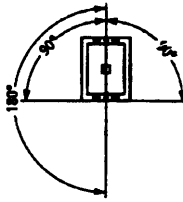
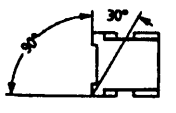
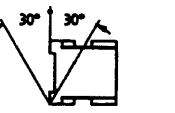


DIL' Contactors

Technical Data

811 841

 Contactor
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			IEC/EN 60 947, VDE 660, UL, CSA, shipping classifications → Page 17/009				
Standards			IEC/EN 60 947, VDE 660, 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
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)
	mm ²		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)
	mm ²		2×(0.75 - 4)	2×(1 - 6)	2×(2.5 - 10)	2×(2.5 - 10)	2×(4 - 50)
Flexible with cable lug	mm ²		-	-	-	-	-
	mm ²		-	-	-	-	-
Stranded	mm ²		-	-	1×(10 - 25)	1×(10 - 35)	16
	mm ²		-	-	2×10	2×10	50
Stranded with cable lug	mm ²		-	-	-	-	-
	mm ²		-	-	-	-	-
Solid or stranded	Min. AWG		18	16	12	12	10
	Max. AWG		10	10	4	2	2
Flat conductor ¹⁾	mm		-	-	3×9×0.8	3×9×0.8	2×(6×9×0.8)
	mm		-	-	2×(3×9×0.8)	2×(3×9×0.8)	-
	mm		-	-	6×9×0.8	6×9×0.8	-

Notes

¹⁾ 5×10⁶ Ops. with 50/50-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

Solid

mm²

1×(0.75 - 4)

1×(0.75 - 4)

1×(0.75 - 4)

1×(0.75 - 4)

2×(0.75 - 4)

Flexible with ferrule

mm²

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)

Solid or stranded

AWG

18 - 12

18 - 12

18 - 12

18 - 12

2×(18 - 12)

Terminal screw

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

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

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

Rated impulse withstand voltage U_{imp}

V

8000

8000

8000

8000

8000

Overvoltage 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

cos ϕ to IEC/EN 60 947

A

200 200 250

270

730

950

1300

Breaking capacity

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

AC-3

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Short-circuit rating

Maximum fuse²⁾

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)

Contactors
Overload Relays

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					
		Enclosed ¹⁾	A	16	30	44	80	90					
1-pole	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				$30 \times I_e$	$30 \times I_e$	$30 \times I_e$	$30 \times I_e$	$30 \times I_e$	$30 \times I_e$	$30 \times I_e$			
Component lifespan		Operations	$\times 10^6$	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Maximum operating frequency		Ops./h	200	200	200	200	200	200	200	100			

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			
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	27	45	48		
110 V	A	12	16	–	18	25	25	27	45	48		
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			
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			
11 15												
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		
...V 50 Hz		W	2.5			3		3.5		4.5		
Dual-voltage coil	Sealing	VA	8.6			10		15		16.5		
...V 50 Hz ...60 Hz		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 operated ¹⁾												
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 operated ¹⁾												
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												

¹⁾ Smoothed DC or three-phase bridge rectifier

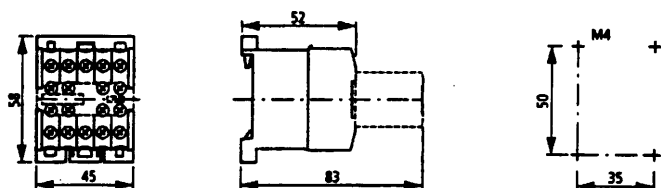
²⁾ DIL 00 (A)M to DIL 2 (A)M must have a current-free pause ≥ 25 ms for reversing at 660/690 V

DIL EM Mini Contactors, DIL Contactors

Dimensions

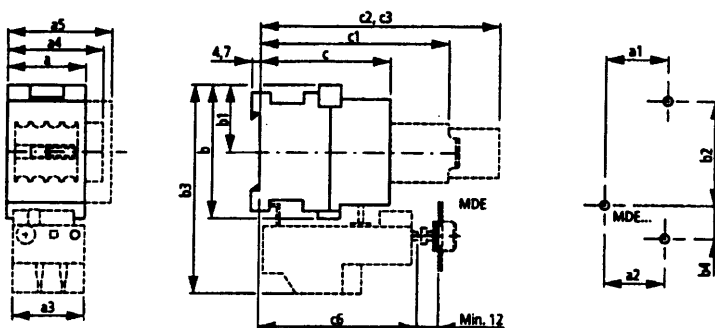
Mini contactors

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



Contactors

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) 00 AM (-G) 00 BM (-G) 00 M 4 (-G)	0 M (-G) 0 AM (-G)	1 M (-G) 1 AM (-G)	2 M (-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