TeSys SK, K, SKGC, Deca, Modular Contactors

Technical Data for Designers

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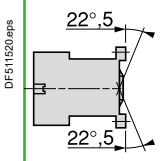
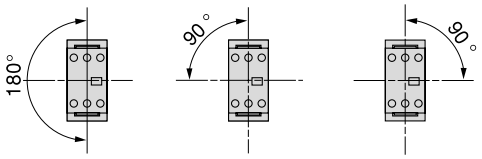
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Ref. References: p. B8/2 to B8/3 | Curves: p. B8/73 | Dimensions: p. B8/78 | Schemes: p. B8/78

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			**Vertical axis**  Without derating	**Horizontal axis**  Without derating
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	

Characteristics

Ref. References: p. B8/2 to B8/3 | Curves: p. B8/73 | Dimensions: p. B8/78 | Schemes: p. B8/78

Pole characteristics

Conventional thermal current (Ith)	For ambient temperature ≤ 55 °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 ≤ 400 V)	Conforming to IEC 60947-1	**A**	52
Short time rating	In free air for a time "t" from cold state (θ ≤ 55 °C)	**A**	50
Short-circuit protection	gl fuse U ≤ 440 V	**A**	16
Average impedance per pole	At Ith and 50 Hz	**mΩ**	4
Maximum rated operational current			
For a temperature ≤ 55 °C	AC-3 (1) (Ue ≤ 400 V)	**A**	6
	AC-1	**A**	12
Utilisation in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 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 ≤ 55 °C	**A**	10
Minimum switching capacity	Umin	**V**	17
	Imin	**mA**	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

AC supply, category AC-15

Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the breaking current (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

DC supply, category DC-13

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

	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.

Characteristics

Ref. References: p. B8/2 to B8/3 | Curves: p. B8/73 | Dimensions: p. B8/78 | Schemes: p. B8/78

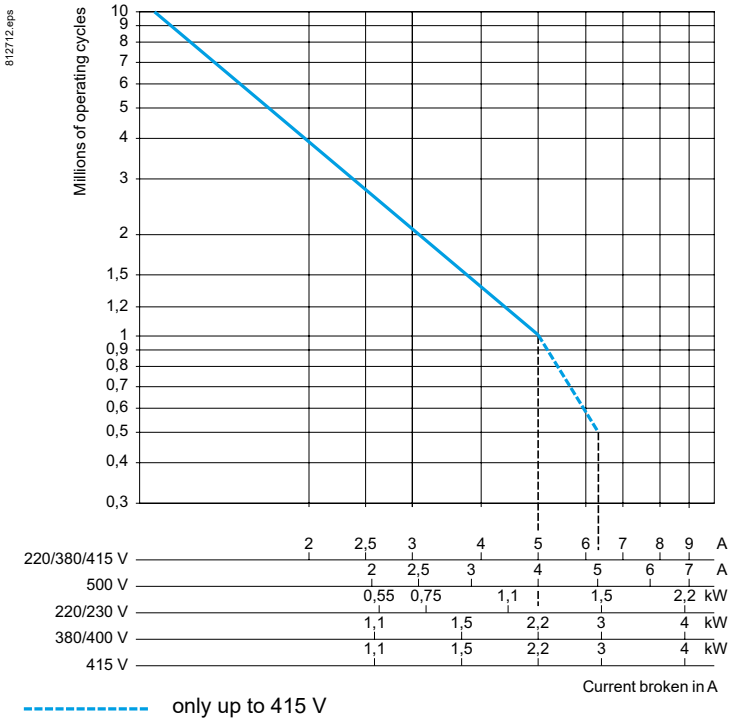
Control circuit characteristics

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. References: p. B8/2 to B8/3
Characteristics: p. B8/70 to B8/72
Dimensions: p. B8/78
Schemes: p. B8/78

Use in category AC-3 (Ue ⩽ 440 V)

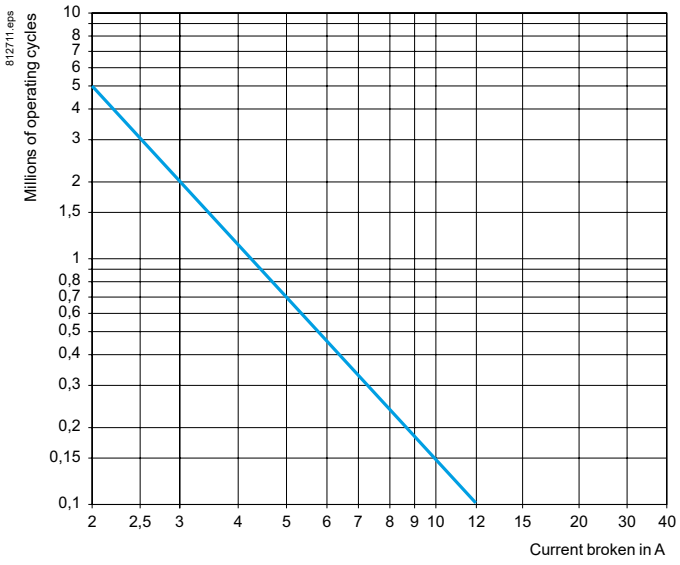
Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.



only up to 415 V

Use in category AC-1 (Ue ⩽ 440 V)

Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.



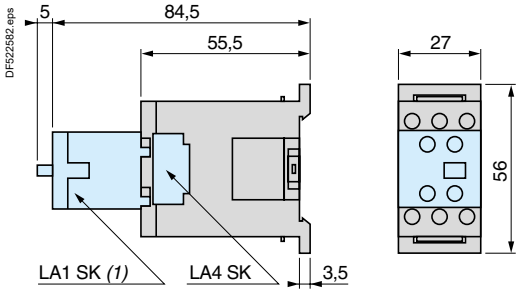
Dimensions, mounting and schemes

References: p. B8/2 to B8/3
Characteristics: p. B8/70 to B8/72
Curves: p. B8/73

Dimensions

Mini-contactors

LC1 and LP1SK06



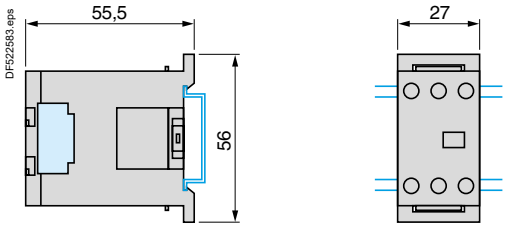
*(1) Only on **LC1SK06**.*

Mounting

Mini-contactors

LC1 and LP1SK06

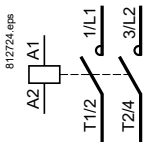
On mounting rail NSYSDR200BD or NSYSDR200 (ـــ 35 mm)



Schemes

2-pole mini-contactors

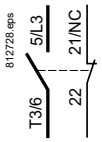
LC1 and LP1SK06



Add-on power pole block

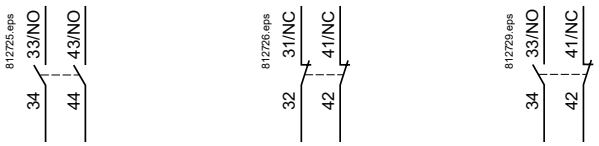
1 pole + 1 "N/C" aux.

LA1SK01



Instantaneous auxiliary contacts

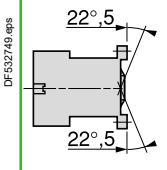
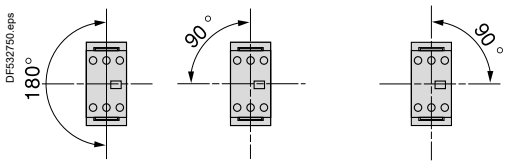
2 "N/O"	2 "N/C"	1 "N/O" + 1 "N/C"
LA1SK20	**LA1SK02**	**LA1SK11**



Characteristics

Ref. References: p. B8/3 | Dimensions: p. B8/79 | Schemes: p. B8/79

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			**Vertical axis**	**Horizontal axis**
			 Without derating	 Without derating
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. References: p. B8/3
Dimensions: p. B8/79
Schemes: p. B8/79

Pole characteristics

Mini-contactor type				LC1SKGC2	LC1SKGC3 and LC1SKGC4
Conventional thermal current (Ith)	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 (Ue)			**V**	690	
Rated making capacity	I rms conforming to IEC 60947		**A**	50	85
Rated breaking capacity (for Ue ≤ 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 Ith and 50 Hz		**mΩ**	4	4
Maximum rated operational current	For temperature ≤ 55 °C	AC-3 (Ue ≤ 400 V)	**A**	5	9
		AC-1	**A**	20	20
Use in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 V)	Increase in rated operational current by paralleling of 2 poles		**A**	32	32

Auxiliary contact characteristics of mini-contactors

Rated operational voltage (Ue)	Up to	**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947	**V**	690
Conventional thermal current (Ith)	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

AC 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

DC 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

Characteristics

Ref. References: p. B8/3 | Dimensions: p. B8/79 | Schemes: p. B8/79

Control circuit characteristics

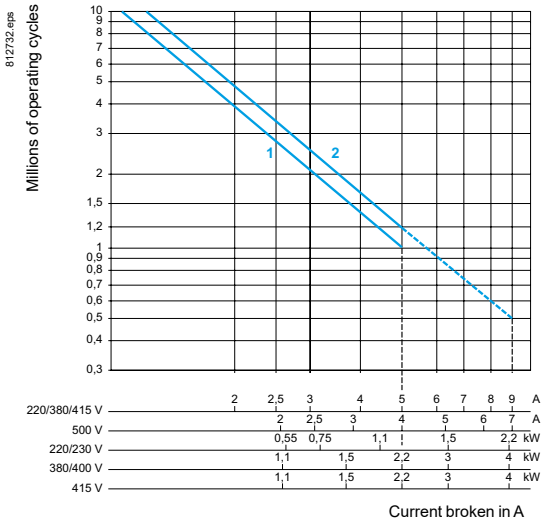
Mini-contactor type			LC1SKGC2	LC1SKGC3 and LC1SKGC4
Rated control circuit voltage (Uc)		**V**	∼ 24…400	
Control voltage limits (θ ≤ 55 °C)	Operation		0.85…1.1 Uc	
	For drop-out		≥ 0.20 Uc	
Average coil consumption at 20 °C and at Uc				
	Inrush	**VA**	16	23
	Sealed	**VA**	4.2	4.9
Heat dissipation		**W**	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 in millions of operating cycles	50/60 Hz coil		10	

Durability curves

Ref. References: p. B8/3
Dimensions: p. B8/79
Schemes: p. B8/79

Use in category AC-3 (Ue ⩽ 440 V)

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

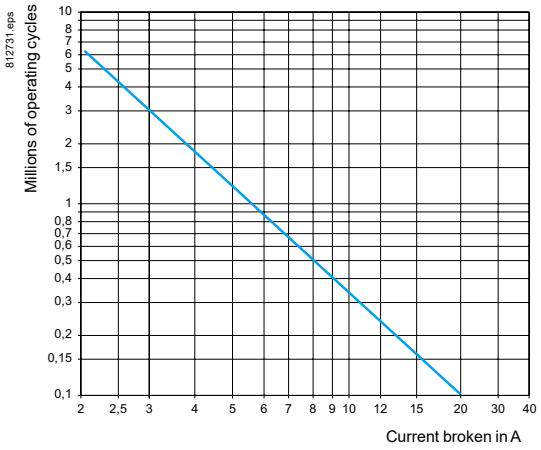


1. LC1SKGC2
2. LC1SKGC3 and SKGC4

- - - - - only up to 415 V

Use in category AC-1 (Ue ⩽ 440 V)

Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

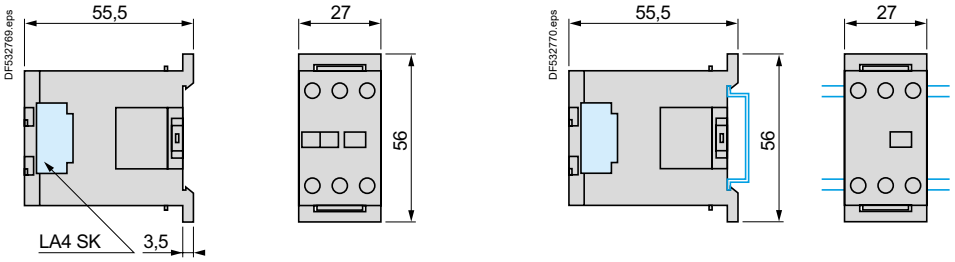


Dimensions, mounting and schemes

Ref. References: p. B8/3
Characteristics: p. B8/75 to B8/77
Curves: p. B8/78

Dimensions
Mini-contactors LC1SKGC2

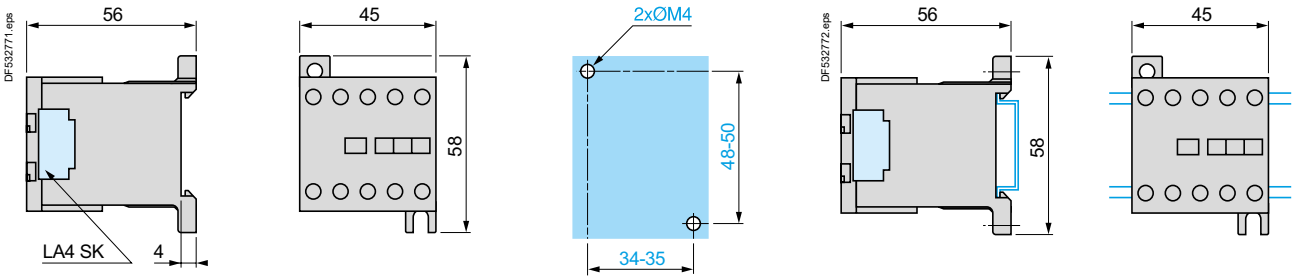
Mounting
On mounting rail NSYSDR200BD or NSYSDR200 (, 35 mm)



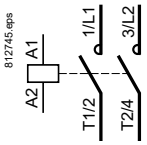
Dimensions
Mini-contactors LC1SKGC3 and SKGC4

Mounting
On panel

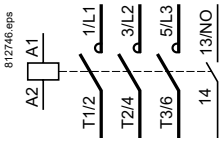
On mounting rail NSYSDR200BD or NSYSDR200 (, 35 mm)



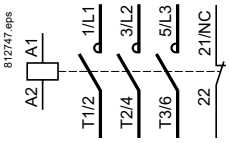
2-pole mini-contactors
LC1SKGC2



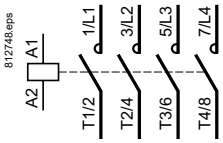
3-pole mini-contactors
LC1SKGC310



LC1SKGC301



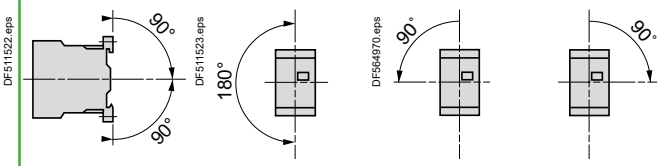
4-pole mini-contactors
LC1SKGC400



Characteristics

Ref. References: p. B8/4 to B8/11
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/85 and B8/87

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		UL, CSA, CCC, EAC, UKCA, CB certification
	LC● and LP●K16		UKCA, CB certification, CCC, EA
Operating positions			Vertical axis / Horizontal axis  *Without derating* — *Without derating* — *Possible positions for* **LC●K** *only. Contactor pull-in voltage: 0.85 Uc*
Connection			**Min.** / **Max.** / **Max. to IEC 60947**
Screw clamp terminals	Solid conductor	**mm²**	1 x 1.5 / 2 x 4 / 1 x 4 + 1 x 2.5
	Flexible conductor without cable end	**mm²**	1 x 0.75 / 2 x 4 / 2 x 2.5
	Flexible conductor with cable end	**mm²**	1 x 0.34 / 1 x 1.5 + 1 x 2.5 / 1 x 1.5 + 1 x 2.5
Spring terminals	Solid conductor	**mm²**	1 x 0.75 / 1 x 1.5 / 2 x 1.5
	Flexible conductor without cable end	**mm²**	1 x 0.75 / 1 x 1.5 / 2 x 1.5
Faston connectors	Clip	**mm**	2 x 2.8 or 1 x 6.35
Solder pins for printed circuit board			With locating device between power 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…1.3
Terminal referencing	Conforming to standards EN 50005 and EN 50012		Up to 5 contacts, depending on model
Rated insulation voltage (Ui)	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 (Uimp)		**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…+60 in AC3, -25…+70 in AC1
Maximum operating altitude	Without derating	**m**	2000
Vibration resistance 5 ... 300 Hz Conforming to IEC/EN 60068-2-27	Contactor open		2 gn
	Contactor 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	Contactor open		On X axis: 6 gn On Y and Z axes: 10 gn
	Contactor closed		On X axis: 10 gn On Y and Z axes: 15 gn

Characteristics

Ref. References: p. B8/4 to B8/11
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/85 and B8/87

Pole characteristics

Type		LC● or LP●		K06	K09	K12	K16
Conventional thermal current (Ith)	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 (Ue)			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 (Type-1)	gG fuse U ≤ 440 V (aM fuse, see”Product references”, page B11/2)		A	25			
Average impedance per pole	At Ith and 50 Hz		mΩ	3			
Use in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 V)	Maximum rated operational current for a temperature ≤ 60 °C		A	20			
	Maximum rated operational current for a temperature ≤ 70 °C		A	16			
	Rated operational current limits in relation to the on-load factor and operating frequency			On-load factor		90 %	60 % 30 %
			A	300 operating cycles/hour		13	15 18
			A	120 operating cycles/hour		15	18 19
			A	30 operating cycles/hour		19	20 20
	Increase in rated operational current by paralleling of poles			Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles			
				2 poles in parallel: K = 1.60			
				3 poles in parallel: K = 2.25			
				4 poles in parallel: K = 2.80			
Use in category AC-3/AC-3e 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, Ith max = 16 A.*

Characteristics

Ref. References: p. B8/4 to B8/11
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/85 and B8/87

Control circuit characteristics

Type			LC1	LC2	LC7	LC8	LP1	LP2	LP4	LP5
Rated control circuit voltage (Uc)		V	∼ 12…690 (1)		∼ 24…240 (1)		⎓ 12…250 (1)		⎓ 12…120	
Control voltage limits (≤ 50 °C) single voltage coil	Operation		0.8…1.15 Uc (2)		0.85…1.1 Uc		0.8…1.15 Uc		0.7…1.30 Uc	
	Drop-out		≥ 0.20 Uc		≥ 0.10 Uc		≥ 0.10 Uc		≥ 0.10 Uc	
Average consumption at 20 °C and at Uc	Inrush		30 VA		3 VA		3 W		1.8 W	
	Sealed		4.5 VA		3 VA		3 W		1.8 W	
Heat dissipation		W	1.3		3		3		1.8	
Operating time at 20 °C and at Uc										
Between coil energisation and:	- opening of the N/C contacts	ms	5…15		25…35		25…35		25…35	
	- closing of the N/O contacts	ms	10…20		30…40		30…40		30…40	
Between coil de-energisation and:	- opening of the N/O contacts	ms	10…20		30		10		10…20	
	- closing of the N/C contacts	ms	15…25		40		15		15…25	
Time constant (L/R)		ms	–		–		19		25	
Maximum immunity to microbreaks		ms	2		2		2		2	
Maximum operating rate	In operating cycles per hour		3600		3600		3600		3600	
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	5	10	5	–	–	–	–
	⎓ coil		–	–	–	–	10	5	–	–
	Wide range coil, Low consumption		–	–	–	–	–	–	30	5

*(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 Uc.*

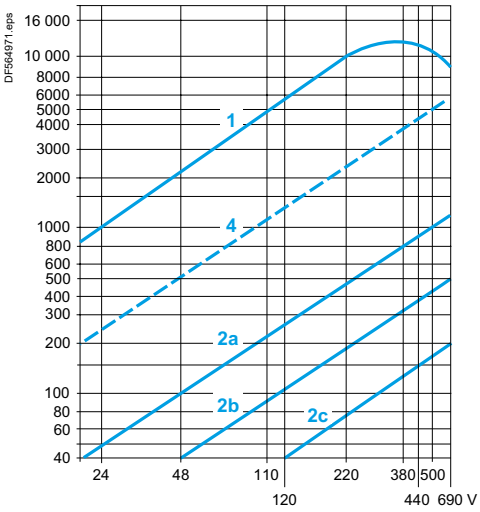
Characteristics and durability curves

Ref. References: p. B8/4 to B8/11
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/85 and B8/87

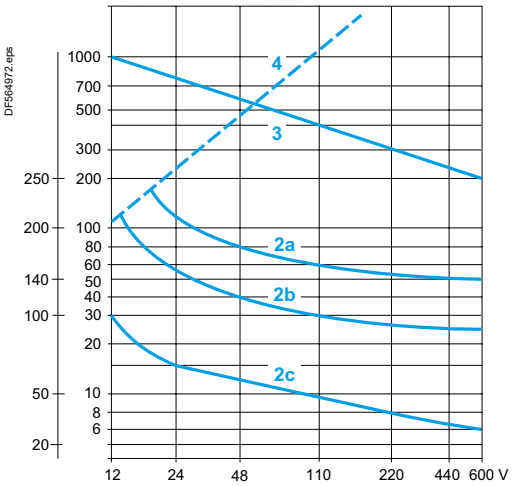
Auxiliary contact characteristics of contactors and instantaneous contact blocks

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**	AC: 110, DC: 150
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 B8/85 and B8/87)

Power broken in VA



Power broken in W



Operational power of contacts conforming to IEC 60947

AC 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).

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

DC 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 φ 0.7).
2. Electrical durability of contacts for:
   - 1 million operating cycles (2a)
   - 3 million operating cycles (2b)
   - 10 million operating cycles (2c).
3. Breaking limit of contacts valid for:
   - maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.
4. Thermal limit.

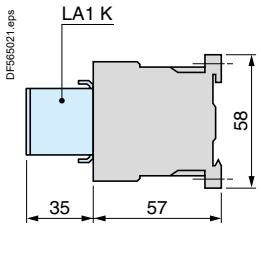
Dimensions and mounting

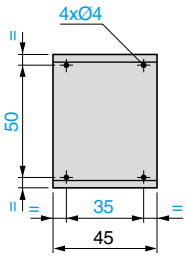
Ref. References: p. B8/4 to B8/14
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/85

Contactors

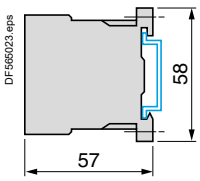
LC1K, LC7K, LP1K, LP4K

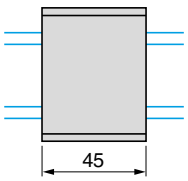
On panel



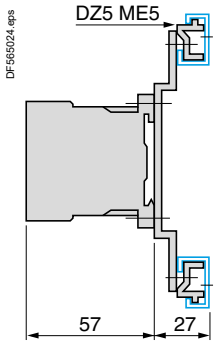


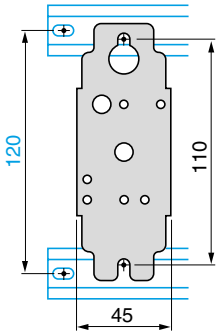
On mounting rail NSYSDR200BD or NSYSDR200 (⎓ 35 mm)



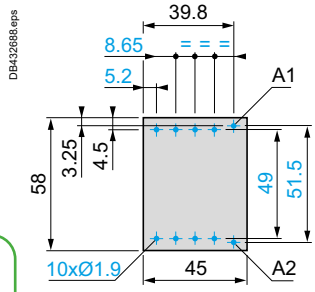


DX1AP25



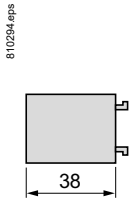


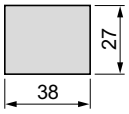
On printed circuit board



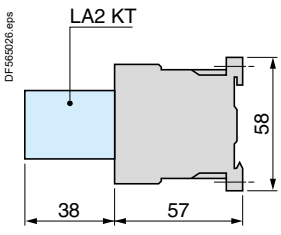
Electronic time delay contact blocks

LA2KT



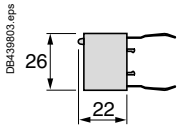


On contactor



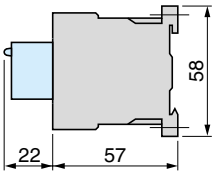
Suppressor modules

LA4K●





On contactor LC1K or LP1K

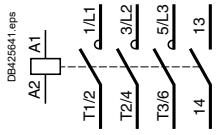


Schemes

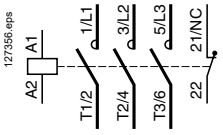
Ref. References: p. B8/4 to B8/14
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/84

3-pole contactors

3 P + N/O

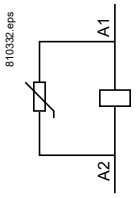


3 P + N/C

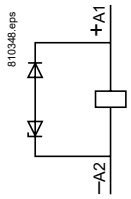


With integral suppression device

LC7K

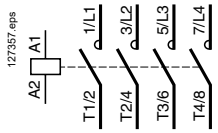


LP4K

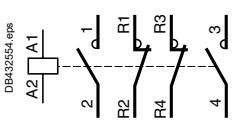


4-pole contactors

4 P

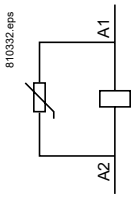


2 P N/O + 2 P N/C

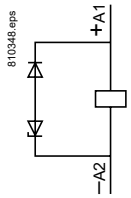


With integral suppression device

LC7K



LP4K



Instantaneous auxiliary contacts LA1K

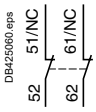
LA1KN20, KN207, KN203

2 N/O



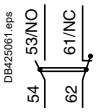
LA1KN02, KN027, KN023

2 N/C



LA1KN11, KN117, KN113

1 N/O + 1 N/C



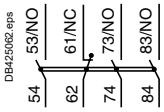
LA1KN40, KN407, KN403

4 N/O



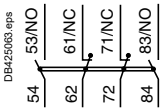
LA1KN31, KN317, KN313

3 N/O + 1 N/C



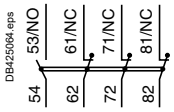
LA1KN22, KN227, KN223

2 N/O + 2 N/C



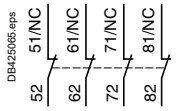
LA1KN13, KN137, KN133

1 N/O + 3 N/C



LA1KN04, KN047, KN043

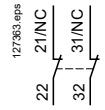
4 N/C



Terminal referencing conforming to standard EN 50012

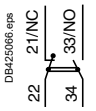
LA1KN02M

2 N/C



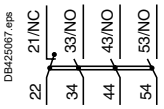
LA1KN11M

1 N/O + 1 N/C



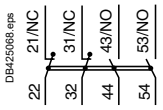
LA1KN31M

3 N/O + 1 N/C



LA1KN22M

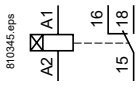
2 N/O + 2 N/C



Electronic time delay contact blocks

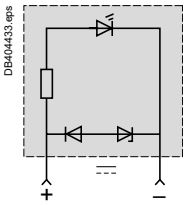
LA2KT

1 C/O

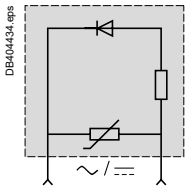


Suppressor modules

LA4KC



LA4KE



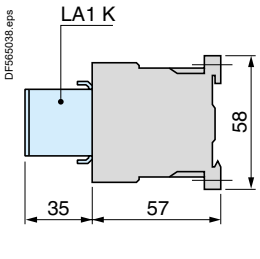
Dimensions and mounting

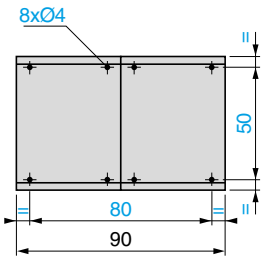
Ref. References: p. B8/8 to B8/14
Dimensions: p. B8/84 and B8/86
Schemes: p. B8/87

Reversing contactors

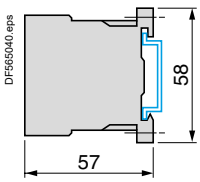
LC2K, LC8K, LP2K, LP5K

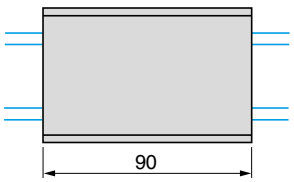
On panel





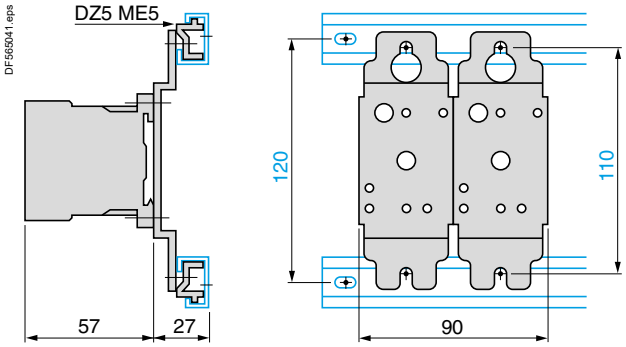
On mounting rail NSYSDR200BD or NSYSDR200 (⎓ 35 mm)



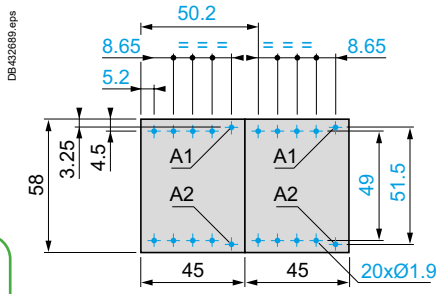


2 x DX1AP25

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.

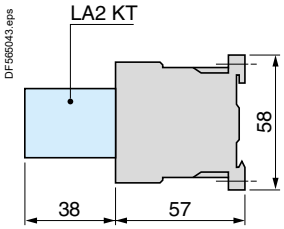


Electronic time delay contact blocks

LA2KT

On reversing contactors

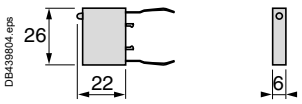


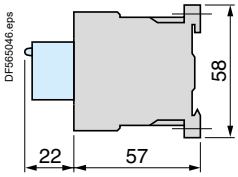


Suppressor modules

LA4K●

On reversing contactors LC2K or LP2 K





Schemes

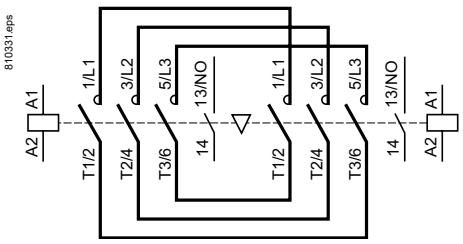
Ref. References: p. B8/8 to B8/14
Dimensions: p. B8/80 to B8/83
Schemes: p. B8/86

3-pole reversing contactors

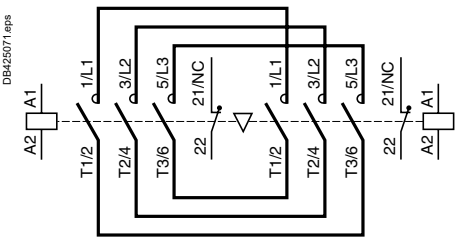
With integral suppression device

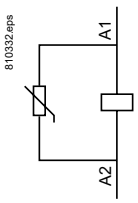
With screw clamp connections — **LC8K** — **LP5K**

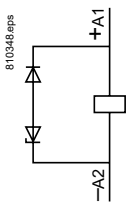
3 P + N/O



3 P + N/C

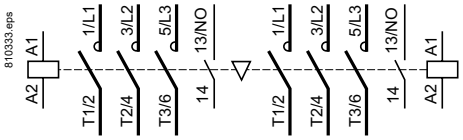




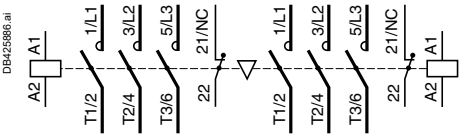


With Faston connectors or solder pins (printed circuit board)

3 P + N/O



3 P + N/C

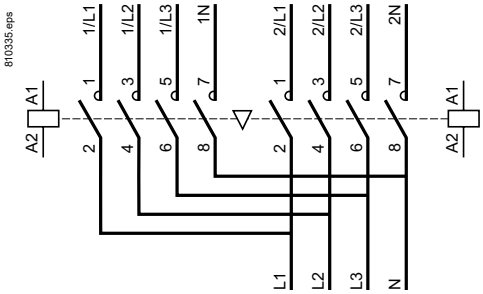


4-pole reversing contactors

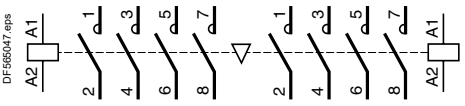
Integral suppression device

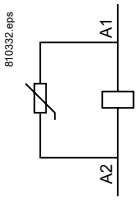
With screw clamp connections — **With Faston connectors or solder pins (printed circuit board)** — **LC8K** — **LP5K**

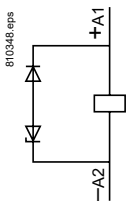
4 P



4 P



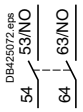


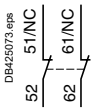


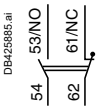
Instantaneous auxiliary contacts LA1K

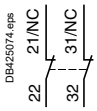
Terminal referencing conforming to standard EN 50012

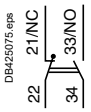
LA1KN20, KN207, KN203	LA1KN02, KN027, KN023	LA1KN11, KN117, KN113	LAKN02M	LA1KN11M
2 N/O	2 N/C	1 N/O + 1 N/C	2 N/C	1 N/O + 1 N/C



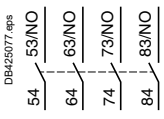


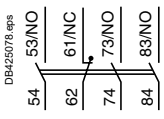


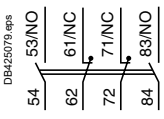


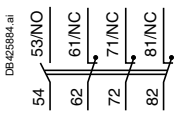


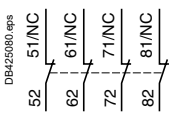
LA1KN40, KN407, KN403	LA1KN31, KN317, KN313	LA1KN22, KN227, KN223	LA1KN13, KN137, KN133	LA1KN04, KN047, KN043
4 N/O	3 N/O + 1 N/C	2 N/O + 2 N/C	1 N/O + 3 N/C	4 N/C







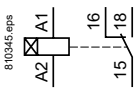




Electronic time delay contact blocks

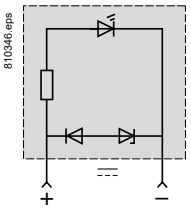
LA2KT

1 C/O

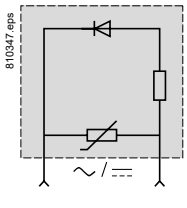


Suppressor modules

LA4KC



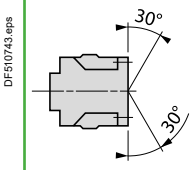
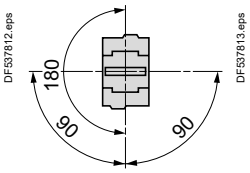
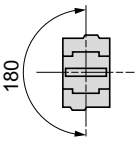
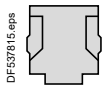
LA4KE



Characteristics

Ref. References: p. B8/24 to B8/34
Dimensions: p. B8/103 to B8/110
Schemes: p. B8/111 to B8/112

Environment

Contactor type LC1			D09…D18 DT20 and DT25	D25…D38 DT32 and DT40	D40A…D80A DT60A and DT80A	D80…D95 (1)	D115A... D150A and DT200A
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			EN/IEC 60947-4-1, UL 60947-4-1, CSA C22.2 No. 60947-4-1, GB/T 14048.4, JIS C8201-4-1				
Product certifications and Declaration of conformity (1)			CB Scheme, CCC, UL, CSA, EAC, CE, UKCA, EU-RO-MR by DNV		CB Scheme, CCC, cULus, EAC, CE, UKCA, EU-RO-MR by DNV	CB Scheme, CCC, UL, CSA, EAC, CE, UKCA, ABS, BV, DNV, RINA, LRoS	CB Scheme, CCC, cULus, EAC, CE, UKCA, EU-RO-MR by DNV
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				
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 (7) 
	With derating in the following position		AC/DC and “BBE” coils 				
	Positions that are not allowed		AC/DC and “BBE” coils 			DC coils 	
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	10 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 DC 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 A5/114).
(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 Ue).
In case of vibration, it is recommended to mount the devices separately by screws on metal plate.
(7) For 90° operating position with DC coil, please contact your Schneider Electric Technical Support for confirming your use case.

Characteristics

Ref. References: p. B8/24 to B8/34
Dimensions: p. B8/103 to B8/110
Schemes: p. B8/111 to B8/112

Pole characteristics Deca, Deca Advanced 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/AC-3e, 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 (as per IEC 60947-1)		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	A		25		40		50		63	
		type 2	A		20		25		35		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/AC-3e		W		0.20		0.36		0.8		1.25	
	AC-1		W		1.56		1.56		2.5		3.2	

Control circuit characteristics, AC supply Deca contactors

Rated control circuit voltage (Uc)	50/60 Hz		V	12…690	
Rated operational voltage	Conforming to IEC 60947-1		V	690	
	Conforming to UL, CSA (5)		V	600	
Control voltage limits					
50 or 60 Hz coils	Operation			–	
	Drop-out			–	
50/60 Hz coils (6)	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	7.5
	∼ 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
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 B8/132 for list of coil references).*
*(5) The **LC1D95** contactor with DCcoil is not UL/CSA certified.*
*(6) **LXD3G7/ LXD3LE7 & LXD3T7** coils used with **LC1D40A...80A**, **LC1DT60A** and **LC1DT80A** contactors are suitable only at 50 Hz.*
*Refer to page B8/56 for details on **LXD3** type coils.*

Characteristics

Ref. References: p. B8/24 to B8/34
Dimensions: p. B8/103 to B8/110
Schemes: p. B8/111 to B8/112

D32	D38	D40A	DT60A	D50A	D65A	D80A	DT80A	D80	D95	D115A	D150A	DT200A
32	38	40	40 (7)	50	65	66	50 (7)	80	95	115	150	115
50 (1)	50	60	60	80	80	80	80	125	125	200	200	200
690	690	690	690	690	690	690	690	1000	1000	1000	1000	1000
25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	16.67…400	16.67…400	16.67…400
50	50	60	60	80	80	80	80	125	125	200	200	200
550	550	800	800	900	1000	1000	1000	1100	1100	1560	1885	1260
550	550	800	800	900	1000	1000	1000	1100	1100	1100	1440	1100
430	430	720	720	810	900	900	900	990	1100	1800	1800	1800
260	310	320	320	400	640	640	640	640	800	1280	1280	1280
138	150	165	165	208	260	260	260	320	400	600	600	600
60	60	72	72	84	110	110	110	135	135	350	350	350
63	63	80	80	100	125	125	125	200	200	250	315	315
63	63	80	80	100	125	125	125	160	160	200	250	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	0.45	0.45	0.45
2	3	2.4	2.4 (7)	3.7	6.3	6.3	6.3 (7)	5.1	7.2	6	8	6
5	5	5.4	5.8	9.6	9.6	9.6	10.2	12.5	12.5	22	22	28

12…690	12…690									*Please refer to page B8/93 for Deca Advanced Control Circuit Characteristics.*		
–	–							0.85…1.1 Uc at 55 °C				
–	–							0.3…0.6 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				
0.3…0.6 Uc at 60 °C	0.3…0.6 Uc at 60 °C							0.3…0.6 Uc at 55 °C				
–	–							200				
0.75	0.75							0.75				
70	160							245				
–	–							20				
0.3	0.3							0.3				
7.5	15							26				
–	–							220				
0.75	0.75							0.75				
70	140							245				
–	–							22				
0.3	0.3							0.3				
7	13							26				
2…3	4…5							6…10				
12…22	12…26	12…26	12…26	12…26	12…26	12…26		20…35	20…35			
4…19	4…19	4…19	4…19	4…19	4…19	4…19		6…20	6…20			
–	–	–	–	–	–	–		10	10			
15	6	6	6	6	6	6		4	4			
3600	3600	3600	3600	3600	3600	3600		3600	3600			

(7) AC-3 category for LC1DT60A & LC1DT80A. For AC-3e category please contact your Local Technical Support.

Characteristics

Ref. References: p. B8/28 to B8/34
Dimensions: p. B8/108 to B8/110
Schemes: p. B8/111 to B8/112

DC control circuit characteristics Deca contactors

Contactor type				LC1D09…D38 LC1DT20…DT40	LC1D40A…D80A LC1DT60A and DT80A	LC1 or LP1D80 LC1D95
Rated control circuit voltage (Uc)	⎓		**V**	12…440	12…440	
Rated operational voltage	Conforming to IEC 60947-1		**V**	690		
	Conforming to UL, CSA (2)		**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
		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
Average consumption at 20 °C and at Uc	⎓	Inrush	**W**	5.4	19	22
		Sealed	**W**	5.4	7.4	22
Operating time (1) average at Uc	Closing	"C"	**ms**	63 ±15 %	50 ±15%	95…130
	Opening	"O"	**ms**	20 ±20 %	20 ±20%	20…35
				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
Mechanical durability at Uc	In millions of operating cycles			30	10	10
Maximum operating rate at ambient temperature ⩽ 60 °C	In operating cycles per hour			3600	3600	3600

Low consumption control circuit characteristics Deca contactors

Rated operational 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 DC 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.
*(2) The **LC1D95** contactor with DC coil is not UL/CSA certified.*

Characteristics

Ref. References: p. B8/24 to B8/27
Dimensions: p. B8/103 to B8/106
Schemes: p. B8/111 to B8/112

Wide band Deca Advanced contactors AC/DC coil circuit characteristics

Rated control circuit voltage (Uc)		V	AC/DC 24…250 for **LC1D09…D38, LC1D40A…D80A, LC1DT60A, LC1DT80A** AC/DC 24…500 for **LC1D115A…D150A, LC1DT200A**
	Operation	V	**LC1D09…D80A**: 0.85 Uc...1.1 Uc at 60 °C in AC or DC (1). **LC1D115A…D150A, LC1DT200A**: 0.8 Uc...1.1 Uc at 60 °C in AC or DC.
	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
Rated operational voltage	Conforming to IEC 60947-1	V	250 max						
	Conforming to UL, CSA	V	250 max						
AC supply at 20°C	Consumption inrush	VA	15	25	25	-	18	25	22
	Consumption sealed	VA	0.9	1.3	1.6	-	1.2	1.8	2.1
	Consumption sealed	mA	28	15	9	-	38	21	11.3
	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	11.5	18	20	20
	Consumption sealed	mA	23	13	7	22	33	18	10.7
	Heat dissipation	W	0.6	0.8	1.1	0.5	0.7	0.9	1.2
Max operating time (3)	Closing "C"	ms	50 ±5			60 ±5			
	Opening "O"	ms	20...90			20...80			
EMC immunity			Meets IEC 60947-4-1 standard, table 12						
EMC emission	IEC 60947-4-1 §9.4.3		Environment A (2)						
Maximum operating rate at ambient temperature ≤ 60°C		cycle/h	3600						
Mechanical durability at Uc In millions of operating cycles			15			10			

Contactor type			**LC1D115A…D150A, LC1DT200A**			
Coil code			**BNE**	**EHE**	**KUE**	**LSE**
Rated control circuit voltage (Uc)			24...60	48...130	100...250	200...500
Rated operational voltage	Conforming to IEC 60947-1	V	500 max			
	Conforming to UL, CSA	V	500 max			
AC supply at 20°C	Consumption inrush	VA	170	170	170	170
	Consumption sealed	VA	7.5	7.5	8	16.5
	Consumption sealed	mA	200	109	40	38
	Heat dissipation	W	2.2	1.5	1.1	3
DC supply at 20°C	Consumption inrush	W	136	120	105	120
	Consumption sealed	mA	130	76	25	26
	Heat dissipation	W	2.2	1.5	1.1	3
Max operating time (3)	Closing "C"	ms	20...90			
	Opening "O"	ms	10...90		25...90	10...90
EMC immunity			Meets IEC 60947-4-1 standard, table 12			
EMC emission	IEC 60947-4-1 §9.4.3		Environment A (2)			
Maximum operating rate at ambient temperature ≤ 60°C		cycle/h	2400			
Mechanical durability at Uc In millions of operating cycles			8			

*(1) **LC1D09**…**D38**: **BNE coil**: 0.8 Uc mini at 24 V DC, 0.85 Uc mini in AC*
***LC1D40A**…**D80A**, **LC1DT60A**, **LC1DT80A**: **BBE coil**: 0.8 Uc mini.*
(2) Use of this product in EMC environment B may require mitigation measures to avoid unwanted disturbance.
(3) 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.

Characteristics

Ref. References: p. B8/24 to B8/34
Dimensions: p. B8/103 to B8/110
Schemes: p. B8/111 to B8/112

Power circuit connections

Screw clamp terminal connections Deca, Deca Advanced 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	D115A, D150A and DT200A
Tightening			Screw clamp terminals					Connector 2 inputs	Screw clamp terminals	Connector 1 input	Connector 2 inputs
Flexible cable without cable end	1 conductor	mm²	1…4	1.5…6	2.5…10			2.5…10	1…35	4…50	10…120
	2 conductors	mm²	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	mm²	1…4	1…6	1…10			2.5…10	1…35	4…50	10…120
	2 conductors	mm²	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	mm²	1…4	1.5…6	1.5…10			2.5…16	1…35	4…50	10…120
	2 conductors	mm²	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 mm² 8: 35 mm²	12 (3)	12

Spring terminal connections (2) Deca contactors

Flexible cable without cable end	1 conductor	mm²	2.5 (4: DT25)	4	4	4	–	10	–	–	–
	2 conductors	mm²	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	–
Hexagonal key			–	–	–	–		–	–	–	6
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 Advanced contactors

Flexible cable without cable end	1 conductor	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4
	2 conductors	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4
Flexible cable with cable end	1 conductor	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…2.5	1…4
	2 conductors	mm²	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	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4
	2 conductors	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4
Screwdriver	Philips / Pozidriv		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
Tightening torque		N.m	1.7	1.7	1.7	1.7		1.7	1.7	1.2	1.7

Spring terminal connections (2) Deca contactors

Flexible cable without cable end	1 conductor	mm²	2.5	2.5	2.5	2.5	–	2.5	0.75…2.5	–	–
	2 conductors	mm²	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	–
Ø of screw		mm	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	–
	Flat screwdriver Ø		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	–

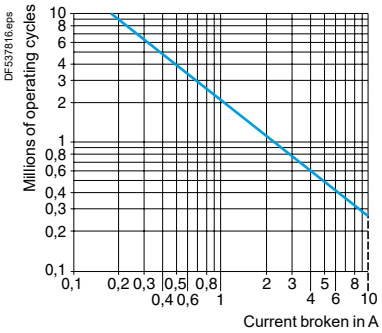
*(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/125).*
(2) If cable ends are used, choose the next size down (example: for 2.5 mm², use 1.5 mm²) and square crimp the cable ends using a special tool.
(3) Tightening torque for D80/ D95 (S207 Railway offers) is 5 N.m. Refer to LVCATRAIL_EN Catalogue for complete details on contactors for railway applications.

Characteristics

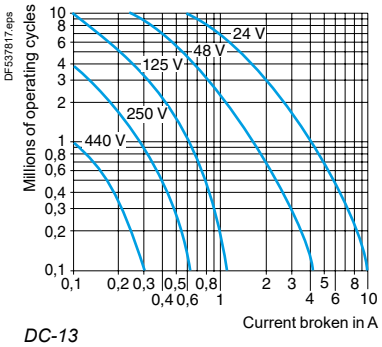
Ref. References: p. B8/24 to B8/34
Dimensions: p. B8/103 to B8/110
Schemes: p. B8/111 to B8/112

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 (2)
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

AC 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 φ 0.7) = 10 times the power broken (cos φ 0.4).

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

DC 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	–	–

(1) LC1D115A, D150A and DT200A are validated under 780 VA up to 1200 operating cycles/hour.
(2) LC1D115A, D150A and DT200A are currently certified for Ue up to 600 V, with the design capabilities for Ue up to 690 V. Certification process is ongoing for Ue = 690 V.

Characteristics

Ref. References: p. B8/43
Dimensions: p. B8/103 to B8/108
Schemes: p. B8/111 to B8/112

Environment

Contact block type				LADN or LADC	LADT and LADS	LADR	LAD8	LADN●●R
				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 around the device	Storage		°C	-60…+80				
	Operation		°C	-5…+60				-25…+70 (1)
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				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	2 or 4
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				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				
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	30
Operational power of contacts				See page B8/98				See page B8/99
Degree of pollution				IP20				IP50 (2)

(1) NC on-delay up to 200 ms under extreme low temperature: -40 to -25 °C.
(2) IP50 for the contacts only, after installed on contactor.

Characteristics

Ref. References: p. B8/43
Dimensions: p. B8/103 to B8/108
Schemes: p. B8/111 to B8/112

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 609475-1 gG fuse		**A**	–	–	10	–
Rated making capacity	Conforming to IEC 609475-1	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

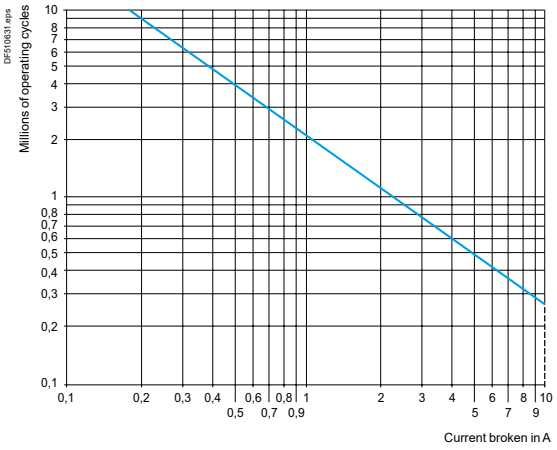
References: p. B8/43
Dimensions: p. B8/103 to B8/108
Schemes: p. B8/111 to B8/112

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

AC 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 φ 0.7) = 10 times the power broken (cos φ 0.4).

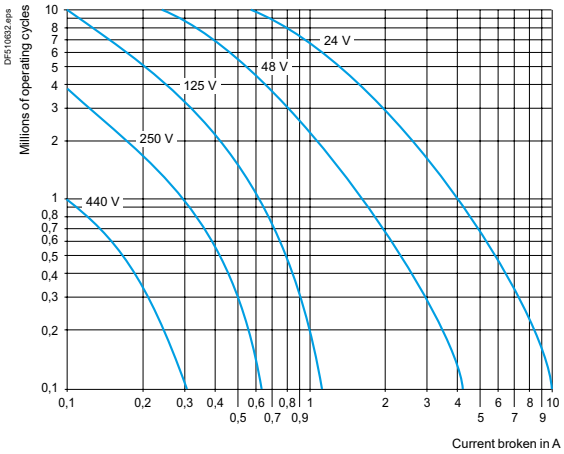
Operating cycles	V	24	48	115	230	400	440	600
1 million	VA	60	120	280	560	960	1050	1440
3 million	VA	16	32	80	160	280	300	420
10 million	VA	4	8	20	40	70	80	100



DC 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	–	–



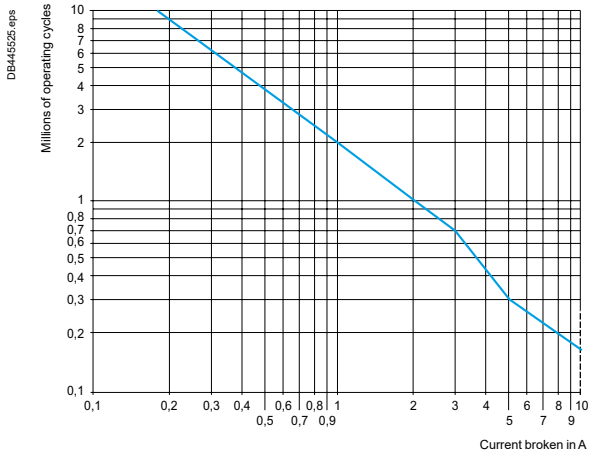
Ref. References: p. B8/43
Dimensions: p. B8/107
Schemes: p. B8/111

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

AC supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour when current less than 1A, up to 1800 operation cycles/hour when current more than 1A) 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) same with LADN

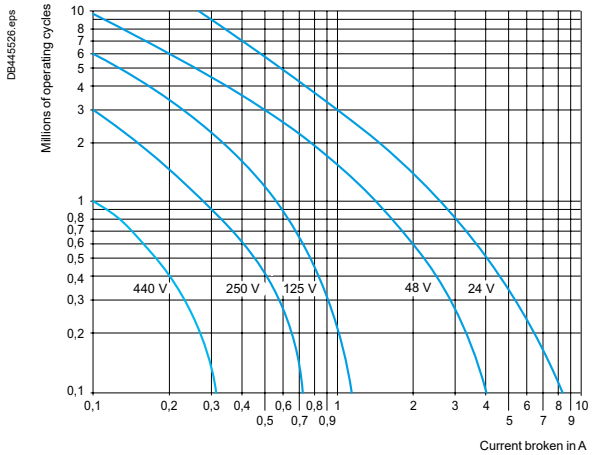
Operating cycles	V	24	48	115	230	400	440	600
1 million	VA	60	120	280	560	800	880	1200
2 million	VA	20	40	92	184	320	352	480
3 million	VA	16	32	80	160	280	300	420



DC 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
0.5 million	W	96	100	95	110	70
1 million	W	54	60	60	60	44
2 million	W	34	36	38	38	–
3 million	W	24	24	25	25	–



Characteristics

Ref. References: p. B8/45 to B8/46
Dimensions: p. B8/103 to B8/108
Schemes: p. B8/112

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 Advanced contactors

Mechanical latch block type			LAD6K10 (2)	LA6DK20	LAD6K20
For use on contactor			LC1D09…D80A DT20…DT80A	LC1D80…D95 LP1D80	LC1D115A…D150A LC1DT200A
Product certifications			UL, CSA	UL, CSA	UL, CSA
Rated insulation voltage	Conforming to IEC 60947-5-1	V	690	690	690
Rated control circuit voltage	∿ 50/60 Hz and ⎓	V	24…415	24…415	24…415
Power required	For unlatching ∿	VA	25	25	25
	⎓	W	30	30	30
Maximum operating rate	In operating cycles/hour		1200	1200	1200
On-load factor			10 %	10 %	10 %
Mechanical durability at Uc	In millions of operating cycles		0.5	0.5	0.1

(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.*
(2) LAD8N side mounted auxiliary contact blocks cannot be used with Deca Advanced contactors (LC1D40A....LC1D80A), when mounted with LAD6K mechanical latch block.

Characteristics

Ref. References: p. B8/49
Dimensions: p. B8/107 to B8/108
Schemes: p. B8/112

Environment Deca, Deca Advanced 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

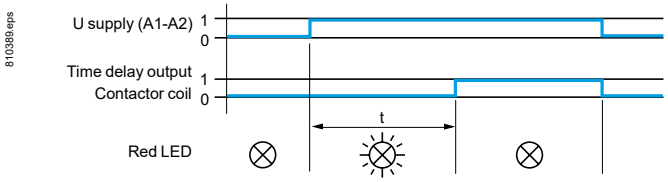
Timing ranges		**s**	0.1…2; 1.5…30; 25…500
Repeat accuracy	0…40 °C		±3 % (10 ms minimum)
Reset time	During time delay period	**ms**	150
	After time delay period	**ms**	50
Immunity to microbreaks	During time delay period	**ms**	10
	After time delay period	**ms**	2
Minimum control pulse duration		**ms**	–
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



Characteristics

Ref. References: p. B8/49
Dimensions: p. B8/107 to B8/108
Schemes: p. B8/112

Environment Deca, Deca Advanced 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

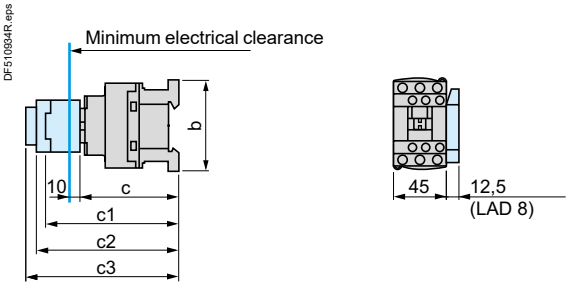
Module type				LA4DFB for Deca contactors With relay	LA4DWB for Deca, Deca Advanced contactors Solid state
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C		A	8	
Rated insulation voltage	Conforming to IEC 60947-5-1		V	250	
Rated operational voltage	Conforming to IEC 60947-5-1		V	250	
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 and D95**	–
		∿ 100…250 V		–	**LC1D80 and D95**
		∿ 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**
	With **LA4DFB**	"C"	ms	20…30	28…34	28…43
		“O”	ms	16…24	20…24	18…32
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end		mm^2	Min: 1 x 1; max: 2 x 2.5		
Tightening torque			N.m	1.7		

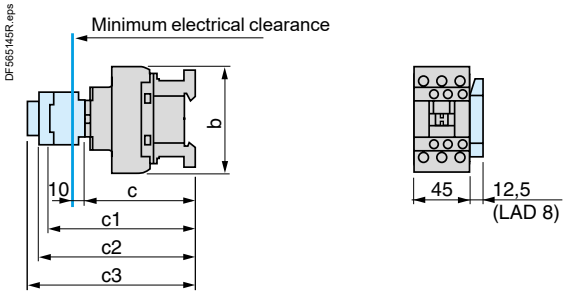
Dimensions

Ref. References: p. B8/24 to B8/26
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

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

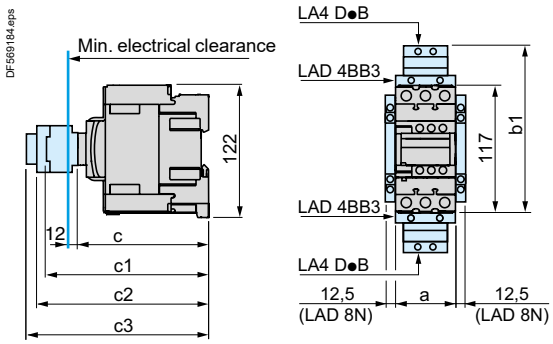


LC1D25…D38 (3-pole), with AC/DC compatible coil



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

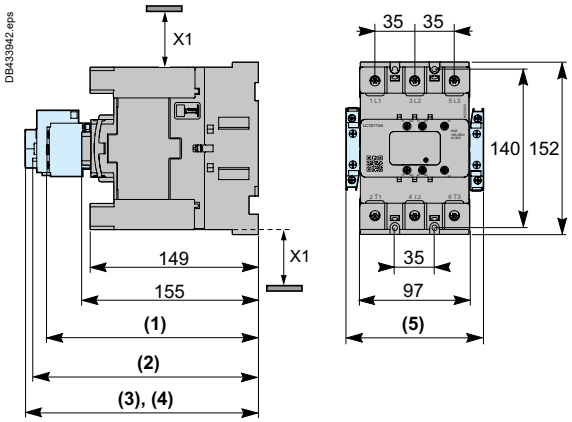


LC1		D40A…D80A	DT60A…DT80A
a		55	70
b1	LAD4BB3	136	–
c	without cover or add-on blocks	118	118
	with cover, without add-on blocks	120	120
c1	with LADN (1 contact)	–	–
	with LADN or C (2 or 4 contacts)	150	150
c2	with LAD6K10	163	163
c3	with LADT, R, S	171	171
	with LADT, R, S and sealing cover	175	175

Dimensions

Ref. References: p. B8/24 to B8/26
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

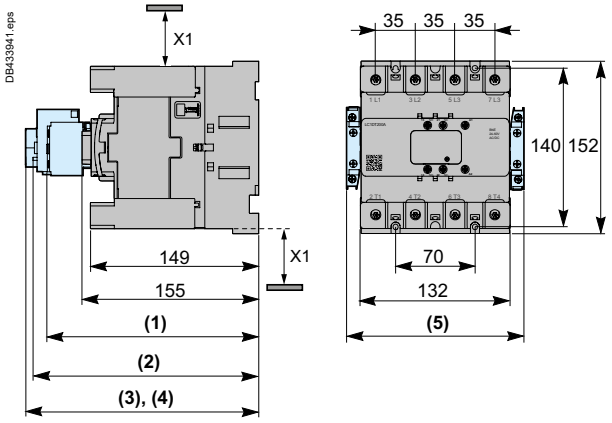
LC1D115A & D150A (3-pole)



All dimensions are in mm.

(1)	LC1D●●●A+LADN+LADC	187
(2)	LC1D●●●A+LAD6K20	196
(3)	LC1D●●●A+LADT+LADR+LADS	205
(4)	LC1D●●●A+LADT+LADR+LADS+LA9D901	209
(5)	LC1D●●●A+(2x LAD8N)	120
X1	Minimum electrical clearance	40

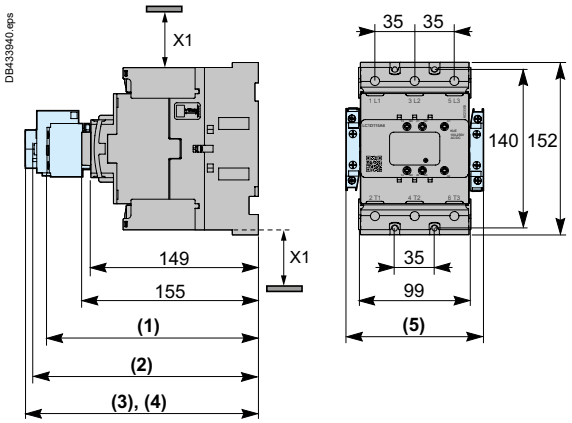
LC1DT200A (4-pole)



All dimensions are in mm.

(1)	LC1DT200A+LADN+LADC	187
(2)	LC1DT200A+LAD6K20	196
(3)	LC1DT200A+LADT+LADR+LADS	205
(4)	LC1DT200A+LADT+LADR+LADS+LA9D901	209
(5)	LC1DT200A+(2x LAD8N)	155
X1	Minimum electrical clearance	40

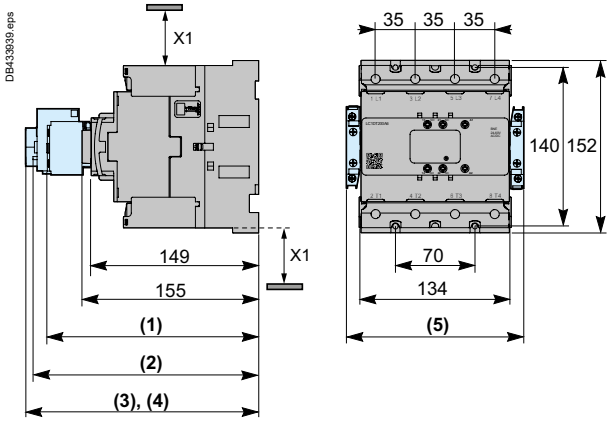
LC1D115A6 & D150A6 (3-pole)



All dimensions are in mm.

(1)	LC1D●●●A6+LADN+LADC	187
(2)	LC1D●●●A6+LAD6K20	196
(3)	LC1D●●●A6+LADT+LADR+LADS	205
(4)	LC1D●●●A6+LADT+LADR+LADS+LA9D901	209
(5)	LC1D●●●A6+(2x LAD8N)	120
X1	Minimum electrical clearance	40

LC1DT200A6 (4-pole)



All dimensions are in mm.

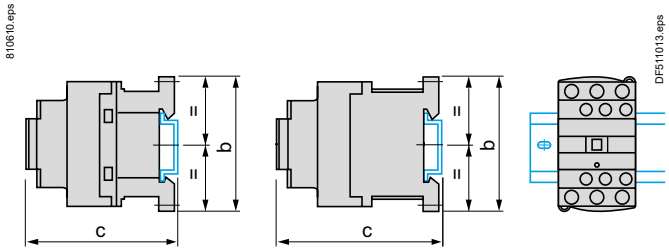
(1)	LC1DT200A6+LADN+LADC	187
(2)	LC1DT200A6+LA6DK20	196
(3)	LC1DT200A6+LADT+LADR+LADS	205
(4)	LC1DT200A6+LADT+LADR+LADS+LA9D901	209
(5)	LC1DT200A6+(2x LAD8N)	155
X1	Minimum electrical clearance	40

Mounting

Ref. References: p. B8/24 to B8/26
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

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

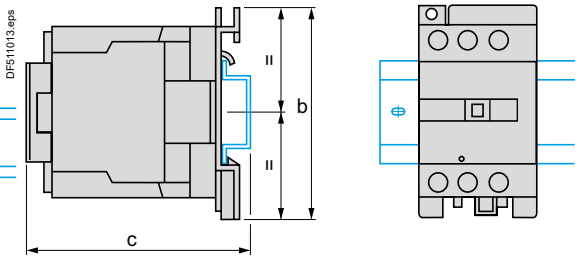
On mounting rail NSYSDR200B, NSYSDR200BD or NSYSDR200 (width 35 mm)



LC1	D09…D18	D25…D38
b	77	85
c (NSYSDR200B or NSYSDR200BD)	88	94
c (NSYSDR200)	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 NSYSDR200 (width 35 mm)



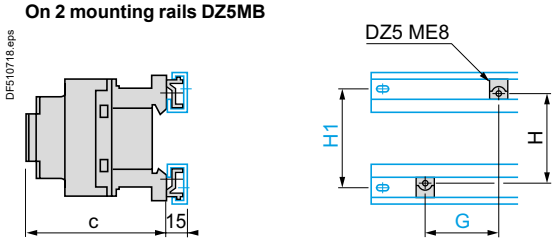
LC1	D40A…D80A DT60A…DT80A
b	122
c	–
c (AM1DL201)	–
c (NSSDPR●● or NSYSDR200)	128

Mounting

Ref. References: p. B8/24 to B8/26
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

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

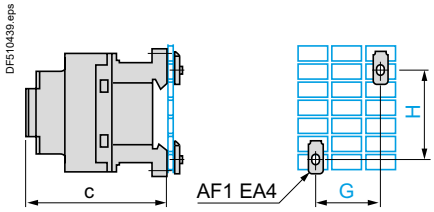
On 2 mounting rails DZ5MB



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

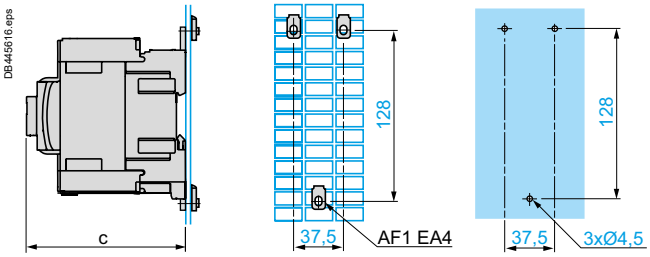
On pre-slotted mounting plate AM1PA, PB, PC



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

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

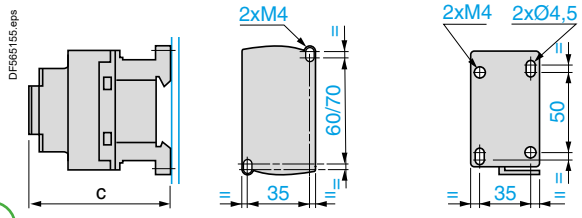
On pre-slotted mounting plate AM1PA, PB, PC and panel mounted



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

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

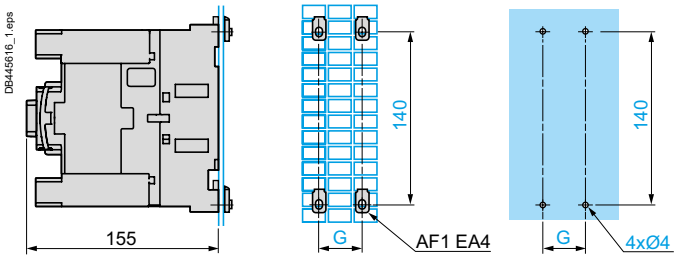
Panel mounted



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

LC1D115A…D150A (3-pole), **LC1DT200A** (4-pole), with AC/DC compatible coil

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



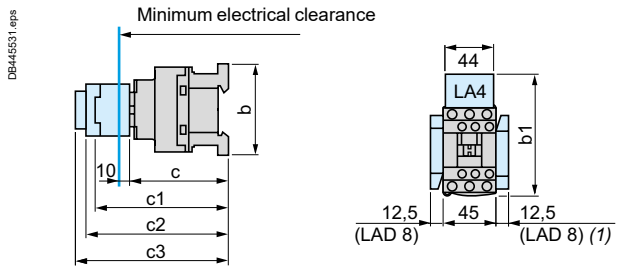
LC1	D115A	D115A6	D150A	D150A6	DT200A	DT200A6
G (3-pole)	35	35	35	35		
G (4-pole)					70	70

Contactors

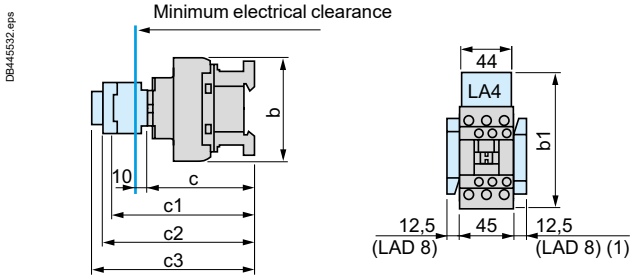
Dimensions

Ref. References: p. B8/28 to B8/34
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

LC1D09…D18 (3-pole)



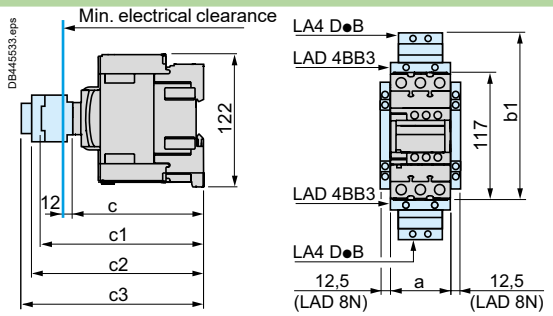
LC1D25…D38 (3-pole), **LC1DT20…DT40** (4-pole)



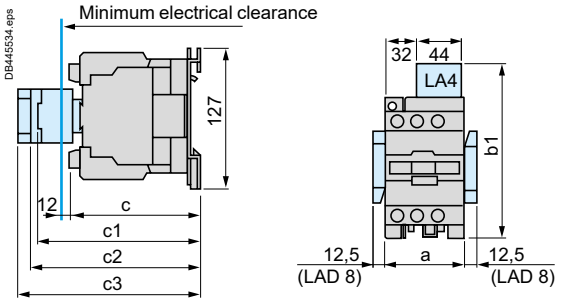
LC1		D09…D18	D093… D123	D099… D129	D25… D38	D183… D323	D098, D128, DT20 and DT25	DT203 and DT253	DT32 and DT40 D188...D258	D1883, D2583, DT323 and DT403
b	without add-on blocks	77	99	80	85	99	85	99	91	105
b1	with LAD4BB	94	107	95,5	98	107	98	–	–	–
	with LA4D●2	110 (1)	123 (1)	111.5 (1)	114 (1)	123 (1)	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
	with LADN●●R (2 or 4 contacts)	120	120	120	126	126	126	126	134	134

*(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)

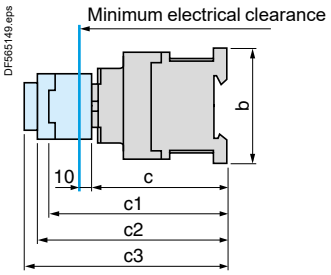


LC1		D40A…D80A	DT60A…DT80A	D40008	D80	D95, D65008	D80004	D80008
a		55	70	85	85	85	96	96
b1	with LA4D●2	–	–	135	135	135	135	135
	with LA4DB3 or LAD4BB3	136	–	–	135	–	–	–
	with LA4DF, DT	157	–	142	142	142	142	142
	with LA4DM, DW, DL	166	–	150	150	150	150	150
c	without cover or add-on blocks	118	118	125	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
	with LADN●●R (2 or 4 contacts)	153	153	150	161	161	161	161

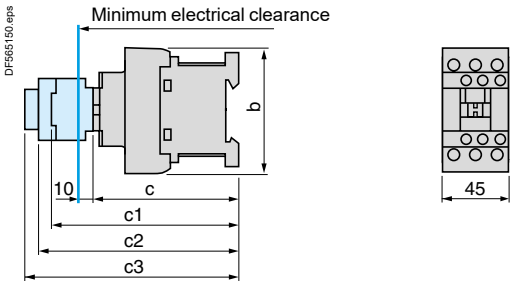
Dimensions

Ref. References: p. B8/28 to B8/34
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

LC1D09…D18 (3-pole)

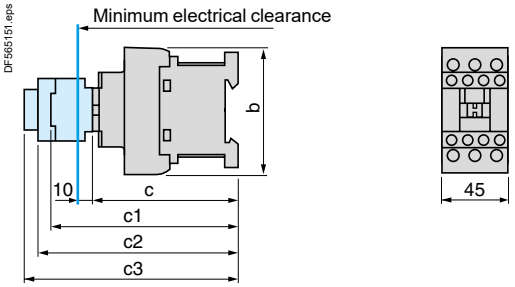


LC1D25…D38 (3-pole)



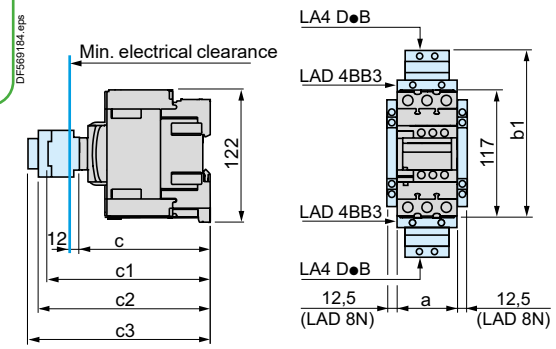
LC1		**D09…D18**	**D093…D123**	**D099…D129**	**D25…D38**	**D183…D323**
b		77	99	80	85	99
c	without cover or add-on blocks	93	93	93	99	99
	with cover, without add-on blocks	95	95	95	101	101
c1	with LADN or C (2 or 4 contacts)	126	126	126	132	132
c2	with LAD6K10	138	138	138	144	144
c3	with LADT, R, S	146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

LC1DT20…DT40 (4-pole)

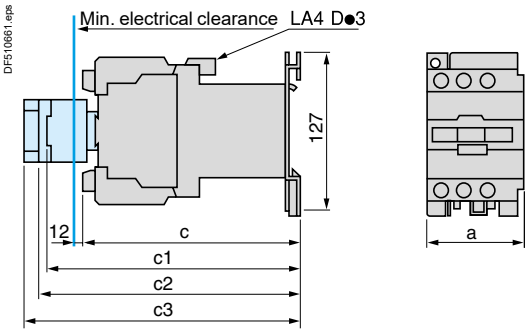


LC1		**DT20** and **DT25** **D098** and **D128**	**DT203** and **DT253** **D0983** and **D1283**	**DT32** and **DT40** **D188…D258**	**DT323** and **DT403** **D1883** and **D2583**
b		85	99	91	105
c	with cover	102	102	107	107
c1	with LADN or C (2 or 4 contacts)	133	133	138	138
c2	with LAD6K10	145	145	150	150
c3	with LADT, R, S	153	153	158	158
	with LADT, R, S and sealing cover	157	157	162	162

LC1D40A…D80A (3-pole), **LC1DT60A…DT80A** (4-pole)



LC1D80 and **D95** (3-pole), **LP1D80004, LP1D80008** (4-pole), **LP1D40008** and **D65008** (4-pole)



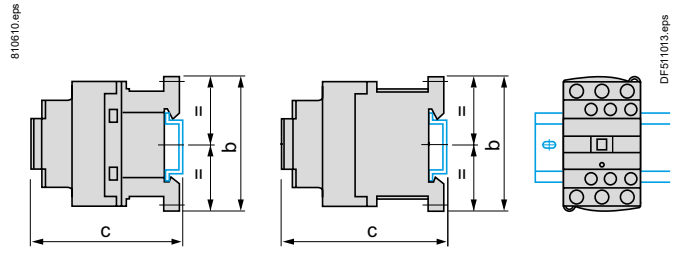
		LC1D40A … D80A	**LC1 DT60A…DT80A**	**LP1D40008** and **D65008**	**LC1 D80** and **D95**	**LP1D80004**	**LP1D80008**
a		55	72	85	85	96	96
b1	with LAD4BB3	136	136	–	–	–	–
	with LA4DF, DT	157	157	–	–	–	–
c	without cover or add-on blocks	118	118	182	181	181	196
	with cover, without add-on blocks	120	120	–	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

Mounting

Ref. References: p. B8/28 to B8/34
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

LC1D09…D38, DT20…DT40

On mounting rail NSYSDR200B, NSYSDR200BD or NSYSDR200 (width 35 mm)

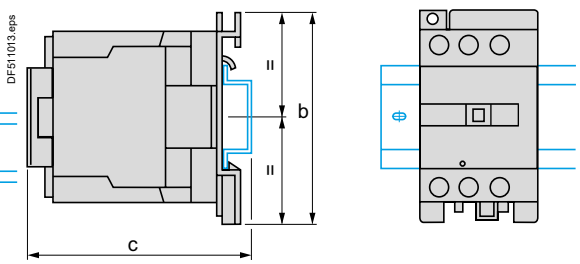


Control circuit: AC					
LC1		D09… D18	D25… D38	DT20 and DT25	DT32 and DT40
b		77	85	85	100
c	(NSYSDR200B or NSYSDR200BD) (1)	88	94	94	101
c	(NSYSDR200) (1)	96	102	102	109

Control circuit: DC					
LC1		D09… D18	D25… D38	DT20 and DT25	DT32 and DT40
b		77	85	85	109
c	(NSYSDR200B or NSYSDR200BD) (1)	97	103	104	118
c	(NSYSDR200) (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 NSYSDR200 (width 35 mm)



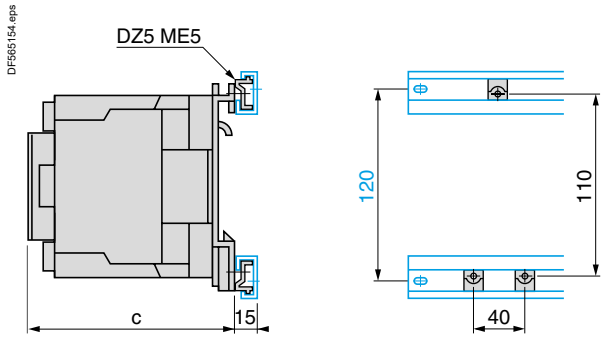
Control circuit: AC				
LC1		D40A…D80A DT60A…DT80A	D80 and D95	D40008 and D65008
b		122	127	127
c		–	147	143
c	(AM1DL201) (1)	–	137	133
c	(NSSDPR●● or NSYSDR200 (1)	128	137	133

Control circuit: DC				
LC1		D40A…D80A DT60A…DT80A	D80 and D95	D40008 and D65008
c		–	205	200
c	(AM1DL201) (1)	–	195	190
c	(NSSDPR●● or NSYSDR200) (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: AC		
LC1		D80 and D95
c	with cover	130

Control circuit: DC (3)		
LC1		D80 and D95
c	with cover	186

LP1		D80
c		181

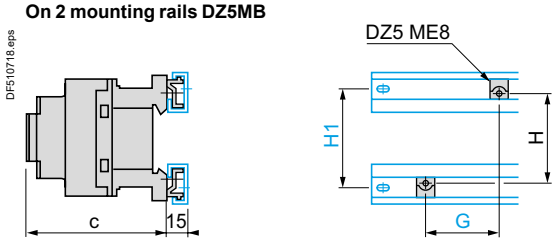
(3) Leave a 9 mm gap between 2 contactors if left on for more than 4 hours.

Mounting

Ref. References: p. B8/28 to B8/34
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

LC1D09…D38 and LC1DT20…DT40

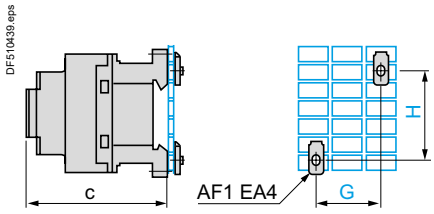
On 2 mounting rails DZ5MB



Control circuit:	AC		DC	
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	99	102	107
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

LC1D09…D38 and LC1DT20…DT40

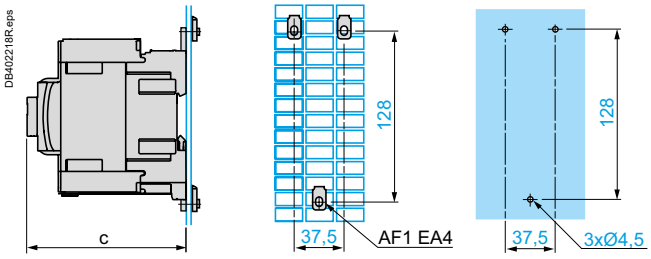
On pre-slotted mounting plate AM1 PA, PB, PC



Control circuit:	AC		DC	
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	92	99	102	107
G	35	35	35	35
H	60	60	70	70

LC1D40A…D80A, LC1DT60A…DT80A

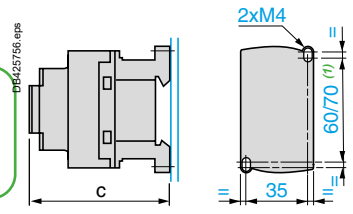
On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



Control circuit:	AC	DC
LC1	D40A…D80A, DT60A…DT80A	D40A…65A, DT60A…DT80A
c with cover	120	120

LC1D09…D38, LC1DT20…DT40

Panel mounted

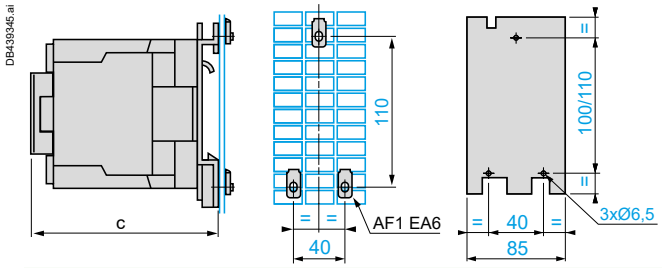


(1) for DC coil: 70 mm only.

Control circuit:	AC		DC	
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	92	99	102	107

LC1D80 and D95, LC1D40008 and D65008, LP1D80

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



Control circuit:	AC		DC
LC1	D80 and D95, D40008 and D65008		D80 and D95 D40008 and D65008
c with cover	130		186
LP1	–	–	D80
c without cover	–	–	181

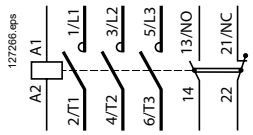
Schemes

Ref. References: p. B8/24 to B8/46 — Characteristics: p. B8/88 to B8/102 — Dimensions: p. B8/107 to B8/108

Contactors

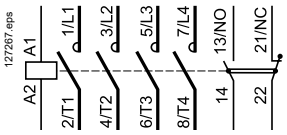
Deca Advanced, Deca 3-pole contactors (References: pages B8/24 to B8/31)

LC1D09 to D150A

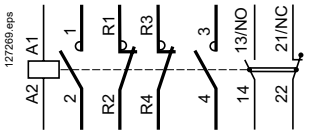


Deca Advanced, Deca 4-pole contactors (References: pages B8/32 and B8/33)

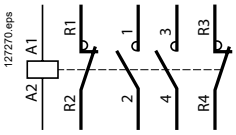
LC1DT20 to DT200A



LC1D098 to D258



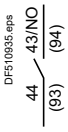
LC1 and LP1D40008 to D80008



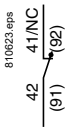
Front mounting add-on contact blocks

Instantaneous auxiliary contacts for Deca Advanced, Deca contactors (References: page B8/43)

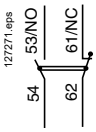
1 N/O LADN10 (1)



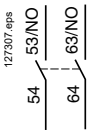
1 N/C LADN01 (1)



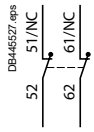
1 N/O + 1 N/C LADN11, LADN11R



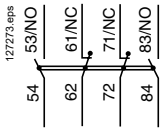
2 N/O LADN20, LADN20R



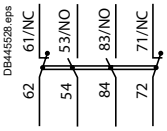
2 N/C LADN02



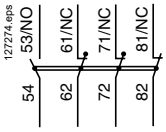
2 N/O + 2 N/C LADN22



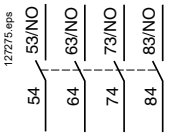
2 N/O + 2 N/C LADN22R



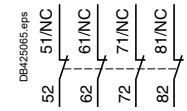
1 N/O + 3 N/C LADN13



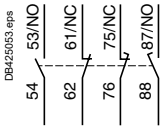
4 N/O LADN40, LADN40R



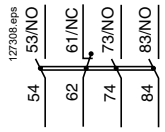
4 N/C LADN04



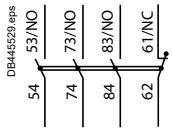
2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LADC22



3 N/O + 1 N/C LADN31

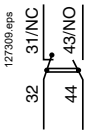


3 N/O + 1 N/C LADN31R

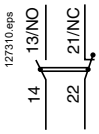


Instantaneous auxiliary contacts conforming to standard EN 50012 for Deca, Deca Advanced contactors (References: page B8/43)

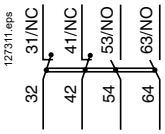
1 N/O + 1 N/C LADN11G



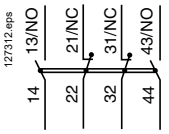
1 N/O + 1 N/C LADN11P



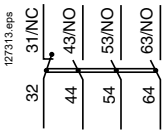
2 N/O + 2 N/C LADN22G



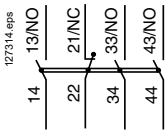
2 N/O + 2 N/C LADN22P



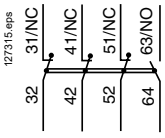
3 N/O + 1 N/C LADN31G



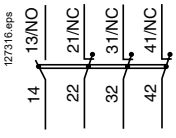
3 N/O + 1 N/C LADN31P



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.

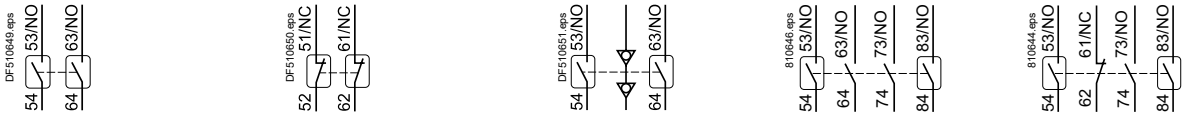
Schemes

Ref. References: p. B8/43 to B8/49 | Characteristics: p. B8/96 to B8/101 | Dimensions: p. B8/107 to B8/108, B8/103

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

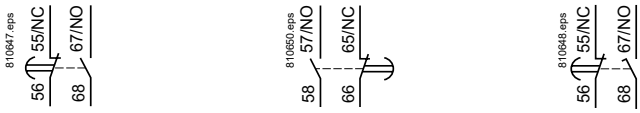
Dust and damp protected instantaneous auxiliary contacts (References: page B8/43)

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



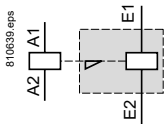
Time delay auxiliary contacts (References: page B8/45)

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 Advanced, Deca contactors (References: page B8/45)

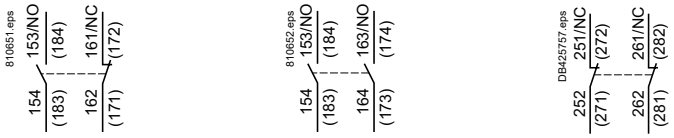
LAD6K10 and LA6DK20



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

Instantaneous auxiliary contacts (References: page B8/43)

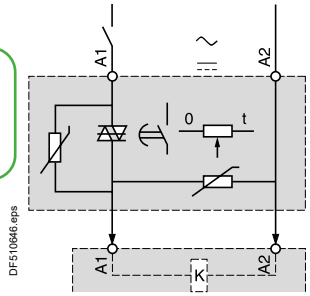
1 N/O + 1 N/C LAD8N11 (1)	2 N/O LAD8N20 (1)	2 N/C LAD8N02 (1)



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

Electronic serial timer modules for Deca Advanced, Deca contactors

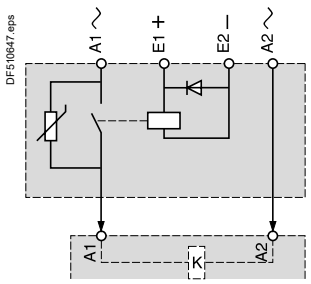
On-delay LA4DT●U



Interface modules

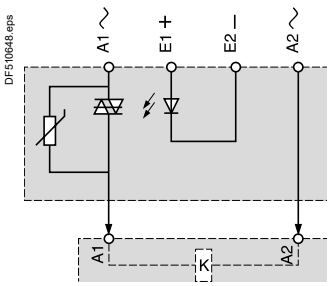
Relay output for Deca contactors

LA4DFB



Solid state for Deca Advanced, Deca contactors

LA4DWB



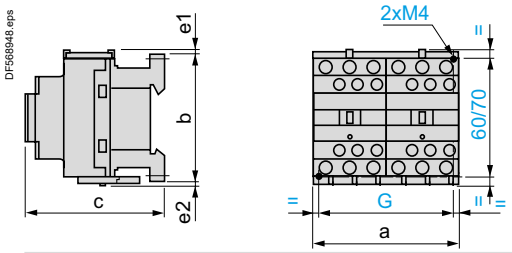
References: page B8/49.

Dimensions

Ref. References: p. B8/36 to B8/39
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/114 to B8/115

LC2D09 to D38 Deca Advanced, Deca contactors

2 x **LC1D09 to D38**



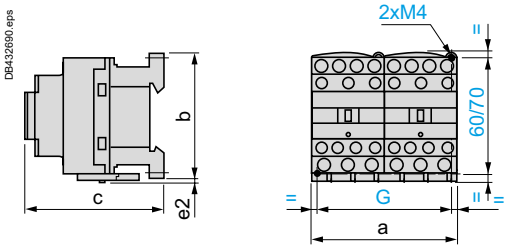
LC2 or 2 x **LC1**	**a**	**b**	**c** (1)	**e1**	**e2**	**G**
D09 to D18 AC, AC/DC	90	77	86	4	1.5	**80**
D093 to D123 AC	90	99	86	–	–	**80**
D09 to D18 DC	90	77	95	4	1.5	**80**
D093 to D123 DC	90	99	95	–	–	**80**
D25 to D38 AC, AC/DC	90	85	92	9	5	**80**
D183 to D383 AC	90	99	92	–	–	**80**
D25 to D32 DC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

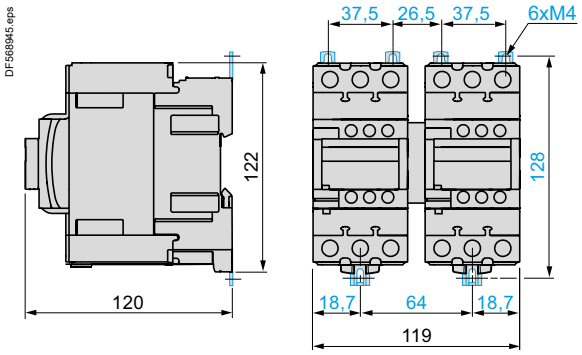


LC2 or 2 x **LC1**	**a**	**b**	**c**	**G**	**e2**
DT20 and DT25 AC	90	85	92	**80**	20
DT32 and DT40 AC	90	91	99	**80**	22
DT20 and DT25 DC	90	85	102	**80**	20
DT32 and DT40 DC	90	91	109	**80**	22

c, e: including cabling.

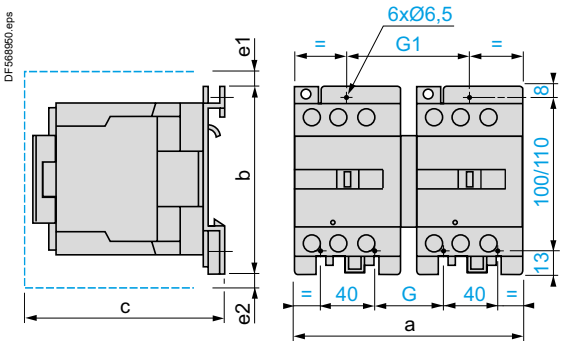
LC2D40A to D80A for Deca Advanced, Deca contactors

2 x **LC1D40A to D80A**



LC2D80 and D95 Deca contactors

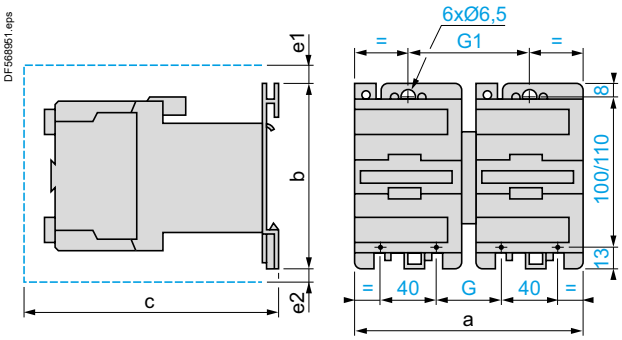
2 x **LC1D80 and D95** ∿



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 **LC1D80 and D95** ⎓



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

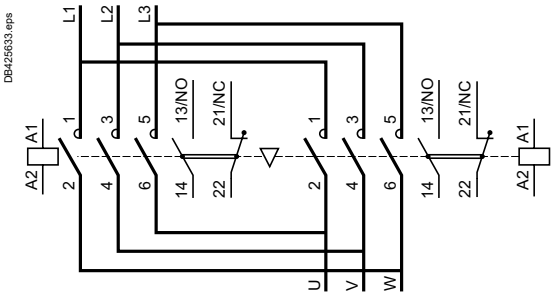
c, e1 and e2: including cabling.

Ref. References: p. B8/36 to B8/35
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

Reversing contactors for motor control

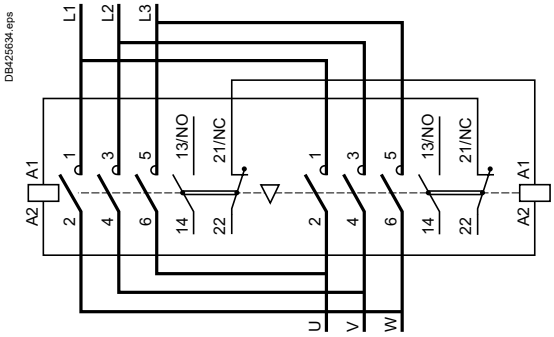
LC2D09...D80A Deca Advanced, Deca contactors
LC2D80 Deca contactors

Horizontally mounted



LAD9R1V – Kit for assembling LC1D09-D38 Deca Advanced, Deca contactors

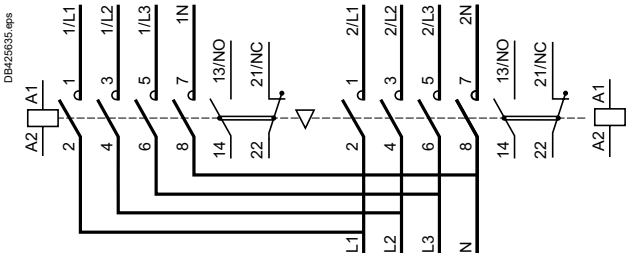
With integral electrical interlocking



Changeover contactor pairs Deca contactors

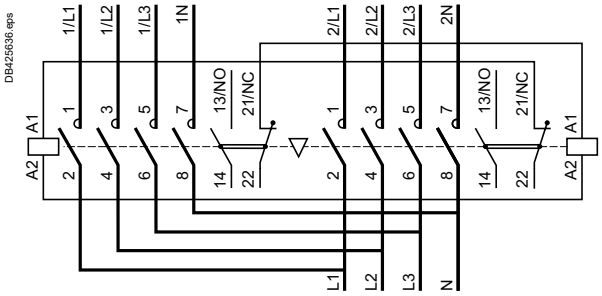
LC2DT20…DT40

Horizontally mounted



LADT9R1V – Kit for assembling LC2DT20…DT40 Deca contactors

With integral electrical interlocking

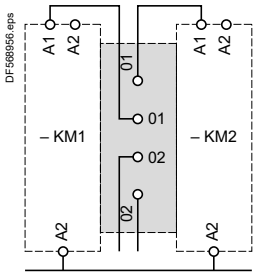


Schemes

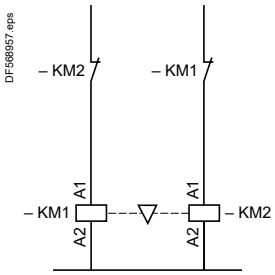
Ref. References: p. B8/36 to B8/35
Characteristics: p. B8/88 to B8/95
Schemes: p. B8/111 to B8/112

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

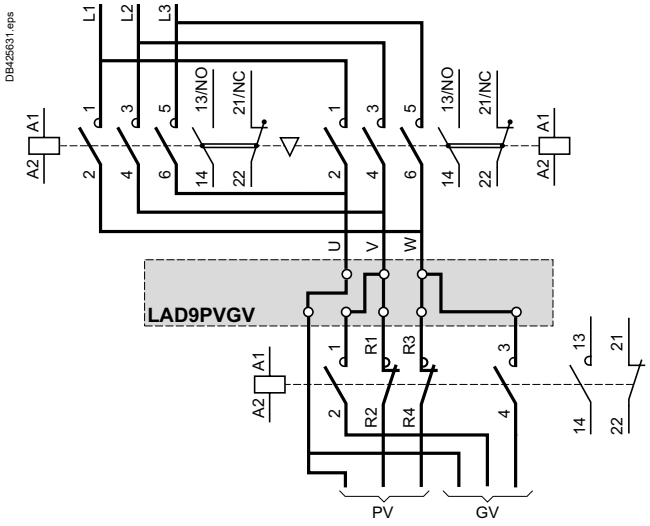
Mechanical interlock with integral electrical contacts
LA9D4002 and LA9D8002 (Deca)



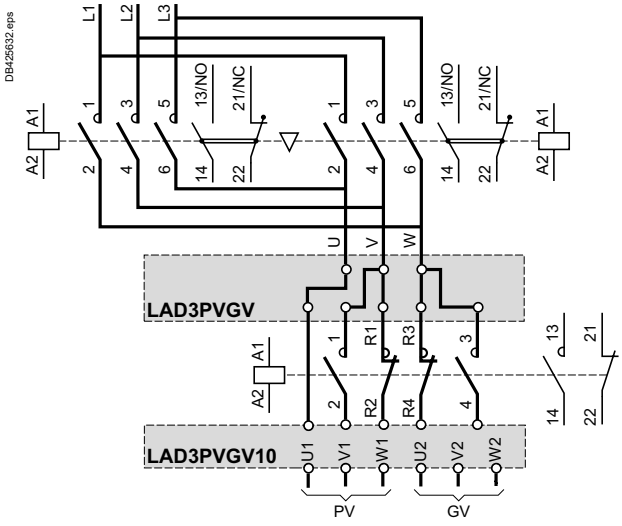
Mechanical interlock without integral electrical contacts
LAD9V2, LAD4CM and LAD5CM (Deca Advanced)
LA9D50978 and LA9D80978 (Deca)



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



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



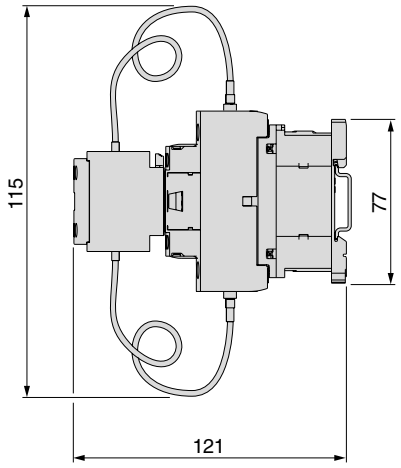
Dimensions and scheme

Ref. References: p. B8/40

Dimensions

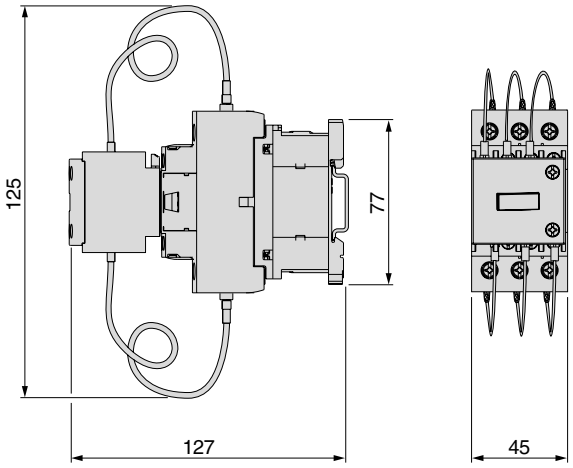
LC1DFK

DB419182.eps



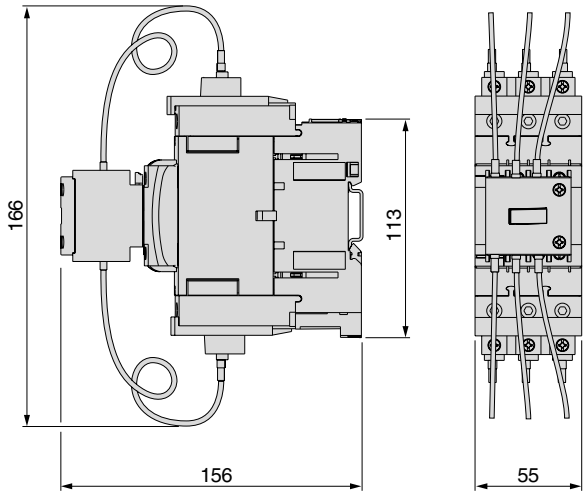
LC1DGK, DLK, DMK

DB419181.eps



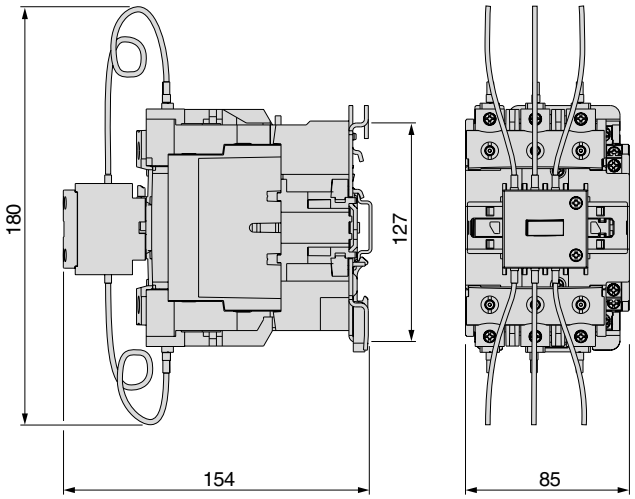
LC1DPK, DTK

DB419183.eps



LC1DWK

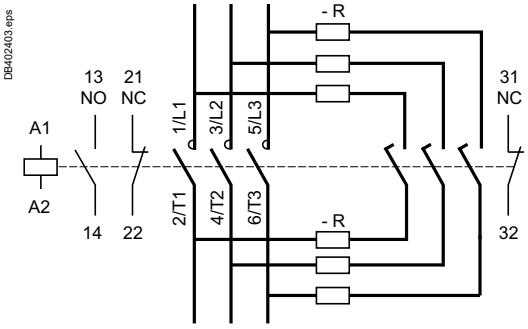
DB419184.eps



Scheme

LC1D●K

DB402403.eps



R = Pre-wired resistor connections.

Characteristics

References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126



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.

Characteristics

Ref. References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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 I^2t (at 3 kA rms prospective) 230 V	A^2s	5000	10000	16000	18000	–
	Circuit breaker I^2t (at 3 kA rms prospective) 400 V	A^2s	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	mm^2	6	6	25	25	35
	2 conductors	mm^2	4	4	16	16	–
Flexible cable with cable end	1 conductor	mm^2	6	6	16	16	35
	2 conductors	mm^2	1.5	1.5	4	4	–
Solid cable without cable end	1 conductor	mm^2	6	6	25	25	35
	2 conductors	mm^2	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.

Characteristics

Ref. References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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

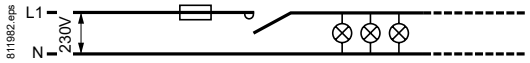
Rated operational voltage (Ue)	Up to	**V**	250
Rated insulation voltage (Ui)	Conforming to IEC 60947-5	**V**	500
	Conforming to VDE 0110	**V**	500
Conventional thermal current (Ith)	For ambient θ ≤ 50 °C	**A**	5
Mechanical durability	Operating cycles		10^6
Maximum cabling c.s.a.	Flexible or solid conductor	**mm²**	2.5
Tightening torque		**N.m**	0.8

Characteristics in lighting applications

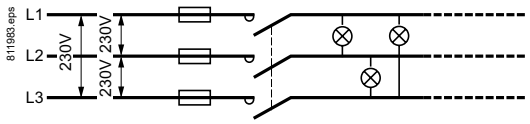
References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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

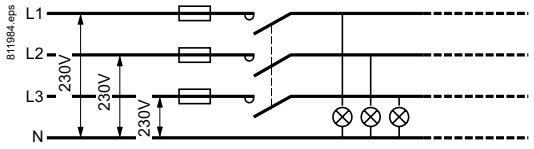


■ 3-phase circuit, 230 V



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*

Characteristics in lighting applications

Ref. References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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

									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

					Contactor rating
P (W)	60	80	105	150	–
I_B (A)	0.26	0.35	0.45	0.65	–
Maximum 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**

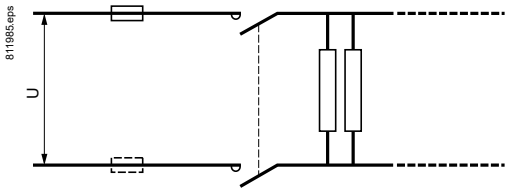
I_B: value of current drawn by each lamp at its rated voltage.
***C**: unit capacitance for each lamp.*
*I_B and **C** correspond to values normally quoted by lamp manufacturers*

Characteristics in heating applications

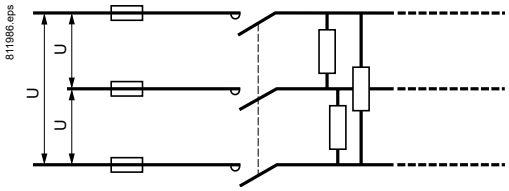
References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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

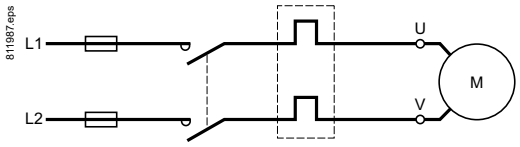
Electrical durability (in operating cycles)	Maximum power (kW)					Contactor rating
	100 x 10^3	150 x 10^3	200 x 10^3	500 x 10^3	10^6	
Single-phase switching 230 V (2-pole)	3.5	3	2.2	1	0.8	**16 A**
	5.4	4.6	3.5	1.6	1.2	**25 A**
	8.6	7.4	5.6	2.6	1.9	**40 A**
	13.6	11.6	8.8	4	3	**63 A**
	21.6	18.4	14	6.4	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**

Characteristics in motor control applications

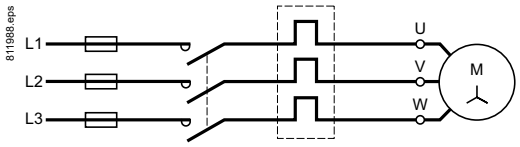
References: p. B8/59
Dimensions: p. B8/124 to B8/125
Schemes: p. B8/126

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**

Dimensions

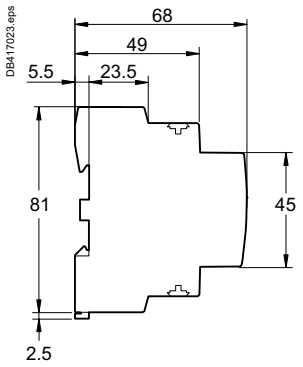
Ref. References: p. B8/59
Characteristics: p. B8/117 to B8/123
Schemes: p. B8/126

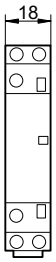
Dimensions

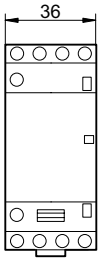
Contactors

Common side view	GC1610, 1611, 1620 GC2502, 2510, 2511, 2520 1 module	GC1622, 1640 GC2504, 2522, 2530, 2540 2 modules

DB417023.eps

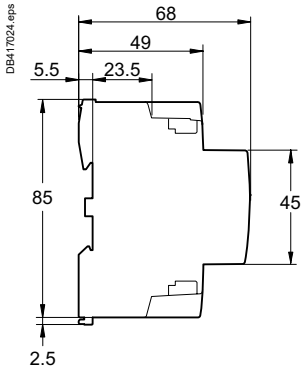


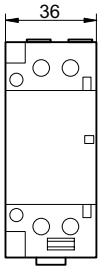


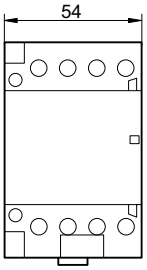


Common side view	GC4002, 4011, 4020 GC6302, 6311, 6320 2 modules	GC4004, 4022, 4030, 4040 GC6304, 6322, 6330, 6340 3 modules

DB417024.eps

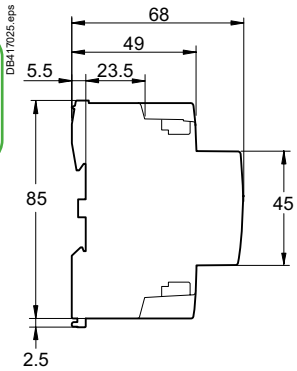


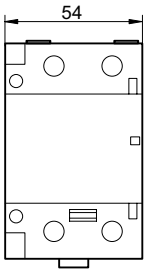


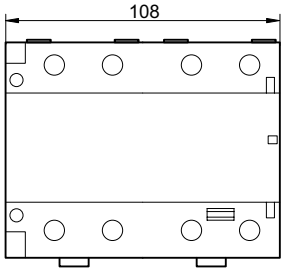


Common side view	GC10020 3 modules	GC10040 6 modules

DB417025.eps







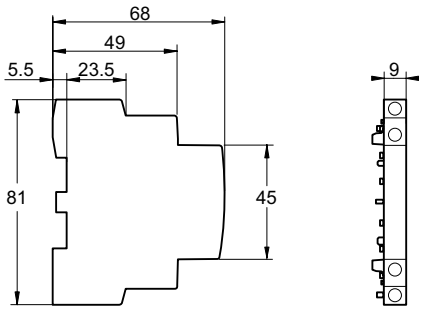
Dimensions and mounting

Ref. References: p. B8/59
Characteristics: p. B8/117 to B8/123
Schemes: p. B8/126

Dimensions

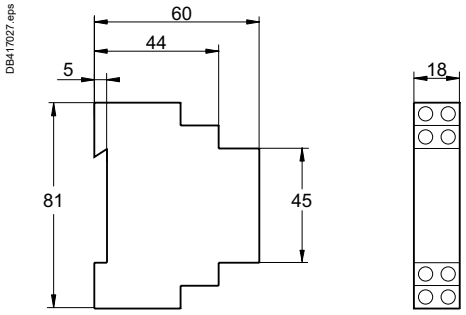
Auxiliary contacts
GAC0511, 0531 and 0521

DB417026.eps



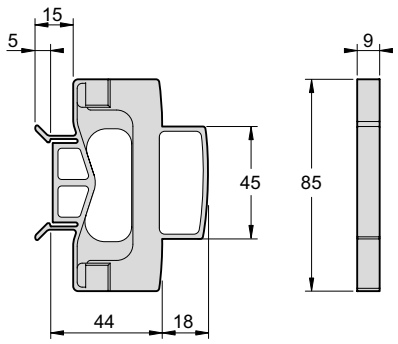
Coil suppression blocks
GAP21 and 23

DB417027.eps



Clip-on ventilation 1/2 module
GAC5

DF533726.eps

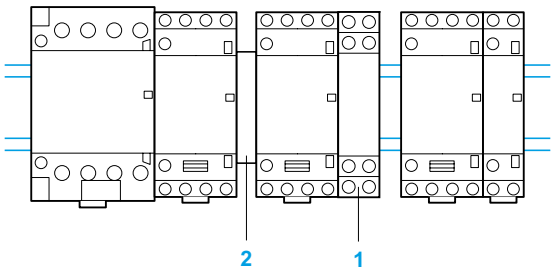


Mounting

Setting-up precautions

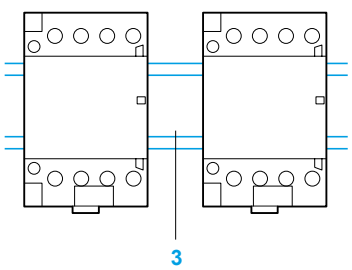
The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP21 or 23) across the coil terminals y 250 V. When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module **2** must be fitted every 2 contactors.

DB417050.eps



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).

DB417051.eps



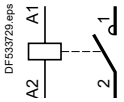
Schemes

References: p. B8/59
Characteristics: p. B8/117 to B8/123
Dimensions: p. B8/124 to B8/125

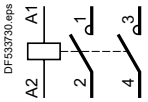
Schemes

Contactors

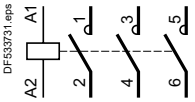
GC●●10



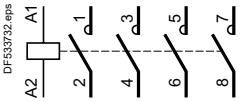
GC●●20



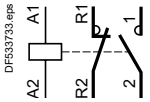
GC●●30



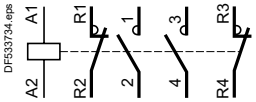
GC●●40



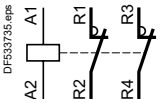
GC●●11



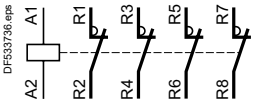
GC●●22



GC●●02

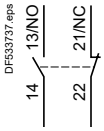


GC●●04

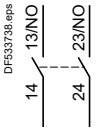


Auxiliary contacts

GAC0521



GAC0531



GAC0511



Characteristics

Ref. References: p. B8/60
Dimensions: p. B8/130 to B8/131
Schemes: p. B8/131

PB113083_13.eps



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.

Characteristics

Ref. References: p. B8/60
Dimensions: p. B8/130 to B8/131
Schemes: p. B8/131

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	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
	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 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						
gI fuse		A	16	25	40	63
Circuit breaker I^2t (at 3 kA rms prospective)	230V	A^2s	5000	10000	16000	18000
	400V	A^2s	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	mm^2	6	6	25	25
	2 conductors	mm^2	4	4	16	16
Flexible cable with cable end	1 conductor	mm^2	6	6	16	16
	2 conductors	mm^2	1.5	1.5	4	4
Solid cable without cable end	1 conductor	mm^2	6	6	25	25
	2 conductors	mm^2	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.

Characteristics

Ref. References: p. B8/60
Dimensions: p. B8/130 to B8/131
Schemes: p. B8/131

Control circuit characteristics

Type			GY16, GY25 single or 2-pole	GY16, GY25 3 or 4-pole / GY40, GY63 2-pole	GY40, GY63 3 or 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 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

Dimensions

Ref. References: p. B8/60
Characteristics: p. B8/127 to B8/129

Dimensions

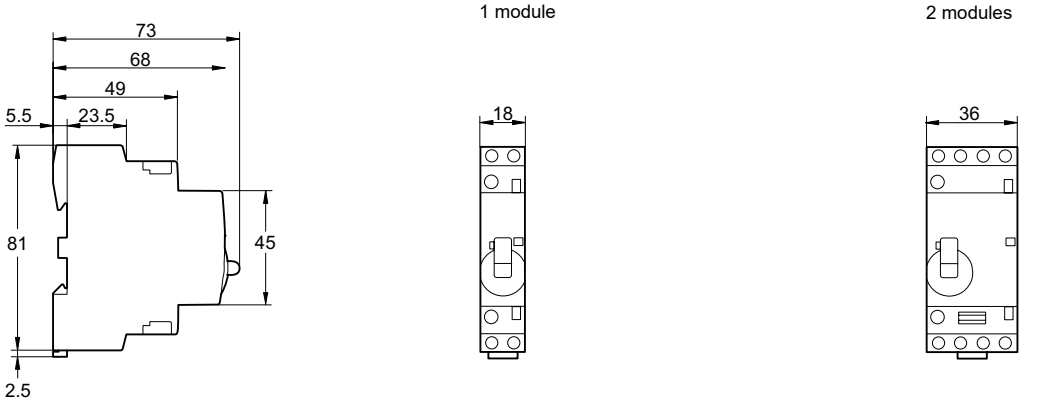
"Dual tariff" contactors

Common side view

GY1620
GY2520
1 module

GY2530, 2540
2 modules

DB417046.eps

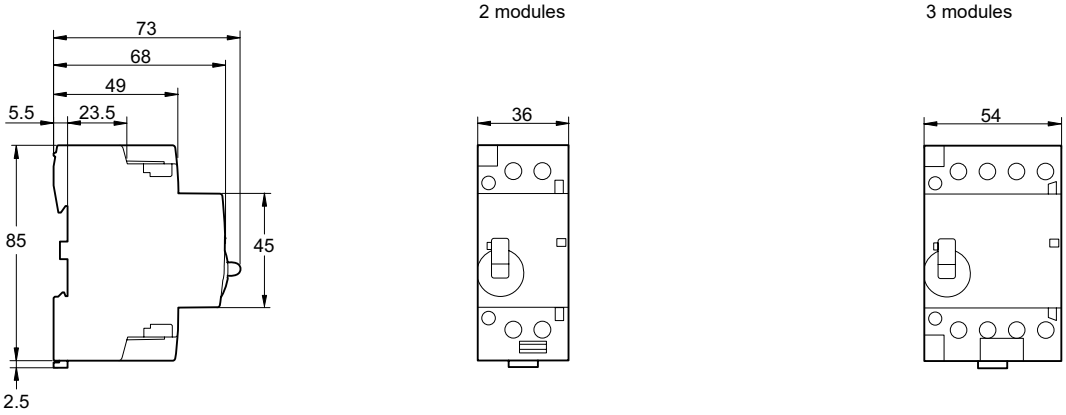


Common side view

GY4020
GY6320
2 modules

GY4030, 4040
GY6330, 6340
3 modules

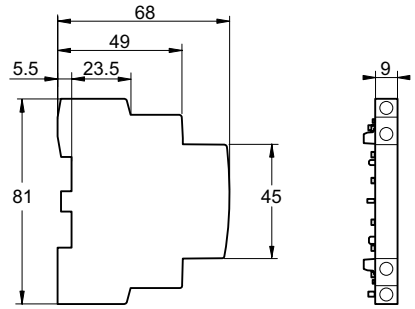
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Auxiliary contacts

GAC0511, 0531 and 0521

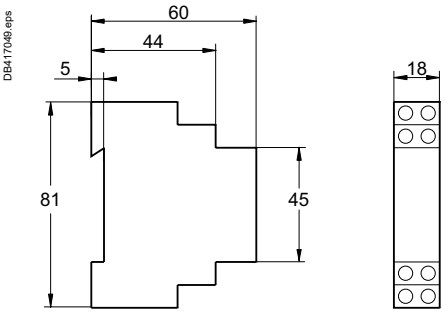
DB417048.eps



Coil suppression block

GAP21 and 23

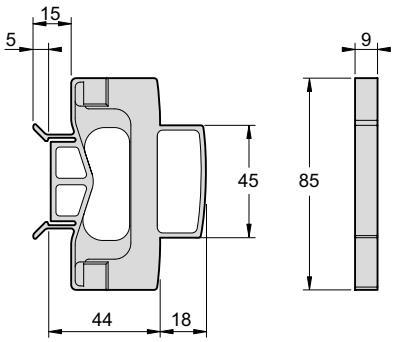
DB417049.eps



Clip-on ventilation 1/2 module

GAC5

DF533726.eps



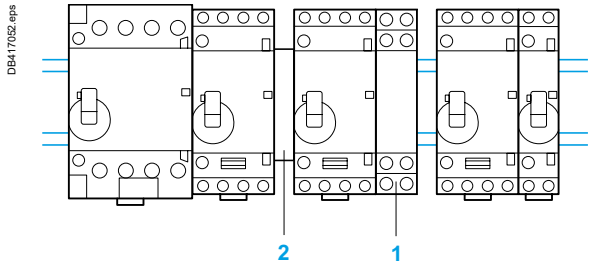
Mounting and schemes

Ref. References: p. B8/60
Characteristics: p. B8/127 to B8/129

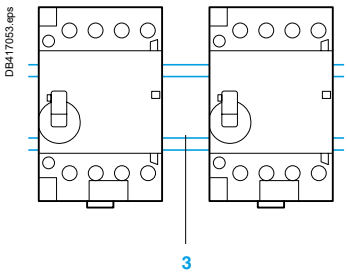
Mounting

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.



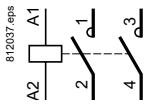
It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module 3 or by 2 ventilation 1/2 modules GAC5.



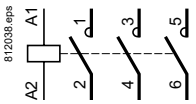
Schemes

Contactors

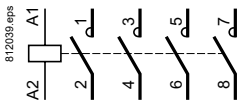
GY●●20



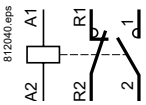
GY●●30



GY●●40

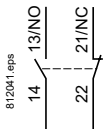


GY●●11

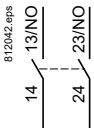


Auxiliary contacts

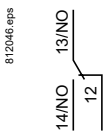
GAC0521



GAC0531



GAC0511



Characteristics

References: p. B8/61
Dimensions: p. B8/136
Schemes: p. B8/136



GF1611M7

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.

Characteristics

Ref. References: p. B8/61 | Dimensions: p. B8/136 | Schemes: p. B8/136

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	gI fuse	**A**	16
	Circuit breaker I^2t (at 3 kA rms prospective)	**A^2s**	5000
Average impedance per pole	At Ith and 50 Hz	**mΩ**	4
Power dissipated per pole		**W**	1

Maximum cabling c.s.a.				Min.	Max.
	Flexible cable without cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4
	Flexible cable with cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4
	Solid cable without cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4

Tightening torque	Power circuit connections	**N.m**	0.8

Characteristics

Ref. References: p. B8/61 | Dimensions: p. B8/136 | Schemes: p. B8/136

Control circuit characteristics

Rated control circuit voltage (Uc)			**V**	12…240 V, for other voltages, please consult your Regional Sales Office
Control voltage limits (θ < 50 °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	**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

Characteristics in lighting and heating applications

Ref. References: p. B8/61 Dimensions: p. B8/136 Schemes: p. B8/136

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

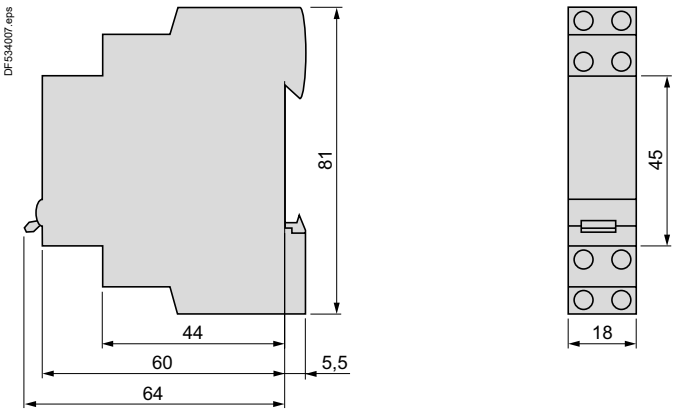
Power in kW	3.6

Dimensions and schemes

Ref. References: p. B8/60
Characteristics: p. B8/132 to B8/135

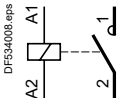
Dimensions

GF1610, GF1611, GF1620

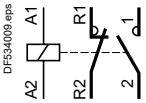


Schemes

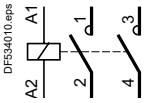
GF1610



GF1611



GF1620



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

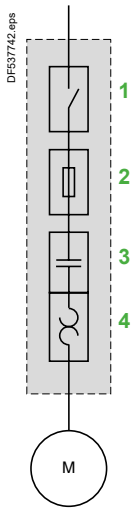
		Electrical durability: making and breaking conditions						Occasional duty: making and breaking conditions					
AC supply													
Typical applications	**Utilisation category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**U**	**cos φ**	**I**	**U**	**cos φ**	**I**	**U**	**cos φ**	**I**	**U**	**cos φ**
Resistors, non inductive or slightly inductive loads	**AC-1**	Ie	Ue	0.95	Ie	Ue	0.95	1.5 Ie	1.05 Ue	0.8	1.5 Ie	1.05 Ue	0.8
Motors													
Slip ring motors: starting, breaking.	**AC-2**	2.5 Ie	Ue	0.65	2.5 Ie	Ue	0.65	4 Ie	1.05 Ue	0.65	4 Ie	1.05 Ue	0.65
Squirrel cage motors: starting, breaking whilst motor running.	**AC-3**												
	Ie ≤ (1)	6 Ie	Ue	0.65	1 Ie	0.17 Ue	0.65	10 Ie	1.05 Ue	0.45	8 Ie	1.05 Ue	0.45
	Ie > (2)	6 Ie	Ue	0.35	1 Ie	0.17 Ue	0.35	10 Ie	1.05 Ue	0.35	8 Ie	1.05 Ue	0.35
Squirrel cage motors: starting, breaking whilst motor running.	**AC-3e**												
	Ie ≤ (1)	6 Ie	Ue	0.65	1 Ie	0.17Ue	0.65	13 Ie	1.05 Ue	0.45 (4)	8.5 Ie	1.05 Ue	0.45 (4)
	Ie > (2)	6 Ie	Ue	0.35	1 Ie	0.17Ue	0.35	13 Ie	1.05 Ue	0.35 (5)	8.5 Ie	1.05 Ue	0.35 (5)
Squirrel cage motors: starting, reversing, inching	**AC-4**												
	Ie ≤ (1)	6 Ie	Ue	0.65	6 Ie	Ue	0.65	12 Ie	1.05 Ue	0.45	10 Ie	1.05 Ue	0.45
	Ie > (2)	6 Ie	Ue	0.35	6 Ie	Ue	0.35	12 Ie	1.05 Ue	0.35	10 Ie	1.05 Ue	0.35
DC supply													
Typical applications	**Utilisation category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)
Resistors, non inductive or slightly inductive loads	**DC-1**	Ie	Ue	1	Ie	Ue	1	1.5 Ie	1.05 Ue	1	1.5 Ie	1.05 Ue	1
Shunt wound motors: starting, reversing, inching	**DC-3**	2.5 Ie	Ue	2	2.5 Ie	Ue	2	4 Ie	1.05 Ue	2.5	4 Ie	1.05 Ue	2.5
Series wound motors: starting, reversing, inching	**DC-5**	2.5 Ie	Ue	7.5	2.5 Ie	Ue	7.5	4 Ie	1.05 Ue	15	4 Ie	1.05 Ue	15

Control relays and auxiliary contacts

		Electrical durability: making and breaking conditions						Occasional duty: making and breaking conditions					
AC supply													
Typical applications	**Utilisation category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**U**	**cos φ**	**I**	**U**	**cos φ**	**I**	**U**	**cos φ**	**I**	**U**	**cos φ**
Electromagnets													
≤ 72 VA	**AC-14**	-	-	-	-	-	-	6 Ie	1.1 Ue	0.7	6 Ie	1.1 Ue	0.7
> 72 VA	**AC-15**	10 Ie	Ue	0.7	Ie	Ue	0.4	10 Ie	1.1 Ue	0.3	10 Ie	1.1 Ue	0.3
DC supply													
Typical applications	**Utilisation category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)	**I**	**U**	**L/R** (ms)
Electromagnets	**DC-13**	Ie	Ue	6 P (3)	Ie	Ue	6 P (3)	1.1 Ie	1.1 Ue	6 P (3)	1.1 Ie	1.1 Ue	6 P (3)

(1) Ie ≤ 17 A for electrical durability, Ie ≤ 100 A for occasional duty.
(2) Ie > 17 A for electrical durability, Ie > 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 DC 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.
(4) Ie ≤ 100A
(5) Ie > 100A

North American market - UL CSA classification of motor starter applications



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,* ***ACNE****: 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.