

Motor contactor CEM

Contactors CEM up to 132 kW Technical Data

type	CEM 9	CEM 12	CEM 18	CEM 25	CEM 32	CEM 40	CEM 50	CEM 65	CEM 80	CEM 95	CEM 105	CEM 112E	CEM 150E	CEM 180E	CEM 250E	CEM 300E		
Standards	IEC/EN 60 947, DIN VDE 0660																	
Rated insulation voltage U_i (V) to IEC/EN 60 947, DIN VDE 0660	1000 V																	
Rated impulse withstand voltage U_{imp}	6 kV						8 kV											
Rated operational frequency	25 - 400 Hz																	
Degree of protection	Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)																	
Main circuits	IP20			IP10						IP00								
Control circuits and auxiliary contacts	IP20																	
Ambient temperature	-25 ... +55 °C																	
Operating temperature																		
Storage temperature	-55 ... +80 °C																	
Altitude																		
Normal values	≤ 3000 m																	
90 % I_e /80 % U_e	3000 ... 4000 m																	
80 % I_e /75 % U_e	4000 ... 5000 m																	
Overvoltage category/Pollution degree	III/3																	
Climatic proofing	IEC 68-2																	
Main circuits																		
Number of poles	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Rated operation voltage U_e	690 V						1000V											
Conv. thermal current I_{th} at ≤ 55°C																		
Rated operational current I_e /AC-1	25 A	25 A	32 A	45 A	60 A	60 A	90 A	110 A	110 A	140 A	140 A	180 A	225 A	225 A	350A	410A		
AC-3 Duty																		
Rated operational power																		
230 V kW	2,2	3	4	6,5	9	11	15	18,5	22	25	30	30	45	55	75	90		
400 V kW	4	5,5	7,5	11	15	18,5	22	30	37	45	55	55	75	90	132	160		
415-440 V kW	4,5	5,5	9	12,5	15	22	30	37	45	55	55	90	110	150	185			
500 V kW	5,5	7,5	10	15	18,5	25	30	40	45	55	65	75	90	110	160	200		
690 V kW	5,5	7,5	10	15	18,5	30	33	45	45	55	65	80	80	132	200	200		
Short circuit rating max. fuse gG (A)	25	35	35	50	63	80	100	125	125	160	200	224	250	250	400	500		
max. electrical operating frequency																		
AC-1 Ops/h	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600	600	600	600		
AC-3 Ops/h	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600	600	600	600	600		
AC-4 Ops/h	360	360	360	360	360	360	200	200	200	200	200	150	150	150	150	150		
no load Ops/h	9000	9000	9000	9000	9000	9000	5000	5000	5000	5000	5000	4000	4000	4000	4000	4000		
Mechanical life span Ops x 10 ⁶	10																	
Electrical life span Ops x 10 ⁶	1,6	1,8		1,2				1,1					1,0					
Control circuit																		
Rated insulation voltage U_i (V)	1000 V																	
Nominal voltages U_s 50 Hz (V)	24 - 690 V																	
Nominal voltages U_s 60 Hz (V)	24 - 690 V																	
Nominal voltages U_s DC (V)	12 - 440 V																	
Pick-up and drop-out values																		
Pick-up x U_s (V)	0,8 - 1,1		0,8 - 1,1				0,8 - 1,1						0,8 - 1,1					
Drop-out x U_s (V)	0,35 - 0,55			0,4 - 0,6				0,4 - 0,6						0,3 - 0,5				
Power consumption of the coil 50/60 Hz																		
Pick-up (VA)	70		98				255						213		214		229	
(cos ϕ)	0,85		0,69				0,32						0,71		0,68		0,73	
Sealing (VA)	4...7,2		6,6...12,3				13,1...19,1						14,8		14,5		14,1	
(cos ϕ)	0,28		0,34				0,54						0,26		0,27		0,26	
Power consumption of the coil, DC coils																		
Pick-up (W)	3,8...7,5		240				340						166		154		171	
Sealing (W)	3,8...7,5		6				6,5						2,4		2,4		2,5	
Power dissipations																		
PD per pole @ 1, AC-3 (W)	0,2	0,3	0,8	1	1,3	1,5	2,1	3,6	5,5	6,9	8,4	6,2	11,1	13,8	17,9	25,7		
PD of coils, AC coils (W)	2,0	2,0	2,0	2,0	4,2	4,2	10,3	10,3	10,3	10,3	10,3	3,9	3,9	3,9	3,7	3,7		
PD of coils, DC coils (W)	7,5	7,5	7,5	7,5	6	6	6,5	6,5	6,5	6,5	6,5	2,4	2,4	2,4	2,5	2,5		

Technical data

Contactors CEM up to 132 kW Technical Data

Type	CEM 9 to CEM 18	CEM25	CEM32 and CEM40	CEM50 and CEM80	CEM95 and CEM105	CEM112E and CEM 150E	CEM180E	CEM250E and CEM300E
Main terminal capacity (mm²)								
Solid, stranded and finely stranded without end sleeve		2x (1... 2,5) 2x (2,5...6)	2x (1... 2,5) 2x (2,5... 10)					
Finely stranded with end sleeve		2x (0,25...2,5) 2x (2,5...6) 2x (13...16)	2x (1...2,5) 2x (2,5...10) 2x (13...17)					
One conductor on top								
Stranded				0,75...16	1...35	1,5...50		
Stranded with end sleeve				0,75...16	1...35	1,5...50		
Stranded without end sleeve				1...16	1,5...35	2,5...50		
Finely stranded				1...16	1,5...35	2,5...50		
One conductor on bottom								
Solid				1...16	2,5...35	4...35		
Stranded with end sleeve				1... 16	2,5...35	4...35		
Stranded without end sleeve				1,5...16	6...35	6...35		
Finely stranded				1,5...16	6...35	6...35		
Two conductors on top								
Solid				0,75...16	1...35	1,5...50		
Stranded with end sleeve				0,75...16	1...35	1,5...50		
Stranded without end sleeve				1...16	1,5...35	2,5...50		
Finely stranded				1...16	1,5...35	2,5...50		
Two conductors on bottom								
Solid				1...16	2,5...35	4...35		
Stranded with end sleeve				1...16	2,5...35	4...35		
Stranded without end sleeve				1,5...16	6...35	6...35		
Finely stranded				1,5...16	6...35	6...35		
Solid and stranded with end sleeve Bar						2 x (25...70) 2 x (15x3)	2 x (50...120) 2 x (20x3)	2 x (50...150) 2 x (30x5)
Tightening torque (N.m)		1...1,9	1,6...3	2,5...4	4...6	5...6,5	10	13

Auxiliary contacts

Type		CEM9	CEM12	CEM18	BCXMF...	BCXMLE ...
Rated insulation voltage Ui						
acc. IEC/EN 60 947	(V)		1000			1000
Rated operational voltage Ue						
	(V)		690			690
Conv. thermal current Ith						
	(A)		20			10
Rated operational current Ie						
AC-15	220 - 240 V	(A)	10			6
	380 - 400 V	(A)	6			4
	415 V	(A)	5			3,5
	500 V	(A)	4			2,5
DC-13	24 V	(A)	6			6
	48 V	(A)	4			4
	110 V	(A)	2			2
	220 V	(A)	0,7			0,7
Making capacity Im						
AC-15/AC-11	Ue ≤ 400 V 50/60 Hz	(A)	250			90
DC-13/DC-11	Ue ≤ 220 V DC	(A)	250			90
Breaking capacity Ic						
AC-15/AC-11	Ue ≤ 400 V 50/60 Hz	(A)	250			60
DC-13/DC-11	Ue ≤ 220 V DC	(A)	2			0,95
Short circuit protection						
max. fuse gG	(A)		16			10
Control circuit reliability						
				Ie min. = 5 mA, Ue min. = 17 V		
Electrical life span	Ops			10 ⁶		
Mechanical life span	Ops			15 x 10 ⁶		
Impedance /pole	mR			2,5		

Power Circuit - CEM 450-560			
Three pole version		CEM450	CEM560
Rated thermal current I _{th} (temp ≤ 55 °C)	(A)	600	700
Rated operational current I _e AC-3 (U _e ≤ 440V)	(A)	450	560
Rated operational voltage U _e	acc. IEC / VDE 0660	(V)	1000
	acc. UL / CSA	(V)	-
Rated insulation voltage U _i (pollution degree 3)	acc. IEC / VDE 0660	(V)	1000
	acc. UL / CSA	(V)	-
Rated impulse withstand voltage U _{imp} (acc. IEC 60947-1)	(kV)	8	8
Maximum continuous current AC-1 (temp ≤ 55 °C)	(A)	600	690
Rated operational current I _e AC-4 (U _e ≤ 440V)	(A)	280	345
Frequency limits	(Hz)	25...400	25...400
Making capacity (RMS) (IEC 60947)	(A)	5600	6300
Breaking capacity (RMS) (IEC 60947)	(U _e ≤ 400V)	(A)	4480
	(U _e = 500V)	(A)	4480
	(U _e = 550V)	(A)	4009
	(U _e = 690V)	(A)	3000
Short-time current	1 seg	(A)	8544
	5 seg	(A)	5733
	10 seg	(A)	4500
	30 seg	(A)	2990
	1 min	(A)	2208
(at temp ≤ 40 °C)	3 min	(A)	1391
No current flowing during recovery time.	Recovery time (min.)	10	10
Electrical Endurance at I _e AC-3 (IEC 60947)	ops. (million)	0,6	0,6
Protection against short-circuits with fuses. Without TOR			
Coordination type "1"	gL/gG	(A)	1000
Coordination type "2"	gL/gG	(A)	630
Without welding	gL/gG	(A)	500
Short-circuit Interrupting Capacity	600V - acc. UL/CSA	(kA)	-
Impedance per pole	(mΩ)	0,2	0,2
Power dissipation per pole	AC-1	(W)	72
	AC-3	(W)	41
Insulation resistance between adjacent poles, poles and earth and between input and output		> 10MΩ	
Degree of protection (acc. VDE 0160 - Part 100)	Main terminals	IP00	
	Coil terminals	IP20	
Relative Humidity	5 to 95% at 40°C (non-condensing)		
Mounting	Screw to panel		

AC - Utilisation Category for CEM 450-560			
Utilisation category AC-1		CEM450	CEM560
Rated thermal current I _{th} (temp ≤ 55 °C)	(A)	600	690
Max. Operational current at ambient temperature of. (up to 690V)"	55 °C	(A)	600
	70 °C	(A)	370
	75 °C	(A)	-
Max. Operational power (q ≤ 55 °C) (Three-phase resistors)	220 / 230 V	(kW)	228
	380 / 400 V	(kW)	395
	415 / 440 V	(kW)	431
	500 V	(kW)	520
	575 / 600 V	(kW)	598
	660 / 690 V	(kW)	685
Cable size	(mm ²)	2 x (50x5)	
Current values for connection of	2 poles in parallel	I _e x 1,7	
	3 poles in parallel	I _e x 2,4	
Percentage of the max. operational current at	600 ops./h	(%)	100
	1200 ops./h	(%)	80
	3000 ops./h	(%)	-

AC - Utilisation Category for CEM 450-560			
Utilisation category AC-3		CEM450	CEM560
Operational current I _e (temp ≤ 55°C)	U _e ≤ 440 V	(A)	450
	500 V	(A)	415
	550 V	(A)	380
	690 V	(A)	315
	1000 V	(A)	200
"Max. Operational power Three-phase motors (50/60 Hz)"	220 / 230 V	(kW)	150
		(HP)	200
	380 / 400 V	(kW)	260
		(HP)	350
	415 / 440 V	(kW)	260
		(HP)	350
	500 V	(kW)	260
		(HP)	350
	660 / 690 V	(kW)	300
		(HP)	400
1000 V	(kW)	260	
	(HP)	350	
Percentage of the max. operational current at	600 ops./h	(%)	100
	1200 ops./h	(%)	75
	3000 ops./h	(%)	-

Technical data

Electronic Control Circuit - AC 50/60Hz / DC							
Coils with electronic module			CEM112 / 150	CEM180 / 215	CEM250 / 300	CEM450/560	
Rated insulation voltage Ui (pollution degree 3)	acc. IEC / VDE 0660	(V)	1000				
	acc. UL / CSA	(V)	600				
Standard voltages		(V)	110-255 V 50/60 Hz / DC				
Voltage Operating limits - acc. IEC 60947-1							
Coil Operating Limits		xUs	0.8...1.1	0.8...1.1	0.8...1.1	0.8...1.1	
	Pick-up	xUs	0.6 ... 0.75	0.6 ... 0.75	0.6 ... 0.75	0.6 ... 0.75	
	Drop-out	xUs	0.4 ... 0.6	0.4 ... 0.6	0.4 ... 0.6	0.4 ... 0.6	
Consumption - AC (at 1,0 x Us and cold coil)							
Electronic coils (at 60Hz)	Magnetic circuit closed	(VA)	16.3	21.5	35.2	38.5	
	Power factor		0.26	0.27	0.26	0.26	
	Thermal power dissipation		(W)	4.2	5.8	9.2	10.0
	Magnetic circuit closing	(VA)	322	426	518	700	
	Power factor		0.71	0.68	0.73	-	
Consumption - DC (at 1,0 x Us and cold coil)							
Electronic coils at DC	Magnetic circuit closed	(W)	12.5	12.5	12.5	25	
	Magnetic circuit closing	(W)	415	375	380	780	
Opening and closing times (Values at Us)							
Between coil energization and:	NO contact closing	(ms)	40...70	40...70	65...85	80...110	
Between coil de-energization and:	NO contact opening	(ms)	50...70	55...75	40...65	50...90	
Mechanical endurance		ops.	10 million	10 million	10 million	3 million	
Maximum rate	No load	ops./h	1000	1000	1000	1000	
	AC1 and AC3 at rated power	ops./h	600	600	600	300	
	AC4 at rated power	ops./h	150	150	150	150	

AC - Utilisation Category for CEM 450-560

Utilisation category AC-4		CEM450	CEM560
Operational current Ie AC-4	Ue ≤ 440 V (A)	280	345
	500 V (A)	211	220
	690 V (A)	160	195
	1000 V (A)	100	125
Operational power Three-phase motors (50/60 Hz) (200.000 operations)	220 / 230 V (kW)	75	90
		(HP)	100
	380 / 400 V (kW)	150	185
		(HP)	200
	415 / 440 V (kW)	150	185
		(HP)	200
	500 V (kW)	130	185
		(HP)	200
	660 / 690 V (kW)	150	185
		(HP)	200
	1000 V (kW)	132	150
		(HP)	175
Max. Operational current Ie (Ue ≤ 400 V) (35.000 operations)		(A)	450 560
Max. Operational power (Ue ≤ 380/400 V)		(kW)	260 300
Maximum frequency of switching		(ops./h)	350 400

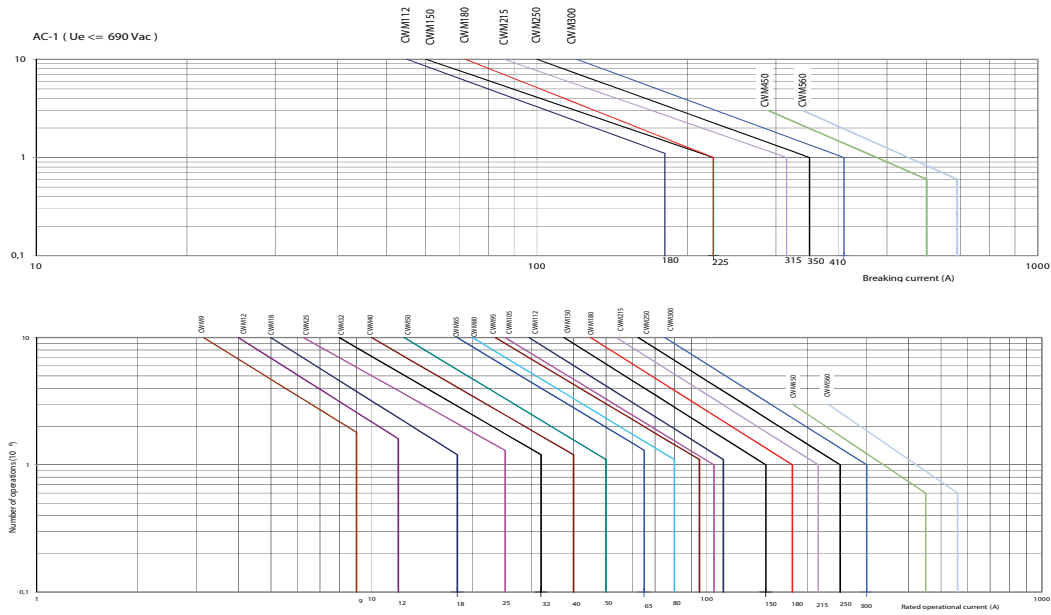
DC - Utilisation Category for CEM450-560

Utilisation category DC-1 (L/R ≤ 1 ms)		CEM450	CEM560
Ue (V)	Poles in serie	Max. Operational current Ie (A)	
24V	1	450	560
	2	600	690
	3	600	690
110V	1	225	280
	2	450	560
	3	600	690
220V	1	45	56
	2	300	345
	3	600	690
440V	1	-	-
	2	150	172
	3	300	345

DC - Utilisation Category for CEM450-560

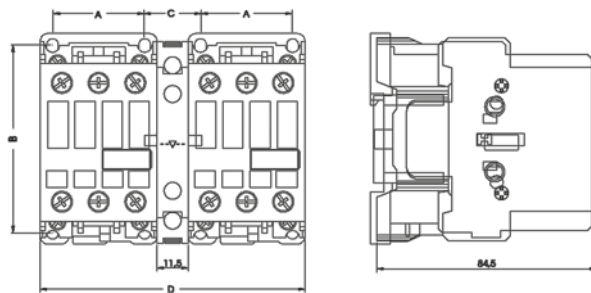
Utilisation category DC-3 / DC-5 (L/R ≤ 15 ms)		CEM450	CEM560
Ue (V)	Poles in serie	Max. Operational current Ie (A)	
24V	1	350	450
	2	450	560
	3	450	560
110V	1	200	260
	2	350	400
	3	400	450
220V	1	30	35
	2	160	200
	3	300	345
440V	1	-	-
	2	50	65
	3	150	180

Diagram



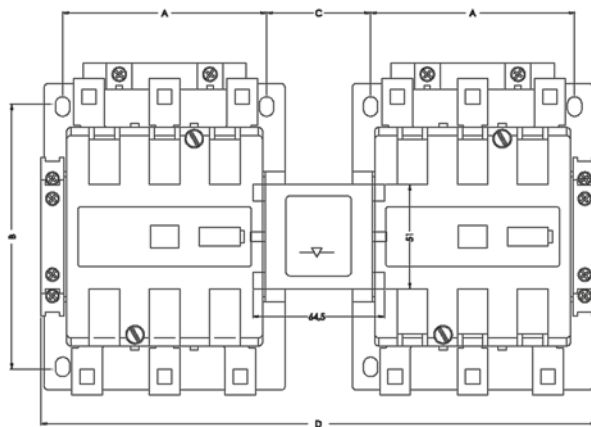
Dimensions

BLIME9-105



Contactors	A	B	C	D
CEM9...25	35	72,5	22	102
CEM32...40	45	79	22	122
CEM50...80	57	90	22	144
CEM95...105	57	90	29	162

BLIME 112-300E



Contactors	A	B	C	D
CEM112...150	100	130	51	272,5
CEM180	110	160	58,5	303,5
CEM250...300	120	180	57	325,4
CEM250...300	175	196	57	414

Mechanical interlocks BLIME: Contactor sizes & compatibility

		Same size Q1=Q2	
BLIME 9-105	004643601	CEM9...CEM105	
BLIME 112-300E	004643602	CEM112(E)-CEM300(E)	
AC coils		Different size	
		Q1	Q2
BLIME 9-105	004643601	CEM9...CEM105	CEM9...CEM105
BLIME 112-300E	004643602	CEM112...CEM150	CEM112...CEM150
		CEM250...300	CEM250...300
DC coils		Different size	
		Q1	Q2
BLIME 9-105	004643601	CEM9...18	CEM9...18
BLIME 9-105	004643601	CEM32...40	CEM32...40
BLIME 9-105	004643601	CEM50...CEM105	CEM50...CEM105
AC&DC coils		Different coil	
		C1	C2
BLIME 9-105	004643601	CEM50...105 DC coil	CEM9...105 AC coil