAD4CM, LA9D50978 and LA9D80978



Low speed - High speed cabling kit, screw clamp terminals for LC1D09... D38 contactors (Deca, Deca green)

Low speed - High speed cabling kit, spring terminals for LC1D09... D38 contactors (Deca)



Ref.



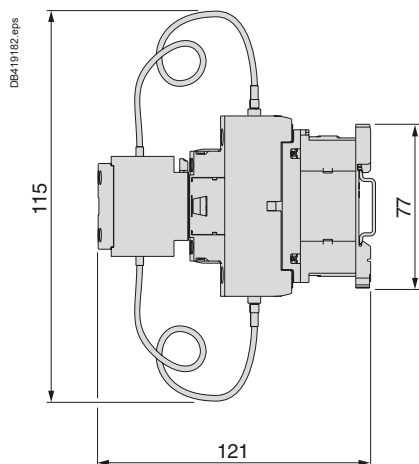
TeSys Control

Deca Contactors for 3-phase capacitor bank switching

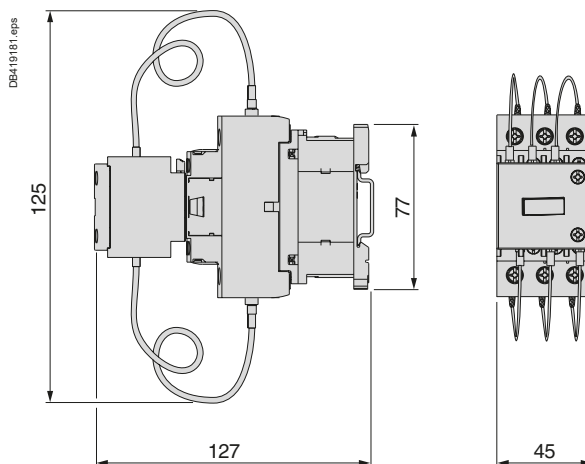
Dimensions and scheme

Dimensions

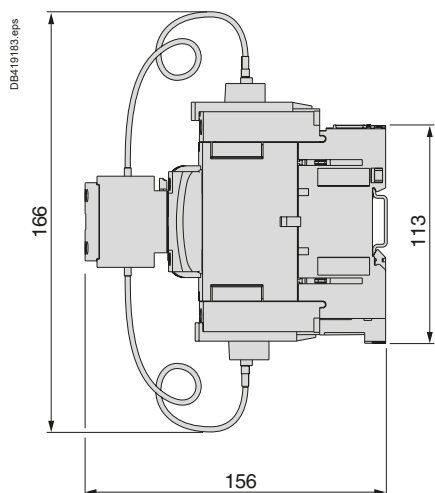
LC1DFK



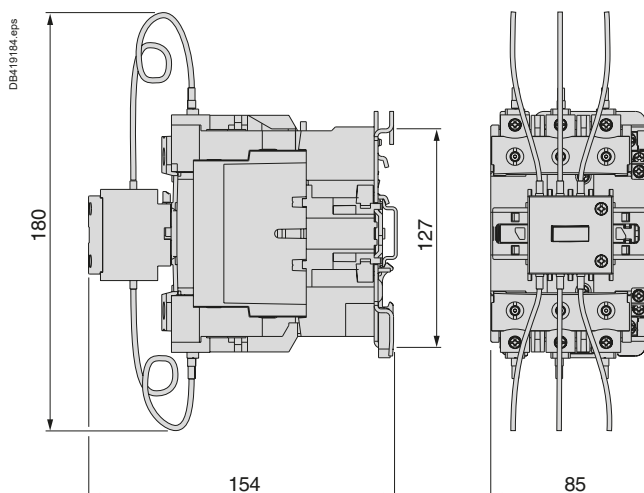
LC1DGK, DLK, DMK



LC1DPK, DTK



LC1DWK

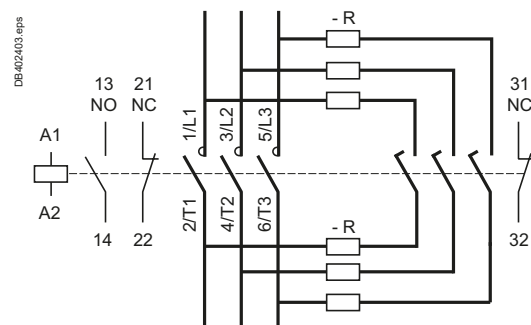


Ref.

Contactors

Scheme

LC1D•K



R = Pre-wired resistor connections.

TeSys Control

Modular Contactors

Characteristics



GC25

Modular contactors are designed for use in modular panels and enclosures.

These contactors feature:

■ **Easy installation:**

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten, captive, pozidrive screw terminals.

■ **Compact size:**

All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety:**

- use of materials conforming to strictest fire safety standards
- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.

This standard is specific to "Electromagnetic contactors for domestic and similar use".

It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public".

Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

Applications

Modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 100 A.

Power switching

These contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:

- lighting
- heating
- ventilation
- motorised shutters or gates.

Ref.



Contactors

TeSys Control

Modular Contactors

Characteristics

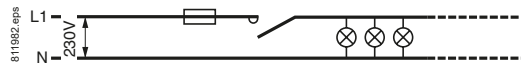
Environment								
Contactor type			GC16	GC25	GC40	GC63	GC100	
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500					
	Conforming to VDE 0110	V	500					
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure					
Conforming to standards			IEC 61095 and IEC 60947-5-1 for auxiliary contacts					
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact (IP 20 open, IP 40 in enclosure)					
Ambient air temperature around the device	Storage	°C	-40...+70					
	Operation	°C	-5...+50 (0.85...1.1 Uc)					
Maximum operating altitude	Without derating	m	3000					
Operating positions	Without derating		±30° in relation to normal vertical mounting plane					
Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27	Contactor open		10 gn					
	Contactor closed		15 gn					
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactor open		2 gn					
	Contactor closed		3 gn					
Flame resistance			Conforming to IEC 61095					
Pole characteristics								
Number of poles			2, 3 or 4					
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63	100	
	In AC-7b (motor control)	A	5	8.5	15	25	–	
Contactor rating	40 °C	A	16	25	40	63	100	
	50 °C	A	14	22	36	57	87	
	60 °C ⁽¹⁾	A	13	20	32	50	80	
Rated operational voltage (Ue)	Up to	V	250 two-pole contactors, 415 three and four-pole contactors					
Frequency limits	Of the operating current	Hz	400					
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63	100	
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200	–	
Permissible short time rating no current flowing for preceding 15 minutes with q ≤ 40 °C	For 10 s	A	128	200	320	504	800	
	For 30 s	A	40	62	100	157	250	
Short-circuit protection by fuse or circuit breaker U ≤ 440 V	gl fuse	A	16	25	40	63	100	
	Circuit breaker I²t 230 V (at 3 kA rms prospective)	A²s	5000	10000	16000	18000	–	
	400 V	A²s	9000	14000	17500	20000	–	
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000	30000	
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2	1	
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8	10	
Maximum cabling c.s.a.	Flexible cable without cable end	1 conductor	mm²	6	6	25	25	35
		2 conductors	mm²	4	4	16	16	–
	Flexible cable with cable end	1 conductor	mm²	6	6	16	16	35
		2 conductors	mm²	1.5	1.5	4	4	–
	Solid cable without cable end	1 conductor	mm²	6	6	25	25	35
		2 conductors	mm²	4	4	6	6	10
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5	3.5	

(1) Ventilation 1/2 module must be fitted.

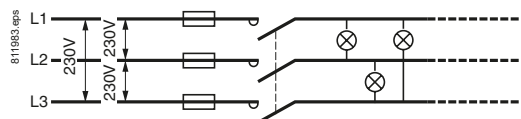
Control circuit characteristics								
Contactor type				GC16, GC25 single or 2-pole		GC16, GC25 3 or 4-pole GC40, GC63 2-pole	GC40, GC63 3 or 4-pole GC100 2-pole	GC100 4-pole
Rated control circuit voltage (Uc)		50 or 60 Hz	V	12...240 V, for other voltages, please consult your Regional Sales Office				
Control voltage limits (θ ≤ 50 °C)	50 Hz coils	Operational		0.85...1.1 Uc				
		Drop-out		0.2...0.75 Uc				
Average coil consumption at 20 °C and at Uc	~ 50 Hz	Inrush	VA	15	34	53	106	
		Sealed	VA	3.8	4.6	6.5	13	
Maximum heat dissipation		50/60 Hz	W	1.3	1.6	2.1	4.2	
Operating time		Closing “C”	ms	10...30				
		Opening “O”	ms	10...25				
Mechanical durability		In operating cycles		10 ⁶				
Maximum operating rate at ambient temperature ≤ 50 °C		In operating cycles per hour		300				
Maximum cabling c.s.a.	Flexible cable without cable end	1 or 2 conductors	mm²	2.5				
	Flexible cable with cable end	1 conductor	mm²	2.5				
		2 conductors	mm²	1.5				
	Solid cable without cable end	1 or 2 conductors	mm²	1.5				
Tightening torque			N.m	0.8				
Instantaneous auxiliary contact characteristics								
Rated operational voltage (Ue)		Up to	V	250				
Rated insulation voltage (Ui)		Conforming to IEC 60947-5	V	500				
		Conforming to VDE 0110	V	500				
Conventional thermal current (Ith)		For ambient θ ≤ 50 °C	A	5				
Mechanical durability		Operating cycles		10 ⁶				
Maximum cabling c.s.a.		Flexible or solid conductor	mm²	2.5				
Tightening torque			N.m	0.8				

Lighting (Maximum number of lamps depending on the power of each unit) Introduction of installations according to type of supply

■ Single-phase circuit, 230 V

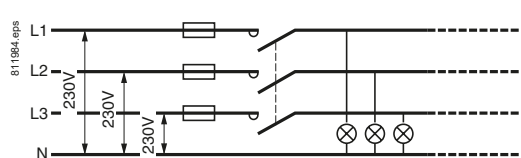


■ 3-phase circuit, 230 V



The maximum number of lamps which can be operated per phase is equal to the number of lamps in the "single phase 230 V" table divided by $\sqrt{3}$.

■ 3-phase circuit, 400 V (with neutral)



The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the "single-phase 230 V" table.

Contactor rating for a single-phase 230 V circuit (single-pole)

Fluorescent lamps with starter

Single fitting	Non corrected					With parallel correction					Contactor rating
P (W)	20	40	50	80	110	20	40	58	80	110	—
I _B (A)	0.39	0.43	0.70	0.80	1.2	0.19	0.29	0.46	0.57	0.79	—
C (μF)	—	—	—	—	—	5	5	7	7	16	—
Maximum number of lamps	22	20	13	10	7	15	15	10	10	5	16 A
	30	28	17	15	10	20	20	15	15	7	25 A
	70	60	35	30	20	40	40	30	30	14	40 A
	100	90	56	48	32	60	60	43	43	20	63 A
Twin fitting	Non corrected					With series correction					Contactor rating
P (W)	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	—
I _B (A)	0.44	0.82	1.34	1.64	2.2	0.26	0.48	0.78	0.96	1.3	—
C (μF)	—	—	—	—	—	3.5	4.5	7	9	18	—
Maximum number of lamps	20	11	7	5	4	30	17	10	9	6	16 A
	30	16	10	8	6	46	25	16	13	10	25 A
	50	26	16	13	10	80	43	27	22	16	40 A
	75	42	25	21	16	123	67	42	34	25	63 A

High pressure mercury vapour lamps

	Non corrected						With parallel correction								Contactor rating
P (W)	50	80	125	250	400	700	50	80	125	250	400	700	1000	—	
I _B (A)	0.6	0.8	1.15	2.15	3.25	5.4	0.35	0.50	0.7	1.5	2.4	4	5.7	—	
C (μF)	—	—	—	—	—	—	7	8	10	18	25	40	60	—	
Maximum number of lamps	15	10	8	4	2	1	10	9	9	4	3	2	—	16 A	
	20	15	10	6	4	2	15	13	10	6	4	2	1	25 A	
	34	27	20	10	6	4	28	25	20	11	8	5	3	40 A	
	53	40	28	15	10	6	43	38	30	17	12	7	5	63 A	

I_B: value of current drawn by each lamp at its rated voltage.

C: unit capacitance for each lamp.

I_B and C correspond to values normally quoted by lamp manufacturers

Ref.



Contactors

Contactor rating for a single-phase 230 V circuit (single-pole) (continued)

Low pressure sodium vapour lamps

	Non corrected						With parallel correction						Contactor rating
P (W)	18	35	55	90	135	180	18	35	55	90	135	180	–
I _B (A)	0.35	1.4	1.4	2.1	3.1	3.1	0.35	0.6	0.6	0.9	0.9	0.9	–
C (μF)	–	–	–	–	–	–	5	20	20	26	45	40	–
Maximum number of lamps	18	4	5	3	2	2	14	3	3	2	1	1	16 A
	34	9	9	6	4	4	21	5	5	4	2	2	25 A
	57	14	14	9	6	6	40	10	10	8	4	5	40 A
	91	24	24	19	10	10	60	15	15	11	6	7	63 A

High pressure sodium vapour lamps

	Non corrected					With parallel correction					Contactor rating
P (W)	70	150	250	400	1000	70	150	250	400	1000	–
I _B (A)	1	1.8	3	4.4	10.3	0.6	0.7	1.5	2.5	6	–
C (μF)	–	–	–	–	–	12	20	32	45	100	–
Maximum number of lamps	8	4	2	1	–	6	6	2	2	1	16 A
	12	7	4	3	1	9	9	3	4	2	25 A
	20	13	8	5	2	18	18	6	8	4	40 A
	32	18	11	8	3	25	25	9	12	6	63 A

Metal iodine or halogen vapour lamps

	Non corrected						With parallel correction						Contactor rating
P (W)	35	70	150	250	400	1000	39	70	150	250	400	1000 2000	–
I _B (A)	0.3	0.5	1	1.5	2.5	6	0.3	0.5	1	1.5	2.5	6 5.5	–
C (μF)	–	–	–	–	–	–	6	12	20	32	45	85 60	–

Maximum number of lamps	27	16	8	5	3	1	12	6	4	3	2	–	1	16 A
	40	24	12	8	5	2	18	9	6	4	3	1	2	25 A
	68	42	20	14	8	4	31	16	10	7	5	3	3	40 A
	106	64	32	21	13	5	50	25	15	10	7	4	5	63 A

Incandescent and halogen lamps

	Non corrected							With parallel correction				Contactor rating
P (W)	60	75	100	150	200	300	500	1000				–
I _B (A)	0.26	0.32	0.44	0.65	0.87	1.3	2.17	4.4				–
Maximum number of lamps	30	25	19	12	10	7	4	2				16 A
	45	38	28	18	14	10	6	3				25 A
	85	70	50	35	26	18	10	6				40 A
	125	100	73	50	37	25	15	8				63 A

Halogen lamps used with transformer

	Non corrected				Contactor rating
P (W)	60	80	105	150	–
I _B (A)	0.26	0.35	0.45	0.65	–
Maximum number of lamps	9	8	6	4	16 A
	14	12	9	6	25 A
	27	23	18	13	40 A
	40	35	27	19	63 A

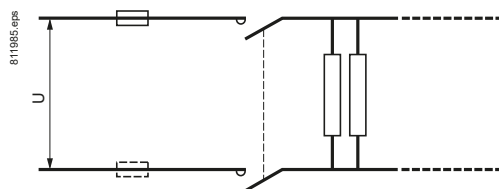
I_B: value of current drawn by each lamp at its rated voltage.

C: unit capacitance for each lamp.

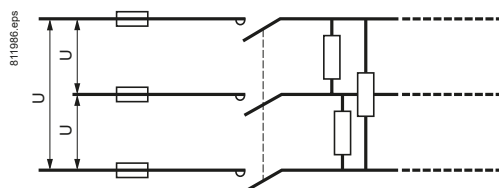
I_B and C correspond to values normally quoted by lamp manufacturers

Heating (AC-7a)

Single-phase, 2-pole switching



3-phase switching



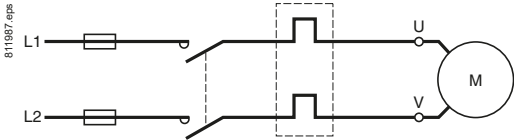
Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 In at the moment of switch-on.

Contactor selection according to power and required electrical life

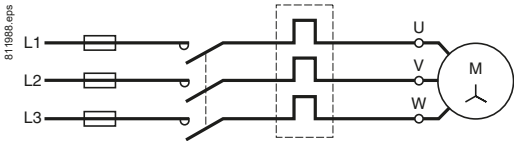
Electrical durability (in operating cycles)	Maximum power (kW)					Contactor rating
	100 x 10 ³	150 x 10 ³	200 x 10 ³	500 x 10 ³	10 ⁶	
Single-phase switching 230 V (2-pole)	3.5	3	2.2	1	0.8	16 A
	5.4	4.6	3.5	1.6	1.2	25 A
	8.6	7.4	5.6	2.6	1.9	40 A
	13.6	11.6	8.8	4	3	63 A
	21.6	18.4	14	6.4	4.8	100 A
3-phase switching 400 V (3-pole)	10	9	6.5	3.2	2.2	16 A
	16	14	10	5	3.5	25 A
	26	22	17	7.5	6	40 A
	41	35	26.5	12	9	63 A
	64.8	55.2	42	19.2	14.4	100 A

Motor control (AC-7b)

Single-phase circuit, 230 V



3-phase circuit, 400 V



Contactor selection according to maximum power in kW

230 V single-phase capacitor motor (2-pole)	400 V 3-phase motor	Contactor rating (Ith)
0.55	2.2	16 A
1.1	4	25 A
2.2	7.5	40 A
4	11	63 A

Ref.



Dimensions

Contactors

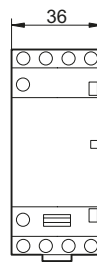
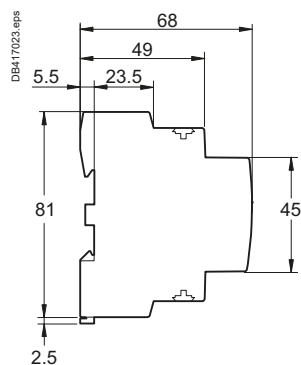
Common side view

GC1610, 1611, 1620
GC2502, 2510, 2511, 2520

1 module

GC1622, 1640
GC2504, 2522, 2530, 2540

2 modules



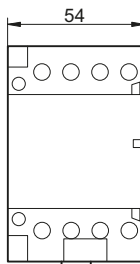
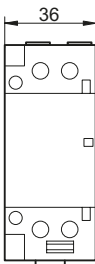
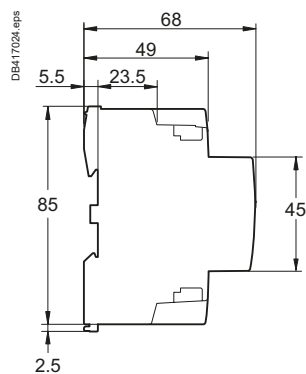
Common side view

GC4002, 4011, 4020
GC6302, 6311, 6320

2 modules

GC4004, 4022, 4030, 4040
GC6304, 6322, 6330, 6340

3 modules



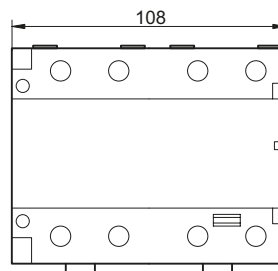
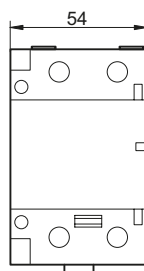
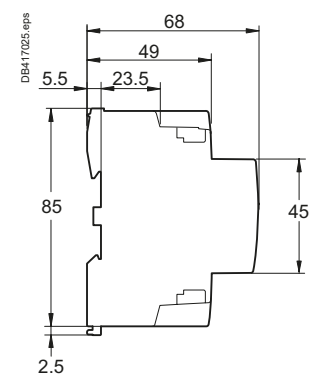
Common side view

GC10020

3 modules

GC10040

6 modules



TeSys Control

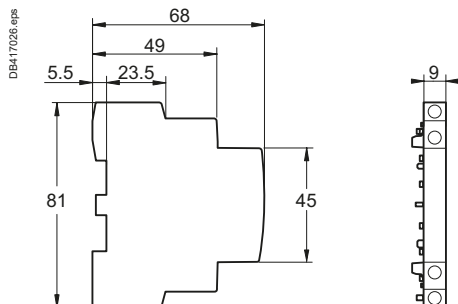
Modular Contactors

Dimensions and mounting

Dimensions

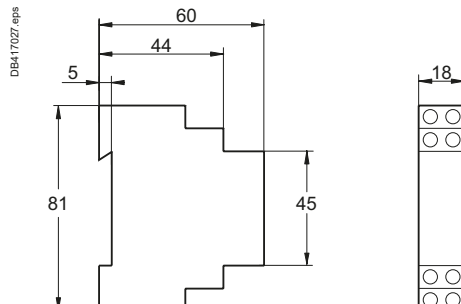
Auxiliary contacts

GAC0511, 0531 and 0521



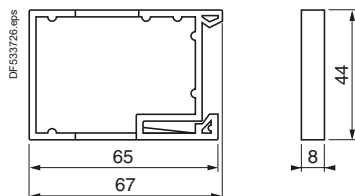
Coil suppression blocks

GAP21 and 23



Clip-on ventilation 1/2 module

GAC5



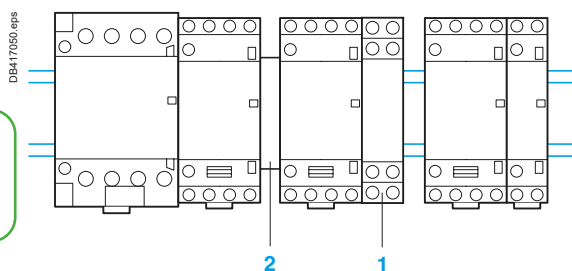
Ref.



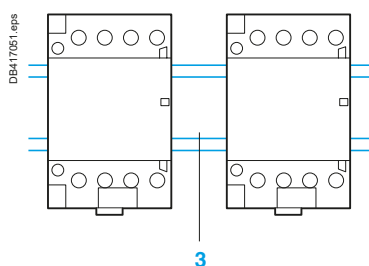
Mounting

Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP21 or 23) across the coil terminals y 250 V. When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module **2** must be fitted every 2 contactors.



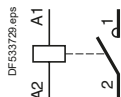
It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space **3** equal to one module, or by 2 ventilation 1/2 modules (GAC 5).



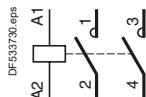
Schemes

Contactors

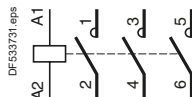
GC●●10



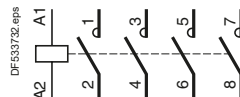
GC●●20



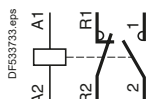
GC●●30



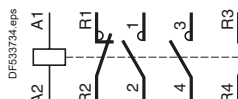
GC●●40



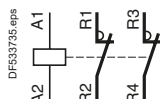
GC●●11



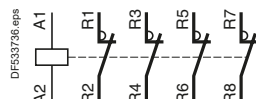
GC●●22



GC●●02

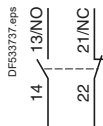


GC●●04



Auxiliary contacts

GAC0521



GAC0531



GAC0511



Ref.



Contactors

TeSys Control

Modular "Dual tariff" contactors

Characteristics



GY25

Modular "dual tariff" contactors are designed for use in modular panels and enclosures.

These contactors feature:

■ **Easy installation:**

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**

All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety:**

- use of materials conforming to strictest fire safety standards
- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

"Dual tariff" contactors are designed for use with Electricity Supply Authority dual tariffs.

They have a 4-position selector switch on the front panel:

"Stop" (O)	For switching off the load, e.g. for prolonged periods of absence.
"Off peak" Automatic start (A)	The contactor switches automatically during "off peak" hours as set by the Supply Authority remote control and thus supplies the load, (washing machine, dishwasher, convector heater, water heater) during this period, at an economy rate to the user.
"Peak time" Manual start (I)	In this position, the contactor supplies the load to cater for additional requirements for hot water, heating, etc., but at the standard rate. The contactor returns automatically to the "off-peak" position at the start of the "off-peak" period.
"Peak time" Manual override with lock	Facility for setting the contactor to continuous manual operation, ignoring the automation system and the Supply Authority control; setting and locking is achieved by means of a tool, with manual return to the "AUTO" position.

Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.

This standard is specific to "Electromagnetic contactors for domestic and similar use".

It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public". Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

"Dual tariff" modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 63 A.

Modular contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:

- lighting,
- heating, ventilation,
- motorised shutters or gates.

Ref.

Contactors

TeSys Control

Modular "Dual tariff" contactors

Characteristics

Environment						
Type			GY16	GY25	GY40	GY63
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500			
	Conforming to VDE 0110	V	500			
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure			
Conforming to standards			IEC 61095 and IEC 60947-5-1 for auxiliary contacts			
Product certifications			NF-USE, VDE, CEBEC, ÖVE			
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 20 open, IP 40 in enclosure			
Ambient air temperature around the device	Storage	°C	-40...+70			
	Operation	°C	-5...+50 (0.85...1.1 Uc)			
Maximum operating altitude	Without derating	m	3000			
Operating positions	Without derating		±30° in relation to normal vertical mounting plane			
Shock resistance 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27	Contact open		10 gn			
	Contact closed		15 gn			
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Contact open		2 gn			
	Contact closed		3 gn			
Flame resistance			Conforming to IEC 61095			
Pole characteristics						
Number of poles			2, 3 or 4			
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63
	In AC-7b (motor control)	A	5	8.5	15	25
Contactor rating	40 °C		16	25	40	63
	50 °C		14	22	36	57
	60 °C ⁽¹⁾		13	20	32	50
Rated operational voltage (Ue)	Up to	V	250 - 2-pole contactors, 415 - 3 and 4-pole contactors			
Frequency limits	Of the operating current	Hz	400			
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200
Short time rating with no current flow for the previous 15 minutes with θ ≤ 40 °C	For 10 s	A	128	200	320	504
	For 30 s	A	40	62	100	157
Short-circuit protection by fuse or circuit breaker U ≤ 440 V						
	gl fuse	A	16	25	40	63
	Circuit breaker I²t (at 3 kA rms prospective) 230V	A²s	5000	10000	16000	18000
	400V	A²s	9000	14000	17500	20000
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8
Maximum cabling c.s.a.						
Flexible cable without cable end	1 conductor	mm²	6	6	25	25
	2 conductors	mm²	4	4	16	16
Flexible cable with cable end	1 conductor	mm²	6	6	16	16
	2 conductors	mm²	1.5	1.5	4	4
Solid cable without cable end	1 conductor	mm²	6	6	25	25
	2 conductors	mm²	4	4	6	6
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5

⁽¹⁾ Ventilation 1/2 module must be fitted.

References:
page B8/52

Dimensions and schemes:
pages B8/121 and B8/122

TeSys Control

Modular "Dual tariff" contactors

Characteristics

Control circuit characteristics					
Type			GY16, GY25 single or 2-pole	GY16, GY25 3 or 4-pole	GY40, GY63 3 or 4-pole
				GY40, GY63 2-pole	
Rated control circuit voltage (Uc)	50 or 60 Hz	V	12...240 V, for other voltages, please consult your Regional Sales Office		
Control voltage limits (θ ≤ 50 °C)					
50 Hz coils	Operational		0.85...1.1 Uc		
	Drop-out		0.2...0.75 Uc		
Average consumption at 20 °C and at Uc ~ 50 Hz					
	Inrush	VA	15	34	53
	Sealed	VA	3.8	4.6	6.5
Heat dissipation	50/60 Hz	W	1.3	1.6	2.1
Operating time	Closing "C"	ms	10 ... 30		
	Opening "O"	ms	10 ... 25		
Mechanical durability	In operating cycles		10 ⁶		
Maximum operating rate at ambient temperature ≤ 50 °C	In operating cycles per hour		300		
Maximum cabling c.s.a.					
Flexible cable without cable end	1 or 2 conductors	mm ²	2.5		
Flexible cable with cable end	1 conductor	mm ²	2.5		
	2 conductors	mm ²	1.5		
Solid cable without cable end	1 or 2 conductors	mm ²	1.5		
Tightening torque		N.m	0.8		
Instantaneous auxiliary contact characteristics					
Rated operational voltage (Ue)	Up to	V	250		
Rated insulation voltage (Ui)	Conforming to IEC 60947-5	V	500		
	Conforming to VDE 0110	V	500		
Conventional thermal current (Ith)	For ambient θ ≤ 50 °C	A	5		
Mechanical durability	In operating cycles		10 ⁶		
Maximum cabling c.s.a.	Flexible or solid conductor	mm ²	2.5		
Tightening torque		N.m	0.8		

Ref.

Contactors

TeSys Control

Modular “Dual tariff” contactors

Dimensions

Dimensions

"Dual tariff" contactors

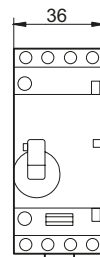
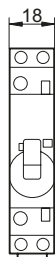
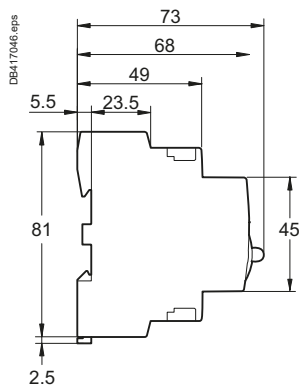
Common side view

**GY1620
GY2520**

1 module

GY2530, 2540

2 modules



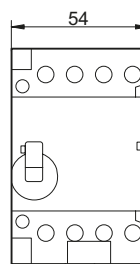
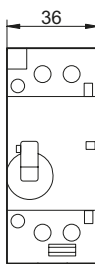
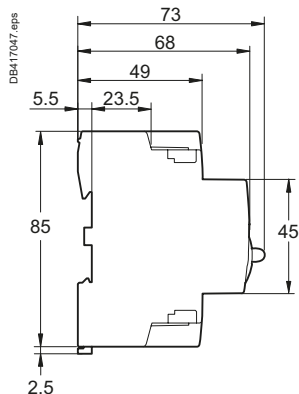
Common side view

**GY4020
GY6320**

2 modules

**GY4030, 4040
GY6330, 6340**

3 modules

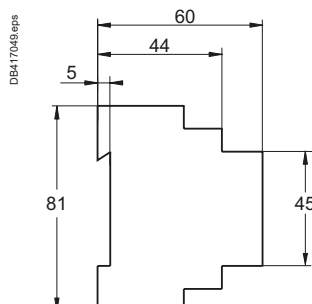
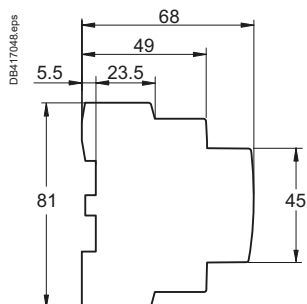


Auxiliary contacts

GAC0511, 0531 and 0521

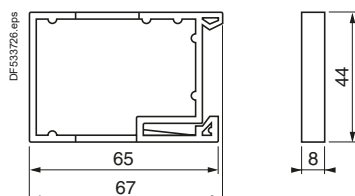
Coil suppression block

GAP21 and 23



Clip-on ventilation 1/2 module

GAC5



References:
page B8/52

Characteristics:
pages B8/118 to B8/120

Ref.



Contactors

TeSys Control

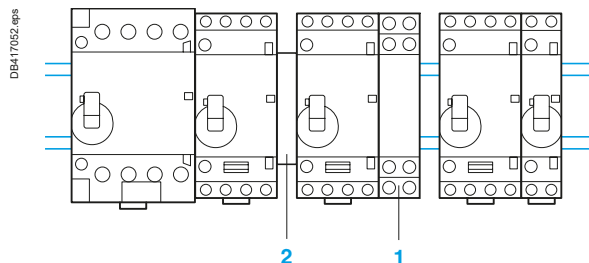
Modular “Dual tariff” contactors

Mounting and schemes

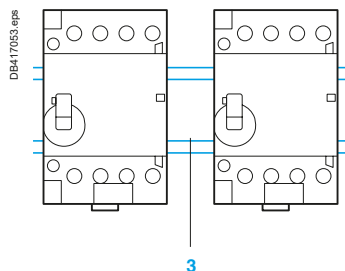
Mounting

Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP 21 or 23) across the coil terminals ≤ 250 V. When several contactors which operate at the same time are mounted side by side, a GAC5 ventilation 1/2 module **2** must be fitted every 2 contactors.



It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module **3** or by 2 ventilation 1/2 modules GAC5.



Ref.



Schemes

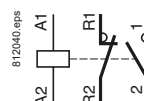
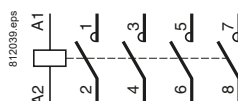
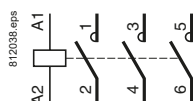
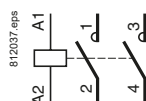
Contactors

GY●●20

GY●●30

GY●●40

GY●●11

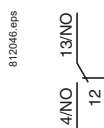
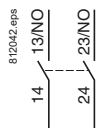
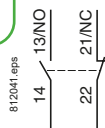


Auxiliary contacts

GAC0521

GAC0531

GAC0511



Contactors

TeSys Control

Modular Impulse relay

Characteristics



Modular impulse relays are designed for use in modular enclosures.

They feature:

■ **Easy installation:**

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**

Units have a common depth of 60 mm and width of 18 mm.

■ **User safety:**

- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

Standards

This range of modular impulse relays has been designed taking into account the requirements of international standard IEC 60669-2.

This standard is specific to "Impulse relays".

Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

Functions

Modular impulse relays are designed for opening and closing of circuits which are remotely controlled by impulses. The position is mechanically maintained.

These impulse relays are used in lighting circuits when there are more than two switching points.

Power switching

Modular impulse relays have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific lighting supply is required.

Ref.



Contactors

TeSys Control

Modular Impulse relay

Characteristics

Environment					
Rated insulation voltage (Ui)		Conforming to IEC 60947-1-5	V	400	
		Conforming to VDE 0110	V	400	
Rated impulse withstand voltage (Uimp)			kV	4 in enclosure	
Conforming to standards				IEC 60669-1 and 60669-2	
Product certifications				NF-USE, CEBEC, ASE, KEMA, N, S, D, FI, VDE	
Degree of protection	Conforming to IEC 60529			Protection against direct finger contact IP 20 open, IP 40 in enclosure	
Ambient air temperature around the device	Storage	°C	-40...+80		
	Operation	°C	-20...+50		
Maximum operating altitude	Without derating	m	2000		
Operating positions	Without derating		±90° in relation to normal vertical mounting plane		
Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27	Impulse relay open		Please consult your Regional Sales Office		
	Impulse relay closed		Please consult your Regional Sales Office		
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Impulse relay open		4 gn		
	Impulse relay closed		4 gn		
Pole characteristics					
Number of poles			1 or 2		
Rated operational current (Ie) (Ue ≤ 250 V)	In AC-7a (heating)	A	16		
Rated operational voltage		V	250		
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16		
Permissible short time rating no current flowing for preceding 15 minutes with θ ≤ 40 °C	For 1 s	A	320		
	For 10 s	A	96		
	For 30 s	A	48		
Short-circuit protection by fuse or circuit breaker	gl fuse	A	16		
	Circuit breaker I²t (at 3 kA rms prospective)	A²s	5000		
Average impedance per pole		At Ith and 50 Hz	mΩ	4	
Power dissipated per pole			W	1	
Maximum cabling c.s.a.	Flexible cable without cable end	1 conductor	mm²	Min. 0.5	Max. 6
		2 conductors	mm²	0.5	4
	Flexible cable with cable end	1 conductor	mm²	0.5	6
		2 conductors	mm²	0.5	4
	Solid cable without cable end	1 conductor	mm²	0.5	6
		2 conductors	mm²	0.5	4
Tightening torque		Power circuit connections	N.m	0.8	

TeSys Control

Modular Impulse relay

Characteristics

Control circuit characteristics			
Rated control circuit voltage (Uc)		V	12...240 V, for other voltages, please consult your Regional Sales Office
Control voltage limits ($\theta < 50\text{ }^{\circ}\text{C}$)	Operating threshold, dual frequency 50/60 Hz	V	0.85...1.1 Uc
Average consumption at 20 °C and at Uc	Inrush at 50 Hz	VA	19
Operating time	Closing "C"	ms	70
	Opening "O"	ms	70
Minimum impulse time		ms	70
Mechanical durability			10 ⁶ operating cycles
Electrical durability	AC-21		200000 operating cycles
	AC-22		100000 operating cycles
Maximum operating rate	Operating cycles per hour		900
Maximum cabling c.s.a.	Flexible cable without cable end	1 or 2 conductors	mm² 2.5
	Flexible cable with cable end	1 conductor	mm² 2.5
		2 conductors	mm² 1.5
	Solid cable without cable end	1 or 2 conductors	mm² 1.5
Tightening torque		N.m	0.8

Ref.



Contactors

TeSys Control

Modular Impulse relay

Characteristics in lighting and heating applications

Lighting circuits

Fluorescent lamps with starter

Single fitting	Non corrected			With parallel correction		
Power in W	18	36	58	18	36	58
Number of lamps	70	35	21	50	25	16

Twin fitting	With series correction		
Power in W	2 x 18	2 x 36	2 x 58
Number of lamps	56	28	17

Incandescent lamps: filament lamps

Power in W	40	60	75	100	200
Number of lamps	40	25	20	16	8

Incandescent lamps: halogen lamps

Power in W	300	500	1000	1500
Number of lamps	5	3	1	1

Incandescent lamps: very low voltage halogen lamps

Power in W	20	50	75	100
Number of lamps	70	28	19	4

Low pressure sodium vapour lamps

	Non corrected			
Power in W	55	90	135	180
Number of lamps	24	15	10	7

High pressure sodium vapour lamps

	Non corrected		
Power in W	250	400	1000
Number of lamps	5	3	1

Heating circuits

Single-phase 230 V, 2-pole

Power in kW	3.6
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Ref.



Contactors

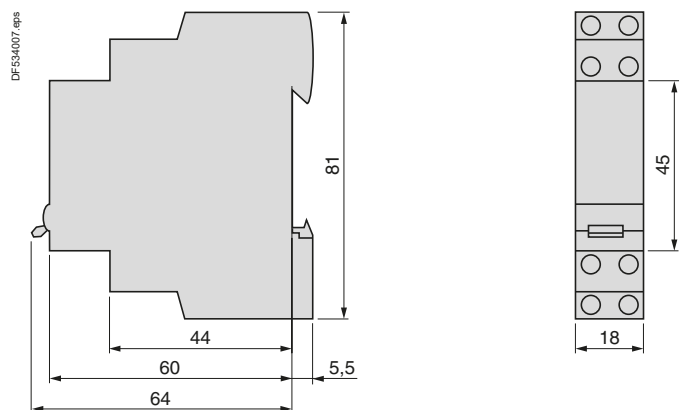
TeSys Control

Modular Impulse relay

Dimensions and schemes

Dimensions

GF1610, GF1611, GF1620

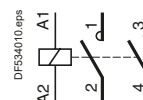
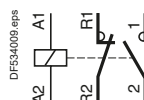
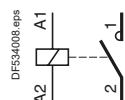


Schemes

GF1610

GF1611

GF1620



Ref.



Contactors

Test conditions according to IEC utilization categories

Contactor characteristics are established following tests and utilization categories whose are conforming IEC 60947-4-1 and 5-1 standards.

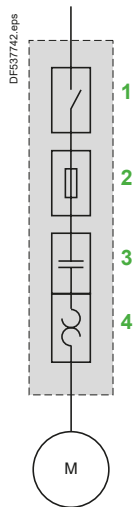
Contactors													
Electrical durability: making and breaking conditions								Occasional duty: making and breaking conditions					
a.c. supply													
Typical applications	Utilisation category	Making I U cos φ			Breaking I U cos φ			Making I U cos φ			Breaking I U cos φ		
Resistors, non inductive or slightly inductive loads	AC-1	1e	Ue	0.95	1e	Ue	0.95	1.5 1e	1.05 Ue	0.8	1.5 1e	1.05 Ue	0.8
Motors													
Slip ring motors: starting, breaking.	AC-2	2.5 1e	Ue	0.65	2.5 1e	Ue	0.65	4 1e	1.05 Ue	0.65	4 1e	1.05 Ue	0.65
Squirrel cage motors: starting, breaking whilst motor running.	AC-3												
	1e ≤ ⁽¹⁾	6 1e	Ue	0.65	1 1e	0.17 Ue	0.65	10 1e	1.05 Ue	0.45	8 1e	1.05 Ue	0.45
	1e > ⁽²⁾	6 1e	Ue	0.35	1 1e	0.17 Ue	0.35	10 1e	1.05 Ue	0.35	8 1e	1.05 Ue	0.35
Squirrel cage motors: starting, reversing, inching	AC-4												
	1e ≤ ⁽¹⁾	6 1e	Ue	0.65	6 1e	Ue	0.65	12 1e	1.05 Ue	0.45	10 1e	1.05 Ue	0.45
	1e > ⁽²⁾	6 1e	Ue	0.35	6 1e	Ue	0.35	12 1e	1.05 Ue	0.35	10 1e	1.05 Ue	0.35
d.c. supply													
Typical applications	Utilisation category	Making I U L/R (ms)			Breaking I U L/R (ms)			Making I U L/R (ms)			Breaking I U L/R (ms)		
Resistors, non inductive or slightly inductive loads	DC-1	1e	Ue	1	1e	Ue	1	1.5 1e	1.05 Ue	1	1.5 1e	1.05 Ue	1
Shunt wound motors: starting, reversing, inching	DC-3	2.5 1e	Ue	2	2.5 1e	Ue	2	4 1e	1.05 Ue	2.5	4 1e	1.05 Ue	2.5
Series wound motors: starting, reversing, inching	DC-5	2.5 1e	Ue	7.5	2.5 1e	Ue	7.5	4 1e	1.05 Ue	15	4 1e	1.05 Ue	15
Control relays and auxiliary contacts													
Electrical durability: making and breaking conditions								Occasional duty: making and breaking conditions					
a.c. supply													
Typical applications	Utilisation category	Making I U cos φ			Breaking I U cos φ			Making I U cos φ			Breaking I U cos φ		
Electromagnets													
≤ 72 VA	AC-14	-	-	-	-	-	-	6 1e	1.1 Ue	0.7	6 1e	1.1 Ue	0.7
> 72 VA	AC-15	10 1e	Ue	0.7	1e	Ue	0.4	10 1e	1.1 Ue	0.3	10 1e	1.1 Ue	0.3
d.c. supply													
Typical applications	Utilisation category	Making I U L/R (ms)			Breaking I U L/R (ms)			Making I U L/R (ms)			Breaking I U L/R (ms)		
Electromagnets	DC-13	1e	Ue	6 P ⁽³⁾	1e	Ue	6 P ⁽³⁾	1.1 1e	1.1 Ue	6 P ⁽³⁾	1.1 1e	1.1 Ue	6 P ⁽³⁾

⁽¹⁾ 1e ≤ 17 A for electrical durability, 1e ≤ 100 A for occasional duty.

⁽²⁾ 1e > 17 A for electrical durability, 1e > 100 A for occasional duty.

⁽³⁾ The value 6 P (in watts) is based on practical observations and is considered to represent the majority of d.c. magnetic loads up to the maximum limit of P = 50 W i.e. 6 P = 300 ms = L/R.

Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.



- 1 Motor Disconnect (Disconnect switch)
- 2 Motor Branch Circuit Protection (Short-circuit protection)
- 3 Motor Controller (Contactor)
- 4 Motor Overload Protection (Thermal overload relay)

Starters for the North American market

In recent years, the North American market has started to harmonise UL, CSA and ANCE standards, as well as the industrial installation codes provided by national regulations (NEC for the United States, CEC for Canada and MEC for Mexico). ⁽¹⁾ Major improvements, carried out by the Canena ⁽²⁾ are aimed at harmonising product requirements based on IEC ⁽³⁾ standards. However, the North American codes use specific terminology for defining the functions of a starter. These functions can be fulfilled by standard IEC products, accompanied by appropriate certifications.

Combination Starters

Combination Starters are the most common type of packaged motor starter. They are called "Combination" because of their structure and their combined functions. The figure opposite shows the four combined functions that constitute a complete motor starter circuit, defined as a "Motor branch circuit" by the NEC (US National Electric Code) in article 430. Standard UL508 currently gives different types of combination starter that meet the requirements of a "Motor branch circuit".

Type E, called "**self-protected combination starter**", covers all these functions and can be controlled manually (thermal-magnetic circuit breaker) or remotely (starter-controller). Type E starters withstand faults within their declared nominal rating without sustaining damage, after which they can be put back into service. In addition, they can withstand more severe short-circuit and durability performance tests without welding or excessive wear of the contact tips.

Type F, called "**Combination motor starter**", consists of a type E manual starter (thermal-magnetic circuit breaker) combined with a contactor. These starters are evaluated by means of basic short-circuit tests, but are not considered as "self-protected".

For this combination, the type E starter must be marked "Combination Motor Controller when used with ...", followed by the reference of the load side contactor.

⁽¹⁾ **UL**: Underwriters Laboratories, **CSA**: Canadian Standards Association, **ANCE**: Association of Standardization and Certification, **NEC**: National Electric Code, **CEC**: Canadian Electrical Code, **MEC**: Mexican Electrical Code.
⁽²⁾ **Canena**: Council for Harmonization of Electrotechnical Standardization of North America.
⁽³⁾ **IEC**: International Electrotechnical Commission.

Control panels

To help users properly coordinate their motor control equipment with their distribution system in the event of a fault, article 409 of the 2005 NEC requires panel builders to list the short-circuit withstand rating of their motor control panels. According to standard UL508A, manufacturers must use the short-circuit withstand value of the lowest rated device as the nominal withstand rating of the panel, unless the devices have been tested together for a higher coordinated rating. The minimum “**short-circuit current rating**” (SCCR), on motor control components for horsepower ratings of 50 hp or below is 5000 A.

Using a **type E** or **type F** combination starter eliminates the coordination problems of using individual components for the “motor branch circuit protection”, “motor controller” and “motor overload protection” functions.

The panel builder uses the declared short-circuit current rating for the combination starter. This value is generally higher than 5000 A.

This makes it easier to list the short-circuit current ratings and to check the compatibility of a UL508A motor control panel within a given distribution system.

Group protection

Article 430.53 of the NEC allows a single short-circuit protection device to be used for more than one motor circuit if the components used are marked and listed for such use.

Components suitable for use in group protection, known as “**motor group installations**”, can be marked in one of the following two ways:

Case n° 1

The contactor and the motor overload relay are both listed as suitable for group installation.

An inverse time circuit breaker can be used as the short-circuit protection device if it is also listed as suitable for group installation.

The panel builder must therefore make sure that the short-circuit protection device selected (fuses or inverse time circuit breaker) does not exceed the value allowed by article 430.40 for the smallest overload relay used in the circuit.

Once these conditions have been met, the panel builder can reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one third of the size of the upstream circuit conductor supplying the protection device.

The panel builder must limit the length of the motor starter conductor (connecting the short-circuit protection device to the motor contactor/overload relay) to a maximum of 7.6 m (25 feet).

Case n° 2

The motor contactor and overload relay are listed as suitable for “**tap conductor protection**” in group installations.

This category allows the panel designer to reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one tenth of the size of the upstream circuit conductor supplying the protection device.

The designer must limit the length of this conductor to a maximum of 3.05 m (10 feet).

In both cases, the supply circuits must not be less than 125 % of the connected motor FLA (Full Load Amps) rating.

For panel builders, using **type F** combination starters in group installations simplifies group motor considerations.

Each starter is a fully coordinated motor branch circuit.

The panel builder follows the same NEC requirements for sizing the supply conductors as those required for single motor branch circuits.

The size of the supply conductors can be reduced in accordance with the specifications of article 430.28.

This allows the same flexibility in conductor sizing as that offered in article 430.53 (D), without a requirement to check the short-circuit protection rating marked on the components and the overload relay limit.

A UL508A panel does not need a short-circuit protection device when each motor starter installed is a **type F**.

The upstream short-circuit protection device supplying the starter protects the panel. The panel builder only has to consider the panel/enclosure disconnect requirements specified by the NEC or local codes.