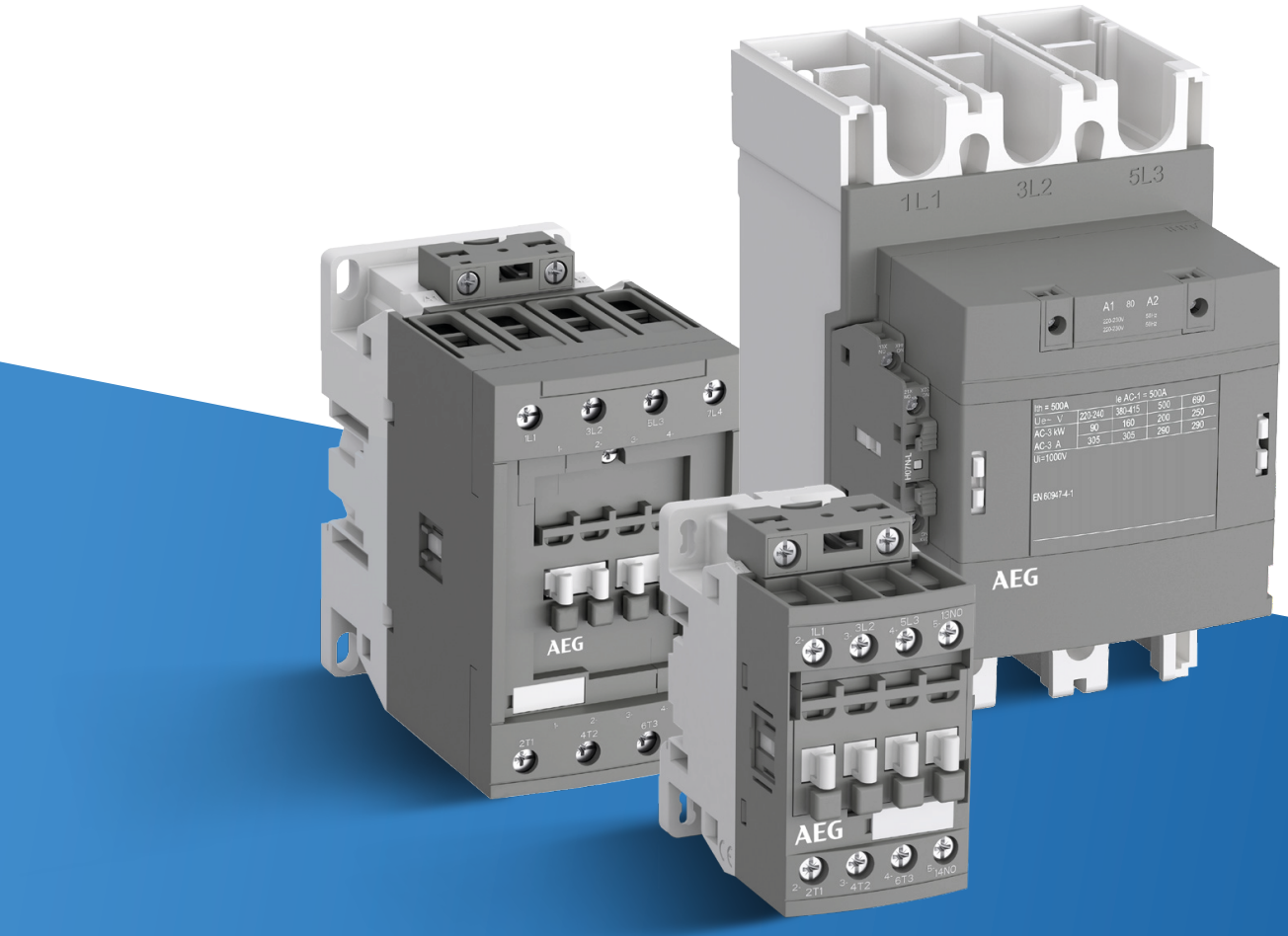
AEG

TECHNICAL GUIDE

LS..N contactors



LS..N contactors

The LS..N contactors range is an optimal choice for motor starting and power switching up to 370 A / 200 kW
400 V AC-3 and up to 300 hp 480 V AC.

Optimized logistics

Lower number of coils

Within contactors and motor protection ranges, the number of product variants and coil has been reduced simplifying customers' logistics while cutting storage and administration costs.

Speed up your projects

Simplified design

Thanks to AC / DC technology, one contactor coil now handles 100 V – 250 V AC / DC, 50 / 60 Hz.
By reducing contactors coil energy consumption, panels can be built smaller and transformers more compact.

Continuous operation

Secure uptime

Make your control circuits safe and reliable thanks to mechanically linked contacts and mirror contact functions.

LS..N contactors
Main Benefits

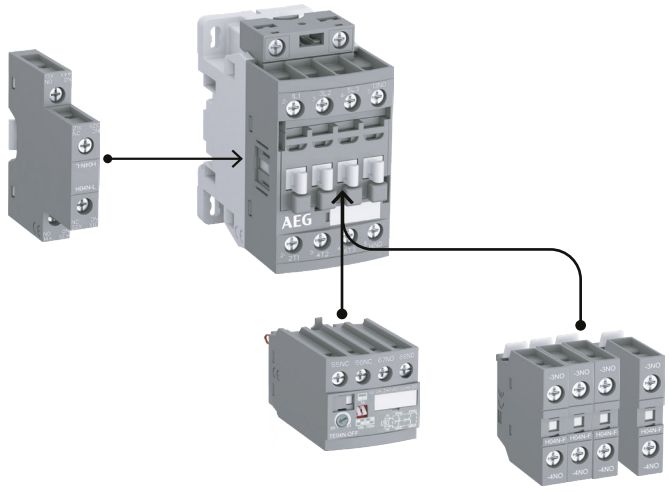
Wide control voltage range
Thanks to the wide operating range of the AC / DC operated contactors, the main coil of the LS04N ... LS45N contactors covers 100…250 V AC 50 / 60 Hz and DC control supplies used worldwide.
LS04N…LS200N are also available with conventional coils supporting main networks.

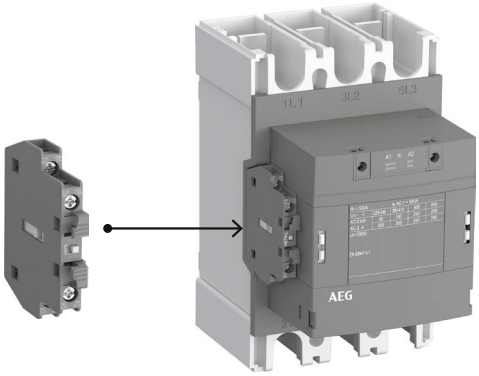
Reduced coil consumption
LS..N contactors coil and energy consumption are reduced allowing reductions of temperature rise, control transformers size and cabinets size.

Safe and reliable control circuits
A white contact carrier ensures that the contactor state is visible at all times.
Built-in and add-on auxiliary contacts provide low signal contacts for 12 V / 3 mA or 24 V / 50 mA.
Mechanically linked element and mirror contact functions are available with front (H04N-F) or side mounted (H04N-L, H06N-L and H07N-L) auxiliary contact blocks.

Certified and trusted contactors
LS04N…LS200N contactors are designed in compliance with IEC 60947-4-1 including CE marking, with UL508, UL 60947-4-1, CSA C22.2 No. 60947-4-1 including cULus marking.
The design and production of LS…N contactor range follow ISO 14000 processes and are compliant to RoHS directives.

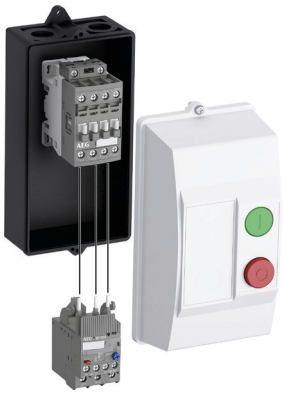
Easy to use accessories
1-pole and 2-pole auxiliary contact blocks, front or side mounted and electronic timers are available for a great flexibility.
Contactors also offer free choice of coil terminal access from top or bottom.





Protect from overload in all conditions
Select thermal overload relays (trip class 10) to protect your motors against overload and phase failure.

Experience reliable and easy to install motor starting
Enclosed starter up to 7.5 kW and 10 hp protecting motor with thermal overload relay, designed for a high number of electrical and mechanical operations, inside a robust IP66 and type 4X enclosure with double electrical insulation.



LS04N ... LS18N 3-pole contactors

4 to 18.5 kW - AC / DC operated

LS04N-30-10

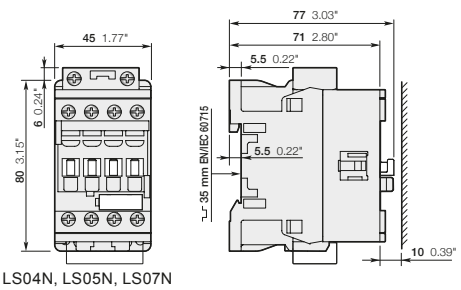
LS11N-30-00

LS04N ... LS18N contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.

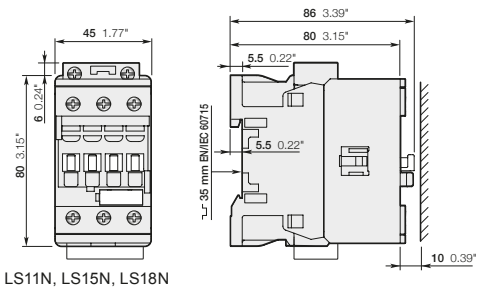
- include 1 N.O. or N.C. built-in auxiliary contact for LS04N ... LS07N
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 3 control voltage ranges covering 24...500 V 50/60 Hz and 20...500 V DC.
  - can manage large control voltage variations
  - reduced panel energy consumption
  - very distinct closing and opening.
- built-in surge suppression
- can be easily extended with a common range of front or side-mounted accessories.

IEC		UL/CSA		Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
kW	A	hp	A	V 50/60 Hz	V DC				kg
4	25	5	25	24...60	20...60 (1)	1 0	LS04N-30-10-ED	4TQD411331R0000	0.270
						0 1	LS04N-30-01-ED	4TQD411332R0000	0.270
				100...250	100...250	1 0	LS04N-30-10-EN	4TQD411341R0000	0.270
						0 1	LS04N-30-01-EN	4TQD411342R0000	0.270
				250...500	250...500	1 0	LS04N-30-10-EU	4TQD411351R0000	0.310
5.5	28	7.5	28	24...60	20...60 (1)	1 0	LS05N-30-10-ED	4TQD411531R0000	0.270
						0 1	LS05N-30-01-ED	4TQD411532R0000	0.270
				100...250	100...250	1 0	LS05N-30-10-EN	4TQD411541R0000	0.270
						0 1	LS05N-30-01-EN	4TQD411542R0000	0.270
				250...500	250...500	1 0	LS05N-30-10-EU	4TQD411551R0000	0.310
7.5	30	10	30	24...60	20...60 (1)	1 0	LS07N-30-10-ED	4TQD411731R0000	0.270
						0 1	LS07N-30-01-ED	4TQD411732R0000	0.270
				100...250	100...250	1 0	LS07N-30-10-EN	4TQD411741R0000	0.270
						0 1	LS07N-30-01-EN	4TQD411742R0000	0.270
11	45	15	45	24...60	20...60 (1)	0 0	LS11N-30-00-ED	4TQD412330R0000	0.310
				100...250	100...250	0 0	LS11N-30-00-EN	4TQD412340R0000	0.310
				250...500	250...500	0 0	LS11N-30-00-EU	4TQD412350R0000	0.350
15	50	20	50	24...60	20...60 (1)	0 0	LS15N-30-00-ED	4TQD412730R0000	0.310
				100...250	100...250	0 0	LS15N-30-00-EN	4TQD412740R0000	0.310
				250...500	250...500	0 0	LS15N-30-00-EU	4TQD412750R0000	0.350
18.5	50	25	50	24...60	20...60 (1)	0 0	LS18N-30-00-ED	4TQD412930R0000	0.310
				100...250	100...250	0 0	LS18N-30-00-EN	4TQD412940R0000	0.310
				250...500	250...500	0 0	LS18N-30-00-EU	4TQD412950R0000	0.350

(1) LS..N-30-..-ED not suitable for direct control by PLC-output.



LS04N, LS05N, LS07N



LS11N, LS15N, LS18N

Main dimensions mm, inches

LS04N ... LS18N 3-pole contactors

4 to 18.5 kW - AC operated

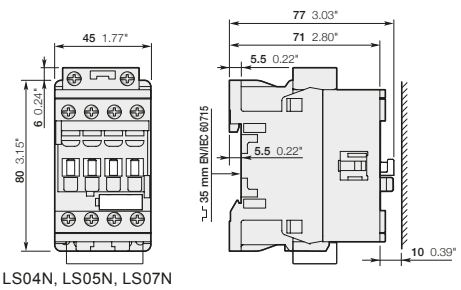
LS04N-30-10

LS11N-30-00

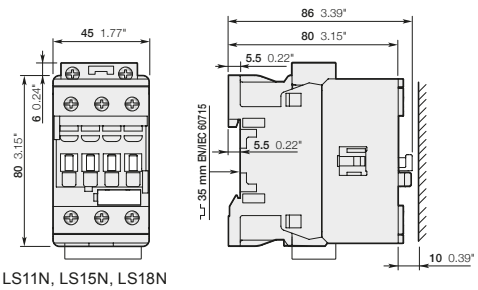
LS04N ... LS18N contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.

- include 1 N.O. or N.C. built-in auxiliary contact for LS04N ... LS07N
- control circuit: AC operated with laminated magnet circuit with 3 control voltage ranges covering 24...230 V 50 Hz / 24...240 V 60 Hz
- optimized operating time for AC control applications
- can be easily extended with a common range of front or side-mounted accessories.

IEC		UL/CSA		Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz				kg
4	25	5	25	24	24	1 0	LS04N-30-10-AD	4TQD421301R0000	0.309
						0 1	LS04N-30-01-AD	4TQD421302R0000	0.309
				110	110...120	1 0	LS04N-30-10-AJ	4TQD421311R0000	0.306
						0 1	LS04N-30-01-AJ	4TQD421312R0000	0.306
				220...230	230...240	1 0	LS04N-30-10-AN	4TQD421321R0000	0.298
						0 1	LS04N-30-01-AN	4TQD421322R0000	0.298
5.5	28	7.5	28	24	24	1 0	LS05N-30-10-AD	4TQD421501R0000	0.309
						0 1	LS05N-30-01-AD	4TQD421502R0000	0.309
				110	110...120	1 0	LS05N-30-10-AJ	4TQD421511R0000	0.306
						0 1	LS05N-30-01-AJ	4TQD421512R0000	0.306
				220...230	230...240	1 0	LS05N-30-10-AN	4TQD421521R0000	0.298
						0 1	LS05N-30-01-AN	4TQD421522R0000	0.298
7.5	30	10	30	24	24	1 0	LS07N-30-10-AD	4TQD421701R0000	0.309
						0 1	LS07N-30-01-AD	4TQD421702R0000	0.309
				110	110...120	1 0	LS07N-30-10-AJ	4TQD421711R0000	0.306
						0 1	LS07N-30-01-AJ	4TQD421712R0000	0.306
				220...230	230...240	1 0	LS07N-30-10-AN	4TQD421721R0000	0.298
						0 1	LS07N-30-01-AN	4TQD421722R0000	0.298
11	45	15	45	24	24	0 0	LS11N-30-00-AD	4TQD422300R0000	0.360
				110	110...120	0 0	LS11N-30-00-AJ	4TQD422310R0000	0.357
				220...230	230...240	0 0	LS11N-30-00-AN	4TQD422320R0000	0.351
15	50	20	50	24	24	0 0	LS15N-30-00-AD	4TQD422700R0000	0.360
				110	110...120	0 0	LS15N-30-00-AJ	4TQD422710R0000	0.357
				220...230	230...240	0 0	LS15N-30-00-AN	4TQD422720R0000	0.351
18.5	50	25	50	24	24	0 0	LS18N-30-00-AD	4TQD422900R0000	0.360
				110	110...120	0 0	LS18N-30-00-AJ	4TQD422910R0000	0.357
				220...230	230...240	0 0	LS18N-30-00-AN	4TQD422920R0000	0.351



LS04N, LS05N, LS07N



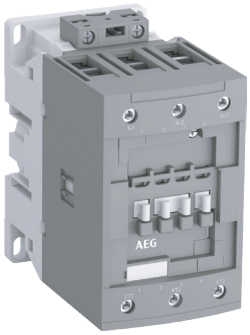
LS11N, LS15N, LS18N

Main dimensions mm, inches

LS22N ... LS45N 3-pole contactors

22 to 45 kW - AC / DC operated

LS22N-30-00



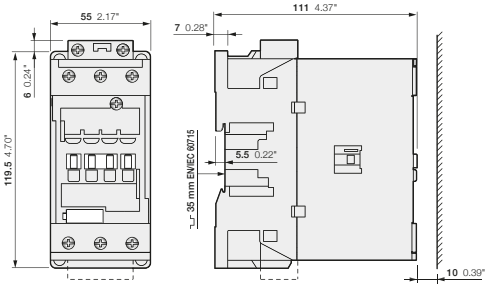
LS37N-30-00

LS22N ... LS45N contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC (LS22N, LS30N), 1000 V AC (LS37N, LS45N) and 220 V DC. These contactors are of the block type design with 3 main poles.

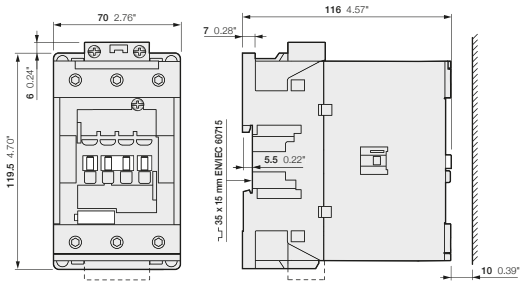
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 2 control voltage ranges covering 24...250 V 50/60 Hz and 20...250 V DC
  - can manage large control voltage variations
  - reduced panel energy consumption
  - very distinct closing and opening
- built-in surge suppression
- can be easily extended with a common range of front or side-mounted accessories.

IEC		UL / CSA		Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type (1)	Order code	Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
kW	A	hp	A	V 50/60 Hz	V DC				kg
22	100	40	80	24...60	20...60 (1)	0 0	LS22N-30-00-ED	4TQD413630R0000	0.970
				100...250	100...250	0 0	LS22N-30-00-EN	4TQD413640R0000	0.950
30	105	50	90	24...60	20...60 (1)	0 0	LS30N-30-00-ED	4TQD413830R0000	0.970
				100...250	100...250	0 0	LS30N-30-00-EN	4TQD413840R0000	0.950
37	125	60	105	24...60	20...60 (1)	0 0	LS37N-30-00-ED	4TQD413930R0000	1.220
				100...250	100...250	0 0	LS37N-30-00-EN	4TQD413940R0000	1.170
45	130	60	115	24...60	20...60 (1)	0 0	LS45N-30-00-ED	4TQD414030R0000	1.220
				100...250	100...250	0 0	LS45N-30-00-EN	4TQD414040R0000	1.170

(1) LS..N-30-..-ED not suitable for direct control by PLC-output.



LS22N, LS30N

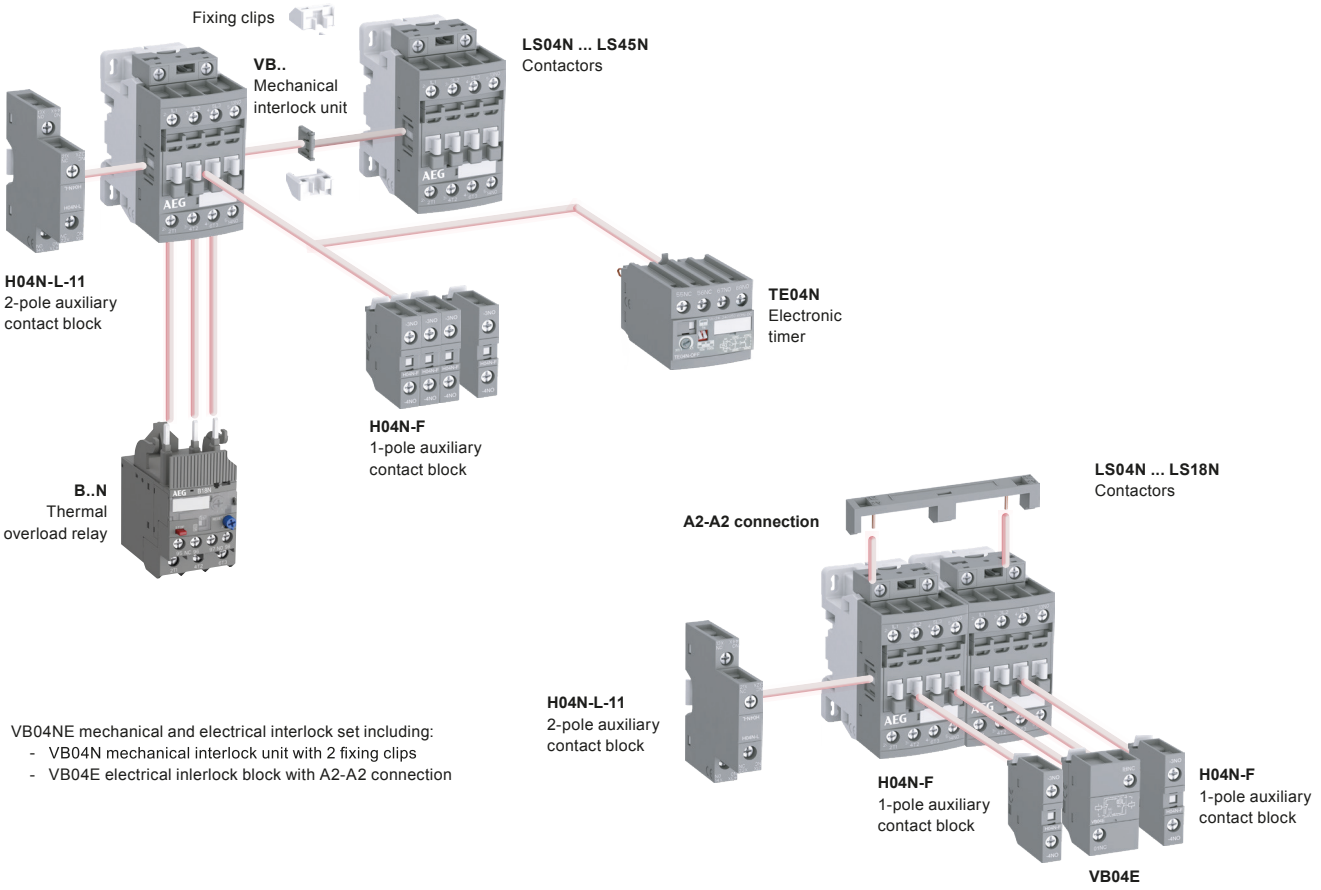


LS37N, LS45N

Main dimensions mm, inches

LS04N … LS45N 3-pole contactors

Contactors and main accessories



VB04NE mechanical and electrical interlock set including:
- VB04N mechanical interlock unit with 2 fixing clips
- VB04E electrical inlerlock block with A2-A2 connection

Main accessory fitting details - for ordering details, technical data and other accessories: see section accessories

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories Auxiliary contact blocks H04N-F	Electronic timer TE04N	Electrical and mechanical interlock set (between 2 contactors) VB04NE	Side-mounted accessories Auxiliary contact blocks H04N-L-11 Left side	Right side
LS04N ... LS18N (1)							
LS04N ... LS07N	3 0	0 1	4 max.	or 1	–	+ 1	–
LS04N ... LS07N	3 0	1 0	2 max.	or 1	–	+ 1	+ 1
LS11N ... LS18N	3 0	0 0	3 max.	–	+ 1 (2)	+ 1	or 1
LS22N ... LS45N							
LS22N ... LS30N	3 0	0 0	4 max.	or 1	–	+ 1	+ 1
LS37N, LS45N	3 0	0 0	4 max.	or 1	–	+ 1	+ 1

(1) Including add-on and built-in contacts : 4 N.C. auxiliary contacts max on positions 1, 2, 3, 4 and 3 N.C. auxiliary contacts max. on positions 1 ±30°, 5.
(2) VB04NE or VB04N not suitable for 2 contactors using different coil type: AC operated coil voltage code A.. and AC / DC operated coil voltage code E...

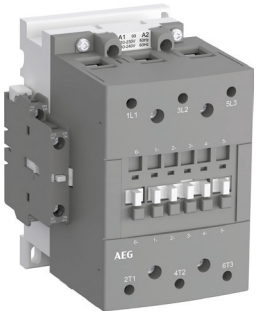
Overload relays fitting details (3)

Contactor types	Thermal overload relays
LS04N ... LS18N	B18N (0.10...38 A)
LS11N ... LS18N	B18N (0.10...38 A)
LS22N ... LS30N	B30N (22...67 A)
LS37N ... LS45N	B45N (40...96 A)

The addition of an overload relay on the contactor does not prevent fitting of many other accessories as shown above.
(3) Direct mounting - No kit required.

LS55N, LS75N 3-pole contactors

55 to 75 kW - AC operated



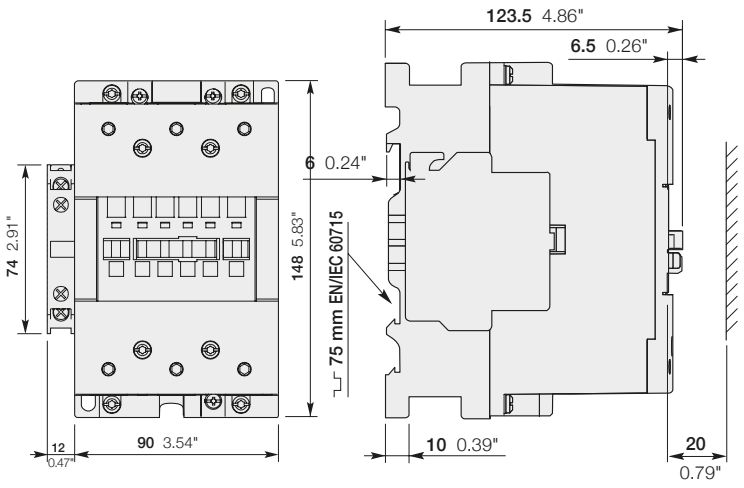
LS55N-30-11

LS55N and LS75N contactors are mainly used for controlling 3-phase motors and power circuits up to 1000 V AC.

These contactors are of the block type design with 3 main poles:

- include 1 N.O. + 1 N.C. side mounted auxiliary contact block
- control circuit: AC operated with laminated magnet circuit, with 3 control voltage ranges covering main network application.

IEC		UL/CSA		Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz				kg
55	160	75	150	24	24	1 1	LS55N-30-11-AD	4TQD438803R0000	2.08
				110	110...120	1 1	LS55N-30-11-AJ	4TQD438813R0000	2.08
				220...230	230...240	1 1	LS55N-30-11-AN	4TQD438823R0000	2.08
75	190	100	170	24	24	1 1	LS75N-30-11-AD	4TQD438903R0000	2.08
				110	110...120	1 1	LS75N-30-11-AJ	4TQD438913R0000	2.08
				220...230	230...240	1 1	LS75N-30-11-AN	4TQD438923R0000	2.08

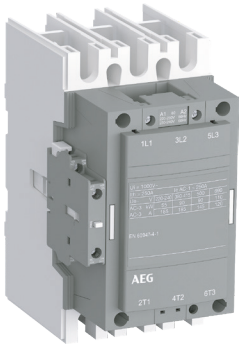


LS55N, LS75N

Main dimensions mm, inches

LS90N, LS110N 3-pole contactors

90 to 110 kW - AC operated



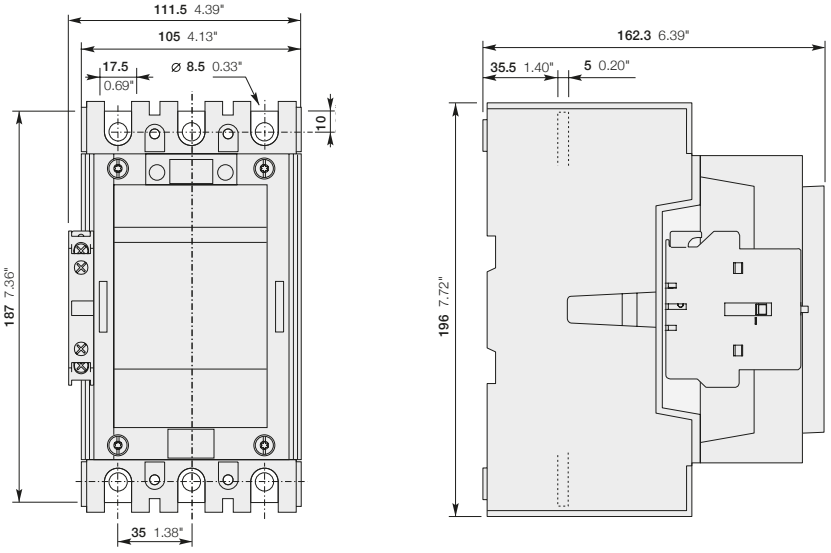
LS90N-30-11

LS90N and LS110N contactors are mainly used for controlling 3-phase motors and power circuits up to 1000 V AC.

These contactors are of the block type design with 3 main poles:

- include 1 N.O. + 1 N.C. side mounted auxiliary contact block
- control circuit: AC operated with laminated magnet circuit, with 2 control voltage ranges covering main network application.

IEC		UL/CSA		Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce)
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						
kW	A	hp	A	V 50 Hz	V 60 Hz				kg
90	250	125	250	110	110…120	1 1	LS90N-30-11-AJ	4TQD434913R0000	3.80
				220…230	230…240	1 1	LS90N-30-11-AN	4TQD434923R0000	3.80
110	275	150	260	110	110…120	1 1	LS110N-30-11-AJ	4TQD435013R0000	3.80
				220…230	230…240	1 1	LS110N-30-11-AN	4TQD435023R0000	3.80



LS90N, LS110N

Main dimensions mm, inches

LS132N ... LS200N 3-pole contactors

132 to 200 kW - AC operated

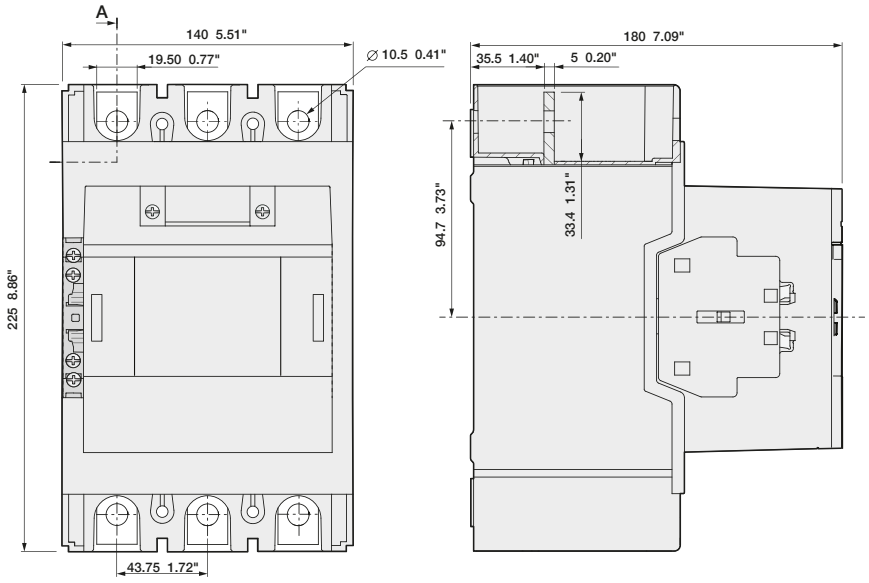
LS132N-30-11

LS132N ... LS200N contactors are mainly used for controlling 3-phase motors and power circuits up to 1000 V AC.

These contactors are of the block type design with 3 main poles:

- include 1 N.O. + 1 N.C. side mounted auxiliary contact block
- control circuit: AC operated with laminated magnet circuit, with 2 control voltage ranges covering main network application.

IEC		UL/CSA		Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce)
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						
kW	A	hp	A	V 50 Hz	V 60 Hz				kg
132	400	200	350	110	110...120	1 1	LS132N-30-11-AJ	4TQD435413R0000	5.4
				220...230	230...240	1 1	LS132N-30-11-AN	4TQD435423R0000	5.4
160	500	250	400	110	110...120	1 1	LS160N-30-11-AJ	4TQD435813R0000	5.4
				220...230	230...240	1 1	LS160N-30-11-AN	4TQD435823R0000	5.4
200	600	300	520	110	110...120	1 1	LS200N-30-11-AJ	4TQD436013R0000	5.4
				220...230	230...240	1 1	LS200N-30-11-AN	4TQD436023R0000	5.4

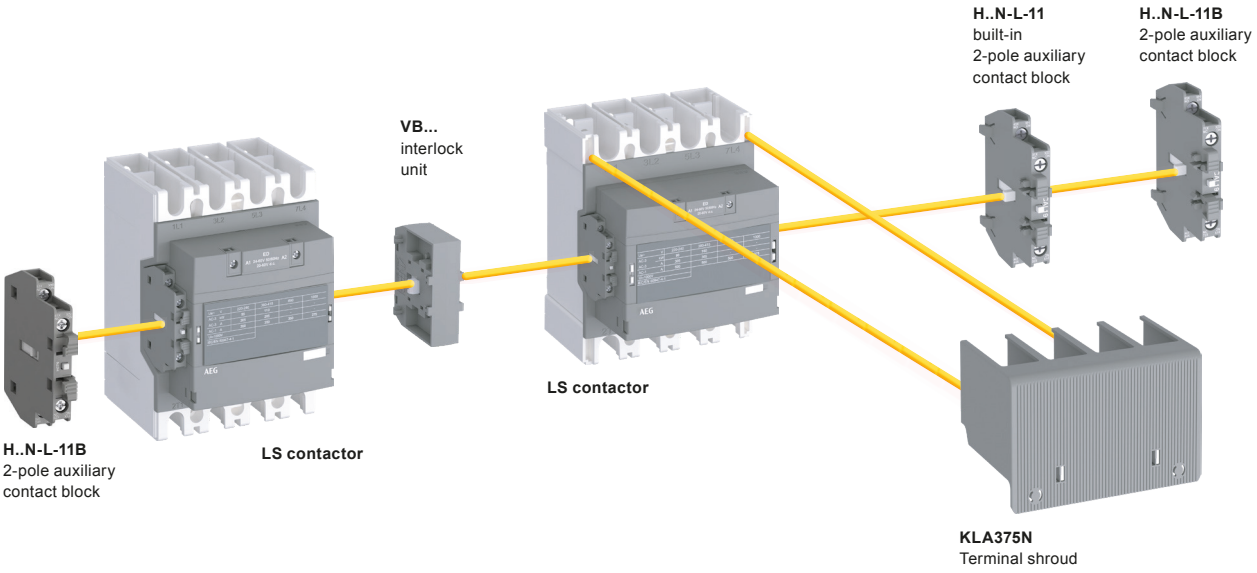


LS132N, LS160N, LS200N

Main dimensions mm, inches

LS55N ... LS200N 3-pole contactors

Contactors and main accessories



Main accessory fitting details - for ordering details, technical data and other accessories: see section accessories

Contactor types	Main poles	Available auxiliary contacts		Side-mounted accessories Auxiliary contact blocks		Mechanical (VB..N) or electrical and mechanical (VB..NE) interlock units (between 2 contactors)
				H..N-L-11	H..N-L-11B	VB..
LS55N, LS75N	3 0	1	1	1 x H06N L-11	–	–
LS55N, LS75N	3 0	1	1	–	–	+ VB75NE
LS90N, LS110N	3 0	1	1	1 x H06N L-11	+ 2 x H06N L-11B	–
LS90N, LS110N	3 0	1	1	–	+ 2 x H06N L-11B (1)	+ VB110N
LS132N ... LS200N	3 0	1	1	1 x H07N L-11	+ 2 x H07N L-11B	–
LS132N ... LS200N	3 0	1	1	–	+ 2 x H07N L-11B (1)	+ VB200N

(1) Total number of auxiliary contact blocks for the two contactors.

AEG

LS04N ... LS18N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

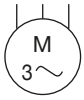
Contactor types		LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1					
Rated operational voltage Ue max.		690 V					
Rated frequency (without derating)		50 / 60 Hz					
Conventional free-air thermal current Ith							
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		35 A	35 A	35 A	50 A	50 A	50 A
With conductor cross-sectional area		6 mm²	6 mm²	6 mm²	10 mm²	10 mm²	10 mm²
AC-1 Utilization category							
For air temperature close to contactor							
Ie / Rated operational current AC-1	θ ≤ 40 °C	25 A	28 A	30 A	45 A	50 A	50 A
Ue max. ≤ 690 V, 50/60 Hz	θ ≤ 60 °C	25 A	28 A	30 A	40 A	42 A	42 A
	θ ≤ 70 °C	22 A	24 A	26 A	32 A	37 A	37 A
With conductor cross-sectional area		4 mm²	6 mm²	6 mm²	10 mm²	10 mm²	10 mm²
AC-3, AC-3e Utilization category							
For air temperature close to contactor θ ≤ 60 °C							
Ie / Max. rated operational current AC-3, AC-3e (1)							
3-phase motors	220-230-240 V	9 A	12 A	18 A	26 A	33 A	40 A
	380-400 V	9 A	12 A	18 A	26 A	32 A	38 A
	415 V	9 A	12 A	18 A	26 A	32 A	38 A
	440 V	9 A	12 A	18 A	26 A	32 A	38 A
	500 V	9.5 A	12.5 A	15 A	23 A	28 A	33 A
	690 V	7 A	9 A	10.5 A	17 A	21 A	24 A
Rated operational power AC-3, AC-3e (1)							
1500 r.p.m. 50 Hz	220-230-240 V	2.2 kW	3 kW	4 kW	6.5 kW	9 kW	11 kW
1800 r.p.m. 60 Hz	380-400 V	4 kW	5.5 kW	7.5 kW	11 kW	15 kW	18.5 kW
3-phase motors	415 V	4 kW	5.5 kW	9 kW	11 kW	15 kW	18.5 kW
	440 V	4 kW	5.5 kW	9 kW	15 kW	18.5 kW	22 kW
	500 V	5.5 kW	7.5 kW	9 kW	15 kW	18.5 kW	22 kW
	690 V	5.5 kW	7.5 kW	9 kW	15 kW	18.5 kW	22 kW
Rated making capacity AC-3, AC-3e		10 x Ie AC-3, 12 x Ie AC-3e acc. to IEC 60947-4-1					
Rated breaking capacity AC-3, AC-3e		8 x Ie AC-3, 8.5 x Ie AC-3e acc. to IEC 60947-4-1					
AC-8a Utilization category							
(without thermal overload relay - Ue 400 V 50/60 Hz - θ ≤ 40 °C)							
Ie / Rated operational current AC-8a		12 A	16 A	22 A	30 A	40 A	50 A
Rated operational power AC-8a		5.5 kW	7.5 kW	11 kW	15 kW	20 kW	25 kW
Short-circuit protection device for contactors							
without thermal overload relay - Motor protection excluded							
Ue ≤ 500 V AC - gG type fuse		25 A	32 A	32 A	50 A	63 A	63 A
Rated short-time withstand current Icw	1 s	300 A	300 A	300 A	700 A	700 A	700 A
at 40 °C ambient temperature,	10 s	150 A	150 A	150 A	350 A	350 A	350 A
in free air from a cold state	30 s	80 A	80 A	80 A	225 A	225 A	225 A
	1 min	60 A	60 A	60 A	150 A	150 A	150 A
	15 min	35 A	35 A	35 A	50 A	50 A	50 A
Maximum breaking capacity							
cos φ = 0.45	at 440 V	250 A	250 A	250 A	500 A	500 A	500 A
	at 690 V	106 A	106 A	106 A	200 A	200 A	200 A
Power dissipation per pole	Ie / AC-1	0.8 W	1 W	1.2 W	1.8 W	2.4 W	2.4 W
	Ie / AC-3, AC-3e	0.1 W	0.2 W	0.35 W	0.6 W	0.9 W	1.3 W
Max. electrical switching frequency	AC-1	600 cycles/h					
	AC-3, AC-3e	1200 cycles/h					
	AC-2, AC-4	300 cycles/h			150 cycles/h		

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

LS22N ... LS45N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types		LS22N	LS30N	LS37N	LS45N
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1			
Rated operational voltage Ue max.		690 V		1000 V	
Rated frequency (without derating)		50 / 60 Hz			
Conventional free-air thermal current Ith					
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		105 A	105 A	130 A	130 A
With conductor cross-sectional area		35 mm²	35 mm²	50 mm²	50 mm²
AC-1 Utilization category					
For air temperature close to contactor					
Ie / Rated operational current AC-1	θ ≤ 40 °C	100 A	105 A	125 A	130 A
Ue max. ≤ 690 V, 50/60 Hz	θ ≤ 60 °C	80 A	90 A	100 A	105 A
	θ ≤ 70 °C	70 A	80 A	85 A	90 A
With conductor cross-sectional area		35 mm²	35 mm²	50 mm²	50 mm²
AC-3, AC-3e Utilization category					
For air temperature close to contactor θ ≤ 60 °C					
Ie / Max. rated operational current AC-3, AC-3e (1)					
AC-3e Ue ≤ 690 V	220-230-240 V	53 A	65 A	80 A	96 A
	380-400 V	53 A	65 A	80 A	96 A
 3-phase motors	415 V	53 A	65 A	80 A	96 A
	440 V	53 A	65 A	80 A	96 A
	500 V	45 A	55 A	65 A	80 A
	690 V	35 A	39 A	49 A	57 A
	1000 V	-	-	25 A	30A
Rated operational power AC-3, AC-3e (1)					
AC-3e Ue ≤ 690 V	220-230-240 V	15 kW	18.5 kW	22 kW	25 kW
	380-400 V	22 kW	30 kW	37 kW	45 kW
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	415 V	30 kW	37 kW	45 kW	55 kW
	440 V	30 kW	37 kW	45 kW	55 kW
	500 V	30 kW	37 kW	45 kW	55 kW
	690 V	30 kW	37 kW	45 kW	55 kW
	1000 V	-	-	35 kW	40 kW
Rated making capacity AC-3, AC-3e		10 x Ie AC-3, 12 x Ie AC-3e acc. to IEC 60947-4-1			
Rated breaking capacity AC-3, AC-3e		8 x Ie AC-3, 8.5 x Ie AC-3e acc. to IEC 60947-4-1			
AC-8a Utilization category					
(without thermal overload relay					
Ue 400 V 50/60 Hz - θ ≤ 40 °C)					
Ie / Rated operational current AC-8a		70 A	85 A	105 A	120 A
Rated operational power AC-8a		37 kW	45 kW	55 kW	65 kW
Short-circuit protection device for contactors					
without thermal overload relay - Motor protection excluded					
Ue ≤ 500 V AC - gG type fuse		125 A	160 A	160 A	200 A
Rated short-time withstand current Icw	1 s	1000 A	1000 A	1200 A	1200 A
at 40 °C ambient temperature,	10 s	600 A	600 A	780 A	780 A
in free air from a cold state	30 s	350 A	350 A	450 A	450 A
	1 min	250 A	250 A	300 A	300 A
	15 min	110 A	110 A	140 A	140 A
Maximum breaking capacity					
cos φ = 0.45	at 440 V	950 A	950 A	1150 A	1150 A
	at 690 V	600 A	600 A	750 A	750 A
Power dissipation per pole	Ie / AC-1	6.3 W	7 W	7.6 W	8.2 W
	Ie / AC-3, AC-3e	1.7 W	2.7 W	3 W	4.5 W
Max. electrical switching frequency	AC-1	600 cycles/h			
	AC-3, AC-3e	1200 cycles/h			
	AC-2, AC-4	150 cycles/h			

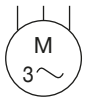
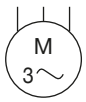
(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

AEG

LS55N ... LS200N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types		LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1						
Rated operational voltage Ue max.		1000 V						
Rated frequency (without derating)		50 / 60 Hz						
Conventional free-air thermal current Ith								
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		160 A	190 A	250 A	275 A	400 A	500 A	600 A
With conductor cross-sectional area		70 mm²	95 mm²	120 mm²	150 mm²	240 mm² (2)	300 mm²	2x 185 mm² (3)
AC-1 Utilization category								
For air temperature close to contactor								
Ie / Rated operational current AC-1	θ ≤ 40 °C	160 A	190 A	250 A	275 A	400 A	500 A	600 A
Ue max. ≤ 690 V, 50/60 Hz	θ ≤ 55 °C	145 A	145 A	230 A	250 A	350 A	400 A	500 A
	θ ≤ 70 °C	130 A	130 A	180 A	180 A	290 A	325 A	400 A
With conductor cross-sectional area		70 mm²	95 mm²	120 mm²	150 mm²	240 mm² (2)	300 mm²	2x 185 mm² (3)
AC-3 Utilization category								
For air temperature close to contactor θ ≤ 55 °C								
Ie / Max. rated operational current AC-3 (1)								
 3-phase motors	220-230-240 V	115 A	150 A	185 A	205 A	265 A	305 A	370 A
	380-400 V	115 A	150 A	185 A	205 A	265 A	305 A	370 A
	415 V	115 A	150 A	185 A	205 A	265 A	305 A	370 A
	440 V	100 A	100 A	145 A	185 A	265 A	305 A	370 A
	500 V	100 A	100 A	145 A	170 A	250 A	290 A	315 A
	690 V	82 A	82 A	120 A	170 A	250 A	290 A	315 A
Rated operational power AC-3 (1)								
 1500 r.p.m. 50 Hz	220-230-240 V	30 kW	45 kW	55 kW	59 kW	75 kW	90 kW	110 kW
1800 r.p.m. 60 Hz	380-400 V	55 kW	75 kW	90 kW	110 kW	132 kW	160 kW	200 kW
3-phase motors	415 V	59 kW	75 kW	90 kW	110 kW	132 kW	160 kW	200 kW
	440 V	59 kW	59 kW	75 kW	90 kW	160 kW	160 kW	200 kW
	500 V	59 kW	59 kW	90 kW	110 kW	160 kW	200 kW	250 kW
	690 V	75 kW	75 kW	110 kW	132 kW	200 kW	250 kW	315 kW
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1						
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1						
AC-8a Utilization category								
(without thermal overload relay - Ue 400 V 50/60 Hz - θ ≤ 40 °C)								
Ie / Rated operational current AC-8a		140 A	-	-	-	-	-	-
Rated operational power AC-8a		75 kW	-	-	-	-	-	-
Short-circuit protection device for contactors								
without thermal overload relay - Motor protection excluded								
Ue ≤ 500 V AC - gG type fuse		200 A	315 A	315 A	355 A	500 A	500 A	630 A
Rated short-time withstand current Icw	1 s	1320 A	1320 A	1800 A	2000 A	2650 A	3050 A	3700 A
at 40 °C ambient temperature,	10 s	800 A	800 A	1200 A	1500 A	2120 A	2440 A	2960 A
in free air from a cold state	30 s	500 A	500 A	800 A	1000 A	1224 A	1409 A	1709 A
	1 min	350 A	350 A	600 A	800 A	865 A	996 A	1208 A
	15 min	160 A	175 A	280 A	320 A	400 A	500 A	600 A
Maximum breaking capacity								
cos φ = 0.45	at 440 V	1160 A	1160 A	1500 A	2000 A	3800 A	4600 A	5000 A
	at 690 V	800 A	800 A	1200 A	1600 A	3300 A	3800 A	4000 A
Power dissipation per pole	Ie / AC-1	7.5 W	10.5 W	16 W	17 W	32 W	50 W	72 W
	Ie / AC-3	3.9 W	6.5 W	8 W	10 W	14 W	19 W	27 W
Max. electrical switching frequency	AC-1	300 cycles/h						
	AC-3	300 cycles/h						
Mechanical durability								
Number of operating cycles		10 millions operating cycles		5 millions operating cycles				
Max. switching frequency		3600 cycles/h				300 cycles/h		

(1) For the corresponding kW/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents";
(2) For current above 275 A use terminal enlargements or terminal extensions;
(3) For current above 450 A use terminal enlargements or terminal extensions.

AEG

LS04N ... LS18N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to UL / NEMA / CSA

Contactor types		LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Standards		UL 60947-4-1, CSA C22.2 No. 60947-4-1					
Maximum operational voltage		600 V					
NEMA size		00	0	–	1	–	–
NEMA continuous amp rating	Thermal current	9 A	18 A		27 A		
NEMA maximum horse power ratings							
1-phase, 60 Hz	115 V AC	1/3 hp	1 hp		2 hp		
	230 V AC	1 hp	2 hp		3 hp		
NEMA maximum horse power ratings							
3-phase, 60 Hz	200 V AC	1-1/2 hp	3 hp		7-1/2 hp		
	230 V AC	1-1/2 hp	3 hp		7-1/2 hp		
	460 V AC	2 hp	5 hp		10 hp		
	575 V AC	2 hp	5 hp		10 hp		
UL / CSA general use rating							
	600 V AC	25 A	28 A	30 A	45 A	50 A	50 A
With conductor cross-sectional area		AWG 10	AWG 10	AWG 10	AWG 8	AWG 8	AWG 8
1 pole	80 V DC	25 A	28 A	30 A	45 A	50 A	50 A
2 poles in serie	160 V DC	25 A	28 A	30 A	45 A	50 A	50 A
3 poles in serie	240 V DC	25 A	28 A	30 A	45 A	50 A	50 A
With conductor cross-sectional area		AWG 10	AWG 10	AWG 10	AWG 8	AWG 8	AWG 8
UL / CSA maximum 1-phase motor rating							
Full load current	120 V AC	13.8 A	16 A	20 A	24 A	24 A	24 A
	240 V AC	10 A	12 A	17 A	17 A	28 A	28 A
Horse power rating	120 V AC	3/4 hp	1 hp	1-1/2 hp	2 hp	2 hp	2 hp
	240 V AC	1-1/2 hp	2 hp	3 hp	3 hp	5 hp	5 hp
UL / CSA maximum 3-phase motor rating							
Full load current (1)	200-208 V AC	7.8 A	11 A	17.5 A	25.3 A	32.2 A	32.2 A
	220-240 V AC	6.8 A	9.6 A	15.2 A	22 A	28 A	28 A
	440-480 V AC	7.6 A	11 A	14 A	21 A	27 A	34 A
	550-600 V AC	9 A	11 A	17 A	22 A	27 A	32 A
Horse power rating (1)	200-208 V AC	2 hp	3 hp	5 hp	7-1/2 hp	10 hp	10 hp
	220-240 V AC	2 hp	3 hp	5 hp	7-1/2 hp	10 hp	10 hp
	440-480 V AC	5 hp	7-1/2 hp	10 hp	15 hp	20 hp	25 hp
	550-600 V AC	7-1/2 hp	10 hp	15 hp	20 hp	25 hp	30 hp
UL / CSA - DC motor starting - 3 poles in series							
Full Load Amps (FLA)	125 V DC	9.5 A	13.2 A	17 A	25 A	25 A	25 A
	250 V DC	8.5 A	12.2 A	12.2 A	20 A	29 A	29 A
Horse power rating	125 V DC	1 hp	1-1/2 hp	2 hp	3 hp	3 hp	3 hp
	250 V DC	2 hp	3 hp	3 hp	5 hp	7-1/2 hp	7-1/2 hp
Short-circuit protection device for contactors							
without thermal overload relay - Motor protection excluded							
High fault current		100 kA					
Fuse rating		30 A	30 A	60 A	60 A	100 A	100 A
Fuse type, 600 V		J					
Max. electrical switching frequency							
For general use		600 cycles/h					
For motor use		1200 cycles/h					

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see “Motor rated operational powers and currents”.

AEG

LS22N ... LS45N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to UL / NEMA / CSA

Contactor types		LS22N	LS30N	LS37N	LS45N
Standards		UL 60947-1, UL 60947-4-1, CSA C22.2 No. 60947-1:22, CSA C22.2 No. 60947-4-1:22			
Maximum operational voltage		600 V			
NEMA size		-	-	3	-
NEMA continuous amp rating	Thermal current	-	-	90 A	-
NEMA maximum horse power ratings					
1-phase, 60 Hz	115 V AC	-	-	-	-
	230 V AC	-	-	-	-
NEMA maximum horse power ratings					
3-phase, 60 Hz	200 V AC	-	-	25 hp	-
	230 V AC	-	-	30 hp	-
	460 V AC	-	-	50 hp	-
	575 V AC	-	-	50 hp	-
UL / CSA general use rating					
	600 V AC	80 A	90 A	105 A	115 A
With conductor cross-sectional area		AWG 4	AWG 3	AWG 2	AWG 2
1 pole	80 V DC	80 A	90 A	105 A	115 A
2 poles in serie	160 V DC	80 A	90 A	105 A	115 A
3 poles in serie	240 V DC	80 A	90 A	105 A	115 A
With conductor cross-sectional area		AWG 4	AWG 3	AWG 2	AWG 2
UL / CSA maximum 1-phase motor rating					
Full load current	120 V AC	34 A	56 A	80 A	80 A
	240 V AC	50 A	68 A	68 A	88 A
Horse power rating	120 V AC	3 hp	5 hp	7-1/2 hp	7-1/2 hp
	240 V AC	10 hp	15 hp	15 hp	20 hp
UL / CSA maximum 3-phase motor rating					
Full load current (1)	200-208 V AC	48.3 A	62.1 A	78.2 A	92 A
	220-240 V AC	54 A	68 A	80 A	80 A
	440-480 V AC	52 A	65 A	77 A	77 A
	550-600 V AC	52 A	62 A	77 A	77 A
Horse power rating (1)	200-208 V AC	15 hp	20 hp	25 hp	30 hp
	220-240 V AC	20 hp	25 hp	30 hp	30 hp
	440-480 V AC	40 hp	50 hp	60 hp	60 hp
	550-600 V AC	50 hp	60 hp	75 hp	75 hp
UL / CSA - DC motor starting - 3 poles in series					
Full Load Amps (FLA)	125 V DC	58 A	76 A	76 A	110 A
	250 V DC	55 A	72 A	89 A	106 A
Horse power rating	125 V DC	7-1/2 hp	10 hp	10 hp	15 hp
	250 V DC	15 hp	20 hp	25 hp	30 hp
Short-circuit protection device for contactors without thermal overload relay - Motor protection excluded					
High fault current		100 kA			
Fuse rating		150 A	150 A	200 A	200 A
Fuse type, 600 V		J			
Maximum electrical switching frequency					
For general use		600 cycles/h			
For motor use		1200 cycles/h			

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

LS55N ... LS200N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to UL / CSA

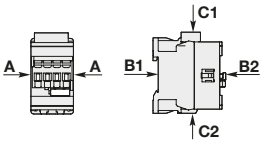
Contactor types		LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Standards		UL 60947-4-1, CSA C22.2 No. 60947-4-1						
Maximum operational voltage		600 V						
UL / CSA general use rating								
600 V AC		150 A	170 A	250 A	260 A	350 A	400 A	520 A
With conductor cross-sectional area		AWG 1/0	AWG 2/0	MCM 250	MCM 300	MCM 500	2//AWG 3/0	2//MCM 300
UL / CSA maximum 3-phase motor rating								
Full load current (1)	200-208 V AC	92 A	120 A	150 A	169 A	221 A	285 A	359 A
	220-240 V AC	104 A	130 A	145 A	192 A	248 A	312 A	360 A
	440-480 V AC	96 A	124 A	156 A	180 A	240 A	302 A	361 A
	550-600 V AC	99 A	125 A	144 A	192 A	242 A	298 A	336 A
Horse power rating (1)	200-208 V AC	30 hp	40 hp	50 hp	60 hp	75 hp	100 hp	125 hp
	220-240 V AC	40 hp	50 hp	60 hp	75 hp	100 hp	125 hp	150 hp
	440-480 V AC	75 hp	100 hp	125 hp	150 hp	200 hp	250 hp	300 hp
	550-600 V AC	100 hp	125 hp	150 hp	200 hp	250 hp	300 hp	350 hp
Short-circuit protection device for contactors without thermal overload relay - Motor protection excluded								
High fault current		100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Fuse rating		200 A	250 A	400 A	400 A	500 A	600 A	800 A
Fuse type, 600 V		J	J	J	J	J	J	J
Maximum electrical switching frequency								
For general use		300 cycles/h						
For motor use		300 cycles/h						

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

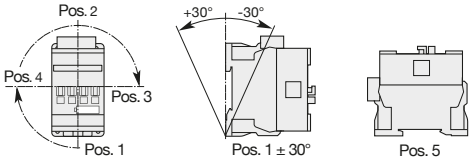
LS04N ... LS18N 3-pole contactors

Technical data

General technical data

Contactor types		LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Rated insulation voltage Ui							
acc. to IEC 60947-4-1		690 V					
acc. to UL / CSA		600 V					
Rated impulse withstand voltage Uimp.		6 kV					
Electromagnetic compatibility		Devices complying with IEC/EN 60947-1 - Environment A and B					
Ambient air temperature close to contactor							
Operation	Fitted with thermal overload relay	-25...+60 °C					
	Without thermal overload relay	-40...+70 °C					
Storage		-60...+80 °C					
Climatic withstand		Category B according to IEC 60947-1 Annex Q					
Maximum operating altitude (without derating)		3000 m					
Mechanical durability							
Number of operating cycles		10 millions operating cycles					
Max. switching frequency		3600 cycles/h					
Shock withstand							
acc. to IEC/EN 60068-2-27							
Mounting position 1							
	Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position					
	A	30 g					
	B1	25 g closed position / 5 g open position					
	B2	15 g					
	C1	25 g					
	C2	25 g					
Vibration withstand		5...300 Hz					
acc. to IEC 60068-2-6		4 g closed position / 2 g open position					

Mounting characteristics and conditions for use

Contactor types	LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Mounting positions						
	Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor LS04N ... LS18N					
Mounting distances	The contactors can be assembled side by side					
Fixing						
On rail according to IEC/EN 60715	35 x 7.5 mm or 35 x 15 mm					
By screws (not supplied)	2 x M4 screws placed diagonally					

LS04N ... LS18N 3-pole contactors

Technical data

Magnet system characteristics AC / DC operated - Coil voltage codes ED, EN, EU

Contactor types		LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Coil operating limits acc. to IEC 60947-4-1	AC supply	At θ ≤ 60 °C 0.85 x Uc min...1.1 x Uc max. At θ ≤ 70 °C 0.85 x Uc min...Uc max.					
	DC supply	At θ ≤ 60 °C 0.85 x Uc min...1.1 x Uc max. At θ ≤ 70 °C 0.85 x Uc min...Uc max.					
AC control voltage 50/60 Hz							
Rated control circuit voltage Uc		24...500 V AC					
Coil consumption	Average pull-in value	50 VA					
	Average holding value	2.2 VA / 2 W					
DC control voltage							
Rated control circuit voltage Uc		20...500 V DC					
Coil consumption	Average pull-in value	50 W					
	Average holding value	2 W					
PLC-output control		ED coil not suitable for direct control by PLC output					
Drop-out voltage		≤ 60 % of Uc min.					
Operating time							
Between coil energization and:	N.O. contact closing	40...95 ms					
	N.C. contact opening	38...90 ms					
Between coil de-energization and:	N.O. contact opening	11...95 ms					
	N.C. contact closing	13...98 ms					

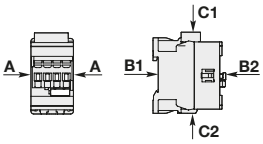
Magnet system characteristics AC operated - Coil voltage codes AD, AJ, AN

Contactor types		LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Coil operating limits acc. to IEC 60947-4-1	AC supply	At θ ≤ 60 °C 0.85 ...1.1 x Uc. At θ ≤ 70 °C Uc					
AC control voltage							
Rated control circuit voltage Uc	50 Hz	24...230 V					
	60 Hz	24...240 V					
Coil consumption	Average pull-in value 50/60 Hz	70 VA / 66 VA					
	Average holding value	8 VA / 2.3 W					
Drop-out voltage	50 Hz	40...65 % of Uc					
	60 Hz	40...70 % of Uc					
Operating time (-40°C ... +60°C)							
Between coil energization and:	N.O. contact closing	10...26 ms					
	N.C. contact opening	7...21 ms					
Between coil de-energization and:	N.O. contact opening	4...18 ms					
	N.C. contact closing	9...20 ms					

LS22N ... LS45N 3-pole contactors

Technical data

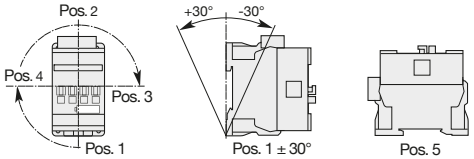
General technical data

Contactor types		LS22N	LS30N	LS37N	LS45N
Rated insulation voltage Ui					
acc. to IEC 60947-4-1		690 V		1000 V	
acc. to UL / CSA		600 V			
Rated impulse withstand voltage Uimp.		6 kV		8 kV	
Electromagnetic compatibility		Devices complying with IEC/EN 60947-1 - Environment A and B			
Ambient air temperature close to contactor					
Operation	Fitted with thermal overload relay	-40...+70 °C			
	Without thermal overload relay	-40...+70 °C			
Storage		-60...+80 °C			
Climatic withstand		Category B according to IEC 60947-1 Annex Q			
Maximum operating altitude (without derating)		3000 m			
Mechanical durability					
Number of operating cycles		10 millions operating cycles			
Max. switching frequency		3600 cycles/h			
Shock withstand					
acc. to IEC/EN 60068-2-27					
Mounting position 1					
	Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position			
	A	25 g			
	B1	25 g closed position / 5 g open position			
	B2	15 g			
	C1	25 g			
	C2	25 g			
Vibration withstand acc. to IEC 60068-2-6		5...300 Hz			

Magnet system characteristics

Contactor types		LS22N	LS30N	LS37N	LS45N
Coil operating limits	AC supply	At θ ≤ 70 °C 0.85 x Uc min...1.1 x Uc max.			
acc. to IEC 60947-4-1	DC supply	At θ ≤ 70 °C 0.85 x Uc min...1.1 x Uc max.			
AC control voltage 50/60 Hz					
Rated control circuit voltage Uc		24...500 V AC			
Coil consumption	Average pull-in value	25 VA		40 VA	
	Average holding value	4 VA / 2 W			
DC control voltage					
Rated control circuit voltage Uc		20...500 V DC			
Coil consumption	Average pull-in value	25 W		40 W	
	Average holding value	2 W			
PLC-output control		ED coil not suitable for direct control by PLC-output			
Drop-out voltage		≤ 60 % of Uc min.			
Operating time					
Between coil energization and:	N.O. contact closing	42...100 ms			
	N.C. contact opening	38...95 ms			
Between coil de-energization and:	N.O. contact opening	17...100 ms			
	N.C. contact closing	19...105 ms			

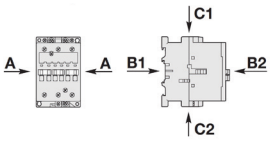
Mounting characteristics and conditions

Contactor types	LS22N	LS30N	LS37N	LS45N
Mounting positions				
	Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor LS22N ... LS45N			
Mounting distances	The contactors can be assembled side by side			
Fixing				
On rail according to IEC/EN 60715	35 x 7.5 mm or 35 x 15 mm		35 x 15 mm	
By screws (not supplied)	2 x M4 or 2 x M6 screws placed diagonally			

LS55N ... LS200N 3-pole contactors

Technical data

General technical data

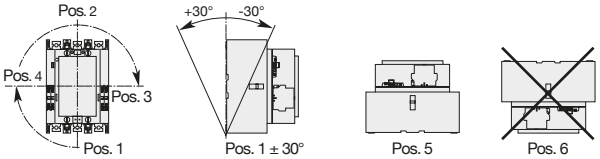
Contactor types			LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Rated insulation voltage Ui									
acc. to IEC 60947-4-1			1000 V						
Rated impulse withstand voltage Uimp.			8 kV						
Electromagnetic compatibility			-				Devices complying with IEC 60947-1 - Environment A		
Ambient air temperature close to contactor									
Operation	Without thermal overload relay		-40...+70 °C						
Storage			-40...+70 °C						
Climatic withstand			acc. to IEC 60068-2-30		Category B acc. to IEC/EN 60947-1 Annex Q				
Maximum operating altitude (without derating)			3000 m						
Shock withstand									
acc. to IEC/EN 60068-2-27									
Mounting position 1									
		Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position				1/2 sinusoidal shock for 30 ms		
		A	20 g		5 g		20 g		
		B1	10 g closed position / 5 g open position		5 g		15 g closed position / 3 g open position		
		B2	15 g		5 g		15 g closed position / 3 g open position		
		C1	20 g		5 g		20 g		
		C2	20 g		5 g		20 g		

Magnet system characteristics

Contactor types				LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Coil operating limits			AC supply	At θ ≤ 70 °C 0.85 ... 1.1 x Uc						
acc. to IEC 60947-4-1				Please also refer to "Mounting characteristics and conditions for use"						
AC control voltage 50/60 Hz										
Rated control circuit voltage Uc			at 50 Hz	24...230 V		110...230 V				
			at 60 Hz	24...240 V		110...240 V				
Coil consumption	Average pull-in value		50 Hz	350 VA		550 VA		-		
			60 Hz	450 VA		600 VA		-		
			50/60 Hz (1)	410 VA / 365 VA		700 VA / 650 VA		475 VA		
	Average holding value		50 Hz	22 VA / 6.5 W		35 VA / 11 W		-		
			60 Hz	26 VA / 8 W		40 VA / 12 W		-		
			50/60 Hz (1)	27 VA / 7.5 W		44 VA / 13 W		17.5 VA		
Drop-out voltage				approx. 40...65 % of Uc				55 % of Uc min.		
Operating time										
Between coil energization and:		N.O. contact closing		10…25 ms		13…27 ms		30…60 ms		
		N.C. contact opening		7…22 ms		8…22 ms		-		
Between coil de-energization and:		N.O. contact opening		7…15 ms		5…10 ms		45…80 ms		
		N.C. contact closing		10…18 ms		9…13 ms		-		

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

Contactor types			LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Mounting positions									
			N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor LS55N ... LS200N						
Control voltage / Ambient temperature									
Mounting positions	1, 1±30°, 2, 3, 4, 5	at θ ≤ 70 °C	0.85…1.1 x Uc						
	6	at θ ≤ 55 °C	0.95…1.1 x Uc		Unauthorized				
		at θ ≤ 55 °C	Unauthorized						
Mounting distances			The contactors can be assembled side by side						
Fixing			-						
On rail according to IEC/EN 60715									
By screws (not supplied)			2 x M6 placed diagonally		4 x M5				

AEG

LS04N ... LS18N 3-pole contactors

Technical data

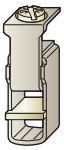
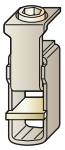
Connecting characteristics

Contactor types			LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Main terminals			 Screw terminals with cable clamp					
Connection capacity (min. ... max.)								
Main conductors (poles)								
Rigid	Solid (≤ 4 mm²)	1 x	1...6 mm²			2.5...10 mm²		
	Stranded (≥ 1 mm²)	2 x	1...6 mm²			2.5...10 mm²		
Flexible with non insulated ferrule		1 x	0.75...6 mm²			1.5...10 mm²		
		2 x	0.75...6 mm²			1.5...10 mm²		
Flexible with insulated ferrule		1 x	0.75...4 mm²			1.5...10 mm²		
		2 x	0.75...2.5 mm²			1.5...4 mm²		
Bars or lugs		L <	9.6 mm			12.5 mm		
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 16...10			AWG 14...8		
Stripping length			10 mm			14 mm		
Tightening torque			1.5 Nm / 13 lb.in			2.5 Nm / 22 lb.in		
Auxiliary conductors								
(built-in auxiliary terminals + coil terminals)								
Rigid solid/stranded		1 x	1...2.5 mm²					
		2 x	1...2.5 mm²					
Flexible with non insulated ferrule		1 x	0.75...2.5 mm²					
		2 x	0.75...2.5 mm²					
Flexible with insulated ferrule		1 x	0.75...2.5 mm²					
		2 x	0.75...1.5 mm²					
Lugs		L <	8 mm					
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 18...14					
Stripping length			10 mm					
Tightening torque								
Coil terminals			1.2 Nm / 11 lb.in					
Built-in auxiliary terminals			1.2 Nm / 11 lb.in					
Degree of protection								
acc. to IEC/EN 60947-1 and IEC/EN 60529								
Main terminals			IP20					
Coil terminals			IP20					
Built-in auxiliary terminals			IP20					
Screw terminals			Delivered in open position, screws of unused terminals must be tightened					
Main terminals			M3.5			M4		
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2			Flat Ø 6.5 / Pozidriv 2		
Coil terminals			M3.5					
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2					
Built-in auxiliary terminals			M3.5					
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2					

LS22N ... LS45N 3-pole contactors

Technical data

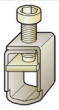
Connecting characteristics

Contactor types			LS22N	LS30N	LS37N	LS45N
Main terminals			 Screw terminals with double connector 2 x (9.3 width x 7.9/10.3 depth)		 Screw terminals with double connector 2 x (12.4 width x 9.3/11.1 depth)	
Connection capacity (min. ... max.)						
Main conductors (poles)						
Rigid	Solid (≤ 4 mm²)	1 x	6...35 mm²		6...70 mm²	
	Stranded (≥ 6 mm²)	2 x	6...35 mm²		6...50 mm²	
Flexible with non insulated ferrule		1 x	4...35 mm²		6...50 mm²	
		2 x	4...35 mm²		6...50 mm²	
Flexible with insulated ferrule		1 x	4...35 mm²		6...50 mm²	
		2 x	4...35 mm²		6...50 mm²	
Bars or lugs		L <	9.2 mm		12.2 mm	
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 10...2		AWG 6...1	
Stripping length			16 mm		17 mm	
Tightening torque			4 Nm / 35 lb.in		6 Nm / 53 lb.in	
Auxiliary conductors (coil terminals)						
Rigid solid/stranded		1 x	1...2.5 mm²			
		2 x	1...2.5 mm²			
Flexible with non insulated ferrule		1 x	0.75...2.5 mm²			
		2 x	0.75...2.5 mm²			
Flexible with insulated ferrule		1 x	0.75...2.5 mm²			
		2 x	0.75...1.5 mm²			
Lugs		L <	8 mm			
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 18...14			
Stripping length			10 mm			
Tightening torque						
Coil terminals			1.2 Nm / 11 lb.in			
Built-in auxiliary terminals			1.2 Nm / 11 lb.in			
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529						
Main terminals			IP10			
Coil terminals			IP20			
Built-in auxiliary terminals			IP20			
Screw terminals			Delivered in open position, screws of unused terminals must be tightened			
Main terminals			M6		M8	
	Screwdriver type		Flat Ø 6.5 / Pozidriv 2		Hexagon socket (s = 4 mm)	
Coil terminals			M3.5			
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2			

LS55N, LS75N 3-pole contactors

Technical data

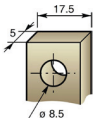
Connecting characteristics

Contactor types			LS55N	LS75N
Main terminals			 Screw terminals with single connector (14 x 14 mm)	
Connection capacity (min. ... max.)				
Main conductors (poles)				
Rigid	Stranded (≥ 6 mm²)	1 x	10…95 mm²	
		2 x	6…35 mm²	
Flexible with ferrule		1 x	10…70 mm²	
		2 x	6…35 mm²	
Flexible with insulated ferrule		1 x	10…70 mm²	
		2 x	6…35 mm²	
Bars or lugs		L <	13 mm	
		I >	6 mm	
Connection capacity acc. to UL / CSA			AWG 6 ... 2/0	
Stripping length			20 mm	
Tightening torque	Recommended		8 Nm / 71 lb.in	
	Max.		9 Nm	
Auxiliary conductors (built-in auxiliary terminals + coil terminals)				
Rigid solid/stranded		1 x	1…4 mm²	
		2 x	1…4 mm²	
Flexible with ferrule		1 x	0.75…2.5 mm²	
		2 x	0.75...2.5 mm²	
Lugs		L <	8 mm	
		I >	3.5 mm	
Connection capacity acc. to UL / CSA		1 or 2 x	AWG 18 ... 14	
Stripping length			9 mm	
Tightening torque				
Coil terminals	Recommended		1 Nm / 9 lb.in	
	Max.		1.2 Nm	
Built-in auxiliary terminals	Recommended		1 Nm / 9 lb.in	
	Max.		-	
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529				
Main terminals			IP10	
Coil terminals			IP20	
Built-in auxiliary terminals			IP20	
Screw terminals			Delivered in open position, screws of unused terminals must be tightened	
Main terminals			M8	
		Screwdriver type	Hexagon socket (s = 4 mm)	
Coil terminals			M3.5	
		Screwdriver type	Flat Ø 5.5 / Pozidriv 2	
Built-in auxiliary terminals			M3.5	
		Screwdriver type	Flat Ø 5.5 / Pozidriv 2	

LS90N, LS110N 3-pole contactors

Technical data

Connecting characteristics

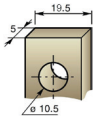
Contactor types			LS90N	LS110N
Main terminals Flat type				
Connection capacity (min. ... max.)				
Main conductors (poles)				
Rigid with connector		Single for Cu cable	6…185 mm²	
		Single for Al/Cu cable	25…150 mm²	
		Double for Al/Cu cable	-	
Bars or lugs		L <	24 mm	
		Ø >	8 mm	
Connection capacity acc. to UL / CSA			6 … 250 MCM	
Stripping length			9 mm	
Tightening torque	Recommended		18 Nm / 160 lb.in	
	Max.		20 Nm	
Auxiliary conductors (built-in auxiliary terminals + coil terminals)				
Rigid solid/stranded		1 x	1....4 mm²	
		2 x	1....4 mm²	
Flexible with ferrule		1 x	0.75…2.5 mm²	
		2 x	0.75...2.5 mm²	
Lugs		L <	8 mm	
		l >	3.5 mm	
Connection capacity acc. to UL / CSA		1 or 2x	AWG 18 ... 14	
Stripping length			9 mm	
Tightening torque				
Coil terminals	Recommended		1 Nm / 9 lb.in	
	Max.		1.2 Nm	
Built-in auxiliary terminals	Recommended		1 Nm / 9 lb.in	
	Max.		-	
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529				
Main terminals			IP00	
Coil terminals			IP20	
Built-in auxiliary terminals			IP20	
Screw terminals				
Main terminals			M8	
			Screw and bolts	
Coil terminals (delivered in open position)			M3.5	
Screwdriver type			Flat Ø 5.5 / Pozidriv 2	
Built-in auxiliary terminals (delivered in open position, screws of unused terminals must be tightened)			M3.5	
Screwdriver type			Flat Ø 5.5 / Pozidriv 2	

AEG

LS132N ... LS200N 3-pole contactors

Technical data

Connecting characteristics

Contactor types				LS132N	LS160N	LS200N
Main terminals Flat type						
Connection capacity (min. ... max.)						
Main conductors (poles)						
	Rigid with connector	Cu cable Stranded	1 x	16...300 mm²		
		Clamp type		1SDA055016R1		
		Tightening torque		25 Nm		
		Cu cable Stranded	2 x	70...185 mm²		
		Clamp type		1SCA022194R0890 (OZXB4)		
		Tightening torque		22 Nm		
		Al cable Stranded	1 x	185...240 mm²		
		Clamp type		1SDA055020R1		
		Tightening torque		43 Nm		
		Cu cable Flexible	1 x	16...240 mm²		
		Clamp type		1SDA055016R1		
		Tightening torque		25 Nm		
		Cu cable Flexible	2 x	70...185 mm²		
		Clamp type		1SCA022194R0890 (OZXB4)		
		Tightening torque		22 Nm		
	Bars or lugs	Double for Al/Cu cable		70...185 mm²		
		W <		32 mm (1.260 in)		
		Ø >		10 mm (0.394 in)		
		Socket type		included		
		Tightening torque		28 Nm / 248 lb.in		
	Connection capacity acc. to UL / CSA		1 x	4 ... 400 MCM		
	Tightening torque			42 Nm / 372 lb.in		
	Auxiliary conductors (built-in auxiliary contact + coil terminals)					
		Rigid solid/stranded	1 x	1...4 mm²		
			2 x	1...4 mm²		
		Flexible	1 x	0.75...2.5 mm²		
			2 x	0.75...2.5 mm²		
		Flexible with non insulated	1 x	0.75...2.5 mm²		
			2 x	0.75...2.5 mm²		
		Flexible with insulated ferrule	1 x	0.75...2.5 mm²		
			2 x	0.75...2.5 mm²		
		Lugs	L <	8 mm		
			l >	3.5 mm		
	Connection capacity acc. to UL / CSA		1 or 2 x	AWG 18 ... 14		
	Stripping length			9 mm		
	Tightening torque			1.00 Nm / 9 lb.in		
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529						
	Main terminals			IP00		
	Coil terminals			IP20		
	Built-in auxiliary terminals			IP20		
Screw terminals						
	Main terminals			M10		
	Screwdriver type			Screws and bolts		
	Coil terminals (delivered in open position)			M3.5		
	Screwdriver type			Flat Ø 5.5 mm / Pozidriv 2		
	Built-in auxiliary terminals (delivered in open position, screws of unused terminals must be tightened)			M3.5		
	Screwdriver type			Flat Ø 5.5 mm / Pozidriv 2		

LS04N ... LS07N 3-pole contactors

Technical data

Built-in auxiliary contacts according to IEC

Contactor types		LS04N	LS05N	LS07N
Rated operational voltage Ue max.		690 V		
Rated frequency (without derating)		50 / 60 Hz		
Conventional free air thermal current Ith - θ ≤ 40 °C		16 A		
Ie / Rated operational current AC-15				
acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A		
	220-240 V 50/60 Hz	4 A		
	400-440 V 50/60 Hz	3 A		
	500 V 50/60 Hz	2 A		
	690 V 50/60 Hz	2 A		
Making capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1		
Breaking capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1		
Ie / Rated operational current DC-13				
acc. to IEC 60947-5-1	24 V DC	6 A / 144 W		
	48 V DC	2.8 A / 134 W		
	72 V DC	1 A / 72 W		
	110 V DC	0.55 A / 60 W		
	125 V DC	0.55 A / 69 W		
	220 V DC	0.27 A / 60 W		
	250 V DC	0.27 A / 68 W		
	400 V DC	0.15 A / 60 W		
	500 V DC	0.13 A / 65 W		
	600 V DC	0.1 A / 60 W		
Short-circuit protection device gG type fuse		10 A		
Conditional short-circuit current		1 kA		
Rated short-time withstand current Icw	for 1.0 s	100 A		
	for 0.1 s	140 A		
Minimum switching capacity		12 V / 3 mA		
with failure rate acc. to IEC 60947-5-4		10^{-7}		
Non-overlapping time between N.O. and N.C. contacts		≥ 2 ms		
Power dissipation per pole at 6 A		0.1 W		
Max. electrical switching frequency	AC-15	1200 cycles/h		
	DC-13	900 cycles/h		
Mechanically linked contacts acc. to annex L of IEC 60947-5-1		Built-in N.O. or N.C. auxiliary contacts and additional N.O. or N.C. auxiliary contacts (H04N-F, H04N-L aux. contact blocks) are mechanically linked contacts.		
Mirror contacts acc. to annex F of IEC 60947-4-1		Built-in N.C. auxiliary contacts or additional N.C. auxiliary contacts (H04N-F, H04N-L aux. contact blocks) are mirror contacts.		

Built-in auxiliary contacts according to UL / CSA

Contactor types	LS04N	LS05N	LS07N
Max. operational voltage	600 V AC, 600 V DC		
Pilot duty	A600, Q600		
AC thermal rated current	10 A		
AC maximum volt-ampere making	7200 VA		
AC maximum volt-ampere breaking	720 VA		
DC thermal rated current	2.5 A		
DC maximum volt-ampere making-breaking	69 VA		

AEG

LS55N ... LS200N 3-pole contactors

Technical data

Side mounted auxiliary contact block - utilization characteristics according to IEC

Types		LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Standards		IEC/EN 60947-5-1						
Rated insulation voltage Ui								
acc. to IEC 60947-5-1		690 V						
Rated operational voltage Ue max.		24...690 V AC						
Conventional thermal current Ith - θ ≤ 40 °C		16 A						
Ie / Rated operational current AC-15								
acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A						
	220-240 V 50/60 Hz	4 A						
	380-440 V 50/60 Hz	3 A						
	500-690 V 50/60 Hz	2 A						
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1						
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1						
Ie / Rated operational current DC-13								
acc. to IEC 60947-5-1	24 V DC	6 A / 144 W				3 A / 72 W		
	48 V DC	2.8 A / 134 W				1.5 A / 72 W		
	72 V DC	1 A / 72 W				1 A / 72 W		
	110 V DC	0.55 A / 60 W				0.55 A / 60 W		
	125 V DC	0.55 A / 69 W				0.55 A / 69 W		
	220 V DC	0.3 A / 66 W				0.3 A / 69 W		
	250 V DC	0.3 A / 75 W				0.3 A / 75 W		
Short-circuit protection device gG type fuse		10 A						
Rated short-time withstand current Icw	for 1.0 s	100 A						
θ = 40 °C	for 0.1 s	140 A						
Minimum switching capacity		24 V / 50 mA (0.5 million of operating cycles)				24 V / 50 mA		
with failure rate acc. to IEC 60947-5-4		≤ 10^{-6}				≤ 10^{-6}		
Power dissipation per pole at 6 A		0.15 W						
Mechanical durability								
Number of operating cycles		5 millions						
Max. switching frequency		3600 cycles/h				300 cycles/h		
Max. electrical switching frequency	AC-15	1200 cycles/h				300 cycles/h		
	DC-13	900 cycles/h				300 cycles/h		
Mechanically linked contacts								
acc. to annex L of IEC 60947-5-1		Built-in or additional N.O. and N.C. auxiliary contacts (H06N-L, H07N-L aux. contact blocks) are mechanically linked contacts.						
Mirror contacts								
acc. to annex F of IEC 60947-4-1		Built-in or additional N.C. auxiliary contacts (H06N-L, H07N-L aux. contact blocks) are mirror contacts.						

Contact utilization characteristics according to UL / CSA

Types	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Max. operational voltage	600 V AC, 250 V DC						
Pilot duty	A600, Q300						
AC thermal rated current	10 A						

3-pole contactors

Electrical durability and utilization categories

General

Utilization categories determine the current making and breaking conditions relating to the characteristics of the loads to be controlled by the contactors. International standard IEC 60947-4-1 and European standard EN 60947-4-1 are the standards to be referred to.
If Ic is the current to be broken by the contactor and Ie the rated operational current normally drawn by the load, then:

- Categories AC-1 and AC-3: .....Ic = Ie
- Category AC-2: .....Ic = 2.5 x Ie
- Category AC-4: .....Ic = 6 x Ie

Generally speaking Ic = m x Ie where m is a multiple of the load operational current.
On next pages, the curves corresponding to categories AC-1, AC-3 and AC-4 represent the electrical durability variation of standard contactors in relation to the breaking current Ic.
Electrical durability is expressed in millions of operating cycles.

Curve utilization mode

Electrical durability forecast and contactor selection for categories AC-1, AC-2, AC-3 or AC-4

- Note the characteristics of the load to be controlled:
  - Operational voltage .....Ue
  - Current normally drawn .....Ie (Ue / Ie / kW relation for motors, see "Motor rated operational powers and currents").
  - Utilization category .....AC-1, AC-2, AC-3 or AC-4
  - Breaking current .....Ic = Ie for AC-1 and for AC-3 ; Ic = 2.5 x Ie for AC-2 ; Ic = 6 x Ie for AC-4
- Define the number of operating cycles N required.
- On the diagram corresponding to the operational category, select the contactor with the curve immediately above the intersection point (Ic ; N).

Electrical durability forecast and contactor selection for mixed duty motor control: AC-3 (Ic = Ie) type switching off while "motor running" and, occasionally, AC-4 (Ic = 6 x Ie) type switching off while "motor accelerating"

- Note the characteristics of the motor to be controlled:
  - Operational voltage .....Ue
  - Current normally drawn while "motor running" .....Ie (Ue / Ie / kW relation for motors, see "Motor rated operational powers and currents")
  - Breaking current for AC-3 .....Ic = Ie
  - Breaking current for AC-4 while "motor accelerating".....Ic = 6 x Ie
  - Percentage of AC-4 operating cycles .....K (on the basis of the total number of operating cycles)
- Define the total number of operating cycles N required.
- Note the smallest contactor rating compatible for AC-3 (Ue / Ie) on Main pole utilization characteristic table (see “Technical data”).
- For the selected contactor make a note of the following in relation to the voltage using diagram AC-3 in next pages:
  - The number of operating cycles A for Ic = Ie (AC-3)
  - The number of operating cycles B for Ic = 6 x Ie (AC-4)
- Calculate the estimated number of cycles N’ (N’ is always below A)

$$N' = \frac{A}{1 + 0.01\,K\,(A/B - 1)}$$

- If N' is too low in relation to the target N, calculate the estimated number of cycles for a higher contactor rating.

Case of uninterrupted duty

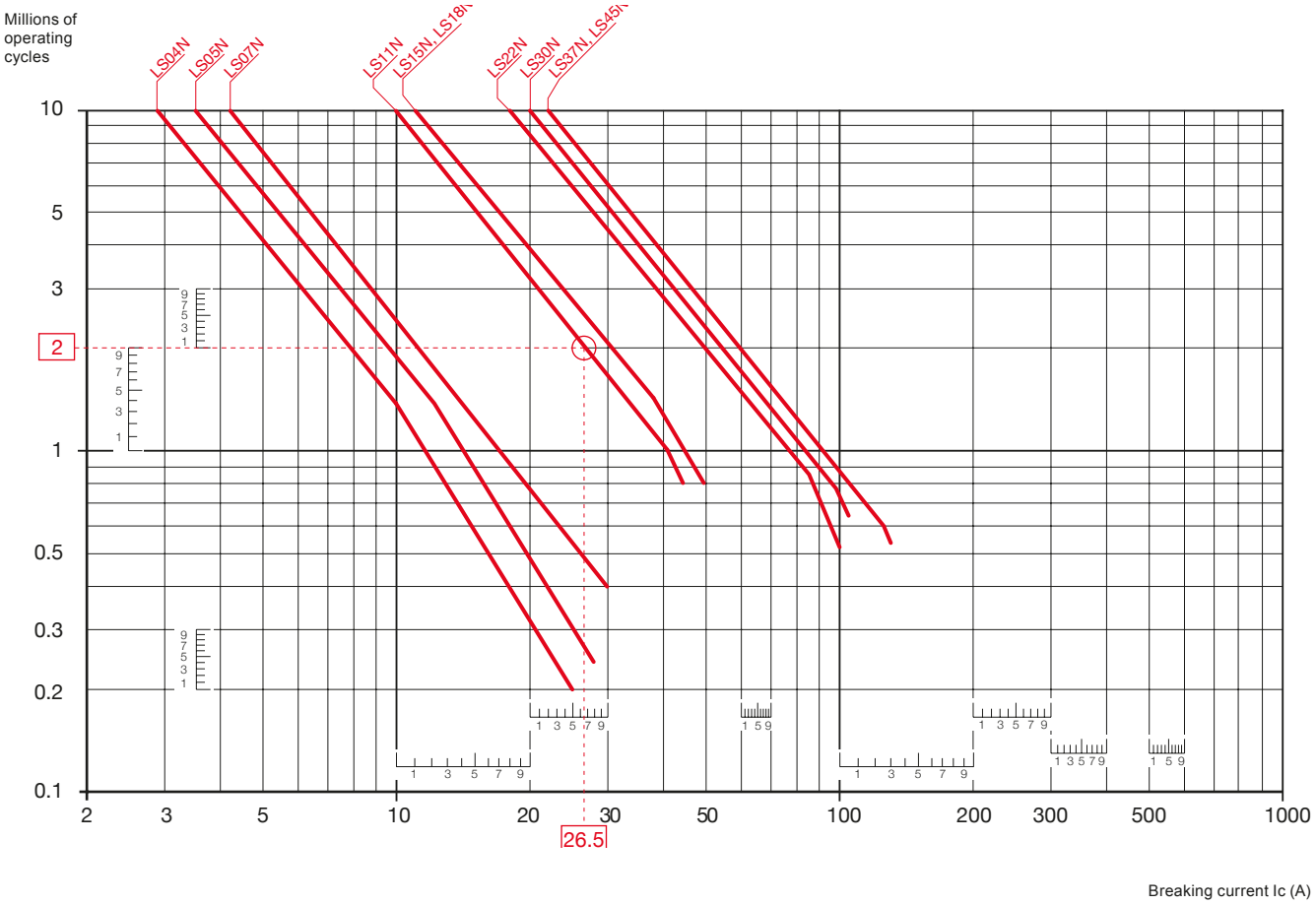
For uninterrupted duty, some verifications of preventing maintenance are necessary to check the functionality of the concerned product (consult us).
The combined effect of environmental conditions and the proper temperature of the product may require some disposals.
As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

AEG

3-pole contactors

Electrical durability for AC-1 utilization category - Ue ≤ 690 V

Switching non-inductive or slightly inductive loads. The breaking current Ic for AC-1 is equal to the rated operational current of the load.
Ambient temperature and maximum electrical switching frequency: see "Technical data".



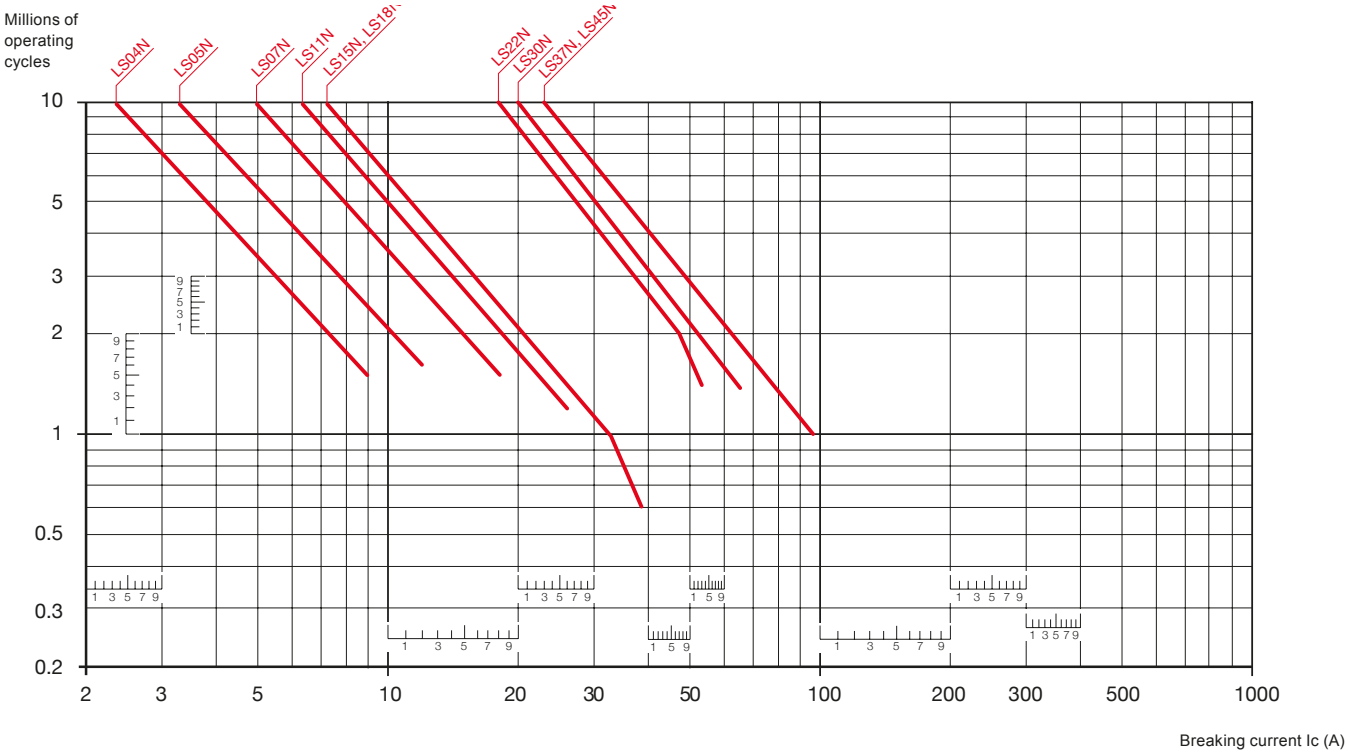
Example:
Ic / AC-1 = 26.5 A – Electrical durability required = 2 millions operating cycles.
Using the AC-1 curves above select the LS11N contactor at intersection "○" (26.5 A / 2 millions operating cycles).

3-pole contactors

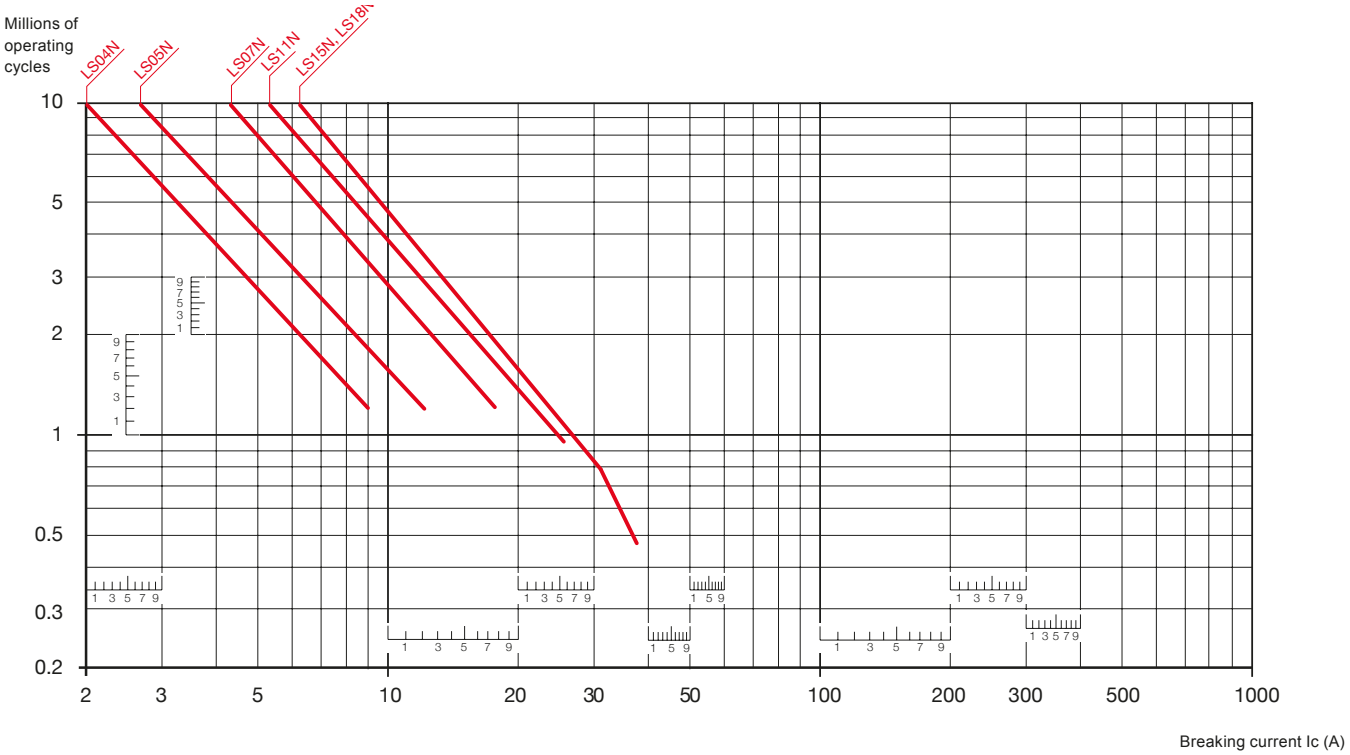
Electrical durability for AC-3 utilization category - Ue ≤ 440 V

Switching cage motors: starting and switching off running motors. The breaking current Ic for AC-3 is equal to the rated operational current Ie (Ie = motor full load current).
Ambient temperature and maximum electrical switching frequency: see "Technical data".

LS04N ...LS75N AC / DC operated (coil voltage codes ED, EN, EU)



LS04N ...LS18N AC operated (coil voltage codes AD, AJ, AN)



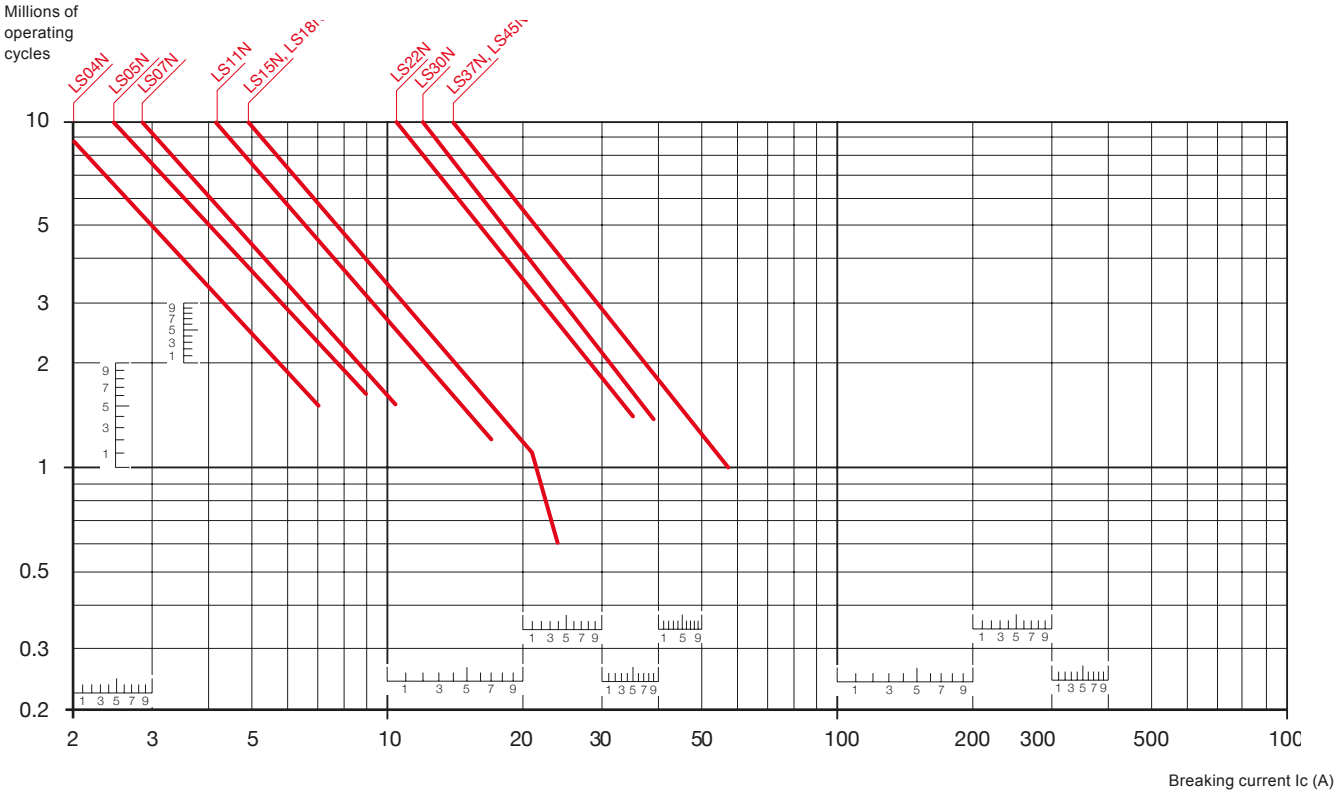
AEG

3-pole contactors

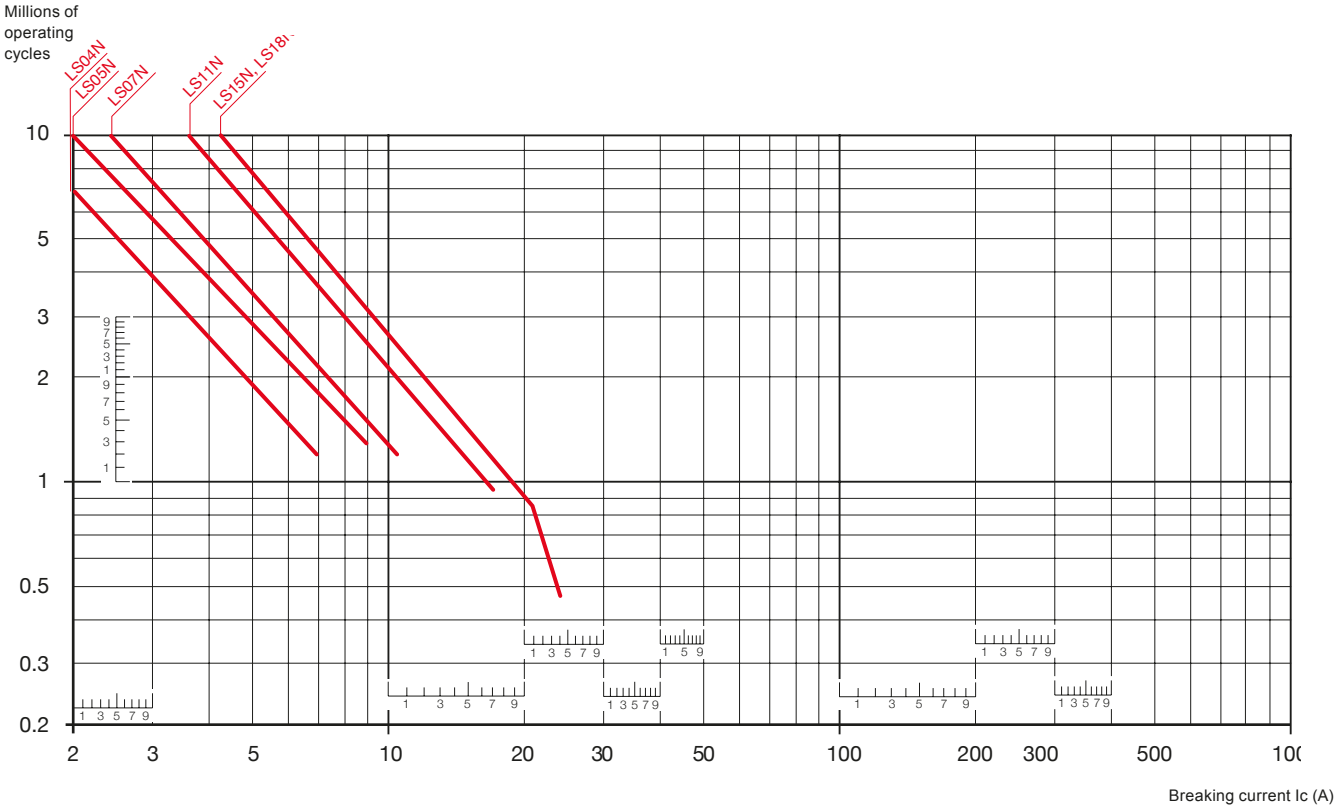
Electrical durability for AC-3 utilization category - 440 V < Ue ≤ 690 V

Switching cage motors: starting and switching off running motors. The breaking current Ic for AC-3 is equal to the rated operational current Ie (Ie = motor full load current).
Ambient temperature and maximum electrical switching frequency: see "Technical data".

LS04N ...LS75N AC / DC operated (coil voltage codes ED, EN, EU)



LS04N ...LS18N AC operated (coil voltage codes AD, AJ, AN)

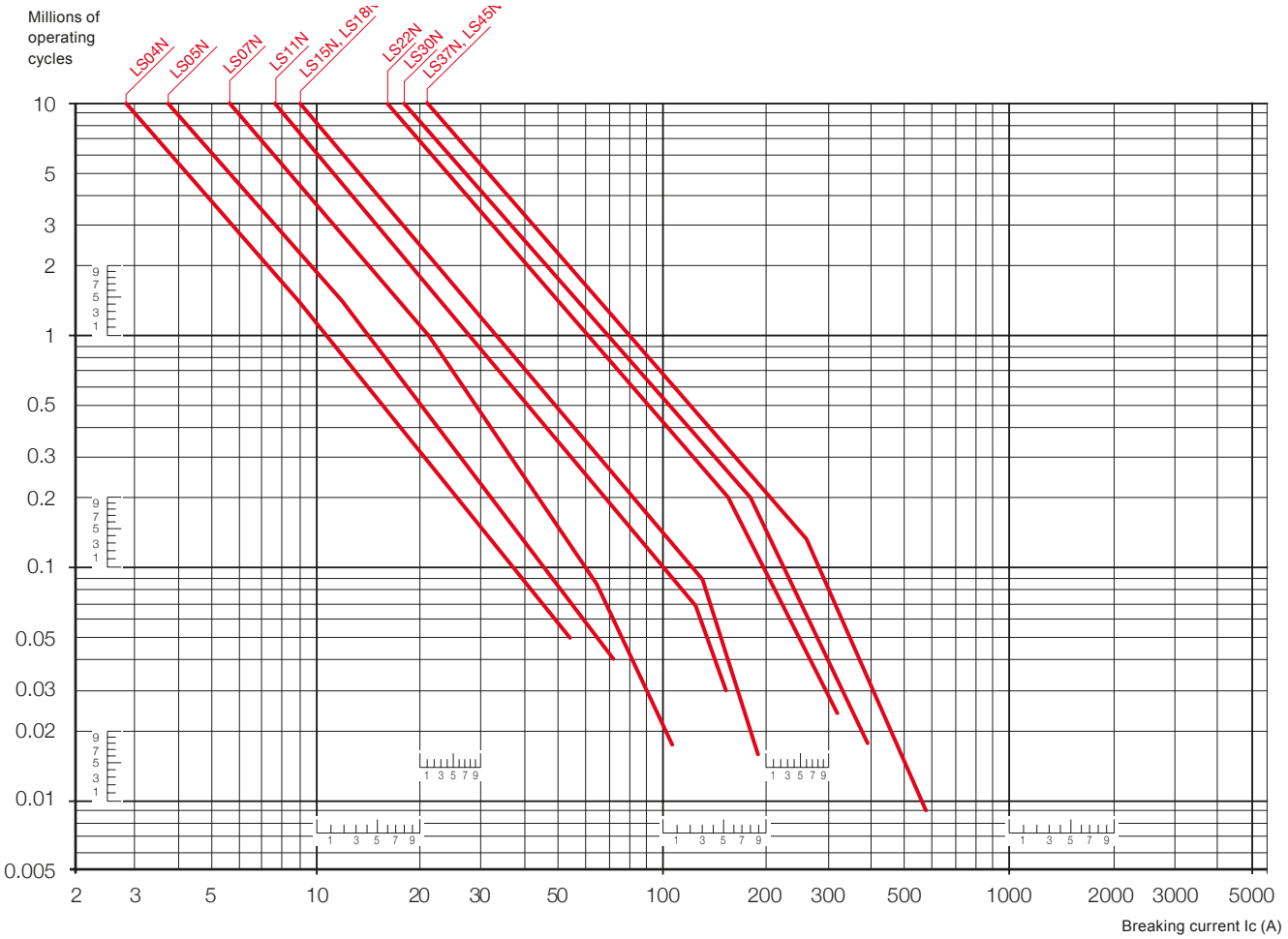


3-pole contactors

Electrical durability for AC-2 or AC-4 utilization category - Ue ≤ 440 V

Ambient temperature ≤ 60 °C for LS04N ... LS45N
Switching cage motors: starting, reverse operation and step-by-step operation. The breaking current Ic is equal to 2.5 x Ie for AC-2 and 6 x Ie for AC-4, keeping in mind that Ie is the motor rated operational current (Ie = motor full-load current).

Maximum electrical switching frequency: see "Technical data".

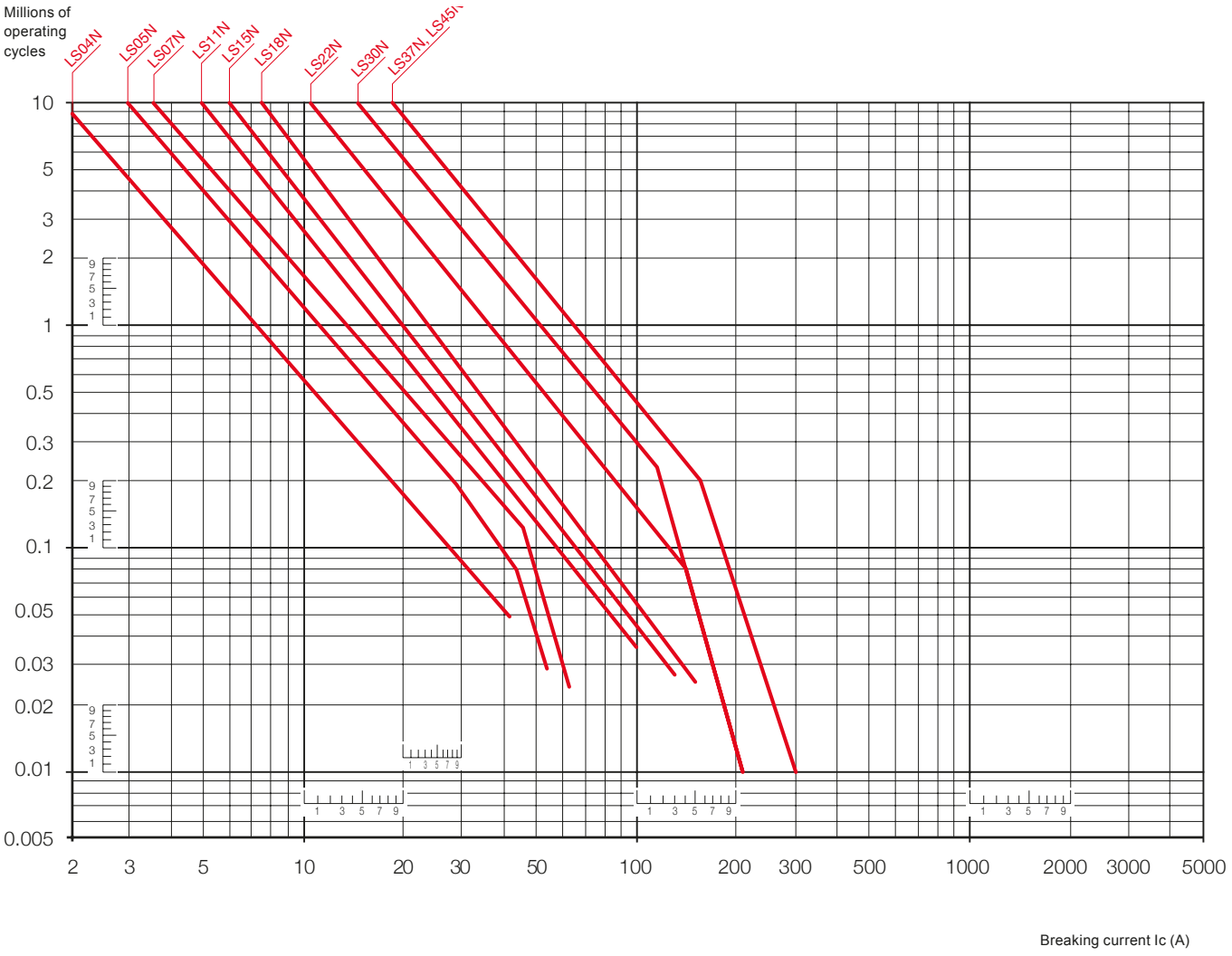


AEG

3-pole contactors

Electrical durability for AC-2 or AC-4 utilization category - 440 V < Ue ≤ 690 V

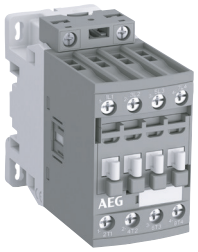
Ambient temperature ≤ 60 °C for LS04N ... LS45N
Switching cage motors: starting, reverse operation and step-by-step operation. The breaking current Ic is equal to 2.5 x Ie for AC-2 and 6 x Ie for AC-4, keaping in mind tha Ie is the motor rated operational current (Ie = motor full load current). Maximum electrical switching frequency: see "Technical data".



LS04N ... LS37N 4-pole contactors

25 to 125 A AC-1 - AC / DC operated

LS04N-40-00



LS18N-40-00

LS22N-40-00

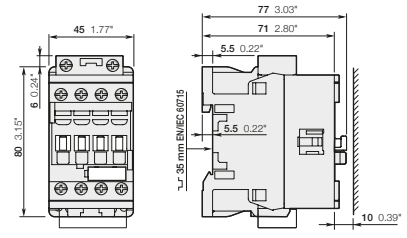
LS37N-40-00

LS04N ... LS37N 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 440 V DC. These contactors are of the block type design with 4 main poles.

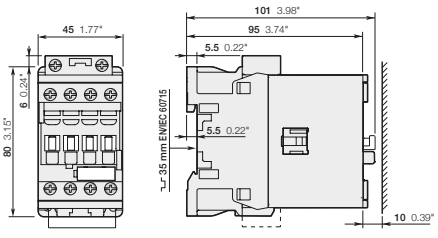
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 2 control voltage ranges covering 24...250 V 50/60 Hz and 20...250 V DC
  - can manage large control voltage variations
  - reduced panel energy consumption
  - very distinct closing and opening.
- built-in surge suppression
- can be easily extended with a common range of front or side-mounted accessories.

IEC	UL/CSA	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC						Pkg (1 pce)
A	A	V 50/60 Hz	V DC				kg
4 N.O. main poles							
25	25	24...60	20...60 (1)	0 0	LS04N-40-00-ED	4TQD411336R0000	0.270
		100...250	100...250	0 0	LS04N-40-00-EN	4TQD411346R0000	0.270
30	30	24...60	20...60 (1)	0 0	LS07N-40-00-ED	4TQD411736R0000	0.270
		100...250	100...250	0 0	LS07N-40-00-EN	4TQD411746R0000	0.270
55	55	24...60	20...60 (1)	0 0	LS18N-40-00-ED	4TQD412936R0000	0.360
		100...250	100...250	0 0	LS18N-40-00-EN	4TQD412946R0000	0.360
100	80	24...60	20...60 (1)	0 0	LS22N-40-00-ED	4TQD413636R0000	1.210
		100...250	100...250	0 0	LS22N-40-00-EN	4TQD413646R0000	1.160
125	105	24...60	20...60	0 0	LS37N-40-00-ED	4TQD413936R0000	1.490
		100...250	100...250	0 0	LS37N-40-00-EN	4TQD413946R0000	1.440
2 N.O. + 2 N.C. main poles							
25	25	100...250	100...250	0 0	LS04N-22-00-EN	4TQD411347R0000	0.270
30	30	24...60	20...60 (1)	0 0	LS07N-22-00-ED	4TQD411737R0000	0.270
		100...250	100...250	0 0	LS07N-22-00-EN	4TQD411747R0000	0.270
55	55	24...60	20...60 (1)	0 0	LS18N-22-00-ED	4TQD412937R0000	0.360
		100...250	100...250	0 0	LS18N-22-00-EN	4TQD412947R0000	0.360
125	105	100...250	100...250	0 0	LS37N-22-00-EN	4TQD413947R0000	1.440

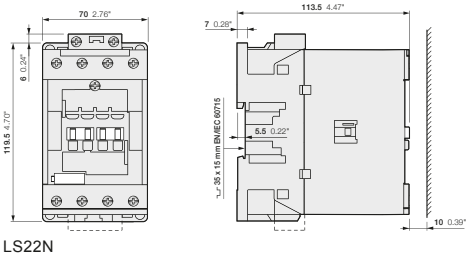
(1) LS..N-40-00-ED and LS..N..-22-00-ED not suitable for direct control by PLC-output.



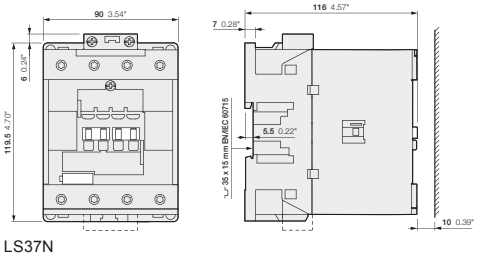
LS04N, LS07N



LS18N



LS22N



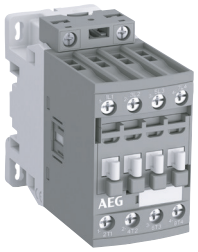
LS37N

Main dimensions mm, inches

LS04N ... LS18N 4-pole contactors

25 to 55 A AC-1 - AC operated

LS04N-40-00

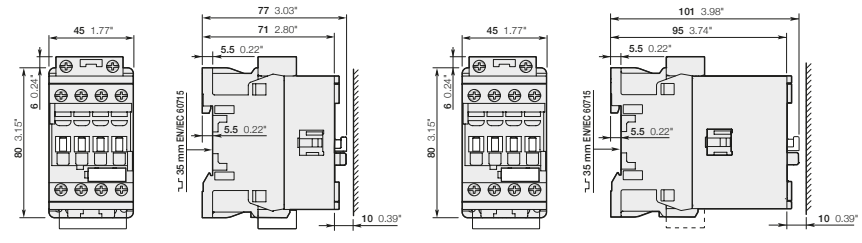


LS18N-40-00

LS04N ... LS18N 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 440 V DC. These contactors are of the block type design with 4 main poles.

- control circuit: AC operated with laminated magnet circuit, with 2 control voltage ranges covering main network application
- optimized operating time for AC control applications
- can be easily extended with a common range of front or side-mounted accessories.

IEC	UL/CSA	Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC						Pkg (1 pce)
A	A	V 50 Hz	V 60 Hz				kg
4 N.O. main poles							
25	25	24	24	0 0	LS04N-40-00-AD	4TQD421306R0000	0.309
		220...230	230...240	0 0	LS04N-40-00-AN	4TQD421326R0000	0.298
30	30	24	24	0 0	LS07N-40-00-AD	4TQD421706R0000	0.309
		220...230	230...240	0 0	LS07N-40-00-AN	4TQD421726R0000	0.298
55	55	24	24	0 0	LS18N-40-00-AD	4TQD422906R0000	0.402
		220...230	230...240	0 0	LS18N-40-00-AN	4TQD422926R0000	0.393



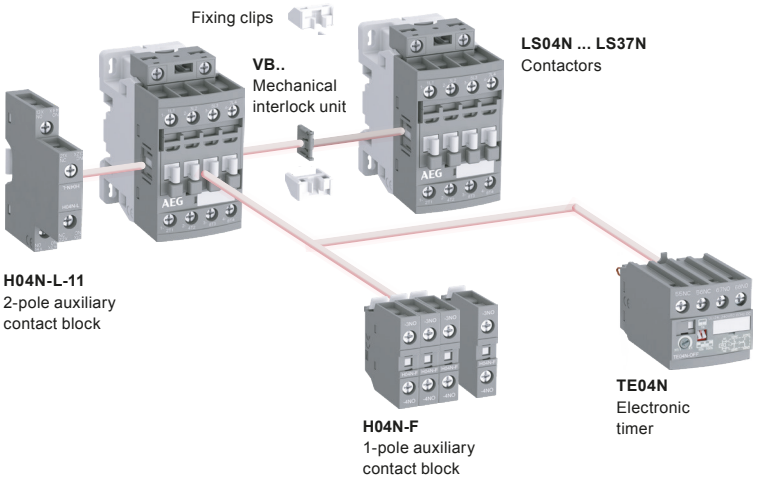
LS04N, LS07N

LS18N

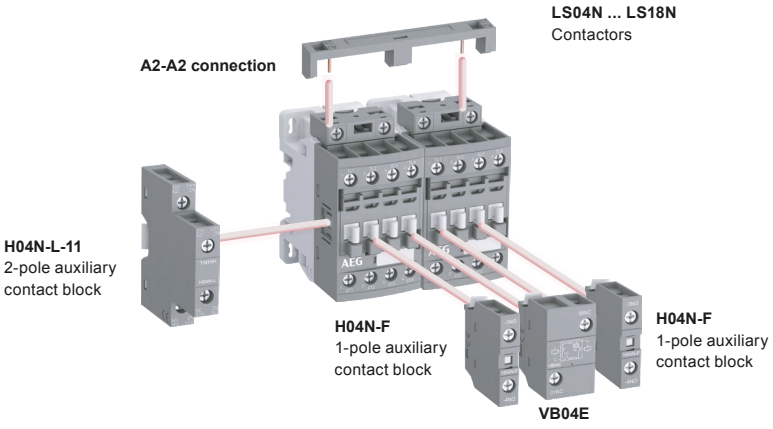
Main dimensions mm, inches

LS04N ... LS37N 4-pole contactors

Contactors and main accessories



VB04NE mechanical and electrical interlock set including:
- VB04N mechanical interlock unit with 2 fixing clips
- VB04E electrical inlerlock block with A2-A2 connection



Main accessory fitting details - for ordering details, technical data and other accessories: see section accessories

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories Auxiliary contact blocks 1-pole H04N-F	Electronic timer TE04N	Electrical and mechanical interlock set (between 2 contactors) VB04NE	Side-mounted accessories Auxiliary contact blocks 2-pole HF04N-L-11 Left side	Right side
LS04N ... LS18N							
LS04N, LS07N	4 0	0 0 (1)	4 max.	**or** 1	–	+ 1	–
LS18N	4 0	0 0 (2)	2 max.	**or** 1	–	+ 1	+ 1
			3 max.	–	+ 1 (4)	+ 1	or 1
LS04N ... LS18N	2 2	0 0 (2)	4 max.	**or** 1	–	+ 1	–
			2 max.	**or** 1	–	+ 1	+ 1
LS22N, LS37N							
LS22N	4 0	0 0	4 max.	**or** 1	–	+ 1	+ 1
LS37N	4 0	0 0	4 max.	**or** 1	–	+ 1	+ 1
LS37N	2 2	0 0 (3)	4 max.	**or** 1	–	+ 1	+ 1

(1) Including add-on contacts: 4 N.C. auxiliary contacts max. on positions 1, 2, 3, 4 and 3 N.C. auxiliary contacts max. on positions 1 ±30°, 5.
(2) Including add-on contacts: 3 N.C. auxiliary contacts max. on positions 1, 2, 3, 4 and 2 N.C. auxiliary contacts max. on positions 1 ±30°, 5.
(3) Including add-on contacts: 2 N.C. auxiliary contacts max. on positions 1, 1 ±30°, 2, 3, 4, 5.
(4) VB04NE or VB04N not suitable for 2 contactors using different coil type: AC operated coil voltage code A.. and AC / DC operated coil voltage code E...

LS55N, LS75N 4-pole contactors

160 to 200 A AC-1 - AC / DC operated

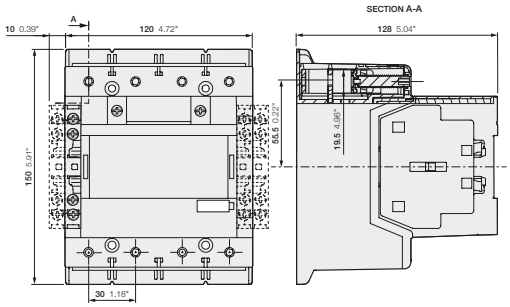
LS75N-40-11

LS55N and LS75N 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 350 V DC. These contactors are of the block type design with 4 main poles.

- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 coils to cover control voltages between 24...500 V 50/60 Hz and 20...500 V DC
  - can manage large control voltage variations
  - reduced panel energy consumption
  - very distinct closing and opening
  - can withstand short voltage dips and voltage sags (SEMI F47 conditions of use on request).
- built-in surge suppression
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

IEC	UL / CSA	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC						Pkg (1 pce)
A	A	V 50/60 Hz	V DC				kg
4 N.O. main poles							
For connection with built-in cable clamps							
160	160	24...60	20...60	1 1	LS55N-40-11-ED	4TQD414238R0000	2.270
		100...250	100...250	1 1	LS55N-40-11-EN	4TQD414248R0000	2.270
200	175	24...60	20...60	1 1	LS75N-40-11-ED	4TQD414438R0000	2.270
		100...250	100...250	1 1	LS75N-40-11-EN	4TQD414448R0000	2.270

Note: for use with bar connections, remove the built-in cable clamps from the main pole terminals and select the CSK75N4 connection socket kit.

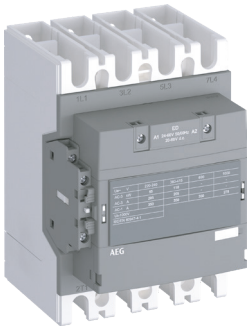


LS55N, LS75N-40-11

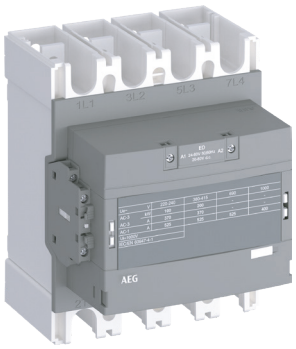
Main dimensions mm, inches

LS90N … LS200N 4-pole contactors

275 to 525 A AC-1 - AC / DC operated



LS110N-40-11

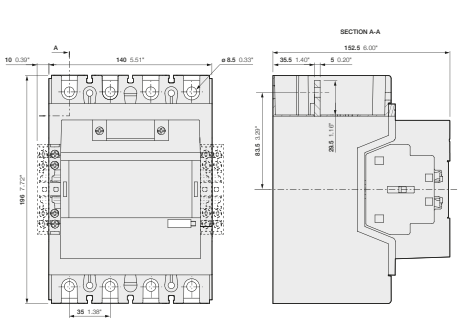


LS200N-40-11

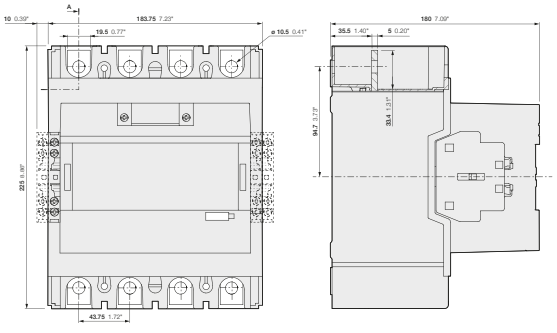
LS90N ... LS200N 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 1000 V AC and 440 V DC. These contactors are of the block type design with 4 main poles.

- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 coils to cover control voltages between 24...500 V 50/60 Hz and 20...500 V DC
  - can manage large control voltage variations
  - reduced panel energy consumption
  - very distinct closing and opening
  - can withstand short voltage dips and voltage sags (SEMI F47 conditions of use on request).
- built-in surge suppression
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

IEC Rated operational current θ ≤ 40 °C AC-1	UL / CSA General use rating 600 V AC	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce)
A	A	V 50/60 Hz	V DC				kg
4 N.O. main poles							
275	230	24...60	20...60	1 1	LS90N-40-11-ED	4TQD414838R0000	3.920
		100...250	100...250	1 1	LS90N-40-11-EN	4TQD414848R0000	3.920
350	250	24...60	20...60	1 1	LS110N-40-11-ED	4TQD415238R0000	3.920
		100...250	100...250	1 1	LS110N-40-11-EN	4TQD415248R0000	3.920
400	300	24...60	20...60	1 1	LS132N-40-11-ED	4TQD415438R0000	6.380
		100...250	100...250	1 1	LS132N-40-11-EN	4TQD415448R0000	6.380
500	350	24...60	20...60	1 1	LS160N-40-11-ED	4TQD415838R0000	6.380
		100...250	100...250	1 1	LS160N-40-11-EN	4TQD415848R0000	6.380
525	420	24...60	20...60	1 1	LS200N-40-11-ED	4TQD416038R0000	6.380
		100...250	100...250	1 1	LS200N-40-11-EN	4TQD416048R0000	6.380



LS90N, LS110N

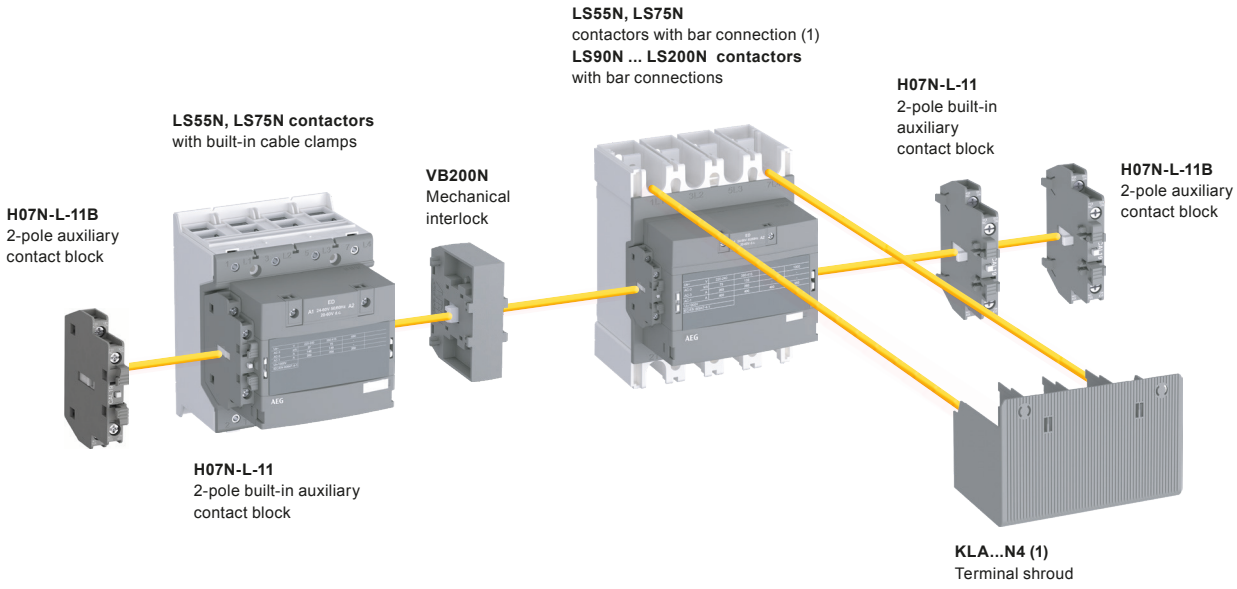


LS132N, LS160N, LS200N

Main dimensions mm, inches

LS55N ... LS200N 4-pole contactors

Contactors and main accessories



(1) dismount the built-in cable clamps and use CSK75N4 connection socket kit for use of LS55N, LS75N with bar connection and KLA75N4 terminal shrouds.

Main accessory fitting details - for ordering details, technical data and other accessories: see section accessories

Contactor types	Main poles	Available auxiliary contacts	Side-mounted accessories Auxiliary contact blocks		
			H07N-L-11	**H07N-L-11**	Mechanical interlock units (between two contactors)
LS55N ... LS200N	4 0	1 1	1 x H07N-L-11	+ 2 x H07N-L-11B	–
LS55N ... LS200N	4 0	1 1	–	+ 2 x H07N-L-11B (1)	+ VB200N

(1) Total number of auxiliary contact blocks for the two contactors.

LS280N, LS375N 4-pole contactors

800 to 1000 A AC-1 - AC operated

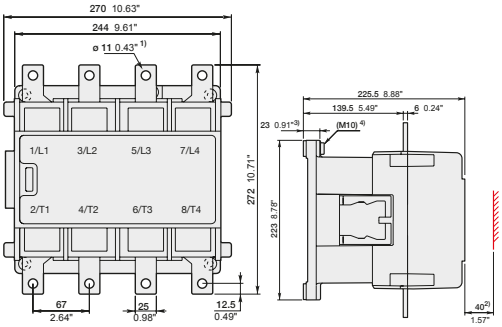
LS375N-40-11

LS280N and LS375N 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 1000 V AC and 600 V DC for LS280N.

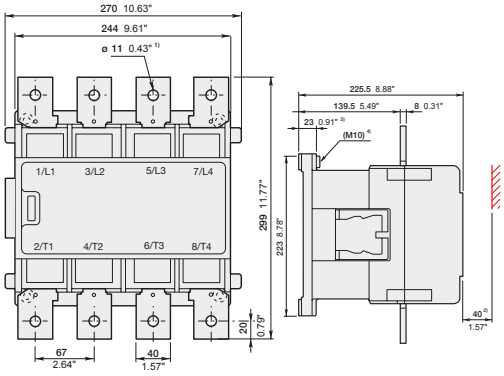
These contactors are of the block type design with:

- 4 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

IEC Rated operational current θ ≤ 40 °C AC-1 A	UL/CSA General use rating 600 V AC A	Rated control circuit voltage Uc V 50 Hz	 V 60 Hz	Auxiliary contacts fitted 	Type	Order code	Weight Pkg (1 pce) kg
800	-	220…230	240	1 1	LS280N-40-11-AN	4TQD446128R0000	17.200
1000	-	220…230	240	1 1	LS375N-40-11-AN	4TQD446328R0000	17.500



LS280N



LS375N

1) Screw, nut and washer by-packed.
2) Min. distance to uninsulated wall.
3) Damping elements are included.
4) Earthing screw.

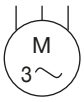
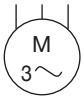
Main dimensions mm, inches

AEG

LS04N ... LS37N 4-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types			LS04N	LS07N	LS18N	LS22N	LS37N
Standards			IEC/EN 60947-1, IEC/EN 60947-4-1				
Rated operational voltage Ue max.			690 V				1000 V
Rated frequency (without derating)			50 / 60 Hz				
Conventional free-air thermal current Ith							
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C			35 A	35 A	55 A	105 A	125 A
With conductor cross-sectional area			6 mm²	6 mm²	16 mm²	35 mm²	50 mm²
AC-1 Utilization category							
For air temperature close to contactor							
Ie / Rated operational current AC-1		θ ≤ 40 °C	25 A	30 A	55 A	100 A	125 A
Ue max. ≤ 690 V, 50/60 Hz		θ ≤ 60 °C	25 A	30 A	45 A	80 A	105 A
		θ ≤ 70 °C	22 A	26 A	37 A	70 A	90 A
With conductor cross-sectional area			4 mm²	6 mm²	16 mm²	35 mm²	50 mm²
AC-3 Utilization category							
For air temperature close to contactor θ ≤ 60 °C							
Ie / Max. rated operational current AC-3 (1)							
 3-phase motors		220-230-240 V	9 A	18 A	23.2 A	53 A	80 A
		380-400 V	9 A	18 A	22 A	53 A	80 A
		415 V	9 A	18 A	21.2 A	53 A	80 A
		440 V	9 A	18 A	20 A	53 A	80 A
		500 V	9.5 A	15 A	17.6 A	45 A	65 A
		690 V	7 A	10.5 A	10.5 A	35 A	49 A
		1000 V					25 A
Rated operational power AC-3 (1)							
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors		220-230-240 V	2.2 kW	4 kW	5.5 kW	15 kW	22 kW
		380-400 V	4 kW	7.5 kW	11 kW (2)	22 kW	37 kW
		415 V	4 kW	9 kW	11 kW	30 kW	45 kW
		440 V	4 kW	9 kW	11 kW	30 kW	45 kW
		500 V	5.5 kW	9 kW	11 kW	30 kW	45 kW
		690 V	5.5 kW	9 kW	9 kW	30 kW	45 kW
		1000 V					35 kW
Rated making capacity AC-3			10 x Ie AC-3 acc. to IEC 60947-4-1				
Rated breaking capacity AC-3			8 x Ie AC-3 acc. to IEC 60947-4-1				
Short-circuit protection device for contactors							
Without thermal overload relay - Motor protection excluded							
Ue ≤ 500 V AC - gG type fuse			25 A	32 A	63 A	110 A	160 A
Rated short-time withstand current Icw		1 s	300 A	300 A	450 A	1000 A	1200 A
at 40 °C ambient temperature,		10 s	150 A	150 A	300 A	600 A	780 A
in free air from a cold state		30 s	80 A	80 A	225 A	350 A	450 A
		1 min	60 A	60 A	150 A	250 A	300 A
		15 min	35 A	35 A	55 A	110 A	140 A
Maximum breaking capacity	N.O. main pole	at 440 V	250 A	250 A	-	950 A	1100 A
cos φ = 0.45		at 690 V	106 A	106 A	-	600 A	750 A
	N.C. Main pole	at 440 V	-	-	-	-	900 A
		at 690 V	-	-	-	-	750 A
Power dissipation per pole		Ie / AC-1	0.8 W	1.2 W	2.3 W	6.3 W	8 W
		Ie / AC-3	0.1 W	0.35 W	0.42 W	1.7 W	3.2 W
Max. electrical switching frequency		AC-1	600 cycles/h				

(1) For the corresponding kW/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor Rated Operational Powers and Currents"
(2) 400 V 3-phase motors only.

AEG

LS55N ... LS375N 4-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N	LS280N	LS375N
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1								
Rated operational voltage Ue max.		690 V		1000 V						
Rated frequency (without derating)		50 / 60 Hz								
Conventional free-air thermal current Ith										
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		160 A	200 A	275 A	350 A	400 A	500 A	525 A	800 A	1000 A
With conductor cross-sectional area		70 mm²	95 mm²	150 mm²	240 mm² (3)	240 mm²	300 mm² (4)	2x 185 mm² (4)	2x 240 mm²	2x 300 mm²
AC-1 Utilization category										
For air temperature close to contactor										
Ie / Rated operational current AC-1	θ ≤ 40 °C	160 A	200 A	275 A	350 A	400 A	500 A	525 A	800 A	1000 A
Ue max. ≤ 690 V, 50/60 Hz	θ ≤ 60 °C	145 A	175 A	250 A	300 A	350 A	400 A	425 A	650 A	800 A
	θ ≤ 70 °C	130 A	160 A	200 A	240 A	290 A	325 A	350 A	575 A	720 A
Ue max. ≤ 1000 V, 50/60 Hz	θ ≤ 40 °C	-	-	250 A	275 A	350 A	375 A	400 A	800 A	1000 A
	θ ≤ 60 °C (2)	-	-	225 A	250 A	300 A	325 A	350 A	650 A	800 A
	θ ≤ 70 °C	-	-	185 A	200 A	240 A	260 A	290 A	575 A	720 A
With conductor cross-sectional area		70 mm²	95 mm²	150 mm²	240 mm² (3)	240 mm²	300 mm² (4)	2x 185 mm² (4)	2x 240 mm²	2x 300 mm²
AC-3 Utilization category										
For air temperature close to contactor θ ≤ 60 °C (2)										
Ie / Max. rated operational current AC-3 (1)										
3-phase motors	220-230-240 V	116 A	140 A	190 A	205 A	265 A	305 A	370 A	550 A	-
	380-400 V	116 A	140 A	190 A	205 A	265 A	305 A	370 A	550 A	-
	415 V	116 A	140 A	190 A	205 A	265 A	305 A	370 A	550 A	-
	440 V	116 A	140 A	190 A	205 A	265 A	305 A	370 A	550 A	-
	500 V	-	-	-	-	-	-	-	550 A	-
	690 V	-	-	-	-	-	-	-	550 A	-
	1000 V	-	-	-	-	-	-	-	175 A	-
Rated operational power AC-3 (1)										
1500 r.p.m. 50 Hz	220-230-240 V	30 kW	37 kW	55 kW	55 kW	75 kW	90 kW	110 kW	160 kW	-
1800 r.p.m. 60 Hz	380-400 V	55 kW	75 kW	90 kW	110 kW	132 kW	160 kW	200 kW	280 kW	-
3-phase motors	415 V	55 kW	75 kW	90 kW	110 kW	132 kW	160 kW	200 kW	315 kW	-
	440 V	75 kW	90 kW	110 kW	132 kW	160 kW	160 kW	200 kW	315 kW	-
	500 V	-	-	-	-	-	-	-	400 kW	-
	690 V	-	-	-	-	-	-	-	500 kW	-
	1000 V	-	-	-	-	-	-	-	250 kW	-
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1								
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1								
Short-circuit protection device for contactors										
Without thermal overload relay - Motor protection excluded										
Ue ≤ 500 V AC - gG type fuse		200 A	250 A	355 A	400 A	630 A	630 A	630 A	800 A	1000 A
Rated short-time withstand current Icw	1 s	1300 A	1460 A	1900 A	2050 A	2650 A	3050 A	3700 A	5500 A	6800 A
at 40 °C ambient temperature,	10 s	928 A	1168 A	1520 A	1640 A	2120 A	2440 A	2960 A	5300 A	6400 A
in free air from a cold state	30 s	536 A	674 A	878 A	947 A	1224 A	1409 A	1709 A	3700 A	4400 A
	1 min	379 A	477 A	621 A	670 A	865 A	996 A	1208 A	3000 A	3400 A
	15 min	160 A	200 A	275 A	350 A	400 A	500 A	525 A	1000 A	1200 A
Maximum breaking capacity	at 440 V	2000 A	3000 A	3300 A	3500 A	3800 A	4600 A	5000 A	5400 A	-
cos φ = 0.45	at 690 V	-	-	-	-	-	-	-	5400 A	-
Power dissipation per pole	Ie / AC-1	12 W	18 W	15 W	25 W	32 W	50 W	72 W	60 W	80 W
	Ie / AC-3	-	-	-	-	-	-	-	25 W	-
Max. electrical switching frequency	AC-1	300 cycles/h								
	AC-3	300 cycles/h								-
	AC-2, AC4	-							120 cycles/h	-

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".
(2) θ ≤ 55 °C for LS280N, LS375N
(3) For currents above 275 A use terminal enlargements or terminal extensions.
(4) For currents above 450 A use terminal enlargements or terminal extensions.

AEG

LS04N ... LS37N 4-pole contactors

Technical data

Main pole - Utilization characteristics according to UL/CSA

Contactor types		LS04N	LS07N	LS18N	LS22N	LS37N
Standards		UL 508 CSA C22.2 No. 60947-1-13 CSA C22.2 No. 60947-4-1			UL 60947-1, UL 60947-4-1 CSA C22.2 No. 60947-1:22 CSA C22.2 No. 60947-4-1:22	
Max. operational voltage		600 V				
UL / CSA general use rating						
	600 V AC	25 A	30 A	55 A	80 A	105 A
With conductor cross-sectional area		AWG 10	AWG 10	AWG 6	AWG 4	AWG 2
1 pole	80 V DC	25 A (1)	30 A (1)	55 A	80 A	105 A
2 poles in serie	160 V DC	25 A (1)	30 A (1)	55 A	80 A	105 A
3 poles in serie	240 V DC	25 A	30 A	55 A	80 A	105 A
4 poles in serie	320 V DC	25 A	30 A	55 A	80 A	105 A
With conductor cross-sectional area		AWG 10	AWG 10	AWG 8	AWG 4	AWG 2
Max. electrical switching frequency						
For general use		600 cycles/h				

Note: 4-pole contactors fitted with 2 N.O. + 2 N.C. main poles, see "General technical data".
(1) 20 A for LS04N-22-00 and LS07N-22-00.

LS55N ... LS375N 4-pole contactors
Technical data

Main pole - Utilization characteristics according to UL/CSA

Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N	LS280N	LS375N
Standards		UL60947-1, UL60947-4-1, CSA C22.2 No. 60947-1, CSA C22.2 No. 60947-4-1							-	
Max. operational voltage		600 V							-	
UL / CSA general use rating										
600 V AC		160 A	175 A	230 A	250 A	300 A	350 A	420 A	-	-
With conductor cross-sectional area		AWG 2/0	AWG 3/0	MCM 250	MCM 250	MCM 400	MCM 500	2//MCM 300	-	-
1 pole	90 V DC	200 A	200 A	-	-	-	-	-	-	-
	100 V DC	-	-	250 A	350 A	-	-	-	-	-
	110 V DC	-	-	-	-	400 A	500 A	520 A	-	-
2 poles in serie	175 V DC	200 A	200 A	-	-	-	-	-	-	-
	200 V DC	-	-	250 A	350 A	-	-	-	-	-
	225 V DC	-	-	-	-	400 A	500 A	520 A	-	-
3 poles in serie	260 V DC	200 A	200 A	-	-	-	-	-	-	-
	300 V DC	-	-	250 A	350 A	-	-	-	-	-
	340 V DC	-	-	-	-	400 A	500 A	520 A	-	-
4 poles in series	350 V DC	200 A	200 A	-	-	-	-	-	-	-
	400 V DC	-	-	250 A	350 A	-	-	-	-	-
	450 V DC	-	-	-	-	400 A	500 A	520 A	-	-
With conductor cross-sectional area		AWG 2/0	AWG 3/0	MCM 250	MCM 250	MCM 400	MCM 500	2//MCM 300	-	-
Max. electrical switching frequency										
For general use		300 cycles/h								

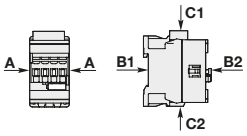
AEG

LS04N ... LS37N 4-pole contactors

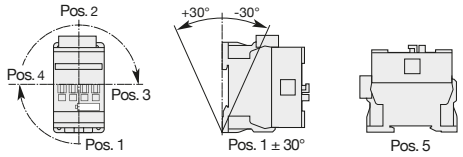
Technical data

General technical data

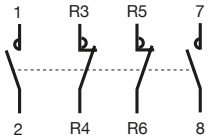
Contactor types			LS04N	LS07N	LS18N	LS22N	LS37N
Rated insulation voltage Ui							
acc. to IEC 60947-4-1			690 V				1000 V
acc. to UL / CSA			600 V				
Rated impulse withstand voltage Uimp.			6 kV				8 kV
Electromagnetic compatibility			Devices complying with IEC/EN 60947-1 - Environment A and B				
Ambient air temperature close to contactor							
Operation			-40...+70 °C				
Storage			-60...+80 °C				
Climatic withstand			Category B according to IEC 60947-1 Annex Q				
Maximum operating altitude (without derating)			3000 m				
Mechanical durability							
Number of operating cycles			10 millions operating cycles				
Max. switching frequency			3600 cycles/h				
Shock withstand acc. to IEC/EN 60068-2-27 Mounting position 1							
		Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position				
	4 N.O. Main poles	A	30 g			20 g	
		B1	25 g Closed position / 5 g Open position			20 g Closed position / 5 g Open position	
		B2	15 g			10 g	
		C1	25 g			20 g	
		C2	25 g			20 g	
	2 N.O. + 2 N.C. Main poles	A	30 g		30 g Closed position / 25 g Open position	20 g	
		B1	25 g Closed position / 5 g Open position		25 g Closed position / 5 g Open position	20 g Closed position / 5 g Open position	20 g Closed position / 4 g Open position
		B2	15 g		15 g Closed position / 10 g Open position	10 g	
		C1	25 g		25 g Closed position / 20 g Open position	20 g	
		C2	25 g		25 g Closed position / 20 g Open position	20 g	
Vibration withstand acc. to IEC 60068-2-6			5 ... 300 Hz 4 g Closed position / 2 g Open position			5 ... 300 Hz 3 g Closed position / 2 g Open position	



Mounting characteristics and conditions for use

Contactor types	LS04N	LS07N	LS18N	LS22N	LS37N
Mounting positions	 Max. add-on N.C. auxiliary contacts: see accessory fitting details for a 4-pole contactor LS04N ... LS37N				
Mounting distances	The contactors can be assembled side by side				
Fixing					
On rail according to IEC/EN 60715	35 x 7.5 mm or 35 x 15 mm			35 x 15 mm	
By screws (not supplied)	2 x M4 screws placed diagonally			2 x M4 or 2 x M6 screws placed diagonally	

Remark for 4-pole contactors fitted with 2 N.O. + 2 N.C. main poles

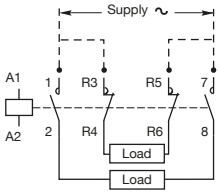


These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit comprising 2 separate loads with a single supply (see diagrams beside). When the contactor operates there is no mechanical overlapping between the N.O. poles and the N.C. poles: BREAK before MAKE.

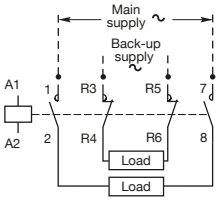
These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

Block diagrams

- Single supply and 2 separate loads

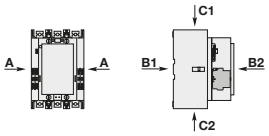


- 2 separate supplies and 2 separate loads

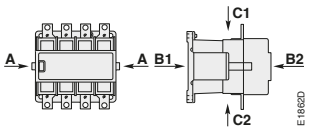


LS55N ... LS375N 4-pole contactors
Technical data

General technical data

Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Rated insulation voltage Ui								
acc. to IEC 60947-4-1		1000 V						
acc. to UL / CSA		600 V						
Rated impulse withstand voltage Uimp.		8 kV						
Electromagnetic compatibility		Devices complying with IEC/EN 60947-1 - Environment A						
Pollution degree		3						
Ambient air temperature close to contactor								
Operation		-40 to +70 °C						
Storage		-40 to +70 °C						
Climatic withstand		Category B according to IEC 60947-1 Annex Q						
Maximum operating altitude (without derating)		3000 m						
Mechanical durability								
Number of operating cycles		5 million operating cycles						
Maximum switching frequency		300 cycles/h						
Shock withstand								
acc. to IEC/EN 60068-2-27								
Mounting position 1		No change in contact position, closed or open position						
	Shock direction	1/2 sinusoidal shock for 11 ms			1/2 sinusoidal shock for 30 ms			
	A	20 g			20 g			
	B1	15 g closed position / 3 g open position			15 g closed position / 3 g open position			
	B2	15 g closed position / 3 g open position			15 g closed position / 3 g open position			
	C1	20 g			20 g			
	C2	20 g			20 g			
Vibration withstand								
acc to IEC 60068-2-6		0.7 g closed position / 0.7 g open position 13.2...100 Hz						

General technical data

Contactor types	AC Operated	LS280N	LS375N
Rated insulation voltage Ui			
acc. to IEC 60947-4-1		1000 V	
acc. to UL		-	
Rated impulse withstand voltage Uimp.		8 kV	
Ambient air temperature close to contactor			
Operation		-40 to +70 °C	
Storage		-50 to +70 °C	
Climatic withstand		Category B acc. to IEC 60068-2-30	
Maximum operating altitude (without derating)		≤ 3000 m	
Mechanical durability			
Number of operating cycles		5 millions operating cycles	3 millions operating cycles
Max. switching frequency		60 cycles/h	
Shock withstand			
acc. to IEC/EN 60068-2-27			
Mounting position 1			
Closed or open position			
	Shock direction	1/2 sinusoidal shock for 15 ms: no change in contact position, closed or open position	
	A	10 g	
	B1	10 g	
	B2	10 g	
	C1	10 g	
	C2	10 g	

AEG

LS04N ... LS37N 4-pole contactors

Technical data

Magnet system characteristics AC / DC operated - Coil voltage codes ED, EN, EU

Contactor types	AC / DC operated	LS04N	LS07N	LS18N	LS22N	LS37N
Coil operating limits acc. to IEC 60947-4-1	AC supply	At θ ≤ 60 °C 0.85 x Uc min...1.1 x Uc max. At θ ≤ 70 °C 0.85 x Uc min...Uc max.			At θ ≤ 70 °C 0.85 x Uc min ... 1.1 x Uc max	
	DC supply	At θ ≤ 60 °C 0.85 x Uc min ... 1.1 x Uc max At θ ≤ 70 °C 0.85 x Uc min ... Uc max			At θ ≤ 70 °C 0.85 x Uc min ... 1.1 x Uc max	
AC control voltage 50/60 Hz						
Rated control circuit voltage Uc		24...250 V AC				
Coil consumption	Average pull-in value	50 VA			40 VA	
	Average holding value	2.2 VA / 2 W			4 VA / 2 W	
DC control voltage						
Rated control circuit voltage Uc		20...250 V DC			20...250 V DC	
Coil consumption	Average pull-in value	50 W			40 W	
	Average holding value	2 W			2 W	
PLC-output control		ED coil not suitable for direct control by PLC-output				
Drop-out voltage		≤ 60 % of Uc min.			≤ 60 % of Uc min.	
Operating time						
Between coil energization and:	N.O. contact closing	40...95 ms			48...120 ms	
	N.C. contact opening	38...90 ms			44...115 ms	
Between coil de-energization and:	N.O. contact opening	11...95 ms			16...110 ms	
	N.C. contact closing	13...98 ms			18...113 ms	

Magnet system characteristics AC operated - Coil voltage codes AD, AN

Contactor types	AC operated	LS04N	LS07N	LS18N
Coil operating limits acc. to IEC 60947-4-1	AC supply	At θ ≤ 60 °C 0.85 ...1.1 x Uc. At θ ≤ 70 °C Uc		
AC control voltage				
Rated control circuit voltage Uc	50 Hz	24...230 V		
	60 Hz	24...240 V		
Coil consumption	Average pull-in value 50 Hz / 60 Hz	70 VA / 66 VA		
	Average holding value	8 VA / 2.3 W		
Drop-out voltage	50 Hz	40...65 % of Uc		
	60 Hz	40...70 % of Uc		
Operating time (-40°C ... +60°C)				
Between coil energization and:	N.O. contact closing	10...26 ms		
	N.C. contact opening	7...21 ms		
Between coil de-energization and:	N.O. contact opening	4...18 ms		
	N.C. contact closing	9...20 ms		

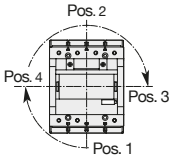
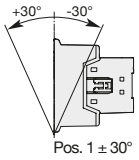
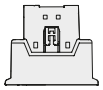
AEG

LS55N ... LS200N 4-pole contactors
Technical data

Magnet system characteristics AC/DC operated - Coil voltage codes ED, EN

Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Coil operating limits	AC supply	At θ ≤ 70 °C 0.85 x Uc min ... 1.1 x Uc max						
acc. to IEC 60947-4-1	DC supply	At θ ≤ 70 °C 0.80 x Uc min ... 1.1 x Uc max						
Rated control circuit voltage Uc		24...60 V AC 50/60 Hz - 20...60 V DC (ED), 100...250 V AC 50/60 Hz - DC						
Coil consumption								
AC control voltage 50/60 Hz								
24...60 V AC	Average pull-in value	225 VA		165 VA		475 VA		
	Average holding value	5.5 VA / 2.5 W		5 VA / 3 W		9 VA / 3 W		
100...250 V AC	Average pull-in value	130 VA		220 VA		385 VA		
	Average holding value	8 VA / 2.5 W		8 VA / 2.5 W		20 VA / 4.5 W		
DC control voltage								
20...60 V DC	Average pull-in value	210 W		205 W		400 W		
	Average holding value	2.5 W		2.5 W		3.5 W		
100...250 V DC	Average pull-in value	135 W		190 W		410 W		
	Average holding value	3 W		2.5 W		4.5 W		
Drop-out voltage		55 % of Uc min						
Operating time								
Coil supply between A1 - A2								
Between coil energization and:	N.O. contact closing	20...55 ms		25...60 ms		30...60 ms		
Between coil de-energization and:	N.O. contact opening	40..70 ms		45...80 ms		45...80 ms		

Mounting characteristics and conditions for use

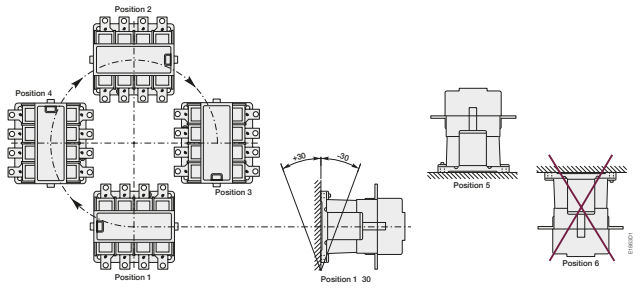
Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Mounting positions		   						
		Max. add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 4-pole contactor LS55N ... LS200N						
Mounting distances		The contactors can be assembled side by side						
Fixing								
On rail acc. to IEC/EN 60715		-						
By screws		4 x M4		4 x M5				

LS280N, LS375N 4-pole contactors
Technical data

Magnet system characteristics

Contactor types		AC operated	LS280N	LS375N
Coil operating limits		AC supply	At θ ≤ 70 °C 0.85 x Uc min...1.1 x Uc max.	
acc. to IEC 60947-4-1			Please also refer to "Mounting characteristics and conditions for use"	
AC control voltage				
Rated control circuit voltage		50 Hz	220 ... 230 V	
		60 Hz	240 V	
Coil consumption	Average pull-in value	50 Hz	3500 VA	
		60 Hz	4000 VA	
	Average holding value	50 Hz	125 VA / 50 W	
		60 Hz	140 VA / 60 W	
Drop-out voltage in % of Uc min.			approx. 45...65 %	
Operating time				
Between coil energization and:		N.O. contact closing	30...60 ms	
		N.C. contact opening	25...55 ms	
Between coil de-energization and:		N.O. contact opening	10...20 ms	
		N.C. contact closing	13...23 ms	

Mounting characteristics and conditions for use

Contactor types		AC / DC operated	LS280N	LS375N
Mounting positions			 Max. N.O. or N.C. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 4-pole contactor LS280N, LS375N	
Control voltage / Ambient temperature				
Mounting positions	1, 1±30°, 2, 3, 4, 5	at θ ≤ 70 °C	0.85...1.1 x Uc	
	6	at θ ≤ 70 °C	Unauthorized	
Mounting distances			The contactors can be assembled side by side	
Fixing				
On rail according to IEC/EN 60715			–	
By screws			4 x M6 (1)	

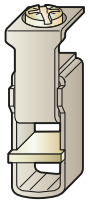
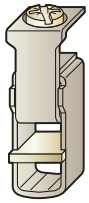
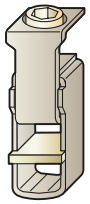
(1) Damping elements are supplied.

AEG

LS04N ... LS37N 4-pole contactors

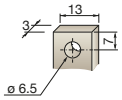
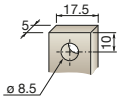
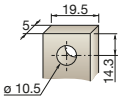
Technical data

Connecting characteristics

Contactor types			LS04N	LS07N	LS18N	LS22N	LS37N
Main terminals			 Screw terminals with cable clamp		 Screw terminals with double connector 2 x (5.5 width x 6.8 depth)	 Screw terminals with double connector 2 x (9.3 width x 7.9/10.3 depth)	 Screw terminals with double connector 2 x (12.4 width x 9.3/11.1 depth)
Connection capacity (min. ... max.)							
Main conductors (poles)							
Rigid	Solid (≤ 4 mm²)	1 x	1...6 mm²		1.5...16 mm²	6...35 mm²	6...70 mm²
	Stranded (≥ 1 mm²)	2 x	1...6 mm²		1.5...16 mm²	6...35 mm²	6...50 mm²
Flexible with non insulated ferrule		1 x	0.75...6 mm²		1.5...16 mm²	4...35 mm²	6...50 mm²
		2 x	0.75...6 mm²		1.5...16 mm²	4...35 mm²	6...50 mm²
Flexible with insulated ferrule		1 x	0.75...4 mm²		1.5...16 mm²	4...35 mm²	6...50 mm²
		2 x	0.75...2.5 mm²		1.5...16 mm²	4...35 mm²	6...50 mm²
Bars or lugs		L <	9.6 mm		-	9.2 mm	12.2 mm
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 16...10		AWG 16...6	AWG 10...2	AWG 6...1
Stripping length			10 mm		12 mm	16 mm	17 mm
Tightening torque			1.5 Nm / 13 lb.in		2.5 Nm / 22 lb.in	4 Nm / 35 lb.in	6 Nm / 53 lb.in
Auxiliary conductors (coil terminals)							
Rigid solid/stranded		1 x	1...2.5 mm²				
		2 x	1...2.5 mm²				
Flexible with non insulated ferrule		1 x	0.75...2.5 mm²				
		2 x	0.75...2.5 mm²				
Flexible with insulated ferrule		1 x	0.75...2.5 mm²				
		2 x	0.75...1.5 mm²				
Lugs		L <	8 mm				
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 18...14				
Stripping length			10 mm				
Tightening torque			1.2 Nm / 11 lb.in				
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529							
Main terminals			IP20			IP10	
Coil terminals			IP20				
Screw terminals			Delivered in open position, screws of unused terminals must be tightened				
Main terminals			M3.5		M4.5	M6	M8
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2			Flat Ø 6.5 / Pozidriv 2	hexagon socket (s = 4 mm)
Coil terminals			M3.5				
	Screwdriver type		Flat Ø 5.5 / Pozidriv 2				

LS55N ... LS200N 4-pole contactors
Technical data

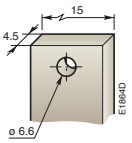
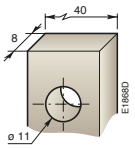
Connecting characteristics

Contactor types	AC / DC operated	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Main terminals Flat type								
Connection capacity (min. ... max.)								
Main conductors (poles)								
Cu cable - Stranded	1 x	10...95 mm²		6...150 mm²		16...300 mm²		
Clamp type		Connection module included		1SDA066917R1		1SDA055016R1		
Tightening torque		8 Nm		14 Nm		25 Nm		
Cu cable - Stranded	2 x	10...95 mm²		50...120 mm²		70...185 mm²		
Clamp type		Connection module included		1SFN074709R1000, LZ185-2C/120		1SCA022194R0890, OZXB4		
Tightening torque		8 Nm		16 Nm		22 Nm		
Al cable - Stranded	1 x	–		95...185 mm²		185...240 mm²		
Clamp type		–		1SDA054988R1		1SDA055020R1		
Tightening torque		–		31 Nm		43 Nm		
Cu cable - Flexible	1 x	10...70 mm²		6...120 mm²		16...240 mm²		
Clamp type		Connection module included		1SDA066917R1		1SDA055016R1		
Tightening torque		8 Nm		14 Nm		25 Nm		
Cu cable - Flexible	2 x	10...70 mm²		50...95 mm²		70...185 mm²		
Clamp type		Connection module included		1SFN074709R1000, LZ185-2C/120		1SCA022194R0890, OZXB4		
Tightening torque		8 Nm		16 Nm		22 Nm		
Lugs	L ≤	22 mm (.866 in)		24 mm (.945 in)		32 mm (1.260 in)		
	Ø >	6 mm (.236 in)		8 mm (.315 in)		10 mm (.394 in)		
Socket type		CSK75N4		connection sockets included		connection sockets included		
Tightening torque		9 Nm / 80 lb.in		18 Nm / 160 lb.in		28 Nm / 248 lb.in		
Connection capacity acc. to UL / CSA	1 x	AWG 6…3/0		6…300 MCM		4…400 MCM		
Clamp type		CSK75N4		ATK185 (1)		ATK300 (1)		
Tightening torque		8 Nm / 71 lb.in		34 Nm / 301 lb.in		42 Nm / 372 lb.in		
Connection capacity acc. to UL / CSA	2 x	AWG 6…3/0		–		4…500 MCM		
Clamp type		CSK75N4		–		ATK300/2 (1)		
Tightening torque		8 Nm / 71 lb.in		–		42 Nm / 372 lb.in		
Auxiliary conductors (coil terminals)								
Rigid Solid/Stranded	1 x	1...4 mm²						
	2 x	1...4 mm²						
Flexible	1 x	0.75...2.5 mm²						
	2 x	0.75...2.5 mm²						
Flexible with non insulated ferrule	1 x	0.75...2.5 mm²						
	2 x	0.75...2.5 mm²						
Flexible with insulated ferrule	1 x	0.75...2.5 mm²						
	2 x	0.75...2.5 mm²						
Lugs	L <	8 mm						
	l >	3.5 mm						
Connection capacity acc. to UL / CSA	1 or 2 x	AWG 18...14						
Stripping length		9 mm						
Tightening torque		1.00 Nm / 9 lb.in						
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529								
Main terminals		IP00						
Coil terminals		IP20						
Screw terminals								
Main terminals		M6		M8		M10		
	Screwdriver type	Screws and bolts						
Coil terminals (delivered in open position)		M3.5						
	Screwdriver type	Flat Ø 5.5 mm / Pozidriv 2						

(1) Available in North America only.

LS280N, LS375N 4-pole contactors
Technical data

Connecting characteristics

Contactor types		AC operated	LS280N	LS375N
Main terminals Flat type				
Connection capacity (min. ... max.)				
Main conductors (poles)				
Rigid with connector	Cu cable	1 x	70...300 mm²	-
	Al/Cu cable	1 x	70...300 mm²	95...300 mm²
	Al/Cu cable	2 x	35...185 mm²	95...300 mm²
Bars or lugs		L ≤	55 mm	
		Ø >	10 mm	
Tightening torque	Recommended		18 Nm / 160 lb.in	
	Max.		22 Nm	
Auxiliary conductors coil and built-in auxiliary contacts terminals				
Rigid Solid/Stranded		1 x	0.5…2.5 mm²	
		2 x	0.5…2.5 mm²	
Flexible with ferrule		1 x	0.5…2.5 mm²	
		2 x	0.5…2.5 mm²	
Bars or lugs		L ≤	8 mm	
		l >	3.7 mm	
Tightening torque	Recommended		1.00 Nm / 9 lb.in	
	Max.		1.20 Nm	
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529				
Main terminals			IP00	
Coil and built-in auxiliary contacts terminals			IP20	
Screw terminals				
Main terminals			M10	
			Screws and bolts	
Coil and built-in auxiliary contacts terminals			Delivered in open position, screws of unused terminals must be tightened M3.5	
		Screwdriver type	Flat Ø 5.5 mm / Pozidriv 2	

AEG

LS55N ... LS375N 4-pole contactors

Technical data

Side mounted auxiliary contact block - utilization characteristics according to IEC

Types		LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N	LS280N	LS375N
Standards		IEC/EN 60947-5-1								
Rated insulation voltage Ui acc. to IEC 60947-5-1		690 V								
Rated operational voltage Ue max.		24...690 V AC								
Conventional thermal current Ith - θ ≤ 40 °C		16 A							10 A	
Ie / Rated operational current AC-15 acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A							6 A	
	220-240 V 50/60 Hz	4 A							6 A	
	380-440 V 50/60 Hz	3 A							6 A	
	500-690 V 50/60 Hz	2 A							6 A	
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1								
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1								
Ie / Rated operational current DC-13 acc. to IEC 60947-5-1	24 V DC	6 A / 144 W				3 A / 72 W			6 A / 144 W	
	48 V DC	2.8 A / 134 W				1.5 A / 72 W			6 A / 288 W	
	72 V DC	1 A / 72 W				1 A / 72 W			4 A / 288 W	
	110 V DC	0.55 A / 60 W				0.55 A / 60 W			-	
	125 V DC	0.55 A / 69 W				0.55 A / 69 W			1.8 A / 225 W	
	220 V DC	0.3 A / 66 W				0.3 A / 69 W			-	
	250 V DC	0.3 A / 75 W				0.3 A / 75 W			0.6 A / 150 W	
Short-circuit protection device gG type fuse		10 A								
Rated short-time withstand current Icw	for 1.0 s	100 A							50 A	
θ = 40 °C	for 0.1 s	140 A							100 A	
Minimum switching capacity		24 V / 50 mA (0.5 million of operating cycles)				24 V / 50 mA			0.25 VA / 12 V or 0.25 VA / 5 mA	
with failure rate acc. to IEC 60947-5-4		≤ 10^{-6}				≤ 10^{-6}			-	
Power dissipation per pole at 6 A		0.15 W							0.2 W	
Mechanical durability										
Number of operating cycles		5 millions							5 millions	3 millions
Max. switching frequency		300 cycles/h				300 cycles/h			60 cycles/h	
Max. electrical switching frequency	AC-15	300 cycles/h				300 cycles/h			60 cycles/h	
	DC-13	300 cycles/h				300 cycles/h			60 cycles/h	

Contact utilization characteristics according to UL / CSA

Types	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Max. operational voltage	600 V AC, 250 V DC						
Pilot duty	A600, Q300						
AC thermal rated current	10 A						

4-pole contactors

Electrical durability and utilization categories

General

Utilization categories determine the current making and breaking conditions relating to the characteristics of the loads to be controlled by the contactors. International standard IEC 60947-4-1 and European standard EN 60947-4-1 are the standards to be referred to.

If Ic is the current to be broken by the contactor and Ie the rated operational current normally drawn by the load, then:

- Categories AC-1: Ic = Ie

Generally speaking Ic = m x Ie where m is a multiple of the load operational current.

On next pages, the curves corresponding to categorie AC-1 represent the electrical durability variation of standard contactors in relation to the breaking current Ic.

Electrical durability curves:

- categories AC-1: the curves represent the electrical durability variation of standard contactors in relation to the breaking current Ic.

Electrical durability is expressed in millions of operating cycles.

Curve utilization mode

Electrical durability forecast and contactor selection for categories AC-1

- Note the characteristics of the load to be controlled:
  - Operational voltage.....Ue
  - Current normally drawn.....Ie (Ue / Ie / kW relation for motors, see "Motor rated operational powers and currents").
  - Utilization category AC-1
  - Breaking current.....Ic = Ie for AC-1
- Define the number of operating cycles N required.
- On the diagram corresponding to the operational category, select the contactor with the curve immediately above the intersection point (Ic ; N).

Case of uninterrupted duty

For uninterrupted duty, some verifications of preventing maintenance are necessary to check the functionality of the concerned product (consult us).

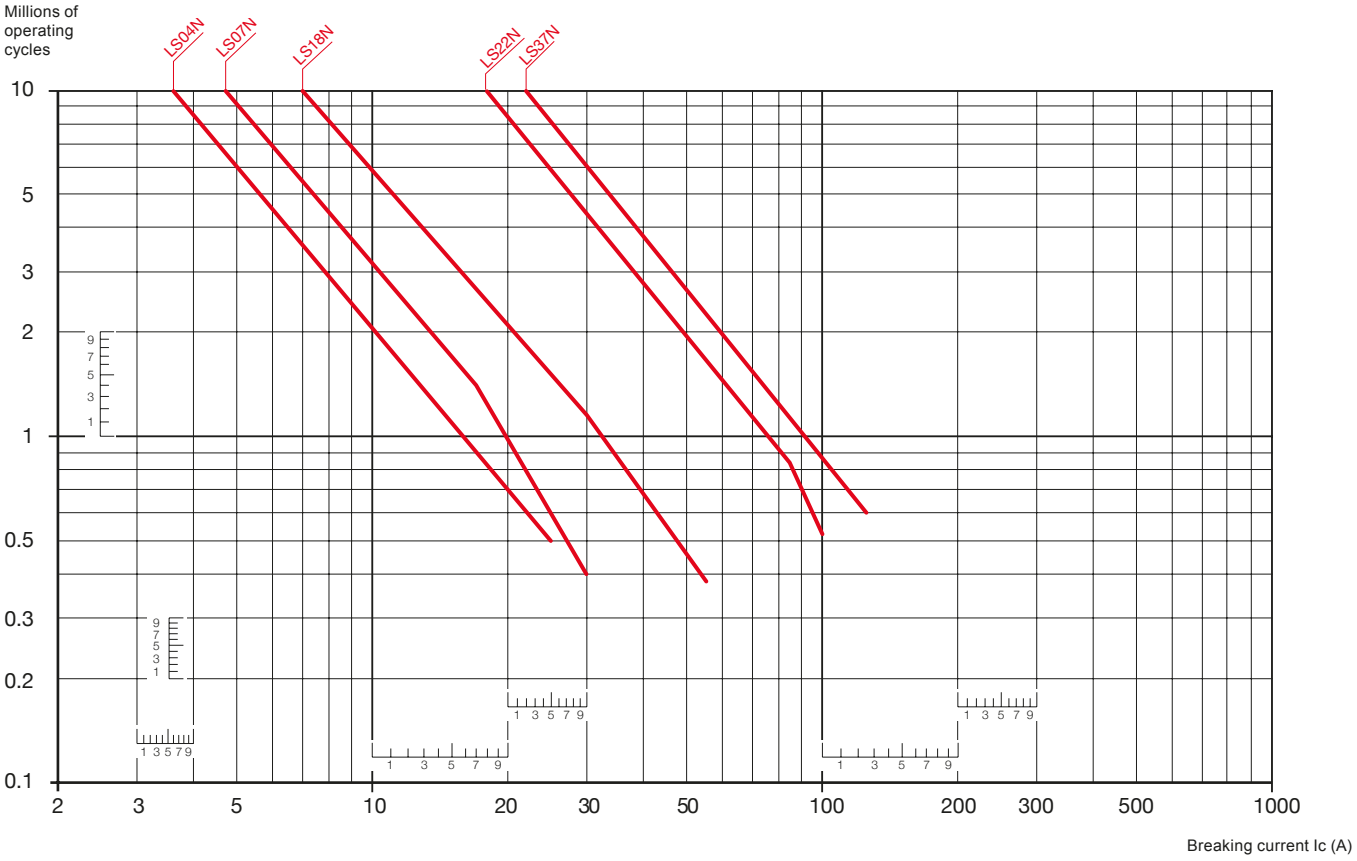
The combined effect of environmental conditions and the proper temperature of the product may require some disposals. As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

AEG

4-pole contactors

Electrical durability for AC-1 utilization category - Ue ≤ 690 V

Switching non-inductive or slightly inductive loads. The breaking current Ic for AC-1 is equal to the rated operational current of the load.
Ambient temperature and maximum electrical switching frequency: see "Technical data".



AEG

Motor rated operational powers and currents

The currents given below concern standard three-phase four-pole cage motors (1500 r.p.m. at 50 Hz 1800 r.p.m. at 60 Hz). These values are given for guidance and may vary according to the motor manufacturer and depending on the number of poles.

IEC	Motor nominal current: standardized values in grey (according to IEC 60947-4-1 Annex G)									
Motor power	**220 V**	**230 V**	**240 V**	**380 V**	**400 V**	**415 V**	**440 V**	**500 V**	**660 V**	**690 V**
kW	A	A	A	A	A	A	A	A	A	A
0.06	0.37	0.35	0.34	0.21	0.2	0.19	0.18	0.16	0.13	0.12
0.09	0.54	0.52	0.50	0.32	0.3	0.29	0.26	0.24	0.18	0.17
0.12	0.73	0.7	0.67	0.46	0.44	0.42	0.39	0.32	0.24	0.23
0.18	1	1	1	0.63	0.6	0.58	0.53	0.48	0.37	0.35
0.25	1.6	1.5	1.4	0.9	0.85	0.82	0.74	0.68	0.51	0.49
0.37	2.0	1.9	1.8	1.2	1.1	1.1	1	0.88	0.67	0.64
0.55	2.7	2.6	2.5	1.6	1.5	1.4	1.3	1.2	0.91	0.87
0.75	3.5	3.3	3.2	2.0	1.9	1.8	1.7	1.5	1.15	1.1
1.1	4.9	4.7	4.5	2.8	2.7	2.6	2.4	2.2	1.7	1.6
1.5	6.6	6.3	6	3.8	3.6	3.5	3.2	2.9	2.2	2.1
2.2	8.9	8.5	8.1	5.2	4.9	4.7	4.3	3.9	2.9	2.8
3	11.8	11.3	10.8	6.8	6.5	6.3	5.7	5.2	4	3.8
4	15.7	15	14.4	8.9	8.5	8.2	7.4	6.8	5.1	4.9
5.5	20.9	20	19.2	12.1	11.5	11.1	10.1	9.2	7	6.7
7.5	28.2	27	25.9	16.3	15.5	14.9	13.6	12.4	9.3	8.9
11	39.7	38	36.4	23.2	22	21.2	19.3	17.6	13.4	12.8
15	53.3	51	48.9	30.5	29	28	25.4	23	17.8	17
18.5	63.8	61	58.5	36.8	35	33.7	30.7	28	22	21
22	75.3	72	69	43.2	41	39.5	35.9	33	25.1	24
30	100	96	92	57.9	55	53	48.2	44	33.5	32
37	120	115	110	69	66	64	58	53	40.8	39
45	146	140	134	84	80	77	70	64	49.1	47
55	177	169	162	102	97	93	85	78	59.6	57
75	240	230	220	139	132	127	116	106	81	77
90	291	278	266	168	160	154	140	128	97	93
110	355	340	326	205	195	188	171	156	118	113
132	418	400	383	242	230	222	202	184	140	134
160	509	487	467	295	280	270	245	224	169	162
200	637	609	584	368	350	337	307	280	212	203
250	782	748	717	453	430	414	377	344	261	250
315	983	940	901	568	540	520	473	432	327	313
355	1109	1061	1017	642	610	588	535	488	370	354
400	1255	1200	1150	726	690	665	605	552	418	400
500	1545	1478	1416	895	850	819	745	680	515	493
560	1727	1652	1583	1000	950	916	832	760	576	551
630	1928	1844	1767	1116	1060	1022	929	848	643	615
710	2164	2070	1984	1253	1190	1147	1043	952	721	690
800	2446	2340	2243	1417	1346	1297	1179	1076	815	780
900	2760	2640	2530	1598	1518	1463	1330	1214	920	880
1000	3042	2910	2789	1761	1673	1613	1466	1339	1014	970

UL/ CSA	Motor nominal current: single and three phase (according to UL 60947-4-1A)									
Motor power	**120 V 1-ph**	**200 V 1-ph**	**200 V 3-ph**	**208 V 1-ph**	**208 V 3-ph**	**220-240 V 1-ph**	**220-240 V 3-ph**	**380-415 V 3-ph**	**440-480 V 3-ph**	**550-600 V 3-ph**
hp	A	A	A	A	A	A	A	A	A	A
1/10	3	–	–	–	–	1.5	–	–	–	–
1/8	3.8	–	–	–	–	1.9	–	–	–	–
1/6	4.4	2.5	–	2.4	–	2.2	–	–	–	–
1/4	5.8	3.3	–	3.2	–	2.9	–	–	–	–
1/3	7.2	4.1	–	4	–	3.6	–	–	–	–
1/2	9.8	5.6	2.5	5.4	2.4	4.9	2.2	1.3	1.1	0.9
3/4	13.8	7.9	3.7	7.6	3.5	6.9	3.2	1.8	1.6	1.3
1	16	9.2	4.8	8.8	4.6	8	4.2	2.3	2.1	1.7
1-1/2	20	11.5	6.9	11	6.6	10	6	3.3	3	2.4
2	24	13.8	7.8	13.2	7.5	12	6.8	4.3	3.4	2.7
3	34	19.6	11	18.7	10.6	17	9.6	6.1	4.8	3.9
5	56	32.2	17.5	30.8	16.7	28	15.2	9.7	7.6	6.1
7-1/2	80	46	25.3	44	24.2	40	22	14	11	9
10	100	57.5	32.2	55	30.8	50	28	18	14	11
15	135	–	48.3	–	46.2	68	42	27	21	17
20	–	–	62.1	–	59.4	88	54	34	27	22
25	–	–	78.2	–	74.8	110	68	44	34	27
30	–	–	92	–	88	136	80	51	40	32
40	–	–	120	–	114	176	104	66	52	41
50	–	–	150	–	143	216	130	83	65	52
60	–	–	177	–	169	–	154	103	77	62
75	–	–	221	–	211	–	192	128	96	77
100	–	–	285	–	273	–	248	165	124	99
125	–	–	359	–	343	–	312	208	156	125
150	–	–	414	–	396	–	360	240	180	144
200	–	–	552	–	528	–	480	320	240	192
250	–	–	–	–	–	–	604	403	302	242
300	–	–	–	–	–	–	722	482	361	289
350	–	–	–	–	–	–	828	560	414	336
400	–	–	–	–	–	–	954	636	477	382
450	–	–	–	–	–	–	1030	–	515	412
500	–	–	–	–	–	–	1180	786	590	472

Auxiliary contact blocks for LS04N ... LS45N contactors

H04N-F

H04N-L

The auxiliary contact blocks are used for the operation of auxiliary circuits and control circuits for standard industrial environments.

Auxiliary contact blocks for front mounting:

- H04N-F 1-pole block, with instantaneous 1 N.O. or 1 N.C. contact

Auxiliary contact blocks for side mounting:

- H04N-L 2-pole block, with instantaneous 1 N.O. + 1 N.C. contacts.

For clipping onto the right- and/or left-hand side of the contactors.

The auxiliary contact blocks are equipped with screw type connecting terminals delivered open, protected against accidental direct contact and bear the corresponding function marking.

For contactors	Auxiliary contacts		Type	Order code	Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks						
LS04N ... LS45N	1 0	– –	H04N-F-10	4TQD419101M0000	10	0.014
	0 1	– –	H04N-F-01	4TQD419102M0000	10	0.014
Side-mounted instantaneous auxiliary contact blocks						
LS04N ... LS45N	1 1	– –	H04N-L-11	4TQD419113M0000	10	0.040

For each contactor type, refer to "Accessory fitting details" table.

Auxiliary contact blocks for LS04N ... LS45N contactors

Technical data

Contact utilization characteristics according to IEC

Types			H04N-F, H04N-L
Standards			IEC 60947-5-1 and EN 60947-5-1
Rated insulation voltage Ui acc. to IEC 60947-5-1			690 V
Rated impulse withstand voltage Uimp.			6 kV
Rated operational voltage Ue max.			24...690 V
Conventional thermal current Ith - θ ≤ 40 °C			16 A
Rated frequency (without derating)			50/60 Hz
Ie / Rated operational current AC-15			
acc. to IEC 60947-5-1		24-127 V 50/60 Hz	6 A
		220-240 V 50/60 Hz	4 A
		400-440 V 50/60 Hz	3 A
		500 V 50/60 Hz	2 A
		690 V 50/60 Hz	2 A
Making capacity acc. to IEC 60947-5-1			10 x Ie AC-15
Breaking capacity acc. to IEC 60947-5-1			10 x Ie AC-15
Ie / Rated operational current DC-13			
acc. to IEC 60947-5-1		24 V DC	6 A / 144 W
		48 V DC	2.8 A / 134 W
		72 V DC	1 A / 72 W
		110 V DC	0.55 A / 60 W
		125 V DC	0.55 A / 69 W
		220 V DC	0.27 A / 60 W
		250 V DC	0.27 A / 68 W
		400 V DC	0.15 A / 60 W
		500 V DC	0.13 A / 65 W
		600 V DC	0.1 A / 60 W
Short-circuit protection device gG type fuse			10 A
Conditional short-circuit current			1 kA
Rated short-time withstand current Icw		for 1.0 s	100 A
θ = 40 °C		for 0.1 s	140 A
Minimum switching capacity			12 V / 3 mA
with failure rate acc. to IEC 60947-5-4			10^{-7}
Power dissipation per pole at 6 A			0.1 W
Mechanical durability	Number of operating cycles		10 millions operating cycles
	Max. switching frequency		3600 cycles/h
Max. electrical switching frequency		AC-15	1200 cycles/h
		DC-13	900 cycles/h
Mechanically linked contacts acc. to annex L of IEC 60947-5-1			Additional N.O. or N.C. auxiliary contacts (H04N-F, H04N-L) are mechanically linked contacts
Mirror contacts acc. to annex F of IEC 60947-4-1			Additional N.C. auxiliary contacts (H04N-F, H04N-L) are mirror contacts

Contact utilization characteristics according to UL / CSA

Types	H04N-F, H04N-L
Standards	UL 60947-5-1, CSA C22.2 No. 60947-5-1-14
Max. operational voltage	600 V AC, 600 V DC
Pilot duty	A600, Q600
AC thermal rated current	10 A
AC maximum volt-ampere making	7200 VA
AC maximum volt-ampere breaking	720 VA
DC thermal rated current	2.5 A
DC maximum volt-ampere making-breaking	69 VA

Connecting characteristics

Types			H04N-F, H04N-L
Connection capacity (min. ... max.)			
	Rigid solid/stranded	1 x	1...2.5 mm²
		2 x	1...2.5 mm²
	Flexible with non insulated ferrule	1 x	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
	Flexible with insulated ferrule	1 x	0.75...2.5 mm²
		2 x	0.75...1.5 mm²
	Lugs	L <	8 mm
Connection capacity acc. to UL/CSA		1 or 2 x	AWG 18...14
Stripping length			10 mm
Tightening torque			1.2 Nm / 11 lb.in
Degree of protection			
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			IP20
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2

Auxiliary contact blocks for LS04N ... LS45N contactors

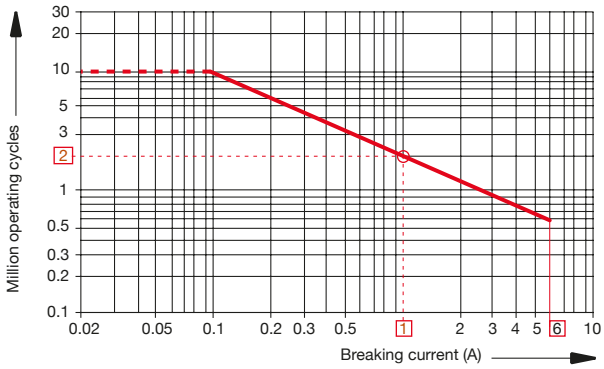
Electrical durability

Electrical durability for AC-15 utilization category

AC-15 utilization category according to IEC/EN 60947-5-1:
- making current: 10 x Ie with cos ϕ = 0.7 and Ue
- breaking current: Ie with cos ϕ = 0.4 and Ue.

These curves represent the electrical durability of the built-in or add-on auxiliary contacts in relation to the breaking current.

The curves have been drawn for resistive and inductive loads up to 690 V, 40...60 Hz.



- LS04N ... LS07N contactor built-in auxiliary contacts
- 1-pole H04N-F and 2-pole H04N-L

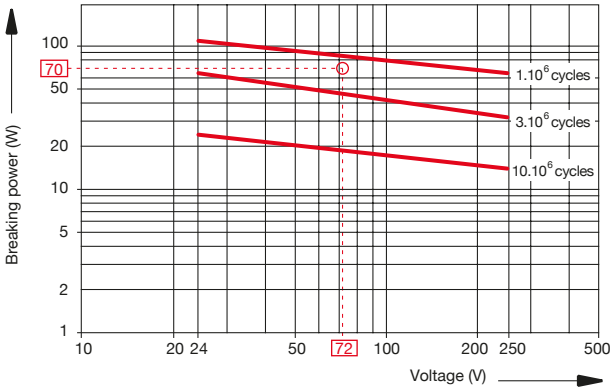
Example:

Breaking current = 1 A

On the opposite curve at intersection "O" 1 A the corresponding value for the electrical durability is approximately 2 millions operating cycles.

Electrical durability for DC-13 utilization category

DC-13 utilization category according to IEC/EN 60947-5-1: making and breaking current Ie and Ue.



- LS04N ... LS07N contactor built-in auxiliary contacts
- 1-pole H04N-F and 2-pole H04N-L

Example:

Control of DC electro-magnet:
Ue voltage = 72 V DC and breaking power = 70 W.

On the opposite curve at intersection "O" 72 V / 70 W the corresponding value for the electrical durability is approximately 2 millions operating cycles.

Auxiliary contact blocks for LS55N ... LS200N contactors

H06N-F-10

H06N-L-11

The auxiliary contact blocks are used for the operation of auxiliary circuits and control circuits for standard industrial environments.

Types of auxiliary contact blocks for front mounting:

- H06N-F 1-pole block, instantaneous with N.O., N.C. contacts.

Types of auxiliary contact blocks for side mounting:

- H0..N-L... 2-pole block instantaneous N.O. + N.C. contacts.

For clipping onto the right- and/or left-hand side of the contactors.

The H0..N-L..B is a second block for mounting in addition to a first H0..N-L-11 block, right- and/or left-hand of the LS55N ... LS200N contactors.

The auxiliary contact blocks are equipped with screw type connecting terminals delivered open, protected against accidental direct contact and bear the corresponding function marking.

For contactors	Auxiliary contacts 	Type	Order code	Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks					
LS55N, LS75N	1 –	H06N-F-10	4TQD439101M0000	10	0.014
	– 1	H06N-F-01	4TQD439102M0000	10	0.014
Side-mounted instantaneous auxiliary contact block, 2-pole					
LS55N ... LS110N 3-pole	1 1	H06N-L-11	4TQD439113R0000	2	0.050
LS90N, LS110N 3-pole	1 1	H06N-L-11B	4TQD439133R0000	2	0.050
LS132N ... LS200N 3-pole	1 1	H07N-L-11	4TQD439123R0000	2	0.040
LS55N ... LS200N 4-pole	1 1	H07N-L-11B	4TQD439143R0000	2	0.040

For each contactor, refer to "Accessories fitting details" table.

AEG

Auxiliary contact blocks
Technical data

Contact utilization characteristics according to IEC

Types		Front mounted	Side mounted	
		1-pole H06N-F	H06N-L-11, H06N-L-11B	H07N-L-11, H07N-L-11B
Standards		IEC/EN 60947-5-1		
Rated insulation voltage Ui acc. to IEC 60947-5-1		690 V		
Rated operational voltage Ue max.		24...690 V AC		
Conventional thermal current Ith - θ ≤ 40 °C		16 A		
Ie / Rated operational current AC-15 acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A		
	220-240 V 50/60 Hz	4 A		
	380-440 V 50/60 Hz	3 A		
	500-690 V 50/60 Hz	2 A		
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1		
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1		
Ie / Rated operational current DC-13 acc. to IEC 60947-5-1	24 V DC	6 A / 144 W		3 A / 72 W
	48 V DC	2.8 A / 134 W		1.5 A / 72 W
	72 V DC	1 A / 72 W		1 A / 72 W
	110 V DC	0.55 A / 60 W		0.55 A / 60 W
	125 V DC	0.55 A / 69 W		0.55 A / 69 W
	220 V DC	0.3 A / 66 W		0.3 A / 69 W
	250 V DC	0.3 A / 75 W		0.3 A / 75 W
Short-circuit protection device gG type fuse		10 A		
Rated short-time withstand current Icw θ = 40 °C	for 1.0 s	100 A		
	for 0.1 s	140 A		
Minimum switching capacity				
LS55N, LS75N contactors		24 V / 50 mA	24 V / 50 mA (0.5 million of operating cycles)	–
with failure rate acc. to IEC 60947-5-4		–	≤ 10^{-6}	–
LS90N, LS110N contactors		–	24 V / 50 mA (0.5 million of operating cycles)	–
with failure rate acc. to IEC 60947-5-4		–	≤ 10^{-6}	–
LS132N ... LS200N contactors		–	–	24 V / 50 mA
with failure rate acc. to IEC 60947-5-4		–	–	≤ 10^{-6}
Power dissipation per pole at 6 A		0.1 W	0.15 W	
Mechanical durability				
Number of operating cycles		3 millions (LS55N, LS75N)	5 millions (LS55N ... LS110N)	5 millions
Max. switching frequency		3600 cycles/h		300 cycles/h
Max. electrical switching frequency	AC-15	1200 cycles/h		300 cycles/h
	DC-13	900 cycles/h		300 cycles/h
Mechanically linked contacts acc. to annex L of IEC 60947-5-1		–	Built in or additional N.O. and N.C. auxiliary contacts (H06N-L, H07N-L aux, contact blocks) are mechanically linked contacts	
Mirror contacts acc. to annex L of IEC 60947-5-1		–	Built in or additional N.C. auxiliary contacts (H06N-L, H07N-L aux, contact blocks) are mirror contacts	

Contact utilization characteristics according to UL / CSA

Standards		UL 60947-5-1, CSA C22.2 No. 60947-5-1-14
Max. operational voltage		600 V AC, 250 V DC
Pilot duty		A600, Q300
AC thermal rated current		10 A

Connecting characteristics

Connection capacity (min. ... max.)			
Rigid solid	1 x	1...4 mm²	
	2 x	1...4 mm²	
Flexible with ferrule	1 x	0.75...2.5 mm²	
	2 x	0.75...2.5 mm²	
Lugs	L ≤	7.7 mm	8 mm
	I >	3.5 mm	3.5 mm
Tightening torque		1 Nm / 9 lb.in	
Connection capacity acc. to UL / CSA	1 or 2 x	AWG 18...14	
Stripping length		11 mm	9 mm
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529	Terminals	IP20	
Screw terminals		Delivered in open position, screws of unused terminals must be tightened	
All terminals		M3.5	
Screwdriver type		Flat Ø 5.5 / Pozidriv 2	

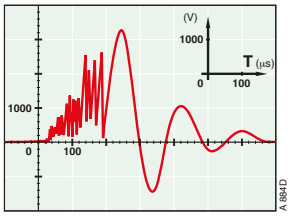
Additional coil terminal blocks for LS04N ... LS45N contactors

LC04N

For contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
Additional coil terminal blocks				
Additional coil terminal blocks for a top and/or bottom access to the coil terminals of contactors.				
LS04N ... LS45N	LS04N	4TQD419726M0000	10	0.010

Note: LC04N connecting characteristics are the same as the contactor coil terminal connection characteristics.

Surge suppressors for LS04N...A ... LS18N...A contactors coils



The operation of inductive circuits such as contactors coil can cause high over-voltage surges, in particular on opening of the contactor. These over-voltage surges need to be avoided as they can go up to several kilovolts (even for low supply voltage) causing interferences and possible damages to sensitives electronic in the installation.

LV3N and LR2N surge suppressors have been designed to be used with LS04N ... LS18N-..-A contactors (top or bottom mounted). They are including the coil connection terminals and can be used with all LS04N ... LS18N A coils up to 230 V 50 Hz and 240 V 60 Hz:

- LV3N: surge suppressor fitted with varistor circuit
- LR2N: surge suppressor fitted with RC circuit.

LR2N-A50

LV3N-A50

For contactors	Rated control circuit voltage Uc V AC	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS18N-..-A	24...50	LV3N-A50	4TQD429531M0000	2	0.015
	50...130	LV3N-A130	4TQD429532M0000	2	0.015
	110...260	LV3N-A260	4TQD429533M0000	2	0.015
LS04N ... LS18N-..-A	24...50	LR2N-A50	4TQD429511M0000	2	0.015
	50...130	LR2N-A130	4TQD429512M0000	2	0.015
	110...260	LR2N-A260	4TQD429513M0000	2	0.015

Note: The use of a surge suppressor will modify the operating time of the contactor.

Surge suppressors for LS04N...A ... LS18N...A contactors coils

Technical data

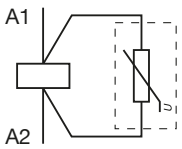
Varistor	LV3N-A50	LV3N-A130	LV3N-A260
Rated control circuit voltage Uc	24...50 V AC	50...130 V AC	110...260 V AC
Residual overvoltage (clipping voltage)	132 V AC	270 V AC	480 V AC
Opening time growth factor	1.1...1.5		
Operating temperature	-20...+70 °C		
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.		
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.		
Advantages	High energy absorption: good damping - Unpolarized system.		
Drawback	Clipping as from Uvdr (1), thus voltage front up to this point.		

(1) Uvdr = Varistor operating voltage (voltage dependent resistor), tolerance ±10 %.

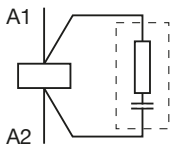
RC type	LR2N-A50	LR2N-A130	LR2N-A260
Rated control circuit voltage Uc	24...50 V AC	50...130 V AC	110...260 V AC
Residual overvoltage (clipping voltage)	2 to 3 x Uc max.		
Opening time growth factor	1.2...1.3		
Operating temperature	-20...+70 °C		
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.		
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.		
Advantages	Very fast clipping - Attenuation of steep fronts and thus of high frequencies.		

Note: LR2N and LV3N connecting characteristics are the same as the contactor coil terminal connection characteristics.

Wiring diagrams

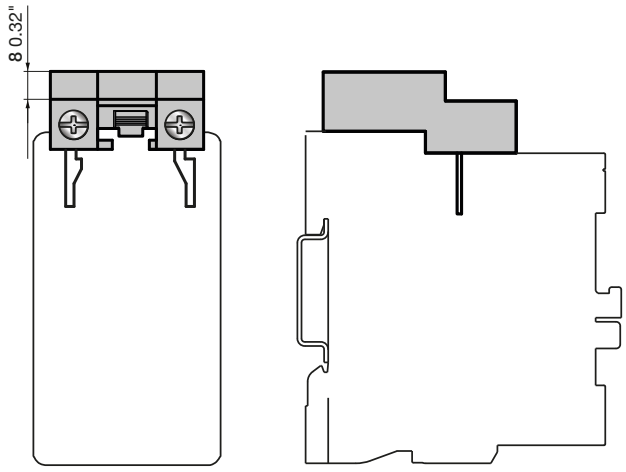


Varistor



RC type

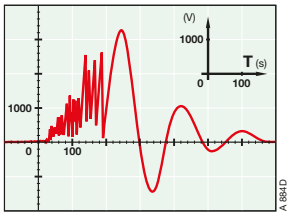
Dimensions



LS04N ... LS18N-..-A + LR2N or LV3N

Main dimensions mm, inches

Surge suppressors for LS55N ... LS110N contactors coils



The operation of inductive circuits causes overvoltages, in particular on opening of the contactor coil.

The electromagnetic energy stored in the coil during contactor closing is restored on opening in the form of surges, the slope and amplitude of which may rise to several kilovolts. A number of drawbacks are observed ranging from interference on the electronic devices to breakdown of insulators and even destruction of certain sensitive components.
The graph opposite reproduces the oscillogram showing voltage discharges at the terminals of a 42 V / 50 Hz coil without peak clipping. The coil was switched by 8 series-connected poles of a contactor relay.

Following a burst of discharges with a very steep slope a damped oscillation emerges with a peak value of 3500 V.

Overvoltage Factor
The overvoltage factor k is defined as the ratio of the maximum overvoltage peak value Ûs to the peak value Ûc of the coil rated control voltage Uc:

$$k = \frac{\hat{U}s\ max.}{\hat{U}c} \quad \text{or in AC:} \quad k = \frac{\hat{U}s\ max.}{Uc\sqrt{2}}$$

For example the following is obtained for the above graph:

$$k = \frac{3500}{42\ \sqrt{2}} \approx 60$$

LV6N-A50

To reduce the harmful effects of these overvoltages, a range of surge suppressors has been designed to reduce the k factor defined above and to limit or even completely eliminate the high pre-damping voltage frequencies.

Each case is different, but the technical data tolerances and the generous sizing of parts have enabled us to reduce the number of variants.

We have chosen the following solutions: varistors and RC blocks.

Note: A varistor is a resistor whose value decreases to a very large extent when a certain voltage is applied at its terminals.

LR6N-A50

For contactors	Rated control circuit voltage Uc V AC	Type	Order code	Pkg qty	Weight (1 pce) kg
LS55N, LS75N	24...50	LV6N-A50	4TQD439531M0000	2	0.015
	50...133	LV6N-A133	4TQD439532M0000	2	0.015
	110...250	LV6N-A250	4TQD439533M0000	2	0.015
LS55N, LS75N	24...50	LR6N-A50	4TQD439511M0000	2	0.015
	50...133	LR6N-A133	4TQD439512M0000	2	0.015
	110...250	LR6N-A250	4TQD439513M0000	2	0.015
LS90N ... LS110N	250...440	LR7N-A440	4TQD439524M0000	2	0.015

Surge suppressors for contactor coils

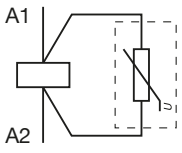
Technical data

Varistor	LV6N-A50	LV6N-A133	LV6N-A250
Rated control circuit voltage Uc	24...50 V AC	50...133 V AC	110...250 V AC
Residual overvoltage (clipping voltage)	132 V AC	270 V AC	480 V AC
Opening time growth factor	1.1...1.5		
Operating temperature	-20...+70 °C		
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.		
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.		
Advantages	High energy absorption: good damping - Unpolarized system.		
Drawback	Clipping as from Uvdr (1), thus voltage front up to this point.		

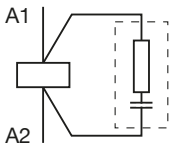
(1) Uvdr = Varistor operating voltage (voltage dependent resistor), tolerance ±10 %.

RC type	LR6N-A50	LR6N-A133	LR6N-A250	LR7N-A440
Rated control circuit voltage Uc	24...50 V AC	50...133 V AC	110...250 V AC	250...440 V AC
Residual overvoltage (clipping voltage)	2 to 3 x Uc max.			
Opening time growth factor	1.2...1.3			
Operating temperature	-20...+70 °C			
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.			
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.			
Advantages	Very fast clipping - Attenuation of steep fronts and thus of high frequencies. No operating delays.			

Wiring diagrams

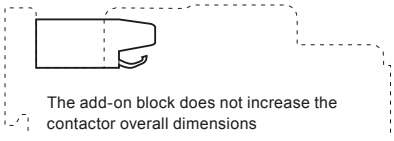


Varistor



RC type

Dimensions



LV6N, LR6N, LR7N

Electronic timers

TE04N-ON

TE04N-OFF

TE04N frontal electronic timers are used for realizing timing function and are available in ON-delay and OFF-delay versions.

Compact solution in cabinet compared to separate timers

TE04N electronic timers are front-mounted and locked on LS..N contactors. A mechanical indicator allows to show the state of the contactor.

Safe and cost-reduced wiring

TE04N electronic timers are supplied by a direct plug-in parallel connection to the coil terminals A1 - A2 of the contactor or contactor relay. A varistor is integrated on the timer to offer a built-in protection against surges in the contactor coil.

Available for a wide control voltage range 24...240 V AC / DC

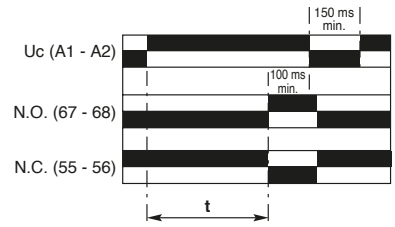
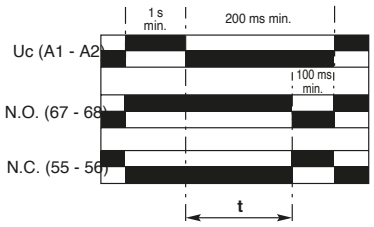
TE04N-ON or TE04N-OFF allow time-delayed functions up to 100 s in 3 distinct time ranges, independently of the control system. The time delay ranges are selected by a switch and the time delay can be adjusted by means of a rotary switch. The timing function is activated by closing or opening the device on which the timer is mounted. The OFF-delay version operates without additional control supply.

For contactors	Time delay range selected by switch	Delay type	Rated control circuit voltage Uc V 50/60 Hz or DC	Auxiliary contacts	Type	Order code	Weight Pkg (1 pce) kg
LS04N ... LS45N	0.1...1 s 1...10 s 10...100 s	ON-delay	24...240	1 1	TE04N-ON	4TQD419223R0000	0.065
		OFF-delay	24...240	1 1	TE04N-OFF	4TQD419243R0000	0.065

Electronic timers

Technical data

Contact utilization characteristics according to IEC

Types			TE04N-ON	TE04N-OFF
Standards			IEC/EN 60947-5-1	
Rated insulation voltage Ui acc. to IEC 60947-5-1			400 V	
Rated impulse withstand voltage Uimp			4 kV	
Rated operational voltage Ue max.			240 V AC / 24 V DC	
Rated frequency (without derating)			50 / 60 Hz	
Conventional thermal current Ith - θ ≤ 40 °C			5 A	
Ie / Rated operational current AC-15				
acc. to IEC 60947-5-1		24-127 V 50/60 Hz	3 A	
		220-240 V 50/60 Hz	1.5 A	
Making capacity acc. to IEC 60947-5-1			10 x Ie AC-15	
Breaking capacity acc. to IEC 60947-5-1			10 x Ie AC-15	
Ie / Rated operational current DC-13				
acc. to IEC 60947-5-1		24 V DC	1 A / 24 W	
Short-circuit protection device gG type fuse			10 A	
Conditional short-circuit current			1 kA	
Rated short-time withstand current Icw		for 1.0 s	8 A	
θ = 40 °C		for 0.1 s	8 A	
Minimum switching capacity			12 V / 3 mA	
with failure rate acc. to IEC 60947-5-4		24 V DC	10^{-7}	
Power dissipation per pole at 3 A			0.1 W	
Function diagram			ON-delay 	OFF-delay 
			Bistable relay inside. Before use, once apply Uc then switch it off in order to initialize position of the contacts.	
Control circuit voltage				
AC control voltage	Rated control circuit voltage Uc		24...240 V AC	
50/60 Hz	Average consumption		1.5 mA RMS	1 mA RMS
DC control voltage	Rated control circuit voltage Uc		24...240 V DC	
	Average consumption		1.5 mA	1 mA
Rated frequency limits			50 / 60 Hz	
Supply voltage range			0.85...1.1 x Uc (at θ ≤ 70 °C)	
Overvoltage protection			Varistor included	
Time delay range (t) selected by switch		0.1...1 s		
		1...10 s		
		10...100 s		
On-load reiteration accuracy under constant conditions			≤ 1 %	
Minimum ON period			0.15 s	1 s
Recovery time			0.15 s	0.1 s
Ambient air temperature	Operation		-25 °C ... +70 °C	
	Storage		-40 °C ... +80 °C	
Climatic withstand			Category B according to IEC 60947-1 Annex Q	
Maximum operating altitude			2000 m	
Mounting positions			Mounting positions 1, 1 +/- 30°, 2, 3, 4, 5	
Shock withstand acc. to IEC 60068-2-27 and EN 60068-2-27 (Mounting position 1)			1/2 sinusoidal shock for 11 ms: no change in contact position For use with LS04N ... LS18N contactors - shock direction A: 25g - other shock directions B1, B2, C1, C2: same as contactors. For use with LS22N ... LS45N: same as contactors	
Vibration withstand acc. to IEC 60068-2-6			5...300 Hz 3 g closed position / 2 g open position	
Mechanical durability				
	Number of operating cycles		5 millions operating cycles	
	Max. switching frequency		3600 cycles/h	1800 cycles/h
Max. electrical switching frequency				
		AC-15	1200 cycles/h	
		DC-13	900 cycles/h	

AEG

Electronic timers

Technical data

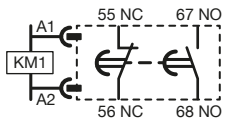
Contact utilization characteristics according to UL / CSA

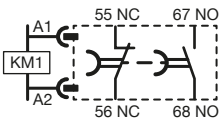
Types	TE04N-ON	TE04N-OFF
Standards	UL 508, CSA C22.2 No. 14-18	
Rated insulation voltage Ui acc. to UL / CSA	300 V	
Max. operational voltage	240 V	
Pilot duty	B300, R300	
AC thermal rated current	5 A	
AC maximum volt-ampere making	3600 VA	
AC maximum volt-ampere breaking	360 VA	
DC thermal rated current	1 A	
DC maximum volt-ampere making-breaking	28 VA	

Connecting characteristics

Connection capacity (min. ... max.)		
Rigid solid/stranded	1 x	1...2.5 mm²
	2 x	1...2.5 mm²
Flexible with non insulated ferrule	1 x	0.75...2.5 mm²
	2 x	0.75...2.5 mm²
Flexible with insulated ferrule	1 x	0.75...2.5 mm² (0.75 ... 1.5 mm² with spring terminals)
	2 x	0.75...1.5 mm² (0.75 ... 1.5 mm² with spring terminals)
Lugs	L ≤	8 mm
	l >	3.7 mm
Connection capacity acc. to UL / CSA	1 or 2 x	AWG 18...14
Stripping length		10 mm
Tightening torque		1.2 N.m / 11 lb.in
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		IP20
Screw terminals		Delivered in open position, screws of unused terminals should be tightened
All terminals		M3.5
Screwdriver type		Flat Ø 5.5 / Pozidriv 2
Spring terminals		
Screwdriver type		Ø 3.5

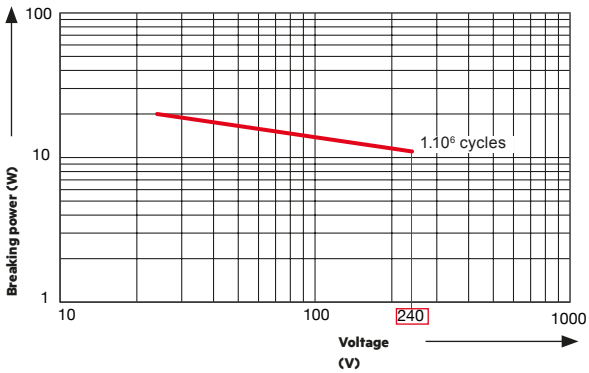
Terminal Marking



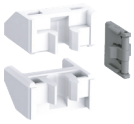


Electrical durability for DC-13 utilization category

DC-13 utilization category according to IEC/EN 60947-5-1: making and breaking current Ie and Ue.



Interlocks



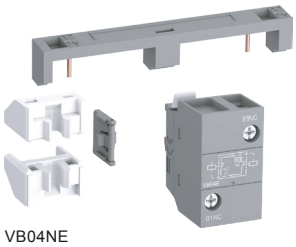
VB04N

Mechanical interlock units

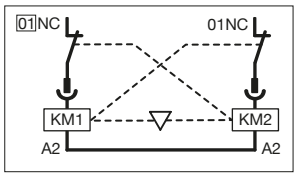
The VB mechanical interlock units are designed for the interlocking of two LS..N contactors.
When mounted between two contactors, the VB mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.
The mechanical interlock units VB04N and VB22N include 2 fixing clips.

For contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two contactors mounted side by side				
LS04N ... LS18N-30-..	VB04N	4TQD419300M0000	10	0.005
LS04N ... LS07N-40-..				
LS18N-40..				
LS22N ... LS45N-30-..	VB22N	4TQD419310M0000	10	0.006
LS22N ... LS37N-40-00				

Note : VB04N not suitable for 2 contactors using different coil type: AC operated coil voltage code A.. and AC / DC operated coil voltage code E...



VB04NE



Mechanical and electrical interlock sets

VB04NE mechanical and electrical interlock set for the interlocking of two LS..N contactors.
VB04NE set includes a mechanical interlock unit VB04N with 2 fixing clips and a VB04E electrical interlock block with A2-A2 connection.
Fixing the electrical interlock block to the contactor front face connects the 2 built-in N.C. interlocking contacts with the two coils. VB04E block must be used with A2-A2 connection to respect the electrical connection diagram.

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Mechanical and electrical interlock set					
For same size contactors: LS04N ... LS07N-30-.. LS11N ... LS18N-30-00 LS04N ... LS07N-40-00 LS18N-40-00	0 2	VB04NE	4TQD419306R0000	1	0.035

AEG

Interlocks

Technical data

Mechanical interlock unit

Types		VB04N, VB22N
Mechanical durability	Number of operating cycles	5 millions operating cycles
	Max. mechanical switching frequency	1800 cycles/h

Mechanical and electrical interlock set

Contact utilization characteristics according to IEC

Types		VB04NE
Standards		IEC/EN 60947-5-1
Rated insulation voltage Ui acc. to IEC 60947-5-1		690 V
Rated impulse withstand voltage Uimp.		6 kV
Rated control circuit voltage Uc		
	AC 50/60 Hz control voltage	24...500 V AC
	DC control voltage	20...500 V DC
Conventional thermal current Ith - θ ≤ 40 °C		16 A
Mechanical durability	Number of operating cycles	5 millions operating cycles
	Max. mechanical switching frequency	1800 cycles/h
Electrical durability	Max. electrical switching frequency	1200 cycles/h

Contact utilization characteristics according to UL / CSA

Types	VB04NE
Standards	UL 60947-1, UL 60947-4-1, CSA C22.2 No. 60947-1-13, CSA C22.2 No. 60947-4-1
Max. operational voltage	500 V AC, 500 V DC

Connecting characteristics

Types			VB04NE
Connection capacity (min. ... max.)			
	Rigid solid/stranded	1 x	1...2.5 mm²
		2 x	1...2.5 mm²
	Flexible with ferrule	1 x	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
	Flexible with insulated ferrule	1 x	0.75...2.5 mm²
		2 x	0.75...1.5 mm²
	Lugs	L <	8 mm
Connection capacity acc. to UL / CSA		1 or 2 x	AWG 18...14
Stripping length			10 mm
Tightening torque			1.2 Nm / 11 lb.in
Degree of protection acc. to IEC/EN 60947-1 and IEC/EN 60529			IP20
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2

Interlocks

VB110N

Mechanical interlock units

The VB mechanical interlock units are designed for the interlocking of two LS contactors.
When mounted between two contactors, the VB mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.

Left side contactor	Right side contactor	Mounting	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two horizontal mounted contactors (1)							
LS55N ... LS110N 3-pole	LS90N ... LS110N 3-pole	Horizontal	– –	VB110N	4TQD439310R0000	1	0.150
LS55N, LS75N 4-pole	LS55N, LS75N 4-pole	Horizontal	– –	VB200N	4TQD439320R0000	1	0.054
LS90N, LS110N 4-pole	LS90N, LS110N 4-pole						
LS132N ... LS200N 3-pole	LS132N ... LS200N 3-pole						
LS132N ... LS200N 4-pole	LS132N ... LS200N 4-pole						

(1) Mechanical durability: VB110N = 1 million cycles, VB200N = 0,5 million cycles

VB75NE

Mechanical and electrical interlock unit

The VB75NE mechanical and electrical interlock unit is designed for the interlocking of two LS contactors. When mounted between two contactors, the VB75NE mechanical and electrical interlock unit prevents one of the contactors from closing as long as the other contactor is closed, and includes 2 N.C. contacts for electrical interlocking function.

Left side contactor	Right side contactor	Mounting	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two horizontal mounted contactors							
LS55N, LS75N	LS55N, LS75N	Horizontal	– 2	VB75NE	4TQD439305R0000	1	0.146

AEG

Interlocks

Technical data

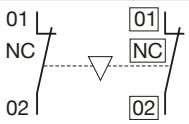
Contact utilization characteristics according to IEC

Types		VB75NE
Standards		IEC/EN 60947-5-1
Rated insulation voltage Ui		
acc. to IEC 60947-5-1		690 V
Rated operational voltage Ue max.		24...690 V
Conventional thermal current Ith - θ ≤ 40 °C		16 A
Ie / Rated operational current AC-15		
acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A
	220-240 V 50/60 Hz	4 A
	380-440 V 50/60 Hz	3 A
	500-690 V 50/60 Hz	2 A
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1
Ie / Rated operational current DC-13		
acc. to IEC 60947-5-1	24 V DC	6 A
	48 V DC	2.8 A
	72 V DC	1 A
	125 V DC	0.55 A
	250 V DC	0.3 A
Short-circuit protection device - gG type fuse		10 A
Rated short-time withstand current Icw	for 1.0 s	100 A
θ = 40 °C	for 0.1 s	140 A
Power dissipation per pole at 6 A		0.15 W
Mechanical durability		
Number of operating cycles		5 millions operating cycles
Max. switching frequency		600 cycles/h

Utilization characteristics according to UL / CSA

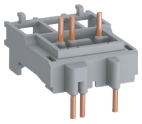
Standards	UL 60947-5-1, CSA C22.2 No. 60947-5-1-14
Max. operational voltage	600 V

Connecting characteristics

Connection capacity (min. ... max.)			
	Rigid solid	1 x	1...4 mm²
		2 x	1...4 mm²
	Flexible with ferrule	1 x	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
	Lugs	L <	8 mm
		l >	3.5 mm
Connection capacity acc. to UL / CSA		1 or 2 x	AWG 18...14
Stripping length			10 mm
Tightening torque	Recommended		1 Nm
	Max.		1.2 Nm
Degree of protection			IP20
acc. to IEC/EN 60947-1 and IEC/EN 60529			
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2
Terminal marking			

Technical note: when, during switching, the arc time is estimated to more than 40 ms, the closing signal of one of the two contactors must be delayed with respect to the opening signal of the other contactor in order to prevent a short-circuit.

Connection accessories for starting solutions

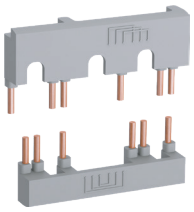


MF32L07N

Connecting links with manual motor starters

The MF32 insulated 3-pole connecting links are used to connect LS04N ... LS18N contactors with the MBS32NG manual motor starters. The MF32 insulated 3-pole connecting links ensure the electrical and mechanical connection between the contactor and the associated manual motor starter.

For 3-pole contactors	Manual motor starter	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS07N	MBS32NG-004 ... MBS32NG-250	MF32L07N	4TQD419806M0000	10	0.025
LS11N ... LS18N	MBS32NG-004 ... MBS32NG-160	MF32L11N	4TQD419816M0000	10	0.025
	MBS32NG-200 ... MBS32NG-320	MF32L18N	4TQD419826M0000	10	0.030

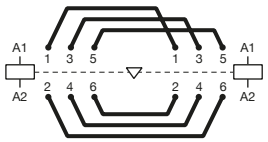


WKR16-4

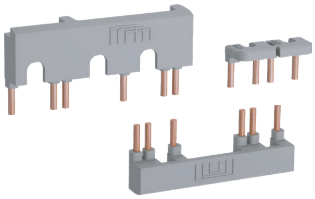
Connection sets for reversing contactors

WKR16-4 connection sets are used to connect the main poles of two 3-pole contactors mounted side by side. The connection sets are made up of 1 upstream and 1 downstream connections.
WKR16-4 connection sets are insulated and made of solid copper bars.

For 3-pole contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS07N	WKR16-4	4TQD419801R0000	1	0.045



LS04N ... LS07N
Reversing connections



WKY16-4

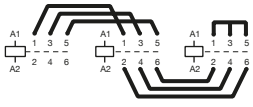
Connection sets for star-delta starter

WKY16-4 connection sets are used to connect the main poles of the Line, Delta and Star contactors of a star-delta starter.

The connection sets are made up of:

- Line contactor / delta contactor: upstream phase-to-phase connection
- Delta contactor / star contactor: downstream connection in parallel
- Star contactor: star point upstream
- Insulated, solid copper bar.

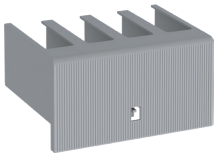
For 3-pole line, delta & star contactors	Interlock unit between delta & star contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS07N	With or without VB04N or VB04NE	WKY16-4	4TQD419803R0000	1	0.050



LS04N ... LS07N
Line-delta-star connection

Terminal shrouds

KLA110N



KLA110N4

Terminal shrouds

Main terminal protection for LS55N ... LS200N contactors.

The auxiliary contact blocks and coils are designed to provide an IP 20 degree of protection.

The main terminals, equipped with compression lugs or cable clamps, can be protected against accidental direct contact after wiring (EN 50274) by the addition of terminal shrouds (see table below).

For contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
3-pole contactors				
LS90N, LS110N with lugs	KLA110N	4TQD439913R0000	2	0.220
LS132N ... LS200N with compression lugs	KLA375N	4TQD439923R0000	2	0.280
4-pole contactors				
LS55N, LS75N, with CSK75N4 connection socket kit	KLA75N4 (1)	4TQD419944R0000	2	0.090
LS90N, LS110N	KLA110N4	4TQD419954R0000	2	0.140
LS132N ... LS200N	KLA200N4	4TQD419964R0000	2	0.165

(1) LS55N, LS75N built-in cable clamps need to be preliminary desinstalled before mouting KL75N4 terminal shroud.

Connection sockets

CSK75N4

Connection sockets

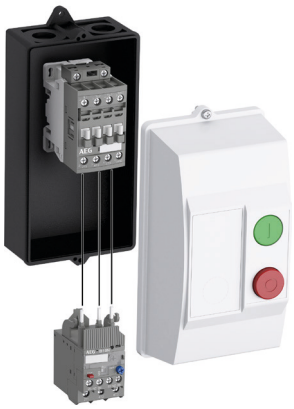
CSK75N4 is a kit of 8 connection sockets which can be used to replace built-in cable clamps in LS55N and LS75N.

For contactor	Type	Order code	Pce Qty / Kit	Weight (1 kit) Kg
4-pole contactors				
LS55N, LS75N	CSK75N4	1SFN074211R2000	8	0.132

Enclosure and accessories for enclosed direct-on-line starters

Up to 7.5 kW and 10 hp, protected by thermal overload relays

AC operated



LS04N ... LS07N-30-10

Enclosed direct-on-line (DOL) starters are used for controlling 3-phase asynchronous motors up to 690 V AC.

Each starter can be assembled and wired using below devices, delivered separately:

- IP66 and type 4X plastic I01N16 enclosure with double insulation, equiped with:
  - 1 green flush "I" ON button and 1 red protruding "O" OFF/RESET button
  - 4 cable inlets and outlets via knockouts
  - 1 PE and 1 neutral terminal
- 1 LS..N 3-pole contactor with holding contact
- 1 B18N thermal overload relay
- 1 IKHT-4 start impulse contact block
- Control supply wiring: phase-to-phase, separate supply or phase-to-neutral.

LS04N ... LS07N 3-pole contactors

IEC Enclosed starter

IEC - AC-3					Rated control circuit voltage LS..N..E..: Uc min ... Uc max (1) LS..N..A..: Uc		Type	Order code	Weight Pkg (1 pce)
Rated operational power 220 V 230 V 240 V	380 V 400 V	500 V	690 V	max. current θ ≤ 40 °C Ue=400 V					
kW	kW	kW	kW	A	V 50 Hz	V 60 Hz			kg
AC/DC operated LS..N-30-10-E..									
2.2	4	5.5	5.5	9	24...60		LS04N-30-10-ED	4TQD411331R0000	0.270
					100...250		LS04N-30-10-EN	4TQD411341R0000	0.270
					250...500		LS04N-30-10-EU	4TQD411351R0000	0.310
3	5.5	7.5	7.5	12	24...60		LS05N-30-10-ED	4TQD411531R0000	0.270
					100...250		LS05N-30-10-EN	4TQD411541R0000	0.270
					250...500		LS05N-30-10-EU	4TQD411551R0000	0.310
4	7.5	9	9	18	24...60		LS07N-30-10-ED	4TQD411731R0000	0.270
					100...250		LS07N-30-10-EN	4TQD411741R0000	0.270
AC operated LS..N-30-10-A..									
2.2	4	5.5	5.5	9	24	24	LS04N-30-10-AD	4TQD421301R0000	0.309
					110	110...120	LS04N-30-10-AJ	4TQD421311R0000	0.306
					220...230	230...240	LS04N-30-10-AN	4TQD421321R0000	0.298
3	5.5	7.5	7.5	12	24	24	LS05N-30-10-AD	4TQD421501R0000	0.309
					110	110...120	LS05N-30-10-AJ	4TQD421511R0000	0.306
					220...230	230...240	LS05N-30-10-AN	4TQD421521R0000	0.298
4	7.5	9	9	18	24	24	LS07N-30-10-AD	4TQD421701R0000	0.309
					110	110...120	LS07N-30-10-AJ	4TQD421711R0000	0.306
					220...230	230...240	LS07N-30-10-AN	4TQD421721R0000	0.298

(1) Select diagram S with separate supply for 20...60 V DC control circuit voltage (change A2 - Us wire to blue color acc. to IEC 60947-4-1).

UL starter type with separate control supply wiring

UL / CSA						Rated control circuit voltage LS..N..E..: Uc min ... Uc max LS..N..A..: Uc		Type	Order code	Weight Pkg (1 pce)
Horse power ratings Single phase motor 120 V	240 V	Three phase motor 200 V 208 V	220 V 240 V	440 V 480 V	550 V 600 V					
hp	hp	hp	hp	hp	hp	V 50 Hz	V 60 Hz			kg
AC/DC operated LS..N-30-10-E..										
3/4	1-1/2	2	2	5	7-1/2	24...60		LS04N-30-10-ED	4TQD411331R0000	0.270
						100...250		LS04N-30-10-EN	4TQD411341R0000	0.270
						250...500		LS04N-30-10-EU	4TQD411351R0000	0.310
1	2	3	3	7-1/2	10	24...60		LS05N-30-10-ED	4TQD411531R0000	0.270
						100...250		LS05N-30-10-EN	4TQD411541R0000	0.270
						250...500		LS05N-30-10-EU	4TQD411551R0000	0.310
1-1/2	3	5	5	10	15	24...60		LS07N-30-10-ED	4TQD411731R0000	0.270
						100...250		LS07N-30-10-EN	4TQD411741R0000	0.270
AC operated LS..N-30-10-A..										
3/4	1-1/2	2	2	5	7-1/2	24	24	LS04N-30-10-AD	4TQD421301R0000	0.309
						110	110...120	LS04N-30-10-AJ	4TQD421311R0000	0.306
						220...230	230...240	LS04N-30-10-AN	4TQD421321R0000	0.298
1	2	3	3	7-1/2	10	24	24	LS05N-30-10-AD	4TQD421501R0000	0.309
						110	110...120	LS05N-30-10-AJ	4TQD421511R0000	0.306
						220...230	230...240	LS05N-30-10-AN	4TQD421521R0000	0.298
1-1/2	3	5	5	10	15	24	24	LS07N-30-10-AD	4TQD421701R0000	0.309
						110	110...120	LS07N-30-10-AJ	4TQD421711R0000	0.306
						220...230	230...240	LS07N-30-10-AN	4TQD421721R0000	0.298

Enclosure and accessories for enclosed direct-on-line starters

Up to 7.5 kW and 10 hp, protected by thermal overload relays

AC operated

B18N

IO1N16

B18N thermal overload relays

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
0.74 ... 1.00	6.0 A, Fuse type gG	10	B18N-1.0	4TQE572108R0000	0.130
1.00 ... 1.30	6.0 A, Fuse type gG	10	B18N-1.3	4TQE572109R0000	0.130
1.30 ... 1.70	10.0 A, Fuse type gG	10	B18N-1.7	4TQE572110R0000	0.130
1.70 ... 2.30	10.0 A, Fuse type gG	10	B18N-2.3	4TQE572111R0000	0.130
2.30 ... 3.10	10.0 A, Fuse type gG	10	B18N-3.1	4TQE572112R0000	0.130
3.10 ... 4.20	20.0 A, Fuse type gG	10	B18N-4.2	4TQE572113R0000	0.130
4.20 ... 5.70	20.0 A, Fuse type gG	10	B18N-5.7	4TQE572114R0000	0.130
5.70 ... 7.60	35.0 A, Fuse type gG	10	B18N-7.6	4TQE572115R0000	0.130
7.60 ... 10.0	35.0 A, Fuse type gG	10	B18N-10	4TQE572116R0000	0.130
10.0 ... 13.0	40.0 A, Fuse type gG	10	B18N-13	4TQE572117R0000	0.130
13.0 ... 16.0	40.0 A, Fuse type gG	10	B18N-16	4TQE572118R0000	0.130
16.0 ... 20.0	63.0 A, Fuse type gG	10	B18N-20	4TQE572119R0000	0.130

Empty enclosure with push-button

IP66 and type 4X plastic enclosure IEC / UL	–	IO1N16	4TQD419900R0000	0.53

IKHT4

Impulse contact blocks

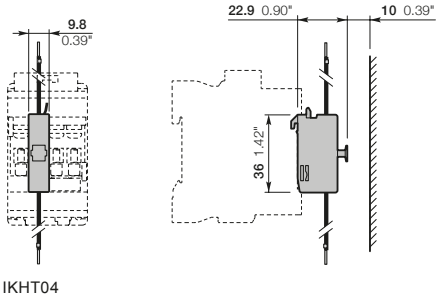
Impulse contact blocks are designed for use in enclosures, in association with an adjustable mechanical pushbutton.

- IKHT4 includes a N.O. contact with a black actuator ("ON" function).

This block is equipped with 2 connecting leads 0.5 mm² with ferrule, approximately 18 cm long.

Mounting: Clipped onto the front face of the contactors.

For contactors	Contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS45N	1 –	IKHT4	4TQD419151R0000	1	0.012



IKHT04

Main dimensions mm, inches

Enclosure and accessories for enclosed direct-on-line starters

Control supply wiring versions

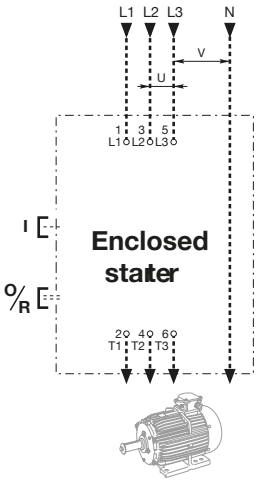


Diagram S

Separate supply

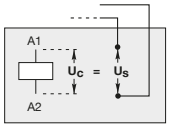


Diagram N

Phase-to-neutral

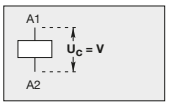
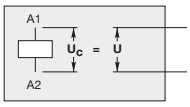


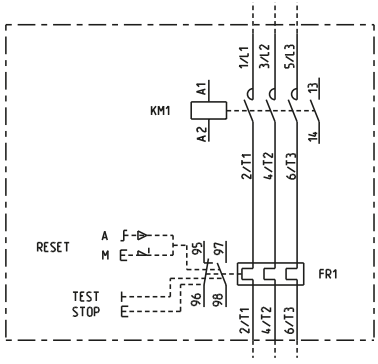
Diagram P

Phase-to-phase

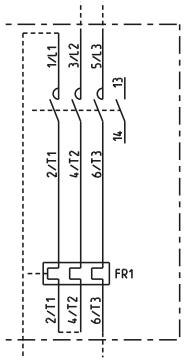


Wiring diagram

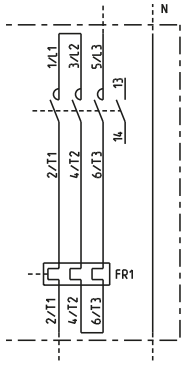
Power circuit



3-phase motor

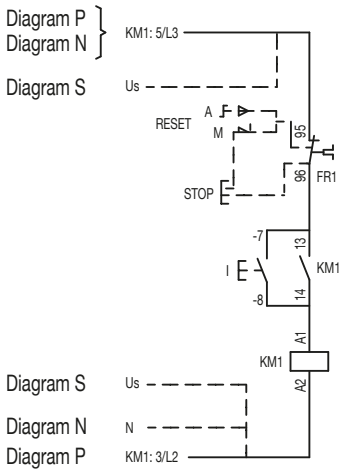


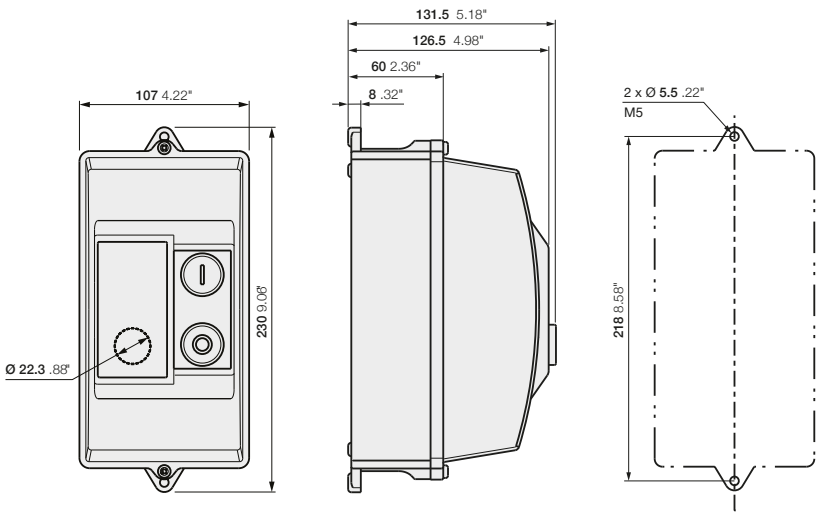
Phase-to-phase
Single phase motor



Phase-to-neutral
Single phase motor

AC local control





IO1N16

Main dimensions mm, inches

IEC starter types - ISO M20

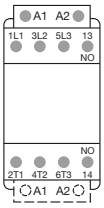
Cable inlet	Cable outlet
Enclosure top	Enclosure bottom
2 x ø 20 mm	2 x ø 20 mm
2 x ø 0.79"	2 x ø 0.79"

LS04N ... LS45N 3-pole contactors

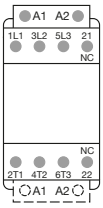
Terminal marking and positioning

LS04N ... LS45N contactors

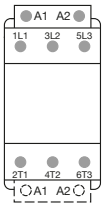
Standard devices without addition of auxiliary contacts



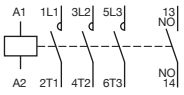
LS04N ... LS07N-30-10



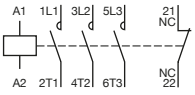
LS04N ... LS07N-30-01



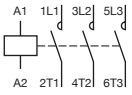
LS11N ... LS45N-30-00



LS04N ... LS07N-30-10

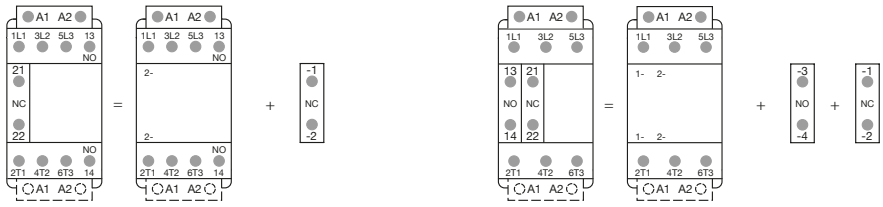


LS04N ... LS07N-30-01



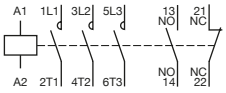
LS11N ... LS45N-30-00

Other possible contact combinations with auxiliary contacts added by the user

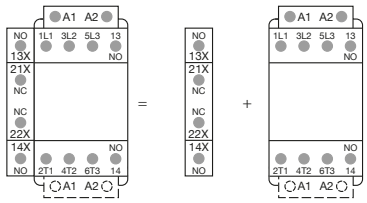


Combination 11 = LS04N ... LS07N-30-10 + H04N-F-01

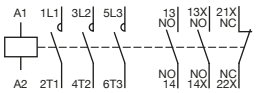
Combination 11 = LS11N ... LS45N-30-00 + H04N-F-10 + H04N-F-01



Combination 11



Combination 21 = H04N-L-11 + LS04N ... LS07N-30-10



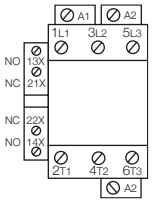
Combination 21

LS55N ... LS200N 3-pole contactors

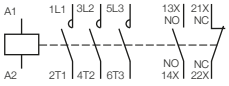
Terminal marking and positioning

LS55N ... LS75N 3-pole contactors - AC operated

Standard devices with factory mounted auxiliary contacts



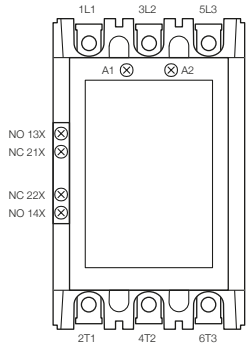
LS55N-30-11 ... LS75N-30-11



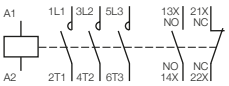
LS55N-30-11 ... LS75N-30-11

LS90N ... LS200N contactors - AC operated

Standard devices with factory mounted auxiliary contacts



LS90N-30-11 ... LS200N-30-11



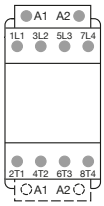
LS90N-30-11 ... LS200N-30-11

LS04N ... LS375N 4-pole contactors

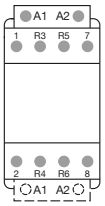
Terminal marking and positioning

LS04N ... LS37N contactors

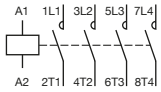
Standard devices without addition of auxiliary contacts



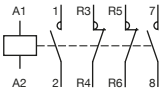
LS04N ... LS37N-40-00



LS04N ... LS37N-22-00

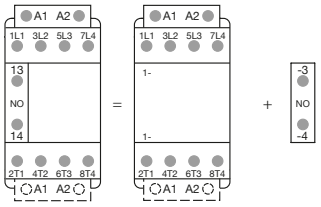


LS04N ... LS37N-40-00

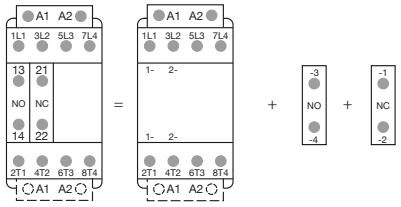


LS04N ... LS37N-22-00

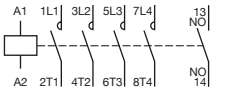
Other possible contact combinations with auxiliary contacts added by the user



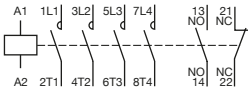
Combination 10 = LS04N ... LS37N-40-00 + H04N-F-10



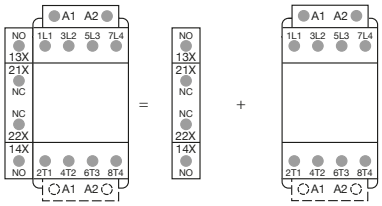
Combination 11 = LS04N ... LS37N-40-00 + H04N-F-10 + H04N-F-01



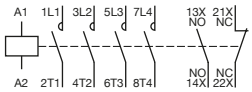
Combination 10



Combination 11

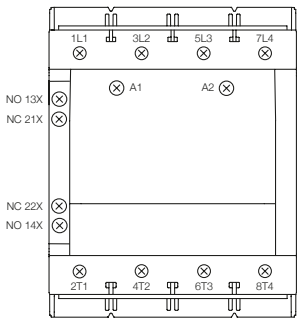


Combination 11 = H04N-L-11 + LS04N ... LS37N-40-00



Combination 11

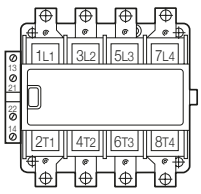
LS55N ... LS200N contactors



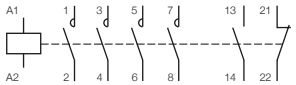
LS55N ... LS200N-40-11

LS55N ... LS200N-40-11

LS280N, LS375N contactors



LS280N, LS375N-40-11



LS280N, LS375N-40-11

Add-on auxiliary contacts for LS04N ... LS200N contactors

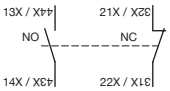
Terminal marking and positioning

1-pole auxiliary contacts

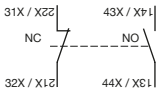
H04N-F-01
H06N-F-01

H04N-F-10
H06N-F-10

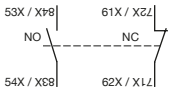
2-pole auxiliary contacts



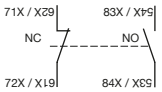
H04N-L-11
H06N-L-11
H07N-L-11
(Left-hand side mounted)



H04N-L-11
H06N-L-11
H07N-L-11
(Right-hand side mounted)



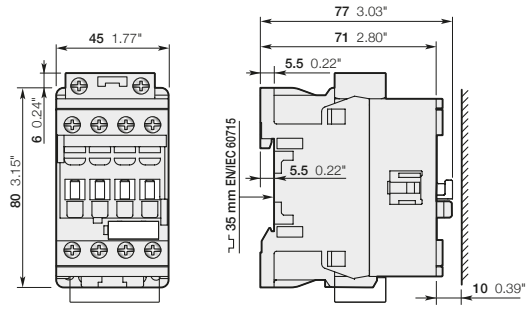
H06N-L-11B
H07N-L-11B
(Left-hand side mounted)



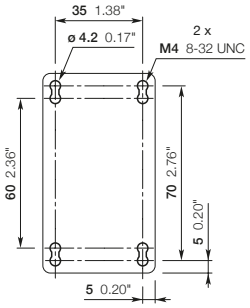
H06N-L-11B
H07N-L-11B
(Right-hand side mounted)

LS04N, LS05N, LS07N 3-pole contactors

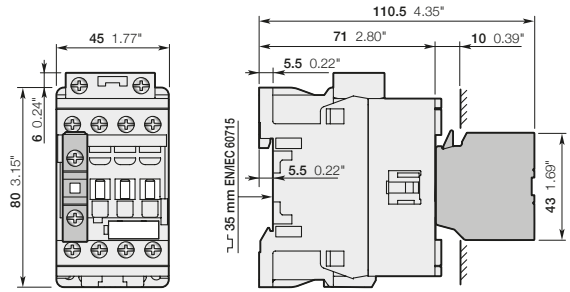
Dimensions



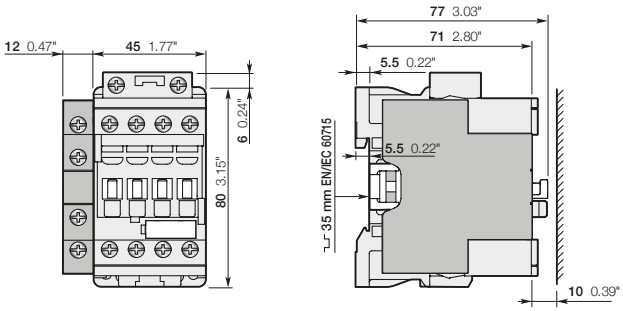
LS04N, LS05N, LS07N



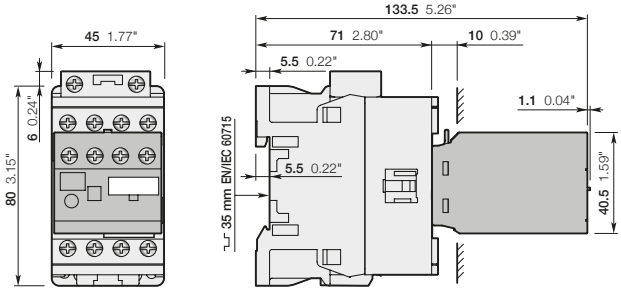
LS04N, LS05N, LS07N
+ B18N



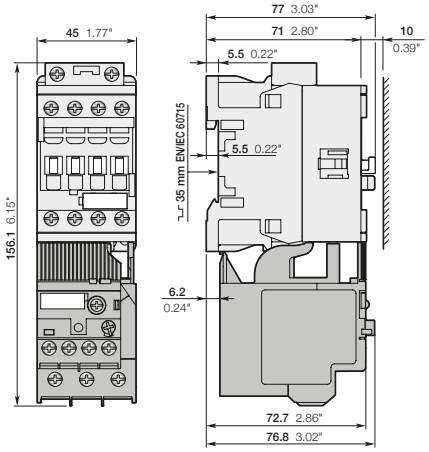
LS04N, LS05N, LS07N
+ H04N-F 1-pole auxiliary contact block



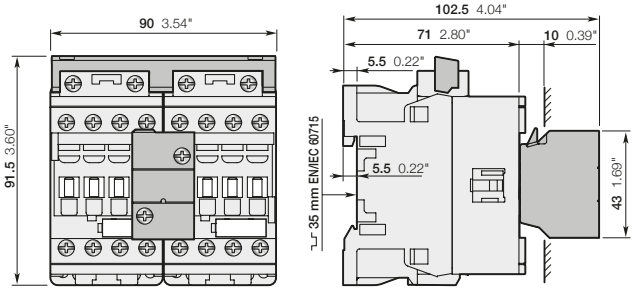
LS04N, LS05N, LS07N
+ H04N-L-11 2-pole auxiliary contact block



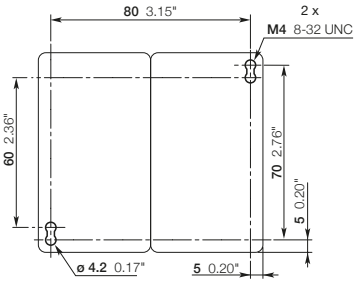
LS04N, LS05N, LS07N
+ TE04N electronic timer



LS04N, LS05N, LS07N
+ B18N thermal overload relay



LS04N, LS05N, LS07N
+ VB04NE mechanical and electrical interlock set



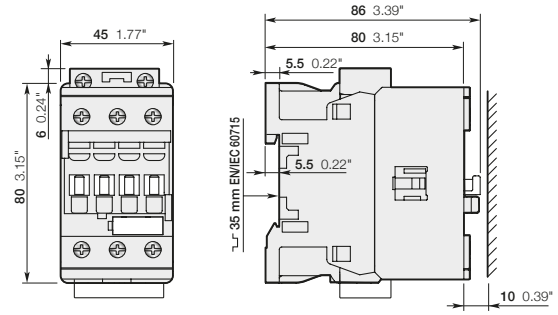
LS04N, LS05N, LS07N
+ VB04NE mechanical and electrical interlock set

(1) Note: For LS04N ... LS07N contactors, lateral distance to grounded component 2 mm (0.08") min.

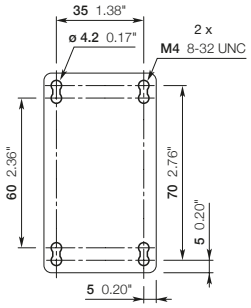
Main dimensions mm, inches (1)

LS11N, LS15N, LS18N 3-pole contactors

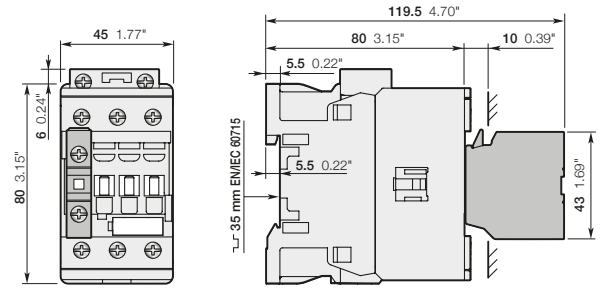
Dimensions



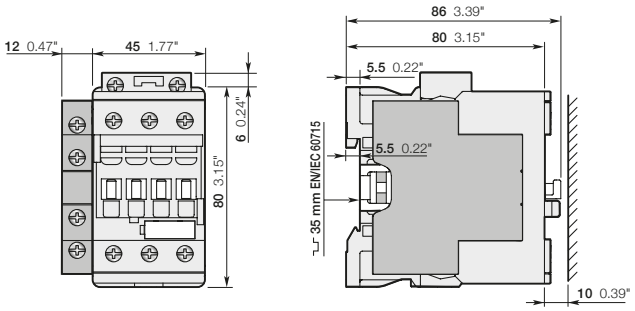
LS11N, LS15N, LS18N



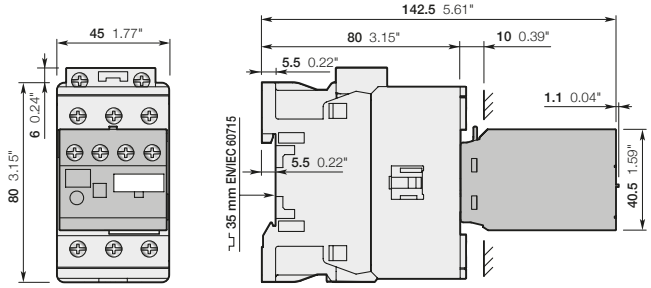
LS11N, LS15N, LS18N
+ B18N



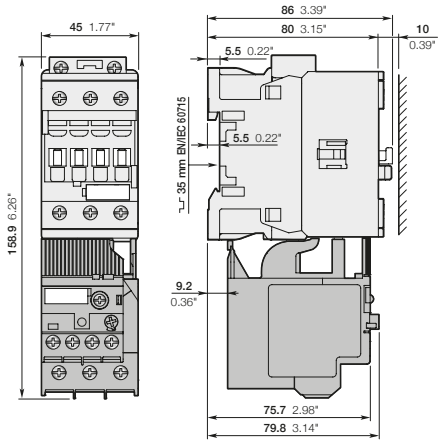
LS11N, LS15N, LS18N
+ H04N-F 1-pole auxiliary contact block



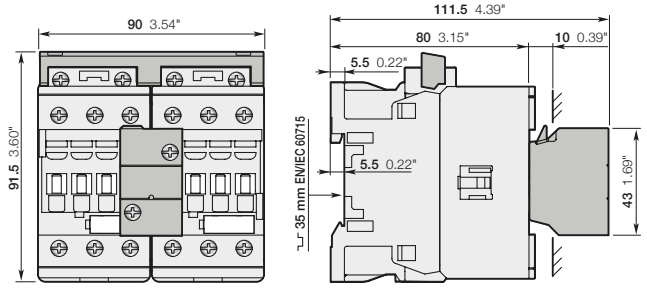
LS11N, LS15N, LS18N
+ H04N-L-11 2-pole auxiliary contact block



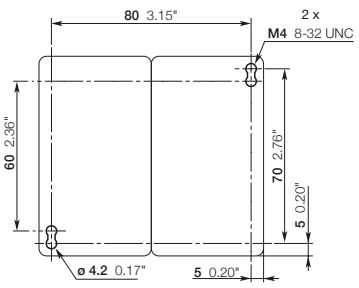
LS11N, LS15N, LS18N
+ TE04N electronic timer



LS11N, LS15N, LS18N
+ B18N thermal overload relay



LS11N, LS15N, LS18N
+ VB04NE mechanical and electrical interlock set



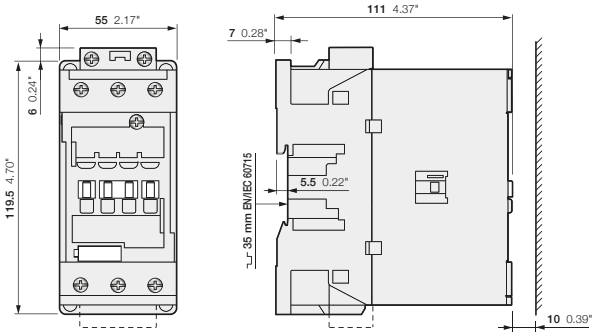
LS11N, LS15N, LS18N
+ VB04NE mechanical and electrical interlock set

(1) Note: For LS11N ... LS18N contactors, lateral distance to grounded component 2 mm (0.08") min.

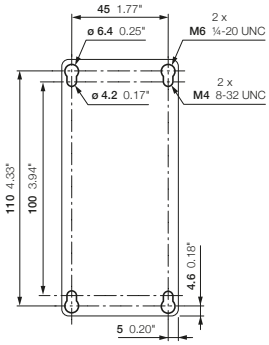
Main dimensions mm, inches (1)

LS22N, LS30N 3-pole contactors

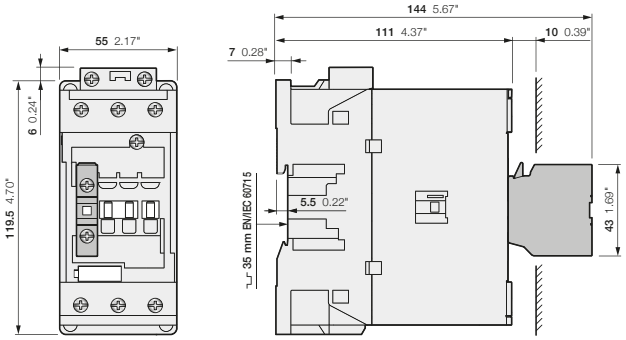
Dimensions



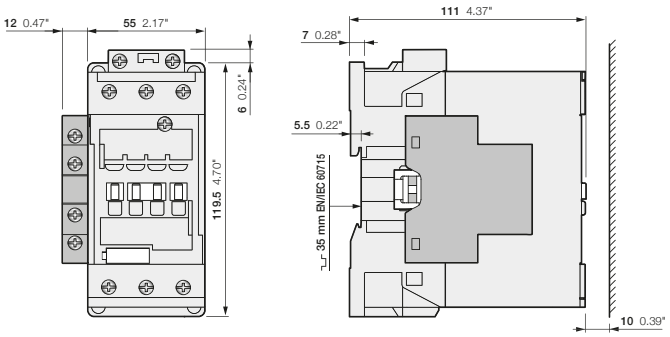
LS22N, LS30N



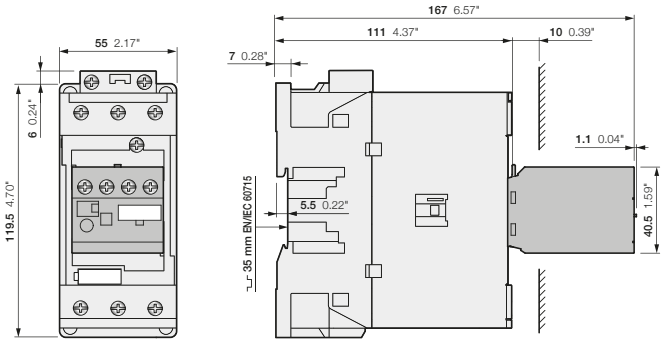
LS22N, LS30N



LS22N, LS30N
+ H04N-F 1-pole auxiliary contact block



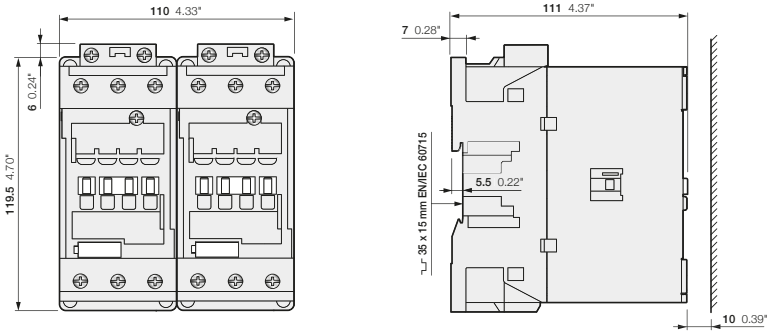
LS22N, LS30N
+ H04N-L-11 2-pole auxiliary contact block



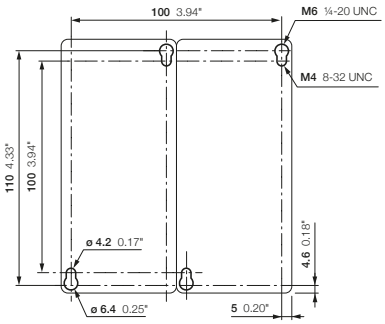
LS22N, LS30N
+ TE04N electronic timer

LS22N, LS30N 3-pole contactors

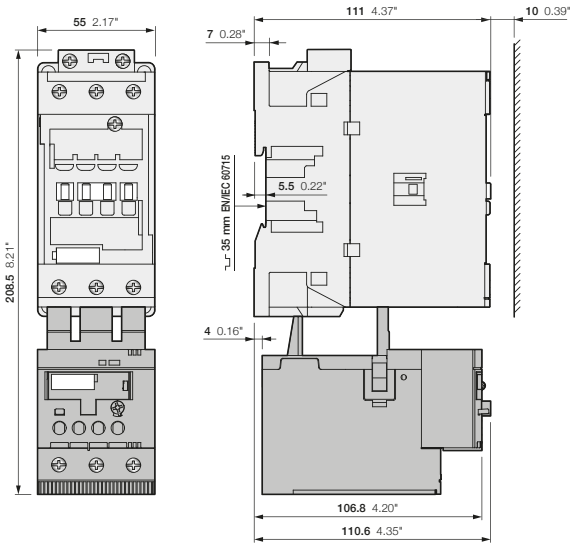
Dimensions



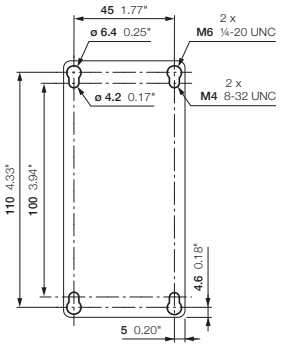
LS22N, LS30N
+ VB22N mechanical interlock unit



LS22N, LS30N
+ VB22N mechanical interlock unit



LS22N, LS30N
+ B30N thermal overload relay

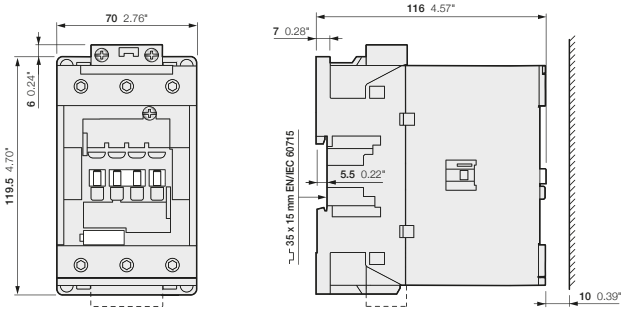


LS22N, LS30N
+ B30N

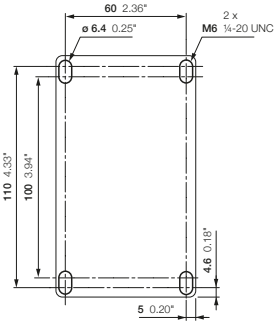
Main dimensions mm, inches

LS37N, LS45N 3-pole contactors

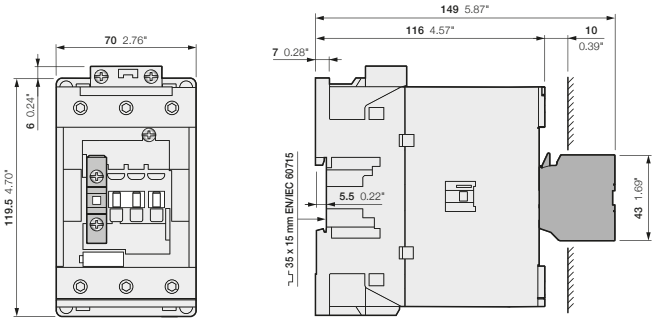
Dimensions



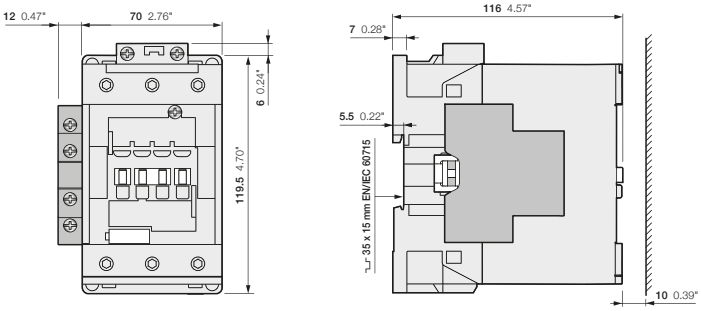
LS37N, LS45N



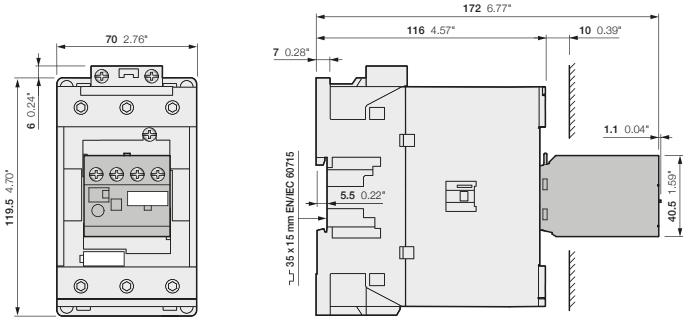
LS37N, LS45N



LS37N, LS45N
+ H04N-F 1-pole auxiliary contact block



LS37N, LS45N
+ H04N-L-11 2-pole auxiliary contact block

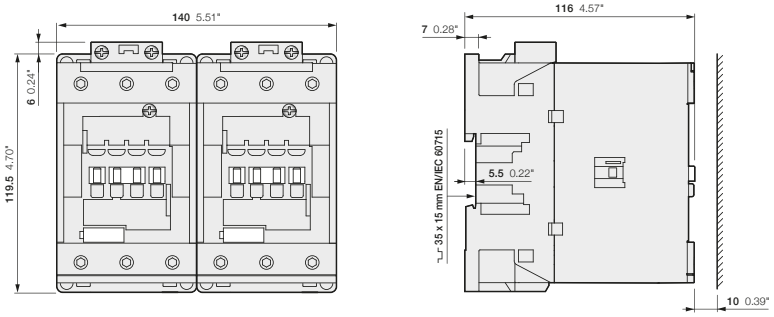


LS37N, LS45N
+ TE04N electronic timer

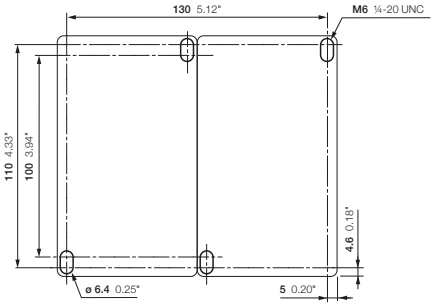
Main dimensions mm, inches

LS37N, LS45N 3-pole contactors

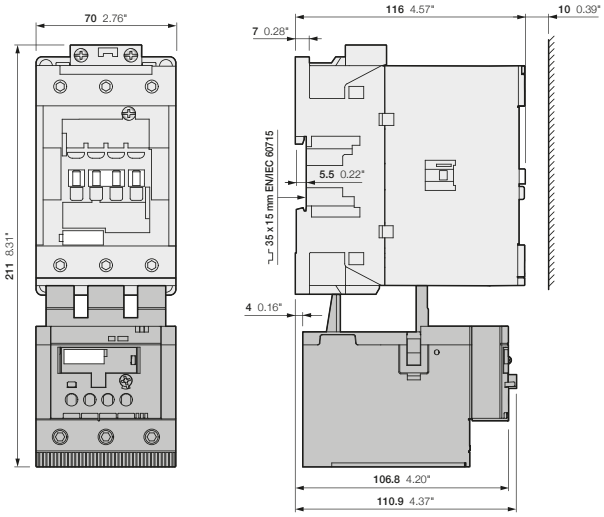
Dimensions



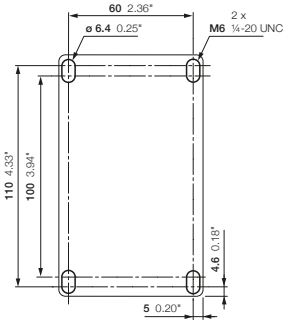
LS37N, LS45N
+ VB22N mechanical interlock unit



LS37N, LS45N
+ VB22N mechanical interlock unit



LS37N, LS45N
+ B45N thermal overload relay

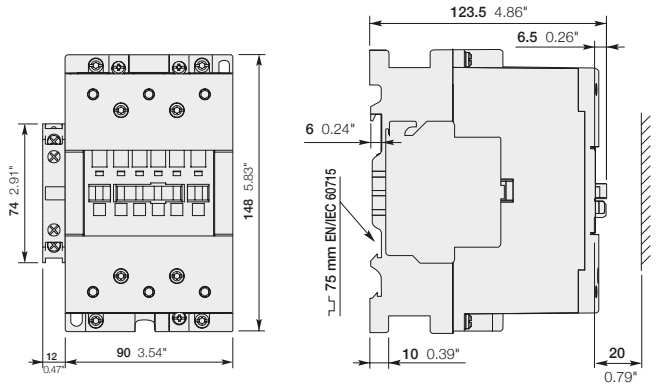


LS37N, LS45N
+ B45N

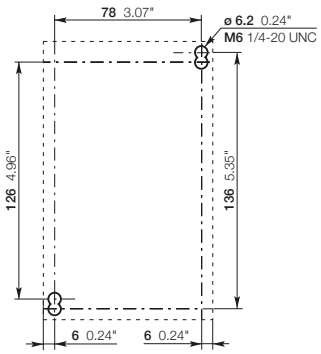
Main dimensions mm, inches

LS55N ... LS200N 3-pole contactors

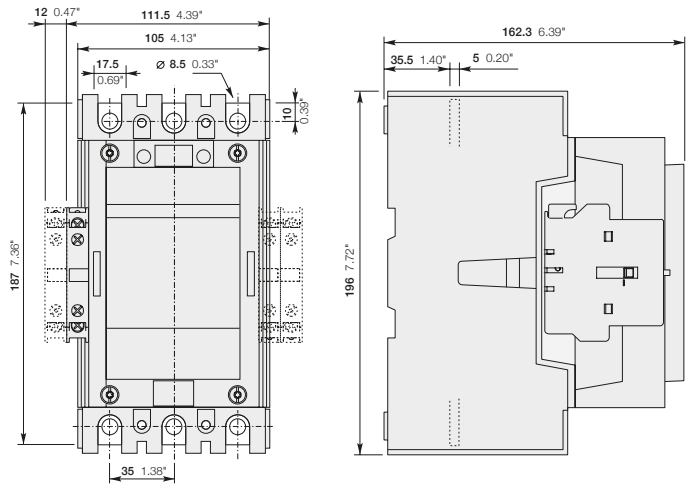
Dimensions



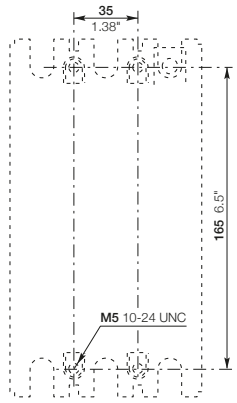
LS55N-30-11 ... LS75N-30-11



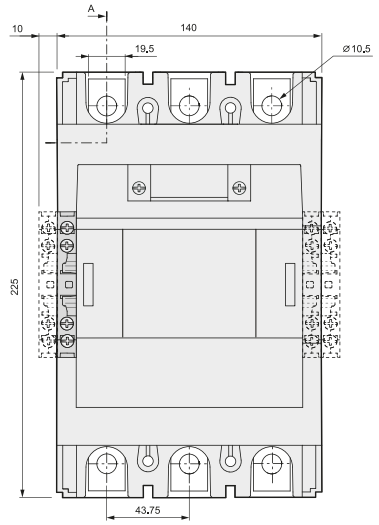
LS55N-30-11 ... LS75N-30-11

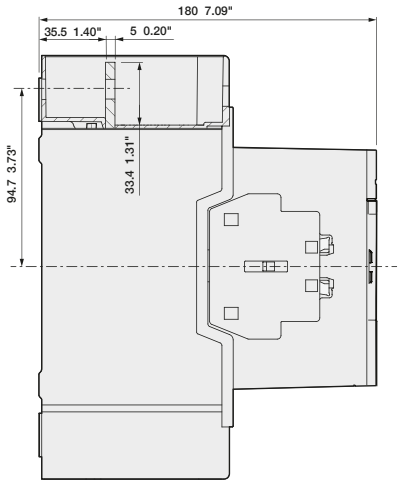


LS90N-30-11 ... LS110N-30-11
+ H06N-L-11 + H06N-L-11B 2-pole auxiliary contact blocks

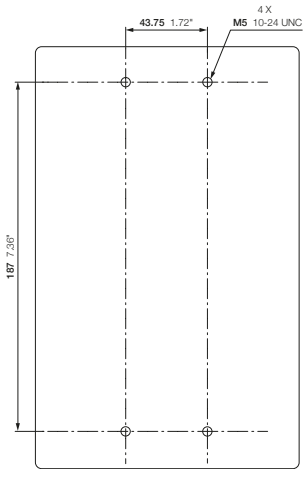


LS90N-30-11 ... LS110N-30-11





LS132N-30-11 ... LS200N-30-11
+ H07N-L-11 + H07N-L-11B 2-pole auxiliary contact blocks

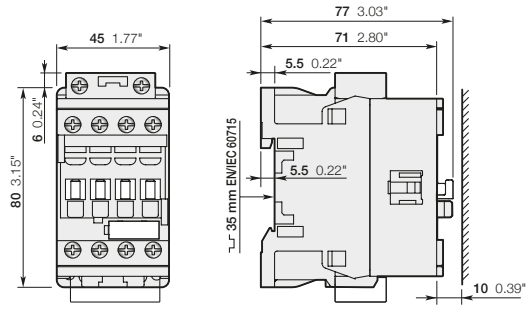


LS132N-30-11 ... LS200N-30-11

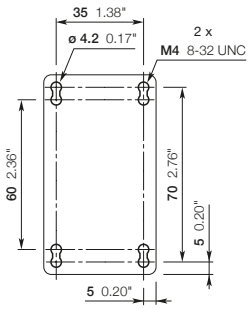
Main dimensions mm, inches

LS04N, LS07N 4-pole contactors

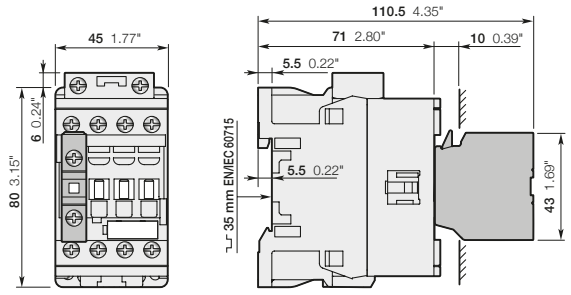
Dimensions



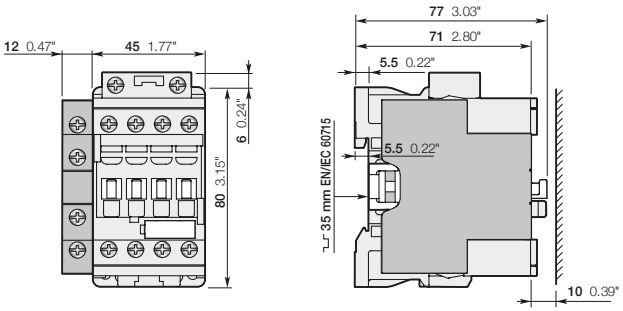
LS04N, LS07N



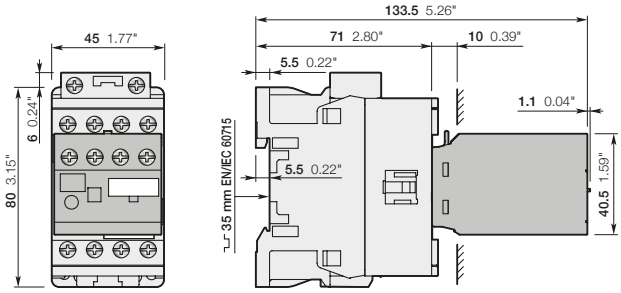
LS04N, LS07N



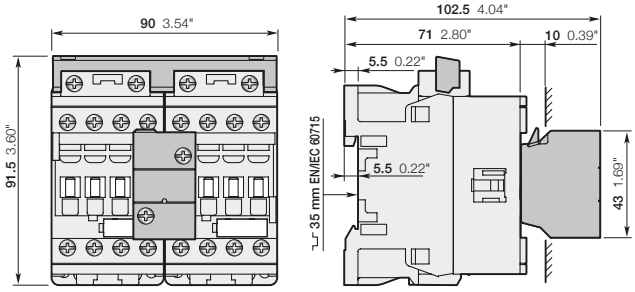
LS04N, LS07N
+ H04N-F 1-pole auxiliary contact block



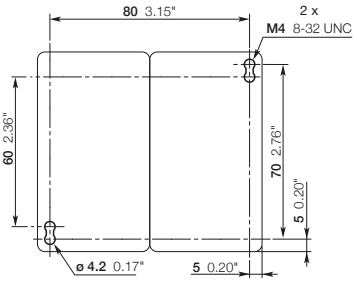
LS04N, LS07N
+ H04N-L-11 2-pole auxiliary contact block



LS04N, LS07N
+ TE04N electronic timer



LS04N-40-00, LS07N-40-00
+ VB04NE mechanical and electrical interlock set



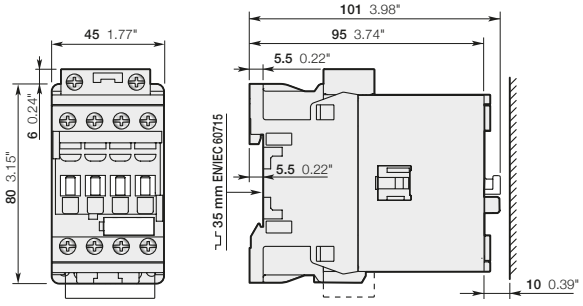
LS04N, LS07N..-40-00
+ VB04NE mechanical and electrical interlock set

(1) Note: contactor lateral distance to grounded component 2 mm (0.08") min.

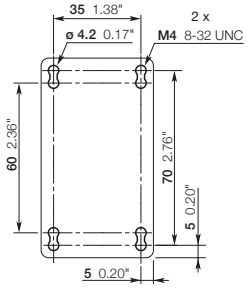
Main dimensions mm, inches (1)

LS18N 4-pole contactors

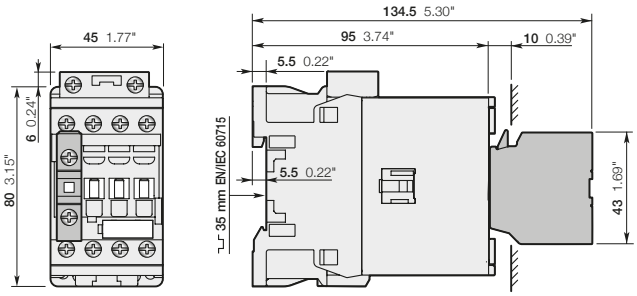
Dimensions



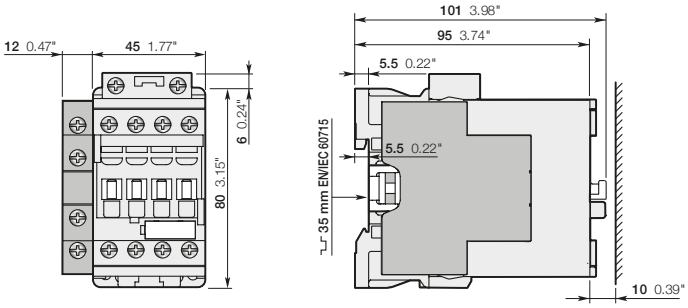
LS18N



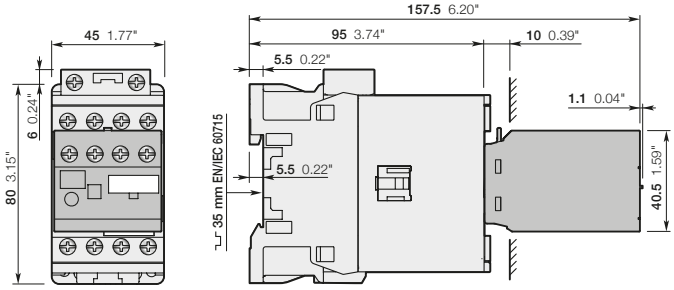
LS18N



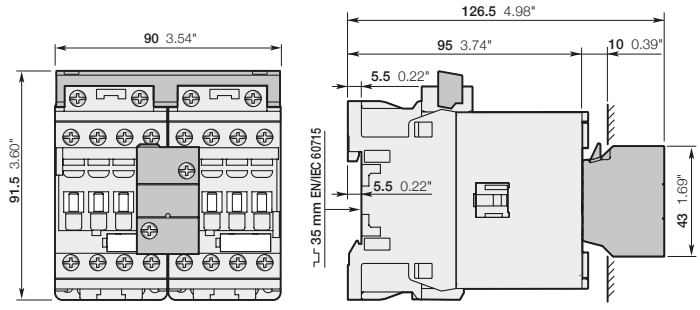
LS18N
+ H04N-F 1-pole auxiliary contact block



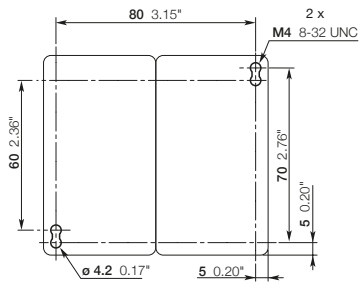
LS18N
+ H04N-L-11 2-pole auxiliary contact block



LS18N
+ TE04N electronic timer



LS18N-40-00
+ VB04NE mechanical and electrical interlock set



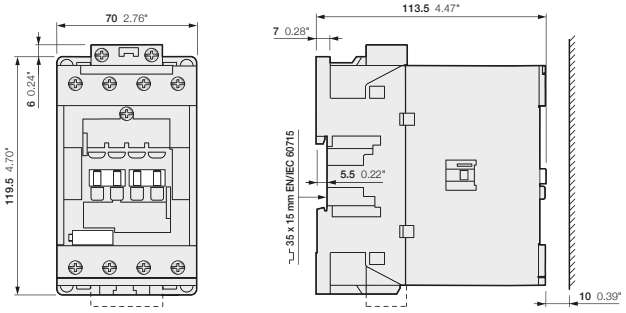
LS18N-40-00
+ VB04NE mechanical and electrical interlock set

(1) Note: For LS18N contactors, lateral distance to grounded component 2 mm (0.08") min.

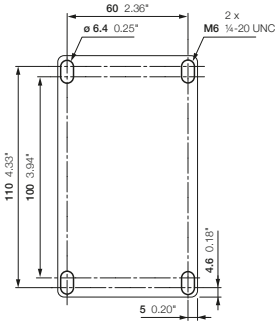
Main dimensions mm, inches (1)

LS22N 4-pole contactors

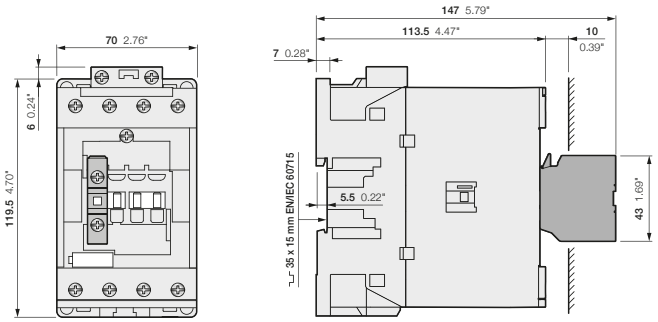
Dimensions



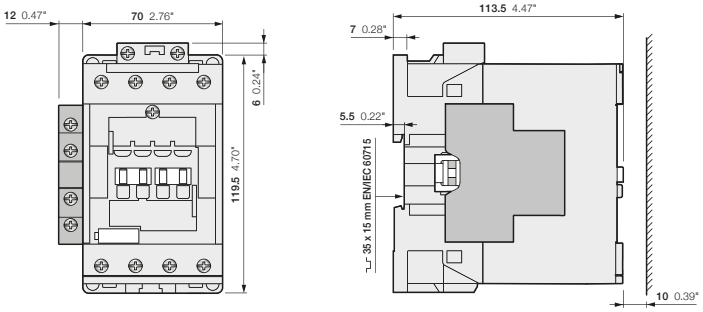
LS22N



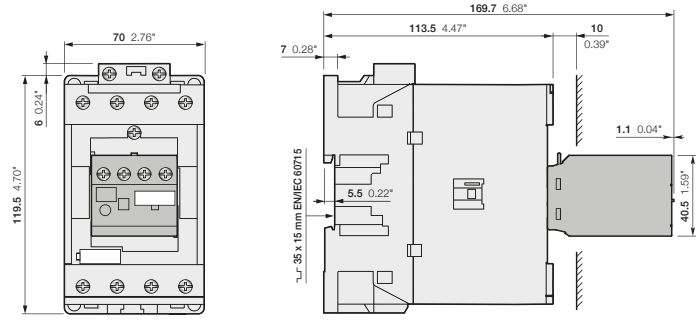
LS22N



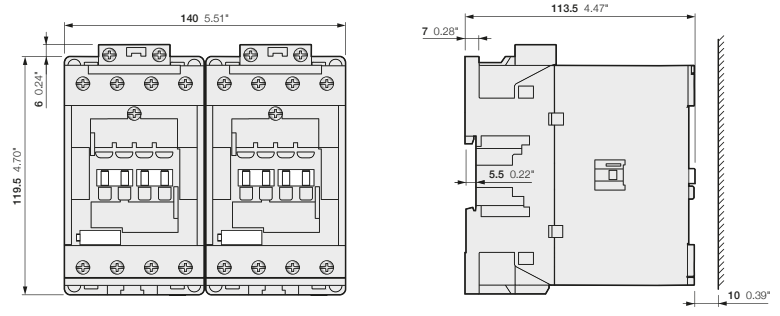
LS22N
+ H04N-F 1-pole auxiliary contact block



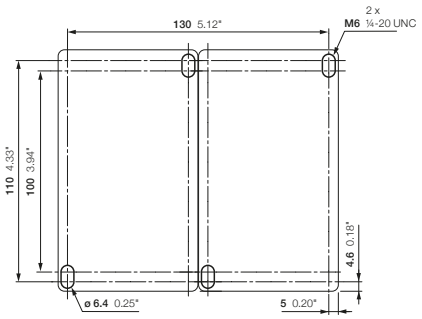
LS22N
+ H04N-L-11 2-pole auxiliary contact block



LS22N
+ TE04N electronic timer



LS22N-40-00
+ VB22N mechanical interlock unit

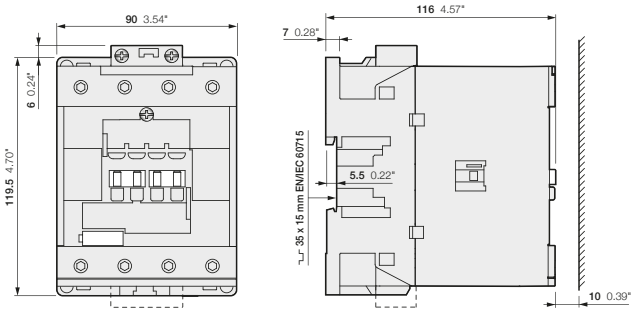


LS22N-40-00
+ VB22N mechanical interlock unit

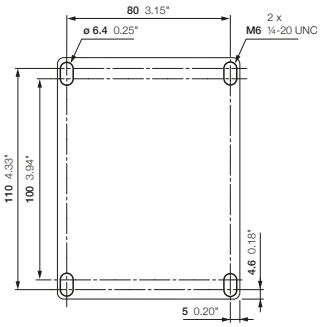
Main dimensions mm, inches

LS37N 4-pole contactors

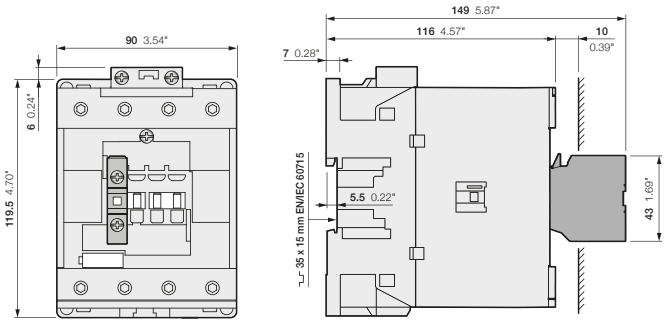
Dimensions



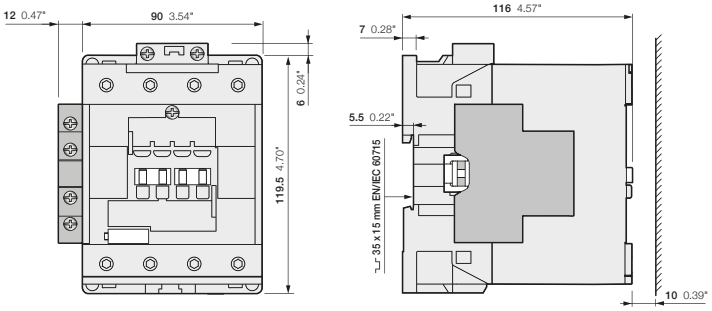
LS37N



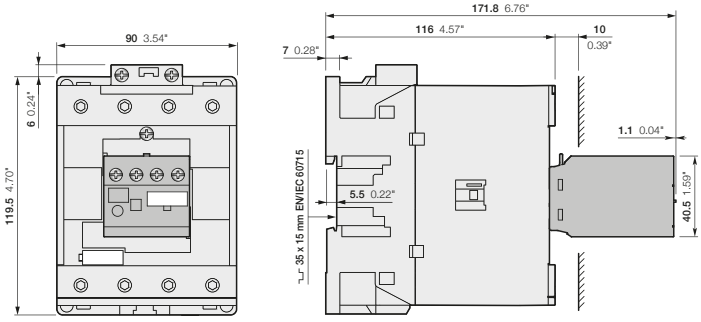
LS37N



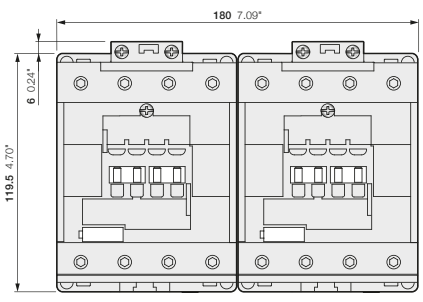
LS37N
+ H04N-F 1-pole auxiliary contact block

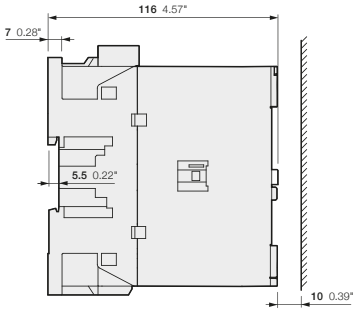


LS37N
+ H04N-L-11 2-pole auxiliary contact block

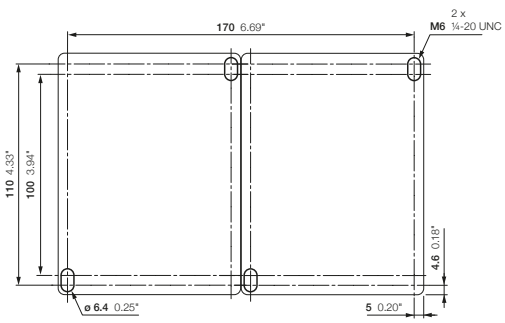


LS37N
+ TE04N electronic timer





LS37N-40-00
+ VB22N mechanical interlock unit

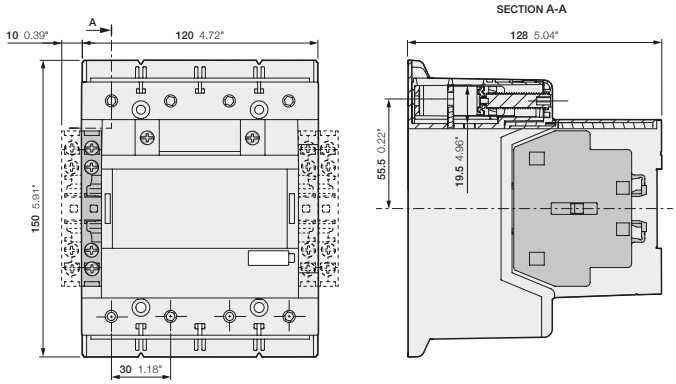


LS37N-40-00
+ VB22N mechanical interlock unit

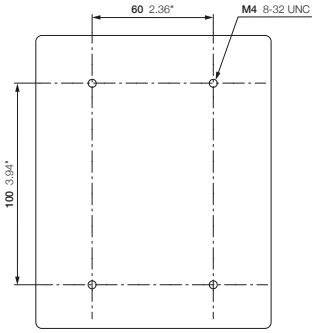
Main dimensions mm, inches

LS55N, LS75N 4-pole contactors

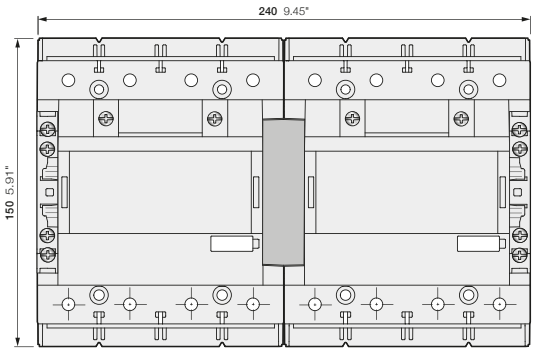
Dimensions



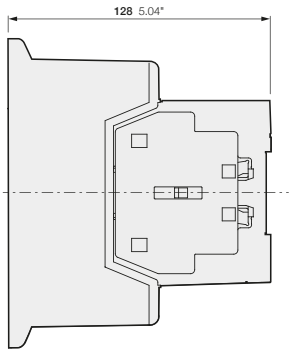
LS55N, LS75N-40-11
+ H07N-L-11(B) 2-pole auxiliary contact block

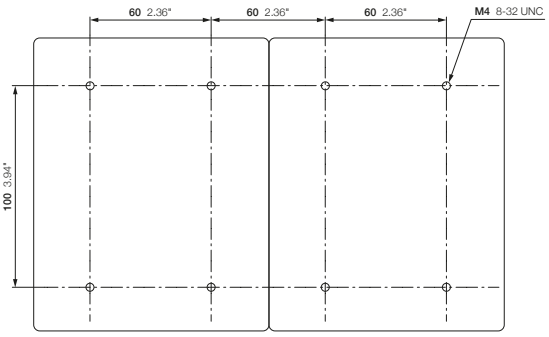


LS55N, LS75N



LS55N, LS75N-40-11
+ VB200N mechanical interlocking unit



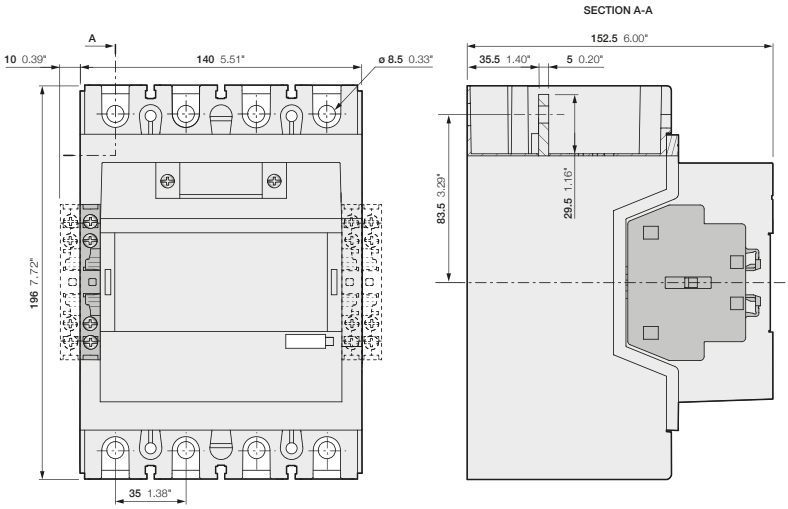


LS55N, LS75N
+ VB200N mechanical interlocking unit

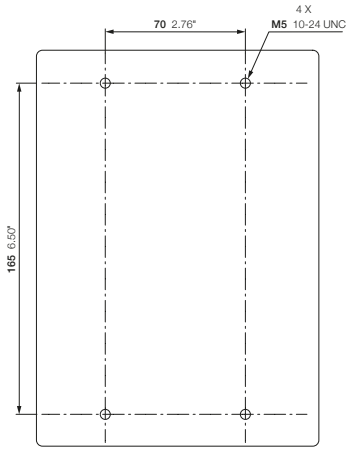
Main dimensions mm, inches

LS90N, LS110N 4-pole contactors

Dimensions



LS90N, LS110N-40-11
+ H07N-L-11(B) 2-pole auxiliary contact block

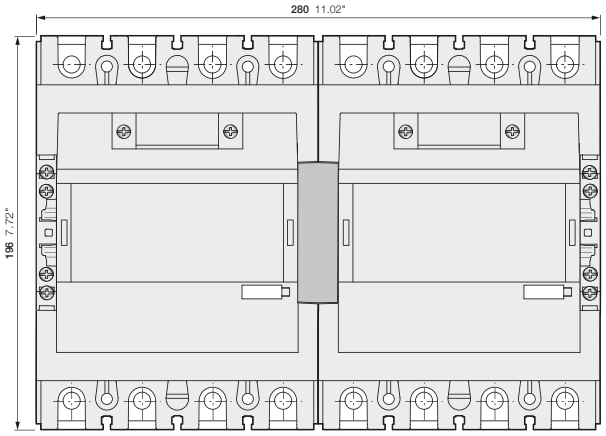


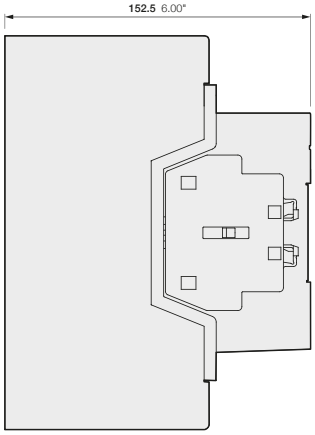
LS90N, LS110N

Main dimensions mm, inches

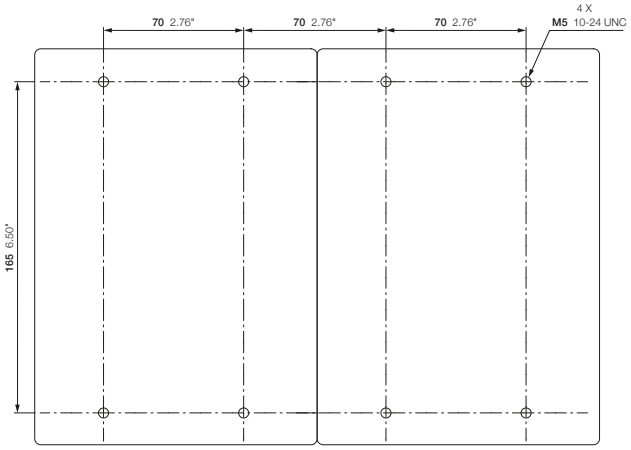
LS90N, LS110N 4-pole contactors

Dimensions





LS90N, LS110N-40-11
+ VB200N mechanical interlocking unit

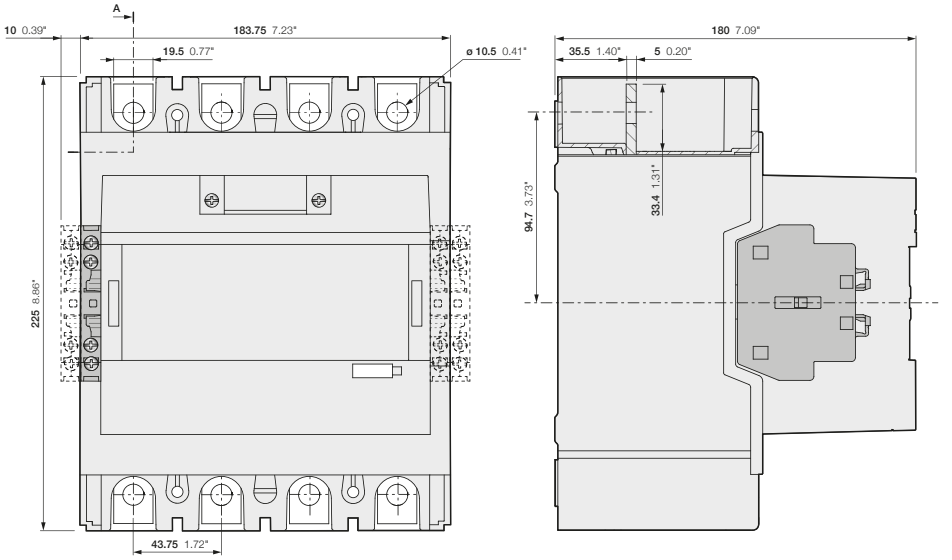


LS90N, LS110N
+ VB200N mechanical interlocking unit

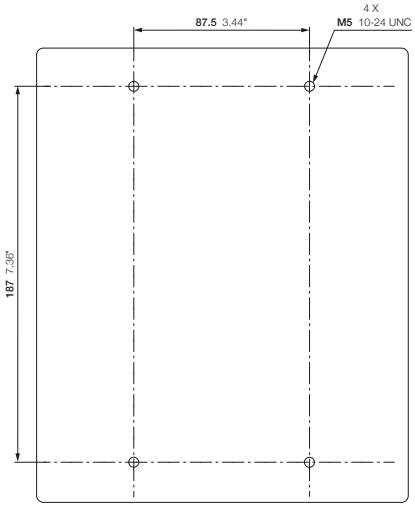
Main dimensions mm, inches

LS132N, LS160N, LS200N 4-pole contactors

Dimensions



LS132N, LS160N, LS200N-40-11
+ H07N-L-11(B) 2-pole auxiliary contact block

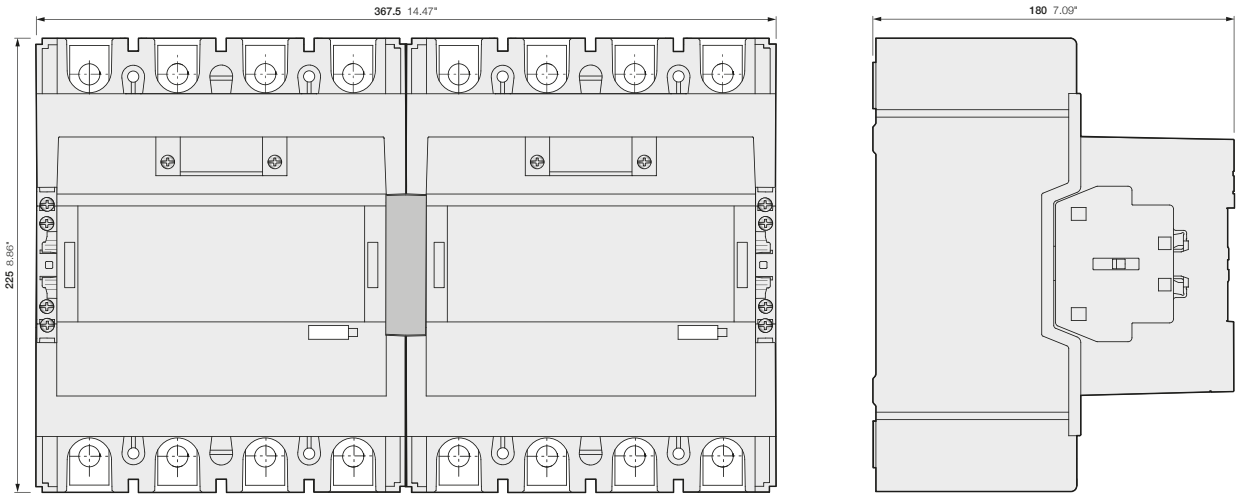


LS132N, LS160N, LS200N

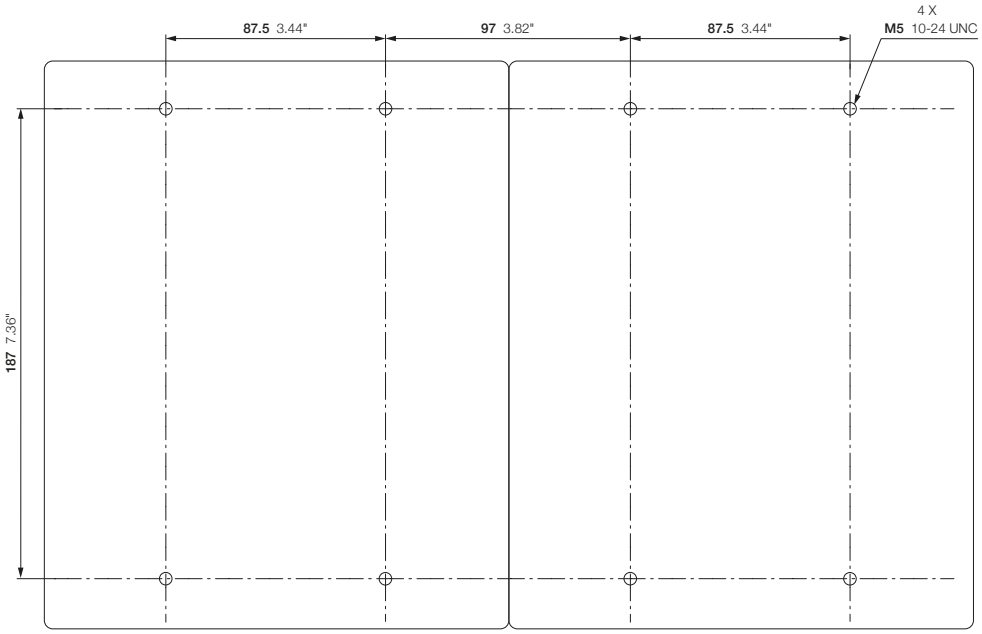
Main dimensions mm, inches

LS132N, LS160N, LS200N 4-pole contactors

Dimensions



LS132N, LS160N, LS200N-40-11
+ VB200N mechanical interlocking unit

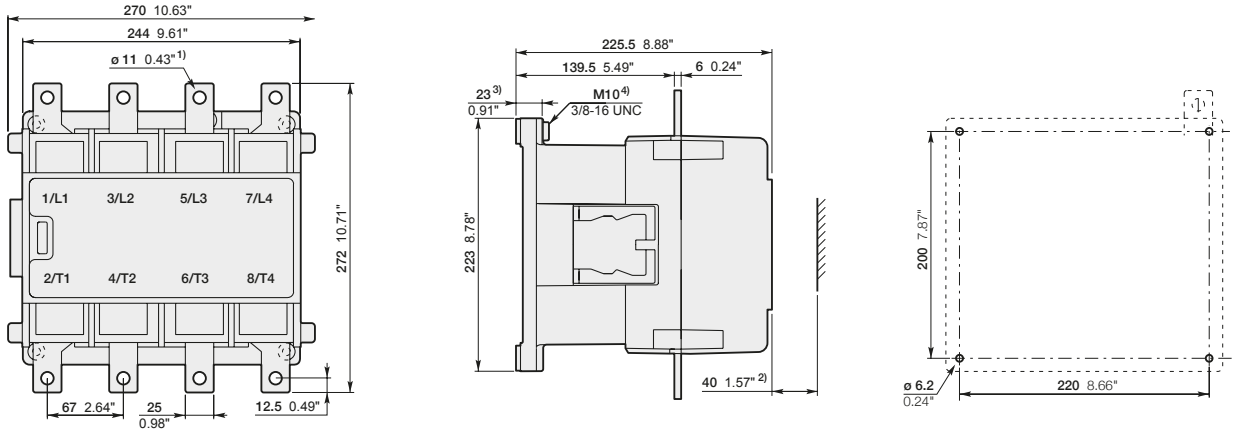


LS132N, LS160N, LS200N-40-11
+ VB200N mechanical interlocking unit

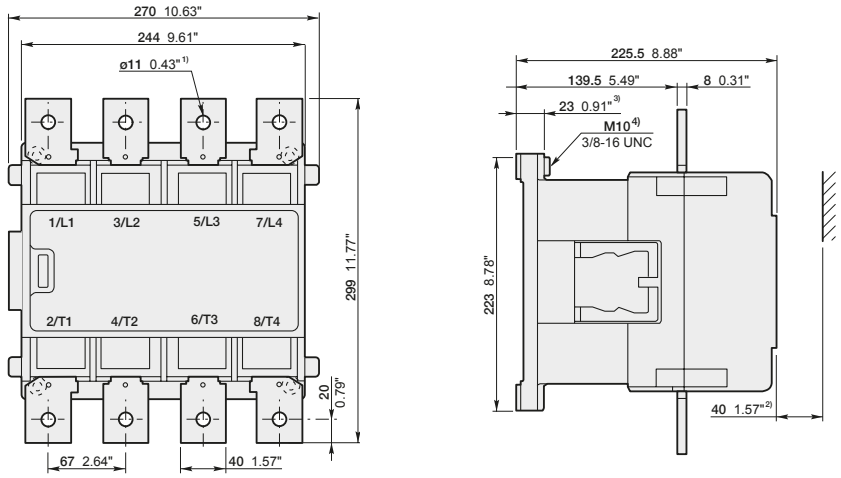
Main dimensions mm, inches

LS280N, LS375N 4-pole contactors AC operated

Dimensions

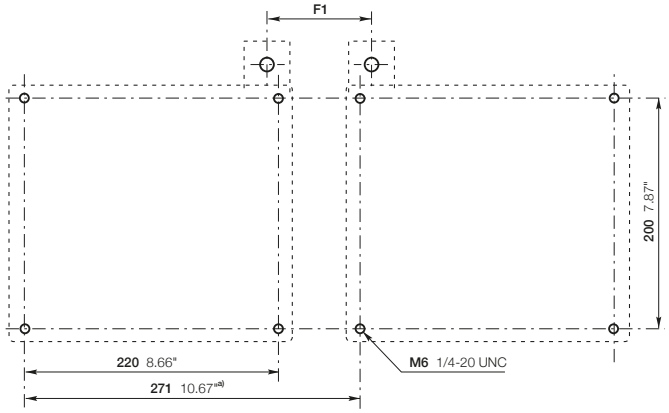


LS280N



LS375N

1) Screw, nut and washer by-packed
2) Min. distance to uninsulated wall
3) Damping elements are included
4) Earthing screw



LS375N

a) Min. dim Makes distance F1 = 70

Main dimensions mm, inches

AEG

Elettra

Via Lisbona 28A/5 - 35127 Padova
049 8075544 - info@elettra.it
www.elettra.it