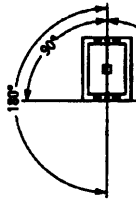
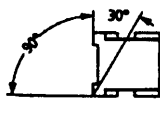
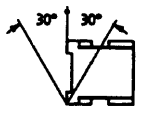


DIL Contactors
Technical Data

811 841

Contactors
Overload Relays

Contactors			DIL 00 M DIL 00 AM DIL 00 BM	DIL 0 M DIL 0 AM	DIL 1 M DIL 1 AM	DIL 2 M DIL 2 AM	DIL 3 M DIL 3 AM
General							
Standards			IEC/EN 60 947, VDE 0660, UL, CSA, shipping classifications → Page 17/009				
Mechanical lifespan							
AC operated	Operations ×10 ⁶		10	10	10	10	10
DC operated	Operations ×10 ⁶		10	10	10	10	3
Maximum operating frequency, mechanical							
AC operated	Ops./h		7000	9000	9000 5000	5000	5000
DC operated	Ops./h		9000	9000 5000	5000	5000	1000
Maximum operating frequency, electrical							
Contactors without overload relays		Page	06/066	06/066	06/066	06/066	06/066
Climatic proofing							
Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclic, to IEC 60 068-2-30							
Ambient temperature							
Open	Min./Max.	°C	-25/+50	-25/+50	-25/+50	-25/+50	-25/+55
Enclosed ²⁾	Min./Max.	°C	-25/+40	-25/+40	-25/+40	-25/+40	-25/+40
Mounting position							
			a)	b)	c)		
							
			DIL 00 M to DIL 4 AM AC/DC operation	DIL 00 M to DIL 2 AM AC operation	DIL 00 M to DIL 4 AM DC operation DIL 3 M to DIL 4 AM AC operation		
Mechanical shock resistance (sinusoidal shock; 20 ms)⁴⁾							
Main contacts							
Make contact	AC	g	10	8	8	8	10
Auxiliary contacts							
Make contact	AC	g	10	8	8	8	10
Break contact	AC	g	6	6	6	6	8
Degree of protection		IP	20	00	00	00	00
Protection against direct contact from front when actuated by a perpendicular test finger (IEC 536)			Finger- and back-of-hand proof				
Dimensions		Page	06/104	06/104	06/104	06/104	06/104
Weights							
AC operated		kg	0.32	0.42	0.71	0.95	2
DC operated		kg	0.50	0.77	1.25	1.85	2
Terminal capacity (Screw terminal; 1 or 2 conductors can be connected)							
Main cable:							
Solid ³⁾	mm ²		1×(0.75 - 4)	1×(1 - 6)	1×(2.5 - 10)	1×(2.5 - 16)	1×(6 - 16)
			2×(0.75 - 4)	2×(1 - 6)	2×(2.5 - 10)	2×(2.5 - 16)	2×(6 - 16)
Flexible with ferrule	mm ²		1×(0.75 - 4)	1×(1 - 6)	1×(2.5 - 16)	1×(2.5 - 25)	1×(4 - 50)
			2×(0.75 - 4)	2×(1 - 6)	2×(2.5 - 10)	2×(2.5 - 10)	2×(4 - 50)
Flexible with cable lug	mm ²		-	-	-	-	-
Stranded	mm ²		-	-	1×(10 - 25)	1×(10 - 35)	16
			-	-	2×10	2×10	50
Stranded with cable lug	mm ²		-	-	-	-	-
Solid or stranded	Min.	AWG	18	16	12	12	10
		Max.	AWG	10	10	4	2
Flat conductor ¹⁾	mm		-	-	3×9×0.8	3×9×0.8	2×(6×9×0.8)
			-	-	2×(3×9×0.8)	2×(3×9×0.8)	-
			-	-	6×9×0.8	6×9×0.8	-

Notes

- ¹⁾ 5×10⁶ Ops. with 50/60-Hz coil, 8×10⁶ Ops. operations with horizontal contacts
- ²⁾ For suitable enclosures, see → Pages 06/060, 061
- ³⁾ Maximum of one size difference admissible when using 2 conductors

DIL Contactors

Technical Data

Contactors

DIL 00 M
DIL 00 AM
DIL 00 BM

DIL 0 M
DIL 0 AM

DIL 1 M
DIL 1 AM

DIL 2 M
DIL 2 AM

DIL 3 M
DIL 3 AM

Terminal capacity

Control circuit cable

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Solid	mm ²	1×(0.75 - 4)	1×(0.75 - 4)	1×(0.75 - 4)	1×(0.75 - 4)	2×(0.75 - 4)
		2×(0.75 - 4)	2×(0.75 - 4)	2×(0.75 - 4)	2×(0.75 - 4)	-
Flexible with ferrule	mm ²	1×(0.75 - 2.5)	1×(0.75 - 2.5)	1×(0.75 - 2.5)	1×(0.75 - 2.5)	2×(0.75 - 2.5)
		2×(0.75 - 2.5)	2×(0.75 - 2.5)	2×(0.75 - 2.5)	2×(0.75 - 2.5)	-
Solid or stranded	AWG	18 - 12	18 - 12	18 - 12	18 - 12	2×(18 - 12)

Terminal screw

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Main cable		M3.5	M4	M6	M6	M8 (SW 4)
Control circuit cable		M3.5	M3.5	M3.5	M3.5	M3.5

Main cable and control circuit cable

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Pozidriv screwdriver	Size	2	2	2	2	2
Standard screwdriver	mm	0.8×5.5	0.8×5.5	0.8×5.5	0.8×5.5	0.8×5.5
	mm	1×6	1×6	1×6	1×6	1×6

Tightening torque

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Main cable	Nm	1.2	1.8	4	4	6
Control circuit cable	Nm	1.2	1.2	1.2	1.2	1.2

Main contacts

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Rated impulse withstand voltage U_{imp}	V	8000	8000	8000	8000	8000
Overtoltage category/pollution degree		III/3	III/3	III/3	III/3	III/3
Rated insulation voltage U_i	V AC	690	690	690	690	1000
Rated operational voltage U_e	V AC	690	690	690	690	1000
"Safe isolation" to IEC 536						

between coil and contacts	V AC	440	440	440	440	500
and between contacts	V AC	440	440	440	440	500

Making capacity

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
cos ϕ to IEC/EN 60 947	A	200 200 250	270	730	950	1300

Breaking capacity

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
cos ϕ to IEC/EN 60 947						
220 V/230 V	A	130 130 160	230	380	750	1100
380 V/400 V	A	120 120 160	230	380	600	1100
500 V	A	120 120 160	230	355	600	1100
660 V/690 V	A	100 100 125	210	255	545	650
1000 V	A	-	-	-	-	330

Component lifespan

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
AC-3	Page	06/062	06/062	06/062	06/062	06/062

Short-circuit rating

		DIL 00 M	DIL 0 M	DIL 1 M	DIL 2 M	DIL 3 M
Maximum fuse ²⁾						
Type "2" coordination	A gL	20	35	63	100	160
Type "1" coordination	A gL	25	50	100	125	250

Notes

- 1) 1000 V please enquire
- 2) See transparent overlay "Fuses" for time/current characteristics (please enquire)

Contactor
 Overload Relays
 1999-2000

DIL Contactors
Technical Data

Contactors
Overload Relays

Contactors		DIL 00 M DIL 00 AM DIL 00 BM			DIL 0 M DIL 0 AM		DIL 1 M DIL 1 AM		DIL 2 M DIL 2 AM		DIL 3 M DIL 3 AM				
AC															
AC-1 duty															
Conventional free air thermal current I_{th}															
Δ rated operational current I_e															
50 – 60 Hz up to 690 V															
3-pole	Open	at 40 °C	A	22		38		60		98.5		114			
		at 50 °C	A	20		35		55		90		104			
		at 55 °C	A	19		33		52		85		100			
1-pole	Enclosed ¹⁾		A	16		30		44		80		90			
	Open ¹⁾		A	50		85		140		225		250			
	Enclosed ¹⁾		A	40		75		110		200		225			
AC-3 duty															
Rated operational current I_e Open ¹⁾															
50 – 60 Hz	220 V / 230 V		A	8.8	12	15.5		15.5	22.5	30	38	50	62	75	85
	380 V / 400 V		A	8.8	12	15.5		15.5	22.5	30	36	43	58	72	85
	500 V		A	9	12	11.5		17	22.5	28	32	43	54	64	78
	660 V / 690 V		A	6.7	9	9		13	17.5	21	25	33	42	60	82
	1000 V		A	–				–		–		–		28	33
AC-4 duty															
Rated operational current I_e Open ¹⁾															
50 – 60 Hz	220 V / 230 V		A	6.6	8.7	8.7		11.5	15.5	22.5	30	37	49	64	75
	380 V / 400 V		A	6.6	8.5	8.5		11.5	15.5	22.5	30	36	43	58	72
	500 V		A	6.4	9	9		11.5	17	22.5	28	32	43	54	64
	660 V / 690 V		A	4.9	6.7	6.7		9	13	17.5	21	25	33	49	49
	1000 V		A	–				–		–		–		28	33
Capacitor duty															
Individual compensation															
Rated operational current I_e															
of three-phase capacitors															
Open	525 V		A	6				10.5	18.5	29	37	47	70	55	
	690 V		A	7				9.5	18.5	28	34	46	55	34	
Enclosed	525 V		A	6				10.5	18.5	29	37	47	58	46	
	690 V		A	7				9.5	18.5	28	34	46	55	28	
Max. inrush current peak				$30 \times I_e$			$30 \times I_e$			$30 \times I_e$			$30 \times I_e$		
Component lifespan Operations				$\times 10^6$			0.1			0.1			0.1		
Maximum operating frequency				Ops./h			200			200			200		

Notes

¹⁾ At maximum admissible ambient temperature

DIL Contactors
Technical Data

Contactor
Overload Relays

Contactors	DIL 00 M		DIL 0 M		DIL 1 M		DIL 2 M		DIL 3 M	
	DIL 00 AM		DIL 0 AM		DIL 1 AM		DIL 2 AM		DIL 3 AM	
		DIL 00 BM								
DC										
Circuitry	Page	06/067		06/067		06/067		06/067		06/067
Rated operational current I_e Open										
DC-1 duty										
up to 60 V	A	20	20	-	35	55	90	100		
110 V	A	20	20	-	35	55	90	100		
220 V	A	12	15	-	20	25	40	80	100	
440 V	A	3	3	-	5	7	10			
DC-3 duty										
up to 60 V	A	15	20	-	20	28	28	70	100	
110 V	A	15	20	-	20	28	28	70	91	
220 V	A	5	8	-	10	12	15	45	91	
440 V	A	-	-	-	-	-	-	-	-	
DC-5 duty										
up to 60 V	A	12	16	-	18	25	25	45	48	100
110 V	A	12	16	-	18	25	25	45	48	91
220 V	A	-	-	-	-	-	-	-	-	91
440 V	A	-	-	-	-	-	-	-	-	-
Current heat loss (3-pole)										
With conventional thermal current I_{th}	W	2.3		3.7		12.4		20		21
With I_e AC-3/400 V	W	0.4	0.8	1.4	0.7	1.5	3.8	5.5	4.6	8.4
Magnet systems										
Pick-up and drop-out values										
AC operated	Pick-up	$\times U_c$	0.8 - 1.1		0.8 - 1.1		0.8 - 1.1		0.8 - 1.1	
DIL 00 M - DIL 4 AM with 50/60 Hz coil: 0.85 - 1.1										
DC operated ¹⁾	Pick-up	$\times U_c$	0.85 - 1.1		0.85 - 1.1		0.85 - 1.1		0.85 - 1.1	
Power consumption of the coil										
AC operated	Pull-in	VA	67		100		136		185	
		W	52		72		88		106	
Single-voltage coil	Sealing	VA	8.5		10		14		16	
		W	2.5		3		3.5		4.5	
Dual-voltage coil	Sealing	VA	8.6		10		15		16.5	
		W	2.5		3		4		5.8	
Dual-frequency coil										
...V 50/60 Hz at 50 Hz	Sealing	VA	10		14		21		25	
		W	3		4		5		7.5	
...V 50/60 Hz bei 60 Hz	Sealing	VA	8.5		10		15		20	
		W	2.5		3		4		6	
DC operated ¹⁾	Pull-in	W	9.5		10		14.5		16	
		Sealing	W	9.5		10		14.5		16
Duty factor	% DF	100		100		100		100		100
Switching times at 100 % U_c (approximate values)										
Main contacts										
AC operated¹⁾										
Closing delay	ms	14 - 22		9 - 19		11 - 19		14 - 22		20 - 24
Opening delay	ms	5 - 14		5 - 13		6 - 13		5 - 15		8 - 13
DC operated¹⁾										
Closing delay	ms	35 - 40		40 - 55		68 - 75		75 - 90		27 - 29
Opening delay	ms	5 - 10		6 - 10		10 - 15		12 - 18		12 - 23
Reversing contactors, AC operated										
Changeover time at 100 % U_c	ms	13 - 21 ²⁾		13 - 19 ²⁾		12 - 16 ²⁾		13 - 19 ²⁾		21 - 30
Arcing time when AC operated	ms	≤ 10		< 20		< 20		< 20		10 - 20
Coil 50/60 Hz	Mechanical lifespan at 50 Hz approx. 30% less than listed under „General“ → Page 06/088									

Notes

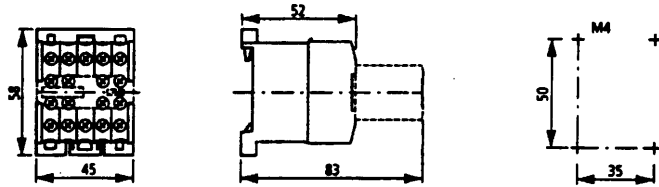
¹⁾ Smoothed DC or three-phase bridge rectifier

²⁾ DIL 00 (A)M to DIL 2 (A)M must have a current-free pause ≥ 25 ms for reversing at 660/690 V

DIL EM Mini Contactors, DIL Contactors Dimensions

Mini contactors

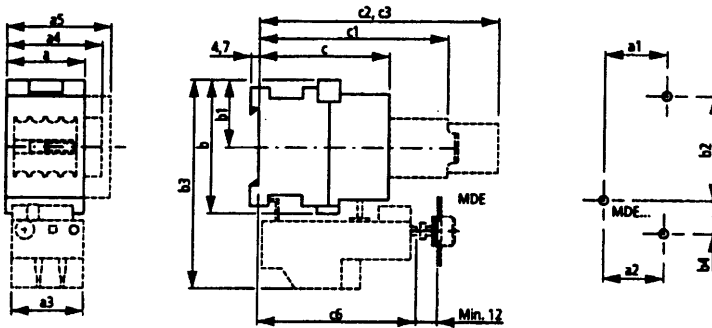
DIL E(E)M-...
DIL E(E)M-...-G



Contactors
Overload Relays

Contactors

DIL 00 M to DIL 2 AM
DIL 00 M-G to DIL 2 AM-G



2 M4 x 16	2 M5 x 16
00 (A)M	1 (A)M
0 (A)M	2 (A)M

Maintain a minimum spacing of 5 mm between DC operated DIL 00 M-G and DIL 2 AM-G contactors mounted side by side.

DIL	00 M (-G)		0 M (-G)		1 M (-G)		2 M (-G)	
	00 AM (-G)	00 BM (-G)	0 AM (-G)		1 AM (-G)		2 AM (-G)	
a	45 (45)		45 (45)		60 (60)		70 (70)	
a1	35 (35)		35 (35)		50 (50)		60 (60)	
a4	-		55 (55)		70 (70)		80 (80)	
a5	-		60 (60)		80 (80)		90 (90)	
b	77 (77)		91 (91)		98 (98)	118 (118)		
b1	39 (39)		46 (46)		49 (49)	59 (59)		
b2	60 (60)		75 (75)		75 (75)	90 (90)		
c (without H DIL)	74 (99)		79 (104)		97 (122)	102 (127)		
c (with H DIL)	76.5 (101.5)		86.3 (113.3)		-	-		
c1	107 (132)		112 (137)		130 (155)	135 (160)		
c2	136 (161)		141 (166)		159 (184)	164 (189)		
c3	136 (161)		-		-	-		

Overload relays

Z	00		00		1		1	
a2	34 (34)		34 (34)		42 (42)	47 (47)		
a3	45 (45)		45 (45)		60 (60)	60 (60)		
b3	120 (120)		133 (133)		153 (153)	171 (171)		
b4	19 (19)		18 (18)		26 (26)	27 (27)		
c6	90 (115)		96 (121)		91 (116)	91 (116)		

a4 = With side mounting auxiliary contact module on DIL 0 M to DIL 2 AM, with second side mounting auxiliary contact module ..SA DIL M on DIL 3 M(-G) to DIL 4 AM(-G)

a5 = With N DIL...M 4th pole module

c1 = With ...DIL M auxiliary contact module

c2 = With TP...11 DIL pneumatic timer module

c3 = With V(-G) DIL mechanical latching module