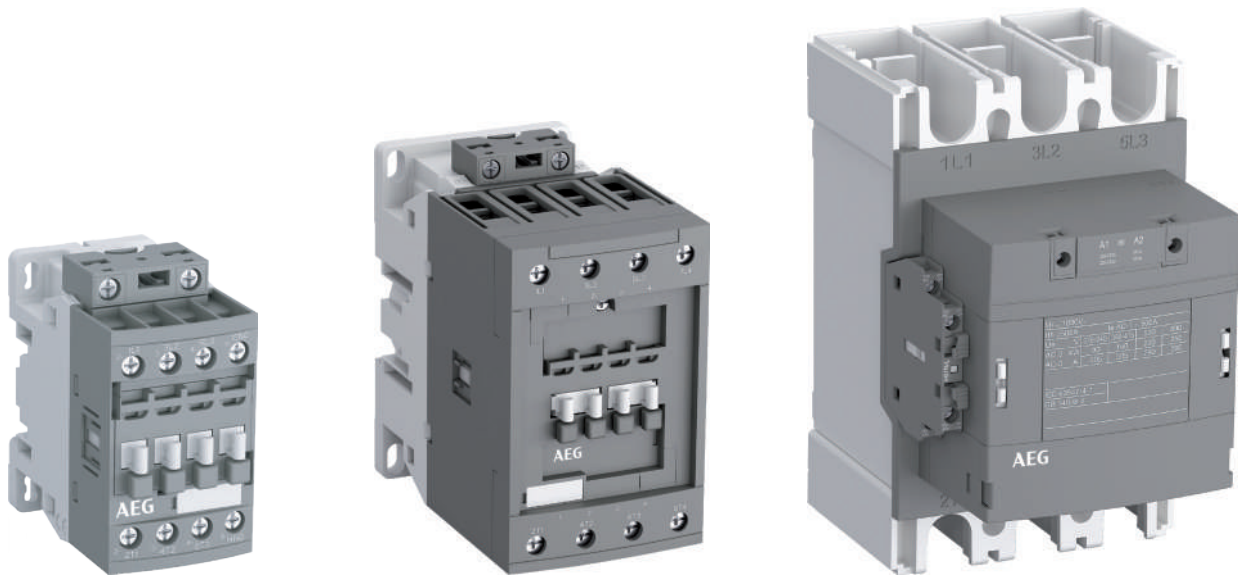


LS..N contactors



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, including the additional multiple benefits from the latest AC / DC electronically controlled coils technology up to 45 kW.

Optimized logistics

Cut your costs

Within contactors and motor protections 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

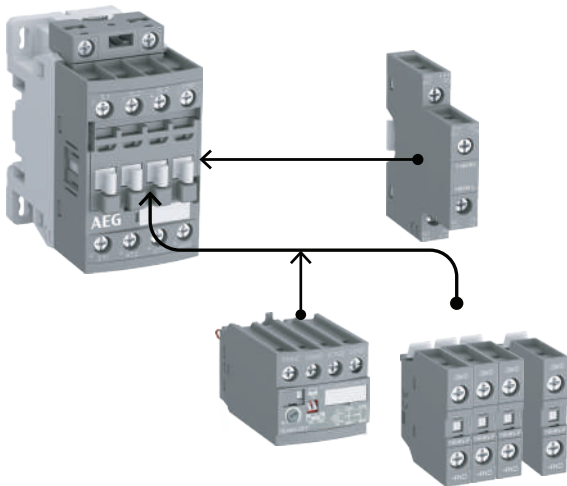
Wide control voltage range

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

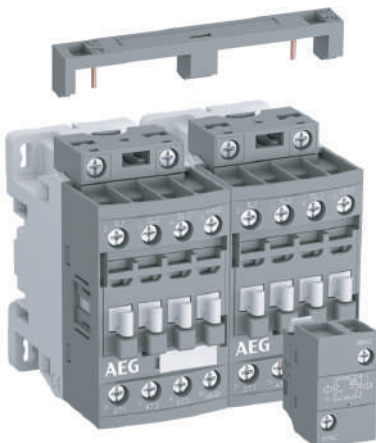
LS..N contactors coil and energy consumption are reduced allowing reductions of temperature rise, control transformers size and cabinets size.



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.



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 with a failure rate less than 10^{-6} according to IEC 60947-5-4.

Mechanically linked element and mirror contact functions are available with front or side mounted auxiliary contact blocks.

Certified and trusted contactors

LS04N...LS200N contactors are designed in compliance with IEC 60947-4-1 including CE marking.

The design and production of LS..N contactor range follow ISO 14000 processes and are compliant to RoHS directives.



Protect from overload in all conditions

Select thermal overload relays (trip class 10) to protect your motors against overload and phase failure.

Save space

Interlocking reversing doesn't require any spacing between contactors, so you can fit more functionality into cabinets or other enclosures.

LS04N ... LS18N 3-pole contactors

4 to 18.5 kW - AC / DC operated



LS04N-30-10



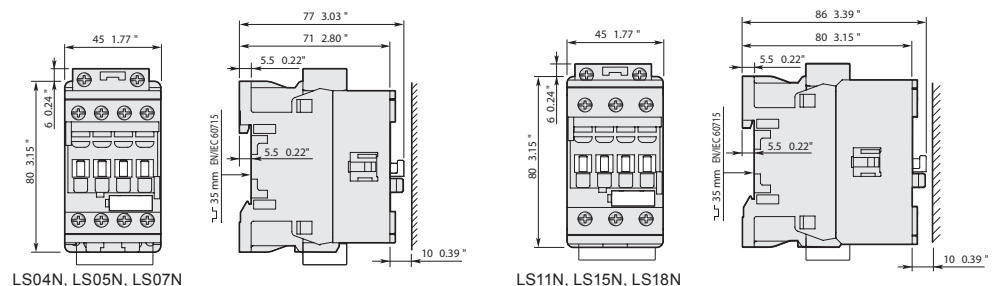
LS11N-30-00

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 Rated operational power	UL/CSA 3-phase motor rating 480 V	General use rating 600 V AC	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce) kg	
			AC-3 kW	AC-1 A					V 50/60 Hz
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
5.5	28	7.5	28	250...500	250...500	1 0	LS04N-30-10-EU	4TQD411351R0000	0.310
						0 1	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
7.5	30	10	30	250...500	250...500	1 0	LS05N-30-01-EN	4TQD411542R0000	0.270
						1 0	LS05N-30-10-EU	4TQD411551R0000	0.310
				24...60	20...60 (1)	1 0	LS07N-30-10-ED	4TQD411731R0000	0.270
						0 1	LS07N-30-01-ED	4TQD411732R0000	0.270
11	45	15	45	100...250	100...250	1 0	LS07N-30-01-EN	4TQD411741R0000	0.270
						0 1	LS07N-30-01-EN	4TQD411742R0000	0.270
				24...60	20...60 (1)	0 0	LS11N-30-00-ED	4TQD412330R0000	0.310
						0 0	LS11N-30-00-EN	4TQD412340R0000	0.310
15	50	20	50	250...500	250...500	0 0	LS11N-30-00-EU	4TQD412350R0000	0.350
						0 0	LS15N-30-00-ED	4TQD412730R0000	0.310
				100...250	100...250	0 0	LS15N-30-00-EN	4TQD412740R0000	0.310
						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
						0 0	LS18N-30-00-EN	4TQD412940R0000	0.310
				100...250	100...250	0 0	LS18N-30-00-EN	4TQD412940R0000	0.310
						0 0	LS18N-30-00-EU	4TQD412950R0000	0.350

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



Main dimensions mm, inches

LS04N ... LS18N 3-pole contactors

4 to 18.5 kW - AC operated



LS04N-30-10

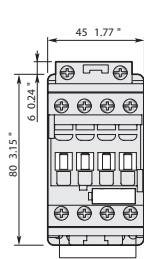


LS11N-30-00

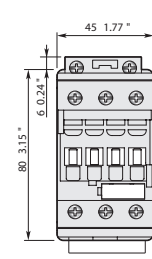
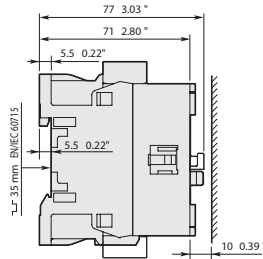
LS04N ... LS18N contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.

- 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.

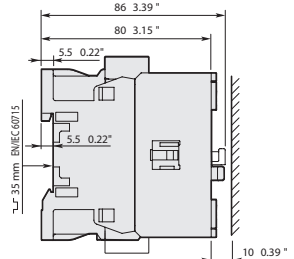
IEC	UL/CSA		Rated control circuit voltage U _c	Auxiliary contacts fitted	Type	Order code	Weight		
	Rated operational power	3-phase motor rating						General use rating	kg
400 V AC-3	current θ ≤ 40 °C	480 V	600 V AC				Pkg (1 pce)		
kW	A	hp	A	V 50 Hz	V 60 Hz		kg		
4	25	5	25	24	24	1 0	LS04N-30-10-AD	4TQD421301R0000	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
						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
						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
						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



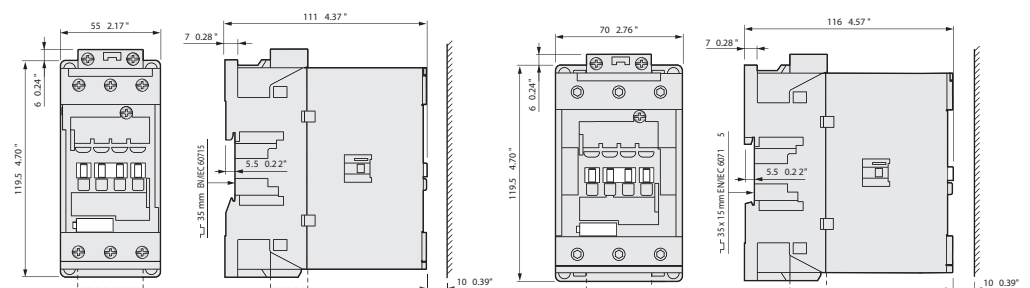
LS37N-30-00

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 Rated operational power 400 V AC-3 kW	UL / CSA 3-phase motor rating 480 V AC-1 A	General use rating 600 V AC hp A	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted 	Type (1)	Order code	Weight Pkg (1 pce) kg	
			V 50/60 Hz	V DC					
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.



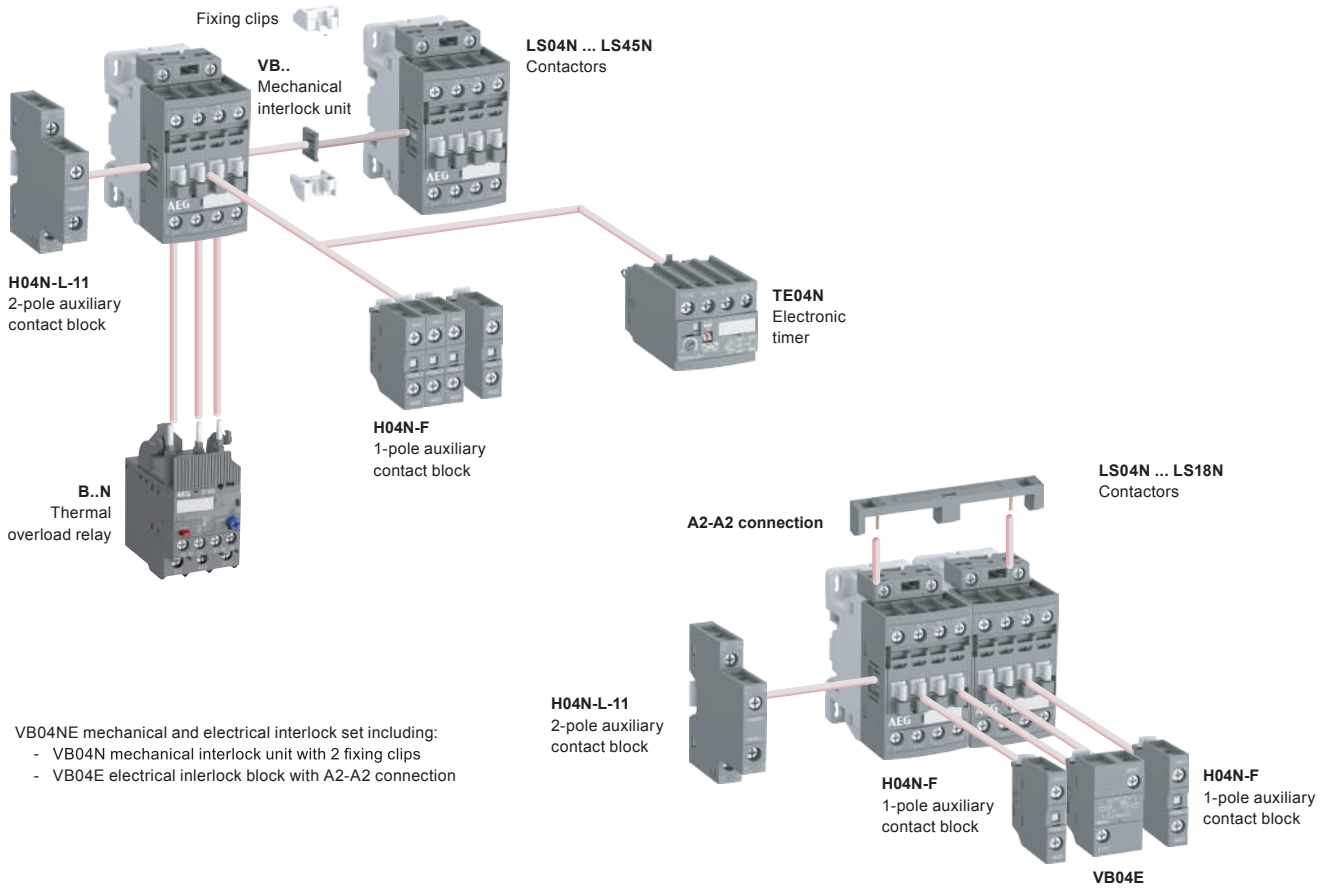
LS22N, LS30N

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 interlock 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		Electronic timer	Electrical and mechanical interlock set (between 2 contactors)	Side-mounted accessories	
			Auxiliary contact blocks				Auxiliary contact blocks	
			H04N-F		TE04N	VB04NE	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
LS11N ... LS18N	3	0	0	0	3 max.	-	+ 1 (2)	or 1
LS22N ... LS45N								
LS22N ... LS30N	3	0	0	0	4 max.	or 1	-	+ 1
LS37N, LS45N	3	0	0	0	4 max.	or 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



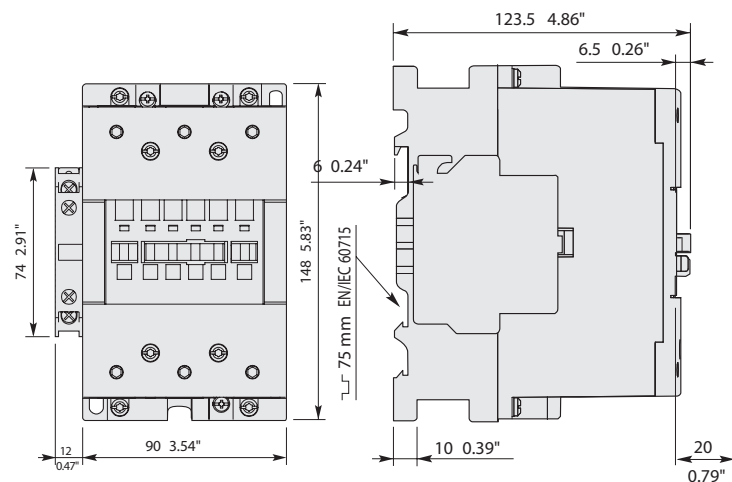
LS55N-30-11

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 Rated operational power 400 V	current $\theta \leq 40^\circ\text{C}$	Rated control circuit voltage Uc		Auxiliary contacts fitted 	Type	Order code	Weight Pkg (1 pce) kg
		V 50 Hz	V 60 Hz				
AC-3 kW	AC-1 A	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	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



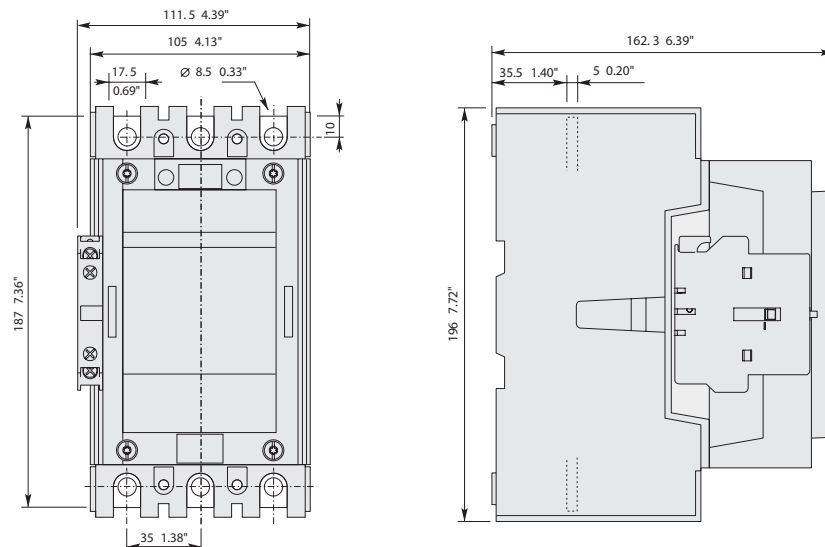
LS90N-30-11

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 Rated operational power 400 V	Rated control circuit voltage Uc	Auxiliary contacts fitted		Type	Order code	Weight Pkg (1 pce) kg
		AC-3 kW	AC-1 A			
90	250		1 1	LS90N-30-11-AJ	4TQD434913R0000	3.80
110	275		1 1	LS110N-30-11-AJ	4TQD435013R0000	3.80



LS90N, LS110N

Main dimensions mm, inches

LS132N ... LS200N 3-pole contactors

132 to 200 kW - AC operated



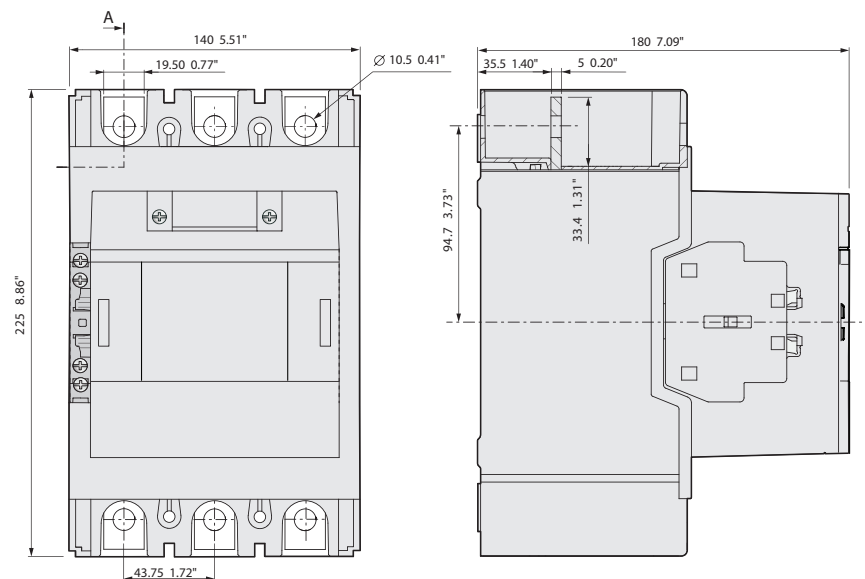
LS132N-30-11

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 Rated operational power 400 V	Rated operational current $\theta \leq 40^\circ\text{C}$	Rated control circuit voltage U_c (1)		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce) kg
		V 50 Hz	V 60 Hz				
AC-3 kW	AC-1 A	110	110...120				
		220...230	230...240				
132	400	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	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	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

LS04N ... LS18N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactors types	LS04N	LS05N	LS07N	LS11N	LS15N	LS18N	
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1						
Rated operational voltage U _e max.	690 V						
Rated frequency (without derating)	50 / 60 Hz						
Conventional free-air thermal current I _{th} acc. to IEC 60947-4-1, open contactors, $\theta \leq 40\text{ }^\circ\text{C}$	35 A	35 A	35 A	50 A	50 A	50 A	
With conductor cross-sectional area	6 mm ²	6 mm ²	6 mm ²	10 mm ²	10 mm ²	10 mm ²	
AC-1 Utilization category For air temperature close to contactor							
I _e / Rated operational current AC-1 U _e max. $\leq 690\text{ V}$, 50/60 Hz	$\theta \leq 40\text{ }^\circ\text{C}$	25 A	28 A	30 A	45 A	50 A	50 A
	$\theta \leq 60\text{ }^\circ\text{C}$	25 A	28 A	30 A	40 A	42 A	42 A
	$\theta \leq 70\text{ }^\circ\text{C}$	22 A	24 A	26 A	32 A	37 A	37 A
With conductor cross-sectional area	4 mm ²	6 mm ²	6 mm ²	10 mm ²	10 mm ²	10 mm ²	
AC-3, AC-3e Utilization category For air temperature close to contactor $\theta \leq 60\text{ }^\circ\text{C}$							
I _e / 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 1800 r.p.m. 60 Hz 3-phase motors	220-230-240 V	2.2 kW	3 kW	4 kW	6.5 kW	9 kW	11 kW
	380-400 V	4 kW	5.5 kW	7.5 kW	11 kW	15 kW	18.5 kW
	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 I _e AC-3, 12 x I _e AC-3e acc. to IEC 60947-4-1					
Rated breaking capacity AC-3, AC-3e	8 x I _e AC-3, 8.5 x I _e AC-3e acc. to IEC 60947-4-1						
AC-8a Utilization category (without thermal overload relay - U _e 400 V 50/60 Hz - $\theta \leq 40\text{ }^\circ\text{C}$)							
I _e / 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							
U _e $\leq 500\text{ V AC}$ - gG type fuse	25 A	32 A	32 A	50 A	63 A	63 A	
Rated short-time withstand current I _{cw} at 40 °C ambient temperature, in free air from a cold state	1 s	300 A	300 A	300 A	700 A	700 A	
	10 s	150 A	150 A	150 A	350 A	350 A	
	30 s	80 A	80 A	80 A	225 A	225 A	
	1 min	60 A	60 A	60 A	150 A	150 A	
	15 min	35 A	35 A	35 A	50 A	50 A	
Maximum breaking capacity cos $\phi = 0.45$	at 440 V	250 A	250 A	250 A	500 A	500 A	
	at 690 V	106 A	106 A	106 A	200 A	200 A	
Power dissipation per pole	I _e / AC-1	0.8 W	1 W	1.2 W	1.8 W	2.4 W	
	I _e / AC-3, AC-3e	0.1 W	0.2 W	0.35 W	0.6 W	0.9 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



Contactors types	LS22N	LS30N	LS37N	LS45N
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1			
Rated operational voltage U _e max.	690 V		1000 V	
Rated frequency (without derating)	50 / 60 Hz			
Conventional free-air thermal current I _{th} acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$	105 A	105 A	130 A	130 A
With conductor cross-sectional area	35 mm ²	35 mm ²	50 mm ²	50 mm ²
AC-1 Utilization category For air temperature close to contactor				
I _e / Rated operational current AC-1				
$\theta \leq 40^\circ\text{C}$	100 A	105 A	125 A	130 A
$\theta \leq 60^\circ\text{C}$	80 A	90 A	100 A	105 A
$\theta \leq 70^\circ\text{C}$	70 A	80 A	85 A	90 A
With conductor cross-sectional area	35 mm ²	35 mm ²	50 mm ²	50 mm ²
AC-3, AC-3e Utilization category For air temperature close to contactor $\theta \leq 60^\circ\text{C}$				
I _e / Max. rated operational current AC-3, AC-3e (1)				
AC-3e U _e \leq 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
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	30 A
Rated operational power AC-3, AC-3e (1)				
AC-3e U _e \leq 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
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 I _e AC-3, 12 x I _e AC-3e acc. to IEC 60947-4-1			
Rated breaking capacity AC-3, AC-3e	8 x I _e AC-3, 8.5 x I _e AC-3e acc. to IEC 60947-4-1			
AC-8a Utilization category (without thermal overload relay U _e 400 V 50/60 Hz - $\theta \leq 40^\circ\text{C}$)				
I _e / 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				
U _e \leq 500 V AC - gG type fuse	125 A	160 A	160 A	200 A
Rated short-time withstand current I _{cw} at 40 °C ambient temperature, in free air from a cold state				
1 s	1000 A	1000 A	1200 A	1200 A
10 s	600 A	600 A	780 A	780 A
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				
I _e / AC-1	6.3 W	7 W	7.6 W	8.2 W
I _e / 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".

LS55N ... LS200N 3-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactors types	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1						
Rated operational voltage Ue max.	1000 V						
Rated frequency limits	25 ... 400 Hz						
Rated frequency (without derating)	50 / 60 Hz						
Conventional free-air thermal current Ith acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$	160 A	190 A	250 A	275 A	400 A	500 A	600 A
With conductor cross-sectional area	70 mm ²	95 mm ²	120 mm ²	150 mm ²	240 mm ² (2)	300 mm ²	2X185 mm ²
AC-1 Utilization category							
For air temperature close to contactor							
le / Rated operational current AC-1 $\theta \leq 40^\circ\text{C}$	160 A	190 A	250 A	275 A	400 A	500 A	600 A
Ue max. $\leq 690\text{ V}$, 50/60 Hz $\theta \leq 55^\circ\text{C}$	145 A	145 A	230 A	250 A	350 A	400 A	500 A
$\theta \leq 70^\circ\text{C}$	130 A	130 A	180 A	180 A	290 A	325 A	400 A
With conductor cross-sectional area	70 mm ²	95 mm ²	120 mm ²	150 mm ²	240 mm ² (2)	300 mm ²	2X185 mm ²
AC-3 Utilization category							
For air temperature close to contactor $\theta \leq 55^\circ\text{C}$							
le / 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 1800 r.p.m. 60 Hz 3-phase motors							
220-230-240 V	30 kW	45 kW	55 kW	59 kW	75 kW	90 kW	110 kW
380-400 V	55 kW	75 kW	90 kW	110 kW	132 kW	160 kW	200 kW
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 - $\theta \leq 40^\circ\text{C}$)							
le / 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 $\leq 500\text{ V AC}$ - gG type fuse	200 A	315 A	315 A	355 A	500 A	500 A	630 A
Rated short-time withstand current Icw							
at 40 °C ambient temperature, in free air from a cold state							
1 s	1320 A	1320 A	1800 A	2000 A	2650 A	3050 A	3700 A
10 s	800 A	800 A	1200 A	1500 A	2120 A	2440 A	2960 A
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 $\cos \varphi = 0.45$							
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							
le / AC-1	7.5 W	10.5 W	16 W	17 W	32 W	50 W	72 W
le / 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".

LS04N ... LS18N 3-pole contactors

Technical data

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

Contactors 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".

LS22N ... LS45N 3-pole contactors

Technical data

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

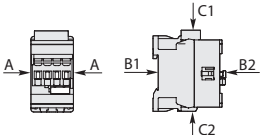
Contactor types	LS22N	LS30N	LS37N	LS45N
Standards	UL 60947-4-1, CSA-C22.2 N°60947-4-1			
Maximum operational voltage	600 V			
NEMA size	-	-	3	-
NEMA continuous amp rating	Thermal current	-	90 A	-
NEMA maximum horse power ratings				
1-phase, 60 Hz	115 V AC	-	-	-
	230 V AC	-	-	-
NEMA maximum horse power 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
With conductor cross-sectional area		AWG 4	AWG 3	AWG 2
1 pole	80 V DC	80 A	90 A	105 A
2 poles in serie	160 V DC	80 A	90 A	105 A
3 poles in serie	240 V DC	80 A	90 A	105 A
With conductor cross-sectional area		AWG 4	AWG 3	AWG 2
UL / CSA maximum 1-phase motor rating				
Full load current	120 V AC	34 A	56 A	80 A
	240 V AC	50 A	68 A	88 A
Horse power rating	120 V AC	3 hp	5 hp	7-1/2 hp
	240 V AC	10 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
	220-240 V AC	54 A	68 A	80 A
	440-480 V AC	52 A	65 A	77 A
	550-600 V AC	52 A	62 A	77 A
Horse power rating (1)	200-208 V AC	15 hp	20 hp	25 hp
	220-240 V AC	20 hp	25 hp	30 hp
	440-480 V AC	40 hp	50 hp	60 hp
	550-600 V AC	50 hp	60 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
	250 V DC	55 A	72 A	89 A
Horse power rating	125 V DC	7-1/2 hp	10 hp	10 hp
	250 V DC	15 hp	20 hp	25 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
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".

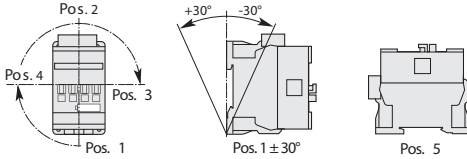
LS04N ... LS18N 3-pole contactors

Technical data

General technical data

Contactors types	LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Rated insulation voltage U_i acc. to IEC 60947-4-1 acc. to UL / CSA	690 V 600 V					
Rated impulse withstand voltage U_{imp} .	6 kV					
Electromagnetic compatibility	Devices complying with IEC 60947-1 / 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 60068-2-27 and 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 acc. to IEC 60068-2-6	5...300 Hz 4 g closed position / 2 g open position					

Mounting characteristics and conditions for use

Contactors types	LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Mounting positions						
	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 60715, 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 $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$.					
	DC supply	At $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$.					
AC control voltage 50/60 Hz		24...500 V AC					
Rated control circuit voltage U_c		50 VA					
Coil consumption	Average pull-in value	2.2 VA / 2 W					
	Average holding value						
DC control voltage		20...500 V DC					
Rated control circuit voltage U_c		50 W					
Coil consumption	Average pull-in value	2 W					
	Average holding value						
PLC-output control		ED coil not suitable for direct control by PLC output					
Drop-out voltage		$\leq 60\%$ of $U_c \text{ min}$.					
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 $\theta \leq 60^\circ\text{C}$ $0.85 \dots 1.1 \times U_c$.					
		At $\theta \leq 70^\circ\text{C}$ U_c					
AC control voltage		24...230 V					
Rated control circuit voltage U_c	50 Hz	24...240 V					
	60 Hz						
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 U_c					
	60 Hz	40...70 % of U_c					
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	690 V		1000 V	
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 60947-1 / EN 60947-1 - Environment A and B			
Ambient air temperature close to contactor				
Operation	Fitted with thermal overload relay			
	Without thermal overload relay			
Storage	-40...+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	10 millions operating cycles			
Max. switching frequency	3600 cycles/h			
Shock withstand				
acc. to IEC 60068-2-27 and 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 $\theta \leq 70$ °C $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$.			
acc. to IEC 60947-4-1	DC supply At $\theta \leq 70$ °C $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$.			
AC control voltage 50/60 Hz				
Rated control circuit voltage U_c	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 U_c	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 $U_c \text{ min}$.			
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				
Mounting distances	Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor LS22N ... LS45N			
Fixing	The contactors can be assembled side by side			
On rail according to IEC 60715, 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

Contactors types	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Rated insulation voltage U_i acc. to IEC 60947-4-1	1000 V						
Rated impulse withstand voltage U_{imp}	8 kV						
Ambient air temperature close to contactor							
Operation	-40...+70 °C						
Without thermal overload relay							
Storage	-40...+70 °C						
Climatic withstand	acc. to IEC 60068-2-30		Category B acc. to IEC60947-1 / EN 60947-1 Annex Q				
Maximum operating altitude (without derating)	3000 m						
Shock withstand acc. to IEC 60068-2-27 and 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

Contactors types	LS55N	LS75N	LS90N	LS110N	LS132N	LS160N	LS200N
Coil operating limits acc. to IEC 60947-4-1	AC supply						
	At $\theta \leq 70^\circ\text{C}$ 0.85 ... 1.1 x U_c		At $\theta \leq 55^\circ\text{C}$ 0.85 ... 1.1 x U_c		At $\theta \leq 70^\circ\text{C}$ 0.85 ... 1.1 x U_c max		
	Please also refer to "Mounting characteristics and conditions for use"						
AC control voltage 50/60 Hz							
Rated control circuit voltage U_c	at 50 Hz		24...440 V				
	at 60 Hz		24...440 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
	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
Drop-out voltage	approx. 40...65 % of U_c				55 % of U_c 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

Contactors 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 $\theta \leq 55^\circ\text{C}$		0.85...1.1 x U_c				
	at $55^\circ\text{C} \leq \theta \leq 70^\circ\text{C}$		0.85...1.1 x U_c				
6	at $\theta \leq 55^\circ\text{C}$		0.95...1.1 x U_c				
	at $\theta \leq 55^\circ\text{C}$		Unauthorized				
Mounting distances	The contactors can be assembled side by side						
Fixing	-						
On rail according to IEC 60715, EN 60715	2 x M6 placed diagonally		4 x M5				
By screws (not supplied)							

LS04N ... LS18N 3-pole contactors

Technical data

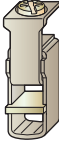
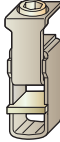












Connecting characteristics

Contactor types	LS04N	LS05N	LS07N	LS11N	LS15N	LS18N
Main terminals	 Screw terminals with cable clamp					
Connection capacity (min. ... max.)						
Main conductors (poles)						
 Rigid Solid ($\leq 4 \text{ mm}^2$)	1 x	1...6 mm ²			2.5...10 mm ²	
 Rigid Stranded ($\geq 1 \text{ mm}^2$)	2 x	1...6 mm ²			2.5...10 mm ²	
 Flexible with non insulated ferrule	1 x	0.75...6 mm ²			1.5...10 mm ²	
 Flexible with non insulated ferrule	2 x	0.75...6 mm ²			1.5...10 mm ²	
 Flexible with insulated ferrule	1 x	0.75...4 mm ²			1.5...10 mm ²	
 Flexible with insulated ferrule	2 x	0.75...2.5 mm ²			1.5...4 mm ²	
 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 mm ²				
 Rigid solid/stranded	2 x	1...2.5 mm ²				
 Flexible with non insulated ferrule	1 x	0.75...2.5 mm ²				
 Flexible with non insulated ferrule	2 x	0.75...2.5 mm ²				
 Flexible with insulated ferrule	1 x	0.75...2.5 mm ²				
 Flexible with insulated ferrule	2 x	0.75...1.5 mm ²				
 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 60947-1 / EN 60947-1 and IEC 60529 / 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	 <p>Screw terminals with double connector 2 x (9.3 width x 7.9/10.3 depth)</p>		 <p>Screw terminals with double connector 2 x (12.4 width x 9.3/11.1 depth)</p>	
Connection capacity (min. ... max.)				
Main conductors (poles)				
 Rigid Solid ($\leq 4 \text{ mm}^2$)	1 x	6...35 mm ²	6...70 mm ²	
 Stranded ($\geq 6 \text{ mm}^2$)	2 x	6...35 mm ²	6...50 mm ²	
 Flexible with non insulated ferrule	1 x	4...35 mm ²	6...50 mm ²	
 Flexible with insulated ferrule	1 x	4...35 mm ²	6...50 mm ²	
 Bars or lugs	2 x	4...35 mm ²	6...50 mm ²	
	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 mm ²		
 Flexible with non insulated ferrule	2 x	1...2.5 mm ²		
 Flexible with insulated ferrule	1 x	0.75...2.5 mm ²		
 Flexible with insulated ferrule	2 x	0.75...2.5 mm ²		
 Flexible with insulated ferrule	1 x	0.75...2.5 mm ²		
 Flexible with insulated ferrule	2 x	0.75...1.5 mm ²		
 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 60947-1 / EN 60947-1 and IEC 60529 / 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	Solid ($\leq 4 \text{ mm}^2$)	} 1 x 10...95 mm ² 2 x 6...35 mm ²
		Stranded ($\geq 6 \text{ mm}^2$)	
	Flexible with ferrule		1 x 10...70 mm ² (1) 2 x 6...35 mm ² (1)
	Flexible with insulated ferrule		1 x 10...70 mm ² (1) 2 x 6...35 mm ² (1)
	Bars or lugs		L < 13 mm I > 6 mm
Connection capacity acc. to UL / CSA		AWG 6 ... 2/0	
Stripping length		9 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 0.75...2.5 mm ² 2 x 0.75...2.5 mm ²
	Flexible with ferrule		1 x 0.75...2.5 mm ² 2 x 0.75...2.5 mm ²
	Lugs		L < 8 mm ² I > 3.7 mm ²
Connection capacity acc. to UL / CSA		1 or 2x	AWG 18 ... 14
Stripping length			
Coil terminals		9 mm	
Built-in auxiliary terminals		10 mm	
Tightening torque			
Coil terminals		Recommended	1 Nm / 9 lb.in
		Max.	1.2 Nm
Built-in auxiliary terminals		Recommended	-
		Max.	-
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529			
Main terminals		IP10	
Coil terminals		IP20	
Built-in auxiliary terminals		-	
Screw terminals			
Main terminals		Delivered in open position, screws of unused terminals must be tightened	
		M8	
		Screwdriver type	Hexagon socket (s = 4 mm)
Coil terminals		M3.5	
		Screwdriver type	Flat Ø 5.5 / Pozidriv 2
Built-in auxiliary terminals		-	
		Screwdriver type	-

(1) Use flexible without ferrule.

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 mm ²
	Single for Al/Cu cable	25...150 mm ²
	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 mm ²
	2 x	1...4 mm ²
 Flexible with ferrule	1 x	0.75...2.5 mm ²
	2 x	0.75...2.5 mm ²
 Lugs	L <	8 mm ²
	l >	3.7 mm ²
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
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529		
Main terminals	IP00	
Coil 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	

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 mm ²
	Clamp type		1SDA055016R1
	Tightening torque		25 Nm
Rigid with connector	Cu cable Stranded	2 x	70...185 mm ²
	Clamp type		1SCA022194R0890 (OZXB4)
	Tightening torque		22 Nm
Rigid with connector	Al cable Stranded	1 x	185...240 mm ²
	Clamp type		1SDA055020R1
	Tightening torque		43 Nm
Flexible with connector	Cu cable Flexible	1 x	16...240 mm ²
	Clamp type		1SDA055016R1
	Tightening torque		25 Nm
Flexible with connector	Cu cable Flexible	2 x	70...185 mm ²
	Clamp type		1SCA022194R0890 (OZXB4)
	Tightening torque		22 Nm
Bars or lugs	Double for Al/Cu cable		70...185 mm ²
	W <		32 mm (1.260 in)
	Ø >		10 mm (0.394 in)
	Socket type		LL...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 mm ²
	2 x		1...4 mm ²
Flexible	1 x		0.75...2.5 mm ²
	2 x		0.75...2.5 mm ²
Flexible with non insulated	1 x		0.75...2.5 mm ²
	2 x		0.75...2.5 mm ²
Flexible with insulated ferrule	1 x		0.75...2.5 mm ²
	2 x		0.75...2.5 mm ²
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			1.00 Nm / 9 lb.in
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529			
Main terminals	IP00		
Coil 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		

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 - $\theta \leq 40^\circ\text{C}$	16 A																						
Ie / Rated operational current AC-15 acc. to IEC 60947-5-1	<table border="1"> <tr> <td>24-127 V 50/60 Hz</td> <td>6 A</td> </tr> <tr> <td>220-240 V 50/60 Hz</td> <td>4 A</td> </tr> <tr> <td>400-440 V 50/60 Hz</td> <td>3 A</td> </tr> <tr> <td>500 V 50/60 Hz</td> <td>2 A</td> </tr> <tr> <td>690 V 50/60 Hz</td> <td>2 A</td> </tr> </table>			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										
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	<table border="1"> <tr> <td>24 V DC</td> <td>6 A / 144 W</td> </tr> <tr> <td>48 V DC</td> <td>2.8 A / 134 W</td> </tr> <tr> <td>72 V DC</td> <td>1 A / 72 W</td> </tr> <tr> <td>110 V DC</td> <td>0.55 A / 60 W</td> </tr> <tr> <td>125 V DC</td> <td>0.55 A / 69 W</td> </tr> <tr> <td>220 V DC</td> <td>0.27 A / 60 W</td> </tr> <tr> <td>250 V DC</td> <td>0.27 A / 68 W</td> </tr> <tr> <td>400 V DC</td> <td>0.15 A / 60 W</td> </tr> <tr> <td>500 V DC</td> <td>0.13 A / 65 W</td> </tr> <tr> <td>600 V DC</td> <td>0.1 A / 60 W</td> </tr> </table>			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
24 V DC	6 A / 144 W																						
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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	<table border="1"> <tr> <td>for 1.0 s</td> <td>100 A</td> </tr> <tr> <td>for 0.1 s</td> <td>140 A</td> </tr> </table>			for 1.0 s	100 A	for 0.1 s	140 A																
for 1.0 s	100 A																						
for 0.1 s	140 A																						
Minimum switching capacity with failure rate acc. to IEC 60947-5-4	<table border="1"> <tr> <td>12 V / 3 mA</td> </tr> <tr> <td>10^{-7}</td> </tr> </table>			12 V / 3 mA	10^{-7}																		
12 V / 3 mA																							
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	<table border="1"> <tr> <td>AC-15</td> <td>1200 cycles/h</td> </tr> <tr> <td>DC-13</td> <td>900 cycles/h</td> </tr> </table>			AC-15	1200 cycles/h	DC-13	900 cycles/h																
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		

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 60947-5-1 and EN 60947-5-1							
Rated insulation voltage U_i acc. to IEC 60947-5-1	690 V							
Rated operational voltage U_e max.	24...690 V AC							
Conventional thermal current I_{th} - $\theta \leq 40$ °C	16 A							
I_e / 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 I_e AC-15 acc. to IEC 60947-5-1							
Breaking capacity	10 x I_e AC-15 acc. to IEC 60947-5-1							
I_e / 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 I_{cw} $\theta = 40$ °C	for 1.0 s	100 A						
	for 0.1 s	140 A						
Minimum switching capacity								
LS55N, LS75N contactors with failure rate acc. to IEC 60947-5-4	24 V / 50 mA (0.5 million of operating cycles)					-		
LS90N, LS110N contactors with failure rate acc. to IEC 60947-5-4	24 V / 50 mA (0.5 million of operating cycles)					-		
LS132N, LS160N, LS200N contactors with failure rate acc. to IEC 60947-5-4	-					24 V / 50 mA		
	-					≤ 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 N.O. and N.C. auxiliary contacts are mechanically linked contacts.							
Mirror contacts acc. to annex F of IEC 60947-4-1	Built-in N.C. auxiliary contacts are mirror contacts.							

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 I_c is the current to be broken by the contactor and I_e the rated operational current normally drawn by the load, then:

- Categories AC-1 and AC-3: $I_c = I_e$
- Category AC-2: $I_c = 2.5 \times I_e$
- Category AC-4: $I_c = 6 \times I_e$

Generally speaking $I_c = m \times I_e$ 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 I_c .

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 U_e
 - Current normally drawn I_e (U_e / I_e / kW relation for motors, see "Motor rated operational powers and currents").
 - Utilization category AC-1, AC-2, AC-3 or AC-4
 - Breaking current $I_c = I_e$ for AC-1 and for AC-3 ; $I_c = 2.5 \times I_e$ for AC-2 ; $I_c = 6 \times I_e$ 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 (I_c ; N).

Electrical durability forecast and contactor selection for mixed duty motor control: AC-3 ($I_c = I_e$) type switching off while "motor running" and, occasionally, AC-4 ($I_c = 6 \times I_e$) type switching off while "motor accelerating"

- Note the characteristics of the motor to be controlled:
 - Operational voltage U_e
 - Current normally drawn while "motor running" I_e (U_e / I_e / kW relation for motors, see "Motor rated operational powers and currents")
 - Breaking current for AC-3 $I_c = I_e$
 - Breaking current for AC-4 while "motor accelerating" $I_c = 6 \times I_e$
 - 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 (U_e / I_e) 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 $I_c = I_e$ (AC-3)
 - The number of operating cycles B for $I_c = 6 \times I_e$ (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.

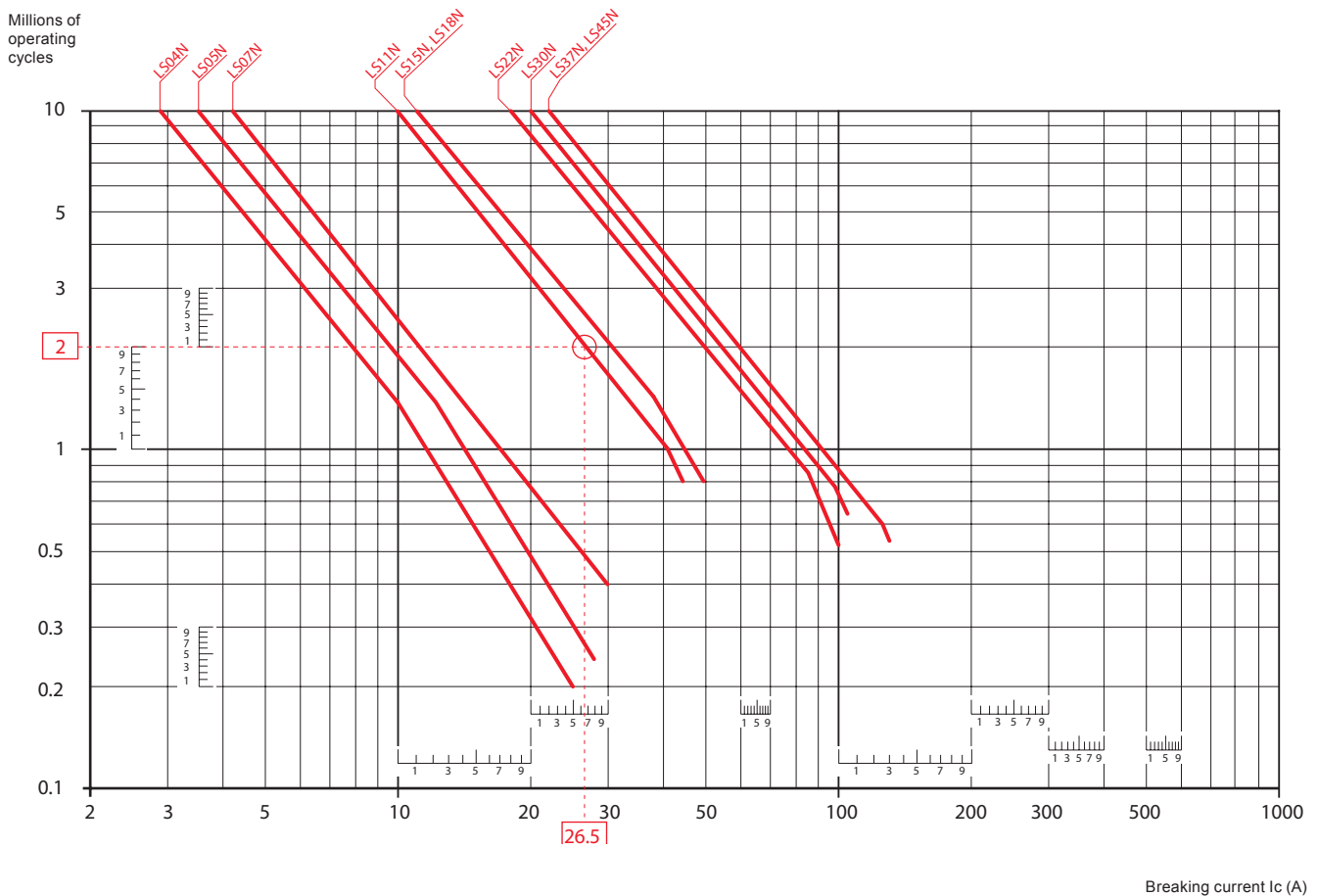
As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

3-pole contactors

Electrical durability for AC-1 utilization category - $U_e \leq 690$ V

Switching non-inductive or slightly inductive loads. The breaking current I_c for AC-1 is equal to the rated operational current of the load.

Ambient temperature and maximum electrical switching frequency: see "Technical data".



Example:

$I_c / AC-1 = 26.5$ A – Electrical durability required = 2 millions operating cycles.

Using the AC-1 curves above select the LS11N contactor at intersection "O" (26.5 A / 2 millions operating cycles).

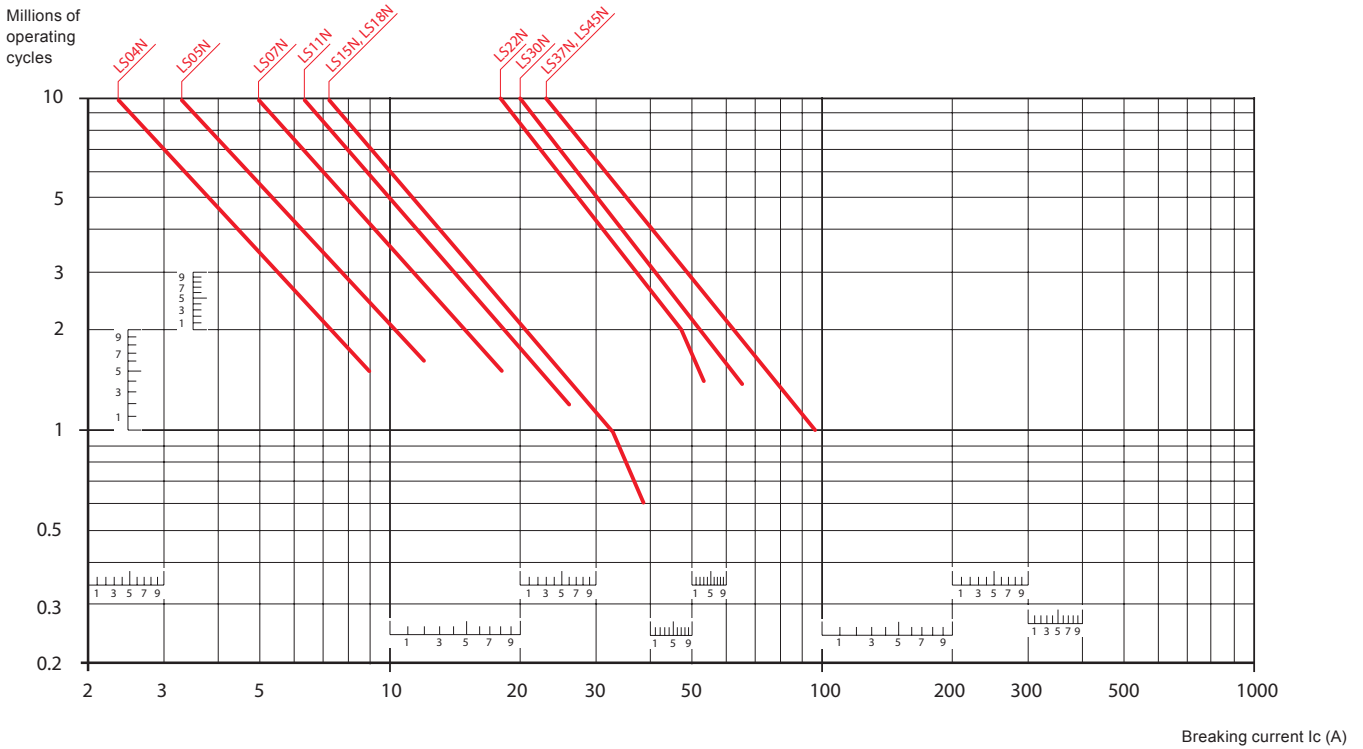
3-pole contactors

Electrical durability for AC-3 utilization category - $U_e \leq 440\text{ V}$

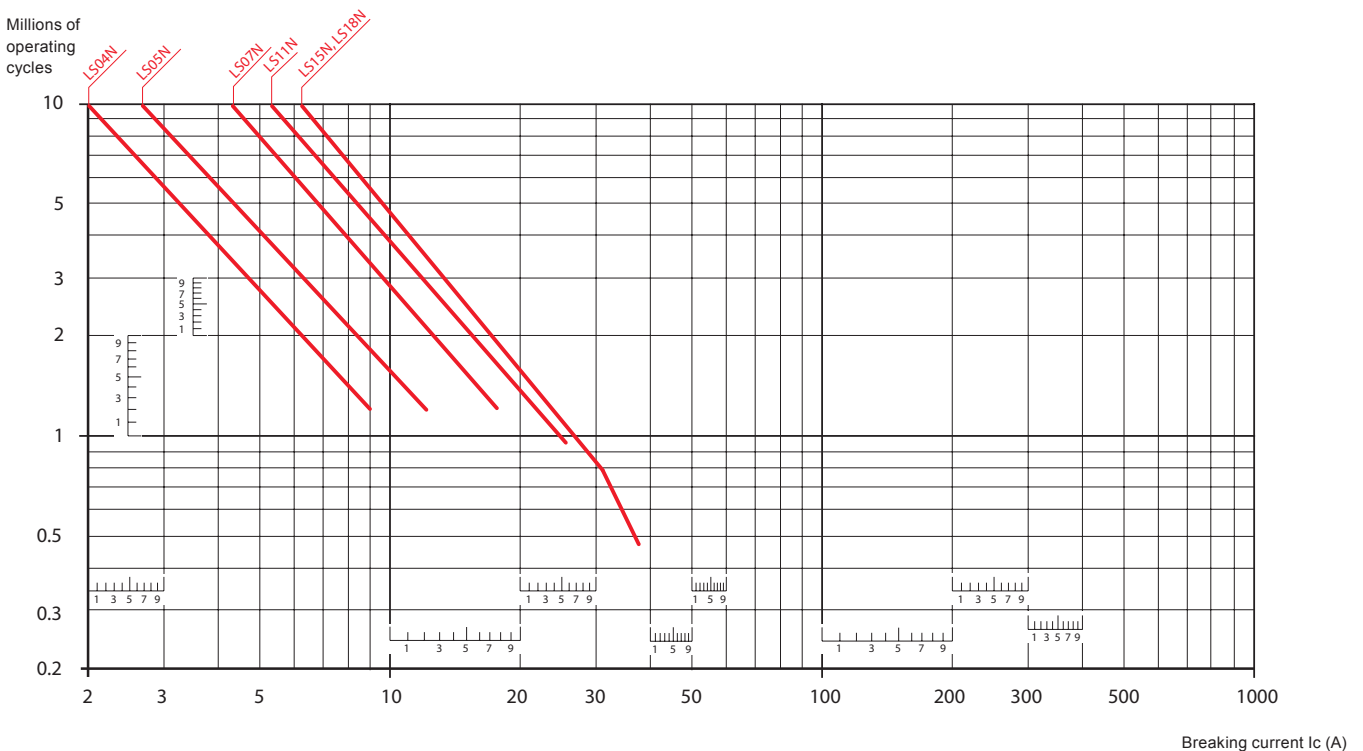
Switching cage motors: starting and switching off running motors. The breaking current I_c for AC-3 is equal to the rated operational current I_e (I_e = motor full load current).

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)



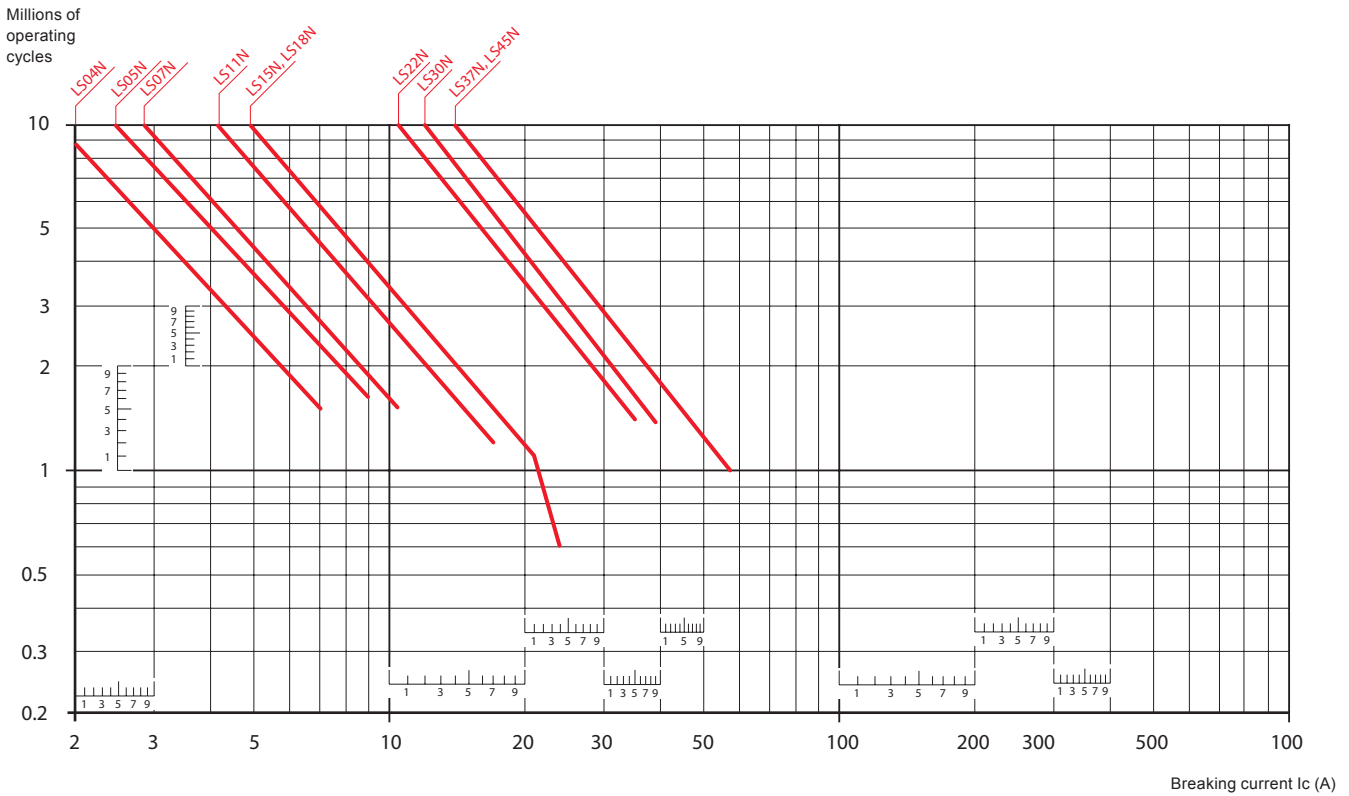
3-pole contactors

Electrical durability for AC-3 utilization category - $440\text{ V} < U_e \leq 690\text{ V}$

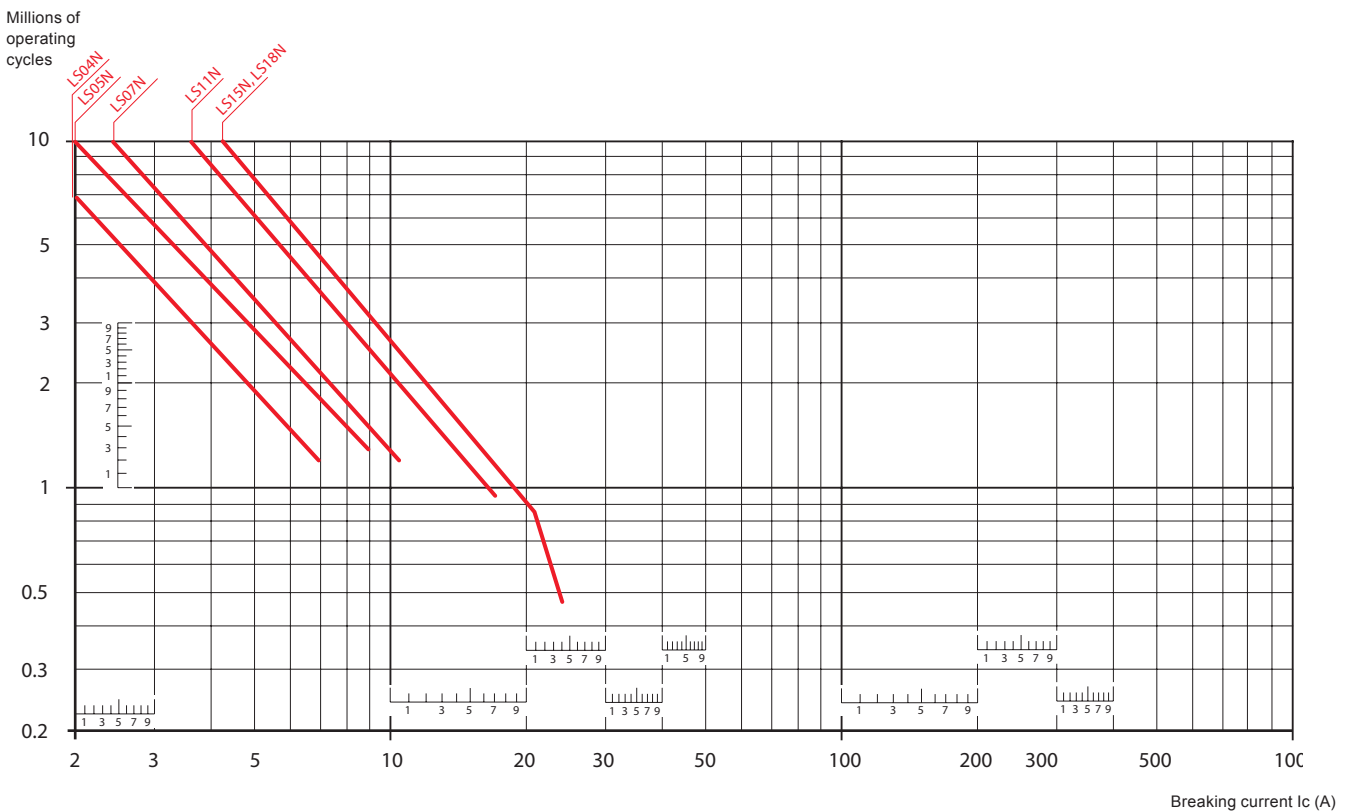
Switching cage motors: starting and switching off running motors. The breaking current I_c for AC-3 is equal to the rated operational current I_e (I_e = motor full load current).

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)



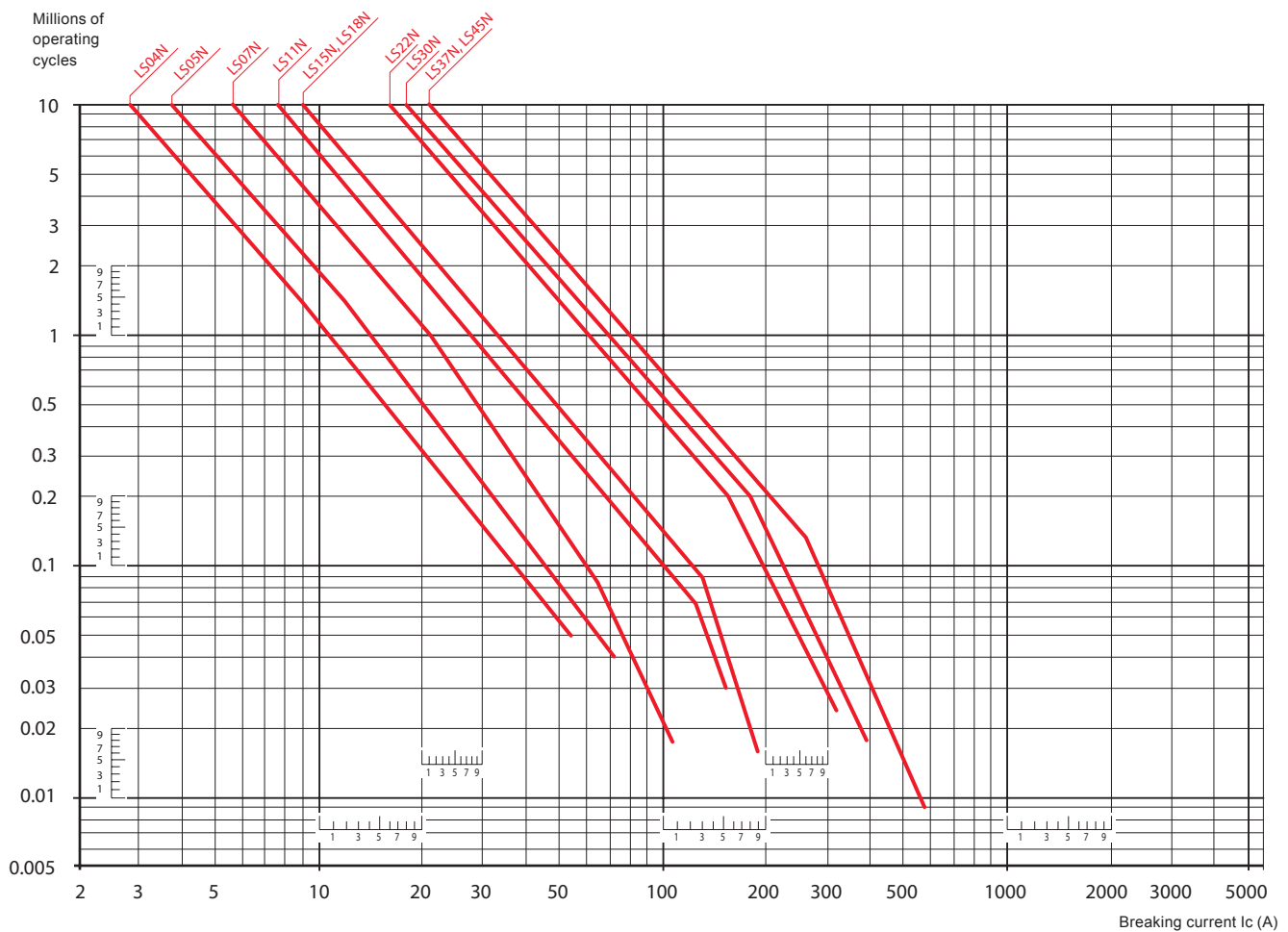
3-pole contactors

Electrical durability for AC-2 or AC-4 utilization category - $U_e \leq 440$ V

Ambient temperature ≤ 60 °C for LS04N ... LS45N

Switching cage motors: starting, reverse operation and step-by-step operation. The breaking current I_c is equal to $2.5 \times I_e$ for AC-2 and $6 \times I_e$ for AC-4, keeping in mind that I_e is the motor rated operational current (I_e = motor full-load current).

Maximum electrical switching frequency: see "Technical data".

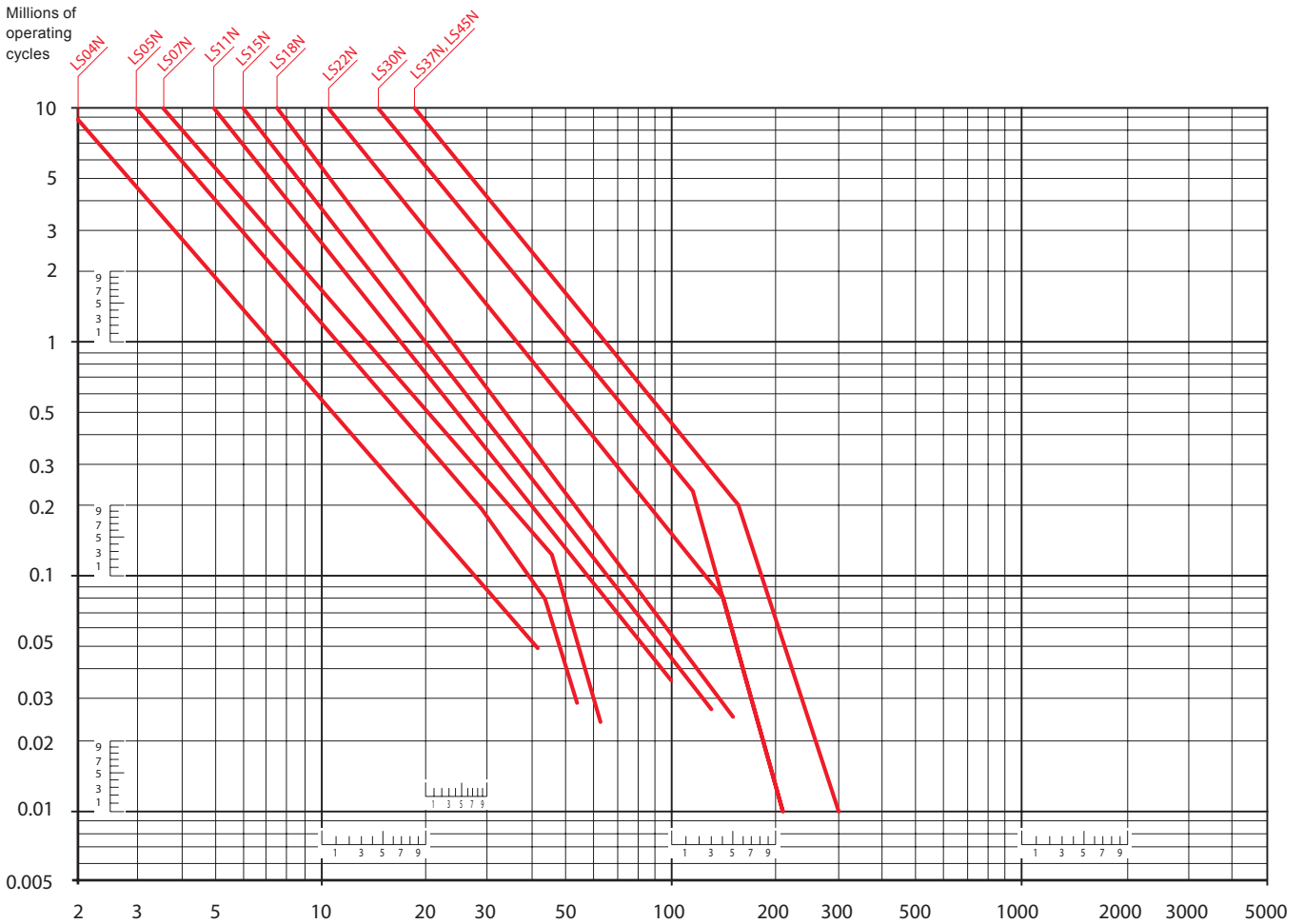


3-pole contactors

Electrical durability for AC-2 or AC-4 utilization category - $440\text{ V} < U_e \leq 690\text{ V}$

Ambient temperature $\leq 60\text{ }^\circ\text{C}$ for LS04N ... LS45N

Switching cage motors: starting, reverse operation and step-by-step operation. The breaking current I_c is equal to $2.5 \times I_e$ for AC-2 and $6 \times I_e$ for AC-4, keeping in mind that I_e is the motor rated operational current (I_e = motor full load current). Maximum electrical switching frequency: see "Technical data".



Breaking current I_c (A)

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 $\theta \leq 40^\circ\text{C}$ AC-1	General use rating 600 V AC						Pkg (1 pce)
A	A	V 50/60 Hz	V DC				kg

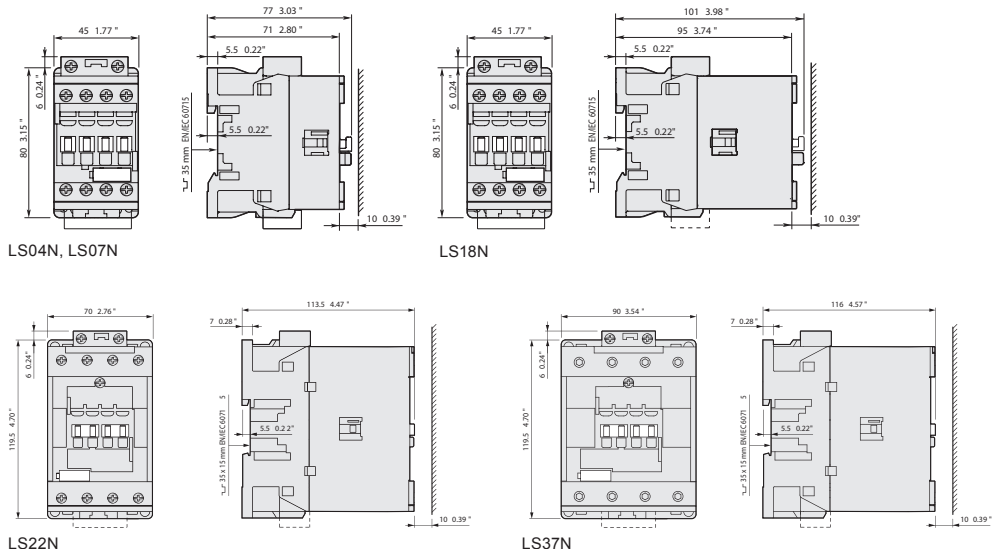
4 N.O. main poles

Rated current (A)	UL/CSA rating (A)	Uc min. (V)	Uc max. (V)	(1)	0	0	Type	Order code	Weight (kg)
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

Rated current (A)	UL/CSA rating (A)	Uc min. (V)	Uc max. (V)	(1)	0	0	Type	Order code	Weight (kg)
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.



Main dimensions mm, inches

LS04N ... LS18N 4-pole contactors

25 to 55 A AC-1 - AC operated



LS04N-40-00

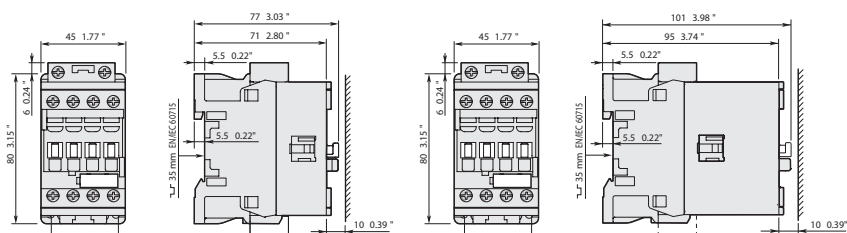


LS18N-40-00

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 U _c		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



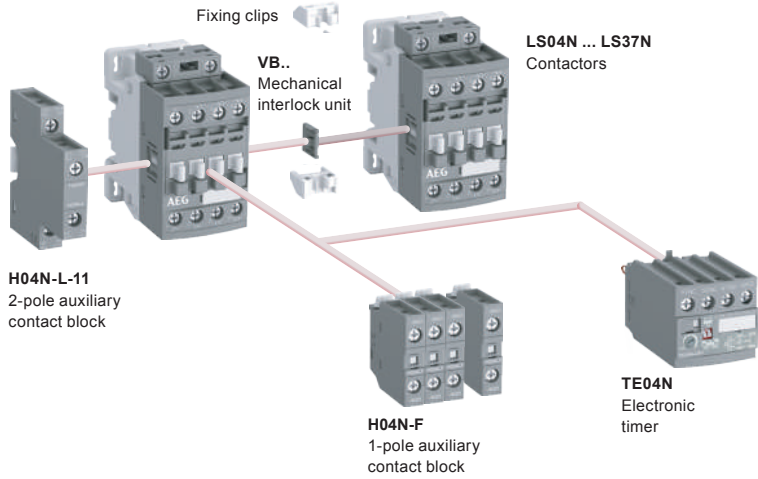
LS04N, LS07N

LS18N

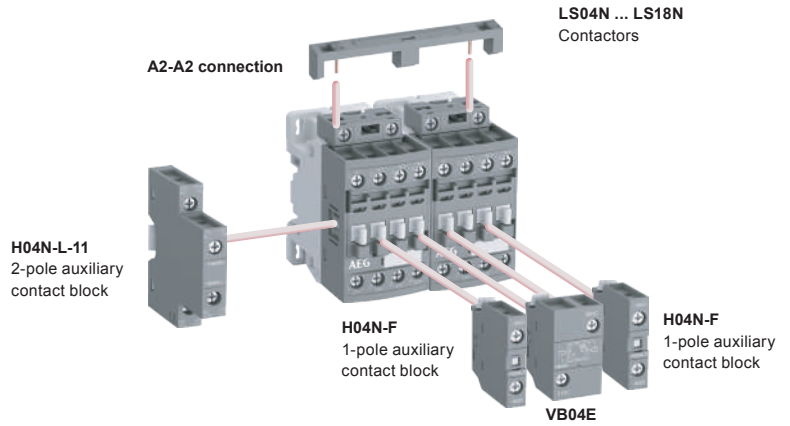
Main dimensions mm, inches

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 interlock 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			Side-mounted accessories		
			Auxiliary contact blocks	Electronic timer	Electrical and mechanical interlock set	Auxiliary contact blocks		
			1-pole H04N-F	TE04N	(between 2 contactors) VB04NE	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...

LS04N ... LS37N 4-pole contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	LS04N	LS07N	LS18N	LS22N	LS37N		
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 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, $\theta \leq 40^\circ\text{C}$	35 A	35 A	55 A	105 A	125 A		
With conductor cross-sectional area	6 mm ²	6 mm ²	16 mm ²	35 mm ²	50 mm ²		
AC-1 Utilization category							
For air temperature close to contactor							
le / Rated operational current AC-1							
$\theta \leq 40^\circ\text{C}$	25 A	30 A	55 A	100 A	125 A		
Ue max. $\leq 690\text{ V}, 50/60\text{ Hz}$	$\theta \leq 60^\circ\text{C}$ 25 A	30 A	45 A	80 A	105 A		
	$\theta \leq 70^\circ\text{C}$ 22 A	26 A	37 A	70 A	90 A		
With conductor cross-sectional area	4 mm ²	6 mm ²	16 mm ²	35 mm ²	50 mm ²		
AC-3 Utilization category							
For air temperature close to contactor $\theta \leq 60^\circ\text{C}$							
le / 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	
 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				30 kW	45 kW	
						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 $\leq 500\text{ V AC}$ - 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, in free air from a cold state	10 s	150 A	150 A	300 A	600 A	780 A	
	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 cos $\phi = 0.45$	N.O. main pole	at 440 V	250 A	250 A	-	950 A	1100 A
		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.

LS04N ... LS37N 4-pole contactors

Technical data

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

Contactor types	LS04N	LS07N	LS18N	LS22N	LS37N	
Standards	UL 60947-4-1, CSA-C22.2 No. 60947-4-1					
Max. operational voltage	600 V					
UL / CSA general use rating						
With conductor cross-sectional area	600 V AC	25 A	30 A	55 A	80 A	105 A
		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".

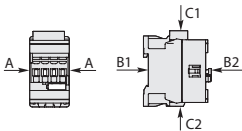
(1) 20 A for LS04N-22-00 and LS07N-22-00.

LS04N ... LS37N 4-pole contactors

Technical data

General technical data

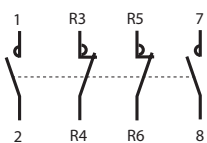
Contactors types	LS04N	LS07N	LS18N	LS22N	LS37N
Rated insulation voltage U_i acc. to IEC 60947-4-1	690 V				1000 V
acc. to UL / CSA	600 V				
Rated impulse withstand voltage U_{imp}	6 kV				8 kV
Electromagnetic compatibility	Devices complying with IEC 60947-1 / EN 60947-1 - Environment A and B				
Ambient 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 60068-2-27 and 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

Contactors types	LS04N	LS07N	LS18N	LS22N	LS37N
Mounting positions					
Mounting distances	Max. add-on N.C. auxiliary contacts: see accessory fitting details for a 4-pole contactor LS04N ... LS37N				
Fixing	The contactors can be assembled side by side				
On rail according to IEC 60715, 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.

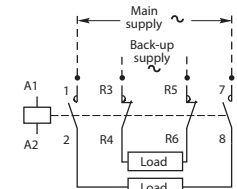
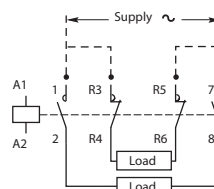


These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

Block diagrams

- Single supply and 2 separate loads

- 2 separate supplies and 2 separate loads



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 $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$. At $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots U_c \text{ max}$.			at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$	
	DC supply	at $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$ at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots U_c \text{ max}$			at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$	
AC control voltage 50/60 Hz		24...250 V AC				
Rated control circuit voltage U_c		24...250 V AC				
Coil consumption		Average pull-in value		50 VA		
		Average holding value		2.2 VA / 2 W		
DC control voltage		20...250 V DC				
Rated control circuit voltage U_c		20...250 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		$\leq 60\%$ of $U_c \text{ min}$.				
Operating time		ED coil not suitable for direct control by PLC-output				
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		


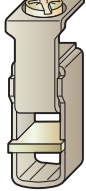
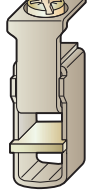
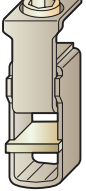














Magnet system characteristics AC operated - Coil voltage codes AD, AN

Contactor types	AC operated	LS04N	LS07N	LS18N
Coil operating limits acc. to IEC 60947-4-1	AC supply	At $\theta \leq 60^\circ\text{C}$ $0.85 \dots 1.1 \times U_c$. At $\theta \leq 70^\circ\text{C}$ U_c		
	DC supply	at $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$ at $\theta \leq 70^\circ\text{C}$ U_c		
AC control voltage		24...230 V		
Rated control circuit voltage U_c		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 U_c
		60 Hz		40...70 % of U_c
Operating time (-40°C ... +60°C)		ED coil not suitable for direct control by PLC-output		
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

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 ($\leq 4 \text{ mm}^2$)	} 1 x 1...6 mm ²		1.5...16 mm ²	6...35 mm ²	6...70 mm ²
 Stranded ($\geq 1 \text{ mm}^2$)		2 x 1...6 mm ²		1.5...16 mm ²	6...35 mm ²
 Flexible with non insulated ferrule	1 x 0.75...6 mm ²		1.5...16 mm ²	4...35 mm ²	6...50 mm ²
 Flexible with insulated ferrule	2 x 0.75...6 mm ²		1.5...16 mm ²	4...35 mm ²	6...50 mm ²
 Flexible with insulated ferrule	1 x 0.75...4 mm ²		1.5...16 mm ²	4...35 mm ²	6...50 mm ²
 Flexible with insulated ferrule	2 x 0.75...2.5 mm ²		1.5...16 mm ²	4...35 mm ²	6...50 mm ²
 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 mm ²				
 Rigid solid/stranded	2 x 1...2.5 mm ²				
 Flexible with non insulated ferrule	1 x 0.75...2.5 mm ²				
 Flexible with non insulated ferrule	2 x 0.75...2.5 mm ²				
 Flexible with insulated ferrule	1 x 0.75...2.5 mm ²				
 Flexible with insulated ferrule	2 x 0.75...1.5 mm ²				
 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					
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				

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 I_c is the current to be broken by the contactor and I_e the rated operational current normally drawn by the load, then:

- Categories AC-1: $I_c = I_e$

Generally speaking $I_c = m \times I_e$ 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 I_c .

Electrical durability curves:

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

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..... U_e
 - Current normally drawn..... I_e (U_e / I_e / kW relation for motors, see "Motor rated operational powers and currents").
 - Utilization categoryAC-1
 - Breaking current..... $I_c = I_e$ 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 ($I_c ; N$).

Case of uninterrupted duty

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

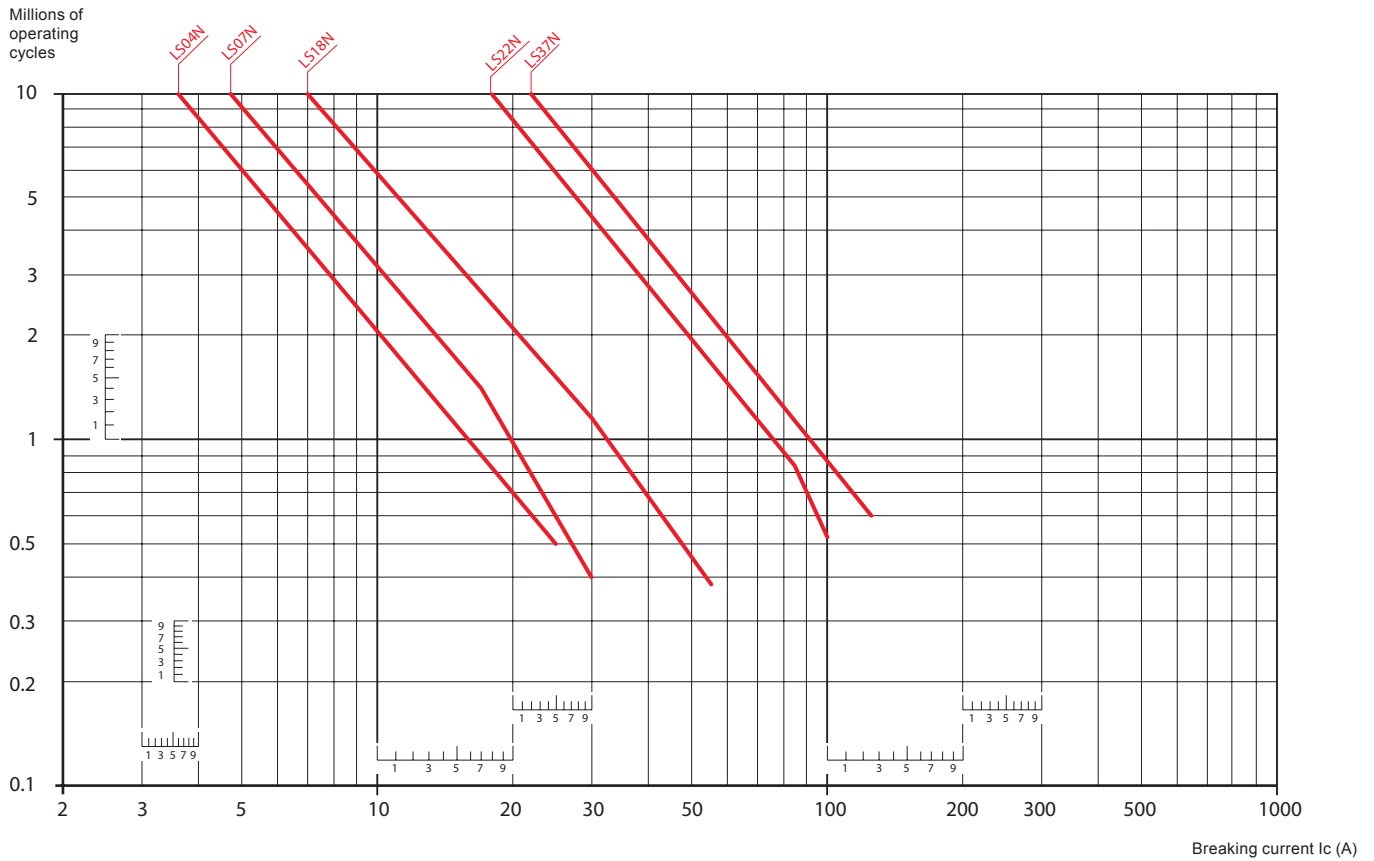
The combined effect of environmental conditions and the proper temperature of the product may require some disposals. As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

4-pole contactors

Electrical durability for AC-1 utilization category - $U_e \leq 690$ V

Switching non-inductive or slightly inductive loads. The breaking current I_c for AC-1 is equal to the rated operational current of the load.

Ambient temperature and maximum electrical switching frequency: see "Technical data".



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:

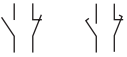
- H04N-F 1-pole block, with instantaneous 1 N.O. or 1 N.C. contact

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
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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 U_i acc. to IEC 60947-5-1	690 V	
Rated impulse withstand voltage U_{imp}	6 kV	
Rated operational voltage U_e max.	24...690 V	
Conventional thermal current I_{th} - $\theta \leq 40$ °C	16 A	
Rated frequency (without derating)	50/60 Hz	
I_e / 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 I_e AC-15	
Breaking capacity acc. to IEC 60947-5-1	10 x I_e AC-15	
I_e / 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 I_{cw} $\theta = 40$ °C	for 1.0 s	100 A
	for 0.1 s	140 A
Minimum switching capacity with failure rate acc. to IEC 60947-5-4	12 V / 3 mA	
Power dissipation per pole at 6 A	10 ⁻⁷	
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	
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 mm ²
 Rigid solid/stranded	2 x	1...2.5 mm ²
 Flexible with non insulated ferrule	1 x	0.75...2.5 mm ²
 Flexible with non insulated ferrule	2 x	0.75...2.5 mm ²
 Flexible with insulated ferrule	1 x	0.75...2.5 mm ²
 Flexible with insulated ferrule	2 x	0.75...1.5 mm ²
 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

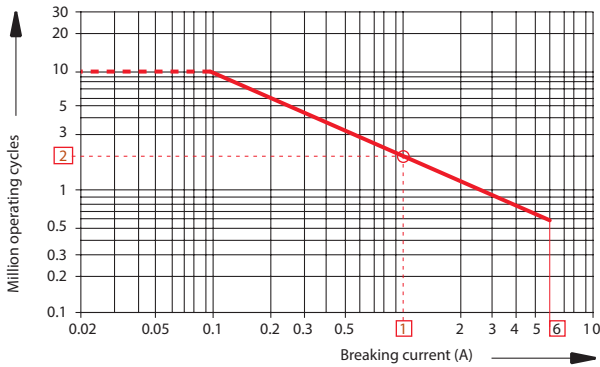
Electrical durability for AC-15 utilization category

AC-15 utilization category according to IEC 60947-5-1 / EN 60947-5-1:

- making current: $10 \times I_e$ with $\cos \phi = 0.7$ and U_e
- breaking current: I_e with $\cos \phi = 0.4$ and U_e .

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

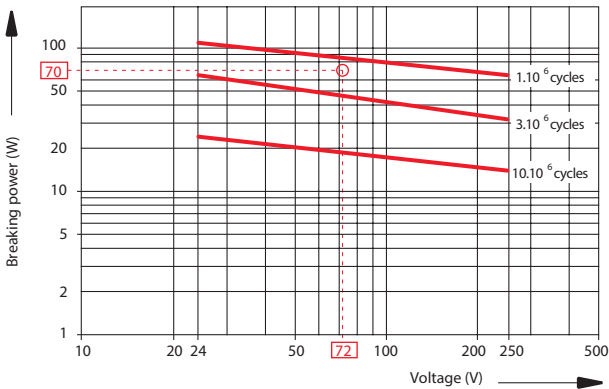
Example:

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 60947-5-1 / EN 60947-5-1: making and breaking current I_e and U_e .



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

Example:

Control of DC electro-magnet:

U_e 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.

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 U_c V 50/60 Hz or DC	Auxiliary contacts 	Type	Order code	Weight Pkg (1 pce) kg
LS04N ... LS45N	0.1...1 s	ON-delay	24...240	1 1	TE04N-ON	4TQD419223R0000	0.065
	1...10 s	OFF-delay	24...240	1 1	TE04N-OFF	4TQD419243R0000	0.065
	10...100 s						

Electronic timers Technical data

Contact utilization characteristics according to IEC

Types		TE04N-ON	TE04N-OFF
Standards		IEC 60947-5-1 and EN 60947-5-1	
Rated insulation voltage U_i acc. to IEC 60947-5-1		400 V	
Rated impulse withstand voltage U_{imp}		4 kV	
Rated operational voltage U_e max.		240V AC / 24 V DC	
Rated frequency (without derating)		50 / 60 Hz	
Conventional thermal current $I_{th} - \theta \leq 40^\circ C$		5 A	
I _e / 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 I _e AC-15	
Breaking capacity acc. to IEC 60947-5-1		10 x I _e AC-15	
I _e / 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 I _{cs} $\theta = 40^\circ C$	for 1.0 s	8 A	
	for 0.1 s	8 A	
Minimum switching capacity 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 U_c then switch it off in order to initialize position of the contacts.	
Control circuit voltage			
AC control voltage	Rated control circuit voltage U_c	24...240 V AC	
50/60 Hz	Average consumption	1.5 mA RMS	1 mA RMS
DC control voltage	Rated control circuit voltage U_c	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 U_c (at $\theta \leq 70^\circ C$)	
Overvoltage protection		Varistor included	
Time delay range (t) selected by switch	0.1...1 s	<input type="checkbox"/>	
	1...10 s	<input type="checkbox"/>	
	10...100 s	<input type="checkbox"/>	
On-load reiteration accuracy under constant conditions		$\leq 1\%$	
Minimum ON period		0.1 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 Same as contactor	
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
Max. electrical switching frequency	AC-15	1200 cycles/h	
	DC-13	900 cycles/h	

Electronic timers

Technical data

Contact utilization characteristics according to UL / CSA

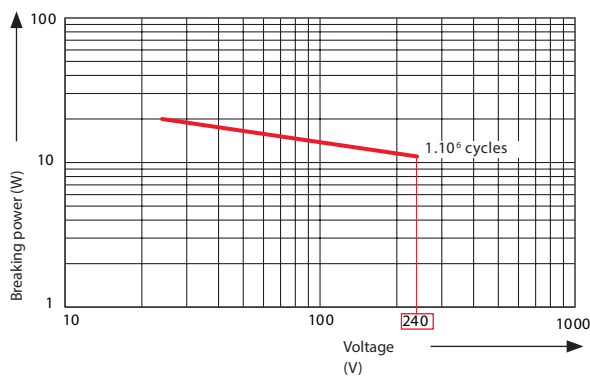
Types	TE04N-ON	TE04N-OFF
Standards	UL 60947-5-1, CSA-C22.2 No. 60947-5-1	
Rated insulation voltage U_i acc. to UL / CSA	300 V	
Max. operational voltage	240 V	
Pilot duty	B300, R300	
AC thermal rated current	5 A	
AC maximum volt-ampere making	3600 VA	
AC maximum volt-ampere breaking	360 VA	
DC thermal 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 mm ²
	2 x	1...2.5 mm ²
Flexible with non insulated ferrule	1 x	0.75...2.5 mm ²
	2 x	0.75...2.5 mm ²
Flexible with insulated ferrule	1 x	0.75...2.5 mm ² (0.75 ... 1.5 mm ² with spring terminals)
	2 x	0.75...1.5 mm ² (0.75 ... 1.5 mm ² 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 60947-5-1 / EN 60947-5-1: making and breaking current I_e and U_e .



Interlocks



VB04N

Mechanical interlock units

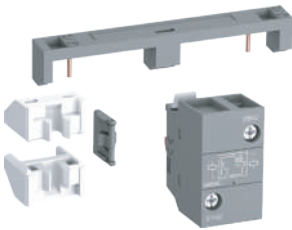
The VB mechanical interlock units are designed for the interlocking of two LS..N contactors. When mounted between two contactors, the VB mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed. The mechanical interlock units VB04N and VB22N include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

For contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
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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

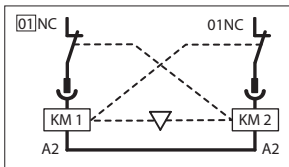
VB04NE mechanical and electrical interlock set for the interlocking of two LS..N contactors. VB04NE set includes a mechanical interlock unit VB04N with 2 fixing clips and a VB04E electrical interlock block with A2-A2 connection.

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:	0 2	VB04NE	4TQD419306R0000	1	0.035
LS04N ... LS07N-30-..					
LS11N ... LS18N-30-00					
LS04N ... LS07N-40-00					
LS18N-40-00					



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 60947-5-1 and EN 60947-5-1
Rated insulation voltage U_i acc. to IEC 60947-5-1		690 V
Rated impulse withstand voltage U_{imp} .		6 kV
Rated control circuit voltage U_c		
	AC 50/60 Hz control voltage	24...500 V AC
	DC control voltage	20...500 V DC
Conventional thermal current $I_{th} - \theta \leq 40^\circ\text{C}$		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 60947-5-1, CSA-C22.2 No. 60947-5-1
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 mm ²
		2 x 1...2.5 mm ²
	Flexible with ferrule	1 x 0.75...2.5 mm ²
		2 x 0.75...2.5 mm ²
	Flexible with insulated ferrule	1 x 0.75...2.5 mm ²
		2 x 0.75...1.5 mm ²
	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

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.

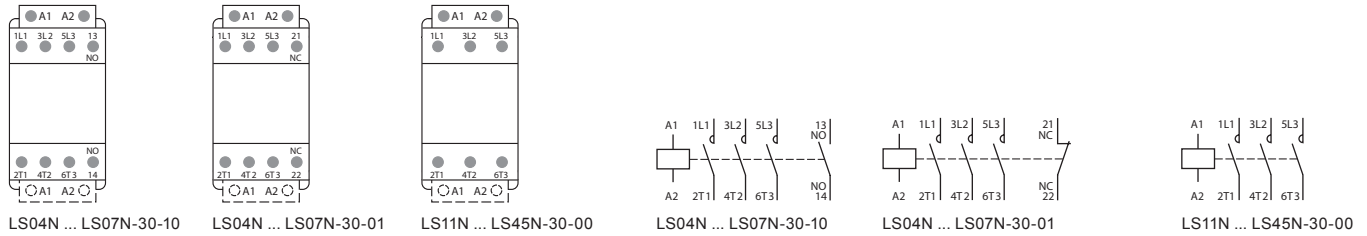
For 3-pole contactors	Manual motor starter	Type	Order code	Pkg qty	Weight (1 pce) kg
LS04N ... LS07N	MBS32NG-004 ... MBS32NG-250	MF32L07N	4TQD419806M0000	10	0.025
LS11N ... LS18N	MBS32NG-004 ... MBS32NG-160	MF32L11N	4TQD419816M0000	10	0.025
	MBS32NG-200 ... MBS32NG-320	MF32L18N	4TQD419826M0000	10	0.030

LS04N ... LS45N 3-pole contactors

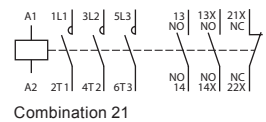
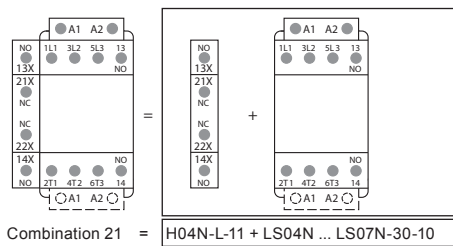
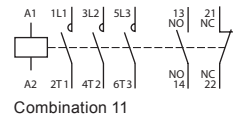
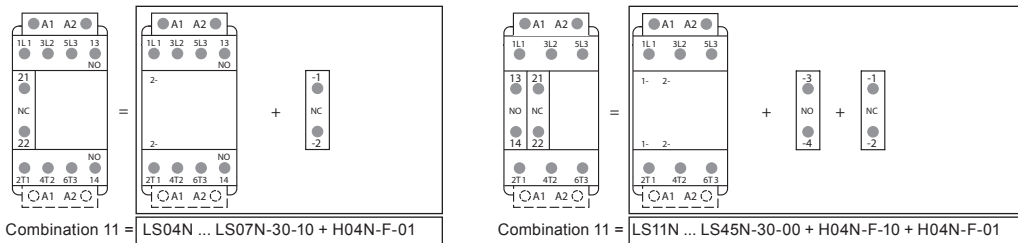
Terminal marking and positioning

LS04N ... LS45N contactors

Standard devices without addition of auxiliary contacts



Other possible contact combinations with auxiliary contacts added by the user

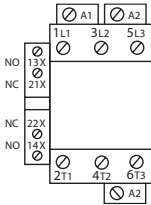


LS55N ... LS200N 3-pole contactors

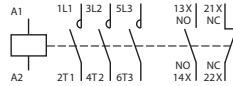
Terminal marking and positioning

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

Standard devices with factory mounted auxiliary contacts



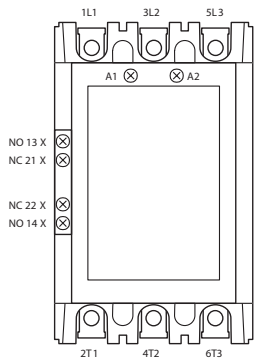
LS55N-30-11 ... LS75N-30-11



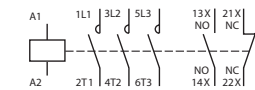
LS55N-30-11 ... LS75N-30-11

LS90N ... LS200N contactors - AC operated

Standard devices with factory mounted auxiliary contacts



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



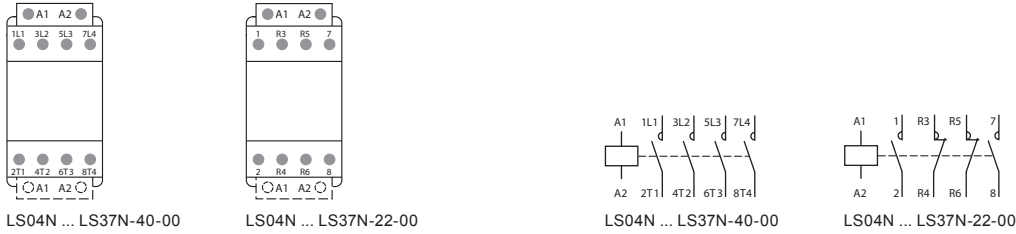
LS90N-30-11 ... LS200N-30-11

LS04N ... LS37N 4-pole contactors

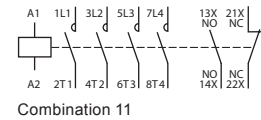
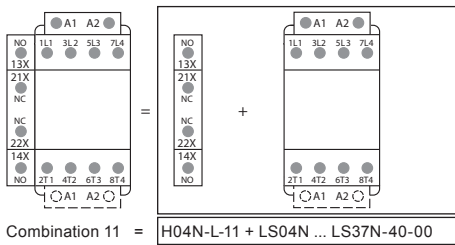
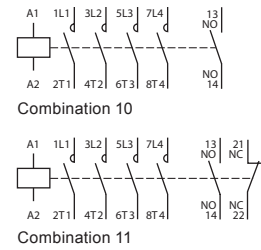
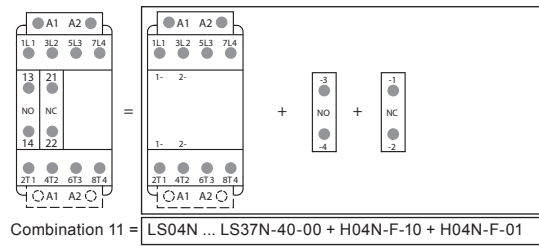
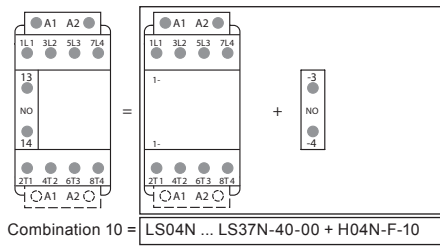
Terminal marking and positioning

LS04N ... LS37N contactors

Standard devices without addition of auxiliary contacts



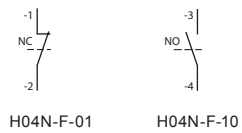
Other possible contact combinations with auxiliary contacts added by the user



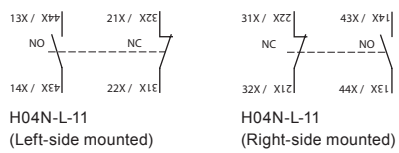
Add-on auxiliary contacts for LS04N ... LS45N contactors

Terminal marking and positioning

1-pole auxiliary contacts

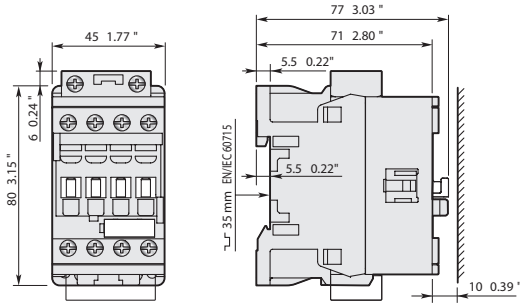


2-pole auxiliary contacts

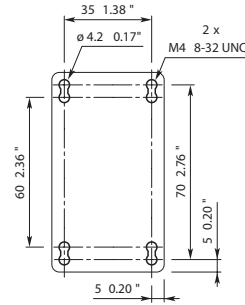


LS04N, LS05N, LS07N 3-pole contactors

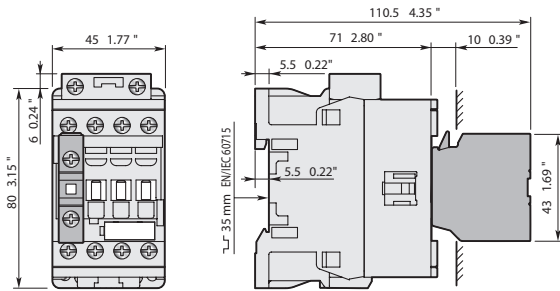
Dimensions



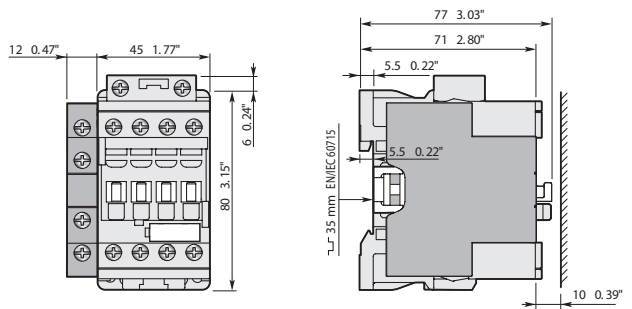
LS04N, LS05N, LS07N



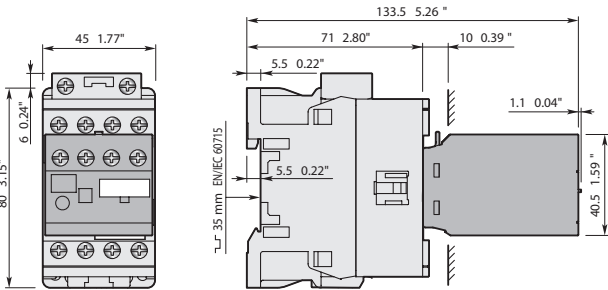
LS04N, LS05N, LS07N + B18N



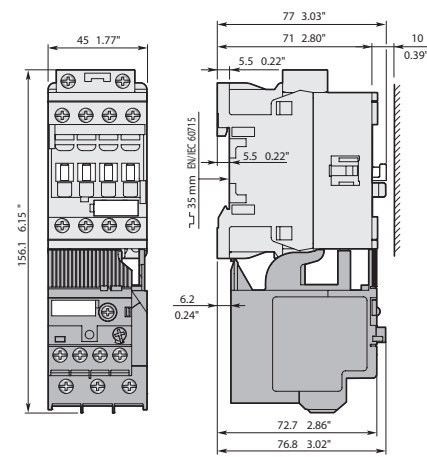
LS04N, LS05N, LS07N + H04N-F 1-pole auxiliary contact block



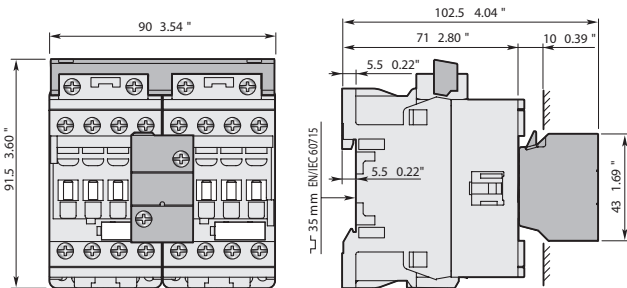
LS04N, LS05N, LS07N + H04N-L-11 2-pole auxiliary contact block



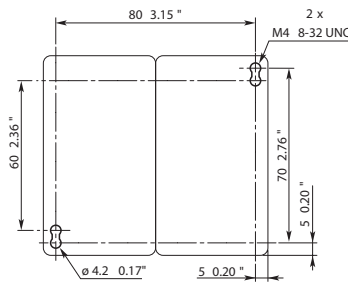
LS04N, LS05N, LS07N + TE04N electronic timer



LS04N, LS05N, LS07N + B18N thermal relay



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

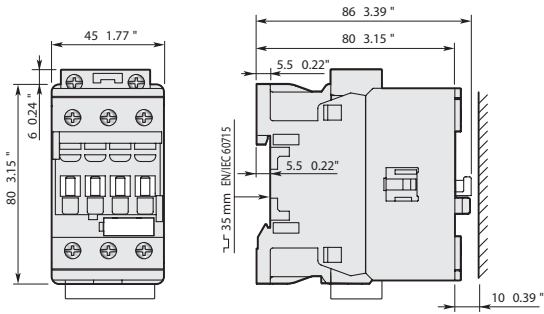


LS04N, LS05N, LS07N + VB04NE mechanical and electrical interlock set

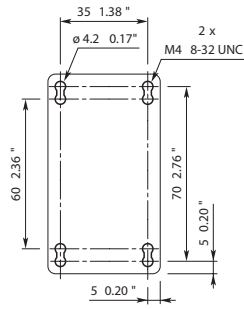
(1) Note: For LS04N ... LS07N contactors, lateral distance to grounded component 2 mm (0.08") min.

LS11N, LS15N, LS18N 3-pole contactors

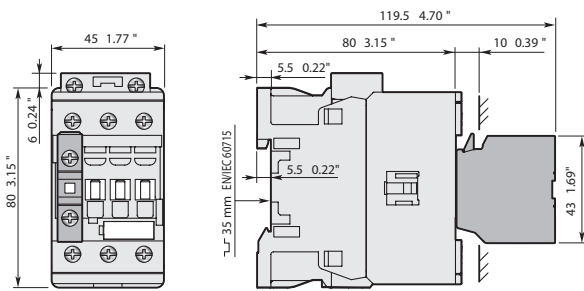
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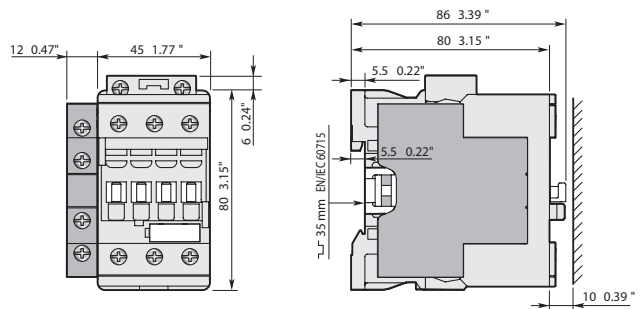
LS11N, LS15N, LS18N



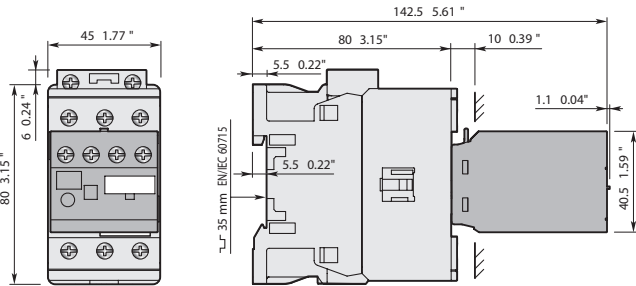
LS11N, LS15N, LS18N + B18



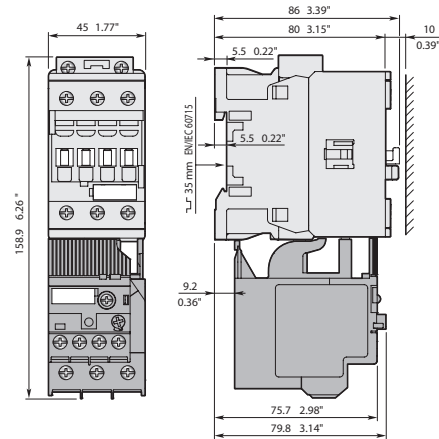
LS11N, LS15N, LS18N + H04N-F 1-pole auxiliary contact block



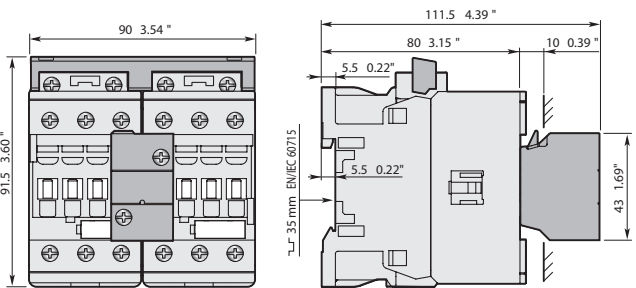
LS11N, LS15N, LS18N + H04N-L-11 2-pole auxiliary contact block



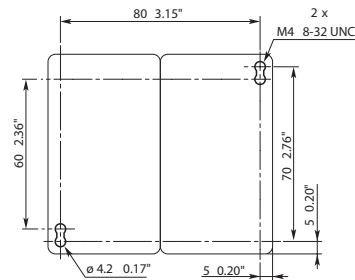
LS11N, LS15N, LS18N + TE04N electronic timer



LS11N, LS15N, LS18N + B18N thermal overload relay



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

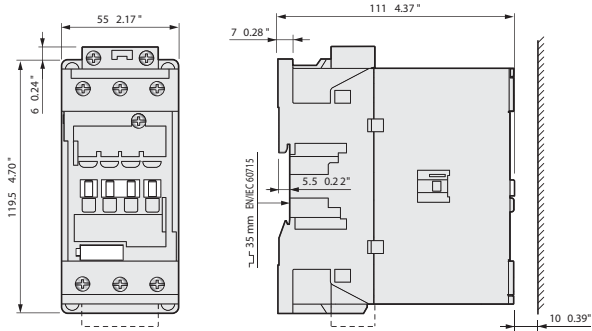


LS11N, LS15N, LS18N + VB04NE mechanical and electrical interlock set

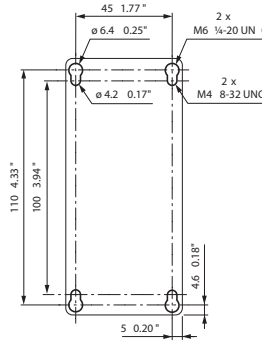
(1) Note: For LS11N ... LS18N contactors, lateral distance to grounded component 2 mm (0.08") min.

LS22N, LS30N 3-pole contactors

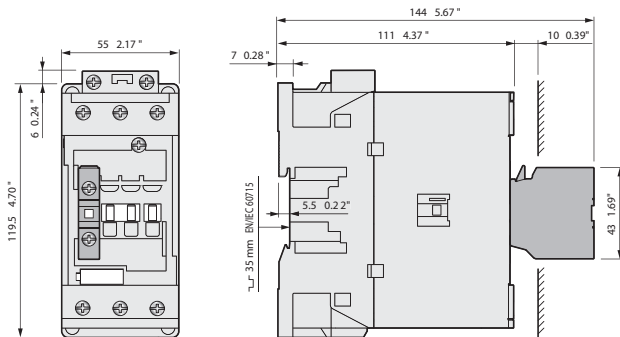
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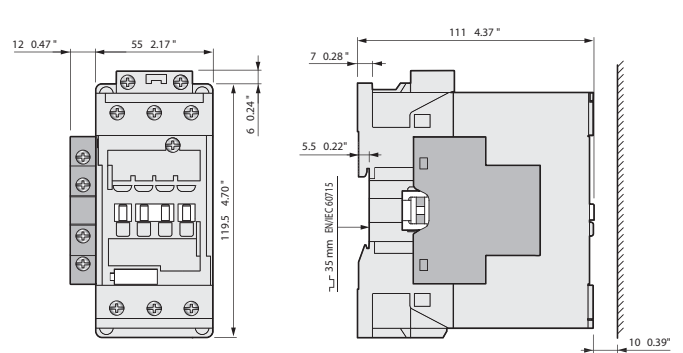
LS22N, LS30N



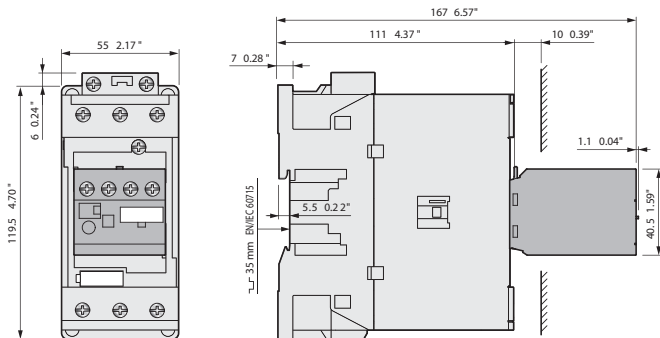
LS22N, LS30N



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



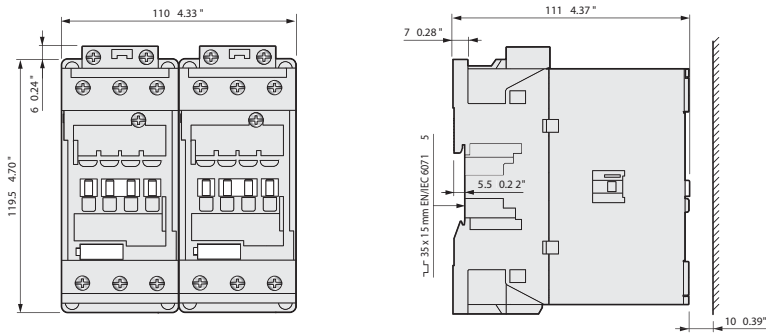
LS22N, LS30N
+ H04N-L-11 2-pole auxiliary contact block



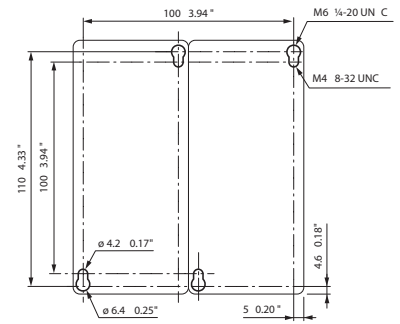
LS22N, LS30N
+ TE04N electronic timer

LS22N, LS30N 3-pole contactors

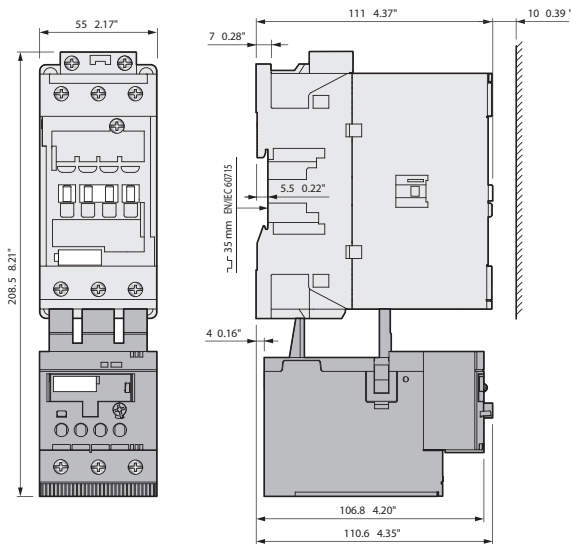
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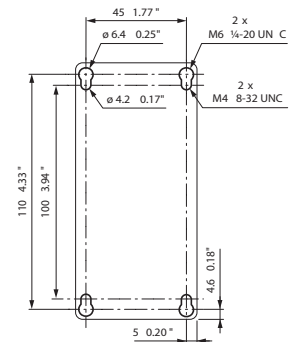
LS22N, LS30N
+ VB22N mechanical interlock unit



LS22N, LS30N
+ VB22N mechanical interlock unit



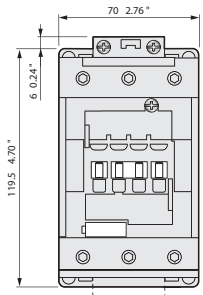
LS22N, LS30N
+ B30N thermal overload relay



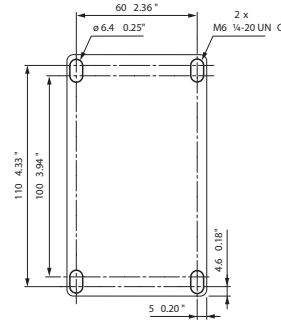
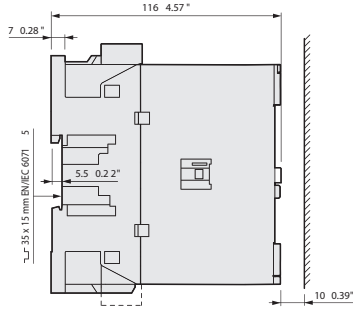
LS22N, LS30N
+ B30N

LS37N, LS45N 3-pole contactors

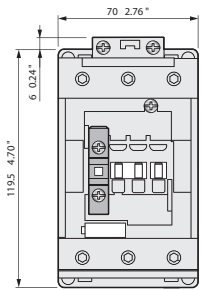
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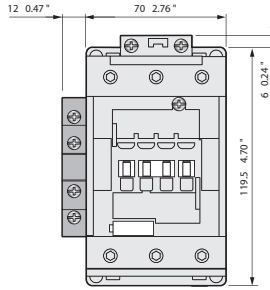
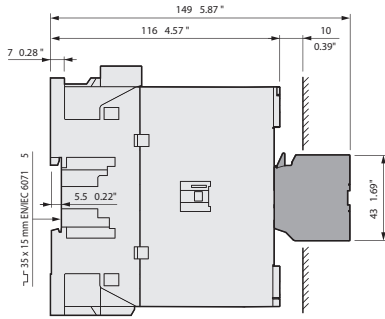
LS37N, LS45N



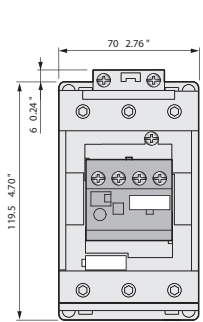
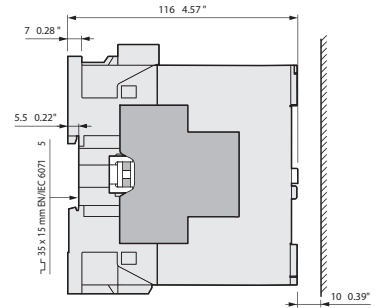
LS37N, LS45N



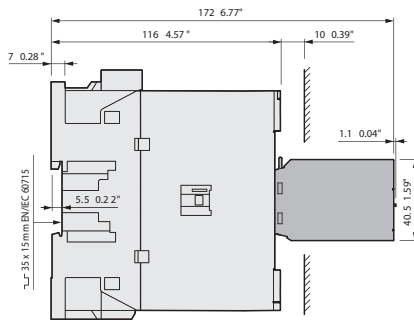
LS37N, LS45N
+ H04N-F 1-pole auxiliary contact block



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

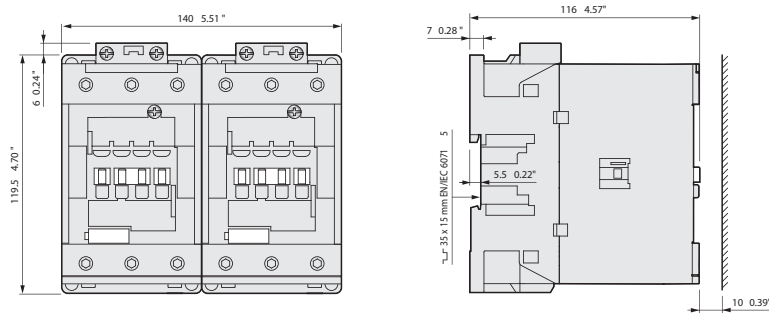


LS37N, LS45N
+ TE04N electronic timer

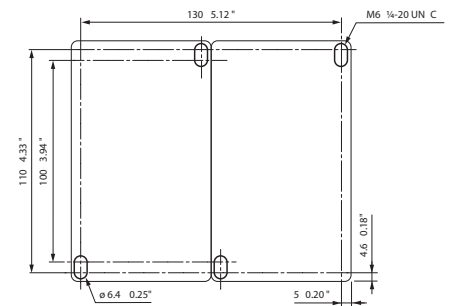


LS37N, LS45N 3-pole contactors

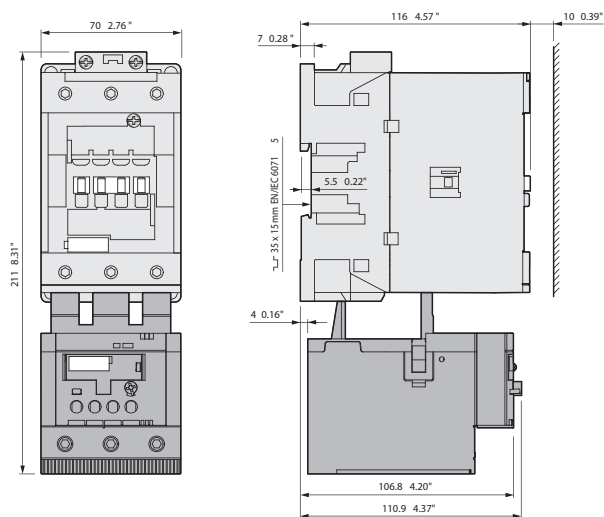
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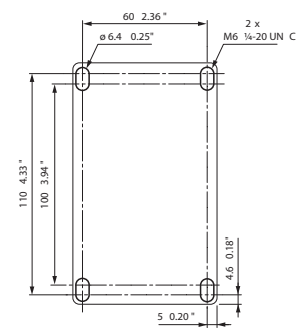
LS37N, LS45N
+ VB22N mechanical interlock unit



LS37N, LS45N
+ VB22N mechanical interlock unit



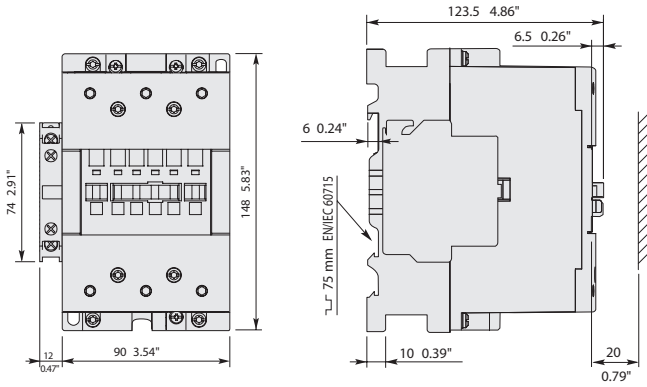
LS37N, LS45N
+ B45N thermal overload relay



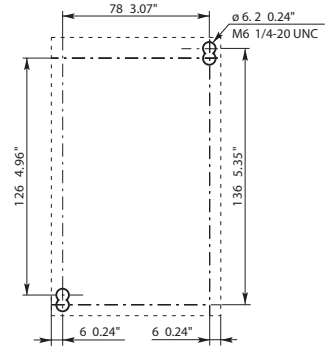
LS37N, LS45N
+ B45N

LS55N ... LS200N 3-pole contactors

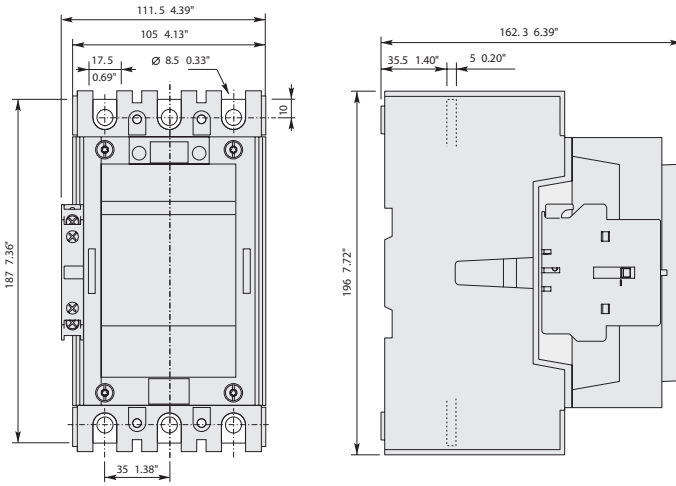
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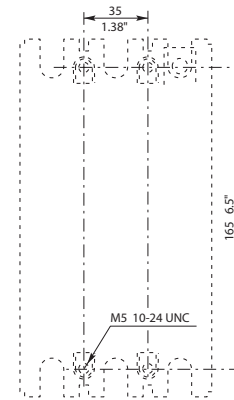
LS55N-30-11 ... LS75N-30-11



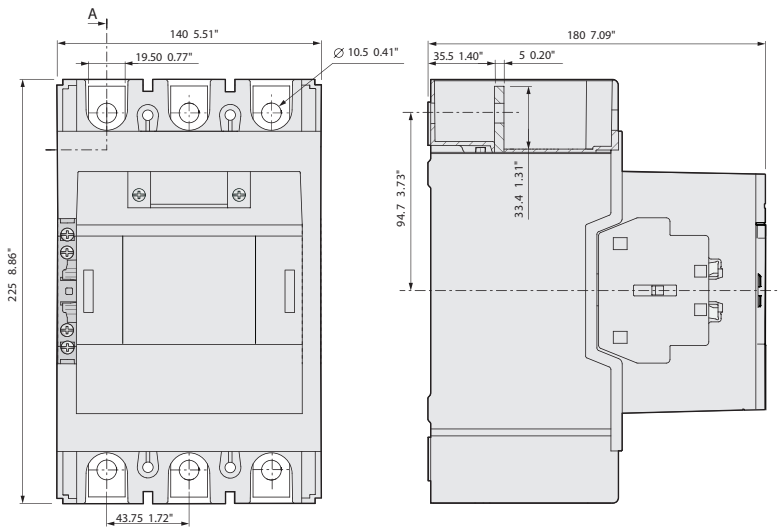
LS55N-30-11 ... LS75N-30-11



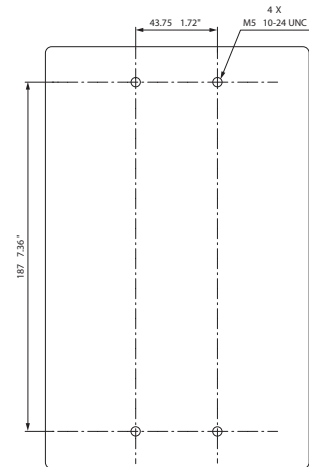
LS90N-30-11 ... LS110N-30-11



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



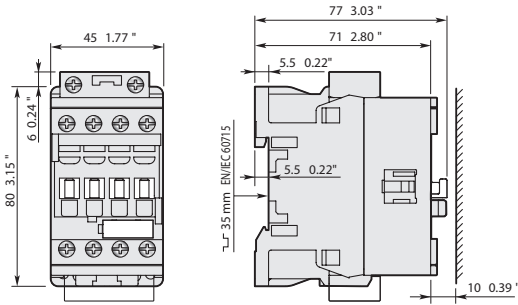
LS132N-30-11 ... LS200N-30-11



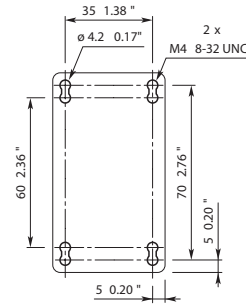
LS132N-30-11 ... LS200N-30-11

LS04N, LS07N 4-pole contactors

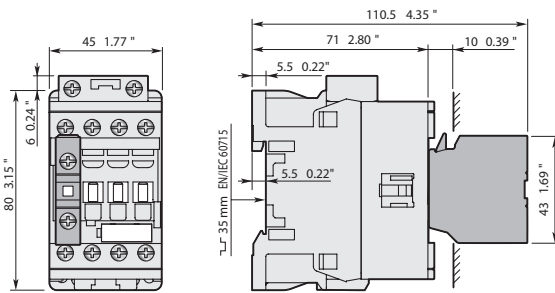
Dimensions



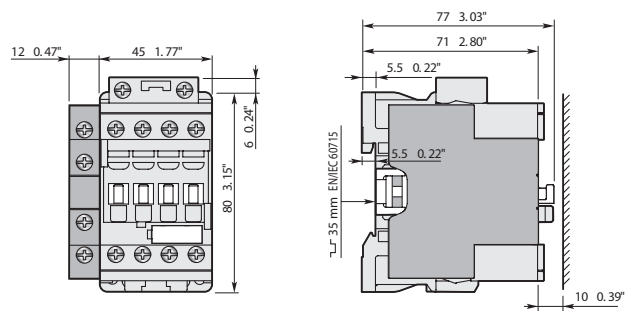
LS04N, LS07N



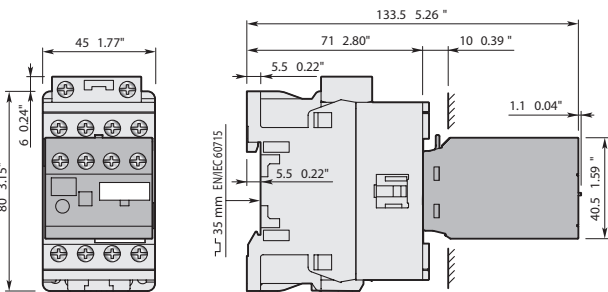
LS04N, LS07N



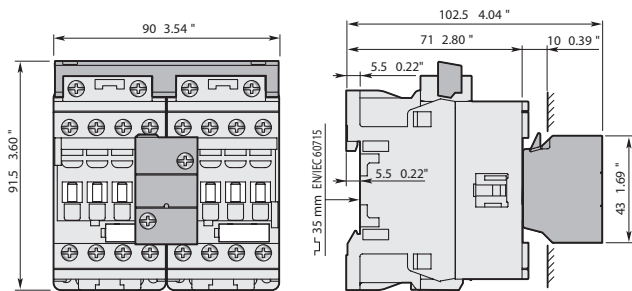
LS04N, LS07N
+ H04N-F 1-pole auxiliary contact block



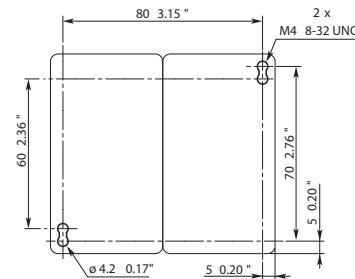
LS04N, LS07N
+ H04N-L-11 2-pole auxiliary contact block



LS04N, LS07N
+ TE04N electronic timer



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



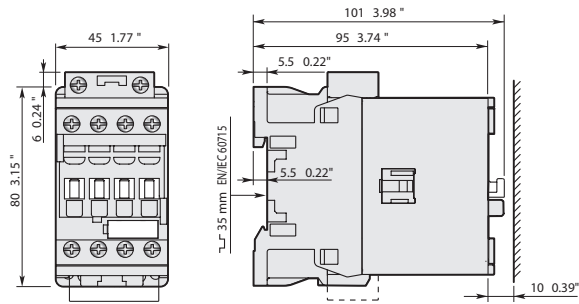
LS04N, LS07N...-40-00
+ VB04NE mechanical and electrical interlock set

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

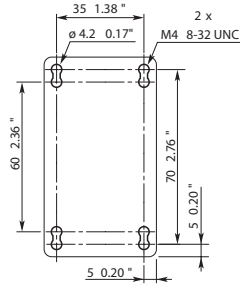
Main dimensions mm, inches (1)

LS18N 4-pole contactors

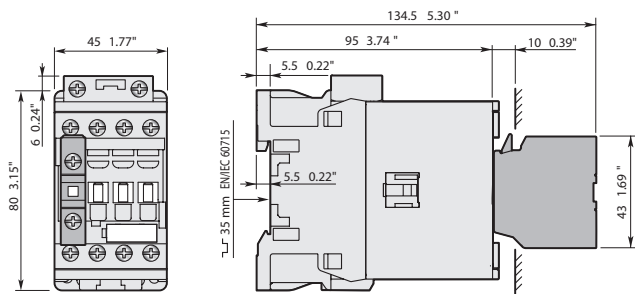
Dimensions



LS18N

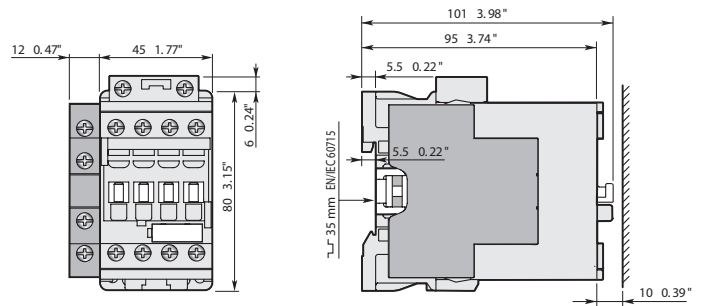


LS18N



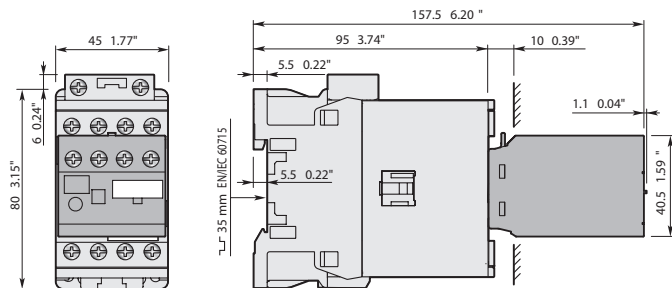
LS18N

+ H04N-F 1-pole auxiliary contact block



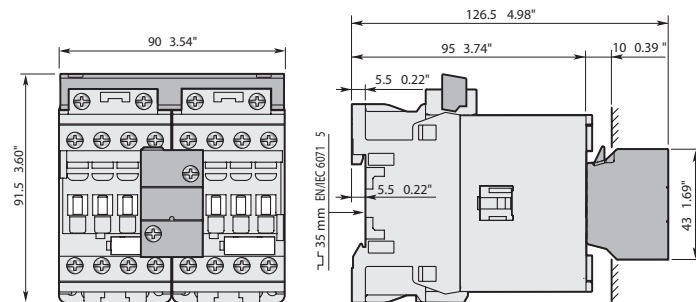
LS18N

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



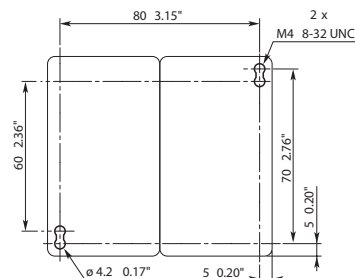
LS18N

+ TE04N electronic timer



LS18N-40-00

+ VB04NE mechanical and electrical interlock set



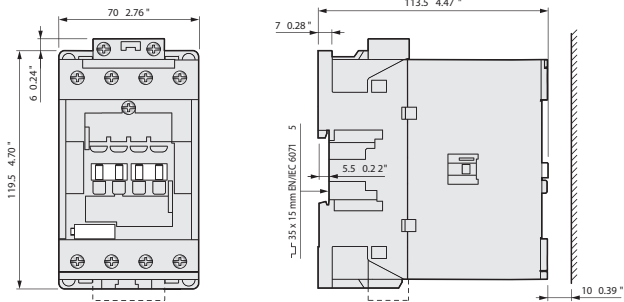
LS18N-40-00

+ VB04NE mechanical and electrical interlock set

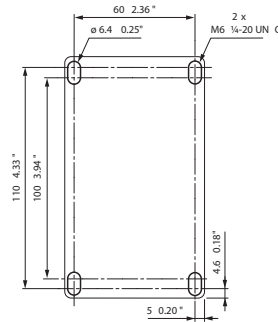
(1) Note: For LS18N contactors, lateral distance to grounded component 2 mm (0.08") min.

LS22N 4-pole contactors

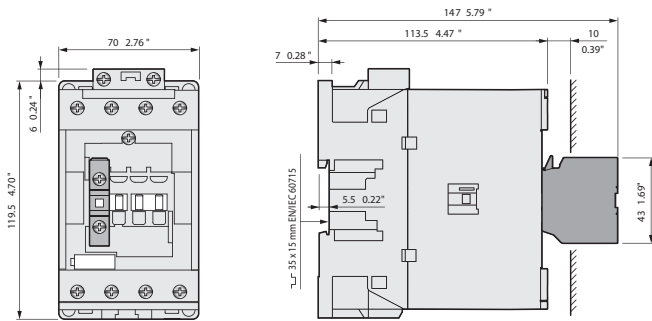
Dimensions



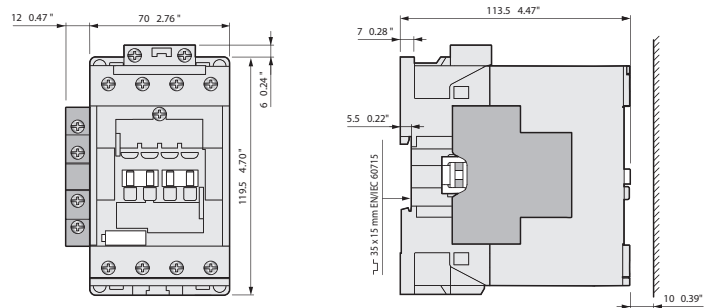
LS22N



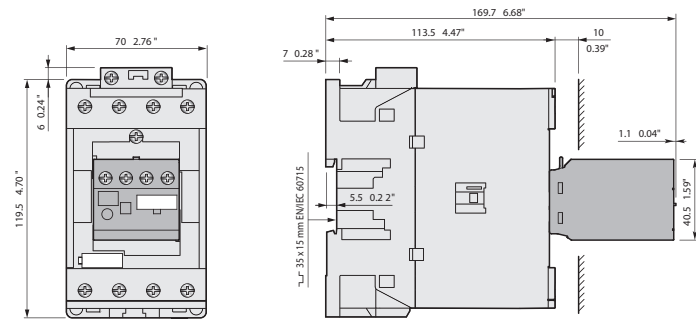
LS22N



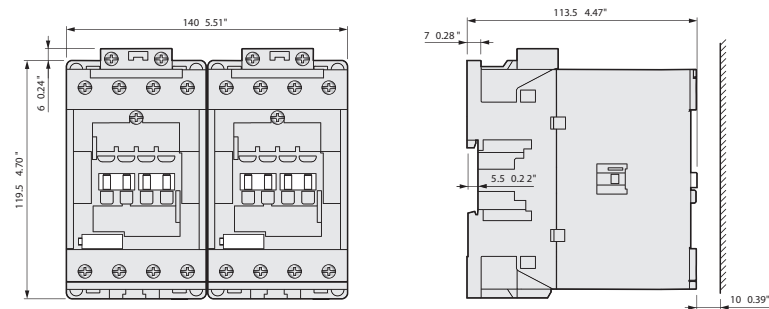
LS22N
+ H04N-F 1-pole auxiliary contact block



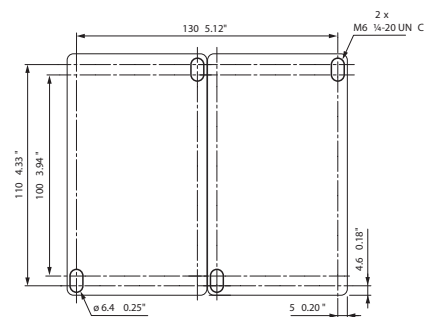
LS22N
+ H04N-L-11 2-pole auxiliary contact block



LS22N
+ TE04N electronic timer



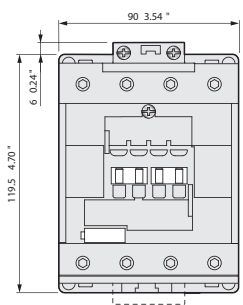
LS22N-40-00
+ VB22N mechanical interlock unit



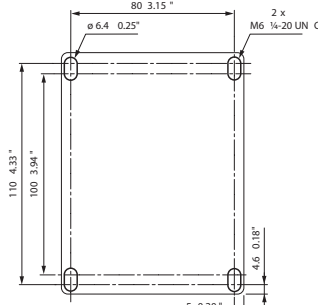
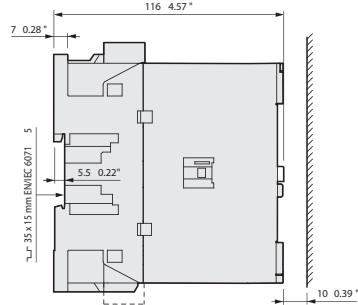
LS22N-40-00
+ VB22N mechanical interlock unit

LS37N 4-pole contactors

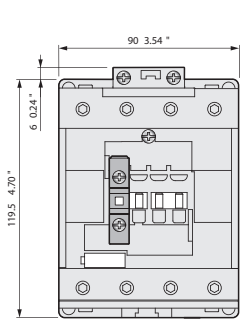
Dimensions



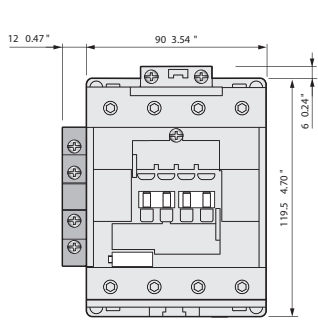
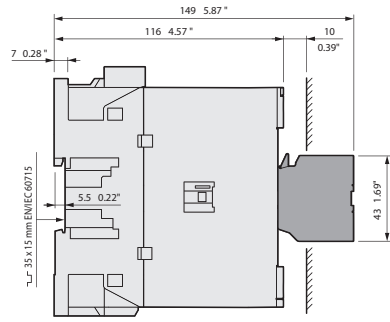
LS37N



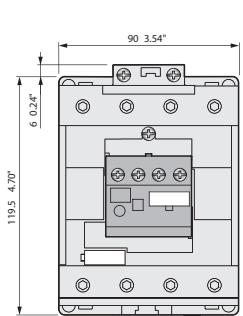
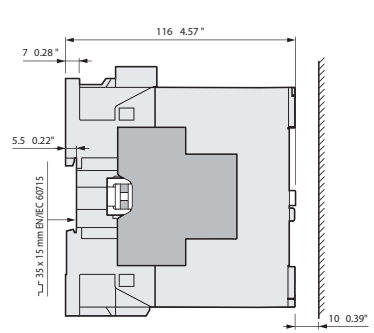
LS37N



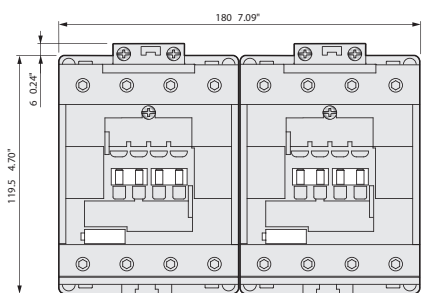
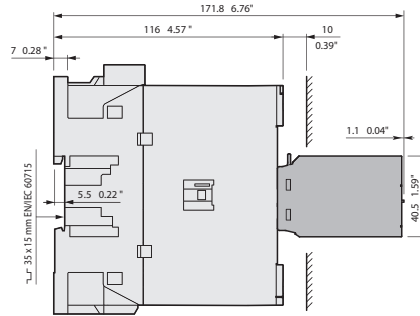
LS37N
+ H04N-F 1-pole auxiliary contact block



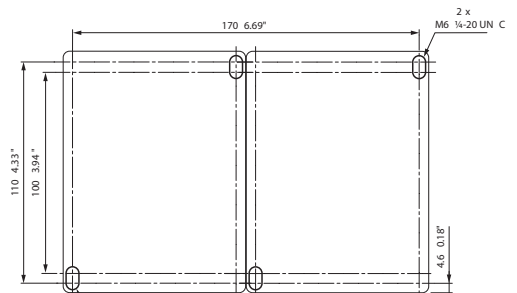
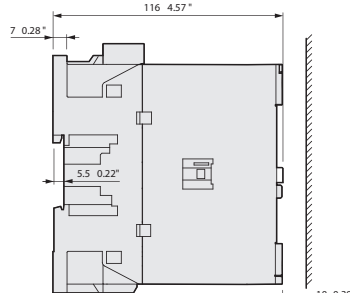
LS37N
+ H04N-L-11 2-pole auxiliary contact block



LS37N
+ TE04N electronic timer



LS37N-40-00
+ VB22N mechanical interlock unit



LS37N-40-00
+ VB22N mechanical interlock unit