

Motor control and protection
ICON family

Start easily Protect precisely



Powering Business Worldwide



An Eaton Brand

Icon Contactors Series

Introducing Eaton's new contactor range for AC-3 applications to 170A. Perfectly suited for applications in the commercial and industrial segments for panel builders and machinery OEMs.

The contactor has a smaller footprint than the existing xStart series and offers application adjusted ratings.

Basic devices

Rated operational current

Max. motor rating for three-phase motors 50 - 60 Hz

Conventional thermal current
 $I_{th} = I_e$ AC-1
at 40°C
A
Open

Contact
N/O = Normally opened contact
N/C = Normally closed contact

AC-3
380 V
400 V
 I_e
A

AC-3
220 V
230 V
P
kW

380 V
400 V
P
kW

660 V
690 V
P
kW

AC-4
220 V
230 V
P
kW

380 V
400 V
P
kW

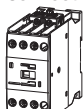
660 V
690 V
P
kW

4 pole, 3 pole
Connection type: Screw terminals



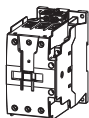
7	2.2	3	3.5	1	2.2	2.9	20	1 N/O	–	DILM7-10N (...)
7	2.2	3	3.5	1	2.2	2.9	20	–	1 N/C	DILM7-01N (...)
9	2.5	4	4.5	1.5	2.5	3.6	20	1 N/O	–	DILM9-10N (...)
9	2.5	4	4.5	1.5	2.5	3.6	20	–	1 N/C	DILM9-01N (...)
12	3.5	5.5	6.5	2	3	4.4	20	1 N/O	–	DILM12-10N (...)
12	3.5	5.5	6.5	2	3	4.4	20	–	1 N/C	DILM12-01N (...)
15	4	7.5	7	2	3	4.4	20	1 N/O	–	DILM15-10N (...)
15	4	7.5	7	2	3	4.4	20	–	1 N/C	DILM15-01N (...)

3 pole
Connection type: Screw terminals



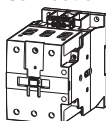
18	5	7.5	11	2.5	4.5	6.5	40	1 N/O	–	DILM18-10N (...)
18	5	7.5	11	2.5	4.5	6.5	40	–	1 N/C	DILM18-01N (...)
25	7.5	11	14	3.5	6	8.5	40	1 N/O	–	DILM25-10N (...)
25	7.5	11	14	3.5	6	8.5	40	–	1 N/C	DILM25-01N (...)
32	10	15	15	4	7	10	45	1 N/O	–	DILM32-10N (...)
32	10	15	15	4	7	10	45	–	1 N/C	DILM32-01N (...)
38	11	18.5	15	4	7	10	45	1 N/O	–	DILM38-10N (...)
38	11	18.5	15	4	7	10	45	–	1 N/C	DILM38-01N (...)

3 pole
Connection type: Screw terminals



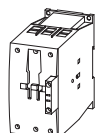
40	12.5	18.5	23	5	9	12	60	1 N/O	1 N/C	DILM40-11N (...)
50	15.5	22	30	6	10	14	80	1 N/O	1 N/C	DILM50-11N (...)
65	20	30	35	7	12	17	98	1 N/O	1 N/C	DILM65-11N (...)
72	22	37	35	7	12	17	98	1 N/O	1 N/C	DILM72-11N (...)
80	25	37	37	11	20	15	110	1 N/O	1 N/C	DILM80-11N (...)
95	30	45	45	11	20	15	130	1 N/O	1 N/C	DILM95-11N (...)

3 pole
Connection type: Screw terminals



115	37	55	90	17	28	43	160	–	–	DILM115N (...)
150	48	75	96	20	33	48	190	–	–	DILM150N (...)
170	52	90	140	20	33	48	203	–	–	DILM170N (...)

3 pole
Connection type: Screw terminals



Coil voltages available are 24V50/60HZ, 110V50/60HZ, 230V50/60HZ, 400V50/60HZ, DC24V.

Icon Overload relays ZB..N series

- Phase failure sensitivity and temperature compensation
- Reset pushbutton manual/auto
- Test/off pushbutton
- Auxiliary contact (1 N/O + 1 NC)
- Fitted directly on the contactor of the maximum current to 175A

Overload relays

Setting range of
overload releases

Circuit symbol

Auxiliary contact

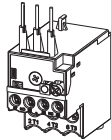
For use with

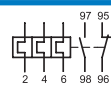
N/O = normally open contact
N/C = normally closed contact

I_r
A

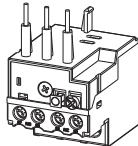


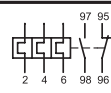
Overload relays ZB12N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



0.1 – 0.16		1 N/O	1 N/C	DILM7..N DILM9..N DILM12..N DILM15..N	ZB12N-0,16 CMN00331
0.16 – 0.24		1 N/O	1 N/C		ZB12N-0,24 CMN00332
0.24 – 0.4		1 N/O	1 N/C		ZB12N-0,4 CMN00333
0.4 – 0.6		1 N/O	1 N/C		ZB12N-0,6 CMN00334
0.6 – 1		1 N/O	1 N/C		ZB12N-1 CMN00335
1 – 1.6		1 N/O	1 N/C		ZB12N-1,6 CMN00336
1.6 – 2.4		1 N/O	1 N/C		ZB12N-2,4 CMN00337
2.4 – 4		1 N/O	1 N/C		ZB12N-4 CMN00338
4 – 6		1 N/O	1 N/C		ZB12N-6 CMN00339
6 – 10		1 N/O	1 N/C		ZB12N-10 CMN00340
9 – 12		1 N/O	1 N/C		ZB12N-12 CMN00341
12 – 16		1 N/O	1 N/C		ZB12N-16 CMN00342

Overload relays ZB32N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



1 – 1.5		1 N/O	1 N/C	DILM18..N DILM25..N DILM32..N DILM38..N	ZB32N-1,5 CMN00344
1.4 – 2.1		1 N/O	1 N/C		ZB32N-2,1 CMN00345
1.8 – 2.7		1 N/O	1 N/C		ZB32N-2,7 CMN00346
2.4 – 3.6		1 N/O	1 N/C		ZB32N-3,6 CMN00347
3.5 – 5		1 N/O	1 N/C		ZB32N-5 CMN00348
4 – 6		1 N/O	1 N/C		ZB32N-6 CMN00349
5.5 – 8.5		1 N/O	1 N/C		ZB32N-8,5 CMN00350
8.5 – 12.5		1 N/O	1 N/C		ZB32N-12,5 CMN00351
12.5 – 18		1 N/O	1 N/C		ZB32N-18 CMN00352
17 – 24		1 N/O	1 N/C		ZB32N-24 CMN00353
22 – 30		1 N/O	1 N/C		ZB32N-30 CMN00354
29 – 36		1 N/O	1 N/C		ZB32N-36 CMN00355
33 – 38		1 N/O	1 N/C		ZB32N-38 CMN00356

Icon Overloads ZB...N series

Overload relays

Setting range of
overload releases

Circuit symbol

Auxiliary contact

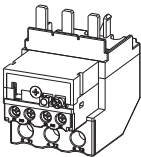
For use with

N/O = normally open contact
N/C = normally closed contact



Part no.
Article no.

Overload relays ZB65N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



17 – 25



1 N/O

1 N/C

DILM40-11N
DILM50-11N
DILM65-11N
DILM72-11N

ZB65N-25
CMN00358

23 – 32

1 N/O

1 N/C

ZB65N-32
CMN00359

30 – 40

1 N/O

1 N/C

ZB65N-40
CMN00360

37 – 50

1 N/O

1 N/C

ZB65N-50
CMN00361

48 – 65

1 N/O

1 N/C

ZB65N-65
CMN00362

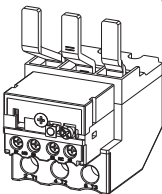
63 – 75

1 N/O

1 N/C

ZB65N-72
CMN00363

Overload relays ZB95N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



37 – 50



1 N/O

1 N/C

DILM80-11N
DILM95-11N

ZB95N-50
CMN00365

48 – 65

1 N/O

1 N/C

ZB95N-65
CMN00366

63 – 80

1 N/O

1 N/C

ZB95N-80
CMN00367

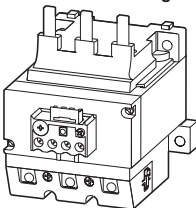
77 – 97

1 N/O

1 N/C

ZB95N-97
CMN00368

Overload relays ZB150N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



25 – 35



1 N/O

1 N/C

DILM115N
DILM150N
DILM170N

ZB150N-35
CMN00370

35 – 50

1 N/O

1 N/C

ZB150N-50
CMN00371

50 – 70

1 N/O

1 N/C

ZB150N-70
CMN00372

70 – 100

1 N/O

1 N/C

ZB150N-100
CMN00373

95 – 125

1 N/O

1 N/C

ZB150N-125
CMN00374

120 – 150

1 N/O

1 N/C

ZB150N-150
CMN00375

145 – 175

1 N/O

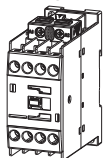
1 N/C

ZB150N-175

Icon Contactor Relays DILA...N series

- Varied 4-pole contact configurations
- Conventional thermal current (I_{th}): 16A
- Identical construction sizes for AC- and DC-operated contactor relays
- Integrated surge suppressors for DC-operated contactor relays

Wiring method: Screw terminals



Basic devices with interlocked opposing contacts

Contact		Rated operational current		Conventional thermal current at 55°C	
		AC – 15			
N/O = Normally opened contact N/C = Normally closed contact		220 V	380 V		
		230 V	400 V		
		240 V	415 V		
		I _e A	I _e A	I _{th} A	
4 N/O	–	4	4	16	DILA-40N (...)
3 N/O	1 N/C	4	4	16	DILA-31N (...)
2 N/O	2 N/C	4	4	16	DILA-22N (...)
1 N/O	3 N/C	4	4	16	DILA-13N (...)
–	4 N/C	4	4	16	DILA-04N (...)

Coil voltages available are 24V50/60HZ, 110V50/60HZ, 230V50/60HZ, 400V50/60HZ, DC24V.

A complete range of accessories are available for the Icon series, such as:

- Auxiliary contacts (top mount)
- Auxiliary contacts (side mount)
- RC Suppressors
- Varistor Suppressors
- Pneumatic timer modules
- Mechanical Interlocks
- Sealable Shrouds
- External Reset Button

Eaton's mission is to improve the quality of life and the environment through the use of power management technologies and services. We provide sustainable solutions that help our customers effectively manage electrical, hydraulic, and mechanical power – more safely, more efficiently, and more reliably. Eaton's 2019 revenues were \$21.4 billion, and we sell products to customers in more than 175 countries. We have approximately 95,000 employees.

For more information about Eaton visit: www.eaton.com

Motor control and protection
ICON

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Energizing a world that demands more.

We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

Discover today's Eaton.



Powering Business Worldwide

Contactor relay DILA..N



Contactor relay DILA..N

1

Contactor DILM..N

2

Overload relays ZB..N

3

Motor protective circuit breaker PKZMC

4

Contactor DILM..N



Overload relays ZB..N



Motor protective circuit breaker PKZMC



Contactor relay DILA..N

Contents

1 Contactor relay DILA..N



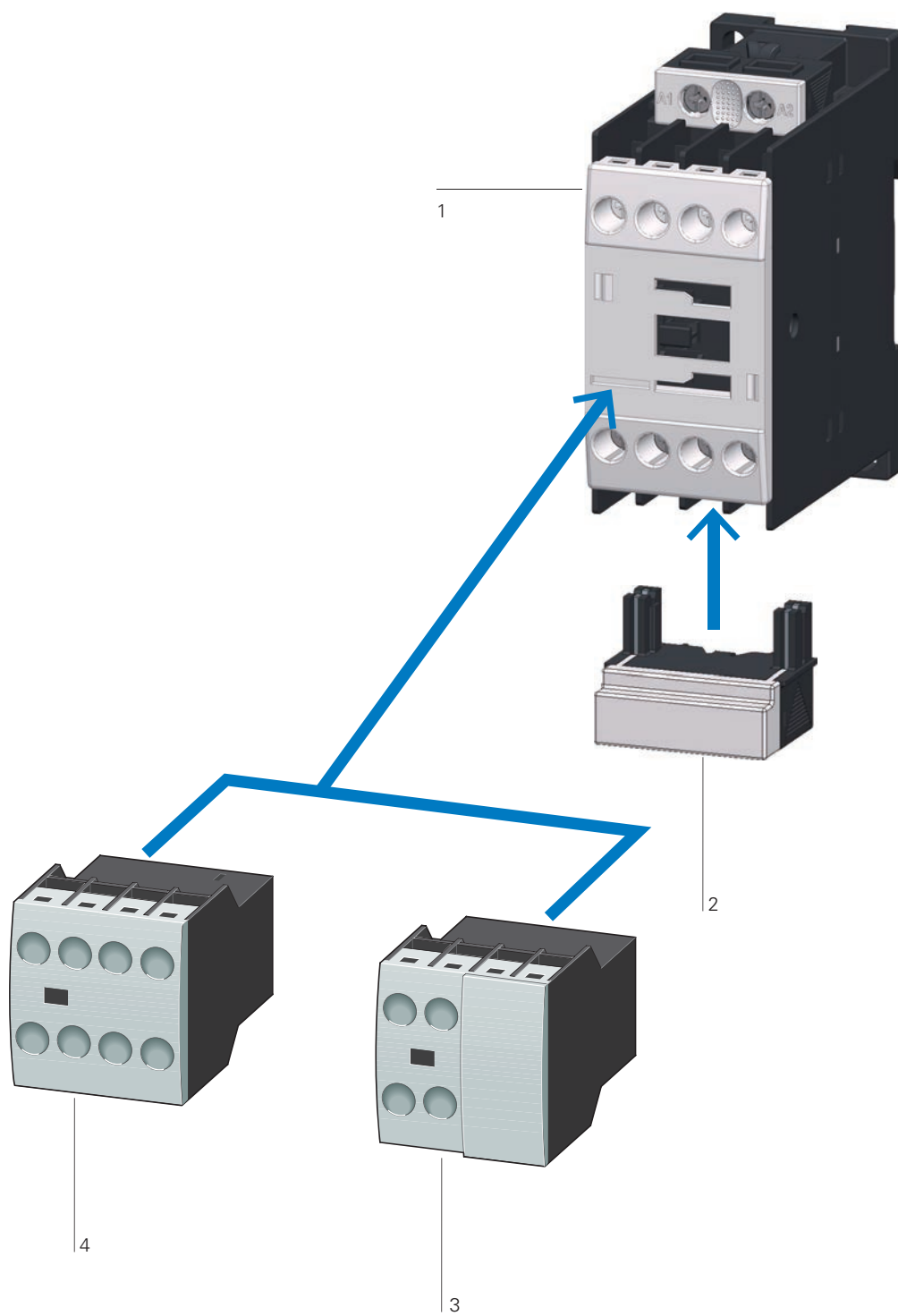
1.1	System overview	6
1.2	Basic devices DILA..N	8
1.3	Auxiliary contact modules	10
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1.5	Actuating voltages, characteristic curves	13
1.6	Technical data	14
1.7	Dimensions	17

- Varied 4-pole contact configurations
- Conventional thermal current (I_{th}): 16A
- Identical construction sizes for AC- and DC-operated contactor relays
- Integrated surge suppressors for DC-operated contactor relays

1.1

Contactor relay DILA..N System overview

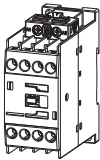
1



System overview

Basic devices	1
AC or DC operated	
Magnet system	
AC 24 – 400V, 50/60 Hz	
0.8 – 1.1×U _c	
DC 24 V DC, 110 V DC, 220 V DC	
0.8 – 1.1×U _c	
Up to 8 sets of normally open or normally closed contacts	
Interlocked opposing contacts	
Modular system	
Screw connection	
Finger-proof protection	
Screw terminals	
From page 8	
Suppressor circuits	2
DC operated contactors (all DC operated contactors have an integrated suppressor)	
AC operated contactors	
From page 29	
Auxiliary contact modules	3, 4
2 or 4 poles	
Interlocked opposing contacts	
From page 10	

1 Wiring method: Screw terminals



Basic devices with interlocked opposing contacts

Contact		Rated operational current		Conventional thermal current at 60°C	Distinctive number	Circuit symbol
		AC – 15				
N/O = Normally opened contact		220 V	380 V			
N/C = Normally closed contact		230 V	400 V			
		240 V	415 V			
		I _e	I _e	I _{th}		
		A	A	A		
4 N/O	–	4	4	16	40E	
3 N/O	1 N/C	4	4	16	31E	
2 N/O	2 N/C	4	4	16	22E	
1 N/O	3 N/C	4	4	16	13E	
–	4 N/C	4	4	16	04E	

Notes 4NC relays cannot be combined in use with DILAC-XHI04, DILAC-XHI13 auxiliary contacts

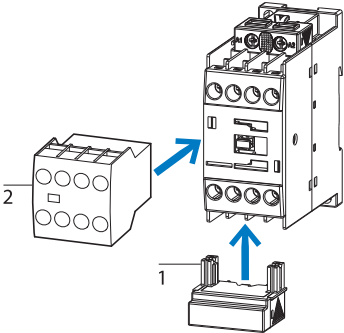
Auxiliary contact
module to use with

AC operation
Part no.
Article no.

DC operation
Part no.
Article no.

Std. pack

Notes

	Operating voltage 220V 50/60Hz	Operating voltage 24VDC		
DILAC-XHI(V)...	DILA-40N(220V50/60Hz) CMN00280	DILA-40N(DC24V) CMN00284	1 Off	With screw terminals: 
DILAC-XHI(V)...	DILA-31N(220V50/60Hz) CMN00291	DILA-31N(DC24V) CMN00295	1 Off	
DILAC-XHI(V)...	DILA-22N(220V50/60Hz) CMN00302	DILA-22N(DC24V) CMN00306	1 Off	
DILAC-XHI(V)...	DILA-13N(220V50/60Hz) CMN00313	DILA-13N(DC24V) CMN00317	1 Off	
DILAC-XHI(V)...	DILA-04N(220V50/60Hz) CMN00324	DILA-04N(DC24V) CMN00328	1 Off	

Accessories	Page
1 Suppressor	→ 29
2 Auxiliary contact module	→ 10
Operating voltage	→ 13

Contact numbers to EN 50011
Coil terminal marking as specified in
EN 50005

DC operated contactor relays have an
integrated suppressor

DILA..N auxiliary contact modules

With interlocked opposing contacts (except ...XHI(C)V...)

Contact	Rated operational current		Conventional thermal current at 60°C	Circuit symbol
	AC – 15			
NN/O = Normally open contact	220 V	380 V		
N/O _E = N/O, early-make	230 V	400 V		
N/C = Normally closed contact	240 V	415 V		
N/C _L = N/C, late-break	I _e	I _e	I _{th}	
	A	A	A	

2 pole

Wiring method: Screw terminals



–	2 N/C	4	4	16	
1 N/O	1 N/C	4	4	16	
2 N/O	–	4	4	16	
1 N/O _E	1 N/C _L	4	4	16	

4 pole

Wiring method: Screw terminals



–	4 N/C	4	4	16	
1 N/O	3 N/C	4	4	16	
2 N/O	2 N/C	4	4	16	
3 N/O	1 N/C	4	4	16	
4 N/O	–	4	4	16	
1 N/O, 1 N/O _E	1 N/C, 1 N/C _L	4	4	16	

Can be combined with contactor

Part no.
Article no.

Std. pack

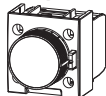
Notes

DILA-40N DILA-31N DILA-22N DILA-13N DILA-04N

42E	33	24	15	06	DILAC-XHI02 114872	5 Off	Type E combinations comply with EN 50011 and are to be given preference. Other types comply with EN 50005.
51E	42	33	24	15	DILAC-XHI11 114871	5 Off	
60E	51	42	33	24	DILAC-XHI20 114870	5 Off	
51	42	33	24	15	DILAC-XHIV11 276423	5 Off	
44E	35	26	17	—	DILAC-XHI04 114877	5 Off	
53E	44	35	26	—	DILAC-XHI13 114876	5 Off	
62E	53	44	35	26	DILAC-XHI22 114875	5 Off	
71E	62	53	44	35	DILAC-XHI31 114874	5 Off	
80E	71	62	53	44	DILAC-XHI40 114873	5 Off	
62	53	44	35	26	DILA-XHIV22 276429	5 Off	

Accessories

Pneumatic time delay module



On-delayed					
0.1-3s	DILM7..N-DILM38..N		DILM38N-XTM003 CMN00390	1 Off	Cannot be combined with: • DILAC-XHI... • DILM32C-XHI... • DILM12-XSP... • DILM32-XSP...
0.1-30s			DILM38N-XTM030 CMN00391	1 Off	
10-180s			DILM38N-XTM180 CMN00392	1 Off	
0.1-3s	DILM40..N-DILM95..N		DILM95N-XTM003 CMN00393	1 Off	
0.1-30s			DILM95N-XTM030 CMN00394	1 Off	
10-180s			DILM95N-XTM180 CMN00395	1 Off	
Off-delayed					
0.1-3s	DILM7..N-DILM38..N		DILM38N-XTB003 CMN00396	1 Off	Cannot be combined with: • DILAC-XHI... • DILM32C-XHI... • DILM12-XSP... • DILM32-XSP...
0.1-30s			DILM38N-XTB030 CMN00397	1 Off	
10-180s			DILM38N-XTB180 CMN00398	1 Off	
0.1-3s	DILM40..N-DILM95..N		DILM95N-XTB003 CMN00399	1 Off	
0.1-30s			DILM95N-XTB030 CMN00400	1 Off	
10-180s			DILM95N-XTB180 CMN00401	1 Off	
—	DILA..N	—	DILM38N-XMV CMN00388	1 Off	For mechanically linking contactors in combinations 0 mm distance between contactors.
—	DILM7..N-DILM38..N		DILM38N-XAB CMN00413	1 Off	—
—	Labelling with laser printer, plotter, film plotter, copier		XGKE-GE 207517	25 Off	1 off = 1 sheet 240 labels per sheet 1 sheet = DIN A4 Can be split into two DIN A5

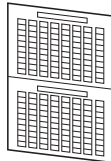
Mechanical interlocks



Sealable shrouds Transparent



Self-adhesive label sheet



Actuating voltages

AC	DILA-40N(...) Article no. ¹⁾	DILA-31N(...) Article no. ¹⁾	DILA-22N(...) Article no. ¹⁾	DILA-13N(...) Article no. ¹⁾	DILA-04N(...) Article no. ¹⁾
Standard voltage					
24V 50/60Hz	CMN00276	CMN00287	CMN00298	CMN00309	CMN00320
36V 50/60Hz	CMN00277	CMN00288	CMN00299	CMN00310	CMN00321
48V 50/60Hz	CMN00278	CMN00289	CMN00300	CMN00311	CMN00322
110V 50/60Hz	CMN00279	CMN00290	CMN00301	CMN00312	CMN00323
220V 50/60Hz	CMN00280	CMN00291	CMN00302	CMN00313	CMN00324
230V 50/60Hz	CMN00281	CMN00292	CMN00303	CMN00314	CMN00325
380V 50/60Hz	CMN00282	CMN00293	CMN00304	CMN00315	CMN00326
400V 50/60Hz	CMN00283	CMN00294	CMN00305	CMN00316	CMN00327

Actuating voltages

DC	DILA-40N(...) Article no. ¹⁾	DILA-31N(...) Article no. ¹⁾	DILA-22N(...) Article no. ¹⁾	DILA-13N(...) Article no. ¹⁾	DILA-04N(...) Article no. ¹⁾
Standard voltage					
24V DC	CMN00284	CMN00295	CMN00306	CMN00317	CMN00328
110VDC	CMN00285	CMN00296	CMN00307	CMN00318	CMN00329
220VDC	CMN00286	CMN00297	CMN00308	CMN00319	CMN00330

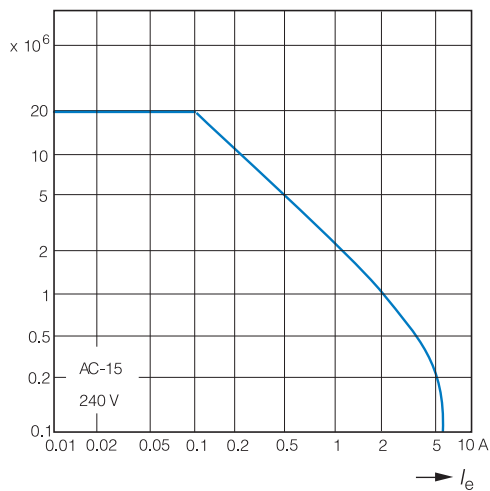
Notes 1) The article number is a combination of part no. and operating voltage.

Characteristic curves

DILA..N(AC-15)

Component lifespan (operations)

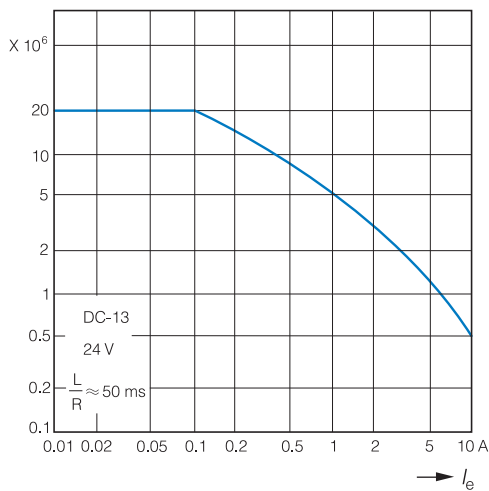
I_e = Rated operational current



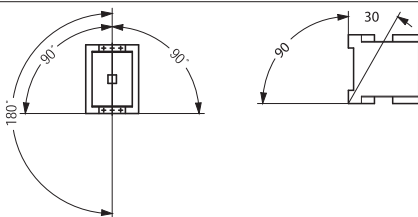
DILA..N(DC-13¹⁾)

Component lifespan (operations)

I_e = Rated operational current



1 Technical data

				DILA...N	DILAC...XHI
General					
Standard				IEC/EN 60947, VDE 0660, GB 14048	
Lifespan, mechanical					
AC operated		Operations	×10 ⁶	20	10
DC operated		Operations	×10 ⁶	20	10
Maximum operating frequency					
Maximum operating frequency		Operations/h		5000	5000
Climatic proofing				Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30	
Ambient temperature					
Open		°C	-25...60		-25...60
For storage		°C	-40...80		-40...80
Mounting position					
Mounting position					
Mechanical shock resistance (IEC/EN 60068-2-27)					
Half-sinusoidal shock 10 ms					
Basic devices with auxiliary contact module					
N/O		g	7		7
N/C		g	5		5
Protection type				IP20	IP20
Protection against direct contact when actuated from front (EN 50274)				Finger- and back-of-hand proof	
Weight					
AC operated		kg	0.27		0.05
DC operated		kg	0.25		0.05
Terminal capacity					
Screw terminals					
Solid		mm ²	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
Flexible with ferrule		mm ²	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
Solid or stranded		AWG	18 – 14		18 – 14
Terminal screw			M3.5		M3.5
Pozidriv screwdriver		Size	2		2
Flat-blade screwdriver		mm	0.8 × 5.5 1×6		0.8 × 5.5 1×6
Max. tightening torque		Nm	1.2		1.2

Technical data

1

			DILA..N	DILAC...XHI
Contacts				
Interlocked opposing contacts to EN 60947-4-1, Annex L, including auxiliary contact module			Yes	Yes
Rated impulse withstand voltage	U_{imp}	V AC	6000	6000
Over-voltage category/degree of pollution			III/3	III/3
Rated insulation voltage	U_i	V AC	690	690
Rated operating voltage	U_e	V AC	600	500
Safe isolation according to EN 61140				
Between coil and auxiliary contacts		V AC	400	400
Between the auxiliary contacts		V AC	400	400
Rated operational current				
AC-15				
220/240 V	I_e	A	4	4
380/415 V	I_e	A	4	4
500 V	I_e	A	1.5	1.5
DC-13				
24 V		A	2.5	2.5
60 V		A	1	1
110 V		A	0.5	0.5
125 V		A	0.5	0.5
220-250 V		A	0.25	0.25
Control circuit reliability (at $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA)	Fault probability	λ	< one failure in 100 million operations	
Conventional thermal current	I_{th}	A	16	16
Short-circuit strength without welding				
Maximum over-current protection device				
220/240 V		PKZM0	4	—
380/415 V		PKZM0	4	—
Short-circuit protection rating maximum fuse ²⁾				
500 V		A gG/gL	10	10
Current heat loss at load of I_{th}				
AC operated		W	0.3	0.3
DC operated		W	0.3	0.3

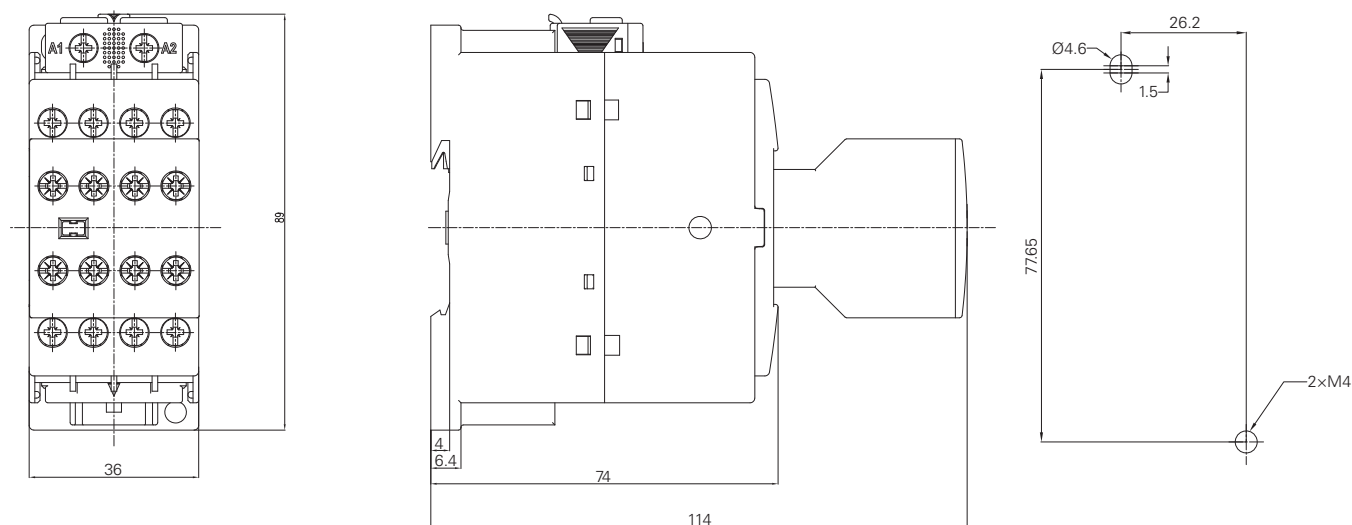
Notes 1) Switch-on and switch-off conditions based on DC-13, time constant as specified
2) See characteristic curve "Fuses" for time/current characteristics (please enquire)

1 Technical data

			DILA...N	DILAC...XHI
Magnet system				
Voltage tolerance				
AC operated	Pick-up	$\times U_c$	0.8 – 1.1	–
DC operated ¹⁾	Pick-up	$\times U_c$	0.8 – 1.1	–
Power consumption without auxiliary contact module (60°C)				
50/60 Hz	Pick-up	VA	40 37	–
50/60 Hz	Sealing	VA	6 5.2	–
50/60 Hz	Sealing	W	1.4 1.2	–
DC operated ¹⁾	Pick-up	W	12	–
	Sealing	W	3	–
Duty factor		% DF	100	–
Changeover times at 100 % U_c (recommended values)				
Main contact				
AC operated				
	Closing delay	ms	15 – 21	–
	Opening delay	ms	9 – 18	–
DC operated				
	Closing delay	ms	80	–
	Opening delay	ms	20	–

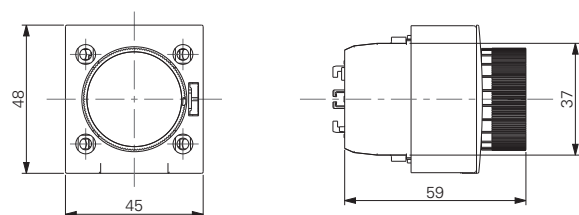
Notes 1) Smoothed DC, three-phase bridge rectifier or smoothed two-phase bridge rectifier

Basic devices with DILAC-...-XHI auxiliary contact modules

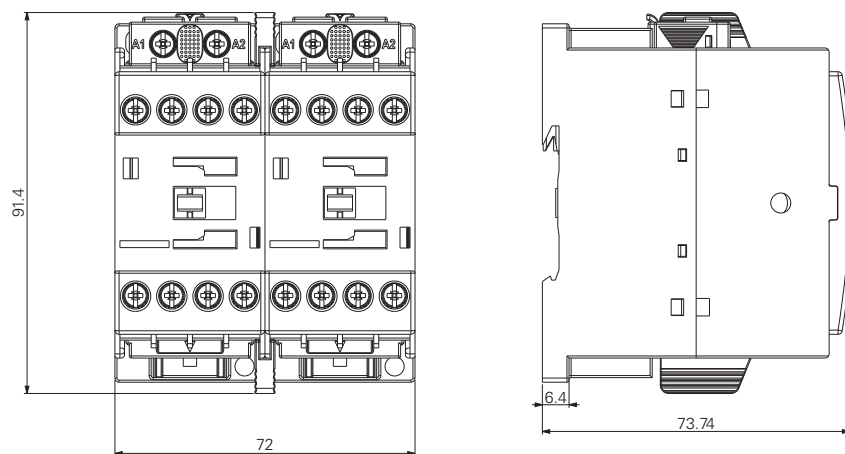


Pneumatic time delay module

DILM38N-XTM/B**

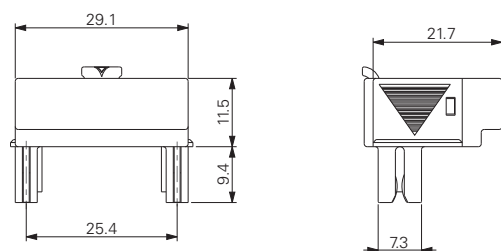


Basic devices with DILM...XMV mechanical interlock



Suppressor circuits

DILM95N-XSP..



Contactor DILM..N

Contents

Contactor DILM..N



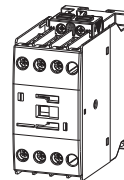
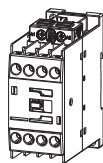
2.1	Technical overview	20
2.2	System overview	22
2.3	Basic devices DILM..N	24
2.4	Auxiliary contact modules for DILM7..N-DILM38..N	26
2.5	Auxiliary contact modules for DILM40..N-DILM170..N	27
2.6	Accessories	29
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- Easier engineering through identical construction sizes for AC- and DC-operated contactors
- Cost and energy savings for control panel ventilation due to reduced heat dissipation
- Less amount of coupler relays due to direct actuation from the PLC for contactors up to 38A
- Easy engineering through integrated suppressor circuits for DC/AC operated contactors rated 115A, 150A, 170A

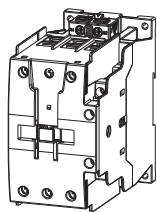
Contactor DILM..N

3 pole

2

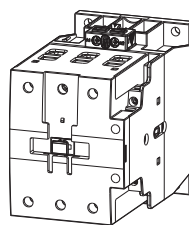


	DIL Basic devices	Page	M7..N Page 25	M9..N Page 25	M12..N Page 25	M15..N Page 25	M18..N Page 25	M25..N Page 25	M32..N Page 25
Rated operational voltage			kW	kW	kW	kW	kW	kW	kW
AC-3									
Rated operational power for 3-phase motors 50 – 60 Hz									
220 V – 230 V			2.2	2.5	3.5	4	5	7.5	10
380 V – 400 V			3	4	5.5	7.5	7.5	11	15
500 V			3.5	4.5	7	7.5	12	17.5	18.5
660 V/690 V			3.5	4.5	6.5	7	11	14	15
AC-4									
Rated operational power for 3-phase motors 50 – 60 Hz									
220 V – 230 V			1	1.5	2	2	2.5	3.5	4
380 V – 400 V			2.2	2.5	3	3	4.5	6	7
500 V			2.5	2.8	3.5	3.5	6	8	9
660 V/690 V			2.9	3.6	4.4	4.4	6.5	8.5	10
AC-1									
Rated operational power under resistive load, 60°C									
220 V – 230 V			8	8	8	8	15	17	17
380 V – 400 V			14	14	14	14	26	29	29
660 V/690 V			25	25	25	25	45	51	51
Conventional thermal current, $I_{th} = I_e$, open at 60 °C									
60°C			20	20	20	20	40	40	45



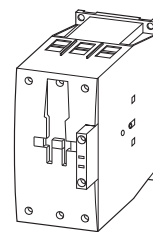
M38..N
Page 25

kW



M80-11N
Page 25

kW



M150N
Page 25

kW

M50-11N
Page 25

kW

M65-11N
Page 25

kW

M72-11N
Page 25

kW

M95-11N
Page 25

kW

M115N
Page 25

kW

M170N
Page 25

kW

11	12.5	15.5	20	22	25	30	37	48	52
18.5	18.5	22	30	37	37	45	55	75	90
18.5	28	36	37	40	45	45	85	110	120
15	23	30	35	35	37	45	90	96	140

4	5	6	7	7	11	11	17	20	20
7	9	10	12	12	20	20	28	33	33
9	11	13	16	16	18.5	18.5	40	47	47
10	12	14	17	17	15	15	43	48	48

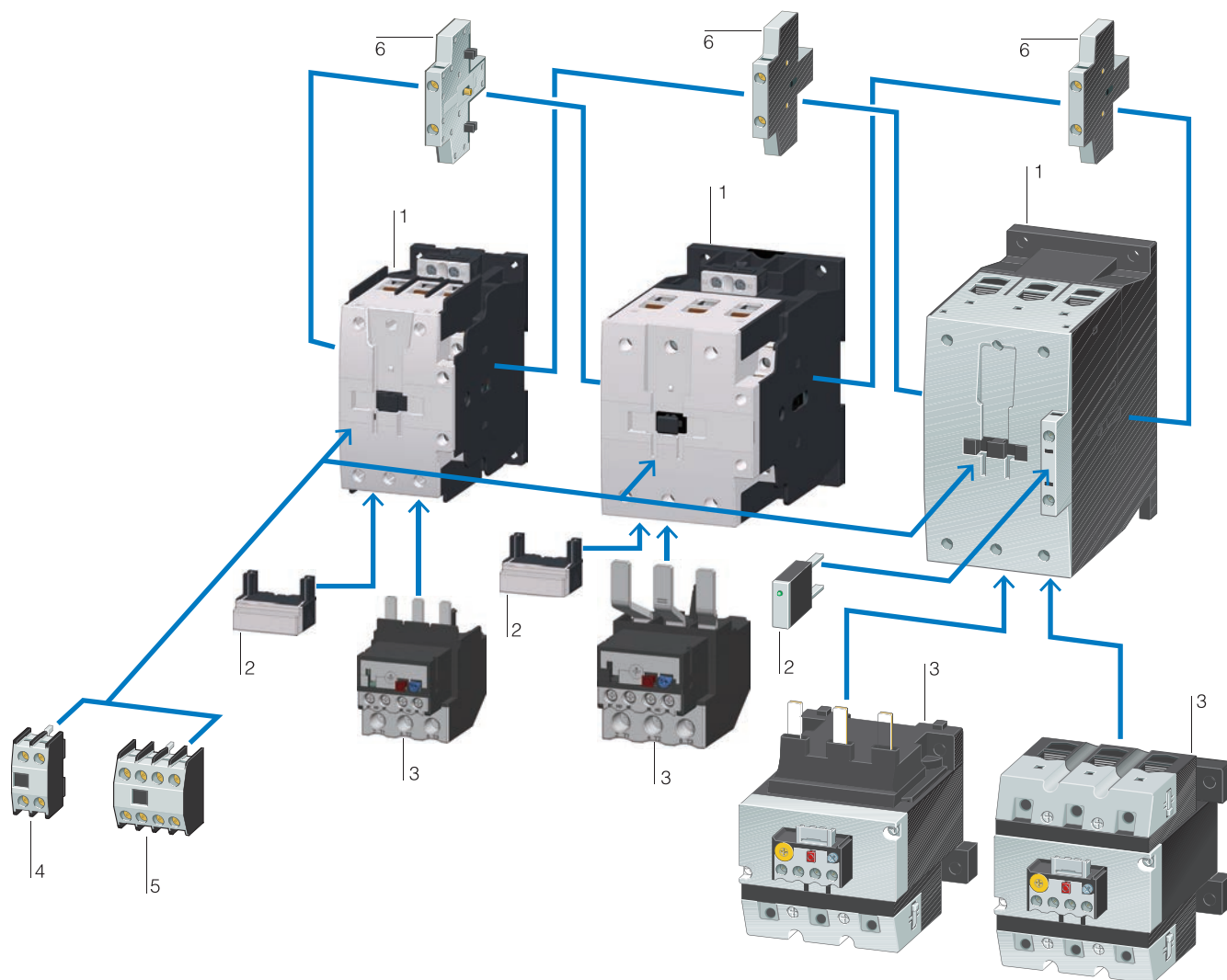
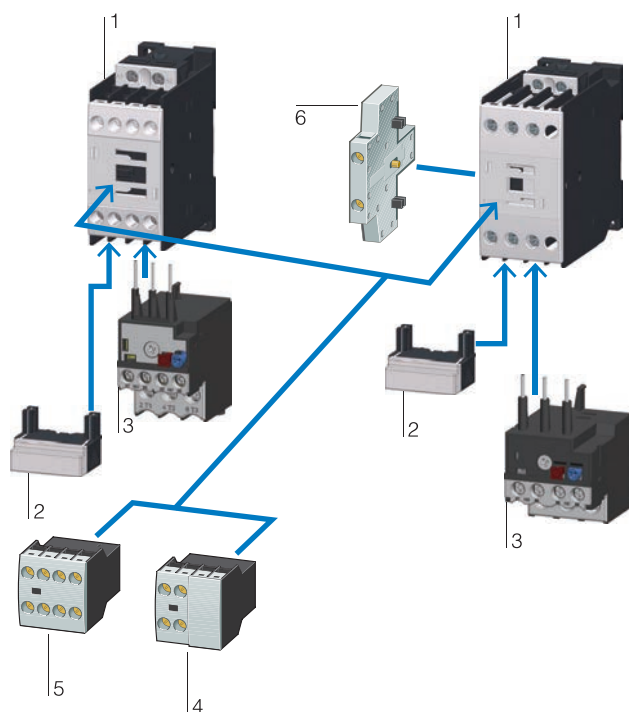
17	22	30	37	37	42	49	61	72	85
29	39	53	65	65	72	85	105	125	150
51	68	91	111	111	125	148	182	216	268

A	A	A	A	A	A	A	A	A	A
45	60	80	98	98	110	130	160	190	203

2.2

Contactor DILM..N System overview

2



System overview

Contactors up to 90kW (AC-3/400 V) 1

Magnet system:
AC: 24 – 400 V, 50/60 Hz
0.8 – 1.1 × U_c
DC: 24 V, 110 V, 220 V
DILM7..N – DILM95..N: 0.8 – 1.1 × U_c
DILM115..N – DILM170N: 0.7 – 1.2 × U_c
Without auxiliary contact modules Ambient
temperature: +60°C
→24

Suppressor circuits 2

RC suppressors
Varistor suppressors
→29

Overload relays 3

Direct mounting
Separate mounting
→50

Auxiliary contact modules 4

2 pole, screw terminals (Top mounting)
→26

Auxiliary contact modules 5

4 pole, screw terminals (Top mounting)
→26

Auxiliary contact modules 6

2 pole, side mounting
→26

Basic devices

Rated operational current

Max. motor rating for three-phase motors 50 - 60 Hz

Conventional thermal current

Contact

Circuit symbol

AC-3	AC-3			AC-4			$I_{th} = I_e$ AC-1 at 60°C	N/O = Normally opened contact N/C = Normally closed contact		
	380 V	400 V	I_e	220 V	380 V	660 V				
	P	P		P	P	P				
	kW	kW		kW	kW	kW				
7	2.2	3	3.5	1	2.2	2.9	20	1 N/O	—	
7	2.2	3	3.5	1	2.2	2.9	20	—	1 N/C	
9	2.5	4	4.5	1.5	2.5	3.6	20	1 N/O	—	
9	2.5	4	4.5	1.5	2.5	3.6	20	—	1 N/C	
12	3.5	5.5	6.5	2	3	4.4	20	1 N/O	—	
12	3.5	5.5	6.5	2	3	4.4	20	—	1 N/C	
15	4	7.5	7	2	3	4.4	20	1 N/O	—	
15	4	7.5	7	2	3	4.4	20	—	1 N/C	
18	5	7.5	11	2.5	4.5	6.5	40	1 N/O	—	
18	5	7.5	11	2.5	4.5	6.5	40	—	1 N/C	
25	7.5	11	14	3.5	6	8.5	40	1 N/O	—	
25	7.5	11	14	3.5	6	8.5	40	—	1 N/C	
32	10	15	15	4	7	10	45	1 N/O	—	
32	10	15	15	4	7	10	45	—	1 N/C	
38	11	18.5	15	4	7	10	45	1 N/O	—	
38	11	18.5	15	4	7	10	45	—	1 N/C	
40	12.5	18.5	23	5	9	12	60	1 N/O	1 N/C	
50	15.5	22	30	6	10	14	80	1 N/O	1 N/C	
65	20	30	35	7	12	17	98	1 N/O	1 N/C	
72	22	37	35	7	12	17	98	1 N/O	1 N/C	
80	25	37	37	11	20	15	110	1 N/O	1 N/C	
95	30	45	45	11	20	15	130	1 N/O	1 N/C	
115	37	55	90	17	28	43	160	—	—	
150	48	75	96	20	33	48	190	—	—	
170	52	90	140	20	33	48	203	—	—	

Notes

Mirror contacts applied to DILM7-01N – DILM32-01N.

Contacts comply to EN 50012.

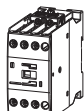
4 pole, 3 pole

Connection type: Screw terminals



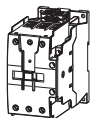
3 pole

Connection type: Screw terminals



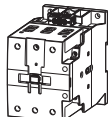
3 pole

Connection type: Screw terminals



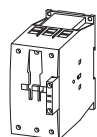
3 pole

Connection type: Screw terminals



3 pole

Connection type: Screw terminals



Auxiliary contact
module to use with

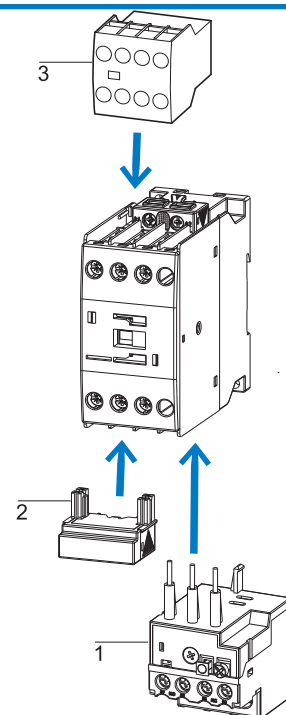
AC operation
Part no.
Article no.

DC operation
Part no.
Article no.

Std. pack

Notes

	Operating voltage 220V 50/60Hz	Operating voltage 24VDC	
DILM32N-XHI..	DILM7-10N(220V 50/60HZ)	DILM7-10N(DC24V)	1 Off
DILAC-XHI..	CMN00005	CMN00009	
DILAC-XHI..	DILM7-01N(220V 50/60HZ)	DILM7-01N(DC24V)	1 Off
	CMN00016	CMN00020	
DILM32N-XHI..	DILM9-10N(220V 50/60HZ)	DILM9-10N(DC24V)	1 Off
DILAC-XHI..	CMN00027	CMN00031	
DILAC-XHI..	DILM9-01N(220V 50/60HZ)	DILM9-01N(DC24V)	1 Off
	CMN00038	CMN00042	
DILM32N-XHI..	DILM12-10N(220V 50/60HZ)	DILM12-10N(DC24V)	1 Off
DILAC-XHI..	CMN00049	CMN00053	
DILAC-XHI..	DILM12-01N(220V 50/60HZ)	DILM12-01N(DC24V)	1 Off
	CMN00060	CMN00064	
DILM32N-XHI..	DILM15-10N(220V 50/60HZ)	DILM15-10N(DC24V)	1 Off
DILAC-XHI..	CMN00071	CMN00075	
DILAC-XHI..	DILM15-01N(220V 50/60HZ)	DILM15-01N(DC24V)	1 Off
	CMN00082	CMN00086	
DILM32N-XHI..	DILM18-10N(220V 50/60HZ)	DILM18-10N(DC24V)	1 Off
DILAC-XHI..	CMN00093	CMN00097	
DILM32N-XHI11-S			
DILAC-XHI..	DILM18-01N(220V 50/60HZ)	DILM18-01N(DC24V)	1 Off
DILM32N-XHI11-S	CMN00104	CMN00108	
DILM32N-XHI..	DILM25-10N(220V 50/60HZ)	DILM25-10N(DC24V)	1 Off
DILAC-XHI..	CMN00115	CMN00119	
DILM32N-XHI11-S			
DILAC-XHI..	DILM25-01N(220V 50/60HZ)	DILM25-01N(DC24V)	1 Off
DILM32N-XHI11-S	CMN00126	CMN00130	
DILM32N-XHI..	DILM32-10N(220V 50/60HZ)	DILM32-10N(DC24V)	1 Off
DILAC-XHI..	CMN00137	CMN00141	
DILM32N-XHI11-S			
DILAC-XHI..	DILM32-01N(220V50/60HZ)	DILM32-01N(DC24V)	1 Off
DILM32N-XHI11-S	CMN00148	CMN00152	
DILM32N-XHI..	DILM38-10N(220V 50/60HZ)	DILM38-10N(DC24V)	1 Off
DILAC-XHI..	CMN00159	CMN00163	
DILM32N-XHI11-S			
DILAC-XHI..	DILM38-01N(220V 50/60HZ)	DILM38-01N(DC24V)	1 Off
DILM32N-XHI11-S	CMN00170	CMN00174	
DILM150N-XHI..	DILM40-11N(220V 50/60HZ)	DILM40-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00181	CMN00185	
DILM150N-XHI..	DILM50-11N(220V 50/60HZ)	DILM50-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00192	CMN00196	
DILM150N-XHI..	DILM65-11N(220V 50/60HZ)	DILM65-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00203	CMN00207	
DILM150N-XHI..	DILM72-11N(220V 50/60HZ)	DILM72-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00214	CMN00218	
DILM150N-XHI..	DILM80-11N(220V 50/60HZ)	DILM80-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00225	CMN00229	
DILM150N-XHI..	DILM95-11N(220V 50/60HZ)	DILM95-11N(DC24V)	1 Off
DILM1000N-XHI..	CMN00236	CMN00240	
DILM150N-XHI..	DILM115N(220V 50/60HZ)	DILM115N(DC24V)	1 Off
DILM1000N-XHI..	CMN00247	CMN00251	
DILM150N-XHI..	DILM150N(220V 50/60HZ)	DILM150N(DC24V)	1 Off
DILM1000N-XHI..	CMN00258	CMN00262	
DILM150N-XHI..	DILM170N(220V 50/60HZ)	DILM170N(DC24V)	1 Off
DILM1000N-XHI..	CMN00269	CMN00273	



Accessories

- 1 Overload relay → 50
- 2 Suppressor → 29
- 3 Auxiliary contact module → 26
- Operating voltage → 31
- Accessories → 29

Auxiliary contact modules

With interlocked opposing contacts (except XHIV and XHICV)

Conventional
thermal current
 $I_{th} = I_e$ AC-1
at 60°C

Open

Contact

N/O = Normally open contact
N/O_E = N/O, early-make
N/C = Normally closed contact
N/C_L = N/C, late-break

Circuit
symbol

For use with

Part no.
Article no.

Std. pack

2 pole
Connection type: Screw terminals
Top mounting auxiliary contacts¹⁾



4 pole
Connection type: Screw terminals
Top mounting auxiliary contacts¹⁾



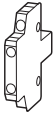
2 pole
Connection type: Screw terminals
Top mounting auxiliary contacts¹⁾



4 pole
Connection type: Screw terminals
Top mounting auxiliary contacts¹⁾



2 pole
Connection type: Screw terminals
Side-mounting auxiliary contacts²⁾



A						
16	1 N/O	1 N/C		DILM7-10N... DILM9-10N...	DILM32C-XHI11 115048	5 Off
16	—	2 N/C		DILM12-10N... DILM15-10N... DILM18-10N... DILM25-10N... DILM32-10N... DILM38-10N...	DILM32C-XHI02 115049	5 Off
16	2 N/O	2 N/C			DILM32C-XHI22 115050	5 Off
16	3 N/O	1 N/C			DILM32C-XHI31 115051	5 Off
16	2 N/O	—		DILM7...N... DILM9...N...	DILAC-XHI20 114870	5 Off
16	1 N/O	1 N/C		DILM12...N... DILM15...N... DILM18...N...	DILAC-XHI11 114871	5 Off
16	—	2 N/C		DILM25...N... DILM32...N... DILM38...N...	DILAC-XHI02 114872	5 Off
16	1 N/O	1 N/C _L			DILA-XHIV11 276423	5 Off
16	4 N/O	—			DILAC-XHI40 114873	5 Off
16	3 N/O	1 N/C			DILAC-XHI31 114874	5 Off
16	2 N/O	2 N/C			DILAC-XHI22 114875	5 Off
16	1 N/O	3 N/C			DILAC-XHI13 114876	5 Off
16	—	4 N/C			DILAC-XHI04 114877	5 Off
16	1 N/O, 1 N/O _E	1 N/C, 1 N/C _L			DILA-XHIV22 276427	5 Off
10	1 N/O	1 N/C		DILM18...N... DILM25...N... DILM32...N... DILM38...N...	DILM32C-XHI11-S 115052	1 Off

Notes

1) Top mounting auxiliary contacts have the following characters:

- Interlocked opposing contacts according to IEC/EN 60947-5-1 Annex L, inside the auxiliary contact modules, also for the integrated auxiliary contacts of the DILM7N-DILM38N (except N/O early-make and N/C late-break)
- N/C Auxiliary contacts can be used as mirror contacts according to IEC/EN 60947-4-1, Annex F (except N/C late-breaks)

2) Can only be left on the contactor. Cannot be combined with mechanical interlock and top mounting auxiliary contacts.

Auxiliary contact modules

With interlocked opposing contacts (except XHIV and XHICV)

Conventional
thermal current

$I_{th} = I_e$ AC-1
at 60°C

Open

Contact

N/O = Normally open contact
N/O_E = N/O, early-make
N/C = Normally closed contact
N/C_L = N/C, late-break

Circuit
symbol

For use with

Part no.
Article no.

Std. pack

2 pole

Connection type: Screw terminals
Top mounting auxiliary contacts



4 pole

Connection type: Screw terminals
Top mounting auxiliary contacts



2 pole

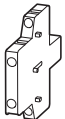
Connection type: Screw terminals
Side-mounting auxiliary contacts



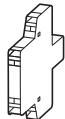
A						
10	2 N/O	—		DILM40-11N... DILM50-11N...	DILM150C-XHI20 105686	5 Off
10	1 N/O	1 N/C		DILM65-11N... DILM72-11N... DILM80-11N...	DILM150C-XHI11 105687	5 Off
10	1 N/O	1 N/C		DILM95-11N... DILM115N...	DILM150-XHIA11 283463	5 Off
10	—	2 N/C		DILM150N... DILM170N...	DILM150C-XHI02 105688	5 Off
10	4 N/O	—			DILM150C-XHI40 105689	5 Off
10	3 N/O	1 N/C			DILM150C-XHI31 105690	5 Off
10	2 N/O	2 N/C			DILM150C-XHI22 105691	5 Off
10	2 N/O	2 N/C			DILM150-XHIA22 283464	5 Off
10	1 N/O	3 N/C			DILM150C-XHI13 105692	5 Off
10	—	4 N/C			DILM150C-XHI04 105693	5 Off
10	1 N/O, 1 N/O _E	1 N/C, 1 N/C _L			DILM150-XHIV22 277953	5 Off
10	1 N/O	1 N/C		DILM40-11N... DILM170N	DILM1000C-XHI11-SI 105694	1 Off
10	1 N/O _E	1 N/C _L		DILM40-11N... DILM170N	DILM1000-XHIV11-SI 278426	1 Off
10	1 N/O	1 N/C		DILM115N... DILM170N	DILM1000C-XHI11-SA 105695	1 Off

Auxiliary contact modules

2



DILM1000C-XHI11-SI
DILM1000-XHIV11-SI



DILM1000C-XHI11-SA



DILM150C-XHI20
DILM150C-XHI11
DILM150C-XHI02



DILM150C-XHI40
DILM150C-XHI31
DILM150C-XHI22
DILM150C-XHI13
DILM150C-XHI04
DILM150C-XHIV22



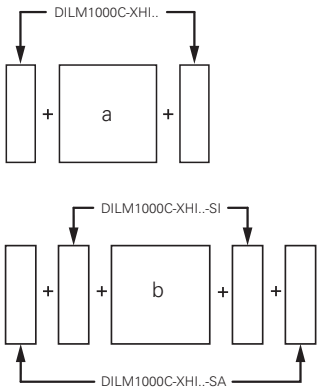
DILM150-XHIA11



DILM150-XHIA22

DILM40-11N...	2x	—	—	—	1x	—
...	—	2x	1x	—	—	—
DILM95-11N...	1x	—	—	—	—	1x
	—	1x	—	1x	—	—
DILM115N	2x	2x	—	—	—	—
...	2x	—	—	—	—	1x
DILM170N	2x	—	—	—	1x	—
	—	2x	—	1x	—	—
	—	2x	1x	—	—	—

Notes Side-mounting auxiliary contacts



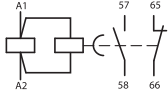
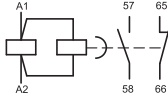
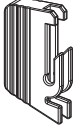
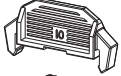
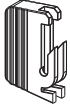
a DILM40-11N – DILM95-11N
b DILM115N – DILM170N

- Interlocked opposing contacts according to IEC/EN 60947-5-1 Annex L, inside the auxiliary contact module (except N/O early close and N/C late open)
- Auxiliary contacts can be used as mirror contacts according to IEC/EN 60947-4-1, Annex F (except N/C late open)
- No auxiliary contact is possible between two contactors with mechanical interlock.

Suppressor circuits

	Voltage	For use with	Circuit symbol	Part no. Article no.	Std. pack	Notes
V						
RC suppressors 	AC 24V	DILM7..N - DILM95..N		DILM95N-XSPR24 CMN00377	6 Off	For AC operated contactors 50-60Hz. Ac operated DILM 115N, DILM 150N, DILM 170N and all DC operated contactors have an integrated suppressor. Note drop-out delay.
	AC 36V			DILM95N-XSPR36 CMN00378	6 Off	
	AC 48V			DILM95N-XSPR48 CMN00379	6 Off	
	AC 110V			DILM95N-XSPR110 CMN00380	6 Off	
	AC 220-230V			DILM95N-XSPR230 CMN00381	6 Off	
	AC 380-400V			DILM95N-XSPR400 CMN00382	6 Off	
Varistor suppressors 	AC 24V	DILM7..N - DILM95..N		DILM95N-XSPV24 CMN00383	6 Off	For AC operated contactors 50-60Hz. Ac operated DILM 115N, DILM 150N, DILM 170N and all DC operated contactors have an integrated suppressor. Note drop-out delay.
	AC 36-48V			DILM95N-XSPV48 CMN00384	6 Off	
	AC 110V			DILM95N-XSPV110 CMN00385	6 Off	
	AC 220-230V			DILM95N-XSPV230 CMN00386	6 Off	
	AC 380-400V			DILM95N-XSPV400 CMN00387	6 Off	

Accessoreis

	Operating voltage	For use with	Circuit Symbol	Part no. Article no.	Std. pack	Notes
Pneumatic time delay module 	On-delayed					
	0.1-3s	DILM7..N-DILM38..N		DILM38N-XTM003 CMN00390	1 Off	Cannot be combined with: • DILM32C-XHI... • DILAC-XHI • DILM150-XHI
	0.1-30s			DILM38N-XTM030 CMN00391	1 Off	
	10-180s			DILM38N-XTM180 CMN00392	1 Off	
	0.1-3s	DILM40..N-DILM95..N		DILM95N-XTM003 CMN00393	1 Off	
	0.1-30s			DILM95N-XTM030 CMN00394	1 Off	
	10-180s			DILM95N-XTM180 CMN00395	1 Off	
	Off-delayed					
	0.1-3s	DILM7..N-DILM38..N		DILM38N-XTB003 CMN00396	1 Off	Cannot be combined with: • DILM32C-XHI... • DILAC-XHI • DILM150-XHI
	0.1-30s			DILM38N-XTB030 CMN00397	1 Off	
	10-180s			DILM38N-XTB180 CMN00398	1 Off	
	0.1-3s	DILM40..N-DILM95..N		DILM95N-XTB003 CMN00399	1 Off	
	0.1-30s			DILM95N-XTB030 CMN00400	1 Off	
	10-180s			DILM95N-XTB180 CMN00401	1 Off	
Mechanical interlocks 	—	DILM7..N - DILM38..N	—	DILM38N-XMV CMN00388	1 Off	For mechanically linking contactors in combinations 0 mm distance between contactors.
	—	DILM40..N - DILM95..N	—	DILM95N-XMV CMN00389	1 Off	
Mechanical interlocks  	—	DILM115N-DILM170N	—	DILM150-XVB 281226	10 Off	
	—	DILM7..N-DILM38..N		DILM38N-XAB CMN00413	1 Off	—
	—	DILM40..N-DILM170..N		DILM95N-XAB CMN00414	1 Off	—

Sealable shrouds
Transparent



Actuating voltages, basic devices

AC	DILM7-10N (...)	DILM7-01N (...)	DILM9-10N (...)	DILM9-01N (...)	DILM12-10N (...)	DILM12-01N (...)	DILM15-10N (...)	DILM15-01N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage								
24V 50/60Hz	CMN00001	CMN00012	CMN00023	CMN00034	CMN00045	CMN00056	CMN00067	CMN00078
36V 50/60Hz	CMN00002	CMN00013	CMN00024	CMN00035	CMN00046	CMN00057	CMN00068	CMN00079
48V 50/60Hz	CMN00003	CMN00014	CMN00025	CMN00036	CMN00047	CMN00058	CMN00069	CMN00080
110V 50/60Hz	CMN00004	CMN00015	CMN00026	CMN00037	CMN00048	CMN00059	CMN00070	CMN00081
220V 50/60Hz	CMN00005	CMN00016	CMN00027	CMN00038	CMN00049	CMN00060	CMN00071	CMN00082
230V 50/60Hz	CMN00006	CMN00017	CMN00028	CMN00039	CMN00050	CMN00061	CMN00072	CMN00083
380V 50/60Hz	CMN00007	CMN00018	CMN00029	CMN00040	CMN00051	CMN00062	CMN00073	CMN00084
400V 50/60Hz	CMN00008	CMN00019	CMN00030	CMN00041	CMN00052	CMN00063	CMN00074	CMN00085

Actuating voltages, basic devices

DC	DILM7-10N (...)	DILM7-01N (...)	DILM9-10N (...)	DILM9-01N (...)	DILM12-10N (...)	DILM12-01N (...)	DILM15-10N (...)	DILM15-01N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage								
24VDC	CMN00009	CMN00020	CMN00031	CMN00042	CMN00053	CMN00064	CMN00075	CMN00086
110VDC	CMN00010	CMN00021	CMN00032	CMN00043	CMN00054	CMN00065	CMN00076	CMN00087
220VDC	CMN00011	CMN00022	CMN00033	CMN00044	CMN00055	CMN00066	CMN00077	CMN00088
Notes	1) The article number is a combination of part no. and operating voltage.							

Actuating voltages, basic devices

AC	DILM18-10N (...)	DILM18-01N (...)	DILM25-10N (...)	DILM25-01N (...)	DILM32-10N (...)	DILM32-01N (...)	DILM38-10N (...)	DILM38-01N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage								
24V 50/60Hz	CMN00089	CMN00100	CMN00111	CMN00122	CMN00133	CMN00144	CMN00155	CMN00166
36V 50/60Hz	CMN00090	CMN00101	CMN00112	CMN00123	CMN00134	CMN00145	CMN00156	CMN00167
48V 50/60Hz	CMN00091	CMN00102	CMN00113	CMN00124	CMN00135	CMN00146	CMN00157	CMN00168
110V 50/60Hz	CMN00092	CMN00103	CMN00114	CMN00125	CMN00136	CMN00147	CMN00158	CMN00169
220V 50/60Hz	CMN00093	CMN00104	CMN00115	CMN00126	CMN00137	CMN00148	CMN00159	CMN00170
230V 50/60Hz	CMN00094	CMN00105	CMN00116	CMN00127	CMN00138	CMN00149	CMN00160	CMN00171
380V 50/60Hz	CMN00095	CMN00106	CMN00117	CMN00128	CMN00139	CMN00150	CMN00161	CMN00172
400V 50/60Hz	CMN00096	CMN00107	CMN00118	CMN00129	CMN00140	CMN00151	CMN00162	CMN00173

Actuating voltages, basic devices

DC	DILM18-10N (...)	DILM18-01N (...)	DILM25-10N (...)	DILM25-01N (...)	DILM32-10N (...)	DILM32-01N (...)	DILM38-10N (...)	DILM38-01N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage								
24VDC	CMN00097	CMN00108	CMN00119	CMN00130	CMN00141	CMN00152	CMN00163	CMN00174
110VDC	CMN00098	CMN00109	CMN00120	CMN00131	CMN00142	CMN00153	CMN00164	CMN00175
220VDC	CMN00099	CMN00110	CMN00121	CMN00132	CMN00143	CMN00154	CMN00165	CMN00176
Notes	1) The article number is a combination of part no. and operating voltage.							

Actuating voltages, basic devices

AC	DILM40-11N (...)	DILM50-11N (...)	DILM65-11N (...)	DILM72-11N (...)	DILM80-11N (...)	DILM95-11N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage						
24V 50/60Hz	CMN00177	CMN00188	CMN00199	CMN00210	CMN00221	CMN00232
36V 50/60Hz	CMN00178	CMN00189	CMN00200	CMN00211	CMN00222	CMN00233
48V 50/60Hz	CMN00179	CMN00190	CMN00201	CMN00212	CMN00223	CMN00234
110V 50/60Hz	CMN00180	CMN00191	CMN00202	CMN00213	CMN00224	CMN00235
220V 50/60Hz	CMN00181	CMN00192	CMN00203	CMN00214	CMN00225	CMN00236
230V 50/60Hz	CMN00182	CMN00193	CMN00204	CMN00215	CMN00226	CMN00237
380V 50/60Hz	CMN00183	CMN00194	CMN00205	CMN00216	CMN00227	CMN00238
400V 50/60Hz	CMN00184	CMN00195	CMN00206	CMN00217	CMN00228	CMN00239

Actuating voltages, basic devices

DC	DILM40-11N (...)	DILM50-11N (...)	DILM65-11N (...)	DILM72-11N (...)	DILM80-11N (...)	DILM95-11N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage						
24VDC	CMN00185	CMN00196	CMN00207	CMN00218	CMN00229	CMN00240
110VDC	CMN00186	CMN00197	CMN00208	CMN00219	CMN00230	CMN00241
220VDC	CMN00187	CMN00198	CMN00209	CMN00220	CMN00231	CMN00242
Notes	1) The article number is a combination of part no. and operating voltage.					

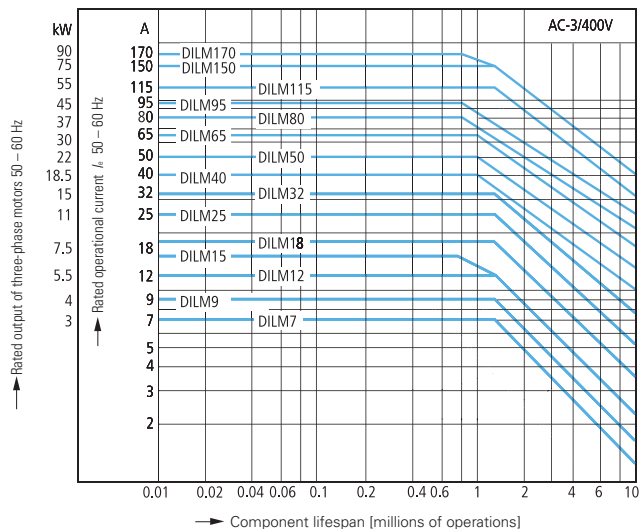
Actuating voltages, basic devices

AC	DILM115N (...)	DILM150N (...)	DILM170N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage			
24V 50/60Hz	CMN00243	CMN00254	CMN00265
110V 50/60Hz	CMN00246	CMN00257	CMN00268
220V 50/60Hz	CMN00247	CMN00258	CMN00269
230V 50/60Hz	CMN00248	CMN00259	CMN00270
380V 50/60Hz	CMN00249	CMN00260	CMN00271
400V 50/60Hz	CMN00250	CMN00261	CMN00272

Actuating voltages, basic devices

DC	DILM115N (...)	DILM150N (...)	DILM170N (...)
	Article no. ¹⁾	Article no. ¹⁾	Article no. ¹⁾
Standard voltage			
24VDC	CMN00251	CMN00262	CMN00273
110VDC	CMN00252	CMN00263	CMN00274
220VDC	CMN00253	CMN00264	CMN00275
Notes	1) The article number is a combination of part no. and operating voltage.		

Normal switching duty



Squirrel-cage motor

Operating characteristics:

Switch on: From standstill

Switch off: While running

Electrical Characteristic:

Switch on: Up to 6 x motor rated current

Switch off: 1 x motor rated current

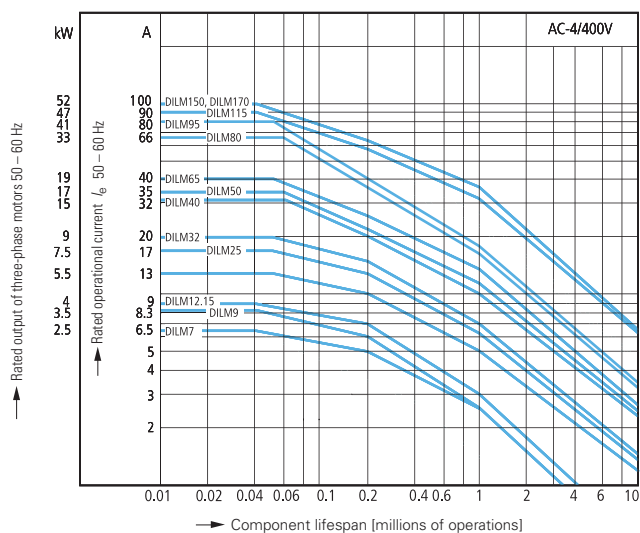
Utilization category:

100 % AC-3

Typical applications:

Compressors	Lifts	Mixers
Pumps	Escalators	Agitators
Fans	Conveyor belts	Centrifuges
Hinged flaps	Bucket-elevator	Air-conditioning system
General drives for manufacturing and processing machines		

Extreme switching duty



Squirrel-cage motor

Operating characteristics:

Inching, DC braking, reversing

Electrical characteristic:

Switch on: 6 x motor rated current

Switch off: 6 x motor rated current

Utilization category:

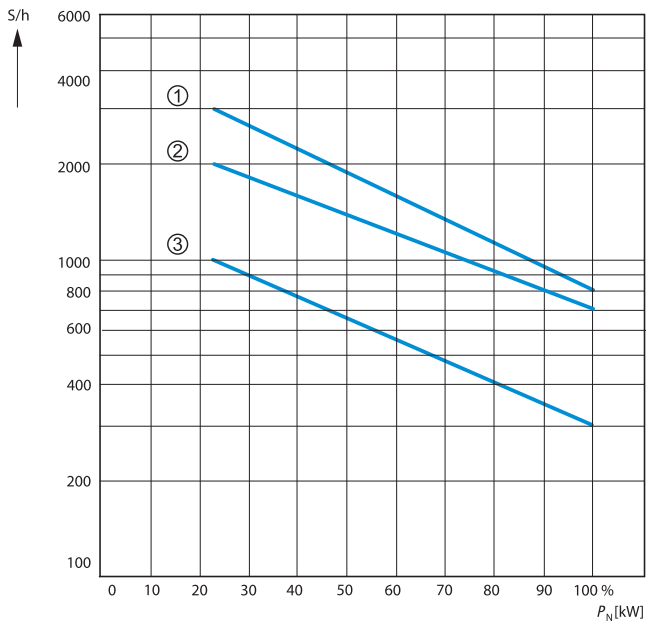
100 % AC-4

Typical applications:

Printing machines	Wire-drawing
Special drives for machining centers and machine tools	

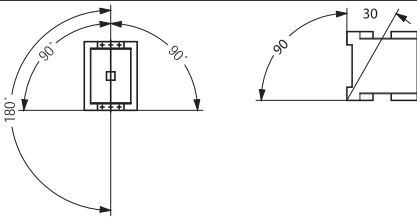
Determination of the maximum operating frequency dependent on the rating and utilization category (recommended values for 400 V)

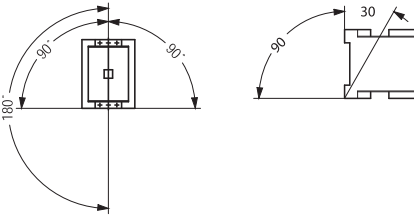
P_N = max. rated motor output (kW) of respective contactor according to Page 24
 S/h = max. operation per hour



Part no.	Characteristic	
	AC-3	AC-4
DILM7..N-DILM15..N	1	3
DILM18..N-DILM38..N	1	3
DILM40-11N-DILM72-11N	1	3
DILM80-11N-DILM170N	2	3

Technical data

			DILM7..N	DILM9..N	DILM12..N	DILM15..N	DILM18..N	DILM25..N	DILM32..N DILM38..N
General									
Standard			IEC/EN 60947, VDE 0660, GB14048						
Lifespan, mechanical									
AC operated	Operations	× 10 ⁶	15	15	15	15	15	15	15
DC operated	Operations	× 10 ⁶	10	10	10	10	10	10	10
Mechanical operating frequency									
AC operated	Operations/h		9000	9000	9000	5000	5000	5000	5000
DC operated	Operations/h		9000	9000	9000	5000	5000	5000	5000
Maximum operating frequency									
Electrical (contactors without overload relays)			See characteristic curves on page 35						
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30						
Ambient temperature									
Open	°C		-25...60	-25...60	-25...60	-25...60	-25...60	-25...60	-25...60
For storage	°C		-40...80	-40...80	-40...80	-40...80	-40...80	-40...80	-40...80
Mounting position, AC/DC operated									
Mechanical shock resistance (IEC/EN 60068-2-27)									
Half-sinusoidal shock 10 ms									
Main contacts									
N/O	g		10	10	10	10	10	10	10
Auxiliary contacts									
N/O	g		7	7	7	7	7	7	7
N/O	g		5	5	5	5	5	5	5
Mechanical shock resistance (IEC/EN 60068-2-27)									
Half-sinusoidal shock 10 ms									
Main contacts									
N/O	g		5.7	5.7	5.7	5.7	6.9	6.9	6.9
Auxiliary contacts									
N/O	g		3.4	3.4	3.4	3.4	5.3	5.3	5.3
N/C	g		3.4	3.4	3.4	3.4	3.5	3.5	3.5
Protection type			IP20	IP20	IP20	IP20	IP00	IP00	IP00
Protection against direct contact when actuated from front (EN 50274)			Finger- and back-of-hand proof						
Weight									
AC operated	kg		0.27	0.27	0.27	0.27	0.38	0.38	0.38
DC operated	kg		0.25	0.25	0.25	0.25	0.46	0.46	0.46
Terminal capacity									
Main circuit cross-section									
Solid	mm ²		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)				1 × (0.75 – 16) 2 × (0.75 – 10)		
Flexible with ferrule	mm ²		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)				1 × (0.75 – 16) 2 × (0.75 – 10)		
Stranded	mm ²		–	–	–	–	1 × 16	1 × 16	1 × 16
Solid or stranded	AWG		18 – 14	18 – 14	18 – 14	18 – 14	16 – 8	16 – 8	16 – 8
Flat conductor	mm	Number of layers × width × thickness	–	–	–	–	–	–	–
Control circuit cross-section									
Solid	mm ²		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)				1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		
Flexible with ferrule	mm ²		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)				1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		
Solid or stranded	AWG		18 – 14	18 – 14	18 – 14	18 – 14	18 – 14	18 – 14	18 – 14

DILM40-11N	DILM50-11N	DILM65-11N DILM72-11N	DILM80-11N	DILM95-11N	DILM115N	DILM150N DILM170N
IEC/EN 60947, VDE0660, GB14048						
10	10	10	10	10	10	10
10	10	10	10	10	10	10
5000	5000	5000	3600	3600	3600	3600 3000
5000	5000	5000	3600	3600	3600	3600 3000
See characteristic curves on page 35						
Damp heat, constant, to IEC 60068-2-78;						
Damp heat, cyclic, to IEC 60068-2-30						
-25...60	-25...60	-25...60	-25...60	-25...60	-25...60	-25...60
-40...80	-40...80	-40...80	-40...80	-40...80	-40...80	-40...80
						
10	10	10	10	10	10	10
7	7	7	7	7	7	7
5	5	5	5	5	5	5
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
IP00	IP00	IP00	IP00	IP00	IP00	IP00
Finger- and back-of-hand proof						
0.95	0.95	0.95	1.4	1.4	2	2
0.93	0.93	0.93	1.44	1.44	2.1	2.1
1 × (0.75 – 16)			—			
2 × (0.75 – 10)						
1 × (0.75 – 35)			1 × (10 – 50)			
2 × (0.75 – 25)			2 × (10 – 50)			
1 × (16 – 50)			1 × (16 – 50)			
2 × (16 – 35)			2 × (16 – 50)			
12 – 2	12 – 2	12 – 2	8 – 3/0	8 – 3/0	8 – 3/0	8 – 3/0
2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)	2 × (6 × 11.5 × 0.8)	2 × (6 × 11.5 × 0.8)	2 × (6 × 16 × 0.8)	2 × (6 × 16 × 0.8)
1 × (0.75 – 2.5)			1 × (0.75 – 2.5)			
2 × (0.75 – 2.5)			2 × (0.75 – 2.5)			
1 × (0.75 – 2.5)			1 × (0.75 – 2.5)			
2 × (0.75 – 2.5)			2 × (0.75 – 2.5)			
18 – 14	18 – 14	18 – 14	18 – 14	18 – 14	18 – 14	18 – 14

Technical data

2

				DILM7..N	DILM9..N	DILM12..N	DILM15..N	DILM18..N	DILM25..N
General									
Main cable connection screw/bolt				M3.5	M3.5	M3.5	M3.5	M5	M5
Tightening torque	Nm			1.2	1.2	1.2	1.2	3	3
Control circuit cable connection screw/bolt				M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Tightening torque	Nm			1.2	1.2	1.2	1.2	1.2	1.2
Tools									
Main circuits									
Pozidriv screwdriver	Size			2	2	2	2	2	2
Internal hexagon	SW	mm		—	—	—	—	—	—
Flat-blade screwdriver	mm			0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6
Control circuits									
Pozidriv screwdriver	Size			2	2	2	2	2	2
Flat-blade screwdriver	mm			0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6
Main contacts									
Rated impulse withstand voltage	U_{imp}	V AC		8000	8000	8000	8000	8000	8000
Over-voltage category/degree of pollution				III/3	III/3	III/3	III/3	III/3	III/3
Rated insulation voltage	U_i	V AC		690	690	690	690	690	690
Rated operational voltage	U_e	V AC		690	690	690	690	690	690
Safe isolation according to EN 61140									
Between coil and contacts		V AC		440	440	440	440	440	440
Between the contacts		V AC		440	440	440	440	440	440
Making capacity of up to 440 V (cos as specified in IEC/EN 60947)	To 690 V	A		112	112	144	155	238	350
Breaking capacity cos as specified in IEC/EN 60947	220/230 V	A		70	90	120	124	170	250
	380-400 V	A		70	90	120	124	170	250
	500 V	A		50	70	100	100	170	250
	660/690 V	A		40	50	70	70	120	150
Max. operating frequency	I_e AC-1 400 V	Op./h		800	800	800	800	800	800
	I_e AC-3 400 V	Op./h		1000	1000	1000	1000	800	800
	I_e AC-4 400 V	Op./h		250	250	250	250	250	250
Short-circuit rating									
Short-circuit protection rating maximum fuse									
Type "2" coordination	400 V	gG/gL 500 V	A	20	20	20	20	35	35
	690 V	gG/gL 690 V	A	16	16	25	25	32	32
Type "1" coordination	400 V	gG/gL 500 V	A	35	35	35	63	63	100
	690 V	gG/gL 690 V	A	20	20	25	50	50	50

DILM32..N DILM38..N	DILM40-11N	DILM50-11N	DILM65-11N DILM72-11N	DILM80-11N	DILM95-11N	DILM115N	DILM150N	DILM170N
M5	M6	M6	M6	M8	M8	M10	M10	M10
3	3	3	3	8	8	14	14	14
M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
2	2	2	2	—	—	—	—	—
—	—	—	—	4	4	5	5	5
0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	—	—	—	—	—
2	2	2	2	2	2	2	2	2
0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6	0.8 × 5.5 1×6
8000	8000	8000	8000	8000	8000	8000	8000	8000
III/3	III/3	III/3	III/3	III/3	III/3	III/3	III/3	III/3
690	690	690	690	690	690	690	690	690
690	690	690	690	690	690	690	690	690
440	440	440	440	440	440	440	440	440
440	440	440	440	440	440	440	440	440
384	560	700	910	1120	1330	1610	2100	2100
320	400	500	650	800	950	1150	1500	1500
320	400	500	650	800	950	1150	1500	1500
320	400	500	650	800	950	1150	1500	1500
180	250	320	370	650	800	1100	1200	1320
800	800	800	800	800	800	800	800	800
800	800	800	800	700	700	800	800	800
250	250	250	250	250	250	250	250	250
50	63	63	100	160	160	250	250	400
35	50	63	80	125	160	250	250	250
125	125	160	250	250	250	250	250	400
63	80	80	100	200	200	250	250	250

Technical data

					DILM7..N	DILM9..N	DILM12..N	DILM15..N	DILM18..N	DILM25..N	DILM32..N
AC voltage											
AC-1 operation											
Conventional thermal current 3 pole 50 - 60 Hz	Open	at 60°C	I _{th}	A	20	20	20	20	35	40	40
Conventional thermal current 1 pole	Open ¹⁾		I _{th}	A	50	50	50	50	85	85	100
AC-3 operation											
Rated operational current ¹⁾ 3 pole 50 - 60 Hz	Open ¹⁾	220/230 V	I _e	A	7	9	12	15	18	25	32
		380/400 V	I_e	A	7	9	12	15	18	25	32
		500 V	I _e	A	5	7	10	12.5	18	25	28
		660/690 V	I _e	A	4	5	7	9	12	15	18
Rated operational power		220/230 V	P	kW	2.2	2.5	3.5	4	5	7.5	10
		380/400 V	P	kW	3	4	5.5	7.5	7.5	11	15
		500 V	P	kW	3.5	4.5	7	7.5	12	17.5	18.5
		660/690 V	P	kW	3.5	4.5	6.5	7	11	14	15
AC-4 operation											
Rated operational current ¹⁾ 3 pole 50 - 60 Hz	Open ¹⁾	220/230 V	I _e	A	5	6	7	7	10	13	15
		380/400 V	I_e	A	5	6	7	7	10	13	15
		500 V	I _e	A	4.5	5	6	6	10	13	15
		660/690 V	I _e	A	4	4.5	5	5	8	10	12
Rated operational power		220/230	P	kW	1	1.5	2	2	2.5	3.5	4
		380/400 V	P	kW	2.2	2.5	3	3	4.5	6	7
		500 V	P	kW	2.5	2.8	3.5	3.5	6	8	9
		660/690 V	P	kW	2.9	3.6	4.4	4.4	6.5	8.5	10

Notes 1) At maximum permissible ambient air temperature

DILM38..N	DILM40-11N	DILM50-11N	DILM65-11N	DILM72-11N	DILM80-11N	DILM95-11N	DILM115N	DILM150N	DILM170N
40	50	65	80	80	90	110	130	160	185
100	125	162	200	200	225	275	325	400	460
38	40	50	65	72	80	95	115	150	170
38	40	50	65	72	80	95	115	150	170
28	40	50	53	55	64	64	115	150	170
18	25	32	37	37	39	47	93	100	150
11	12.5	15.5	20	22	25	30	37	48	52
18.5	18.5	22	30	37	37	45	55	75	90
18.5	28	36	37	40	45	45	85	110	120
15	23	30	35	35	37	45	90	96	96
15	18	21	25	25	39	39	55	65	65
15	18	21	25	25	39	39	55	65	65
15	18	21	25	25	30	30	55	65	65
12	14	17	20	20	23	23	45	50	50
4	5	6	7	7	11	11	17	20	20
7	9	10	12	12	20	20	28	33	33
9	11	13	16	16	18.5	18.5	40	47	47
10	12	14	17	17	15	15	43	48	48

Technical data

2

			DILM7..N	DILM9..N	DILM12..N	DILM15..N	DILM18..N	DILM25..N
Current heat loss (3 pole)								
Current heat loss at I _{th}	W		3	3	3	3	7.3	9.6
Current heat loss at I _e AC-3/400 V	W		0.37	0.6	1.1	1.8	1.9	3.8
Impedance per pole	mΩ		2.5	2.5	2.5	2.5	2	2
Magnet systems								
Voltage tolerance								
AC operated	Pick-up	×U _c	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
AC operated	Drop-out	×U _c	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6
DC operated ¹⁾	Pick-up	×U _c	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
DC operated ¹⁾	Drop-out	×U _c	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65
Power consumption of the coil in a cold state and 1.0 × U _c								
50/60 Hz	Pick-up	VA	40 37	40 37	40 37	40 37	62 58	62 58
50/60 Hz	Sealing	VA	6 5.2	6 5.2	6 5.2	6 5.2	7.38 5.98	7.38 5.98
50/60 Hz	Sealing	W	1.4 1.2	1.4 1.2	1.4 1.2	1.4 1.2	2.5 2	2.5 2
DC operated ¹⁾	Pick-up	W	12	12	12	12	12	12
DC operated ¹⁾	Sealing	W	3	3	3	3	3	3
Duty factor	% DF		100	100	100	100	100	100
Changeover times at 100 % U _c (recommended values)								
Main contacts								
AC operated								
	Closing delay	ms	15 – 21	15 – 21	15 – 21	15 – 21	16 – 22	16 – 22
	Opening delay	ms	9 – 18	9 – 18	9 – 18	9 – 18	8 – 14	8 – 14
DC operated ¹⁾								
	Closing delay	ms	80	80	80	80	90	90
	Opening delay	ms	20	20	20	20	25	25
Arc ing time		ms	10	10	10	10	10	10
Permissible residual current when A1 - A2 are actuated from the electronic system (with 0 signal)	mA		–	–	–	–	–	–
Electromagnetic compatibility (EMC)								
Emitted interference			According to EN 60947-1					
Interference immunity			According to EN 60947-1					
Notes								
1) Smoothed DC, three-phase bridge rectifier or smoothed two-phase bridge rectifier								

DILM32..N DILM38..N	DILM40-11N	DILM50-11N	DILM65-11N DILM72-11N	DILM80-11N	DILM95-11N	DILM115N	DILM150N DILM170N
12.1	11.3	19	28.8	14.6	21.8	30.4	46.1
6.1	7.2	11.3	19	11.5	16.2	23.8	40.5
2	1.5	1.5	1.5	0.6	0.6	0.6	0.6
0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.25 – 0.6	0.25 – 0.6
0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.7 – 1.2	0.7 – 1.2
0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.65	0.15 – 0.6	0.15 – 0.6
62	168	168	168	372	372	170	170
58	154	154	154	328	328	170	170
7.38	16.8	16.8	16.8	18	18	3.1	3.1
5.98	13.1	13.1	13.1	13.9	13.9	3.1	3.1
2.5	5.3	5.3	5.3	7.5	7.5	2.1	2.1
2	4.3	4.3	4.3	6.1	6.1	2.1	2.1
12	65	65	65	80	80	149	149
3	4	4	4	5	5	2.1	2.1
100	100	100	100	100	100	100	100
16 – 22	12 – 18	12 – 18	12 – 18	14 – 20	14 – 20	28 – 33	28 – 33
8 – 14	8 – 13	8 – 13	8 – 13	9 – 14	9 – 14	35 – 41	35 – 41
90	90	90	90	110	110	35	35
25	65	65	65	60	60	30	30
10	10	10	10	15	15	15	15
–	–	–	–	≤ 1	≤ 1	≤ 1	≤ 1
According to EN 60947-1							
According to EN 60947-1							

Technical data

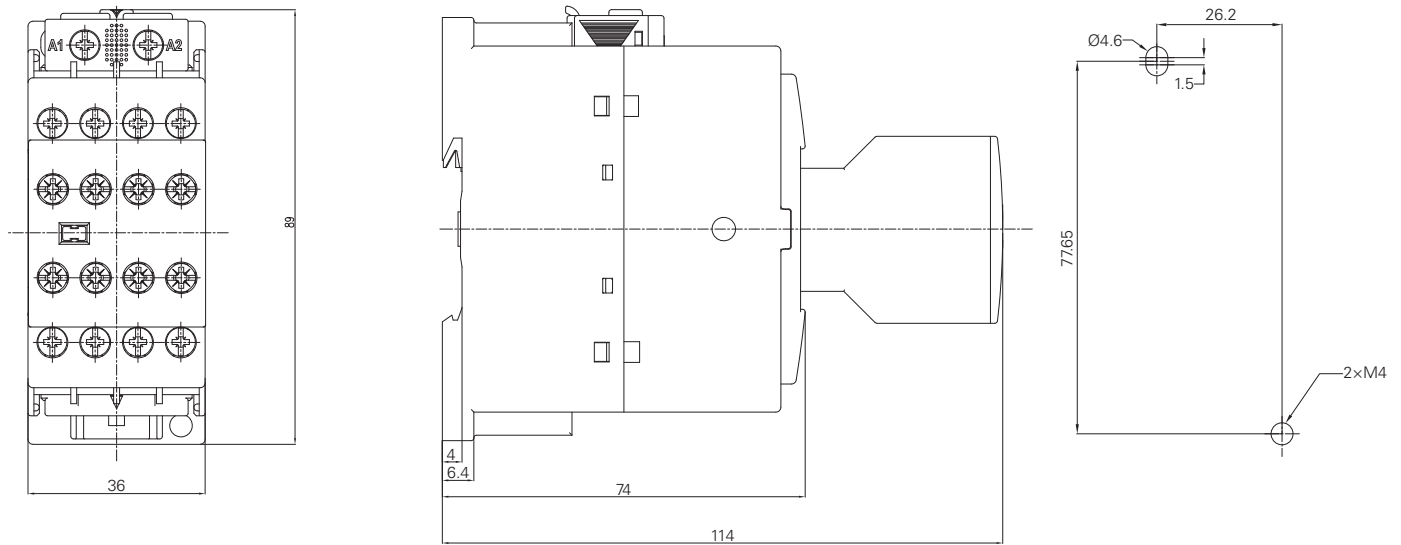
2

			DILAC- XHI...	DILM32C- XHI...	DILM150C- XHI...	DILM1000C- XHI...
Auxiliary contacts						
Interlocked opposing contacts within an auxiliary contact module (to IEC 60947-5-1 Annex L)			Yes	Yes	Yes	Yes
N/C (not late-normally closed) suitable as a mirror contact (to IEC/EN 60947-4-1, Annex F)			DILA..N DILM7..N- DILM38..N	DILM7..N- DILM38..N	DILM40N- DILM170N	DILM40N- DILM170N
Rated impulse withstand voltage	U _{imp}	V AC	6000	6000	6000	6000
Over-voltage category/degree of pollution			III/3	III/3	III/3	III/3
Rated insulation voltage	U _i	V AC	690	690	690	690
Rated operational voltage	U _e	V AC	500	500	500	500
Safe isolation according to EN 61140						
Between coil and auxiliary contacts		V AC	440	440	440	440
Between the auxiliary contacts		V AC	440	440	440	440
Rated operational current						
AC-15						
220/240 V	I _e	A	4	4	6	6
380/415 V	I _e	A	4	4	4	4
500 V	I _e	A	1.5	1.5	1.5	1.5
DC-13 L/R ≤ 15 ms ¹⁾						
24 V	I _e	A	10	10	10	10
60 V	I _e	A	6	6	6	6
110 V	I _e	A	3	3	3	3
220 V	I _e	A	1	1	1	1
Conventional thermal current	I _{th}	A	16	16	16	10
Control circuit reliability (at U _e = 24 V DC, U _{min} = 17 V, I _{min} = 5.4 mA)	Fault possibly	λ	< one failure in 100 million operations			
Component lifespan						
at U _e = 230 V, AC-15, 3 A	Operations	× 10 ⁶	1.3	1.3	1.3	1.3
Short-circuit rating without welding						
Max. fuse		A gG/gL	10	10	16	16

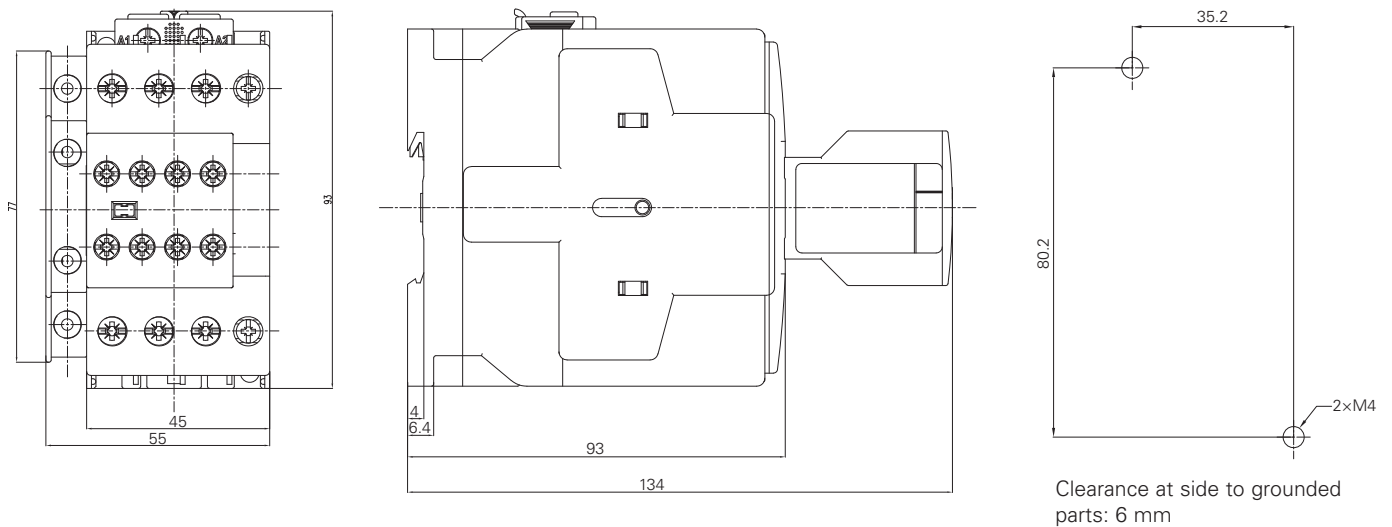
Notes Switch-on and switch-off conditions based on DC-13, time constant as specified.

Contactor with auxiliary contact module

DILM7..N
DILM9..N
DILM12..N
DILM15..N



DILM18..N
DILM25..N
DILM32..N
DILM38..N



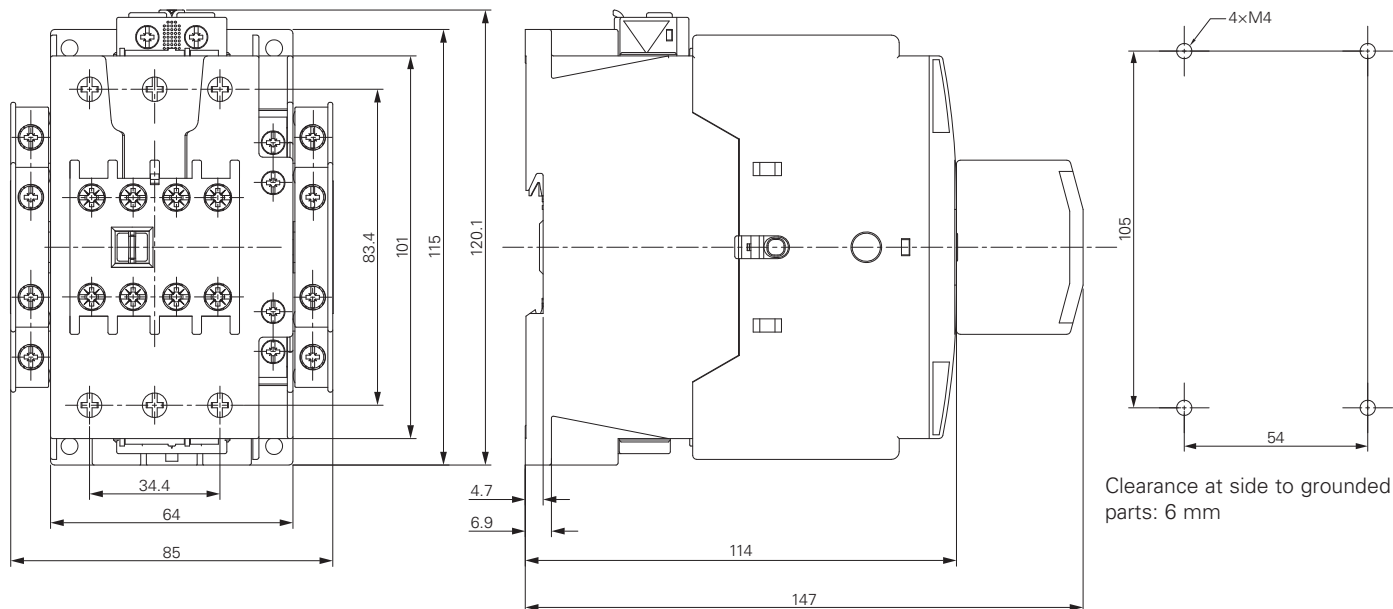
Clearance at side to grounded parts: 6 mm

2.11

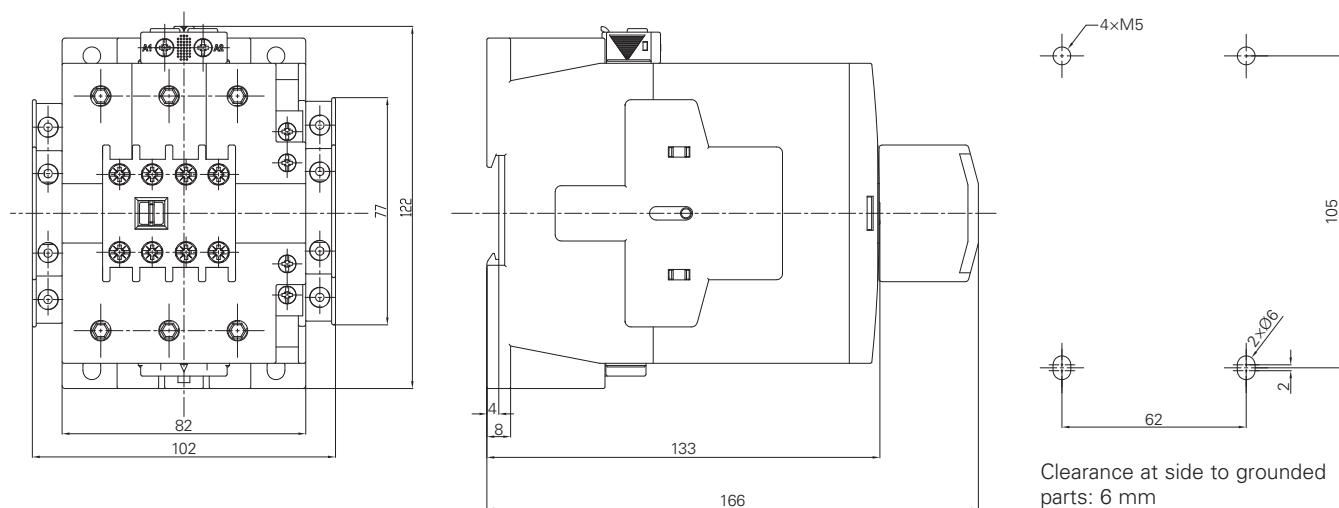
Contactor DILM..N Dimensions

Contactor with auxiliary contact module

DILM40-11N
DILM50-11N
DILM65-11N
DILM72-11N



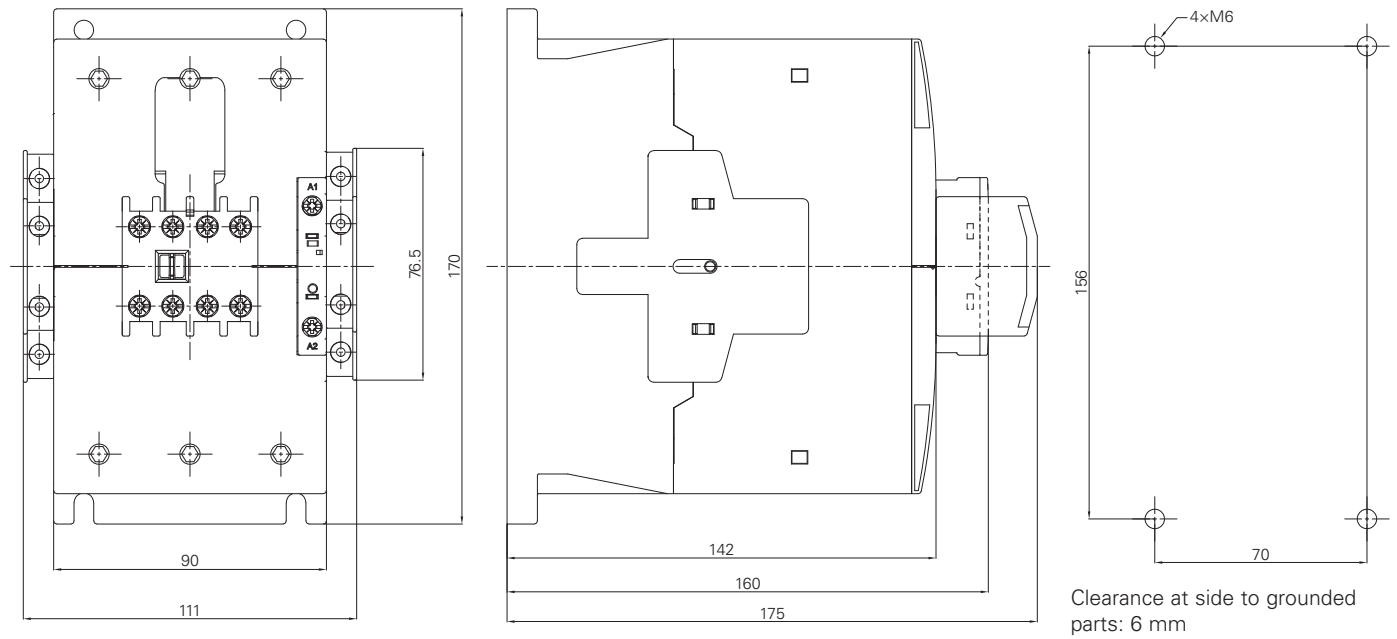
DILM80-11N
DILM95-11N



Contactor with auxiliary contact module

DILM115N
DILM150N
DILM170N

2



Overload relays ZB..N

Contents

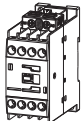
Overload relays ZB..N



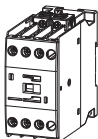
3.1	Overload relays ZB..N	50
3.2	Accessories	54
3.3	Technical data	55
3.4	Dimensions	58

- Phase failure sensitivity and temperature compensation
- Reset pushbutton manual/auto
- Test/off pushbutton
- Auxiliary contact (1 N/O + 1 NC)
- Fitted directly on the contactor of the maximum current to 175A

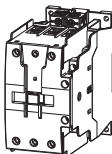
Setting ranges (A)
(note max. current
of the contactor)



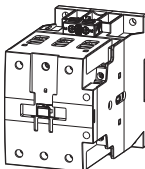
DILM7..N
DILM9..N
DILM12..N
DILM15..N



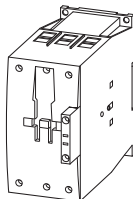
DILM18..N
DILM25..N
DILM32..N
DILM38..N



DILM40-11N
DILM50-11N
DILM65-11N
DILM72-11N



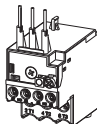
DILM80-11N
DILM95-11N



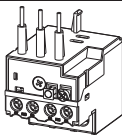
DILM115N
DILM150N
DILM170N

Overload relays

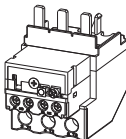
ZB12..N
0.1 – 16



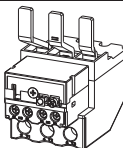
ZB32..N
1 – 38



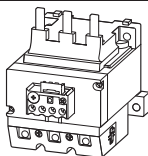
ZB65..N
17 – 75



ZB95..N
37 – 97



ZB150N
25– 175



Overload relays

Setting range of
overload releases

Circuit symbol

Auxiliary contact

For use with

Short-circuit protection

N/O = normally open contact
N/C = normally closed contact

Type "1"
coordination

Type "2"
coordination

I_r
A



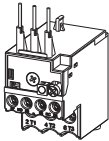
gG/gL
A



gG/gL
A

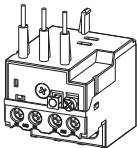


Overload relays ZB12N **Phase failure sensitivity** **to IEC/EN 60947** **For direct mounting**



0.1 – 0.16		1 N/O	1 N/C	DILM7..N DILM9..N DILM12..N DILM15..N	25	0.5
0.16 – 0.24		1 N/O	1 N/C		25	1
0.24 – 0.4		1 N/O	1 N/C		25	2
0.4 – 0.6		1 N/O	1 N/C		25	4
0.6 – 1		1 N/O	1 N/C		25	4
1 – 1.6		1 N/O	1 N/C		25	6
1.6 – 2.4		1 N/O	1 N/C		25	10
2.4 – 4		1 N/O	1 N/C		25	16
4 – 6		1 N/O	1 N/C		25	20
6 – 10		1 N/O	1 N/C		25	25
9 – 12		1 N/O	1 N/C		25	25
12 – 16		1 N/O	1 N/C		25	25

Overload relays ZB32N **Phase failure sensitivity** **to IEC/EN 60947** **For direct mounting**



1 – 1.5		1 N/O	1 N/C	DILM18..N DILM25..N DILM32..N DILM38..N	25	4
1.4 – 2.1		1 N/O	1 N/C		25	6
1.8 – 2.7		1 N/O	1 N/C		25	10
2.4 – 3.6		1 N/O	1 N/C		25	16
3.5 – 5		1 N/O	1 N/C		25	20
4 – 6		1 N/O	1 N/C		25	20
5.5 – 8.5		1 N/O	1 N/C		25	25
8.5 – 12.5		1 N/O	1 N/C		25	25
12.5 – 18		1 N/O	1 N/C		25	25
17 – 24		1 N/O	1 N/C		50	50
22 – 30		1 N/O	1 N/C		50	50
29 – 36		1 N/O	1 N/C		50	50
33 – 38		1 N/O	1 N/C		50	50

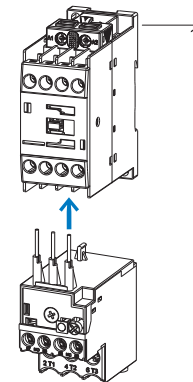
Part no.
Article no.

Std. pack

Notes

ZB12N-0,16 CMN00331	1 Off	Overload release: tripping class 10A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.
ZB12N-0,24 CMN00332	1 Off	
ZB12N-0,4 CMN00333	1 Off	
ZB12N-0,6 CMN00334	1 Off	
ZB12N-1 CMN00335	1 Off	
ZB12N-1,6 CMN00336	1 Off	
ZB12N-2,4 CMN00337	1 Off	
ZB12N-4 CMN00338	1 Off	
ZB12N-6 CMN00339	1 Off	
ZB12N-10 CMN00340	1 Off	
ZB12N-12 CMN00341	1 Off	
ZB12N-16 CMN00342	1 Off	

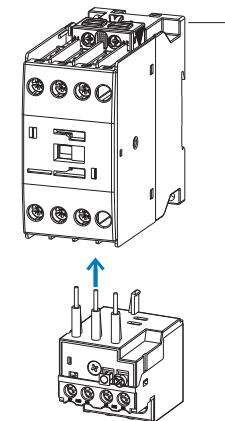
Fitted directly to the contactor



1 Contactor → 24

ZB32N-1,5 CMN00344	1 Off	Overload release: tripping class 10A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.
ZB32N-2,1 CMN00345	1 Off	
ZB32N-2,7 CMN00346	1 Off	
ZB32N-3,6 CMN00347	1 Off	
ZB32N-5 CMN00348	1 Off	
ZB32N-6 CMN00349	1 Off	
ZB32N-8,5 CMN00350	1 Off	
ZB32N-12,5 CMN00351	1 Off	
ZB32N-18 CMN00352	1 Off	
ZB32N-24 CMN00353	1 Off	
ZB32N-30 CMN00354	1 Off	
ZB32N-36 CMN00355	1 Off	

Fitted directly to the contactor



1 Contactor → 24

3.1

Overload relays ZB..N

Overload relays

3

Overload relays

Setting range of
overload releases

Circuit symbol

Auxiliary contact

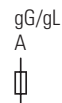
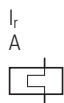
For use with

Short-circuit protection

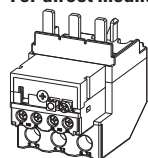
N/O = normally open contact
N/C = normally closed contact

Type "1"
coordination

Type "2"
coordination

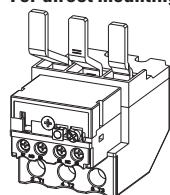


Overload relays ZB65N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



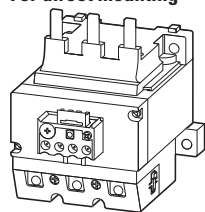
17 – 25		1 N/O	1 N/C	DILM40-11N DILM50-11N DILM65-11N DILM72-11N	50	25
23 – 32		1 N/O	1 N/C		63	35
30 – 40		1 N/O	1 N/C		63	50
37 – 50		1 N/O	1 N/C		100	63
48 – 65		1 N/O	1 N/C		100	80
63 – 75		1 N/O	1 N/C		100	100

Overload relays ZB95N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



37 – 50		1 N/O	1 N/C	DILM80-11N DILM95-11N	100	100
48 – 65		1 N/O	1 N/C		100	100
63 – 80		1 N/O	1 N/C		100	100
77 – 97		1 N/O	1 N/C		100	100

Overload relays ZB150N
Phase failure sensitivity
to IEC/EN 60947
For direct mounting



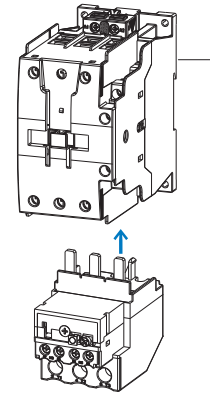
25 – 35		1 N/O	1 N/C	DILM115N DILM150N DILM170N	125	100
35 – 50		1 N/O	1 N/C		160	125
50 – 70		1 N/O	1 N/C		250	160
70 – 100		1 N/O	1 N/C		315	200
95 – 125		1 N/O	1 N/C		315	250
120 – 150		1 N/O	1 N/C		315	250
145 – 175		1 N/O	1 N/C		315	250

Part no.
Article no.

Std. pack

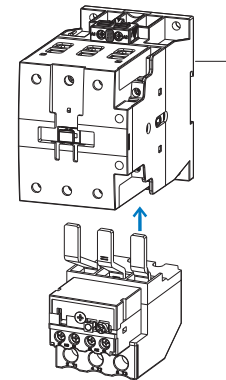
Notes

ZB65N-25 CMN00358	1 Off	Overload release: tripping class 10A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.	Fitted directly to the contactor
ZB65N-32 CMN00359	1 Off		
ZB65N-40 CMN00360	1 Off		
ZB65N-50 CMN00361	1 Off		
ZB65N-65 CMN00362	1 Off		
ZB65N-72 CMN00363	1 Off		



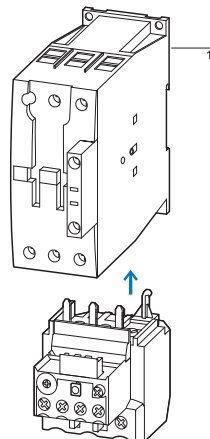
1 Contactor → 24

ZB95N-50 CMN00365	1 Off	Overload release: tripping class 10A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.	Fitted directly to the contactor
ZB95N-65 CMN00366	1 Off		
ZB95N-80 CMN00367	1 Off		
ZB95N-97 CMN00368	1 Off		



1 Contactor → 24

ZB150N-35 CMN00370	1 Off	Overload release: tripping class 10A Short-circuit protection: With direct mounting, observe the maximum permissible fuse of the contactor.	Fitted directly to the contactor
ZB150N-50 CMN00371	1 Off		
ZB150N-70 CMN00372	1 Off		
ZB150N-100 CMN00373	1 Off		
ZB150N-125 CMN00374	1 Off		
ZB150N-150 CMN00375	1 Off		
ZB150N-175 CMN00376	1 Off		



1 Contactor → 24

3.2

Overload relays ZB..N

Accessories

Pushbuttons

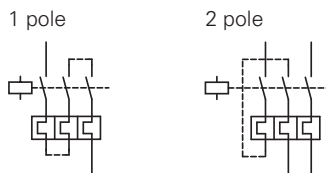
For enclosed overload relays
Mounting diameter: 22.3 mm

For use with	Part no. Article no.	Std. pack	Notes
External reset button, IP65 	ZB12..N	10 Off	Button plate, blue
	ZB32..N		
	ZB65..N	10 Off	Button plate, blue RESET
	ZB95..N		
Off button, IP65 	ZB150N	10 Off	Without button plate, add button plate.
Button plates —	M22-DZ-X	10 Off	Button plate, red
		216423	
		10 Off	Button plate, red with white circle
		218153	
		10 Off	Button plate, red STOP
		218194	

Selection criteria

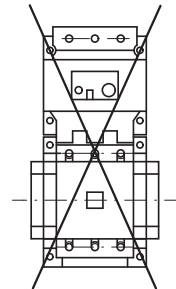
	ZB12..N, ZB32..N, ZB65..N, ZB95..N, ZB150N
Phase failure sensitivity	•
Temperature compensation	•
Auxiliary contact 1N/O + 1N/C	•
Test/Release pushbutton	•
Reset pushbutton manual/auto	•
Separate mounting	•
Explosion-proof motor protection (PTB)	—
Protection with heavy starting duty	—
Trip-free	•

Protection of single-phase and DC current motors:

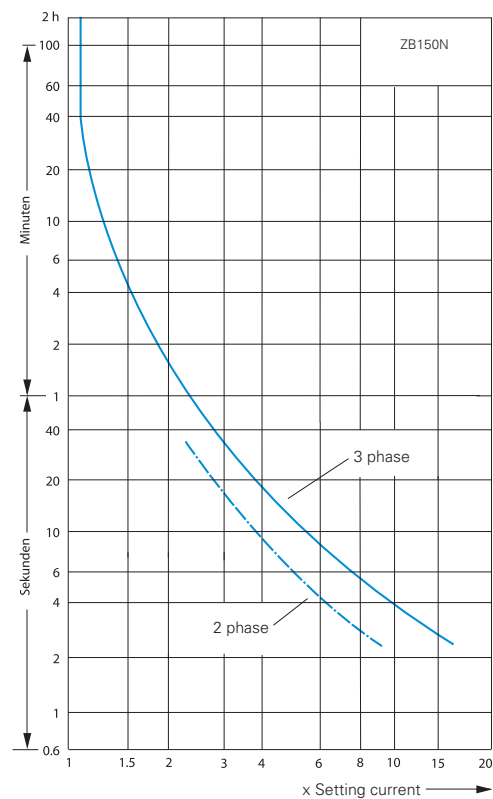
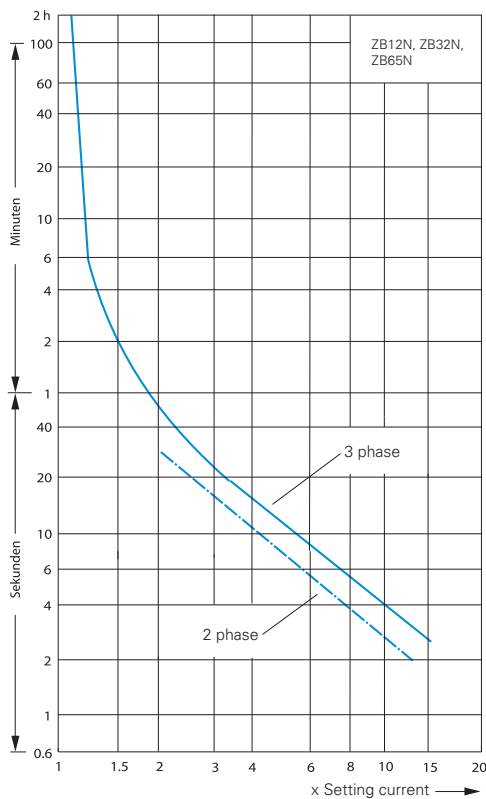


Mounting position:

ZB12..N, ZB32..N, ZB65..N, ZB95..N, ZB150N



These tripping characteristics are mean values of the spread at 20 °C ambient temperature in a cold state. They show the tripping times in relation to the response current.



Technical data

			ZB12..N	ZB32..N	ZB65..N	ZB95..N	ZB150N
General							
Standards			IEC/EN 60947, VDE 0660, GB14048				
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30				
Ambient temperature							
Open ¹⁾	°C		-25...60	-25...60	-25...60	-25...60	-25...60
Temperature compensation			Continuous	Continuous			
Mounting position			→Page 55	→Page 55	→Page 55	→Page 55	→Page 55
Weight	kg		0.1	0.11	0.3	0.33	1.64
Mechanical shock resistance half-sinusoidal shock, 10 ms	g		10	10	10	10	10
Protection type			IP20	IP20	IP20	IP20	IP00
Protection against direct contact when actuated from front (EN 50274)			Finger- and back-of-hand proof				
Main contacts							
Rated impulse withstand voltage	U _{imp}	V AC	6000	6000	6000	6000	6000
Overvoltage category/pollution degree			III/3	III/3	III/3	III/3	III/3
Rated insulation voltage							
AC	U _i	V AC	690	690	690	690	690
Rated operating voltage	U _e	V AC	690	690	690	690	690
Safe isolation according to EN 61140							
Between auxiliary contacts and main contacts		V AC	440	440	440	440	440
Between the main contacts		V AC	440	440	440	440	440
Overload relay setting range	A		0.1 – 16	1 – 38	17 – 75	37 – 97	25 – 175
Temperature compensation residual error > 60°C	%/K		≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25
Short-circuit protection rating maximum fuse			→Page 50	→Page 50	→Page 52	→Page 52	→Page 52
Current heat loss (3 conductors)							
Lower value of setting range	W		2.5	2.5	3	3	16
Upper value of setting range	W		6	6	7.5	7.5	28
Terminal capacity							
Solid	mm ²		2 × (1 – 2.5)	2 × (1 – 10)	2 × (2.5 – 16)	2 × (2.5 – 16)	2 × (4 – 16)
Flexible with ferrule	mm ²		2 × (1 – 2.5)	2 × (1 – 10) 2 × (1 – 10)	1 × (2.5 – 16) 2 × (2.5 – 16) ²⁾	1 × (2.5 – 16) 2 × (2.5 – 16) ²⁾	1 × (4 – 70) 2 × (4 – 50)
Stranded	mm ²		–	–	1 × (2.5 – 16)	1 × (2.5 – 16)	1 × (16 – 50) 2 × (16 – 50)
Solid or stranded	AWG		18 – 14	14 – 8	14 – 2	14 – 2	2/0
Terminal screw			M4	M4	M5	M5	M10
Tightening torque		Nm	1.2	1.2	2.5	2.5	10
Tools							
Pozidriv screwdriver	Size		2	2	2	2	–
Flat-blade screwdriver	mm		0.8 × 5.5	1×6	1×6	1×6	–
Hexagon socket	SW	mm	–	–	–	–	5

Notes

1) Ambient temperature: Operating range to IEC/EN 60947

2) Use identical cross-section when using two conductors

Technical data

			ZB12..N, ZB32..N	ZB65..N, ZB95..N	ZB150N
Auxiliary and control circuits					
Rated impulse withstand voltage	U_{imp}	V	4000	4000	4000
Overvoltage category/Pollution degree			III/3	III/3	III/3
Terminal capacity					
Solid		mm ²	2 × (0.75 – 2.5)	2 × (0.75 – 2.5)	2 × (0.75 – 4)
Flexible with ferrule		mm ²	2 × (0.75 – 2.5)	2 × (0.75 – 2.5)	2 × (0.75 – 2.5)
Solid or stranded		AWG	18 – 14	18 – 14	18 – 12
Terminal screw			M3.5	M3.5	M3.5
Tightening torque		Nm	0.8	0.8	0.8 – 1.2
Tools					
Pozidriv screwdriver		Size	2	2	2
Flat-blade screwdriver		mm	1×6	1×6	1×6
Rated insulation voltage	U_i	V AC	500	500	500
Rated operating voltage	U_e	V AC	500	500	500
Safe isolation according to EN 61140					
Between the auxiliary contacts		V AC	240	240	240
Conventional thermal current	I_{th}	A	6	6	6
Rated operational current					
AC-15					
N/O					
120 V	I_e	A	6	6	1.5
240 V	I_e	A	3	3	1.5
415 V	I_e	A	1.9	1.9	0.5
500 V	I_e	A	–	–	0.5
N/C					
120 V	I_e	A	6	6	1.5
240 V	I_e	A	3	3	1.5
415 V	I_e	A	1.9	1.9	0.9
500 V	I_e	A	–	–	0.8
DC-13 L/R ≤ 15 ms ¹⁾					
24 V	I_e	A	0.9	0.9	0.9
60 V	I_e	A	–	0.75 ³⁾	0.75 ³⁾
110 V	I_e	A	0.5	0.5	0.4
220 V	I_e	A	0.25	0.25	0.2
Short-circuit rating without welding					
Max. fuse ²⁾		A gG/gL	10	10	6

Notes

- 1) Making and breaking conditions to DC-13, time constant as stated
- 2) See transparent overlay "Fuses" for time/current characteristics (please enquire)
- 3) Rated operational current DC-13, 60 V: N/O auxiliary contact 0.6 A

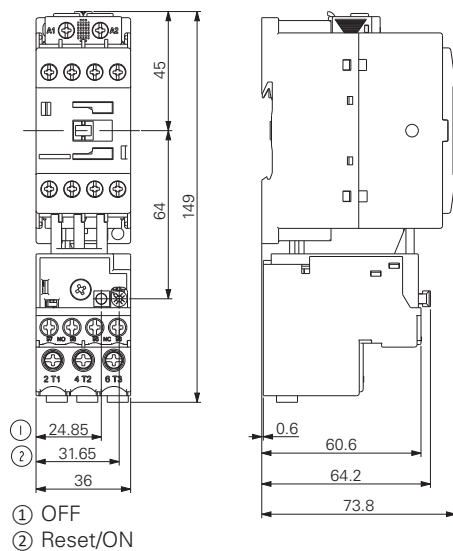
3.4

Overload relays ZB..N

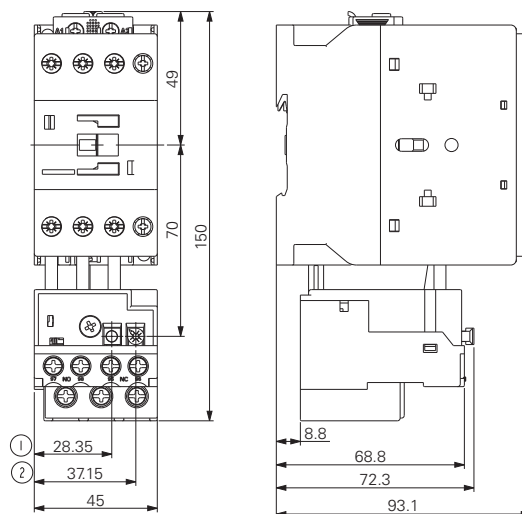
Dimensions

Overload relays

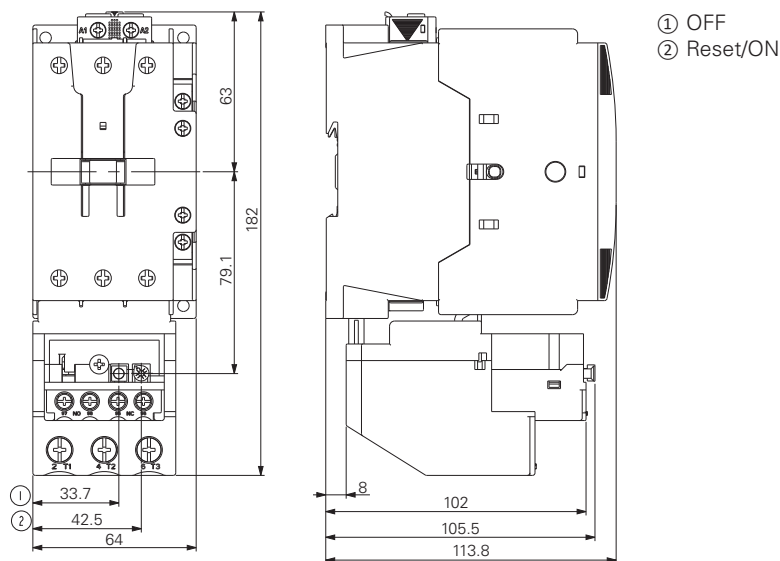
ZB12N



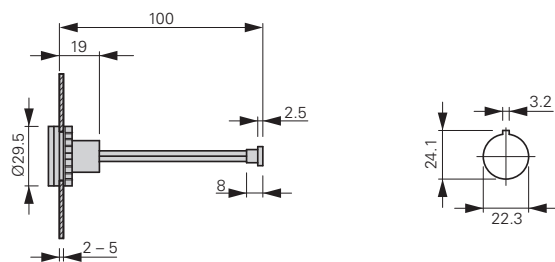
ZB32N



ZB65N

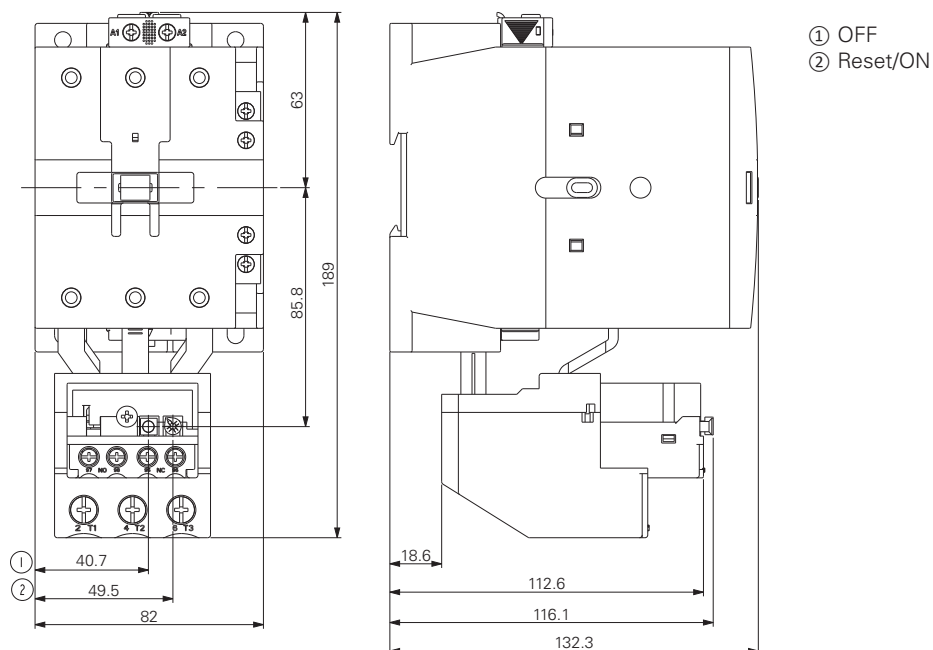


M22-DZ-...External reset button OFF Pushbutton M22-DZ-...

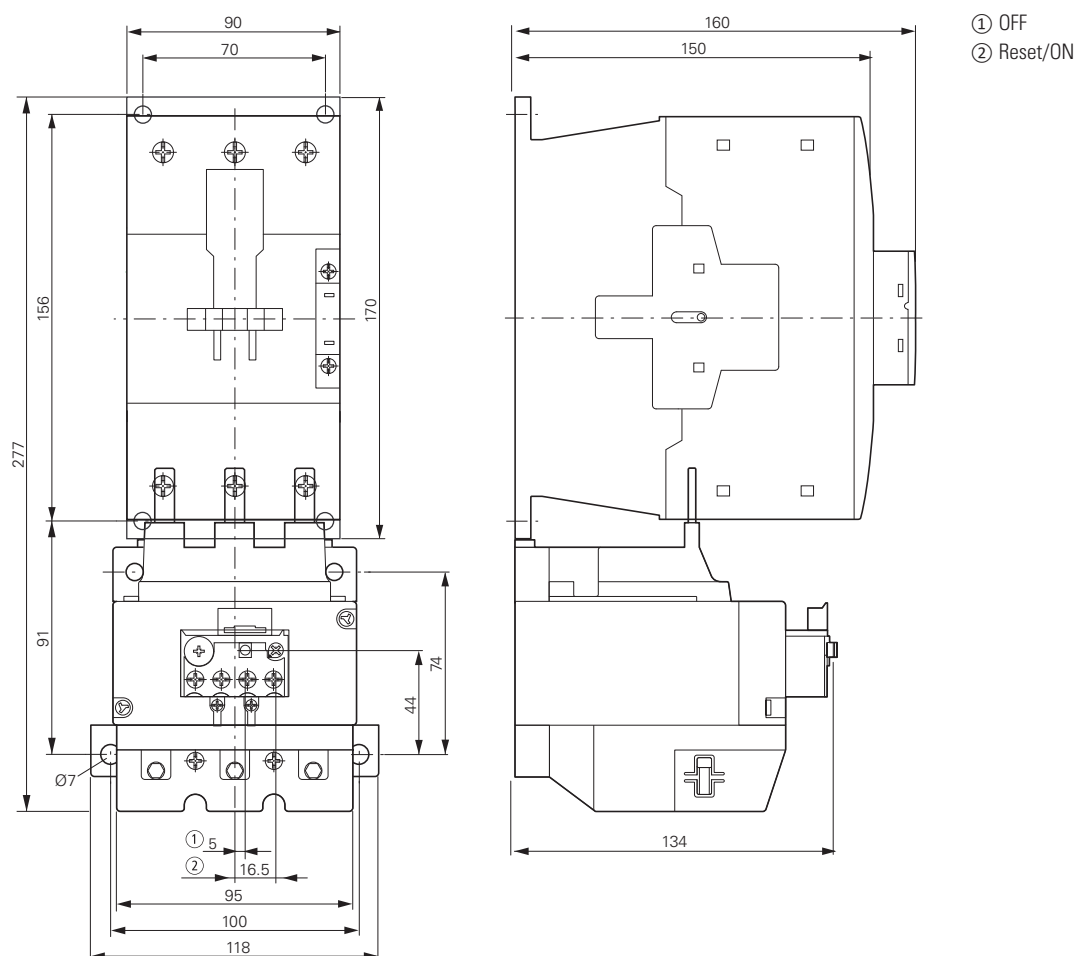


Overload relays

ZB95N



ZB150N



Motor protective circuit breaker PKZMC

Contents

Motor protective circuit breaker
PKZMC



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- Switches motors up to 32A
- Short-circuit protection capacity up to 65kA
- Common accessories with PKZM0 and PKZM4

High price-performance-ratio motor protection solutions via PKZMC

With PKZMC, everyone can access to modern technology for motor protection

Can be combined with contactors to serve as manually operated motor starter.

4

Compact and modular design, easy operating, high protection rate.

Common accessories with PKZM0 motor starters.

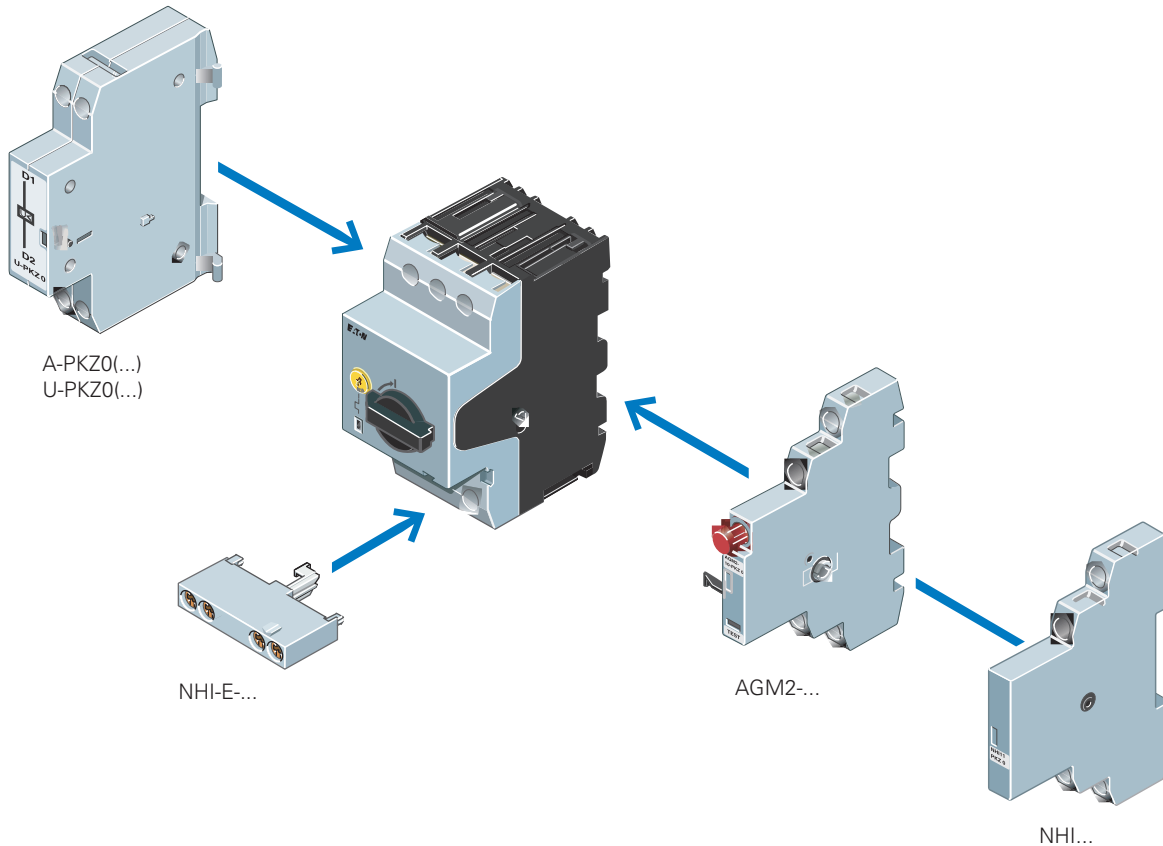
Comply to all of major standards.

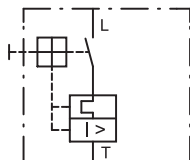
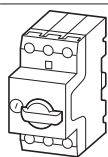
Safety first

PKZMC series comply with all technical standards for main switches.

PKZMC can protect your machine equipment powered by small rating motor, and can manually switch on your equipment.

Emergency stop and locking functions come with PKZMC as standard.





Basic devices

Max. motor rating AC-3 380/400V	Rated uninterrupted current	Overload release Setting range	Rated ultimate short-circuit breaking capacity I_{cu}				Part no. Article no.
P kW	I_u A	I_r A 	220V kA	380/400V kA	440V kA	690V kA	
—	0.16	0.1 – 0.16	65	65	65	1.44	PKZMC-0,16 225358
0.06	0.25	0.16 – 0.25	65	65	65	1.44	PKZMC-0,25 225364
0.09	0.4	0.25 – 0.4	65	65	65	1.44	PKZMC-0,4 225370
0.12	0.63	0.4 – 0.63	65	65	65	1.44	PKZMC-0,63 225376
0.25	1	0.63 – 1	65	65	65	1.44	PKZMC-1 225383
0.55	1.6	1 – 1.6	65	65	65	1.44	PKZMC-1,6 225387
0.75	2.5	1.6 – 2.5	65	65	65	1.44	PKZMC-2,5 225389
1.5	4	2.5 – 4	65	65	65	1.44	PKZMC-4 225390
2.2	6.3	4 – 6.3	65	16	6	1.44	PKZMC-6,3 225391
4	10	6.3 – 10	16	16	6	1.44	PKZMC-10 225394
7.5	16	10 – 16	16	16	6	1.44	PKZMC-16 225395
9	20	16 – 20	12	12	6	1.44	PKZMC-20 225396
12.5	25	20 – 25	12	12	6	1.44	PKZMC-25 225397
15	32	25 – 32	12	12	6	1.44	PKZMC-32 112112

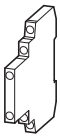
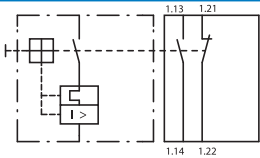
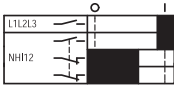
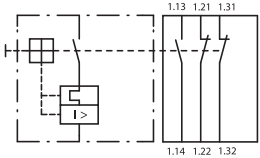
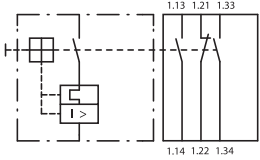
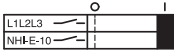
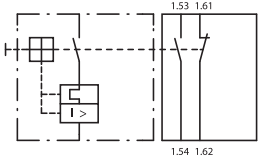
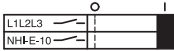
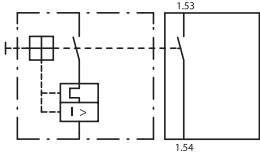
4.3

Motor protective circuit breaker PKZMC
Standard auxiliary contacts

Standard auxiliary contacts

Contact Circuit diagrams Contact sequence For use with

N/O = normally
open contact
N/C = normally
closed contact

	1 N/O 1 N/C			Screw terminals	PKZMC
	1 N/O 2 N/C			Screw terminals	PKZMC
	2 N/O 1 N/C			Screw terminals	PKZMC
	1 N/O 1 N/C			Screw terminals	PKZMC
	1 N/O —			Screw terminals	PKZMC

Part no.
Article no.

Std. pack

Notes

NHI11-PKZ0
072896

5 off

Can be fitted to the right side of: motor-protective circuit-breakers, transformer protective circuit breakers and motor-protective circuit-breakers for starter combinations
Can be combined with: Trip-indicating auxiliary contact AGM, NHI-E-...

NHI12-PKZ0
072895

5 off

Can be fitted to the right side of: motor-protective circuit-breakers, transformer protective circuit breakers and motor-protective circuit-breakers for starter combinations
Can be combined with: Trip-indicating auxiliary contact AGM, NHI-E-...

NHI21-PKZ0
072894

5 off

Can be fitted to the right side of: motor-protective circuit-breakers, transformer protective circuit breakers and motor-protective circuit-breakers for starter combinations
Can be combined with: Trip-indicating auxiliary contact AGM, NHI-E-...

NHI-E-11-PKZ0
082882

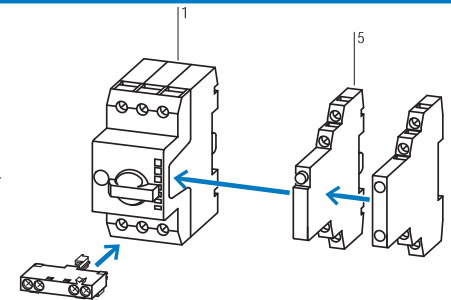
5 off

Can be fitted to motor-protective circuit-breakers, transformer-protective circuit-breakers and motor-protective circuit-breakers for starter combinations from serial number 01.45 mm (PKZM0 and PKZM01) or 55 mm (PKZM4) widths of the motor-protective circuit-breakers remain unchanged.

NHI-E-10-PKZ0
082884

5 off

Can be fitted to motor-protective circuit-breakers, transformer-protective circuit-breakers and motor-protective circuit-breakers for starter combinations from serial number 01.45 mm (PKZM0 and PKZM01) or 55 mm (PKZM4) widths of the motor-protective circuit-breakers remain unchanged.



Accessories

1 Motor-protective circuit-breakers
5 Trip-indicating auxiliary contact
Additional accessories

Page

→ 63
→ 66
→ 70

Auxiliary contacts, undervoltage releases

Contact

Circuit diagrams

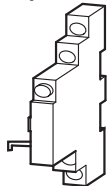
Contact sequence

For use with

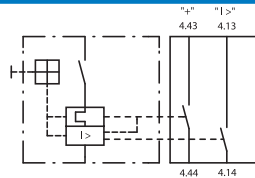
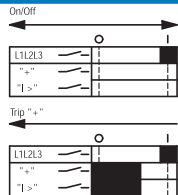
N/O = normally
open contact
N/C = normally
closed contact

4

Trip-indicating auxiliary contact

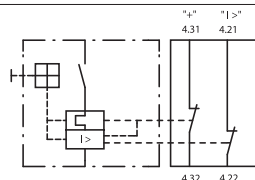
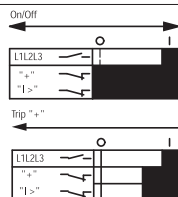


2 × 1 N/O



PKZMC

2 × 1 N/C

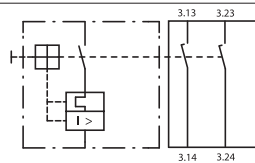


PKZMC

Early-make auxiliary contact

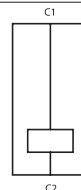
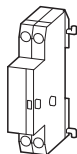


2 N/O



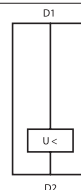
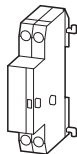
PKZMC

Shunt release



PKZMC

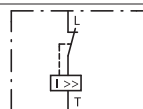
Undervoltage release



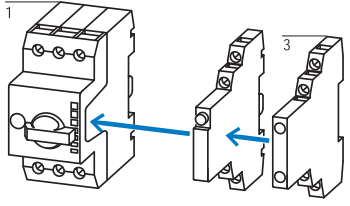
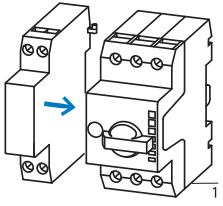
PKZMC

Current limiters

For increasing switching capacity of motor-protective circuit-breakers without auto-protection
motor-protective circuit breakers PKZM0-16,-20,-25,-32 reach 150kA/440V



PKZMC

Part no. Article no.	Std. pack		Notes
AGM2-10-PKZ0 072898	2 off	Can be fitted to the right side of motor-protective circuit-breakers: Can be combined with: Standard auxiliary contacts NHI11-PKZ0 NHI12-PKZ0 NHI21-PKZ0 NHI-E-...	 Accessoreis 1 Motor-protective circuit-breakers → 63 3 Standard auxiliary contacts → 64
AGM2-01-PKZ0 072899	2 off	Separate indication of: a) General trip indication (overload) b) Short-circuit trip Local short-circuit indication by red indicator, manually resettable.	
VHI20-PKZ0 203595	2 off	Can be fitted to front of motor-protective circuitbreaker, 45 mm width of the motor-protective circuit-breaker remains unchanged. For early energization of undervoltage release, e.g. in emergency switching off circuits to EN 60204.	
A-PKZ0(230V50Hz) 073187	2 off	Can be fitted to the left side of motor-protective circuit-breakers.	 Accessoreis 1 Motor-protective circuit-breakers → 63 Further actuating voltages → 73
A-PKZ0(24V DC) 073200	2 off	Cannot be combined with: undervoltage release U-PKZ0 DC: Intermittent operation 5 s	
U-PKZ0(230V50Hz) 073135	2 off	Can be fitted to the left side of motor-protective circuit-breakers. Cannot be combined with: A-PKZ0 shunt release When combined with circuit-breaker, can be used as emergency switching off device to IEC/EN 60204.	
CL-PKZ0 082881	1 off	Max. rated operating voltage $U_g = 690$ V, rated uninterrupted current $I_u = 63$ A Can be used for individual and group protection. For group protection and in combination with PKZM4, order additional BK25/3 incoming terminal if required. Mounting next to or behind the motor-protective circuit-breaker. PKZM4: 16 – 63 A: 100 kA/400 V PKZM4: 16 – 63 A: 10 kA/690 V	

Insulated enclosure

Enclosure

Accessories

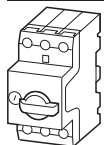
Part no.

Degree of
protectionHandle
colorNHI...-
PKZ0AGM2...-
PKZ0NHI-E...-
PKZ0VHI...-
PKZ0U-PKZ0
or
A-PKZ0

L-PKZ0

Surface mounting enclosure

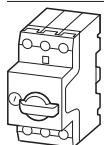
For motor protective circuit breaker PKZMC



CI-K2-PKZ0	IP41	—	•	—	•	—	•	•
CI-K2-PKZ0	IP41	—	—	•	•	—	•	•
CI-K2-PKZ0-G	IP65	Black	•	—	•	—	•	•
CI-K2-PKZ0-G	IP65	Black	—	•	•	—	•	•
CI-K2-PKZ0-GR	IP65	Red - yellow	•	—	•	—	•	•
			—	•	•	—	•	•
CI-PKZ0-M	IP40	—	•	—	•	—	—	•
CI-PKZ0-M	IP40	—	—	—	•	—	•	•
CI-PKZ0-GM	IP55	Black	•	—	•	—	—	•
CI-PKZ0-GM	IP55	Black	—	—	•	—	•	•
CI-PKZ0-GRM	IP55	Red - yellow	•	—	•	—	—	•
			—	—	•	—	•	•

Surface mounting housings

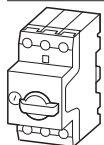
For motor protective circuit breaker PKZMC + early-make auxiliary contact VHI-PKZ0



CI-K2-PKZ0-GV	IP65	Black	•	—	—	•	•	•
CI-K2-PKZ0-GV	IP65	Black	—	•	—	•	•	•
CI-K2-PKZ0-GRV	IP65	Red - yellow	•	—	—	•	•	•
			—	•	—	•	•	•
CI-K2-PKZ0-GVM	IP55	Black	•	—	—	•	—	•
CI-K2-PKZ0-GVM	IP55	Black	—	—	—	•	•	•
CI-K2-PKZ0-GRVM	IP55	Red - yellow	•	—	—	•	—	•
			—	—	—	•	•	•

Flush mounting enclosure

For motor protective circuit breaker PKZMC



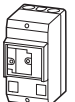
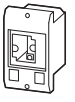
E-PKZ0	IP40	—	•	—	—	—	—	•
E-PKZ0	IP40	—	—	—	—	—	•	•
E-PKZ0-G	IP55	Black	•	—	•	—	—	•
E-PKZ0-G	IP55	Black	—	—	•	—	•	•
E-PKZ01-GR	IP55	Red - yellow	•	—	•	—	—	•
			—	—	•	—	•	•

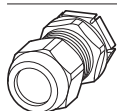
Notes

The combination possibilities of circuit-breakers in an enclosure with accessory modules are identified by a •

1) Always required

Insulated enclosure

		Degree of protection	For use with	Part no. Article no.	Std. pack	
Surface mounting enclosure						
For motor protective circuit breaker PKZMC						
	Cover with aperture dimensioned to accommodate front of breaker. IP40, when mounted turned through 90° to left/right	IP41 with vertical mounting	PKZMC-...+NHI or AGM+U or A (undervoltage or shunt release) +NHI-EL-PKZ0 (2 off)	CI-K2-PKZ0 219653	1 off	M25 metric cable entry knockout, top and bottom Cable push-through membrane top, bottom, in the back plate and as a control line entry.
	With black-grey rotary knob	IP65		CI-K2-PKZ0-G 219654	1 off	Insulated enclosure CI-K2 incl. N and PE terminal.
	With red-yellow rotary knob, for use as emergency switching off device to IEC/EN 60204	IP65		CI-K2-PKZ0-GR 219655	1 off	
	Cover with aperture dimensioned to accommodate front of breaker	IP40	PKZMC-... +NHI or U or A +L-PKZ0 (2 off)	CI-PKZ0-M 267083	1 off	Integrated terminal for PE(N) connection, two M25 cable entry knockouts at top and at bottom.
	With black-grey rotary knob	IP55	PKZMC-... +NHI-E	CI-PKZ0-GM 260089	1 off	
	With red-yellow rotary knob, for use as emergency switching off device to IEC/EN 60204	IP55	+NHI or U or A +L-PKZ0 (2 off)	CI-PKZ0-GRM 260104	1 off	
Surface mounting enclosure						
For motor protective circuit breakers PKZMC with early-make VHI-PKZ0 auxiliary contacts						
	With black-grey rotary knob	IP65	+NHI or AGM +U or A	CI-K2-PKZ0-GV 219657	1 off	M25 metric cable entry knockout, top and bottom Cable push-through membrane top, bottom, in the back plate and as a control line entry.
	With red-yellow rotary knob, for use as emergency switching off device to IEC/EN 60204	IP65	+L-PKZ0 (2 off)	CI-K2-PKZ0-GRV 219656	1 off	
	With black-grey rotary knob	IP55	PKZMC-...and VHI +U or A (undervoltage and shunt release)	CI-PKZ0-GVM 263526	1 off	Two M25 cable entry knockouts at top and at bottom.
	With red-yellow rotary knob, for use as emergency switching off device to IEC/EN 60204	IP55	+L-PKZ0 (2 off)	CI-PKZ0-GRVM 263525	1 off	
Flush mounting enclosure						
For motor protective circuit breaker PKZMC						
	Cover with aperture dimensioned to accommodate front of breaker	Front IP40	PKZMC-...+NHI or +U or A+L-PKZ0 (2 off)	E-PKZ0 072906	1 off	Integrated terminal for PE(N) connection, two PG16 cable entry knockouts at top and at bottom.
	With black-grey rotary knob	Front IP55	PKZMC-... +NHI or U or A	E-PKZ0-G 072907	1 off	
	With red-yellow rotary knob, for use as emergency switching off device to IEC/EN 60204	Front IP55	+NHI-E +L-PKZ0 (2 off)	E-PKZ0-GR 072908	1 off	
	For up to 3 padlocks with 3 – 6 mm hasp thickness, for use as main switch to IEC/EN60204		E-PKZ0-G(R)	SVB-PKZ0-E 035127	3 off	Lockable in Off position of PKZMC
Neutral terminal						
For connection of a 5th conductor						
			E-PKZ0(-G)(-GR)	N-PKZ0 082160	20 off	—



Metric cable glands to EN 50262

- With lock nut and built-in strain relief
- IP68 up to 5 bar

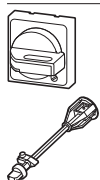
Cable entry	Drilling dimensions	External cable diameter	Part no. Article no.	Std. pack
	mm	mm		
M20	20.5	613	V-M20 206910	20 off
M25	25.5	917	V-M25 206911	20 off
M32	32.5	1321	V-M32 206912	10 off
M32	32.5	1825	V-M32G 226156	10 off



Metric diaphragm grommets

- IP66
- With integral push-through diaphragm

Cable entry	Drilling dimensions	External cable diameter	Part no. Article no.	Std. pack
	mm	mm		
M20	20.5	113	KT-M20 207602	100 off
M25	25.5	118	KT-M25 207603	100 off
M32	32.5	124	KT-M32 207604	100 off

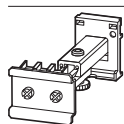


Door coupling handles

- IP65

	Handle color	For use with	Part no. Article no.	Std. pack	Notes
For use as main switch to IEC/EN 60204	Black	PKZMC	PKZ0-XH 106132	1 off	Pluggable PKZ0-XAH extension shaft, can be cut to any required length for installation depths of 100...240 mm. Follower included in delivery. With ON/OFF switch position and "+" (tripped), lockable. With 3 padlocks, 4 – 8 mm hasp.
For use as a main switch with emergency switching off function to IEC/EN 60204	Red/yellow	PKZMC	PKZ0-XRH 106133	1 off	
For use as a main switch to IEC/EN 60204 in MCC power distribution systems and with PKZMC installed rotated by 90°	Black	PKZMC	PKZ0-XH-MCC 106136	1 off	
For use as a main switch with emergency switching off function to IEC/EN 60204 in MCC power distribution systems and with PKZMC installed rotated by 90°	Red/yellow	PKZMC	PKZ0-XRH-MCC 106137	1 off	

Other accessories



Telescopic adapters

With 45 mm top-hat rail to IEC/EN 60715 for compensation of the mounting depth of rear-mounted devices enclosures CI-K and cabinets.

For use with motor-protective circuit-breakers PKZMC

Part no.
Article no.

Std. pack

M22-TA
226161

1 off

Stepless adjustment via scale from 75 – 115 mm



Lockable rotary handle

For locking motor-protective circuit-breakers PKZMC as a main switch in compliance with EN 60204.

Can be padlocked in the "0" position.

Hasp thickness: 3 – 6.35 mm

AK-PKZ0
030851

5 off

–

Holding facility

To prevent tampering with the overload release and the test function, it can be sealed using industry standard sealing wire.

For use with motor-protective circuit-breakers PKZMC

PL-PKZ0
203599

5 off

–



Indicator lights with glow lamp

For use with

Color

Voltage

Part no.
Article no.

Std. pack

V

CI-K2-PKZ0-...
CI-K4-PKZ4

White

110 – 230

L-PKZ0(230V)
082151

10 off

–

E-PKZ0-...
CI-PKZ01

White

230 – 400

L-PKZ0(400V)
082152

10 off

–

E-PKZ01

White

415 – 500

L-PKZ0(500V)
082153

5 off

–

CI-K2-PKZ0-...
CI-K4-PKZ4

Green

110 – 230

L-PKZ0-GN(230V)
082154

10 off

–

E-PKZ0-...
CI-PKZ01

Green

230 – 400

L-PKZ0-GN(400V)
082155

10 off

–

E-PKZ01

Green

415 – 500

L-PKZ0-GN(500V)
082156

5 off

–

CI-K2-PKZ0-...
CI-K4-PKZ4

Red

110 – 230

L-PKZ0-RT(230V)
082157

10 off

–

E-PKZ0-...
CI-PKZ01

Red

230 – 400

L-PKZ0-RT(400V)
082158

10 off

–

E-PKZ01

Red

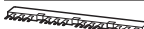
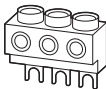
415 – 500

L-PKZ0-RT(500V)
082159

5 off

–

Other accessories

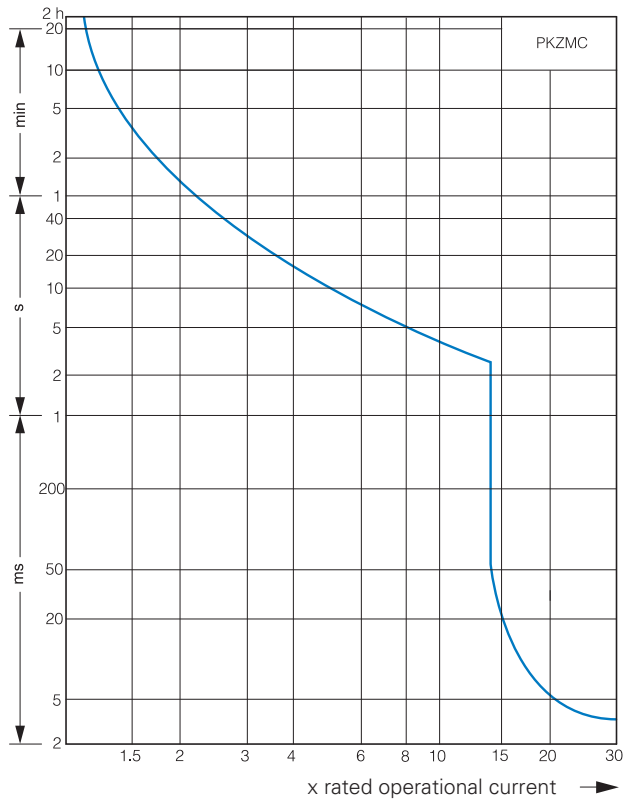
	Circuit-breakers/ compact starters	length	Unit width	Part no. Article no.	Std. pack	Notes
	Number	mm	mm			
Three-phase commoning links, incoming unit via terminals 1, 3, and 5						
Finger- and back-of-hand-proof, short-circuit proof, $U_e = 690V$, $I_u = 63A$ Can be extended through rotated installation						
For PKZMC-... without side-mounted auxiliary contacts or voltage releases						
	2	90	45	B3.0/2-PKZ0 063961	10 off	For parallel feeding of multiple motor-protective circuit-breakers on terminals 1, 3, and 5
	3	135	45	B3.0/3-PKZ0 232289	10 off	
	4	180	45	B3.0/4-PKZ0 063960	10 off	
	5	225	45	B3.0/5-PKZ0 232290	10 off	
For motor-protective circuit-breakers with one auxiliary contact or trip-indicating auxiliary contact each fitted to right side						
	2	99	45 + 9	B3.1/2-PKZ0 044945	10 off	For parallel feeding of multiple motor-protective circuit-breakers on terminals 1, 3, and 5
	3	153	45 + 9	B3.1/3-PKZ0 044946	10 off	
	4	207	45 + 9	B3.1/4-PKZ0 044947	10 off	
	5	261	45 + 9	B3.1/5-PKZ0 044948	10 off	
For PKZMC-... with one auxiliary contact or trip-indicating auxiliary contact each fitted to right side, or one voltage release fitted on left side						
	2	108	45 + 18	B3.2/2-PKZ0 063963	10 off	For parallel feeding of multiple motor-protective circuit-breakers on terminals 1, 3, and 5
	4	234	45 + 18	B3.2/4-PKZ0 063959	10 off	
Shroud for unused terminals						
Protection against direct contact. For covering unused terminals on three-phase commoning link B3...-PKZ0						
	—	—	—	H-B3-PKZ0 032721	20 off	—
Incoming terminals						
	—	—	—	BK25/3-PKZ0 032720	5 off	For three-phase commoning link, protected against accidental contact, $U_e = 690V$, $I_u = 63A$ For conductor cross-sections: 2.5 – 25 mm ² stranded 2.5 – 16 mm ² flexible with ferrule AWG 14 – 6, usable on terminals 1, 3, and 5

Shunt release, undervoltage release

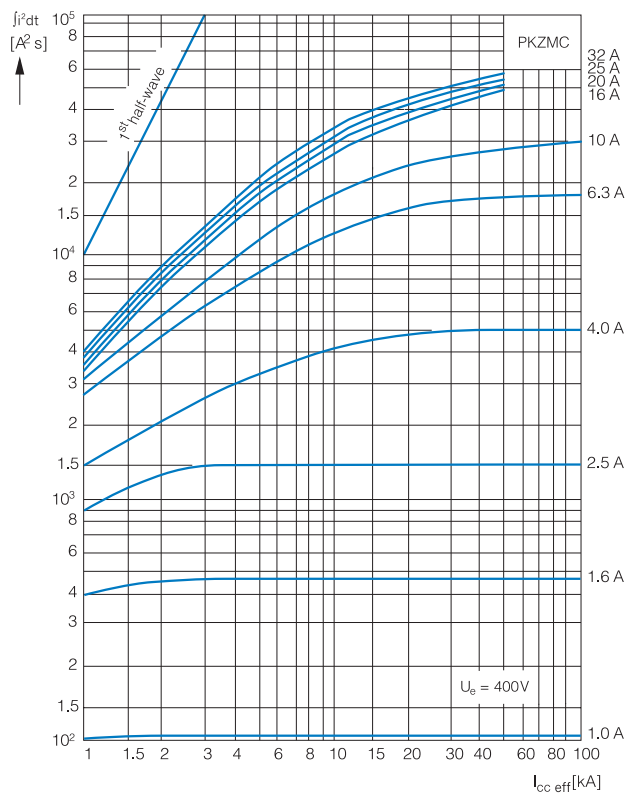
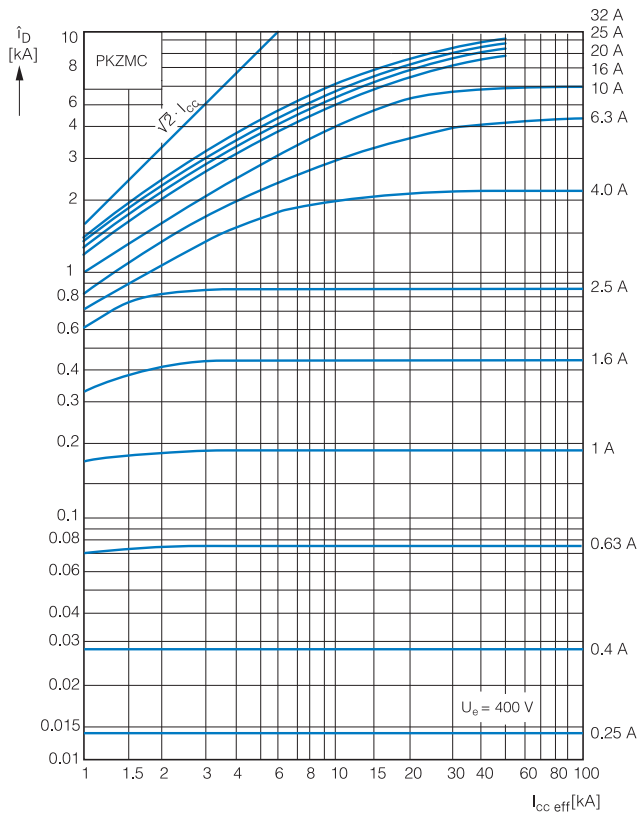
AC	A-PKZ0(...)	Std. pack	U-PKZ0(...)	Std. pack
	Article no. ¹⁾		Article no. ¹⁾	
Standard voltage				
24V 50Hz	073181	2 off	073129	2 off
110V 50Hz	073184	2 off	073132	2 off
220V 50Hz	073186	2 off	073134	2 off
230V 50Hz	073187	2 off	073135	2 off
380V 50Hz	073189	2 off	073137	2 off
Non-standard voltages not covered by above standard voltages²⁾				
... V 50Hz(24 – 500V)	982165	2 off	982162	2 off
... V 60Hz(24 – 600V)	982166	2 off	982163	2 off
DC				
Standard voltage				
24V DC	073200	2 off	–	
110V DC	073203	2 off	–	

- Notes**
- 1) The part number for ordering consists of the basic part number and the actuating voltage.
 - 2) For non-standard voltages, specify the required actuating voltage within the indicated range (... - ... V). Minimum order quantity is 10 units.

Motor-protective circuit breaker PKZMC tripping characteristics



Let-through characteristics, motor-protective circuit-breaker



Circuit-breaker switching capacity from serial no. 04

Rated uninterrupted current I_u

Rated conditional short-circuit current I_q IEC/EN60947-4-1

Rated ultimate short-circuit breaking capacity I_{cu} } IEC/EN 60947-2

Rated breaking capacity I_{cs}

	230V				400V				440V			
I_u A	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾
PKZMC, With type "1" and "2" coordination												
0.16 - 1	65	65	65	N	65	65	65	N	65	65	65	N
1.6	65	65	65	N	65	65	65	N	65	65	65	N
2.5	65	65	65	N	65	65	65	N	65	65	65	N
4	65	65	65	N	65	65	65	N	65	65	65	N
6.3	65	65	65	N	16	16	8	50	6	6	3	50
10	16	16	8	50	16	16	8	50	6	6	3	50
12	16	16	8	50	16	16	8	50	6	6	3	50
16	16	16	8	50	16	16	8	50	6	6	3	50
20	12	12	6	50	12	12	6	50	6	6	3	50
25	12	12	6	50	12	12	6	50	6	6	3	50
32	12	12	6	50	12	12	6	50	6	6	3	50
PKZMC + CL-PKZO												
0.16 - 1				N				N				N
1.6				N				N				N
2.5				N				N				N
4				N				N				N
6.3				N				N				N
10				N				N				N
12				N				N				N
16				N				N				N
20				N				N				N
25				N				N				N
32				N				N				N
PKZMC + 2 CL-PKZO												
0.16 - 1				N				N				N
1.6				N				N				N
2.5				N				N				N
4				N				N				N
6.3				N				N				N
10				N				N				N
12				N				N				N
16				N				N				N
20				N				N				N
25				N				N				N
32				N				N				N

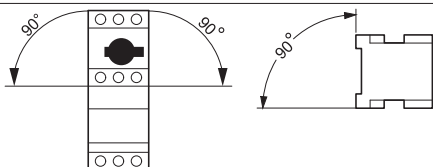
Notes

No upstream protective device required, as it is the autoprotected range (100/150 kA)

1) Required back-up fuse if the short-circuit current exceeds the device's rated conditional short-circuit current ($I_{cc} > I_q$).

N Not necessary

Technical data

PKZMC-...			
General			
Standards		IEC/EN 60947, GB14048	
Climatic proofing		Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30	
Ambient temperature	Storage	°C	-25...80
	Open	°C	-25...60
	Encapsulated	°C	-25...40
Built-in position			
Direction of incoming supply		Any	
Degree of protection	Device	IP20	
	Terminals	IP00	
Contact protection to EN 50274		Finger- and back-of-hand proof	
Shock resistance, half-sinusoidal shock, 10 ms to IEC 60068-2-27		g	25
Installation altitude		m	2000
Terminal capacity	Solid	mm ²	1 × (1 – 6) 2 × (1 – 6)
		mm ²	1 × (1 – 6) 2 × (1 – 6)
	Solid or stranded	AWG	18 – 10
Terminal screw tightening torque			
Main conductors		Nm	1.7
Auxiliary conductors		Nm	1
Main contacts			
Rated impulse withstand voltage		U_{imp}	V AC 6000
Overvoltage category/pollution degree			III/3
Rated operational voltage		U_e	V AC 690
Rated uninterrupted current = rated operational current		$I_u = I_e$	A 32 or current setting of the overcurrent release
Rated frequency		Hz	40 – 60
Heat dissipation (3 pole at operating temperature)		W	6
Lifespan, mechanical		Operations	× 10 ⁶ 0.05
Lifespan, electrical (AC-3 at 400 V)		Operations	× 10 ⁶ 0.05
Maximum operating frequency		Operations/h	Ops/h 40
Short-circuit rating			
AC		See Page 75	
DC		kA	60 (Up to PKZMC-16) 40 (PKZMC-20 to PKZMC-32)
Motor switching capacity	AC-3 (up to 690 V)	A	32
	DC-5 (up to 250 V)	A	25 (3 contacts in series)
Trip blocks			
Temperature compensation			
To IEC/EN 60947, VDE 0660		°C	-5...40
Operating range		°C	-25...60
Temperature compensation residual error for T > 60°C		%/K	≤ 0.25
Setting range of overload releases		× I_u	0.6 – 1
Fixed value of short-circuit releases		× I_u	14
Short-circuit releases tolerance		%	± 20
Phase-failure sensitivity		IEC/EN 60947-4-1, VDE0660 Part102	

Technical data

			NHI...PKZ0	NHI-E...PKZ0	VHI...PKZ0	AGM
Auxiliary contacts						
Rated impulse withstand voltage	U_{imp}	V AC	6000	4000	4000	6000
Overvoltage category/pollution degree			III/3	III/3	III/3	III/3
Rated operational voltage	U_e	V AC	500	440	440	500
	U_e	V DC	250	250	250	250
Safe isolation according to EN 61140						
Between auxiliary contacts and main contacts		V AC	690	690	690	690
Rated operational current						
AC-15						
220-240 V	I_e	A	3.5	1	1	3.5
380-415 V	I_e	A	2	–	–	2
440-500 V	I_e	A	1	–	–	1
DC-13 L/R ≤ 100 ms						
24 V	I_e	A	2	2	2	2
60 V	I_e	A	1.5	–	–	1.5
110 V	I_e	A	1	–	–	1
220 V	I_e	A	0.25	–	–	0.25
Durability						
Lifespan, mechanical	Operations	$\times 10^6$	0.1	0.1	0.1	0.01
Lifespan, electrical	Operations	$\times 10^6$	0.05	0.1	0.1	0.05
Control circuit reliability (at $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA)	Fault probability	λ	< one failure in 100 million operations			
Interlocked opposing contacts			Yes	–	–	–
Short-circuit rating without welding						
Fuseless			FAZ-B4/1-HI	–	–	FAZ-B4/1-HI
Fuse		A gG/gL	10	10	10	10
Terminal capacity						
Solid or flexible conductor with ferrule		mm ²	0.75 – 2.5	0.75 – 1.5	0.75 – 1.5	0.75 – 2.5
Solid or stranded		AWG	18 – 14	18 – 16	18 – 16	18 – 14

Technical data

U-PKZ...

Undervoltage releases

Conductor cross-sections	Solid or flexible conductor with ferrule	mm ²	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
	Solid or stranded	AWG	1 × (18 – 14) 2 × (18 – 14)

Main contacts

Rated operational voltage		U _e	V AC	42 – 480
Rated operational voltage		U _e	V DC	24 – 250
Pick-up voltage			× U _s	0.85 – 1.1
Drop-out voltage			× U _s	0.7 – 0.35
Power consumption	AC	Pick-up	VA	5
	AC	Holding	VA	3

Technical data

A-PKZ...

Shunt releases

Conductor cross-sections	Solid or flexible conductor with ferrule	mm ²	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
	Solid or stranded	AWG	1 × (18 – 14) 2 × (18 – 14)

Main contacts

Rated operational voltage		U _e	V AC	42 – 480
Rated operational voltage		U _e	V DC	24 – 250
Range of operational voltage	AC		× U _s	0.7 – 1.1
	DC (intermittent operation 5 s)		× U _s	0.7 – 1.1
Power consumption				
AC		Pick-up	VA	5
		Holding	VA	3
DC		Pick-up	W	3
		Holding	W	3

1- and 2-pole-connected PKZMC with AC and DC

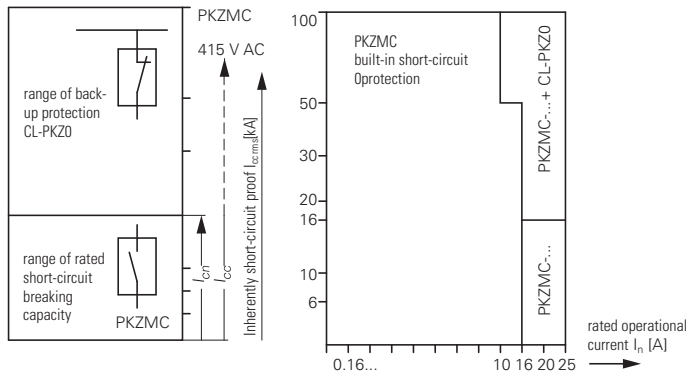


Protection of PVC-insulated cables against thermal overload on short-circuits

The table specifies which minimum conductor cross-sections are protected by motor-protective circuit-breaker PKZMC up to their rated conditional short-circuit current I_q

Min. cross-section protected					Device
380 – 415 V, 50 Hz, Cu mm ²					Part no.
4	2.5	1.5	1	0.75	PKZMC-0.16
					⋮
					PKZMC-6.3
					PKZMC-10
					PKZMC-16
					PKZMC-20
					PKZMC-25
					PKZMC-32
					PKZMC-16
					PKZMC-25
					PKZMC-32
					PKZMC-40
					PKZMC-50
					PKZMC-58
					PKZMC-63

Diagram of back-up protection by PKZ(M)

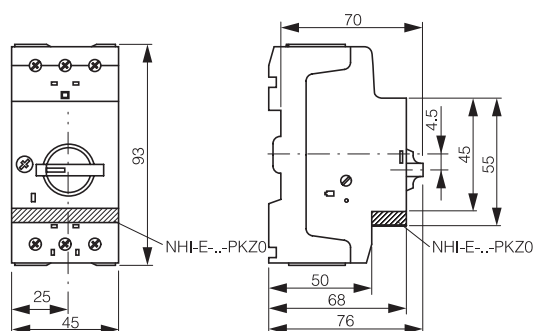


4.10

Motor protective circuit breaker PKZMC Dimensions

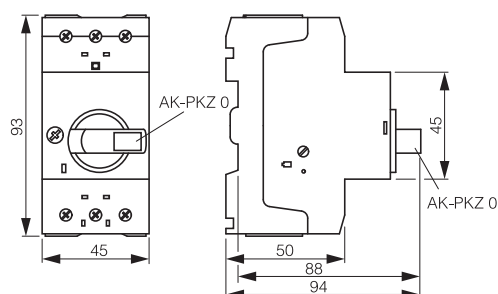
Motor-protective circuit-breaker

PKZMC-...(+NHI-E...-PKZ0)



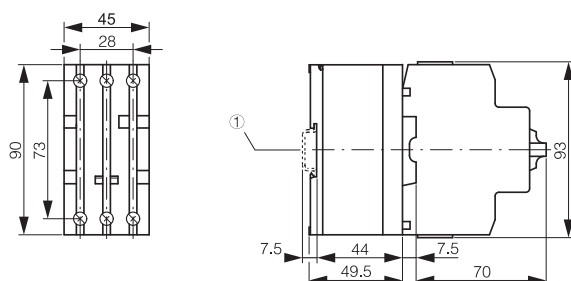
Motor-protective circuit-breakers with lockable rotary handles

PKZMC-...+AK-PKZ0



Current limiters

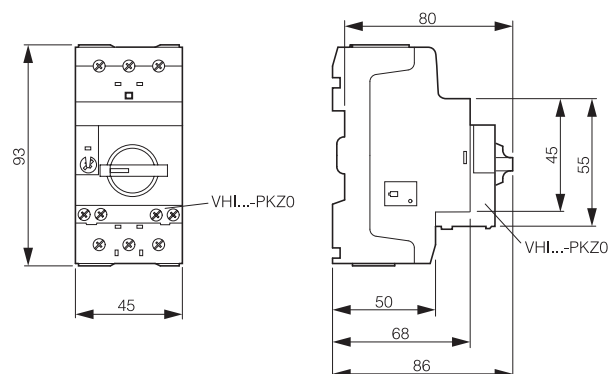
CL-PKZ...



① IEC/EN 60715 Standard rail

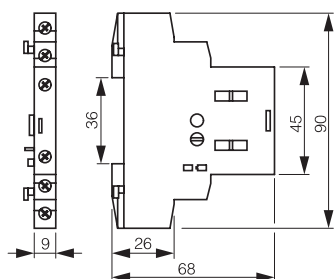
Motor-protective circuit-breakers with early-make auxiliary contacts

PKZMC-...+VHI-...-PKZ0



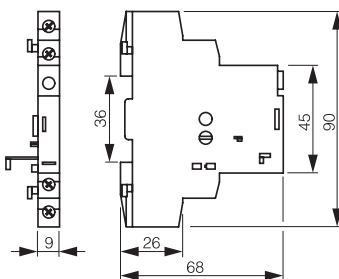
Standard auxiliary contacts

NHI...-PKZ0



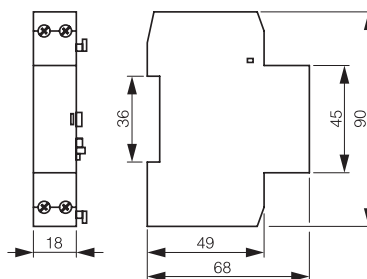
Trip indicators

AGM2...-PKZ0



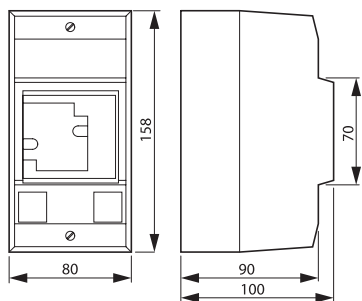
Undervoltage release

U/A-PKZ0

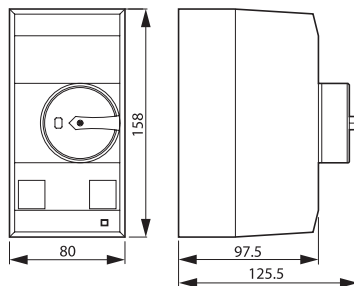


Insulated enclosures for surface mounting

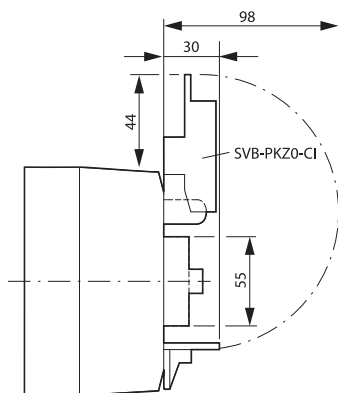
CI-PKZ0



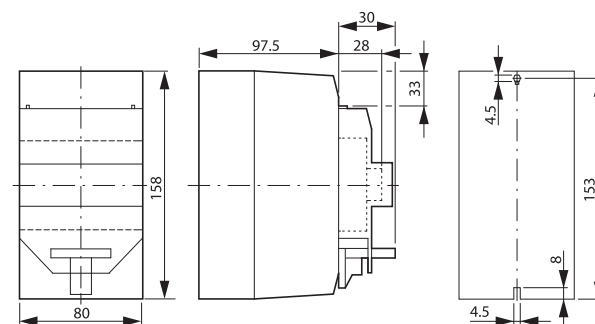
CI-PKZ0-G(R)(V)



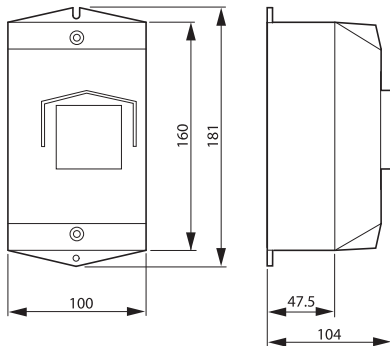
CI-PKZ0-G(R)(V)
+SVB-PKZ0-CI



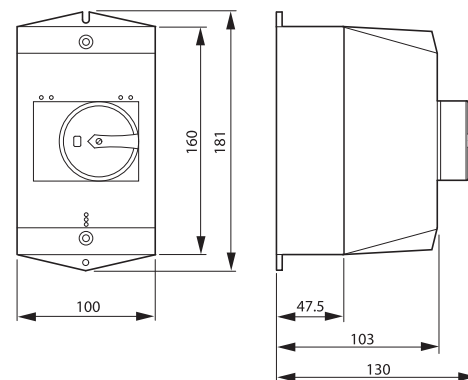
Drilling dimensions
CI-PKZ0...



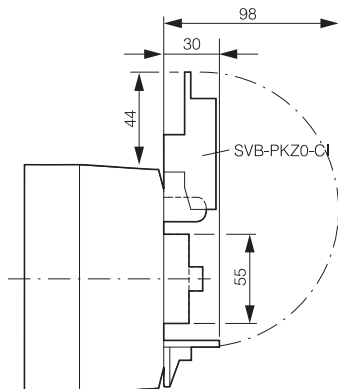
CI-K2-PKZ0



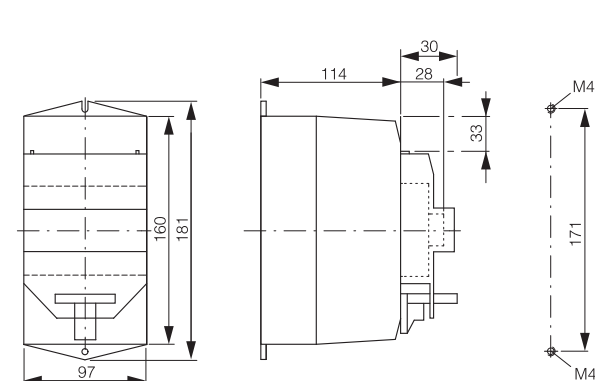
CI-K2-PKZ0G(R)(V)



CI-K2-PKZ0-G(R)(V)
+SVB-PKZ0-CI



Drilling dimensions
CI-K2-PKZ0...

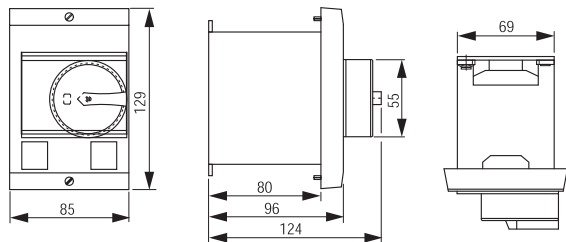


4.10

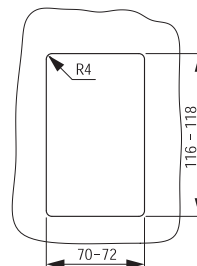
Motor protective circuit breaker PKZMC Dimensions

Insulated enclosures for flush mounting

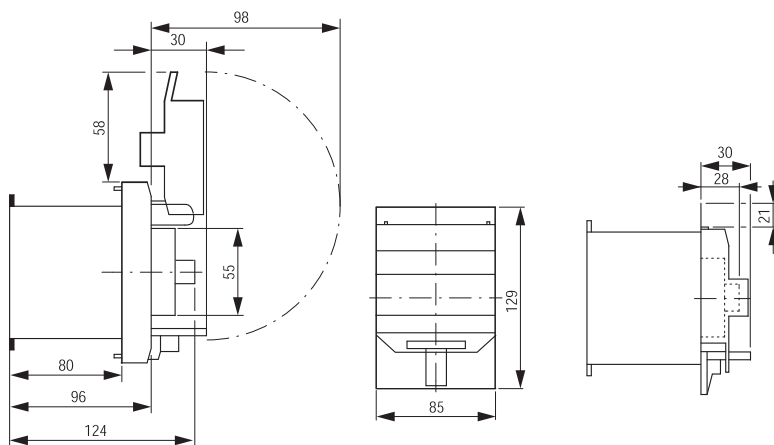
E-PKZ0
E-PKZ0-G(R)



Mounting aperture
E-PKZ0...

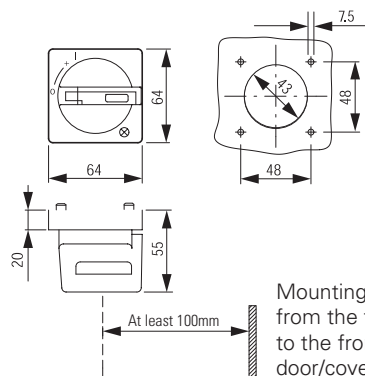


E-PKZ0-G(R)+SVB-PKZ0-E



Door coupling handles

PKZ0-XH



Mounting depth: 100 to 240 mm
from the top edge of the top-hat rail
to the front edge of the cabinet
door/cover

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