xStart: Efficient solutions for motor control



xStart

The complete range of contactors, efficient motor-starters and variable speed drives for the motor circuit. New simple to install solutions based on clever communication.

- **DIL contactors**
- **PKZ motor-protective circuit-breakers**
- **MSC motor-starters**
- DS 4 softstarters
- DF & DV Drives
- Rapid Link

Product information

DIL M motor contactors
PKZ motor-protective circuit-breakers
MSC motor-starters

MOELLER

Think future. Switch to green.

xStart is the intelligent solution: easier engineering, faster fitting



1

Both trade and industry expect innovations in electrical engineering to bring them clear advantages by making processes more efficient – all the way from the planning stage through engineering to fitting and installation. The new xStart range from Moeller does just that.

"We need a partner we can rely on. Moeller satisfies all of our needs."



With Moeller you can meet any challenge!

Moeller has proved its competence as a partner with high-quality, efficient motor-related solutions for more than a century. xStart now offers you the complete range of products needed for switching, protecting, starting, running up and controlling motors. You can rely on our competence in each of these areas, and we can meet any challenge from contactors to drive control.

1 The latest innovation is the new MSC motor-starter: a combination of standard components, i.e. the new DIL M motor contactors and the optimised PKZ motor-protective circuit-breakers.

Just four slim starter modules up to 150 A, each with the same dimensions for AC and DC, significantly simplify planning and engineering.

2 The newly developed DIL M motor contactors can switch motors up to 150 A. Their significantly improved performance criteria such as pick-up and sealing consumption, space saving foot-prints and ease of installation make these contactors state-of-the-art, top-class products.



2

Tested quality

Every single one of our products is built and tested to the latest national and international standards. Having attained all the major approvals, they are perfectly suited to the world's markets.

PKZ motor-protective circuit-breakers: now better than ever



PKZ motor-protective circuit-breakers from Moeller have long set the benchmark for quality. And now, for inclusion in the xStart concept, these products have been updated once again, and enhanced in terms of their technical specification.

The PKZM 0 now switches motors up to 32 A. At the same time, its short-circuit switching capacity is significantly increased: the short-circuit rating (400 V) is now 150 kA up to 12 A and 50 kA up to 32 A. The PKZM 4 also has a switching capacity of 50 kA. This simplifies the engineering of safety and reliability, with current limiters becoming virtually obsolete. PKZM 01 is a completely new product with push-button operation for switching motors up to 16 A (50 kA/400 V).

"PKZ motor-protective circuit-breakers are, and always will be, the epitome of safety, reliability and quality in motor protection."





Common accessories throughout the system

Whether PKZM 0, PKZM 01 or PKZM 4, the accessories are always the same. Whether On or Off, overload or short circuit, differential indication helps to locate the cause of tripping without delay, every time. The auxiliary contacts can be fitted without tools and are fail-safe in the way they signal every switching state. One particularly convenient component is the NHI-E front auxiliary contact that can be optionally built into already installed and wired circuit-breakers. It goes without saying that all the auxiliary contacts and releases are worldmarket devices, for all the customary mains voltages.

1 Shunt trips and undervoltage trips

2 PKZM 0 motor-protective circuit-breakers from 0 to 32 A

3 PKZM 4 motor-protective circuit-breakers from 10 to 65 A

4 The optionally integrable front auxiliary contact indicates the switching position of 1 NO and NC contact or 1 NO contact

5 Trip-indicating contacts: two contacts provide differential indication of short circuit or overload

6 Standard auxiliary contacts with up to three contacts for the On/Off switching position

The door coupling handle (IP 65) has a tripped position in addition to the On and Off positions.

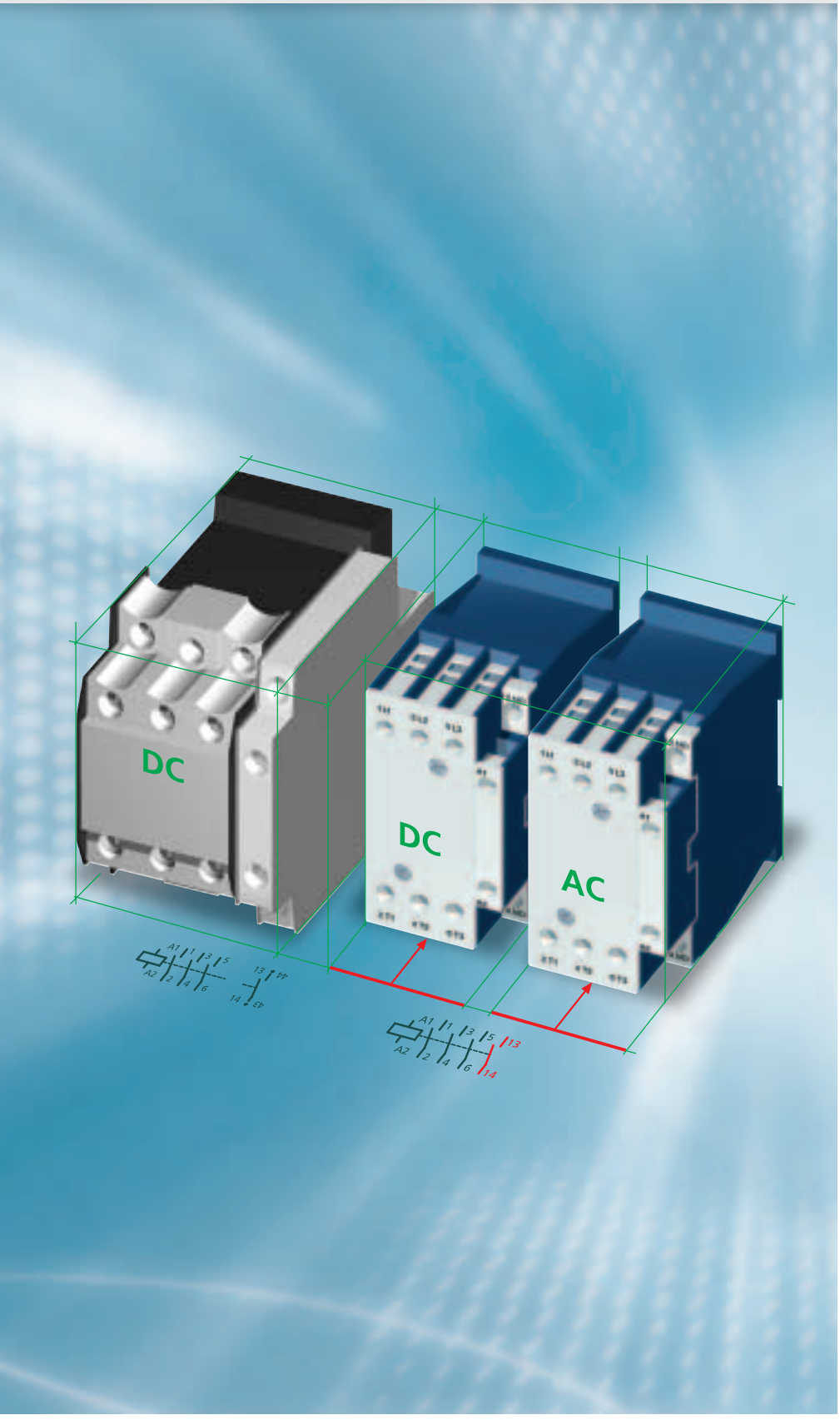
PKZM 01 motor-protective circuit-breakers: easy to operate by pressing or hitting a button

The new PKZM 01 motor-protective circuit-breakers for motors up to 12 A are ideally suited to small machines and applications where operation by pressing or even hitting a button is preferred. In addition to the auxiliary contacts from the PKZM 0 range, special enclosures with ingress protection IP 65 or IP 40 and the appropriate Emergency-Stop buttons are available for these new components. Their short-circuit switching capacity is 50 kA.





AC and DC contactors: both the same frame size – simplifies engineering



Great efficiency in planning and engineering with AC and DC contactors is achieved by them being the same dimensions. With only four component sizes covering the rating range up to 150 A engineering is further simplified.

Definitely useful: up to 32 A, the auxiliary contact is already built in, and the DC contactors include a suppressor circuit up to 150 A. From 12 A, the DC contactors have an electronic drive that removes the need for coupling relays. With all these extras already included in the contactors, your costs are clearly reduced.

DC contactors now are no bigger than AC contactors

The new DIL contactors are significantly more compact than their predecessors, even though, up to 32 A, the auxiliary contact is included. The advantage of this is particularly striking with the DC contactors that now are the same size as their AC counterparts. This makes everything easier, i.e. planning, engineering and fitting, without having to alter the control system, even if the control current has to change for another customer.



"With these new motor contactors, Moeller is definitely on to a winner. They bring real advantages from the planning all the way to the fitting costs."

1 This reduces the cost of your control panel

The space-saving is achieved not just by the reduced component dimensions, but also due to the lower heat dissipation that, particularly with the DC contactors, helps keep the cabinet size down and saves the cost of a fan. The significantly reduced sealing consumption achieved by innovative, electronic drives makes this possible. The Moeller DC contactors from 17 up to 65 A have a sealing consumption of only 0.5 Watt, even those at 150 A only use 1.5 Watt. This also results in lower power consumption for the whole installation.

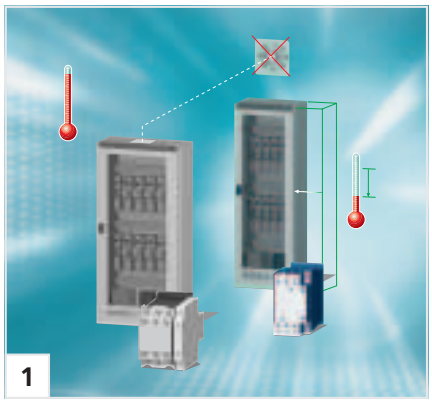
2 No compromise where termination reliability is concerned

DIL contactors up to 150 A have box terminals with two clamping chambers, allowing unequal cable cross-sections to be terminated absolutely securely, even in strongly vibrating machines. This makes wiring easier and cuts down on associated errors.

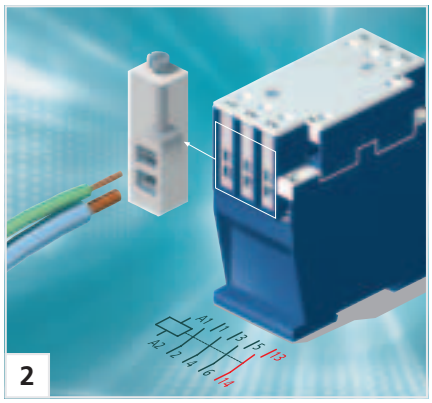
3 The benefits of the electronically controlled drive

All DC DIL M motor contactors from 12 A have an electronically controlled drive that offers the following advantages:

- Significantly less heat dissipation due to reduced sealing consumption
- Smaller control transformers because of lower pick-up consumption
- Direct actuation from the PLC without coupling contactors.



1



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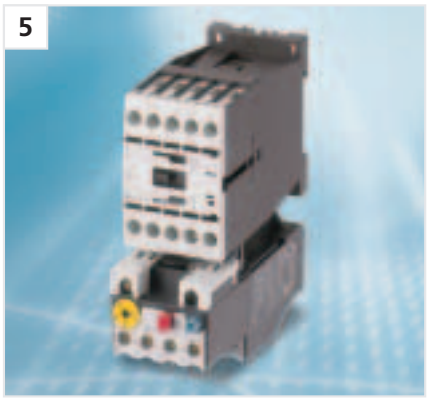
3



4



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4 The new DIL A auxiliary contacts perfectly complement the new DIL M motor contactors.

5 Z overloads relays protect the motor against phase failure or overload. Their auxiliary contacts switch the motor contactor off, and signal the fault. These relays are suitable for protecting EEx e-motors according to ATEX 100 a guideline.

The simplicity of it! –
Toolless plug connection!



Using the new xStart motor-starter combinations it is possible to create the best solutions from standard products even more easily and efficiently.

Moeller has optimised the DIL and PKZ standard products in such a way that, by using simple toolless plug connectors, they can be assembled to form reliable motor-starters. Without the need for tools! The MSC motor-starter combinations can also be supplied as complete devices. Costs for fitting and wiring can be considerably reduced in this way. Costs for testing are cut and errors are prevented from the start. Another advantage lies in increased safety during maintenance work where removal of the combination plug connector produces a visible isolating gap. This Moeller technology is available on our direct-on-line and reversing starters up to 12 A.

"The toolless plug connection is very quick to fit – just what I need to reduce costs."



Slim solutions: DOL starters from standard components

The new direct-on-line starters built from standard components are available in four slim frame sizes. The contactor and the protective switch are of the same compact width dimension. Thus you lose not a millimetre of control panel space. The convenient MSC motor-starters using toolless plug connection technology are available up to 12 A and require only a top-hat rail for mounting. The mechanical connector ensures a secure hold and the electrical connector provides optimum reliability and safety. Complete mounting connectors are offered for DOL and reversing starters from 17 up to 32 A. This prevents fitting errors and cuts down on wiring time.

Plug and go: reversing starters from standard components

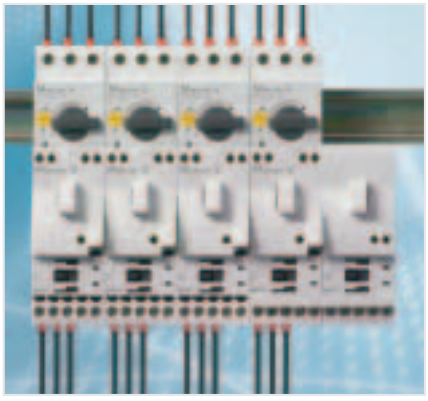
The reversing starters offer distinct advantages to the assembler. Instead of laboriously having to tighten up 23 screws, a small number of components simply plug together. This of course speeds up fitting work, and means fewer errors and a very clearly laid out switching installation.

Speedier wiring using spring-loaded terminations

Moeller provides proven quality with tension clamp terminals. Numerous tests have proved that contactors and motor-protective circuit-breakers are just as securely wired in this way as by screw connection – even in strongly vibrating machines. But wiring work using tension clamp terminals is very much quicker to do. The main current paths on PKZM 0 and motor contactors up to 12 A all use spring-loaded terminals. The sundries for termination are always available for both screw and tension clamp connection.









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Xtra Combinations

Xtra Combinations from Moeller offers a range of products and services, enabling the best possible combination options for switching, protection and control in power distribution and automation.

Using Xtra Combinations enables you to find more efficient solutions for your tasks while optimising the economic viability of your machines and systems.

It provides:
- flexibility and simplicity
- great system availability
- the highest level of safety

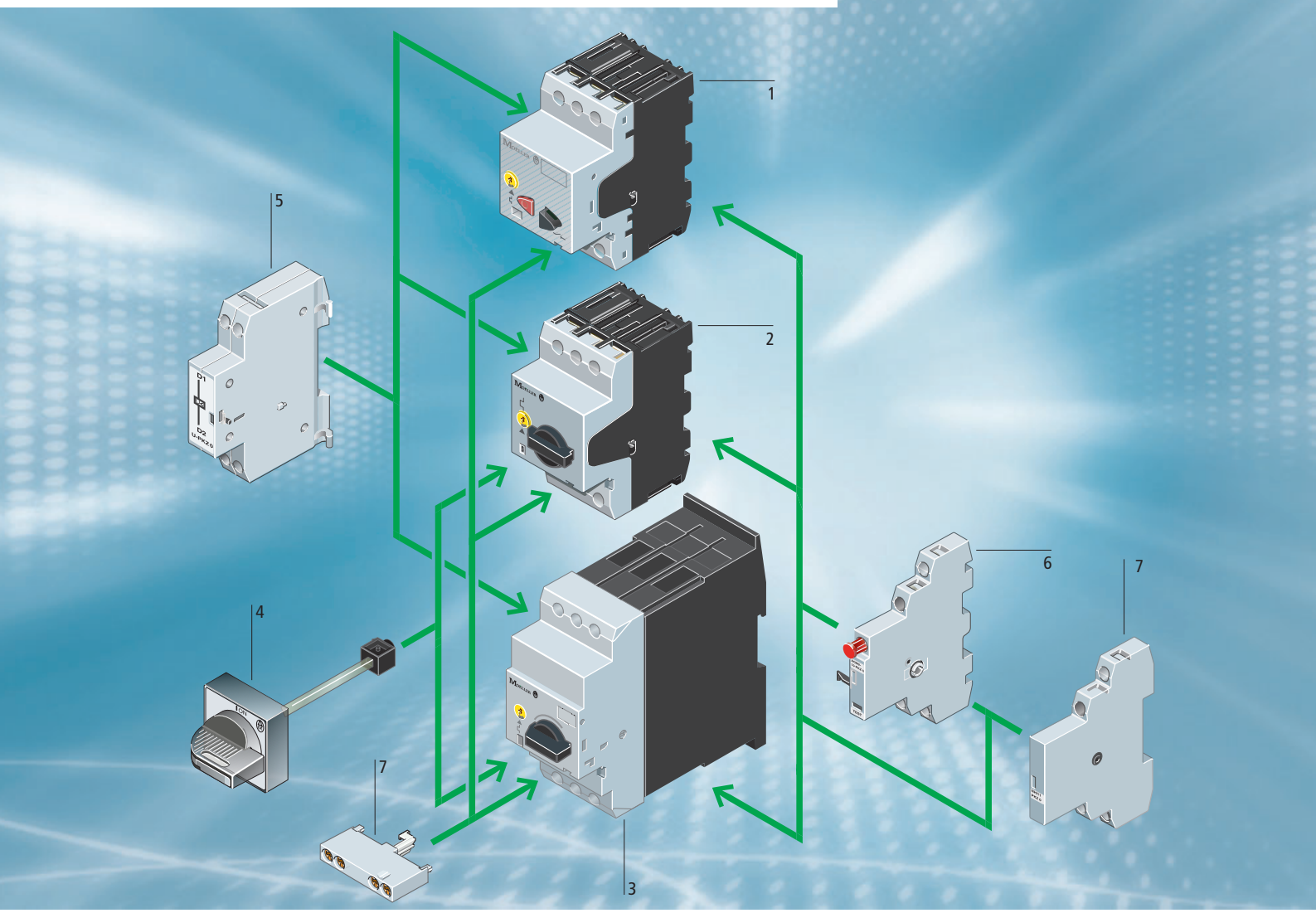
All the products can be easily combined with one another mechanically, electrically and digitally, enabling you to arrive at flexible and stylish solutions tailored to your application – quickly, efficiently and cost-effectively. The products are proven and of such excellent quality that they ensure a high level of operational continuity, allowing you to achieve optimum safety for your personnel, machinery, installations and buildings.

Thanks to our state-of-the-art logistics operation, our comprehensive dealer network and our highly motivated service personnel in 80 countries around the world, you can count on Moeller and our products every time. Challenge us! We are looking forward to it!

MOELLER

Think future. Switch to green.

PKZ
motor-protective circuit-breaker



1. PKZM01 motor-protective circuit-breaker
2. PKZM0 motor-protective circuit-breaker
3. PKZM4 motor-protective circuit-breaker
4. Door coupling rotary handle IP65
5. Voltage release
6. Trip-indicating auxiliary contact
7. Auxiliary contacts

PKZM0, PKZM4 motor-protective circuit-breakers

	Max. motor rating	Rated uninterrupted current	Setting range		Screw terminals
	AC-3		Overload releases	Short-circuit release	**Type**
	380 V 400 V 415 V	I_u	I_r	I_{rm}	Article no.
	P	A	A	A	
	kW				
Motor-protective circuit-breakers, classification type "1" and "2"	–	0.16	0.1 – 0.16	2.2	**PKZM0-0,16** 072730
	0.06	0.25	0.16 – 0.25	3.5	**PKZM0-0,25** 072731
	0.09	0.4	0.25 – 0.4	5.6	**PKZM0-0,4** 072732
	0.12	0.63	0.4 – 0.63	8.8	**PKZM0-0,63** 072733
	0.25	1	0.63 – 1	14	**PKZM0-1** 072734
	0.55	1.6	1 – 1.6	22	**PKZM0-1,6** 072735
	0.75	2.5	1.6 – 2.5	35	**PKZM0-2,5** 072736
	1.5	4	2.5 – 4	56	**PKZM0-4** 072737
	2.2	6.3	4 – 6.3	88	**PKZM0-6,3** 072738
	4	10	6.3 – 10	140	**PKZM0-10** 072739
	5.5	12	9 – 12	168	**PKZM0-12** 278486
	7.5	16	10 – 16	224	**PKZM0-16** 046938
	9	20	16 – 20	280	**PKZM0-20** 046988
	12.5	25	20 – 25	350	**PKZM0-25** 046989
	15	32	25 – 32	448	**PKZM0-32** 278489
Motor-protective circuit-breaker, classification type "1" and "2"	7.5	16	10 – 16	224	**PKZM4-16** 222350
	12.5	25	16 – 25	350	**PKZM4-25** 222352
	15	32	25 – 32	448	**PKZM4-32** 222353
	20	40	32 – 40	560	**PKZM4-40** 222354
	25	50	40 – 50	700	**PKZM4-50** 222355
	30	58	50 – 58	812	**PKZM4-58** 222394
	34	65	55 – 63	882	**PKZM4-63** 222413





Note Three-phase motors (approximate values for squirrel-cage rotors)

PKZM01 motor-protective circuit-breaker

	Max. motor rating AC-3 380 V 400 V 415 V P kW	Rated uninterrupted current I_u A	Setting range Overload releases I_r A	Short-circuit releases I_{rm} A	Screw terminals **Type** Article no.
Motor-protective circuit-breakers, classification type "1" and "2"	–	0.16	0.1 – 0.16	2.2	**PKZM01-0,16** 278475
	0.06	0.25	0.16 – 0.25	3.5	**PKZM01-0,25** 278476
	0.09	0.4	0.25 – 0.4	5.6	**PKZM01-0,4** 278477
	0.12	0.63	0.4 – 0.63	8.8	**PKZM01-0,63** 278478
	0.25	1	0.63 – 1	14	**PKZM01-1** 278479
	0.55	1.6	1 – 1.6	22	**PKZM01-1,6** 278480
	0.75	2.5	1.6 – 2.5	35	**PKZM01-2,5** 278481
	1.5	4	2.5 – 4	56	**PKZM01-4** 278482
	2.2	6.3	4 – 6.3	88	**PKZM01-6,3** 278483
	4	10	6.3 – 10	140	**PKZM01-10** 278484
	5.5	12	8 – 12	168	**PKZM01-12** 278485
	7.5	16	10 – 16	224	**PKZM01-16** 283390

Note Three-phase motors (approximate values for squirrel-cage rotors)

Insulated enclosures

		Protection type	For use with	**Type** Article no.
Insulated enclosures for surface mounting	–	IP40	PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off)	**CI-PKZ01** 281403
	With actuating diaphragm	IP65	PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off)	**CI-PKZ01-G** 281404
	Lockable in the Off position	IP65	PKZM01+NHI-E+U or A (undervoltage or shunt release)+L (2 off)	**CI-PKZ01-SVB** 281405
	Lockable in the Off position, in conjunction with VHI-PKZ01	IP65	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**CI-PKZ01-SVB-V** 281944
	With stay-put Emergency-Stop mushroom button	IP65	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**CI-PKZ01-PVT** 281406
	With key-release Emergency-Stop mushroom button	IP65	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**CI-PKZ01-PVS** 281407
Insulated enclosures for flush mounting	–	Front IP40	PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off)	**E-PKZ01** 281633
	With actuating diaphragm	Front IP55	PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off)	**E-PKZ01-G** 281634
	Lockable in the Off position	Front IP55	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**E-PKZ01-SVB** 281635
	Lockable in the Off position, in conjunction with VHI-PKZ01	Front IP55	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**E-PKZ01-SVB-V** 281943
	With stay-put Emergency-Stop mushroom button	Front IP55	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**E-PKZ01-PVT** 281636
	With key-release Emergency-Stop mushroom button	Front IP55	PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off)	**E-PKZ01-PVS** 281637

Accessories

	Contacts M = Make	Contacts B = Break	Type of current AC/DC	For use with	**Type** Article no. when ordered separately
Trip-indicating auxiliary contact 	2 × 1 M	–	–	PKZM0 PKZM4 PKZM01	**AGM2-10-PKZ0** 072898
	–	2 × 1 B	–		**AGM2-01-PKZ0** 072899
Early-make auxiliary contacts 	2 M	–	–	PKZM0 PKZM01	**VHI20-PKZ0** 203595
–	2 M	–	–	PKZM01	**VHI20-PKZ01** 278495
Shunt release 	–	–	AC operation	PKZM0 PKZM4 PKZM01	**A-PKZ0(230V50HZ)** 073187
	–	–	DC operation		**A-PKZ0(24VDC)** 073200
Undervoltage release 	–	–	AC operation	PKZM0 PKZM4 PKZM01	**U-PKZ0(230V50HZ)** 073135
Standard auxiliary contact 	1 M	1 B	–	PKZM0 PKZM4 PKZM01	**NHI11-PKZ0** 072896
	1 M	2 B	–		**NHI12-PKZ0** 072895
	2 M	1 B	–		**NHI21-PKZ0** 072894
Standard auxiliary contact 	1 M	1 B	–		**NHI-E-11-PKZ0** 082882
	1 M	–	–		**NHI-E-10-PKZ0** 082884

Technical data basic units

			PKZM01...	PKZM0-...	PKZM4
General					
Ambient temperature					
open		°C	–25/55	–25/55	–25/55
Terminal capacity					
Solid		mm²	1 × (1 – 6) 2 × (1 – 6)	1 × (1 – 6) 2 × (1 – 6)	1 × (1 – 50) 2 × (1 – 35)
Flexible with ferrule		mm²	1 × (1 – 6) 2 × (1 – 6)	1 × (1 – 6) 2 × (1 – 6)	1 × (1 – 35) 2 × (1 – 35)
Solid or stranded		AWG	18 – 10	18 – 10	14 – 2
Tightening torque, terminal screws					
Main contacts		Nm	1.7	1.7	3
Auxiliary contacts		Nm	1	1	1
Main contacts					
Rated operational voltage	U_e	V AC	690	690	690
Rated uninterrupted current = rated operational current	$I_u = I_e$	A	16 or setting current of overcurrent release	32 or setting current of overcurrent release	63 or setting current of overcurrent release
Lifespan, mechanical	Operations	× 10⁶	0.05	0.05	0.03
Lifespan, electric (AC-3 at 400 V)	Operations	× 10⁶	0.05	0.05	0.03
Maximum operating frequency		Ops/h	25	40	40
Releases					
Temperature compensation					
to IEC/EN 60947, VDE 0660		°C	–5/40	–5/40	–5/40
Operating range		°C	–25/55	–25/55	–25/55
Setting range, overload release		× I_u	0.6 – 1	0.6 – 1	0.6 – 1
Short-circuit release fixed		× I_u	14	14	14
Phase-failure sensitivity			IEC/EN 60947-4-1, VDE 0660 Part 102	IEC/EN 60947-4-1, VDE 0660 Part 102	IEC/EN 60947-4-1, VDE 0660 Part 102

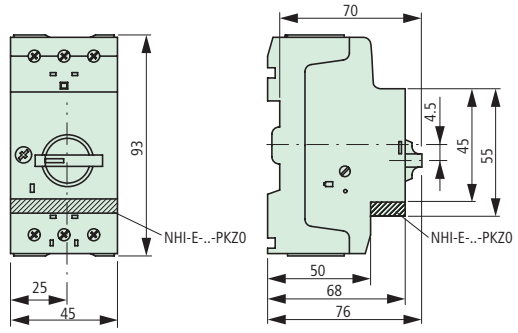
Technical data auxiliary contacts

		NHI...PKZ0	NHI-E-...PKZ0	VHI...PKZ0	AGM
Terminal capacity					
Solid or flexible with ferrule	mm²	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

PKZM, dimensions

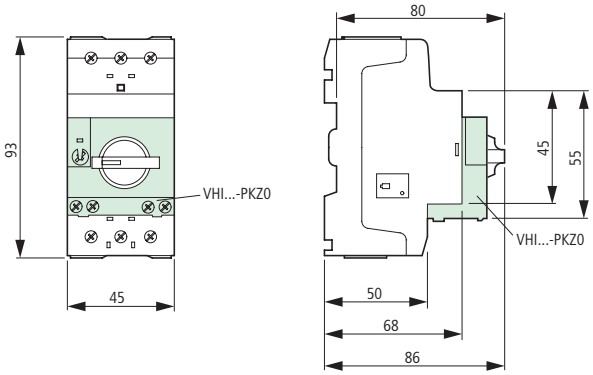
Motor-protective circuit-breakers

PKZM0-…(+NHI-E-..-PKZ0)



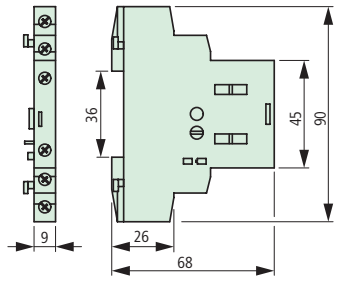
Motor-protective circuit-breaker with early-make auxiliary contact

PKZM0-…+VHI-…-PKZ0



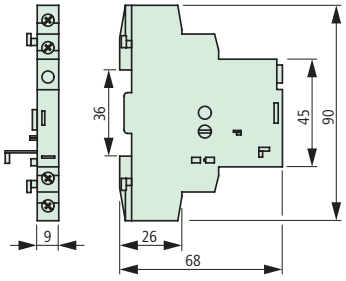
Standard auxiliary contact

NHI…-PKZ0



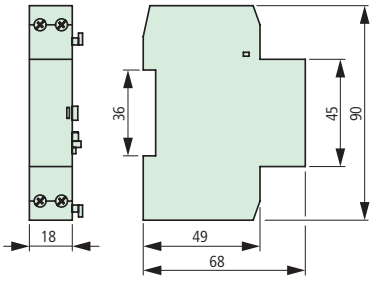
Trip-indicating auxiliary contact

AGM2-…-PKZ0



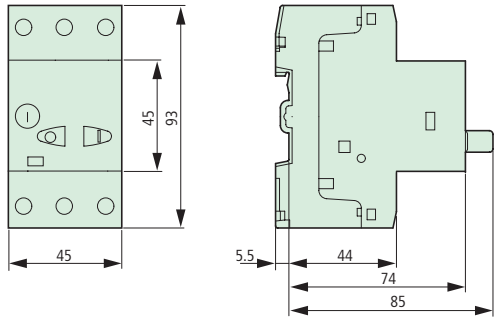
Voltage release

U/A-PKZ0



Motor-protective circuit-breakers

PKZM01



Switching capacity with classification type "1" and "2"

PKZM0					PKZM01			
	400 V				400 V			
I_u A	I_q kA	I_{cu} kA	I_{cs} kA	A[1]	I_q kA	I_{cu} kA	I_{cs} kA	A[2]
0.16 – 1	150	150	150	N	50	50	50	50
1.6	150	150	150	N	50	50	50	50
2.5	150	150	150	N	50	50	50	50
4	150	150	150	N	50	50	50	50
6.3	150	150	150	N	50	50	50	50
10	150	150	150	N	50	50	50	50
12	50	50	10	50	50	50	10	50
16	50	50	10	50	–	–	–	–
20	50	50	10	50	–	–	–	–
25	50	50	10	50	–	–	–	–
32	50	50	10	50	–	–	–	–

Rated uninterrupted current I_u
Rated conditional short-circuit current I_q IEC/EN 60947-4-1
Rated ultimate short-circuit breaking capacity I_{cu} } IEC/EN 60439-2
Rated breaking capacity I_{cs}

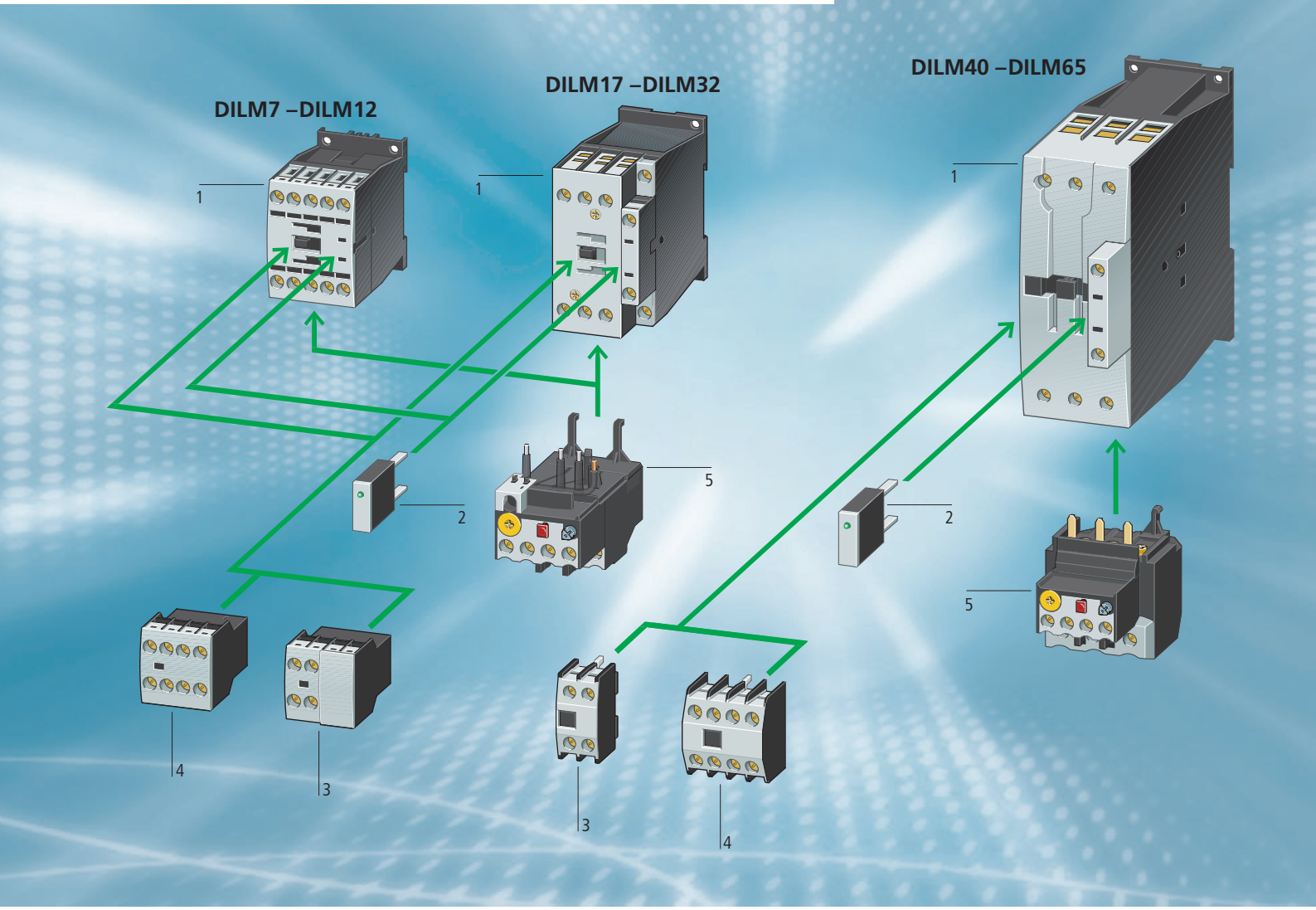
1) Required back-up fuse, if the short-circuit current exceeds the rated conditional short-circuit current of the devices ($I_{cc} > I_q$).

2) Fuse (A gG/gL) to raise the switching capacity of the motor-protective circuit-breaker to 100 kA

N Not required

No upstream protective device necessary, since inherently protected range (100/150 kA)

Contactors DILM7 –65
DILA contactor relays



1. Basic units
2. Suppressor [1)]
3. Auxiliary contact modules, 2-pole
4. Auxiliary contact modules, 4-pole
5. Overload relays

1) For AC operated contactors 50 – 60 Hz;
in DC operated contactors, the suppressor circuit is incorporated.
Note drop-out delay

DILM basic units

	AC-3 380 V 400 V I_e A	AC-3 380 V 400 V P kW	open $I_{th} = I_e$ A	Contacts B = Break M = Make		Can be combined with auxiliary contact	AC operation Type Article no. 230 V 50Hz	AC operation Type Article no. 24 V 50/60 Hz	AC operation Type Article no. 110 V 50 Hz, 120 V 60 Hz	DC actuation Type Article no.
3-pole 	7	3	20	1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM7-10(...)** 276550	**DILM7-10(...)** 276554	**DILM7-10(...)** 276547	**DILM7-10(24VDC)** 276565
	7	3		–	1 B	DILA-XHI(V)..	**DILM7-01(...)** 276585	**DILM7-01(...)** 276589	**DILM7-01(...)** 276582	**DILM7-01(24VDC)** 276600
	9	4		1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM9-10(...)** 276690	**DILM9-10(...)** 276694	**DILM9-10(...)** 276687	**DILM9-10(24VDC)** 276705
	9	4		–	1 B	DILA-XHI(V)..	**DILM9-01(...)** 276725	**DILM9-01(...)** 276729	**DILM9-01(...)** 276722	**DILM9-01(24VDC)** 276740
	12	5.5		1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM12-10(...)** 276830	**DILM12-10(...)** 276834	**DILM12-10(...)** 276827	**DILM12-10(24VDC)** 276845
	12	5.5		–	1 B	DILA-XHI(V)..	**DILM12-01(...)** 276865	**DILM12-01(...)** 276869	**DILM12-01(...)** 276862	**DILM12-01(24VDC)** 276880
4-pole	–	–		–	–	DILM32-XHI.. DILA-XHI(V)..	**DILMP20(...)** 276970	**DILMP20(...)** 276974	**DILMP20(...)** 276967	**DILMP20(24VDC)** 276985
3-pole 	18	7.5	35	1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM17-10(...)** 277004	**DILM17-10(...)** 277008	**DILM17-10(...)** 277001	**DILM17-10(RDC24)** 277018
	18	7.5	35	–	1 B	DILA-XHI(V)..	**DILM17-01(...)** 277036	**DILM17-01(...)** 277040	**DILM17-01(...)** 277033	**DILM17-01(RDC24)** 277050
	25	11	40	1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM25-10(...)** 277132	**DILM25-10(...)** 277136	**DILM25-10(...)** 277129	**DILM25-10(RDC24)** 277146
	25	11	40	–	1 B	DILA-XHI(V)..	**DILM25-01(...)** 277164	**DILM25-01(...)** 277168	**DILM25-01(...)** 277161	**DILM25-01(RDC24)** 277178
	32	15	40	1 M	–	DILM32-XHI.. DILA-XHI(V)..	**DILM32-10(...)** 277260	**DILM32-10(...)** 277264	**DILM32-10(...)** 277257	**DILM32-10(RDC24)** 277274
	32	15	40	–	1 B	DILA-XHI(V)..	**DILM32-01(...)** 277292	**DILM32-01(...)** 277296	**DILM32-01(...)** 277289	**DILM32-01(RDC24)** 277306
[1] 	40	18.5	50	–	–	DILM150-XHI(V).. DILM1000-XHI(V)..	**DILM40(...)** 277766	**DILM40(...)** 277770	**DILM40(...)** 277763	**DILM40(RDC24)** 277780
	50	22	60	–	–	DILM150-XHI(V).. DILM1000-XHI(V)..	**DILM50(...)** 277830	**DILM50(...)** 277834	**DILM50(...)** 277827	**DILM50(RDC24)** 277844
	65	30	72	–	–	DILM150-XHI(V).. DILM1000-XHI(V)..	**DILM65(...)** 277894	**DILM65(...)** 277898	**DILM65(...)** 277891	**DILM65(RDC24)** 277908

The listed auxiliary and main contacts up to 12 A are available with tension clamp terminations.
The auxiliary contact modules listed for the DILA contactor relay can also be used for the DILM contactors up to 32 A.
Auxiliary contact members: DILA-XHI to EN 50005, DILM32-XHI to DIN 50012
The 2- and 4-pole DILM32-XHI... auxiliary contact modules can not be combined with DILM...-01 contactors.

[1] Availability for supply for DILM40 to DILM65 from December 2004.

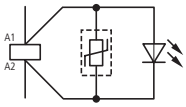
Auxiliary contact modules

		$I_{th} = I_e$ open A	Contacts M = Make B = Break M_F = Early-make contacts B_S = Late-break contacts		I_e AC–15 380 V 400 V 415 V A	Can be combined with basic unit	**Type** Article no.
	2-pole	10	1 M	1 B	3	DILM7-10... DILM9-10... DILM12-10... DILM17-10... DILM25-10... DILM32-10...	**DILM32-XHI11** 277376
			–	2 B			**DILM32-XHI02** 277375
	4-pole		2 M	2 B			**DILM32-XHI22** 277377
	2-pole		2 M	–		DILM7... DILM9... DILM12... DILM17... DILM25... DILM32...	**DILA-XHI20** 276422
			1 M	1 B			**DILA-XHI11** 276421
			–	2 B			**DILA-XHI02** 276420
			1 M_F	1 B_S			**DILA-XHIV11** 276423
	4-pole		4 M	–			**DILA-XHI40** 276428
			3 M	1 B			**DILA-XHI31** 276427
			2 M	2 B			**DILA-XHI22** 276426
			1 M	3 B			**DILA-XHI13** 276425
			–	4 B			**DILA-XHI04** 276424
			1 M_F	1 B_S			**DILA-XHIV22** 276429
	2-pole	10	2	–	3	DILM40... DILM50... DILM65...	**DILM150-XHI20** 277945
			1	1			**DILM150-XHI11** 277946
			–	2			**DILM150-XHI02** 277947
	4-pole		4	–			**DILM150-XHI40** 277948
			3	1			**DILM150-XHI31** 277949
			2	2			**DILM150-XHI22** 277950
			1	3			**DILM150-XHI13** 277951
			–	4			**DILM150-XHI04** 277952
			1 M, 1 M_F	1 B, 1 B_S			**DILM150-XHIV22** 277953
–	2-pole	10	1	1	3	DILM40... DILM50... DILM65...	**DILM1000-XHI11-SI** 278425
							DILM150-XHIA11[1)] 283463

The listed auxiliary and main contacts up to 12 A are available with tension clamp terminations.
The auxiliary contact modules listed for the DILA contactor relay can also be used for the DILM contactors up to 32 A.
Auxiliary contact members: DILA-XHI to EN 50005, DILM32-XHI to DIN 50012
The 2- and 4-pole DILM32-XHI... auxiliary contact modules can not be combined with DILM...-01 contactors.

[1)] NEW: Also available as 4-pole version DILM150-XHIA22 with terminal markings 53/54, 61/62, 71/72 and 83/84 (Article no. 283464) in order to avoid duplication of terminal markings on combinations with auxiliary contact on the side.

Accessories

	U_s V AC	For use with	Contact sequence	Type Article no.	Notes
Suppressor Varistor suppressor 	24 – 48	DILM7 – DILM12 DILMP20 DILA		**DILM12-XSPV48** 281208	For AC operated contactors, 50-60 Hz DC operated contactors have an integrated suppressor Note drop-out delay
	48 – 130			**DILM12-XSPV130** 281209	
	130 – 240			**DILM12-XSPV240** 281210	
	240 – 500			**DILM12-XSPV500** 281211	
	24 – 48	DILM17 – DILM32		**DILM32-XSPV48** 281212	
	48 – 130			**DILM32-XSPV130** 281213	
	130 – 240			**DILM32-XSPV240** 281214	
	240 – 500			**DILM32-XSPV500** 281215	
	24 – 48	DILM40 – DILM65		**DILM95-XSPV48** 281216	Availability for supply for DILM95-XSPV48/130/240/500 from December 2004
	48 – 130			**DILM95-XSPV130** 281217	
	130 – 240			**DILM95-XSPV240** 281218	
	240 – 500			**DILM95-XSPV500** 281219	
Varistor suppressors with built-in LED 	24 – 48	DILM7 – DILM12 DILMP20 DILA		**DILM12-XSPVL48** 281220	For AC operated contactors, 50-60 Hz DC operated contactors have an integrated suppressor Note drop-out delay
	127 – 240			**DILM12-XSPVL240** 281221	
	24 – 48	DILM17 – DILM32		**DILM32-XSPVL48** 281222	
	130 – 240			**DILM32-XSPVL240** 281223	
	24 – 48	DILM40 – DILM65		**DILM95-XSPVL48** 281224	Availability for supply for DILM95-XSPVL48/240 from December 2004
	130 – 240			**DILM95-XSPVL240** 281225	
RC suppressor 	24 – 48	DILM7 – DILM12 DILMP20 DILA		**DILM12-XSPR48** 281199	For AC operated contactors, 50-60 Hz DC operated contactors have an integrated suppressor Note drop-out delay
	130 – 240			**DILM12-XSPR240** 281200	
	240 – 500			**DILM12-XSPR500** 281201	
	24 – 48	DILM17 – DILM32		**DILM32-XSPR48** 281202	
	110 – 240			**DILM32-XSPR240** 281203	
	240 – 500			**DILM32-XSPR500** 281204	
	24 – 48	DILM40 – DILM65		**DILM95-XSPR48** 281205	Availability for supply for DILM95-XSPR48/240/500 from December 2004
	110 – 240			**DILM95-XSPR240** 281206	
	240 – 500			**DILM95-XSPR500** 281207	
Connector For the mechanical connection of contactors to groups of components	–	DILM7 – DILM32 DILA	–	**DILM32-XVB** 281227	0 mm distance between contactors Availability for supply for DILM150-XVB from December 2004
		DILM40 – DILM65		**DILM150-XVB** 281226	
Mechanical interlock 	–	DILM7 – DILM32 DILMP20 DILA	–	**DILM12-XMV** 281196	For two contactors with AC or DC operation, distance between contactors 0 mm, mechanical lifespan 2.5 × 10 ^{6} switching operations, additional auxiliary contact modules can be fitted
		DILM17 – DILM32		**DILM32-XMV** 281197	
		DILM40 – DILM65		**DILM65-XMV** 281198	Availability for supply for DILM65-XMV from December 2004

Technical data

					DILM7	DILM9	DILM12
General							
Lifespan, mechanical							
AC operated			Operations	× 10^6	10	10	10
DC operated			Operations	× 10^6	10	10	10
Ambient temperature		open		°C	–25/60	–25/60	–25/60
Mechanical shock resistance (IEC/EN 60068-2-27)							
Half-sinusoidal shock 10 ms	Main contacts	Make contact		g	10	10	10
	Auxiliary contacts	Make contact		g	7	7	7
		Break contact		g	5	5	5
Weight	AC operated			kg	0.23	0.23	0.23
	DC operated			kg	0.28	0.28	0.28
Terminal capacity, main contacts							
Solid				mm^2	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)
Flexible with ferrule				mm^2	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)
Stranded				mm^2	–	–	–
Solid or stranded				AWG	18 – 14	18 – 14	18 – 14
Flat conductor			Number of layers × width × thickness	mm	–	–	–
Terminal capacity, auxiliary contacts							
Solid				mm^2	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 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)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
Solid or stranded				AWG	18 – 14	18 – 14	18 – 14
Main contacts							
Rated insulation voltage		AC	U_i	V AC	690	690	690
Rated operational voltage			U_e	V AC	690	690	690
Making capacity (cos φ to IEC/EN 60947)				A	108	108	144
Breaking capacity		220/230 V		A	70	90	120
		380/400 V		A	70	90	120
		500 V AC		A	50	70	100
		660/690 V		A	40	50	70
		1000 V		A	–	–	–
Component lifespan		AC-3	Operations	× 10^6	1.3	1.3	1.3
		AC-4	Operations	× 10^6	0.2	0.2	0.2

Technical data

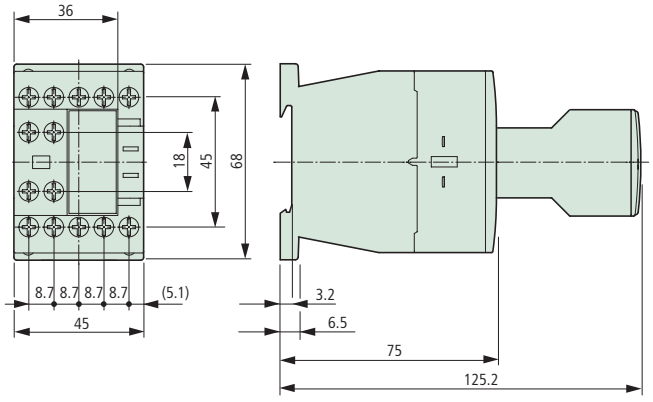
DILM17	DILM25	DILM32	DILM40	DILM50	DILM65
10	10	10	10	10	10
10	10	10	10	10	10
–25/60	–25/60	–25/60	–25/60	–25/60	–25/60
10	10	10	10	10	10
7	7	7	7	7	7
5	5	5	5	5	5
0.4	0.4	0.4	0.9	0.9	0.9
0.4	0.4	0.4	0.9	0.9	0.9
1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (2.5 – 16) 2 × (2.5 – 16)	1 × (2.5 – 16) 2 × (2.5 – 16)	1 × (2.5 – 16) 2 × (2.5 – 16)
1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (0.75 – 16) 2 × (0.75 – 10)	1 × (2.5 – 35) 2 × (2.5 – 25)	1 × (2.5 – 35) 2 × (2.5 – 25)	1 × (2.5 – 35) 2 × (2.5 – 25)
1 × 16	1 × 16	1 × 16	1 × (16 – 50) 2 × (16 – 35)	1 × (16 – 50) 2 × (16 – 35)	1 × (16 – 50) 2 × (16 – 35)
14 – 6	14 – 6	14 – 6	12 – 2	12 – 2	12 – 2
–	–	–	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)
1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 2.5)
1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
18 – 14	18 – 14	18 – 14	18 – 14	18 – 14	18 – 14
690	690	690	690	690	690
690	690	690	690	690	690
238	350	448	560	700	910
170	250	320	400	500	650
170	250	320	400	500	650
170	250	320	400	500	650
120	150	180	250	320	370
–	–	–	–	–	–
1.3	1.3	1.3	1.3	1.3	1.3
0.2	0.2	0.2	0.2	0.2	0.2

Technical data

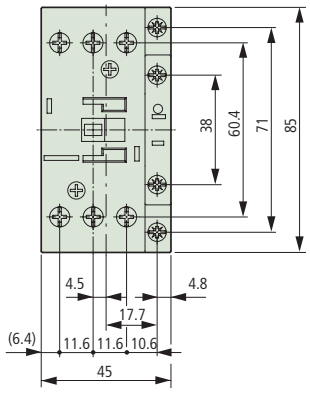
					DILM7	DILM9	DILM12
AC							
AC-1 actuation							
Conventional free air thermal current, 3-pole 50/60 Hz	Open	At 40 °C		A	22	22	22
		At 60 °C		A	20	20	20
AC-3 actuation							
Rated operational current, AC-3 open, 50/60 Hz, 3-pole		220/230 V	I_e	A	7	9	12
		380/400 V	I_e	A	7	9	12
		500 V	I_e	A	5	7	10
		660/690 V	I_e	A	4	5	7
Motor rating		220/230 V	P	kW	2.2	2.5	3.5
		380/400 V	P	kW	3	4	5.5
		500 V	P	kW	3.5	4.5	7
		660/690 V	P	kW	3.5	4.5	6.5
Magnet systems							
Pick-up and drop-out values							
AC operated			Pick-up	× U_c	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
DC operated			Pick-up	× U_c	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1
Coil consumption from cold and 1.0 × U_c							
AC operated 50/60 Hz			Pick-up	VA	28 26	28 26	28 26
				W	22 21	22 21	22 21
			Sealing	VA	4.6 3.9	4.6 3.9	4.6 3.9
				W	1.4 1.2	1.4 1.2	1.4 1.2
DC operated			Pick-up	W	3	3	4.5
			Sealing	W	3	3	4.5

Dimensions

DILM7 – DILM12, DILA with auxiliary contact module



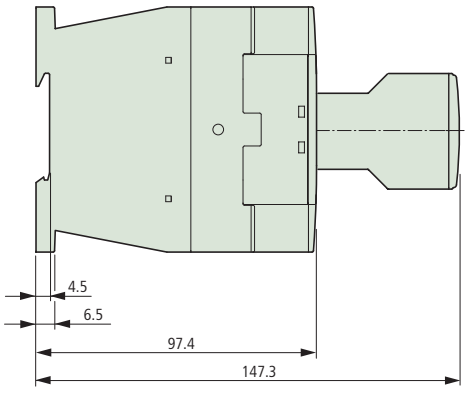
DILM17 – DILM32 basic unit



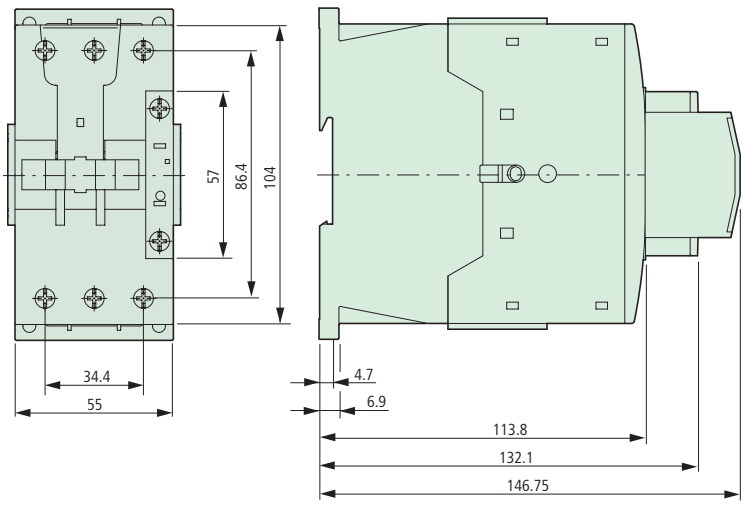
Technical data

DILM17	DILM25	DILM32	DILM40	DILM50	DILM65
40	45	45	60	70	85
35	36	36	50	60	72
17	25	32	40	50	65
18	32	25	40	50	65
17	25	32	40	50	65
12	15	18	25	32	37
5	10	7.5	12.5	15.5	20
7.5	15	11	18.5	22	30
12	23	17.5	28	36	47
11	17	14	23	30	35
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	0.7 – 1.2	0.7 – 1.2	0.7 – 1.2	0.7 – 1.2
60 54	60 54	60 54	–	–	–
48 43	48 43	48 43	–	–	–
9.5 7.9	9.5 7.9	9.5 7.9	–	–	–
2.8 2.4	2.8 2.4	2.8 2.4	–	–	–
12 at 24 V	12 at 24 V	12 at 24 V	24 at 24 V	24 at 24 V	24 at 24 V
0.5 at 24 V	0.5 at 24 V	0.5 at 24 V	0.5 at 24 V	0.5 at 24 V	0.5 at 24 V

Dimensions



DILM40 – DILM65 basic unit



DILA contactor relays

	Contacts		AC–15 380 V 400 V 415 V		Can be combined with auxiliary contact	AC operation			DC operation
						Type Article no.	**Type** Article no.	**Type** Article no.	**Type** Article no.
	M = Make B = Break		I_e A	I_{th} A		230 V 50 Hz	24 V 50/60 Hz	110 V 50 Hz, 120 V 60 Hz	24 V DC
Basic units with interlocked opposing contacts	4 M	–	4	10	DILA-XHI(V)...	**DILA-40(...)** 276329	**DILA-40(...)** 276333	**DILA-40(...)** 276326	**DILA-40(...)** 276344
	3 M	1 B	4	10	DILA-XHI(V)...	**DILA-31(...)** 276364	**DILA-31(...)** 276368	**DILA-31(...)** 276361	**DILA-31(...)** 276379
	2 M	2 B	4	10	DILA-XHI(V)...	**DILA-22(...)** 276399	**DILA-22(...)** 276403	**DILA-22(...)** 276396	**DILA-22(...)** 276414

The listed auxiliary and main contacts up to 12 A are available with tension clamp terminations.
The auxiliary contact modules listed for the DILA contactor relay can also be used for the DILM contactors up to 32 A.
Auxiliary contact members: DILA-XHI to EN 50005, DILM32-XHI to DIN 50012
The DILA-22 contactor relay can not be combined with the 4-pole auxiliary contact module.

DILA auxiliary contact modules

	Contacts M = make contact, B = break contact M_F = Early-make contacts B_S = Late-break contacts		Rated operating current AC–15 380 V 400 V 415 V I_e A	Conventional current, open at 60 °C I_{th} A	Can be combined with basic unit	**Type** Article no.
2-pole	–	2 B	3	10	DILA... DILM7... DILM9... DILM12... DILM17... DILM25... DILM32...	**DILA-XHI02** 276420
	1 M	1 B				**DILA-XHI11** 276421
	2 M	–				**DILA-XHI20** 276422
	1 M_F	1 B_S				**DILA-XHIV11** 276423
4-pole	–	4 B				**DILA-XHI04** 276424
	1 M	3 B				**DILA-XHI13** 276425
	2 M	2 B				**DILA-XHI22** 276426
	3 M	1 B				**DILA-XHI31** 276427
	4 M	–				**DILA-XHI40** 276428
	1 M_F	1 B_S				**DILA-XHIV22** 276429

→ Dimensions Page 22

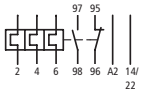
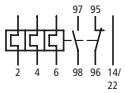
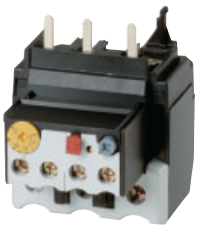
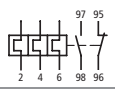
Technical data

				DILA	DILA-XHI...
General					
Lifespan, mechanical					
AC operated		Operations	× 10^6	20	20
DC operated		Operations	× 10^6	20	20
Ambient temperature					
open			°C	–25/60	–25/60
Weight					
AC operated			kg	0.19	
DC operated			kg	0.19	
Terminal capacity					
Screw terminals					
	Solid		mm^2	1 × (0.75 – 4) 2 × (0.75 – 2.5)	
	Flexible with ferrule		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	
	Solid or stranded		AWG	18 – 14	
Contacts					
Rated insulation voltage		U_i	V AC	690	690
Rated operational voltage		U_e	V AC	690	500
Rated operational current					
AC–15	220/240 V	I_e	A	6	6
	380/415 V	I_e	A	4	3
	500 V	I_e	A	1.5	–
DC-13 [1]	DC-13 L/R ≦ 15 ms				
	Contacts in series:				
	1	24 V	A	–	–
Control circuit reliability at U_e = 24 V DC, U_{min} = 17 V, I_{min} = 5.4 mA		Fault probability	H_F	< 10^{-8}, < 1 failure to 100 mill. switching operations	
Magnet systems					
Pick-up and drop-out values					
AC operated					
	50 Hz single-voltage coil and 50/60 Hz dual-voltage coil	Pick-up	× U_s	0.8 – 1.1	–
	Dual-frequency coil 50/60 Hz	Pick-up	× U_s	0.8 – 1.1	–
DC operated [2]					
	Pick-up voltage	Pick-up	× U_s	0.8 – 1.1	–
	Without auxiliary contact module (40 °C)	Pick-up	× U_c	0.7 – 1.3	–
Power consumption					
50 Hz single-voltage coil and 50/60 Hz dual-voltage coil		Pick-up	VA	24	–
		Pick-up	W	19	–
50 Hz single-voltage coil and 50/60 Hz dual-voltage coil		Sealing	VA	4	–
		Sealing	W	1.2	–
DC operated		Pick-up = pick-up	W	3	–

Notes

[1] Making and breaking currents to DC-13 time constant as stated
[2] Smoothed DC or three-phase bridge rectifier

ZB overload relays

	Setting range Overload releases I_r A	For use with	Short-circuit protection Classification type "1" gG/gL A	Short-circuit protection Classification type "2" gG/gL A	Type Article no.	
ZB12 overload relays Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102 Direct fitting  	0.1 – 0.16	DILM7, DILM9, DILM12, DIULM7, DIULM9, DIULM12, SDAINLM12, SDAINLM16, SDAINLM22	25	0.5	**ZB12-0.16** 278431	Overload release: tripping class 10 A Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor. Suitable for the protection of EEx e-motors. EU prototype test certificate available on request.
	0.16 – 0.24			1	**ZB12-0.24** 278432	
	0.24 – 0.4			2	**ZB12-0.4** 278433	
	0.4 – 0.6			4	**ZB12-0.6** 278434	
	0.6 – 1			4	**ZB12-1.0** 278435	
	1 – 1.6			6	**ZB12-1.6** 278436	
	1.6 – 2.4			10	**ZB12-2.4** 278437	
	2.4 – 4			16	**ZB12-4** 278438	
	4 – 6			20	**ZB12-6** 278439	
	6 – 10		50	25	**ZB12-10** 278440	
	9 – 12		50	25	**ZB12-12** 278441	
ZB32 overload relays Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102 Direct fitting  	0.1 – 0.16	DILM17, DILM25, DILM32, DIULM17, DIULM25, DIULM32 SDAINLM30, SDAINLM45, SDAINLM55	25	0.5	**ZB32-0.16** 278442	Overload release: tripping class 10 A Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor. Suitable for the protection of EEx e-motors. EU prototype test certificate available on request.
	0.16 – 0.24			1	**ZB32-0.24** 278443	
	0.24 – 0.4			2	**ZB32-0.4** 278444	
	0.4 – 0.6			4	**ZB32-0.6** 278445	
	0.6 – 1			4	**ZB32-1.0** 278446	
	1 – 1.6			6	**ZB32-1.6** 278447	
	1.6 – 2.4			10	**ZB32-2.4** 278448	
	2.4 – 4			16	**ZB32-4** 278449	
	4 – 6			20	**ZB32-6** 278450	
	6 – 10		50	25	**ZB32-10** 278451	
	10 – 16		63	35	**ZB32-16** 278452	
	16 – 24		100	35	**ZB32-24** 278453	
	24 – 32		125	63	**ZB32-32** 278454	
ZB65 overload relays Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102 Direct fitting  	6 – 10	DILM40, DILM50, DILM65, DIULM40, DIULM50, DIULM65	50	25	**ZB65-10** 278455	Overload release: tripping class 10 A Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor. Suitable for the protection of EEx e-motors. EU prototype test certificate available on request.
	10 – 16		63	35	**ZB65-16** 278456	
	16 – 24		63	50	**ZB65-24** 278457	
	24 – 40		125	63	**ZB65-40** 278458	
	40 – 57		160	80	**ZB65-57** 278459	
	50 – 65		160	100	**ZB65-65** 278460	

Technical data Overload relays

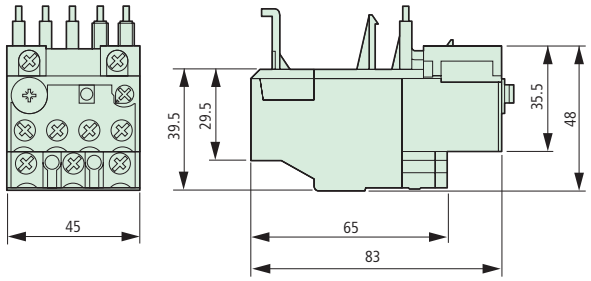
				ZB12, ZB32	ZB65
General					
Standards and regulations				IEC/EN 60947, VDE 0660, UL, CSA	
Ambient temperature					
open[1]			°C	–25/50	–25/50
enclosed[1]			°C	–25/40	–25/40
Main contacts					
Rated operational voltage		U_e	V AC	690	690
Terminal capacity					
Solid			mm²	2 × (1 – 6)	2 × (1 – 16)
Flexible without ferrule			mm²	–	–
Flexible with ferrule			mm²	2 × (1 – 4) 2 × (1 – 6)[2]	1 × 25 2 × (1 – 10)[3]
Solid or stranded			AWG	14 – 8	14 – 2
Auxiliary circuits and control circuits					
Conventional free air thermal current		I_{th}	A	6	6
Rated operational current					
AC–15					
Make contact	240 V	I_e	A	1.5	1.5
	415 V	I_e	A	0.5	0.5
	500 V	I_e	A	0.5	0.5
Break contact	240 V	I_e	A	1.5	1.5
	415 V	I_e	A	0.9	0.9
	500 V	I_e	A	0.8	0.8
DC-13 L/R ≦ 15 ms[4]					
	24 V	I_e	A	0.9	0.9
	60 V	I_e	A	0.75	0.75
	110 V	I_e	A	0.4	0.4
	220 V	I_e	A	0.2	0.2

Notes

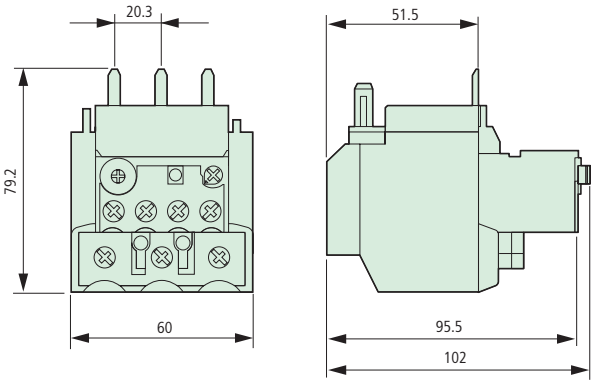
[1] Ambient temperature: operating range to IEC/EN 60947, PTB: –5 °C to +50 °C
[2] 6 mm² flexible with ferrule to DIN 46228
[3] Terminal capacity of main contacts solid and flexible with ferrule: when using 2 conductor of equal cross-section
[4] Rated operational current: making and breaking currents to DC-13, time constant as stated

Dimensions

ZB12/ZB32



ZB65



Direct-on-line starter, 400/415 V

Complete units PKZ and DILM

Classification type "1"[1)]



Motor data			Setting range		Motor starter	
					Actuating voltage 230 V 50 Hz	Actuating voltage 24 V DC
AC-3 380 V 400 V 415 V	Rated operational current 400 V	Rated short-circuit current 380 – 415 V	Overload release	Short-circuit release		
P	I_e	I_q	I_r	I_{rm}	**Type** Article no.	**Type** Article no.
kW	A	kA	A	A		
0.06	0.21	100	0.16 – 0.25	3.5	**MSC-D-0.25-M7 (...)** 281925	**MSC-D-0.25-M7 (...)** 283154
0.09	0.31	100	0.25 – 0.4	5.6	**MSC-D-0.4-M7 (...)** 281926	**MSC-D-0.4-M7 (...)** 283155
0.12	0.41	100	0.40 – 0.63	8.82	**MSC-D-0.63-M7 (...)** 281927	**MSC-D-0.63-M7 (...)** 283156
0.18	0.6	100	0.40 – 0.63	8.82	**MSC-D-0.63-M7 (...)** 281927	**MSC-D-0.63-M7 (...)** 283156
0.25	0.8	100	0.63 – 1	14	**MSC-D-1-M7 (...)** 281929	**MSC-D-1-M7 (...)** 283158
0.37	1.1	100	1.00 – 1.6	22.4	**MSC-D-1.6-M7 (...)** 283140	**MSC-D-1.6-M7 (...)** 283159
0.55	1.5	100	1.00 – 1.6	22.4	**MSC-D-1.6-M7 (...)** 283140	**MSC-D-1.6-M7 (...)** 283159
0.75	1.9	100	1.60 – 2.5	35	**MSC-D-2.5-M7 (...)** 283142	**MSC-D-2.5-M7 (...)** 283161
1.1	2.6	100	2.50 – 4	56	**MSC-D-4-M7 (...)** 283143	**MSC-D-4-M7 (...)** 283162
1.5	3.6	100	2.50 – 4	56	**MSC-D-4-M7 (...)** 283143	**MSC-D-4-M7 (...)** 283162
2.2	5	100	4.00 – 6.3	88.2	**MSC-D-6.3-M7 (...)** 283145	**MSC-D-6.3-M7 (...)** 283164
3	6.6	100	6.30 – 10	140	**MSC-D-10-M7 (...)** 283146	**MSC-D-10-M7 (...)** 283165
4	8.5	100	6.30 – 10	140	**MSC-D-10-M9 (...)** 283147	**MSC-D-10-M9 (...)** 283166
5.5	11.3	100	8 – 12	168	**MSC-D-12-M12 (...)** 283148	**MSC-D-12-M12 (...)** 283167
7.5	16	50	10 – 16	224	**MSC-D-16-M17 (...)** 283150	**MSC-D-16-M17 (...)** 283168
11	21.7	50	20 – 25	350	**MSC-D-25-M25 (...)** 283151	**MSC-D-25-M25 (...)** 283169
15	29.3	50	25 – 32	448	**MSC-D-32-M32 (...)** 283152	**MSC-D-32-M32 (...)** 283170

Notes

[1)] For classification type "2", please inquire.

Direct-on-line starter, 400/415 V

Motor-protective circuit-breakers	Contactor	Direct-on-line starter set Mechanical connection module + electrical contact module	
Type	**Type**	**Type**	
PKZM0-0,25	**DILM7-10**	**PKZM0-XD M12**	**Notes** The direct-on-line starters (complete units) consist of a PKZM0 motor-protective circuit-breaker and a DILM contactor. Up to 12 A, starters are mounted without adapter plates, with only the motor-protective circuit-breaker being secured to the top-hat rail. The contactors receive their mechanical hold via a mechanical connection module. From 16 A, motor-protective circuit-breakers and contactors are mounted on top-hat-rail adapter plates. The connection of the main contacts between PKZ and contactor is effected via an electrical contact module.
PKZM0-0,4	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-0,63	**DILM -10**	**PKZM0-XD M12**	
PKZM0-0,63	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-1	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-1,6	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-1,6	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-2,5	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-4	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-4	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-6,3	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-10	**DILM7-10**	**PKZM0-XD M12**	
PKZM0-10	**DILM9-10**	**PKZM0-XD M12**	
PKZM0-12	**DILM12-10**	**PKZM0-XD M12**	
PKZM0-16	**DILM17-10**	**PKZM0-XD M32**	
PKZM0-25	**DILM25-10**	**PKZM0-XD M32**	
PKZM0-32	**DILM32-10**	**PKZM0-XD M32**	

Reversing starter 400/415 V

	Motor data			Setting range		Motor starter	
						Actuating voltage 230 V 50 Hz	Actuating voltage 24 V DC
	AC-3 380 V 400 V 415 V	Rated operational current 400 V	Rated short-circuit current 380 – 415 V	Overload release	Short-circuit releases		
	P	I_e	I_q	I_r	I_{rm}	**Type** Article no.	**Type** Article no.
	kW	A	kA	A	A		
Complete units PKZ and DILM	0.06	0.21	100	0.16 – 0.25	3.5	**MSC-R-0.25-M7 (...)** 283171	**MSC-R-0.25-M7 (...)** 283190
Classification type "1"[1]	0.09	0.31	100	0.25 – 0.4	5.6	**MSC-R-0.4-M7 (...)** 283172	**MSC-R-0.4-M7 (...)** 283191
	0.12	0.41	100	0.40 – 0.63	8.82	**MSC-R-0.63-M7 (...)** 283173	**MSC-R-0.63-M7 (...)** 283192
	0.18	0.6	100	0.40 – 0.63	8.82	**MSC-R-0.63-M7 (...)** 283173	**MSC-R-0.63-M7 (...)** 283192
	0.25	0.8	100	0.63 – 1	14	**MSC-R-1-M7 (...)** 283175	**MSC-R-1-M7 (...)** 283194
	0.37	1.1	100	1.00 – 1.6	22.4	**MSC-R-1.6-M7 (...)** 283176	**MSC-R-1.6-M7 (...)** 283195
	0.55	1.5	100	1.00 – 1.6	22.4	**MSC-R-1.6-M7 (...)** 283176	**MSC-R-1.6-M7 (...)** 283195
	0.75	1.9	100	1.60 – 2.5	35	**MSC-R-2.5-M7 (...)** 283178	**MSC-R-2.5-M7 (...)** 283197
	1.1	2.6	100	2.50 – 4	56	**MSC-R-4-M7 (...)** 283179	**MSC-R-4-M7 (...)** 283198
	1.5	3.6	100	2.50 – 4	56	**MSC-R-4-M7 (...)** 283179	**MSC-R-4-M7 (...)** 283198
	2.2	5	100	4.00 – 6.3	88.2	**MSC-R-6.3-M7 (...)** 283181	**MSC-R-6.3-M7 (...)** 283200
	3	6.6	100	6.30 – 10	140	**MSC-R-10-M7 (...)** 283182	**MSC-R-10-M7 (...)** 283201
	4	8.5	100	6.30 – 10	140	**MSC-R-10-M9 (...)** 283183	**MSC-R-10-M9 (...)** 283202
	5.5	11.3	100	8 – 12	168	**MSC-R-12-M12 (...)** 283184	**MSC-R-12-M12 (...)** 283203
	7.5	16	50	10 – 16	224	**MSC-R-16-M17 (...)** 283186	**MSC-R-16-M17 (...)** 283204
	11	21.7	50	20 – 25	350	**MSC-R-25-M25 (...)** 283187	**MSC-R-25-M25 (...)** 283205
	15	29.3	50	25 – 32	448	**MSC-R-32-M32 (...)** 283188	**MSC-R-32-M32 (...)** 283206

Notes

[1] For classification type "2", please inquire.

Reversing starter 400/415 V

Motor-protective circuit-breakers	Contactor	Reversing starter set Mechanical connection module + electrical contact module and reversing link	
Type	Type	Type	
PKZM0-0,25	DILM7-01	PKZM0-XR M12	**Notes** The reversing starters (complete units) consist of a PKZM0 motor-protective circuit-breaker and two DILM contactors. Up to 12 A, starters are mounted without adapter plates, with only the motor-protective circuit-breaker being secured to the top-hat rail. The contactors receive their mechanical hold via a mechanical connection module. From 16 A, motor-protective circuit-breakers and contactors are mounted on top-hat-rail adapter plates. The connection of the main contacts between PKZ and contactor is effected via an electrical contact module. Complete units with mechanical interlock, starters up to 12 A also with electrical interlock.
PKZM0-0,4	DILM7-01	PKZM0-XR M12	
PKZM0-0,63	DILM-01	PKZM0-XR M12	
PKZM0-0,63	DILM7-01	PKZM0-XR M12	
PKZM0-1	DILM7-01	PKZM0-XR M12	
PKZM0-1,6	DILM7-01	PKZM0-XR M12	
PKZM0-1,6	DILM7-01	PKZM0-XR M12	
PKZM0-2,5	DILM7-01	PKZM0-XR M12	
PKZM0-4	DILM7-01	PKZM0-XR M12	
PKZM0-4	DILM7-01	PKZM0-XR M12	
PKZM0-6,3	DILM7-01	PKZM0-XR M12	
PKZM0-10	DILM7-01	PKZM0-XR M12	
PKZM0-10	DILM9-01	PKZM0-XR M12	
PKZM0-12	DILM12-01	PKZM0-XR M12	
PKZM0-16	DILM17-01	PKZM0-XR M32	
PKZM0-25	DILM25-01	PKZM0-XR M32	
PKZM0-32	DILM32-01	PKZM0-XR M32	