

IEC Technical data

A/E/L40, A/E/F50.../AF110, 3-pole

Utilization characteristics

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A40	A50	A63	A75	A95	A110
	DC operated	AL40	AE50	AE63	AE75	–	–
		TAL40	TAE50	–	TAE75	–	–
	AC / DC operated	–	AF50	AF63	AF75	AF95	AF110
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1						
Rated operational voltage U_e max.	690 V		1000 V (690 V for AF.. contactors)			1000 V	
Rated frequency (without derating)	50/60 Hz						
Conventional free-air thermal current I_{th} acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$		65 A	100 A	125 A	125 A	145 A	160 A
With conductor cross-sectional area		16 mm ²	35 mm ²	50 mm ²	50 mm ²	50 mm ²	70 mm ²
AC-1 Utilization category For air temperature close to contactor							
I_e / Rated operational current AC-1	$\theta \leq 40^\circ\text{C}$	60 A	100 A	115 A	125 A	145 A	160 A
U _e max. $\leq 690\text{ V}, 50/60\text{ Hz}$	$\theta \leq 55^\circ\text{C}$	60 A	85 A	95 A	105 A	135 A	145 A
	$\theta \leq 70^\circ\text{C}$ (3)	42 A	70 A	80 A	85 A	115 A	130 A
With conductor cross-sectional area		16 mm ²	35 mm ²	50 mm ²	50 mm ²	50 mm ²	70 mm ²
AC-3 Utilization category For air temperature close to contactor $\theta \leq 55^\circ\text{C}$							
I_e / Max. rated operational current AC-3 (1)							
	220-230-240 V	40 A	53 A	65 A	75 A	96 A	110 A
	380-400 V	37 A	50 A	65 A	75 A	96 A	110 A
	415 V	37 A	50 A	65 A	75 A	96 A	110 A
	440 V	37 A	45 A	65 A	70 A	93 A	100 A
	500 V	33 A	45 A	55 A	65 A	80 A	100 A
	690 V	25 A (4)	35 A	43 A	46 A	65 A	82 A
	1000 V	–	23 A (6)	25 A (6)	28 A (6)	30 A	30 A
Rated operational power AC-3 (1)							
	220-230-240 V	11 kW	15 kW	18.5 kW	22 kW	25 kW	30 kW
	380-400 V	18.5 kW	22 kW	30 kW	37 kW	45 kW	55 kW
	415 V	18.5 kW	25 kW	37 kW	40 kW	55 kW	59 kW
	440 V	22 kW	25 kW	37 kW	40 kW	55 kW	59 kW
	500 V	22 kW	30 kW	37 kW	45 kW	55 kW	59 kW
	690 V	22 kW (4)	30 kW	37 kW	40 kW	55 kW	75 kW
	1000 V	–	30 kW (6)	33 kW (6)	37 kW (6)	40 kW	40 kW
Rated making capacity AC-3	10 x I _e AC-3 acc. to IEC 60947-4-1						
Rated breaking capacity AC-3	8 x I _e AC-3 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		50 A	63 A	85 A	95 A	120 A	140 A
Rated operational power AC-8a		22 kW	30 kW	45 kW	45 kW	55 kW	75 kW
Short-circuit protection device for contactors without thermal overload relay - Motor protection excluded (2)							
U _e $\leq 500\text{ V AC}$ - gG type fuse		63 A	100 A	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	600 A	1000 A			1320 A	
	10 s	400 A	650 A			800 A	
	30 s	225 A	370 A			500 A	
	1 min	150 A	250 A			350 A	
	15 min	65 A	110 A	135 A	135 A	160 A	175 A
Maximum breaking capacity cos $\phi = 0.45$	at 440 V	820 A (5)	1300 A			1160 A	
(cos $\phi = 0.35$ for I _e > 100 A)	at 690 V	340 A (5)	630 A			800 A	
Power dissipation per pole	I_e / AC-1	3 W	5 W	6.5 W	7 W	6.5 W	7.5 W
	I_e / AC-3	1.3 W	1.3 W	1.5 W	2 W	2.7 W	3.6 W
Max. electrical switching frequency	AC-1	600 cycles/h	600 cycles/h (300 for AF., AE., TAE.)			300 cycles/h	
	AC-3	1200 cycles/h	600 cycles/h (300 for AF., AE., TAE.)			300 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".

(2) For the protection of motor starters against short circuits, see "Coordination with short-circuit protection devices".

(3) Unauthorized for TAL., TAE.. contactors.

(4) AC-3, 690 V values for AL40 and TAL40 contactors: 18.5 kW, I_e = 21 A.

(5) Max. breaking capacity for AL40 and TAL40 contactors: 470 A at 440 V, 175 A at 690 V.

(6) AF contactors excluded.

UL/NEMA/CSA Technical data

A/E/L40; A/E/F50...A/F110, A/E/F50N2...A/E/F75N3, 3-pole Utilization characteristics

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

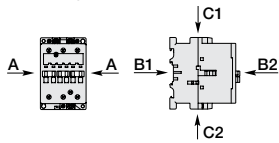
Contactor types	AC operated	A40	A50	A63	A75	A95	A110
	DC operated	AL40, TAL40	AE50, TAE50	AE63	AE75, TAE75	-	-
	AC / DC operated	-	AF50	AF63	AF75	AF95	AF110
Standards		UL 508, CSA C22.2 N°14					
Max. operational voltage		600 V					
NEMA size		-	2	-	3	-	-
NEMA continuous amp rating	Thermal current	-	45 A	-	90 A	-	-
NEMA maximum horse power ratings 1-phase, 60 Hz							
	115 V AC	-	3 hp	-	-	-	-
	230 V AC	-	7-1/2	-	-	-	-
NEMA maximum horse power ratings 3-phase, 60 Hz							
	200 V AC	-	10 hp	-	25 hp	-	-
	230 V AC	-	15 hp	-	30 hp	-	-
	460 V AC	-	25 hp	-	50 hp	-	-
	575 V AC	-	25 hp	-	50 hp	-	-
UL / CSA general use rating							
600 V AC		60 A	80 A	90 A	105 A	125 A	150 A
With conductor cross-sectional area		AWG 6	AWG 4	AWG 3	AWG 2	AWG 1	AWG 1/0
UL / CSA maximum 1-phase motor rating							
Full load current	120 V AC	34 A	34 A	56 A	80 A	80 A	100 A
	240 V AC	40 A	40 A	50 A	68 A	88 A	110 A
Horse power rating	120 V AC	3 hp	3 hp	5 hp	7.5 hp	7.5 hp	10 hp
	240 V AC	7.5 hp	7.5 hp	10 hp	15 hp	20 hp	25 hp
UL / CSA maximum 3-phase motor rating							
Full load current (1)	200-208 V AC	32.2 A	48.3 A	62.1 A	78.2 A	92 A	92 A
	220-240 V AC	42 A	54 A	68 A	80 A	80 A	104 A
	440-480 V AC	40 A	52 A	77 A	77 A	77 A	96 A
	550-600 V AC	41 A	52 A	77 A	77 A	77 A	99 A
Horse power rating (1)	200-208 V AC	10 hp	15 hp	20 hp	25 hp	30 hp	30 hp
	220-240 V AC	15 hp	20 hp	25 hp	30 hp	30 hp	40 hp
	440-480 V AC	30 hp	40 hp	60 hp	60 hp	60 hp	75 hp
	550-600 V AC	40 hp	50 hp	75 hp	75 hp	75 hp	100 hp
Max. electrical switching frequency							
For general use		600 cycles/h	600 cycles/h (300 for AF..., AE...)			300 cycles/h	-
For motor use		1200 cycles/h	600 cycles/h (300 for AF..., AE...)			300 cycles/h	-

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

General technical data

Contactor types	AC operated	A40	A50	A63	A75	A95	A110
	DC operated	AL40, TAL40	AE50, TAE50	AE63	AE75, TAE75	-	-
	AC / DC operated	-	AF50	AF63	AF75	AF95	AF110
Rated insulation voltage Ui		1000 V					
acc. to IEC 60947-4-1		600 V					
acc. to UL		8 kV					
Rated impulse withstand voltage Uimp.		8 kV					
Electromagnetic compatibility		AF contactors complying with IEC 60947-1 / EN 60947-1 - Environment A					
Ambient air temperature close to contactor							
Operation	Fitted with thermal overload relay	-25...+55 °C					
	Without thermal overload relay	-40...+70 °C (55 °C max. for TAL..., and TAE... contactor)					
Storage		-60...+80 °C					-40...+70 °C
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 UTE C 63-100 specification II					acc. to IEC 60068-2-30
Maximum operating altitude (without derating)		3000 m					
Mechanical durability							
Number of operating cycles		10 millions operating cycles (5 millions for AE... and TAE...)					
Max. switching frequency		3600 cycles/h (300 for AF contactors)					
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 (2)					
	A	20 g					<div style="border: 1px solid black; padding: 2px;"> For AL40, TAL40 A : 20 g closed position / 10 g open position B1 : 15 g closed position / 5 g open position B2 : 10 g closed position / 10 g open position C1 : 20 g closed position / 8 g open position C2 : 14 g closed position / 8 g open position </div>
	B1	10 g closed position / 5 g open position					
	B2	15 g					
	C1	20 g					
	C2	20 g					

(2) These values are not valid for rail mounting with contactors A95 ... A110 and AF95 ... AF110.



General technical data

AF50...AF110, 3-pole

Coil & mounting characteristics

Magnet system characteristics

Contactor types		AC / DC operated	AF50	AF63	AF75	AF95	AF110
Coil operating limits acc. to IEC 60947-4-1		AC or DC supply	At $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c$ min... $1.1 \times U_c$ max. Please also refer to "Mounting characteristics and conditions for use"				
AC control voltage 50/60 Hz	Rated control circuit voltage U_c		48...250 V 50/60 Hz				
	Coil consumption	Average pull-in value	210 VA				350 VA
		Average holding value	7 VA / 2.8 W				7 VA / 3.5 W
DC control voltage	Rated control circuit voltage U_c		20...250 V DC				
	Coil consumption	Average pull-in value	190 W				400 W
		Average holding value	2.8 W				2 W
Drop-out voltage			55 % of U_c min.				
Voltage sag immunity acc. to SEMI F47			Conditions of use on request				
Dips withstand			≥ 20 ms				
Operating time							
Between coil energization and:		N.O. contact closing	30...100 ms				30...80 ms
		N.C. contact opening	27...95 ms				27...77 ms
Between coil de-energization and:		N.O. contact opening	30...110 ms				55...125 ms
		N.C. contact closing	35...115 ms				60...130 ms

Mounting characteristics and conditions for use











Contactor types		AC / DC operated	AF50	AF63	AF75	AF95	AF110
Mounting positions							
Control voltage / Ambient temperature			Max. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor AF50 ... AF110				
Mounting positions	1, 1±30°, 2, 3, 4, 5	at $\theta \leq 70^\circ\text{C}$	0.85 x U_c min...1.1 x U_c max.				
	6		Unauthorized				
Mounting distances			The contactors can be assembled side by side				
Fixing	On rail according to IEC 60715, EN 60715		35 x 15 mm or 75 x 25 mm				-
	By screws (not supplied)		2 x M6 screws placed diagonally				

General technical data

A/E/L40, A/E/F50...A/F110, 3-pole

Terminal characteristics

Connecting characteristics

Contactor types	AC operated	A40	A50	A63	A75	A95	A110	
	DC operated	AL40	AE50	AE63	AE75	–	–	
		TAL40	TAE50	–	TAE75	–	–	
	AC / DC operated	–	AF50	AF63	AF75	AF95	AF110	
Main terminals		 Screw terminals with double connector 2 x (5.6 x 6.5 mm)	 Screw terminals with single connector (13 x 10 mm)			 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 2.5...16 mm ² 2 x 2.5...16 mm ²	} 6...50 mm ² 6...25 mm ²	}	}	} 10...95 mm ² 6...35 mm ²	}	
 Stranded ($\geq 6 \text{ mm}^2$)								
 Flexible with ferrule		1 x 2.5...10 mm ² 2 x 2.5...10 mm ²	6...35 mm ² 6...16 mm ²			10...70 mm ² (1) 6...35 mm ² (1)		
 Bars or lugs		L \leq – L $>$ –	– –			30 mm (2) 6 mm		
Connection capacity acc. to UL/CSA (solid/stranded)		1 or 2 x AWG 8...4	AWG 8...1			AWG 6...2/0		
Tightening torque	Recommended	2.30 Nm / 20 lb.in	4.00 Nm / 35 lb.in			8 Nm / 71 lb.in		
	Max.	2.60 Nm	4.50 Nm			9 Nm		
Auxiliary conductors (built-in auxiliary terminals + coil terminals)								
 Rigid solid		1 x 1...4 mm ² 2 x 1...4 mm ²				0.75...2.5 mm ² 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	1...2.5 mm ²			0.75...2.5 mm ²		
 Lugs		L \leq 8 mm L $>$ 3.7 mm						
Connection capacity acc. to UL/CSA (solid/stranded)		1 or 2 x AWG 18...14						
Tightening torque								
Coil terminals	Recommended	1.00 Nm / 9 lb.in						
	Max.	1.20 Nm						
Built-in auxiliary terminals	Recommended	1.00 Nm / 9 lb.in	–			–		
	Max.	1.20 Nm	–			–		
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529								
Main terminals		IP20	IP10					
Coil terminals		IP20						
Built-in auxiliary terminals		IP20	–			–		
Screw terminals								
Main terminals		Delivered in open position, screws of unused terminals must be tightened						
		M5	M6			M8		
	Screwdriver type	Flat \varnothing 6.5 / Pozidriv 2					Hexagon socket (s = 4 mm)	
Coil terminals		M3.5						
	Screwdriver type	Flat \varnothing 5.5 / Pozidriv 2						
Built-in auxiliary terminals		M3.5					–	
	Screwdriver type	Flat \varnothing 5.5 / Pozidriv 2					–	

(1) A(F)95 / A(F)110: use flexible without ferrule.

(2) With LW110 enlargement piece, see "Accessories".