

Motor starter combinations

Depending on the combination of motor-protective circuit-breaker and contactor a motor starter can be coordination type "1" or type "2". With both types the possible short-circuit is safely interrupted. The maximum operational continuity is obtained by starters with type "2" coordination as they can be directly re-switched on after the cause of the short-circuit has been removed.



Motor starter combinations
 Motor starters up to 1000 A
 Tested coordination type "1" and "2"
 starters offer the highest safety
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xStart Motorstarters
 Complete DOL or reversing starters up to 32 A

- Pre-mounted starters minimise the wiring time.
- "Plug & Play" with starters on busbar adapters
- Suitable design for high value systems

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easyConnect SmartWire
 Plug-in control wiring system

- SmartWire replaces the control wiring and the I/O level in the PLC
- The use of standard devices from the xStart range guarantees a high flexibility and reduces stock costs
- The use of wiring links eliminates wiring errors

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***Conditions for fulfilling type "1" coordination (IEC/EN 60947-4-1)**

- The stated short-circuit current I_q must be safely interrupted.
- In the event of a short-circuit, the starter must not present a danger to persons and equipment.
- The starter does not have to be usable for continued use without repairs or parts replacements.
- Damage to the starter or its components is permissible.

Conditions for fulfilling type "2" coordination (IEC/EN 60947-4-1)

- The stated short-circuit current I_q must be safely interrupted.
- In the event of a short-circuit, the starter must not present a danger to persons and equipment.
- The starter must be suitable for continued use.
- No damage may occur to the starter – with the exception of welding of the contactor contacts – provided they can be easily separated (e.g. with a screwdriver) without any significant deformation.



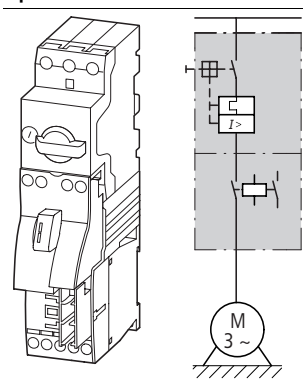
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Complete units MSC-R	9/34		

Motor starter actuating voltage
230 V 50 Hz
Part no.
Article no.
Price
see price list

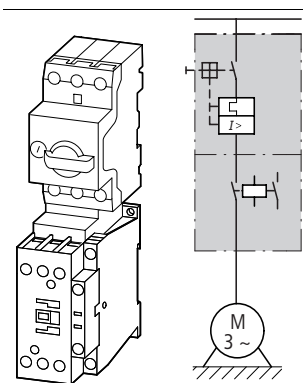
Motor starter actuating voltage
24 V DC
Part no.
Article no.
Price
see price list

Contact sequence	Motor ratings		Setting range		Coord.
	Motor rating	Rated operational current	Rated short-circuit current	Overload releases	
	AC-3 380 V 400 V 415 V	400 V	380 – 415 V		
P	I_e	I_q	I_r	I_m	
kW	A	kA	A	A	

Complete devices MSC-D



0.06	0.21	150	0.16...0.25	3.5	„1“, „2“	MSC-D-0,25-M7(230V50HZ) 281925
0.09	0.31	150	0.25...0.4	5.6		MSC-D-0,4-M7(230V50HZ) 281926
0.12 0.18	0.41 0.6	150	0.4...0.63	8.82		MSC-D-0,63-M7(230V50HZ) 281927
0.25	0.8	150	0.63...1	14		MSC-D-1-M7(230V50HZ) 281929
0.37 0.55	1.1 1.5	150	1...1.6	22.4	„1“	MSC-D-1,6-M7(230V50HZ) 283140
0.75	1.9	150	1.6...2.5	35		MSC-D-2,5-M7(230V50HZ) 283142
1.1 1.5	2.6 3.6	150	2.5...4	56		MSC-D-4-M7(230V50HZ) 283143
2.2	5	150	4...6.3	88.2		MSC-D-6,3-M7(230V50HZ) 283145
3	6.6	150	6.3...10	140	„1“, „2“	MSC-D-10-M7(230V50HZ) 283146
4	8.5	150	6.3...10	140		MSC-D-10-M9(230V50HZ) 283147
5.5	11.3	50	8...12	168		MSC-D-12-M12(230V50HZ) 283148
7.5	15.2	50	10...16	224		MSC-D-16-M15(230V50HZ) 100414
3 4	6.6 8.5	50	6.3...10	140	„1“, „2“	MSC-D-10-M17(230V50HZ) 101045
5.5	11.3	50	8...12	168		MSC-D-12-M17(230V50HZ) 101046
7.5	15.2	50	10...16	224		MSC-D-16-M17(230V50HZ) 283150
11	21.7	50	20...25	350		MSC-D-25-M25(230V50HZ) 283151
15	29.3	50	25...32	448		MSC-D-32-M32(230V50HZ) 283152



Std. pack	Motor-protective circuit-breakers	Contactor	DOL starter wiring set	Notes
			Mechanical connection element and electrical electric contact module	

1 off	PKZM0-0,25	DILM7-...	PKZM0-XDM12	The direct-on-line starter (complete unit) consists of a PKZM0 motor-protective circuit-breaker and a DILM contactor. With the adapter-less top-hat rail mounting of starters up to 15 A, only the motor-protective circuit-breaker on the top-hat rail requires an adapter. The contactors are provided with mechanical support via a mechanical connection element. Control wire guide with max. 6 conductors up to 2.5mm external diameter or 4 conductors up to 3.5mm external diameter. From 16 A, the motor-protective circuit-breaker and contactor are mounted on the top-hat rail adapter plate. The connection of the main circuit between PKZ and contactor is established with electrical contact modules. When using the auxiliary contacts DILA-XHIT... (→ 5/29) the plug-in electrical connector can be removed without removing the front mounting auxiliary contacts.
	PKZM0-0,4			
	PKZM0-0,63			
	PKZM0-1			
	PKZM0-1,6			
	PKZM0-2,5			
	PKZM0-4			
	PKZM0-6,3			
	PKZM0-10			
	PKZM0-10	DILM9-...		
	PKZM0-12	DILM12-...		
	PKZM0-16	DILM15-...		
1 off	PKZM0-10	DILM17-...	PKZM0-XDM32	
	PKZM0-12	DILM17-...		
	PKZM0-16	DILM17-...		
	PKZM0-25	DILM25-...		
	PKZM0-32	DILM32-...		

Further information
Technical data PKZM0
Accessories PKZ
Technical data DILM
DILM accessories

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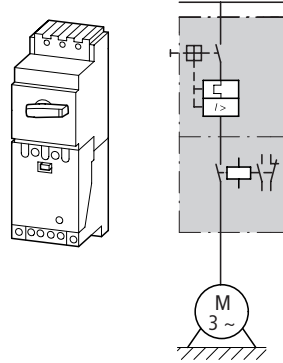
PKZ2/ZM...

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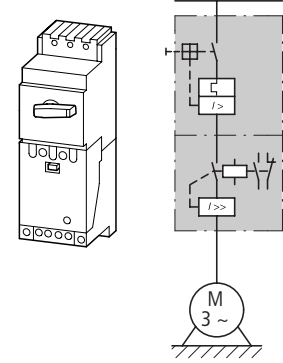
Motor ratings		Setting range				Coord.	
Motor rating	Rated operational current 400 V	Rated operational current 500 V	Rated short-circuit current 380 - 415 V	Rated short-circuit current 500 V	Overload releases	Short-circuit releases	
AC-3							
380 V 400 V 415 V	500 V						
<i>P</i>	<i>P</i>	<i>I_e</i>	<i>I_e</i>	<i>I_q</i>	<i>I_q</i>	<i>I_r</i>	<i>I_m</i>
kW	kW	A	A	kA	kA	A	A

PKZ2 compact starters



0.18	0.25	0.8	0.6	100	100	0.6...1	8...14	„1“
0.25	0.37		0.9					
0.37	0.55	1.1	1.2	100	100	1...1.6	14...22	
0.55	0.75	1.5	1.5					
0.75	1.1	1.9	2.1	100	100	1.6...2.4	20...35	
1.1	1.5	2.65	2.9	100	100	2.4...4	35...55	
1.5		3.6						
2.2	2.2	5	4	100	100	4...6	50...80	
3	4	6.6	6.8	100	7	6...10	80...140	
4	5.5	8.5	9					
5.5	7.5	11.3	12.1	100	7	10...16	130...220	
7.5		15.2						
11	11	21.7	17.4	30	7	16...25	200...350	
15	15	23.4	23.4					
15	18.5	29.3	28.9	30	7	24...32	275...425	
18.5	22	36	33	30	7	32...40	350...500	

PKZ2 high-capacity compact starters



0.18	0.25	0.8	0.6	100	100	0.6...1	8...14	„2“
0.25	0.37		0.9					
0.37	0.55	1.1	1.2	100	100	1...1.6	14...22	
0.55	0.75	1.5	1.5					
0.75	1.1	1.9	2.1	100	100	1.6...2.4	20...35	
1.1	1.5	2.6	2.9	100	100	2.4...4	35...55	
1.5		3.6						
2.2	2.2	5	4	100	100	4...6	50...80	
3	4	6.6	6.8	100	100	6...10	80...140	
4	5.5	8.5	9					
5.5	7.5	11.3	12.1	100	100	10...16	130...220	
7.5		15.2						
11	11	21.7	17.4	100	100	16...25	200...350	
15	15	23.4	23.4					
15	18.5	29.3	28.9	100	100	24...32	275...425	
18.5	22	36	33	100	100	32...40	350...500	

PKZ2/ZM...

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Part no. Article no.	Price see price list	Std. pack	Notes	
PKZ2/ZM-1/SE1A/11(230V50HZ) 063364		1 off	The compact starters consist of a motor-protective circuit-breaker which features a plug-in trip block and an attached contact module with the same matching profile. The devices are prefitted to a clip plate and can be snap fitted, as a unit, centrally onto one or as two IEC/EN 60715 conform top-hat rails. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. <i>I_q</i> = Rated conditional short-circuit current.	
PKZ2/ZM-1,6/SE1A/11(230V50HZ) 063372				
PKZ2/ZM-2,4/SE1A/11(230V50HZ) 063382				
PKZ2/ZM-4/SE1A/11(230V50HZ) 063392				
PKZ2/ZM-6/SE1A/11(230V50HZ) 063402				
PKZ2/ZM-10/SE1A/11(230V50HZ) 063412				
PKZ2/ZM-16/SE1A/11(230V50HZ) 063422				
PKZ2/ZM-25/SE1A/11(230V50HZ) 063432				
PKZ2/ZM-32/SE1A/11(230V50HZ) 063442				
PKZ2/ZM-40/SE1A/11(230V50HZ) 063452				
PKZ2/ZM-1/S(230V50HZ) 063472		1 off		The high-capacity compact starter consists of a motor-protective circuit-breaker and an attached contact module with the same matching profile. The devices are prefitted to a clip plate and can be snap fitted, as a unit, centrally onto one or as two IEC/EN 60715 conform top-hat rails. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. <i>I_q</i> = Rated conditional short-circuit current.
PKZ2/ZM-1,6/S(230V50HZ) 063482				
PKZ2/ZM-2,4/S(230V50HZ) 063492				
PKZ2/ZM-4/S(230V50HZ) 063502				
PKZ2/ZM-6/S(230V50HZ) 063512				
PKZ2/ZM-10/S(230V50HZ) 063522				
PKZ2/ZM-16/S(230V50HZ) 063532				
PKZ2/ZM-25/S(230V50HZ) 063542				
PKZ2/ZM-32/S(230V50HZ) 063552				
PKZ2/ZM-40/S(230V50HZ) 063562				

DOL starters

DOL starters



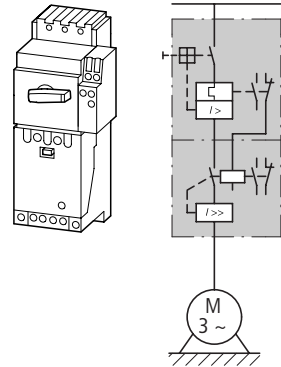
PKZ2/S...

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Motor data		Rated operating current				Rated short-circuit current		Setting range	
AC-3								Overload release	Short-circuit release
380 V	500 V	400 V	500 V	380 ... 415 V	500 V			I_r	I_{rm}
400 V								A	A
415 V									
P	P	I_e	I_e	I_q	I_q				
kW	kW	A	A	kA	kA				

PKZ2 high-capacity compact starters
with and without manual reset,
type "2" coordination



0,18	0,25	0,6	0,6	100	100	0,6 – 1	8 – 14
0,25	0,37	0,8	0,9	100	100		
0,37	0,55	1,1	1,2	100	100	1 – 1,6	14 – 22
0,55	0,75	1,5	1,5	100	100		
0,75	1,1	1,9	2,1	100	100	1,6 – 2,4	20 – 35
1,1	1,5	2,6	2,9	100	100	2,4 – 4	35 – 55
1,5	–	3,6	–	100	–		
2,2	2,2	5	4,0	100	100	4 – 6	50 – 80
–	3	–	5,3	–	100		
3	4	6,6	6,8	100	100	6 – 10	80 – 140
4	5,5	8,5	9	100	100		
5,5	7,5	11,3	12,1	100	100	10 – 16	130 – 220
7,5	–	15,2	–	100	–		
11	11	21,7	17,4	100	100	16 – 25	200 – 350
–	15	–	23,4	–	100		
15	18,5	29,3	28,9	100	100	24 – 32	275 – 425
18,5	22	36	33	100	100	32 – 40	350 – 500

PKZ2/S ...

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Basic unit Part no.	Trip block Part no.	Price Sum of module prices AC standard coil	Notes Std. pack
PKZ2/S(230V50HZ) 063572	ZMR-1-PKZ2 033950		1 off
PKZ2/S(230V50HZ) 063572	ZMR-1,6-PKZ2 033952		
PKZ2/S(230V50HZ) 063572	ZMR-2,4-PKZ2 033955		
PKZ2/S(230V50HZ) 063572	ZMR-4-PKZ2 033957		
PKZ2/S(230V50HZ) 063572	ZMR-6-PKZ2 033966		
PKZ2/S(230V50HZ) 063572	ZMR-10-PKZ2 033967		
PKZ2/S(230V50HZ) 063572	ZMR-16-PKZ2 033968		
PKZ2/S(230V50HZ) 063572	ZMR-25-PKZ2 033969		
PKZ2/S(230V50HZ) 063572	ZMR-32-PKZ2 033973		
PKZ2/S(230V50HZ) 063572	ZMR-40-PKZ2 033975		

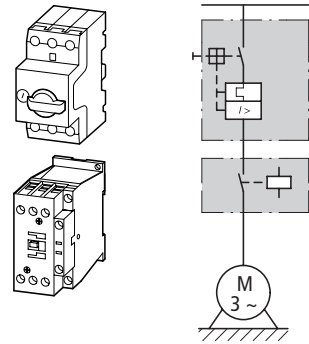
The motor-starter combinations consists of the motor-protective circuit-breakers and high-capacity contact modules which have matching profiles. They conform to IEC/EN 60947-4-1 or VDE 0660 part 102. I_q = rated conditional short-circuit current.

The combinations can be operated with or without manual reset. In the Manual position, the combination is blocked against automatic restarting. It must be reset locally. In the Auto position, the combination automatically switches on again when the bimetallic elements have cooled down.



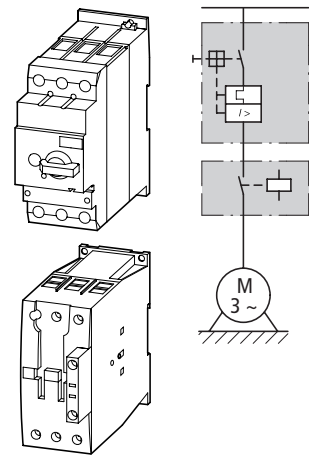
Motor ratings	Rated short-circuit current 380 – 415 V, Type "1" coordination			Setting range	
	Rated operational current 400 V	Rated short-circuit current 380 – 415 V, Type "2" coordination	Rated short-circuit current 380 – 415 V, Type "2" coordination	Overload releases	Short-circuit releases
AC-3 380 V 400 V 415 V					
<i>P</i>	<i>I_e</i>	<i>I_q</i>	<i>I_q</i>	<i>I_r</i>	<i>I_{rm}</i>
kW	A	kA	kA	A	A

Modules PKZM0 and DILM



0.06	0.21	150	50	0.16...0.25	3.5
0.09	0.31	150	50	0.25...0.4	5.6
0.12	0.41	150	50	0.4...0.63	8.82
0.18	0.6	150	50	0.4...0.63	8.82
0.25	0.8	150	50	0.63...1	14
0.37	1.1	150	50	1...1.6	22.4
0.55	1.5	150	50	1...1.6	22.4
0.75	1.9	150	50	1.6...2.5	35
1.1	2.6	150	50	2.5...4	56
1.5	3.6	150	50	2.5...4	56
2.2	5	150	50	4...6.3	88.2
3	6.6	150	50	6.3...10	140
4	8.5	150	50	6.3...10	140
–	11.3	50	50	8...12	168
7.5	15.2	50	50	10...16	224
11	21.7	50	50	20...25	350
–	29.3	50	50	25...32	448

Modules PKZM4 and DILM



5.5	11.3	50	50	10...16	224
7.5	15.2	50	50	10...16	224
11	21.7	50	50	20...25	350
15	29.3	50	50	25...32	448
18.5	36	50	50	32...40	560
22	41	50	50	40...50	700
30	55	50	50	50...58	812
34	63	50	50	55...65	882

Motor-protective circuit-breakers Part no.	Contactor type "1" coordination	Contactor type "2" coordination	Notes										
PKZM0-0,25	DILM7-...(...)	DILM7-...(...)	<p>The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. <i>I_q</i> = Rated conditional short-circuit current.</p> <p>For further information</p> <table border="0"> <tr> <td>Technical data PKZM0</td> <td>→ Chapter 8</td> </tr> <tr> <td>Accessories PKZ</td> <td>→ 8/8</td> </tr> <tr> <td>Technical data DILM</td> <td>→ Chapter 5</td> </tr> <tr> <td>Further actuating voltages</td> <td>→ 5/53</td> </tr> <tr> <td>DILM accessories</td> <td>→ 5/42</td> </tr> </table>	Technical data PKZM0	→ Chapter 8	Accessories PKZ	→ 8/8	Technical data DILM	→ Chapter 5	Further actuating voltages	→ 5/53	DILM accessories	→ 5/42
Technical data PKZM0	→ Chapter 8												
Accessories PKZ	→ 8/8												
Technical data DILM	→ Chapter 5												
Further actuating voltages	→ 5/53												
DILM accessories	→ 5/42												
PKZM0-0,4	DILM7-...(...)	DILM7-...(...)											
PKZM0-0,63	DILM7-...(...)	DILM7-...(...)											
PKZM0-0,63	DILM7-...(...)	DILM7-...(...)											
PKZM0-1	DILM7-...(...)	DILM7-...(...)											
PKZM0-1,6	DILM7-...(...)	DILM7-...(...)											
PKZM0-1,6	DILM7-...(...)	DILM7-...(...)											
PKZM0-2,5	DILM7-...(...)	DILM7-...(...)											
PKZM0-4	DILM7-...(...)	DILM7-...(...)											
PKZM0-4	DILM7-...(...)	DILM7-...(...)											
PKZM0-6,3	DILM7-...(...)	DILM7-...(...)											
PKZM0-10	DILM9-...(...)	DILM17-...(...)											
PKZM0-10	DILM9-...(...)	DILM17-...(...)											
PKZM0-12	DILM12-...(...)	DILM17-...(...)											
PKZM0-16	DILM17-...(...)	DILM17-...(...)											
PKZM0-25	DILM25-...(...)	DILM25-...(...)											
PKZM0-32	DILM32-...(...)	DILM32-...(...)											
PKZM4-16	DILM17-...(...)	DILM17-...(...)	<p>The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. <i>I_q</i> = Rated conditional short-circuit current.</p> <p>For further information</p> <table border="0"> <tr> <td>Technical data PKZM4</td> <td>→ Chapter 8</td> </tr> <tr> <td>Accessories PKZ</td> <td>→ 8/8</td> </tr> <tr> <td>Technical data DILM</td> <td>→ Chapter 5</td> </tr> <tr> <td>Further actuating voltages</td> <td>→ 5/54</td> </tr> <tr> <td>DILM accessories</td> <td>→ 5/42</td> </tr> </table>	Technical data PKZM4	→ Chapter 8	Accessories PKZ	→ 8/8	Technical data DILM	→ Chapter 5	Further actuating voltages	→ 5/54	DILM accessories	→ 5/42
Technical data PKZM4	→ Chapter 8												
Accessories PKZ	→ 8/8												
Technical data DILM	→ Chapter 5												
Further actuating voltages	→ 5/54												
DILM accessories	→ 5/42												
PKZM4-16	DILM17-...(...)	DILM17-...(...)											
PKZM4-25	DILM25-...(...)	DILM25-...(...)											
PKZM4-32	DILM32-...(...)	DILM32-...(...)											
PKZM4-40	DILM40(...)	DILM40(...)											
PKZM4-50	DILM50(...)	DILM50(...)											
PKZM4-58	DILM65(...)	DILM65(...)											
PKZM4-63	DILM65(...)	DILM65(...)											

DOL starters

DOL starters



Motor ratings

Motor rating

AC-3
500 V
P

kW

Rated operational
current 500 V I_e

A

Rated short-circuit
current 500 V I_q

kA

Setting range

Overload releases

 I_r

A



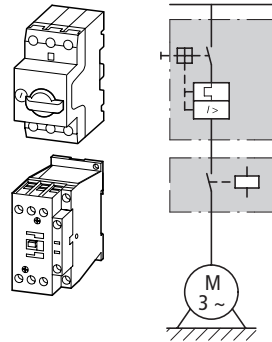
Short-circuit releases

 I_{rm}

A



Modules PKZM0 and DILM



0.06	0.17	100	0.16...0.25	3.5
0.09	0.25	100	0.25...0.4	5.6
0.12	0.33	100		
0.18	0.48	100	0.4...0.63	8.8
0.25	0.7	100	0.63...1	14
0.37	0.9	100		
0.55	1.2	100	1...1.6	22
0.75	1.5	100		
1.1	2.1	100	1.6...2.5	35
1.5	2.9	100	2.5...4	56
2.2	4	42	4...6.3	88
3	5.3	42		
4	6.8	42	6.3...10	140
5.5	9	42		
6.5	10.6	42	8...12	168
7.5	12.1	15	10...16	224
11	17.4	6	16...20	280
15	23.4	6	20...25	350
18.5	28.9	6	25...32	448

Note concerning the product

¹⁾ With CL-PKZ0, $I_q = 15$ kA.Motor-protective circuit-
breakers
Part no.Contactor type "1"
coordination
Part no.

Notes

PKZM0-0,25

DILM7-...(...)

PKZM0-0,4

DILM7-...(...)

PKZM0-0,63

DILM7-...(...)

PKZM0-1

DILM7-...(...)

PKZM0-1,6

DILM7-...(...)

PKZM0-2,5

DILM7-...(...)

PKZM0-4

DILM7-...(...)

PKZM0-6,3

DILM7-...(...)

PKZM0-10

DILM9-...(...)

PKZM0-12

DILM12-...(...)

PKZM0-16

DILM17-...(...)

PKZM0-20¹⁾

DILM25-...(...)

PKZM0-25¹⁾

DILM25-...(...)

PKZM0-32¹⁾

DILM32-...(...)

The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. I_q = Rated conditional short-circuit current.

For further information

Technical data PKZM0

Accessories PKZ

Technical data DILM

Further actuating voltages

DILM accessories

Page

→ Chapter 8



→ 8/8

→ Chapter 5

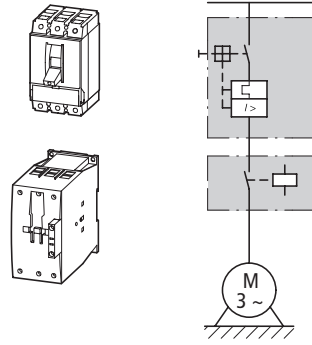
→ 5/53

→ 5/42



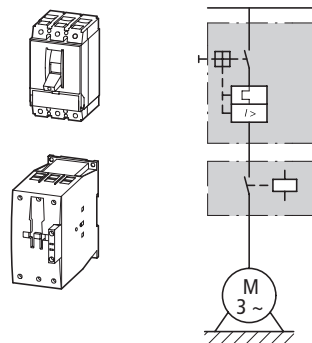
Motor ratings		Rated operational current AC-3 400 V		Rated short-circuit current 400/415 V		Setting range	
Motor rating				Overload releases	Short-circuit releases		
AC-3							
380 V 400 V 415 V							
P	I_e	I_q		I_r	I_{rm}		
kW	A	kA		A 	A 		



Modules NZM and DILM



15	29.3	50	25...32	320...448
18.5	36	50	32...40	320...560
22	41	50	40...50	400...700
30	55	50	50...63	504...882
37	68	50	63...80	640...1120
45	81	50	80...100	800...1250
55	99			
75	134	50	125...160	1280...2240
90	161	50	160...200	1600...2500
110	196			
132	231	50	175...350	350...4900
160	279			
200	349			
250	437	50	225...450	450...6300
315	544	50	275...550	550...7700
400	683	50	438...875	875...12250
450	750			
500	820			
560	947	50	700...1400	1400...19600
22	41	100	40...50	400...700
30	55	100	50...63	504...882
37	68	100	63...80	640...1120
45	81	100	80...100	800...1250
55	100	100	100...125	1000...1750
75	134	100	125...160	1280...2240
30	55	100	45...90	90...1260
37	68			
45	81			
55	100	100	70...140	140...1960
75	134			

Modules NZM and DILM



Motor ratings		Rated operational current		750 V DC	Setting range	
Motor rating					Overload releases	Short-circuit release
AC-3		500 V	525 V			
500 V DC						
P	I_e	I_e	I_q		I_r	I_i
kW	A	A	kA		A 	A 

11	17.4	17	50	16...20	350...350
15	23.4	22.5	50	20...25	350...350
18.5	28.9	28	50	25...32	320...448
22	33	32	50	30...40	320...560
30	44	43	50	40...50	400...700
37	54	54	50	50...63	504...882
45	65	64	50	63...80	640...1120
55	79	78			
75	107	106	50	100...125	1000...1750
90	129	127	50	125...160	1280...2240
30	44	43	50	45...90	90...1260
37	54	54			
45	65	64			
55	79	78			
75	107	106	50	70...140	140...1960
90	129	127			

Circuit-breakers	Contactor type "1" coordination	Contactor type "2" coordination	Notes
Part no.	Part no.	Part no.	

NZMN1-M32	DILM40(...)	DILM80(...)	The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform with IEC/EN 60947-4-1 or VDE 0660 Part 102. I_q = Rated conditional short-circuit current.
NZMN1-M40	DILM40(...)	DILM80(...)	
NZMN1-M50	DILM50(...)	DILM80(...)	
NZMN1-M63	DILM65(...)	DILM80(...)	
NZMN1-M80	DILM80(...)	DILM80(...)	
NZMN1-M100	DILM95(...) DILM115(...)	DILM95(...) DILM115(...)	
NZMN2-M160	DILM150(...)	DILM80(...)	
NZMN2-M200	DILM185/22(...) DILM225/22(...)	DILM185/22(...) DILM225/22(...)	
NZMN3-ME350	DILM250/22(...) DILM300/22(...) DILM400/22(...)	DILM250/22(...) DILM300/22(...) DILM400/22(...)	
NZMN3-ME450	DILM500/22(...)	DILM500/22(...)	
NZMN4-ME550	DILM580/22(...)		
NZMN4-ME875	DILM650/22(...) DILM750/22(...) DILM820/22(...)		
NZMN4-ME1400	DILM1000/22(...)		
NZMH2-M50	DILM80(...)	DILM80(...)	
NZMH2-M63	DILM80(...)	DILM80(...)	
NZMH2-M80	DILM80(...)	DILM80(...)	
NZMH2-M100	DILM95(...)	DILM95(...)	
NZMH2-M125	DILM115(...)	DILM115(...)	
NZMH2-M160	DILM150(...)	DILM80(...)	
NZMH2-ME90	DILM80(...) DILM80(...) DILM95(...)	DILM80(...)	
NZMH2-ME140	DILM115(...) DILM150(...)	DILM115(...) DILM80(...)	

Circuit-breakers	Contactor type "1" coordination	Contactor type "2" coordination	Notes
------------------	---------------------------------	---------------------------------	-------

NZMH2-M20	DILM40(...)	DILM80(...)	The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform with IEC/EN 60947-4-1 or VDE 0660 Part 102. I_q = Rated conditional short-circuit current.
NZMH2-M25	DILM40(...)	DILM80(...)	
NZMH2-M32	DILM40(...)	DILM80(...)	
NZMH2-M40	DILM40(...)	DILM80(...)	
NZMH2-M50	DILM80(...)	DILM80(...)	
NZMH2-M63	DILM80(...)	DILM80(...)	
NZMH2-M80	DILM80(...)	DILM80(...)	
NZMH2-M125	DILM115(...)	DILM115(...)	
NZMH2-M160	DILM150(...)	DILM80(...)	
NZMH2-ME90	DILM80(...)	DILM80(...)	
NZMH2-ME140	DILM115(...) DILM150(...)	DILM115(...) DILM80(...)	

DOL starters

DOL starters



Motor data

Setting range

AC-3
380 V
400 V
415 V

Rated operational
current 400 V

Rated short-circuit
current 380 – 415 V

Overload releases

Short-circuit
release, non-
delayed

P
kW

I_e
A

I_q
kA

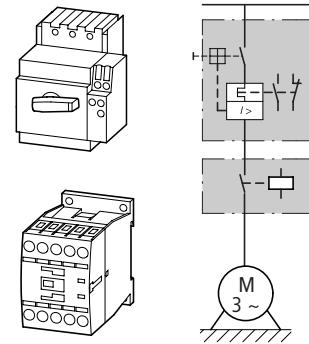
I_r
A



I_{rm}
A

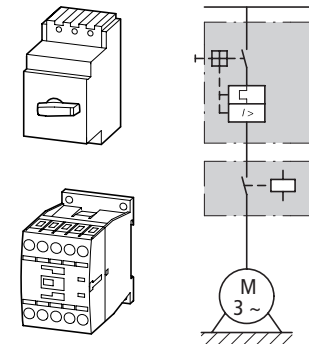


PKZ2 and DILM modules, with and without manual reset



P	I_e	I_q	I_r	I_{rm}
0.12	0.41	100	0.4 – 0.6	5 – 8
0.18	0.6	100	0.6 – 1	8 – 14
0.25	0.8	100	0.6 – 1	8 – 14
0.37	1.1	100	1 – 1.6	14 – 22
0.55	1.5	100	1 – 1.6	14 – 22
0.75	1.9	100	1.6 – 2.4	20 – 35
1.1	2.6	100	2.4 – 4	35 – 55
1.5	3.6	100	2.4 – 4	35 – 55
2.2	5.0	100	4 – 6	50 – 80
3	6.6	100	6 – 10	80 – 140
4	8.5	100	6 – 10	80 – 140
5.5	11.3	100	10 – 16	130 – 220
7.5	15.2	100	10 – 16	130 – 220
11	21.7	30	16 – 25	200 – 350
15	29.3	30	24 – 32	275 – 425
18.5	36	30	32 – 40	350 – 500

PKZ2 and DILM modules



P	I_e	I_q	I_r	I_{rm}
0.12	0.41	100	0.4 – 0.6	5 – 8
0.18	0.6	100	0.6 – 1	8 – 14
0.25	0.8	100	0.6 – 1	8 – 14
0.37	1.1	100	1 – 1.6	14 – 22
0.55	1.5	100	1 – 1.6	14 – 22
0.75	1.9	100	1.6 – 2.4	20 – 35
1.1	2.6	100	2.4 – 4	35 – 55
1.5	3.6	100	2.4 – 4	35 – 55
2.2	5.0	100	4 – 6	50 – 80
3	6.6	100	6 – 10	80 – 140
4	8.5	100	6 – 10	80 – 140
5.5	11.3	30	10 – 16	130 – 220
7.5	16	30	10 – 16	130 – 220
11	21.7	30	16 – 25	200 – 350
15	29.3	30	25 – 32	275 – 425
18.5	36	30	32 – 40	350 – 500

Basic unit	Trip block	Contactors type "1" coordination	Contactors type "2" coordination	Notes
Part no.	Part no.	Part no.	Part no.	
		For increase to $I_q = 100$ kA		
PKZ2	ZMR-0.6-PKZ2	DILM7(...)	DILM7(...)	
PKZ2	ZMR-1-PKZ2	DILM7(...)	DILM7(...)	
PKZ2	ZMR-1-PKZ2	DILM7(...)	DILM7(...)	
PKZ2	ZMR-1.6-PKZ2	DILM7(...)	DILM7(...)	
PKZ2	ZMR-1.6-PKZ2	DILM7(...)	DILM7(...)	
PKZ2	ZMR-2.4-PKZ2	DILM7(...)	DILM17(...)	
PKZ2	ZMR-4-PKZ2	DILM7(...)	DILM17(...)	
PKZ2	ZMR-4-PKZ2	DILM7(...)	DILM17(...)	
PKZ2	ZMR-6-PKZ2	DILM7(...)	DILM17(...)	
PKZ2	ZMR-10-PKZ2	DILM17(...)	DILM17(...)	
PKZ2	ZMR-10-PKZ2	DILM17(...)	DILM17(...)	
PKZ2	ZMR-16-PKZ2	DILM17(...)	DILM17(...)	
PKZ2	ZMR-16-PKZ2	DILM17(...)	DILM17(...)	
PKZ2	ZMR-25-PKZ2	DILM25(...)	DILM40(...)	
PKZ2	ZMR-32-PKZ2	DILM32(...)	DILM40(...)	
PKZ2	ZMR-40-PKZ2	DILM40(...)	DILM40(...)	
PKZ2/ZM-0.8	–	DILM7(...)	DILM7(...)	
PKZ2/ZM-1	–	DILM7(...)	DILM7(...)	
PKZ2/ZM-1	–	DILM7(...)	DILM7(...)	
PKZ2/ZM-1.6	–	DILM7(...)	DILM7(...)	
PKZ2/ZM-1.6	–	DILM7(...)	DILM7(...)	
PKZ2/ZM-2.4	–	DILM7(...)	DILM17(...)	
PKZ2/ZM-4	–	DILM7(...)	DILM17(...)	
PKZ2/ZM-4	–	DILM7(...)	DILM17(...)	
PKZ2/ZM-6	–	DILM7(...)	DILM17(...)	
PKZ2/ZM-10	–	DILM17(...)	DILM17(...)	
PKZ2/ZM-10	–	DILM17(...)	DILM17(...)	
PKZ2/ZM-16	–	DILM17(...)	DILM17(...)	
PKZ2/ZM-16	–	DILM17(...)	DILM17(...)	
PKZ2/ZM-25	–	DILM25(...)	DILM40(...)	
PKZ2/ZM-32	–	DILM32(...)	DILM40(...)	
PKZ2/ZM-40	–	DILM40(...)	DILM40(...)	

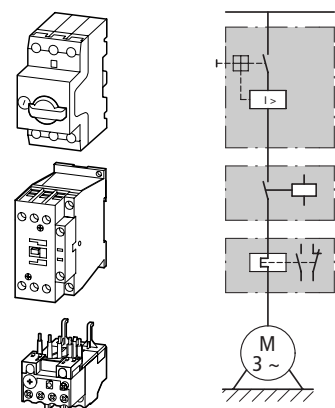
The motor-starter combination consists of motor-protective circuit-breaker and contactor modules. They conform to IEC/EN 60947-4-1 or VDE 0660 part 102. I_q = rated conditional short-circuit current.

The combinations can be operated with or without manual reset. In the Manual position, the combination is blocked against automatic restarting. They must be reset locally. In the Auto position, the combination automatically switches on again when the bimetallic elements have cooled down.



Motor ratings			Setting range	
Motor rating	Rated operational current 400 V	Rated short-circuit current 380 – 415 V	Overload releases	Short-circuit releases
AC-3 380 V 400 V 415 V				
<i>P</i>	<i>I_e</i>	<i>I_q</i>	<i>I_r</i>	<i>I_r</i>
kW	A	kA	A	A

Modules PKM0, DILM and ZB with/without automatic reset



0.06	0.21	100	0.16...0.24	3.5
0.09	0.31	100	0.24...0.4	5.6
0.12	0.41	100	0.4...0.6	8.82
0.18	0.6			
0.25	0.8	100	0.6...1	14
0.37	1.1	100	0.1...1.6	22.4
0.55	1.5			
0.75	1.9	100	1.6...2.4	35
1.1	2.6	100	2.4...4	56
1.5	3.6			
2.2	5	100	4...6	88.2
3	6.6	100	6...10	140
4	8.5			
5.5	11.3	50	8...12	168
7.5	15.2	50	10...16	224
11	21.7	50	16...24	350
15	29.3	50	20...32	448

Base unit Part no.	Contactor type "1" coordination Part no.	Overload relay type "1" coordination Part no.	Contactor type "2" coordination Part no.	Overload relay type "2" coordination Part no.	Notes
PKM0-0,25	DILM7-...(...)	ZB12-0,24	DILM7-...(...)	ZB12-0,24	The motor-starter combination consists of the motor-protective circuit-breaker (without overload function), contactor and overload relay modules. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. <i>I_q</i> = Rated conditional short-circuit current. The combinations can be operated with or without manual reset. In the manual position, the combination is blocked against automatic restarting and must be reset locally. In the auto position, the combination automatically switches on again when the bimetallic elements have cooled down.
PKM0-0,4	DILM7-...(...)	ZB12-0,4	DILM7-...(...)	ZB12-0,4	
PKM0-0,63	DILM7-...(...) DILM7-...(...)	ZB12-0,6 ZB12-0,6	DILM7-...(...) DILM7-...(...)	ZB12-0,6	
PKM0-1	DILM7-...(...)	ZB12-1	DILM7-...(...)	ZB12-1	
PKM0-1,6	DILM7-...(...) DILM7-...(...)	ZB12-1,6 ZB12-1,6	DILM7-...(...) DILM7-...(...)	ZB12-1,6	
PKM0-2,5	DILM7-...(...)	ZB12-2,4	DILM7-...(...)	ZB12-2,5	
PKM0-4	DILM7-...(...) DILM7-...(...)	ZB12-4 ZB12-4	DILM7-...(...) DILM7-...(...)	ZB12-4	
PKM0-6,3	DILM7-...(...)	ZB12-6	DILM7-...(...)	ZB12-6	
PKM0-10	DILM9-...(...) DILM9-...(...)	ZB12-10 ZB12-10	DILM17-...(...) DILM17-...(...)	ZB12-10	
PKM0-12	DILM12-...(...)	ZB12-12	DILM17-...(...)	ZB12-12	
PKM0-16	DILM17-...(...)	ZB32-16	DILM17-...(...)	ZB12-16	
PKM0-25	DILM25-...(...)	ZB32-24	DILM25-...(...)	ZB12-25	
PKM0-32	DILM32-...(...)	ZB32-32	DILM32-...(...)	ZB12-32	

Further information	Page
Technical data PKZM0	→ Chapter 8
Accessories PKZ	→ 8/8
Technical data DILM	→ Chapter 8
Further actuating voltages	→ 5/53
DIL accessories	→ 5/42
Technical data ZB...	→ Chapter 8
Accessories ZB	→ 6/18

DOL starters

DOL starters



Motor ratings	Setting range	Coord.	Part no. Article no.	Price see price list
Motor rating	Rated operational current	Rated short-circuit current	Overload releases	Short-circuit releases
AC-3	380 V 400 V 415 V	380 – 415 V	I_r	I_{rm}
P	I_e	I_q	I_r	I_{rm}
kW	A	kA	A	A

Motor starter actuating voltage 230 V 50 Hz
Motor starter actuating voltage 24 V DC

Complete units MSC-R

	0.06	0.21	150	0.16...0.25	3.5	"1", "2"	MSC-R-0,25-M7(230V50HZ) 283171
	0.09	0.31	150	0.25...0.4	5.6	"1", "2"	MSC-R-0,4-M7(230V50HZ) 283172
	0.12	0.41	150	0.4...0.63	8.82	"1", "2"	MSC-R-0,63-M7(230V50HZ) 283173
	0.18	0.6	150	0.63...1	14	"1", "2"	MSC-R-1-M7(230V50HZ) 283175
	0.25	0.8	150	0.63...1	14	"1", "2"	MSC-R-1,6-M7(230V50HZ) 283176
	0.37	1.1	150	1...1.6	22.4	"1", "2"	MSC-R-1,6-M7(230V50HZ) 283176
	0.55	1.5	150	1...1.6	22.4	"1", "2"	MSC-R-1,6-M7(230V50HZ) 283176
	0.75	1.9	150	1.6...2.5	35	"1", "2"	MSC-R-2,5-M7(230V50HZ) 283178
	1.1	2.6	150	2.5...4	56	"1", "2"	MSC-R-4-M7(230V50HZ) 283179
	1.5	3.6	150	2.5...4	56	"1", "2"	MSC-R-4-M7(230V50HZ) 283179
	2.2	5	150	4...6.3	88.2	"1"	MSC-R-6,3-M7(230V50HZ) 283181
	3	6.6	150	6.3...10	140	"1"	MSC-R-10-M7(230V50HZ) 283182
	4	8.5	150	6.3...10	140	"1"	MSC-R-10-M9(230V50HZ) 283183
	5.5	11.3	50	8...12	168	"1"	MSC-R-12-M12(230V50HZ) 283184
	3	6.6	50	6.3...10	140	"1", "2"	MSC-R-10-M17(230V50HZ) 101049
	4	11.3	50	8...12	168	"1", "2"	MSC-R-12-M17(230V50HZ) 101050
	7.5	15.2	50	10...16	224	"1", "2"	MSC-R-16-M17(230V50HZ) 283186
	11	21.7	50	20...25	350	"1", "2"	MSC-R-25-M25(230V50HZ) 283187
	15	29.3	50	25...32	448	"1", "2"	MSC-R-32-M32(230V50HZ) 283188

Part no. Article no.	Price see price list	Std. pack	Motor-protective circuit-breakers Part no.	Contactor Part no.	Reversing starter wiring set	Notes
MSC-R-0,25-M7(24VDC) 283190		1 off	PKZM0-0,25	DILM7-01	PKZM0-XRM12	The reversing starter (complete unit) consists of a PKZM0 motor-protective circuit-breaker and two DILM contactors. With the adapter-less top-hat rail mounting of starters up to 12 A, only the motor-protective circuit-breaker on the top-hat rail requires an adapter. The contactors are provided with mechanical support via a mechanical connection element. Control wire guide with max. 6 conductors up to 2.5mm external diameter or 4 conductors up to 3.5mm external diameter. From 16 A, the motor-protective circuit-breakers and contactors are mounted on the top-hat rail adapter plate. The connection of the main circuit between PKZ and contactor is established with electrical contact modules. Complete units with mechanical interlock, starters up to 12 A also feature electrical interlock. When using the auxiliary contacts DILA-XHIT... (→ 5/29) the plug-in electrical connector can be removed without the removal of the front mounting auxiliary contact.
MSC-R-0,4-M7(24VDC) 283191			PKZM0-0,4	DILM7-01	PKZM0-XRM12	
MSC-R-0,63-M7(24VDC) 283192			PKZM0-0,63	DILM7-01	PKZM0-XRM12	
MSC-R-1-M7(24VDC) 283194			PKZM0-1	DILM7-01	PKZM0-XRM12	
MSC-R-1,6-M7(24VDC) 283195			PKZM0-1,6	DILM7-01	PKZM0-XRM12	
MSC-R-2,5-M7(24VDC) 283197			PKZM0-2,5	DILM7-01	PKZM0-XRM12	
MSC-R-4-M7(24VDC) 283198			PKZM0-4	DILM7-01	PKZM0-XRM12	
MSC-R-6,3-M7(24VDC) 283200			PKZM0-6,3	DILM7-01	PKZM0-XRM12	
MSC-R-10-M7(24VDC) 283201			PKZM0-10	DILM7-01	PKZM0-XRM12	
MSC-R-10-M9(24VDC) 283202			PKZM0-10	DILM9-01	PKZM0-XRM12	
MSC-R-12-M12(24VDC) 283203			PKZM0-12	DILM12-01	PKZM0-XRM12	
MSC-R-10-M17(24VDC) 101051		1 off	PKZM0-10	DILM17-01	PKZM0-XRM32	
MSC-R-12-M17(24VDC) 101052			PKZM0-12	DILM17-01	PKZM0-XRM32	
MSC-R-16-M17(24VDC) 283204			PKZM0-16	DILM17-01	PKZM0-XRM32	
MSC-R-25-M25(24VDC) 283205			PKZM0-25	DILM25-01	PKZM0-XRM32	
MSC-R-32-M32(24VDC) 283206			PKZM0-32	DILM32-01	PKZM0-XRM32	

For further information	Page
Technical data PKZM0	→ Chapter 8
Accessories PKZ	→ 8/8
Technical data DILM	→ Chapter 5
Further actuating voltages	→ 5/53
DILM accessories	→ 5/42

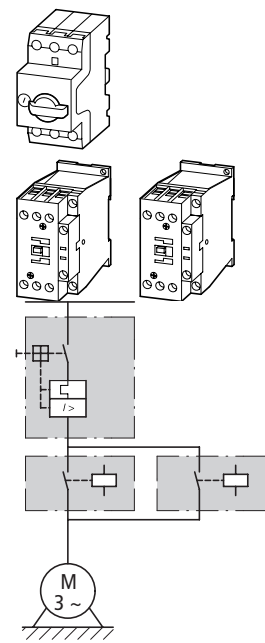
Reversing starters

Reversing starters



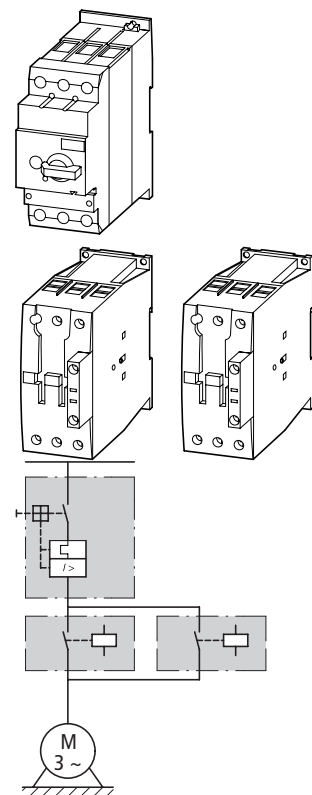
Motor ratings Motor rating	Rated operational current 400 V	Rated short-circuit current 380 – 415 V, Type "1" coordination	Rated short-circuit current 380 – 415 V, Type "2" coordination	Setting range	
				Overload releases	Short-circuit releases
AC-3 380 V 400 V 415 V 230 V 240 V P	I_e	I_q	I_q	I_r	I_{m1}
kW	A	kA	kA	A	A

Modules PKZM0 and DILM



0.06	0.21	150	50	0.16...0.25	3.5
0.09	0.31	150	50	0.25...0.4	5.6
0.12	0.41	150	50	0.4...0.63	8.82
0.18	0.6				
0.25	0.8	150	50	0.63...1	14
0.37	1.1	150	50	1...1.6	22.4
0.55	1.5				
0.75	1.9	150	50	1.6...2.5	35
1.1	2.6	150	50	2.5...4	56
1.5	3.6				
2.2	5	150	50	4...6.3	88.2
3	6.6	150	50	6.3...10	140
4	8.5				
5.5	11.3	50	50	8...12	168
7.5	15.2	50	50	10...16	224
11	21.7	50	50	20...25	350
15	29.3	50	50	25...32	448

Modules PKZM4 and DILM



5.5	11.3	50	50	10...16	224
7.5	15.2				
11	21.7	50	50	20...25	350
15	29.3	50	50	25...32	448
18.5	36	50	50	32...40	560
22	41	50	50	40...50	700
30	55	50	50	50...58	812
34	63	50	50	55...65	882

Motor-protective circuit-breakers Part no.		Contactor type "1" coordination Part no.		Contactor type "2" coordination Part no.	Notes
PKZM0-0,25	2 ×	DILM7-...(...)	2 ×	DILM7-...(...)	The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform to IEC/EN 60947-4.1 and VDE 0660 Part 102. I_q = Rated conditional short-circuit current.
PKZM0-0,4	2 ×	DILM7-...(...)	2 ×	DILM7-...(...)	
PKZM0-0,63	2 ×	DILM7-...(...) DILM7-...(...)	2 ×	DILM7-...(...) DILM7-...(...)	
PKZM0-1	2 ×	DILM7-...(...)	2 ×	DILM7-...(...)	
PKZM0-1,6	2 ×	DILM7-...(...) DILM7-...(...)	2 ×	DILM7-...(...) DILM7-...(...)	
PKZM0-2,5	2 ×	DILM7-...(...)	2 ×	DILM7-...(...)	
PKZM0-4	2 ×	DILM7-...(...) DILM7-...(...)	2 ×	DILM7-...(...) DILM7-...(...)	
PKZM0-6,3	2 ×	DILM7-...(...)	2 ×	DILM7-...(...)	
PKZM0-10	2 ×	DILM9-...(...) DILM9-...(...)	2 ×	DILM17-...(...) DILM17-...(...)	
PKZM0-12	2 ×	DILM12-...(...)	2 ×	DILM17-...(...)	
PKZM0-16	2 ×	DILM17-...(...)	2 ×	DILM17-...(...)	
PKZM0-25	2 ×	DILM25-...(...)	2 ×	DILM25-...(...)	
PKZM0-32	2 ×	DILM32-...(...)	2 ×	DILM32-...(...)	

PKZM4-16	2 ×	DILM17-...(...) DILM17-...(...)	2 ×	DILM17-...(...) DILM17-...(...)
PKZM4-25	2 ×	DILM25-...(...)	2 ×	DILM25-...(...)
PKZM4-32	2 ×	DILM32-...(...)	2 ×	DILM32-...(...)
PKZM4-40	2 ×	DILM40(...)	2 ×	DILM40(...)
PKZM4-50	2 ×	DILM50(...)	2 ×	DILM50(...)
PKZM4-58	2 ×	DILM65(...)	2 ×	DILM65(...)
PKZM4-63	2 ×	DILM65(...)	2 ×	DILM65(...)

For further information

Technical data PKZM0 → Chapter 8

Accessories PKZ → 8/8

Technical data DILM → Chapter 5

Further actuating voltages → 5/53

DILM accessories → 5/42

For further information

Technical data PKZM4 → Chapter 8

Accessories PKZ → 8/8

Technical data DILM → Chapter 5

Further actuating voltages → 5/54

DILM accessories → 5/42

Reversing starters

Reversing starters



NZMN, DILM



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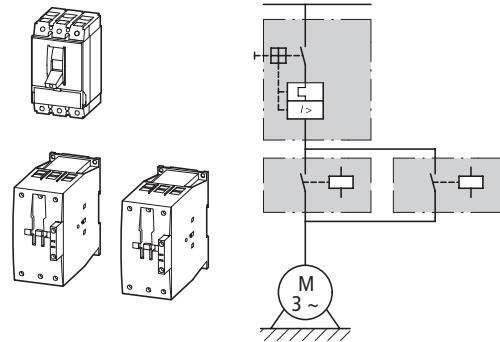
Moeller HPL0211-2007/2008

NZMN, DILM

Motor ratings			Setting range	
Motor rating	Rated operational current 400 V	Rated short-circuit current 400/415 V	Overload releases	Short-circuit releases
AC-3 380 V 400 V 415 V				
<i>P</i>	<i>I_e</i>	<i>I_q</i>	<i>I_r</i>	<i>I_{rm}</i>
kW	A	kA	A 	A 

Circuit-breakers Part no.	Contactor type "1" coordination Part no.	Contactor type "2" coordination Part no.	Notes
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Modules NZM and DILM



Motor rating (kW)	Rated operational current (A)	Rated short-circuit current (kA)	Overload releases (A)	Short-circuit releases (A)
15	29.3	50	25...32	320...448
18.5	36		32...40	320...560
22	41		40...50	400...700
30	55		50...63	504...882
37	68		63...80	640...1120
45	81		80...100	800...1250
55	99			
75	134		125...160	1280...2240
90	161		160...200	1600...2500
110	196			
132	231		175...350	350...4900
160	279			
200	349			
250	437		225...450	450...6300
315	544		275...550	550...7700
400	683		438...875	875...12250
450	750			
500	820			
560	947		700...1400	1400...19600

NZMN1-M32	2 ×	DILM40(...)	2 ×	DILM80(...)
NZMN1-M40	2 ×	DILM40(...)	2 ×	DILM80(...)
NZMN1-M50	2 ×	DILM50(...)	2 ×	DILM80(...)
NZMN1-M63	2 ×	DILM65(...)	2 ×	DILM80(...)
NZMN1-M80	2 ×	DILM80(...)	2 ×	DILM80(...)
NZMN1-M100	2 ×	DILM95(...) DILM115(...)	2 ×	DILM95(...) DILM115(...)
NZMN2-M160	2 ×	DILM150(...)	2 ×	DILM80(...)
NZMN2-M200	2 ×	DILM185/22(...) DILM225/22(...)	2 ×	DILM185/22(...) DILM225/22(...)
NZMN3-ME350	2 ×	DILM250/22(...) DILM300/22(...) DILM400/22(...)	2 ×	DILM250/22(...) DILM300/22(...) DILM400/22(...)
NZMN3-ME450	2 ×	DILM500/22(...)	2 ×	DILM500/22(...)
NZMN4-ME550	2 ×	DILM580/22(...)	-	
NZMN4-ME875	2 ×	DILM650/22(...) DILM750/22(...) DILM820/22(...)	-	
NZMN4-ME1400	2 ×	DILM1000/22(...)	-	

The motor-starter combination consists of the motor protective circuit-breaker or circuit-breaker and contactor. They conform with IEC/EN 60947-4-1 or VDE 0660 Part 102. *I_q* = Rated conditional short-circuit current.



Motor starter actuating voltage
230 V 50 Hz

Motor starter actuating voltage
24 V DC

Part no.
Article no.

Price
see price
list

Part no.
Article no.

Price
see price
list

Std. pack

Motor-
protective
circuit-
breakers
Part no.

Contactor
Part no.

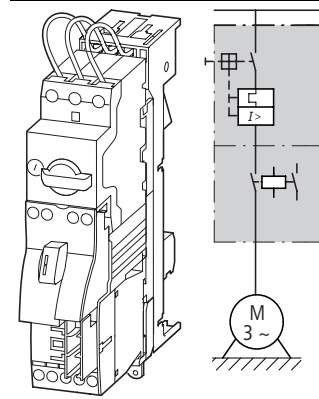
Wiring set,
DOL starter
Mechanical
connection
module and
electrical
contact module
Part no.

Busbar
adapter
Part no.

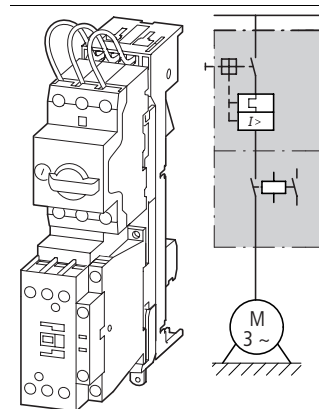
Notes

Contact sequence	Motor ratings			Setting range			Coordin- ation
	Motor rating	Rated operatio- nal current 400 V	Rated short- circuit current 380 – 415 V	Overload releases	Short-circuit releases		
AC-3	I_e	I_q					
380 V 400 V 415 V	A	kA					
P	I_e	I_q		I_r	I_{rm}		
kW	A	kA					

Complete devices PKZ and DIL on BBA



0.06	0.21	100	0.16...0.25	3.5	"1", "2"
0.09	0.31	100	0.25...0.4	5.6	
0.12 0.18	0.41 0.6	100	0.4...0.63	8.82	
0.25	0.8	100	0.63...1	14	
0.37 0.55	1.1 1.5	100	1...1.6	22.4	
0.75	1.9	100	1.6...2.5	35	
1.1 1.5	2.6 3.6	100	2.5...4	56	
2.2	5	100	4...6.3	88.2	
3	6.6	100	6.3...10	140	"1"
4	8.5	100	6.3...10	140	
5.5	11.3	100	8...12	168	
7.5	15.2	50	10...16	224	



3	6.6	100	6.3...10	140	"1", "2"
4	8.5	100	6.3...10	140	
5.5	11.3	100	8...12	168	
7.5	15.2	50	10...16	224	
11	21.7	50	20...25	350	
15	29.3	50	25...32	448	

MSC-D-0,25-M7(230V50HZ)/BBA 102737
MSC-D-0,4-M7(230V50HZ)/BBA 102738
MSC-D-0,63-M7(230V50HZ)/BBA 102739
MSC-D-1-M7(230V50HZ)/BBA 102950
MSC-D-1,6-M7(230V50HZ)/BBA 102951
MSC-D-2,5-M7(230V50HZ)/BBA 102952
MSC-D-4-M7(230V50HZ)/BBA 102953
MSC-D-6,3-M7(230V50HZ)/BBA 102954
MSC-D-10-M7(230V50HZ)/BBA 102955
MSC-D-10-M9(230V50HZ)/BBA 102956
MSC-D-12-M12(230V50HZ)/BBA 102957
MSC-D-16-M15(230V50HZ)/BBA 102958
MSC-D-10-M17(230V50HZ)/BBA 102959
MSC-D-12-M17(230V50HZ)/BBA 102960
MSC-D-16-M17(230V50HZ)/BBA 102961
MSC-D-25-M25(230V50HZ)/BBA 102962
MSC-D-32-M32(230V50HZ)/BBA 102963

MSC-D-0,25-M7(24VDC)/BBA 102964
MSC-D-0,4-M7(24VDC)/BBA 102965
MSC-D-0,63-M7(24VDC)/BBA 102966
MSC-D-1-M7(24VDC)/BBA 102967
MSC-D-1,6-M7(24VDC)/BBA 102968
MSC-D-2,5-M7(24VDC)/BBA 102969
MSC-D-4-M7(24VDC)/BBA 102970
MSC-D-6,3-M7(24VDC)/BBA 102971
MSC-D-10-M7(24VDC)/BBA 102972
MSC-D-10-M9(24VDC)/BBA 102973
MSC-D-12-M12(24VDC)/BBA 102974
MSC-D-16-M15(24VDC)/BBA 102975
MSC-D-10-M17(24VDC)/BBA 102976
MSC-D-12-M17(24VDC)/BBA 102977
MSC-D-16-M17(24VDC)/BBA 102978
MSC-D-25-M25(24VDC)/BBA 102979
MSC-D-32-M32(24VDC)/BBA 102980

1 off	PKZM0-0,25	DILM7-10	PKZM0-XDM12
	PKZM0-0,4	DILM7-10	PKZM0-XDM12
	PKZM0-0,63	DILM7-10	PKZM0-XDM12
	PKZM0-1	DILM7-10	PKZM0-XDM12
	PKZM0-1,6	DILM7-10	PKZM0-XDM12
	PKZM0-2,5	DILM7-10	PKZM0-XDM12
	PKZM0-4	DILM7-10	PKZM0-XDM12
	PKZM0-6,3	DILM7-10	PKZM0-XDM12
	PKZM0-10	DILM7-10	PKZM0-XDM12
	PKZM0-10	DILM9-10	PKZM0-XDM12
	PKZM0-12	DILM12-10	PKZM0-XDM12
	PKZM0-16	DILM15-10	PKZM0-XDM12
	PKZM0-10	DILM17-10	PKZM0-XM32
	PKZM0-12	DILM17-10	PKZM0-XM32
	PKZM0-16	DILM17-10	PKZM0-XM32
	PKZM0-25	DILM25-10	PKZM0-XM32
	PKZM0-32	DILM32-10	PKZM0-XM32

BBA0-25
BBA0-32

The DOL starter (complete) consists of a PKZM0 motor-protective circuit-breaker and a DILM contactor. This combination is mounted on the busbars. The connection of the main circuit between PKZ and contactor is established with electrical contact modules.

Further information	Page
Technical data PKZM0	→ Chapter
Accessories PKZ	→ 8/8
Technical data DILM	→ Chapter
DILM accessories	→ 5/42

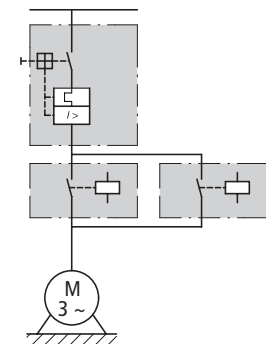


Motor starter actuating voltage
230 V 50 Hz

Motor ratings			Setting range			Part no. Article no.	Price see price list
Motor rating	Rated operation current I _e 400 V	Rated short-circuit current 380 – 415 V I _q	Overload releases I _r	Short-circuit releases I _m	Coordination		
AC-3 380 V 400 V 415 V							
P	I _e	I _q	I _r	I _m			
kW	A	kA	A	A			

Complete devices PKZ and DIL on BBA

	0.06	0.21	100	0.16...0.25	3.5	"1", "2"	MSC-R-0,25-M7(230V50HZ)/BBA 102981
	0.09	0.31	100	0.25...0.4	5.6		MSC-R-0,4-M7(230V50HZ)/BBA 102982
	0.12	0.41	100	0.4...0.63	8.82		MSC-R-0,63-M7(230V50HZ)/BBA 102983
	0.18	0.6					MSC-R-1-M7(230V50HZ)/BBA 102984
	0.25	0.8	100	0.63...1	14		MSC-R-1,6-M7(230V50HZ)/BBA 102985
	0.37	1.1	100	1...1.6	22.4		MSC-R-2,5-M7(230V50HZ)/BBA 102986
	0.55	1.5					MSC-R-4-M7(230V50HZ)/BBA 102987
0.75	1.9	100	1.6...2.5	35	MSC-R-6,3-M7(230V50HZ)/BBA 102988		
	1.1	2.6	100	2.5...4	56	"1"	MSC-R-10-M7(230V50HZ)/BBA 102989
	1.5	3.6					MSC-R-10-M9(230V50HZ)/BBA 102990
	2.2	5	100	4...6.3	88.2		MSC-R-12-M12(230V50HZ)/BBA 102991
	3	6.6	100	6.3...10	140	"1", "2"	MSC-R-10-M17(230V50HZ)/BBA 102992
	4	8.5	100	6.3...10	140		MSC-R-12-M17(230V50HZ)/BBA 102993
	5.5	11.3	100	8...12	168		MSC-R-16-M17(230V50HZ)/BBA 102994
	7.5	15.2	50	10...16	224		MSC-R-25-M25(230V50HZ)/BBA 102995
	11	21.7	50	20...25	350		MSC-R-32-M32(230V50HZ)/BBA 102996
	15	29.3	50	25...32	448		

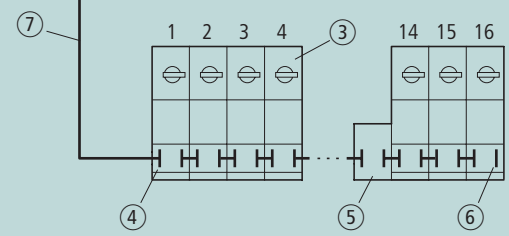


Motor starter actuating voltage
24 V DC

Part no. Article no.	Price see price list	Std. pack	Motor- protective circuit- breakers Part no.	Contactor Part no.	Wiring set, reversing starter Mechanical connection module and electrical contact module and reversing connector Part no.	Busbar adapter Part no.	Notes
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MSC-R-0,25-M7(24VDC)/BBA 102997		1 off	PKZM0-0,25	2 × DILM7-01	PKZM0-XRM12	BBA0R-25	The reversing starter (complete unit) consists of a PKZM0 motor-protective circuit-breaker and two DILM contactors. These combinations are mounted on the busbars. The connection of the main circuit between PKZ and contactor is made with electrical contact modules. Complete units with mechanical interlock, starters up to 12 A also feature electrical interlock. Further information Page Technical data PKZM0 → Chapter 8 Accessories PKZ → 8/8 Technical data DILM → Chapter 5 Accessories DIL → 5/42
MSC-R-0,4-M7(24VDC)/BBA 102998			PKZM0-0,4	2 × DILM7-01			
MSC-R-0,63-M7(24VDC)/BBA 102999			PKZM0-0,63	2 × DILM7-01			
MSC-R-1-M7(24VDC)/BBA 103000			PKZM0-1	2 × DILM7-01			
MSC-R-1,6-M7(24VDC)/BBA 103001			PKZM0-1,6	2 × DILM7-01			
MSC-R-2,5-M7(24VDC)/BBA 103002			PKZM0-2,5	2 × DILM7-01			
MSC-R-4-M7(24VDC)/BBA 103003			PKZM0-4	2 × DILM7-01			
MSC-R-6,3-M7(24VDC)/BBA 103004			PKZM0-6,3	2 × DILM7-01			
MSC-R-10-M7(24VDC)/BBA 103005			PKZM0-10	2 × DILM7-01			
MSC-R-10-M9(24VDC)/BBA 103006			PKZM0-10	2 × DILM9-01			
MSC-R-12-M12(24VDC)/BBA 103007			PKZM0-12	2 × DILM12-01			
MSC-R-10-M17(24VDC)/BBA 103008			PKZM0-10	2 × DILM17-01	PKZM0-XM32 + DILM32-XRL	BBA0R-32	
MSC-R-12-M17(24VDC)/BBA 103009			PKZM0-12	2 × DILM17-01			
MSC-R-16-M17(24VDC)/BBA 103010			PKZM0-16	2 × DILM17-01			
MSC-R-25-M25(24VDC)/BBA 103011			PKZM0-25	2 × DILM25-01			
MSC-R-32-M32(24VDC)/BBA 103012			PKZM0-32	2 × DILM32-01			





- ① Gateway PROFIBUS-DP
- ② Gateway easy-NET/CANopen
- ③ Contactor DILM or motor starter MSC
- ④ SmartWire Module for DILM
- ⑤ SmartWire-Power-Module
- ⑥ SmartWire terminal plug
- ⑦ Smart-Wire connection cable
- ⑧ SmartWire-Interface for e.g. I/O-System XI/ON, Supplier, company MicroInnovation AG, www.microinnovation.com

System description

The SmartWire connection system allows the connection of switchgear to a PLC without complex control wiring. The control wiring between the PLC and the switchgear is replaced by the plug-in SmartWire module for DILM and a pre-manufactured connection cable. The wiring complexity is drastically reduced and wiring errors are impossible. There are further savings also with the assembly, the commissioning and the search for faults on the machine or system.

The inputs and outputs of the PLC are replaced by the SmartWire module for DILM and the control wiring termination points are not necessary. This simplifies the engineering and the documentation of the machine or system.

The SmartWire connection system is an expansion of the well proven Moeller switchgear and is designed to be an accessory for the standard device. The well know system accessories can still be used and the normal flexibility of the switchgear is still available. By using standard devices the necessary stores level is reduced and the worldwide availability of replacement parts is of course guaranteed. The connection to the various field Buses is via Gateways or interface modules available from another manufacturer.

Features

- Gateway
 - Connects the SmartWire modules with the field Bus
 - Supports the field Buses PROFIBUS-DP, CANopen and easy-NET
 - Supplies the control voltage for the motor starter or contactor
 - Supplies the supply voltage for the SmartWire connection system
 - Configuration button for automatic addressing of the SmartWire modules for DILM
 - Supports max. 16 SmartWire modules for DILM
- Interface from third party devices e.g. for the I/O System XI/ON
 - Connection to the field Buses PROFIBUS-DP, CANopen and DeviceNET
- SmartWire-Module for DILM
 - Pluggable onto contactors of the xStart range
 - Suitable for contactors DILM7 to DILM32 (24 V DC), DILMC7 to DILMC32 (24 V DC), DILMP20 (24 V DC) or motor starter MSC-... (24 V DC)
 - Use the standard switchgear of the xStart range
 - Suitable for DOL and reversing starters
 - Use the accessories of the xStart range
 - Suitable for contactor combinations with PKZ or with Z overloads
 - Integrated switch position monitoring of the contactors
 - Integrated mechanical switch position display
 - Actuation of the contactors
 - Interrogation of a potential-free contact, e.g. NHI-E-10-PKZ0
 - Electrical interlocking, e.g. possible with reversing starters
 - LED for status and diagnostic display
 - Connection to Gateway or interface from third party devices
- SmartWire-Power-Module
 - Supply of the 24 V-DC control voltage for actuation of DILM contactors
 - Assembly of emergency-stop groups
 - Increase the control voltage power in the SmartWire chain
- Safety engineering
 - Emergency-Stop disconnection as per IEC/EN 954-1, Switching Category 2
 - Central switch off of control voltage at the Gateway or SmartWire Power module
 - Combination with safety conform switchgear possible



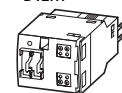


Transmission rate: 9.6 kBit/s to 12 MBit/s
 9 pole SUB-D socket
 Address range: 1 – 126
 - Connection to SmartWire module as Master.
 - supports 16 SmartWire modules.

Conne

Modules

SmartWire module for DILM



SmartWire module to assemble on the contactors DILM7...DILM32.
 - One module is necessary per contactor.
 - Connection to SmartWire- Gateway as Slave.
 - Max. 16 SmartWire modules per chain.
 - 1 digital input for potential-free contact.
 - Signalling contactor switch position.

SWIRE-DIL
107028

1 off

- Take account of the max. current consumption of the contactor coils per SmartWire chain.
- Length of connection cable at the input and the electrical interlock < 2.8 m.
- A2 terminal of the contactor must not be bridged.
- Electrical interlocking only possible via the terminals on the module for DILM.
- Wiring kits DILM 12-XRL and PKZM0-XRM12 cannot be used.
- Connection terminals for electrical interlocking are not suitable for safety technology.

SmartWire Power-Module



Power module for supplying the control voltage.
 - Connection on SmartWire Gateway as interactive station (no address).

SWIRE-PF
107029

1 off

Max. 4 power modules per SmartWire chain.

Accessories

SmartWire connection cable

Length: 85 mm

SWIRE-CAB-008
107032

25 off

Length: 110 mm

SWIRE-CAB-011
107033

25 off

Length: 150 mm

SWIRE-CAB-015
107034

5 off

Length: 250 mm

SWIRE-CAB-025
107035

5 off

Length: 1000 mm

SWIRE-CAB-100
107036

1 off

Length: 2000 mm

SWIRE-CAB-200
107037

1 off

Cable lengths: Engineering → Engineering SmartWire connection system

Termination plug

Termination plug for last SmartWire module, 6 pole, no electrical function.

SWIRE-CAB-000
107031

25 off

Data cable

6 core, flat-band cable, length: 100 m.

SWIRE-CAB-100M
107038

1 off

Pre-manufacture of cable only possible with special tool.

Plug

6 plug for flat-band cable.

SWIRE-CAB-CON
107039

50 off

NHI-E with cable

NHI-E-10-PKZ0 with connection cable AWG18 blue, for connection to SmartWire module for DILM.

NHI-E-10L-PKZ0
107040

5 off



Motorstarter MSC	None (45 grid)	DILM7-...15	DILM7-...15	110 mm
		DILM17-...32	DILM17-...32	110 mm
		DILM7-...15	DILM7-...15	110 mm
	PKZM0 with U-/A.../ NHI.../AGM...	DILM7-...15	DILM7-...15	85 mm
		DILM17-...32	DILM17-...32	85 mm
		DILM7-...15	DILM17-...32	110 mm
		DILM17-...32	DILM7-...15	110 mm
		DILM7-...15	DILM7-...15	110 mm
		DILM17-...32	DILM17-...32	110 mm
	DILM7-...15	DILM17-...32	150 mm	
	DILM17-...32	DILM7-...15	150 mm	

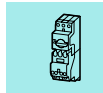
For the connection of the SmartWire devices the cable lengths depend upon the assembly of the devices.

Applications	Cable length
Connection from Power module to SWire-DIL with mounting beside PKZ	250 mm
Connection from Power module to SmartWire DIL with mounting beside DILM	150 mm
Connection from Gateway to SWire-DIL with mounting beside PKZ	250 mm
Connection from Gateway to SWire-DIL with mounting beside DILM	250 mm

Magnet systems

The number of motor starters or DILM contactors that can be connected is dependant upon the power consumption of the magnet systems per SmartWire chain. To increase the number of SmartWire modules that can be connected Power modules can be used.

24 V DC		DILM7	DILM9	DILM12	DILM15	DILM17	DILM25	DILM32
Pick-up power	W	3	3	4.5	4.5	12 at 24 V	12 at 24 V	12 at 24 V
Sealing power	W	3	3	4.5	4.5	0.5 at 24 V	0.5 at 24 V	0.5 at 24 V



Dimensions (W × H × D)	mm	35 x 90 x 105	35 x 90 x 74	45 x 44 x 81
Weight	kg	0.15	0.1	0.036
Terminal capacities				
Solid	mm ²	0.34...1.5	0.34...1.5	0.34...1.5
Flexible with ferrule	mm ²	0.34...1.5	0.34...1.5	0.34...1.5
Solid or stranded	AWG	22...16	22...16	22...16
Standard screwdriver	mm	3.5 x 0.8	3.5 x 0.8	3.5 x 0.8
Max. tightening torque	Nm	0.6	0.6	0.5
Climatic environmental conditions				
Ambient temperature				
Operation	°C	-25...+55	-25...+55	-25...+60
Storage	°C	-25...+70	-25...+70	-25...+70
Condensation				
Prevent condensation with suitable measures				
Relative humidity, non-condensing (IEC/EN 60068-2-30)	%	5...95	5...95	5...95
Air pressure (operation)	hPa	795...1080	795...1080	795...1080
Ambient conditions, mechanical				
Degree of protection IEC/EN 60529		IP20	IP20	IP20
Pollution degree		2	2	2
Mounting position		Vertical	Vertical	as DILM7...DILM32
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge	kV	8	8	8
Contact discharge	kV	4	4	4
Electromagnetic fields (IEC/EN 61000-4-3, RFI)	V/m	10	10	10
Radio interference suppression EN 55011, EN 55022		Class A	Class A	Class A
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables	kV	2	2	2
Signal lines	kV	2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)	kV	0.5 (supply cables, symmetrical)		
Immunity to line-conducted interference to (IEC/EN 61000-4-6)	V	10	10	10
Insulation resistance				
Clearance in air and creepage distances		EN 50178, EN 60947-1, UL 508, CSA C22.2 No 142		
Insulation resistance		EN 50178, EN 60947-1		
Voltage supply, Gateway electronic and SmartWire station electronics $U_{Gateway}$				
Rated operational voltage $U_{Gateway}$	V DC	24, -15 %, +20 %		
Admissible range		20.4...28.8	Supply from gateway	Supply from gateway
Residual ripple	%	≤5		
Maximum current consumption at 24 V DC	mA	500 (typically 100 Gateway + typically 25 per SmartWire module)		
Voltage dips (IEC/EN 61131-2)	ms	10	-	-
Heat dissipation at 24 V DC	W	typically 6	typically 1	typically 0.6
Protection against polarity reversal		Yes	-	-
Short-circuit protection, SmartWire side		Yes		

Conne



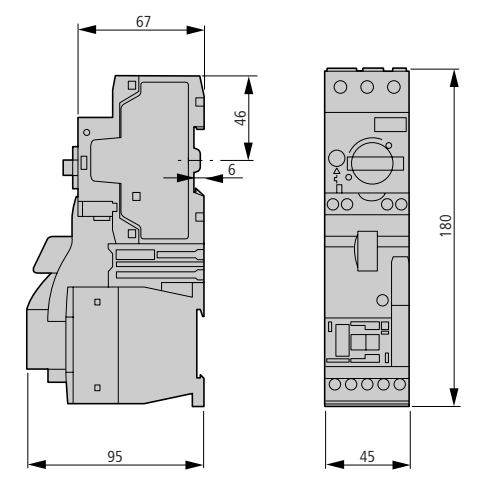
Input current U_{AUX} bei 24 V DC		A	Normally 3	Normally 3	–
Residual ripple		%	≤ 5	≤ 5	–
Voltage dips (IEC/EN 61131-2)		ms	10	10	–
Protection against polarity reversal			Yes	Yes	
Short-circuit protection, SmartWire side			no, external protection (3 A) necessary, miniature circuit-breaker FAZ		
LEDs					
Ready for operation			Ready: green		Ready: green
Power supply SmartWire contactors			U_{AUX} : green	U_{AUX} : green	
Status PROFIBUS-DP			PROFIBUS DP: green		
Status SmartWire			SmartWire: green		over Ready
Status Outputs					
Connection potential-free contacts					
Number					1
Rated voltage (own supply)	U_e	V DC	–	–	17
Input current at "1" signal, typically		mA	–	–	5
Potential isolation			–	–	No
max. conductor length		m	–	–	< 2.8
PROFIBUS DP					
Connection technique			SUB-D 9 pole, socket		
Station address			1...126	–	–
Address allocation			DIP switch		
Potential isolation					
for supply voltage U_{AUX}			Yes		No
for supply voltage $U_{Gateway}$			Yes		
To SmartWire			Yes		
Function			PROFIBUS-DP Slave		
Bus protocol			PROFIBUS-DP V1		
Bus terminating resistors			Can be connected via plug		
Data transfer rate			automatically to 12 Mbit/s		
SmartWire module for DILM					
Connection types			Plug, 6-pole	Plug, 6-pole	Plug, 6-pole
Data/power cable			6 core flat-band cable	6 core flat-band cable	6 core flat-band cable
maximum cable length System SmartWire		m	4	4	4
Bus termination			No	Connector plug	Connector plug
Station address			none	none	1...16
Station			max. 126 PROFIBUS stations	Max. 4 power modules per SmartWire chain.	max. 16 per SmartWire chain
Address allocation			none	none	Automatic via SmartWire
Potential isolation					
for supply voltage U_{AUX}			No	No	No
for supply voltage $U_{Gateway}$			No	No	No
Function			SmartWire-Master	none SmartWire module	SmartWire-Slave
Data transfer time System SmartWire					
Write switch					typically 20 ms for all stations
Read status information					typically 10 ms per station



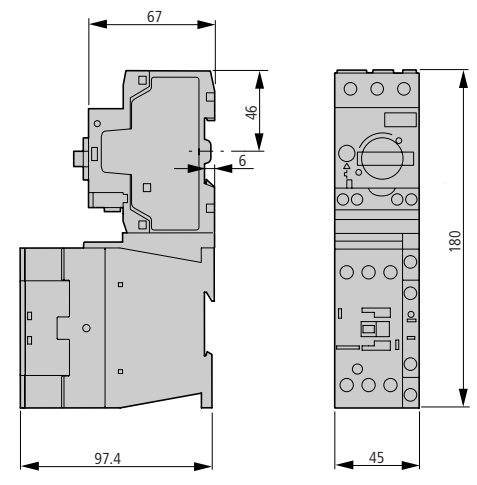
Main contacts		
Rated impulse withstand voltage U_{imp}	V	6000
Overvoltage category/degree of pollution		III/3
Rated operational voltage U_e	V	230 – 415
Further technical data		
PKZM0 motor-protective circuit-breakers		→ Engineering guidelines
DILM contactors		→ Engineering guidelines

DOL starters

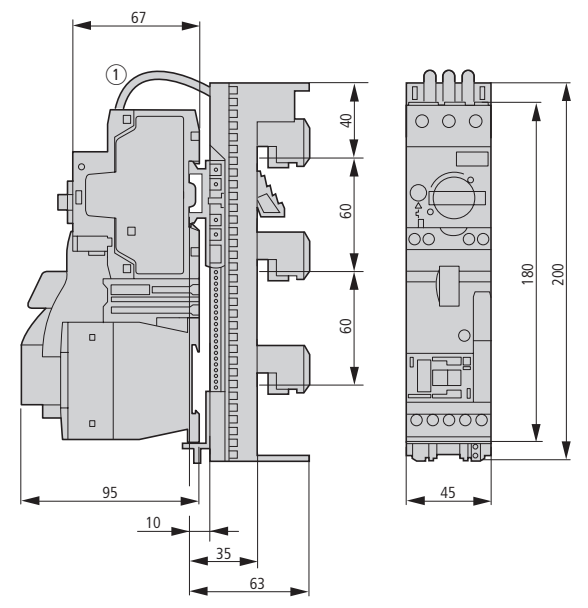
MSC-D-...-M7[...15]...



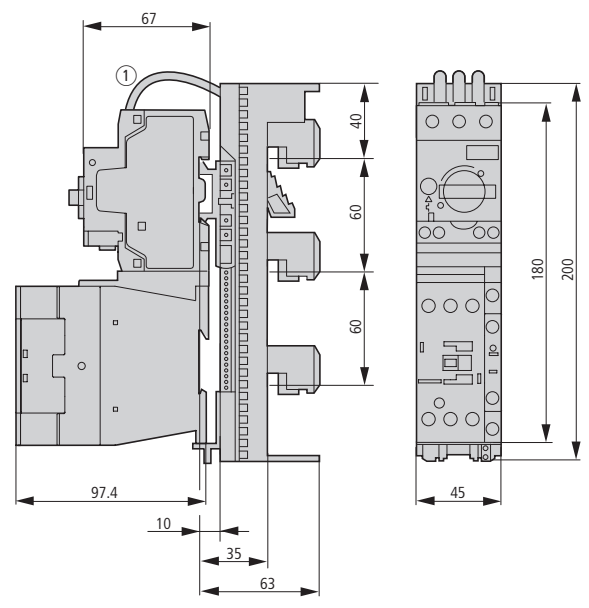
MSC-D-...-M17[...32]...



MSC-D-...-M7[...15]BBA...



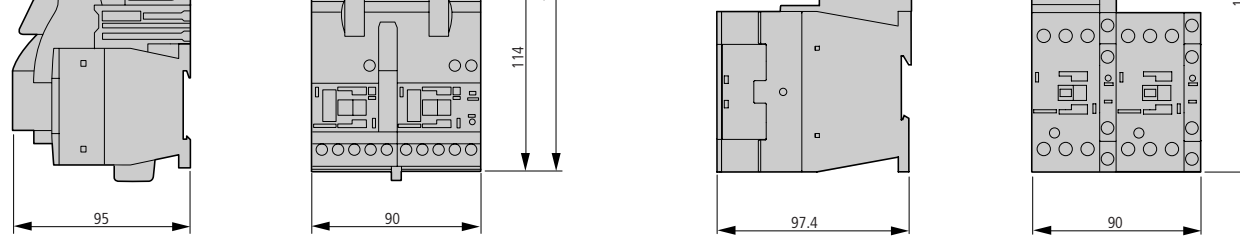
MSC-D-...-M17[...32]BBA...



① l = 73 mm

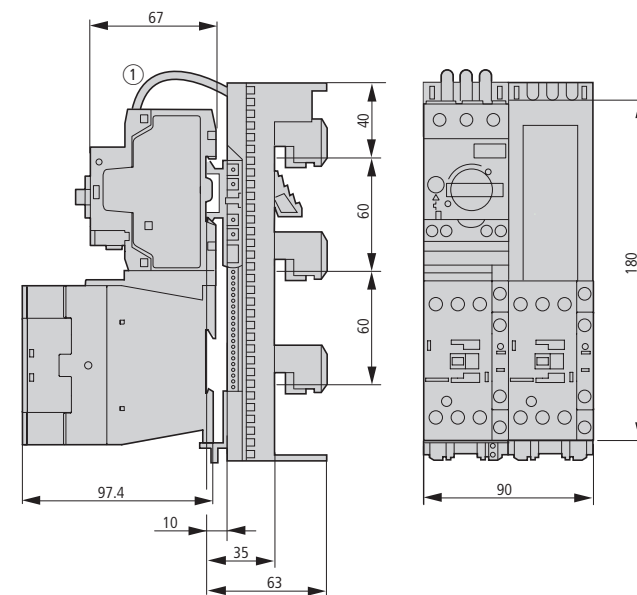
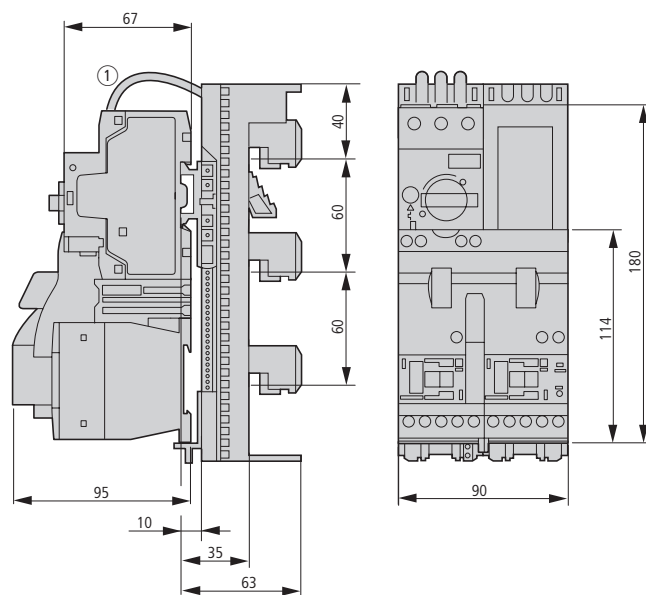


Motor



MSC-R-...-M7[...12]BBA...

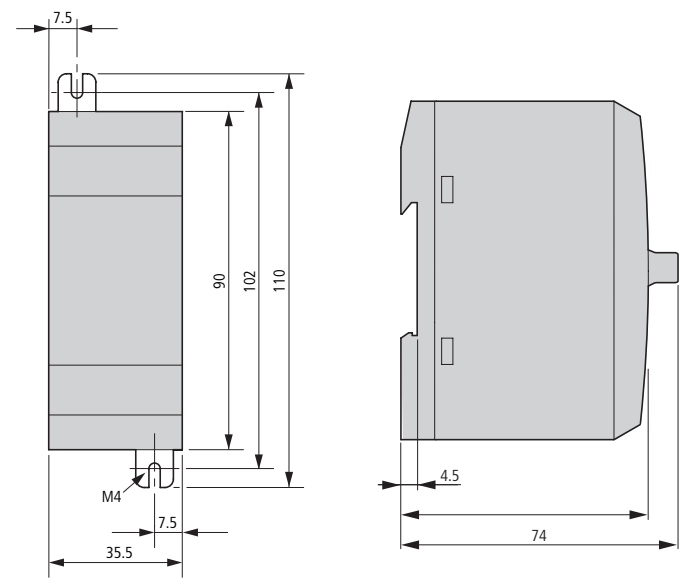
MSC-R-...-M17[...32]BBA...



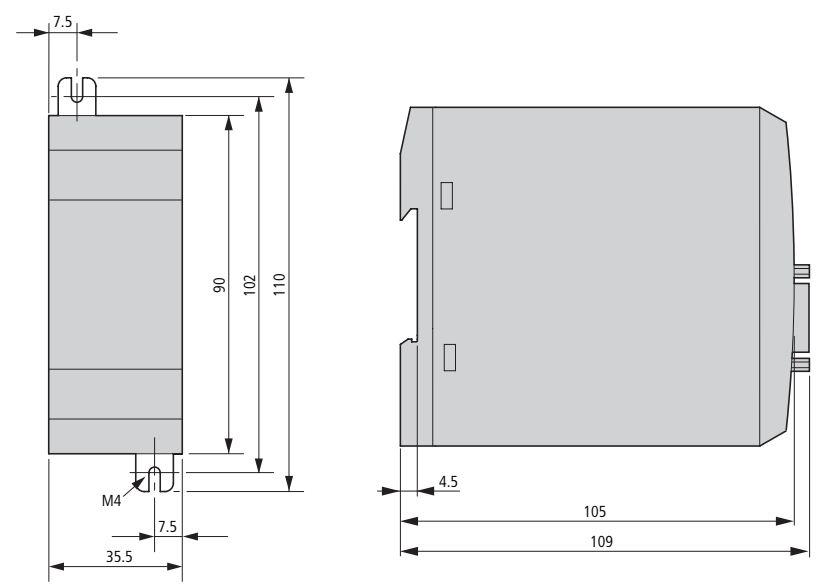
① l = 73 mm



SWIRE-PF



Gateway
SWIRE-GW-DP



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