# 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

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# xStart is the intelligent solution: easier engineering, faster fitting



1



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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 product.

**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 market.



**2**

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# 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."**





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**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.






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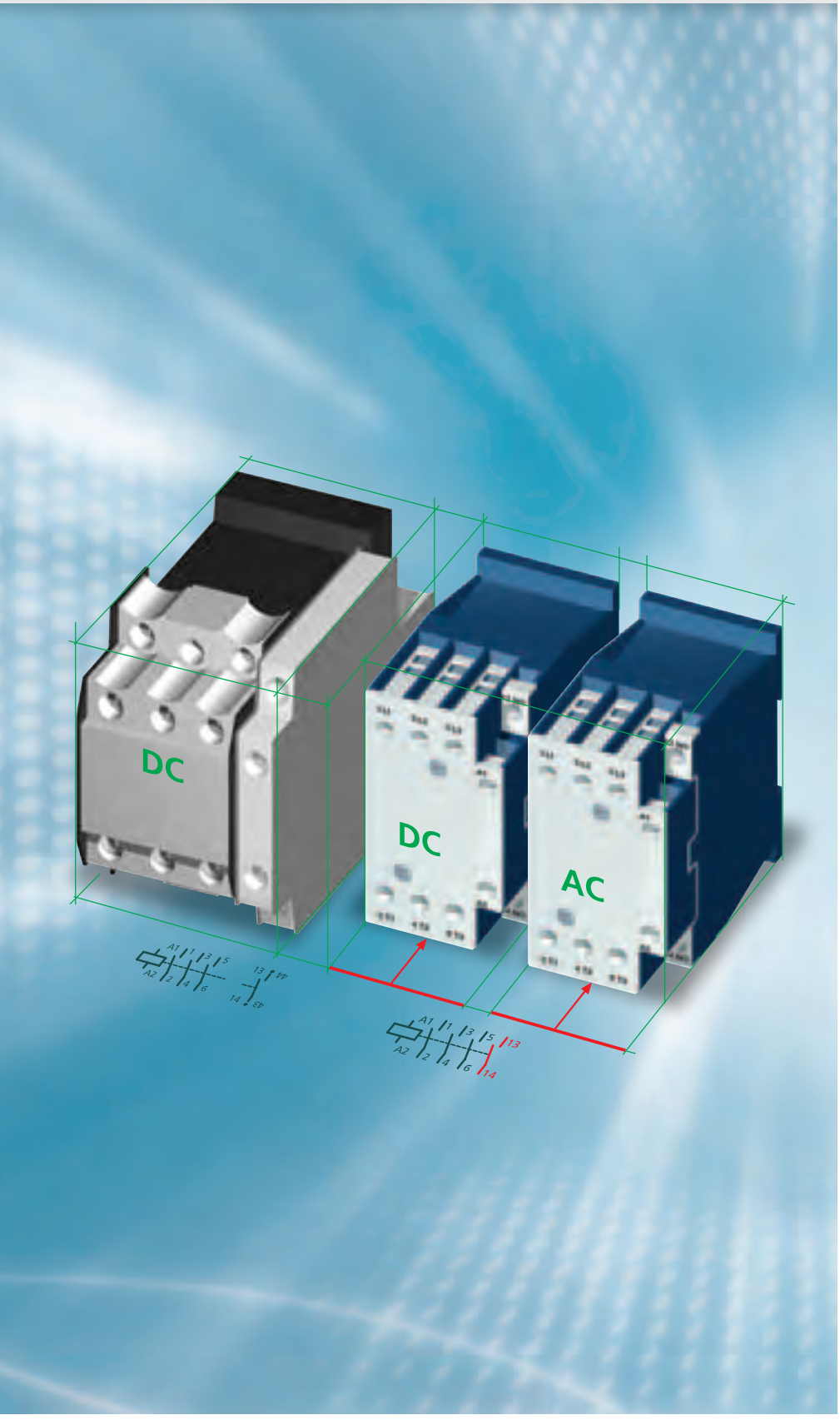
# AC and DC contactors: both the same frame size – simplifies engineering




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.



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**"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.

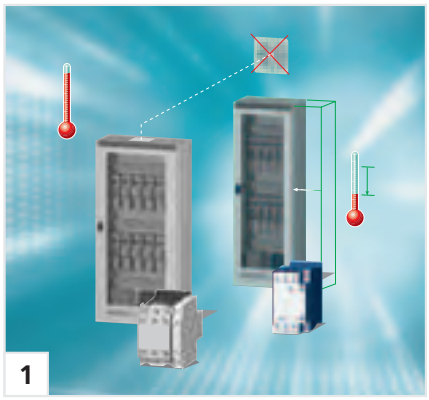
### 2 No compromise where termination reliability is concerned

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 motor contactors from DIL M17 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.



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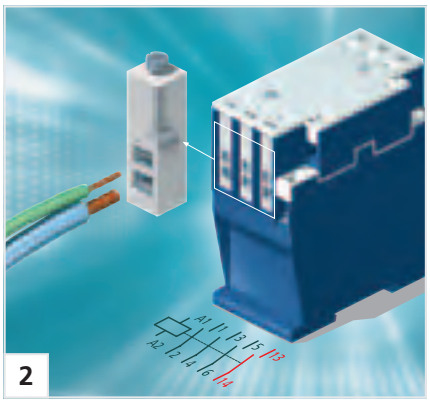

2



3



4



5

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.

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# The simplicity of it! –
# Toolless plug connection!






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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 15.5 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 15.5 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**

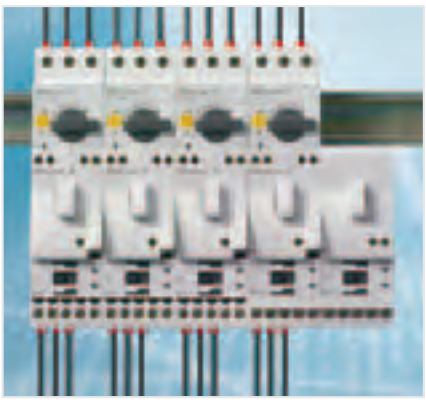
The reversing starters offer distinct advantages to the assembler. Instead of laboriously having to tighten up 23 screws, a small number of components simply plug together. This of course speeds up fitting work, and means fewer errors and a very clearly laid out switching installation.

**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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# Reversing starters with mechanical interlock – as compact as it gets!




**Reversing starters and star-delta combinations up tp 15.5 A can be combined without tools.**

Moeller has significantly reduced the wiring costs with reversing and star-delta combinations using tool-less plug connections. Moeller DIL M contactors up to 15.5 A feature sockets in which the connection elements are simply plugged in as standard and without additional expense. Thus, costs associated with operations such as cutting wires to length, stripping of insulation, work on the wire ends and provision of conductors with markings, as well as application of defined torques when tightening screws, have been totally eliminated. Inspection of 21 electrical connections between the mains and the star and delta contactor are reduced to a simple visual inspection. A measurement with test device probes can be undertaken without having to remove the connection elements.





Precious space is provided in the control panel by the narrow widths of just 55 mm on contactors up to 65 A. The mechanical interlocks which are usually found on reversing contactor combinations do not require any additional space from Moeller. The smart, patented solution is a plastic sphere. It is simply inserted into the side cavities provided on both contactors and reliably prevents simultaneous switch on. Furthermore, a lateral clearance between the contactors is not required – the contactors can be mounted and wired side-by-side.
Generally, DC contactors in the range up to 65 A have a longer depth than AC contactors. However, with xStart – thanks to electronically supported magnet systems – all dimensions of the DC variants are identical to those of the AC variants. If the manufacturer of mass produced machines uses differing control voltages, the testing of the control panel layout is now eliminated, the DC contactors are simply positioned on the top-hat rail or mounting plate in the same manner as the AC variants.
The heat dissipation limits the packing density in control panels. Solutions which are possible from a purely mechanical viewpoint cannot be implemented due to heat dissipation considerations. The extremely low holding power of just 0.5 W with Moeller DC contactors now enables solutions which were previously impossible.



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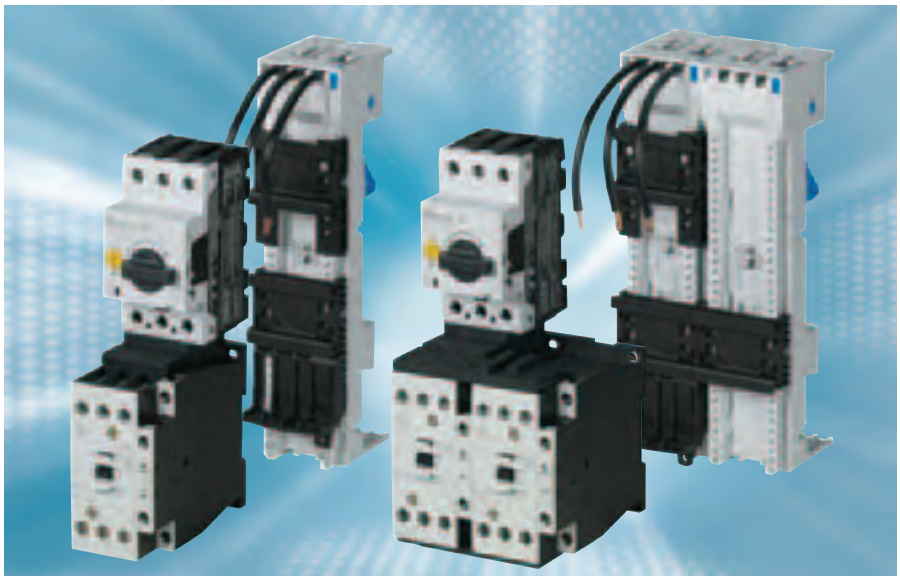

**Mounting rail adapter with new flexibility**

The switchgear interconnected with the three phase commoning links is generally snapped onto a mounting rail. The result is an additional benefit where components can be easily removed from an interconnected group by offsetting the adapter mounting rail without having to disassemble the entire three phase commoning link.

**Optimum compatibility: Starters and busbar adapters**

The xStart system has been extended by the new busbar adapter, which is compatible with the busbar system and the system accessories from Wöhner, the market leader in this field. Conformity to the standard ensures that busbar adapters for 60 mm busbar clearances fit all similar manufacturers systems. An additional benefit is that the busbar adapter material used worldwide is a standard copper profile. Prefabricated connectors or the new tool-less plug connections are available for establishing connections between circuit-breakers and contactors. With large and uniform requirements, Moeller supplies the adapter fitted complete with switchgear for DOL and reversing starters.

**Simply select tested motor starters to approval types I and II**

The DOL starter (complete unit) consists of a PKZM0 motor-protective circuit-breaker and a DILM contactor.

Moeller provides a PC-based electronic selection program for motor starters in addition to the comprehensive selection page in the Moeller main catalogue. This program considers various operating voltages, short-circuit ratings and coordination types, as well as fuseless and fused combinations. This small program is available from Moeller free of charge on the Internet. Moeller has provided the practically-minded with a carton selection slider for a number of years.



www.moeller.net/select

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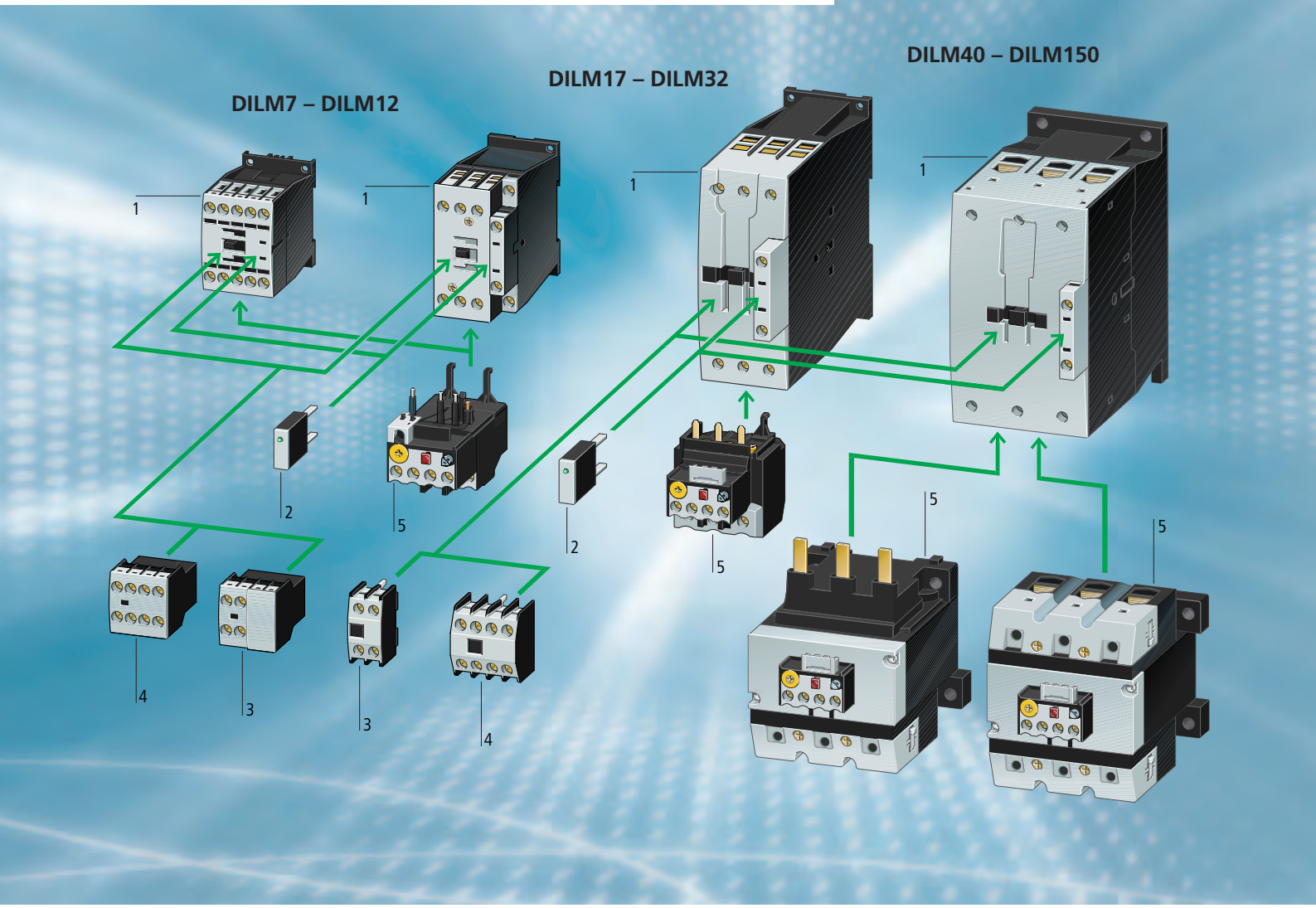
# Contactors DIL M7 – 150
# DILA contactor relays




**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



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## 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** Auxiliary contact **Type** Article no. 230 V 50 Hz 240 V 60 Hz | **Type** Article no. 24 V 50/60 Hz | **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 |
| | 15.5 | 7.5 | | 1 M | DILM32-XHI.. DILA-XHI(V).. | **DILM15-10(...)** 290057 | **DILM15-10(...)** 290062 | **DILM15-10(...)** 290055 | **DILM15-10(24VDC)** 290073 |
| | 15.5 | 7.5 | | 1 B | DILA-XHI(V).. | **DILM15-01(...)** 290093 | **DILM15-01(...)** 290097 | **DILM15-01(...)** 290090 | **DILM15-01(24VDC)** 290108 |
| 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 |
|  | 40 | 18.5 | 50 | – | DILM150-XHI(V).. DILM1000-XHI(V).. | **DILM40(...)** 277766 | **DILM40(...)** 277770 | **DILM40(...)** 277763 | **DILM40(RDC24)** 277780 |
| | 50 | 22 | 60 | – | | **DILM50(...)** 277830 | **DILM50(...)** 277834 | **DILM50(...)** 277827 | **DILM50(RDC24)** 277844 |
| | 65 | 30 | 72 | – | | **DILM65(...)** 277894 | **DILM65(...)** 277898 | **DILM65(...)** 277891 | **DILM65(RDC24)** 277908 |
|  | 80 | 37 | 110 | – | | **DILM80(...)** 239402 | **DILM80(...)** 239406 | **DILM80(...)** 239399 | **DILM80(RDC24)** 239416 |
| | 95 | 45 | | – | | **DILM95(...)** 239480 | **DILM95(...)** 239484 | **DILM95(...)** 239477 | **DILM95(RDC24)** 239510 |
| | 115 | 55 | 160 | – | | **DILM115(RAC240)** 239548 | **DILM115(RAC24)** 239545 | **DILM115(RAC120)** 239547 | **DILM115(RDC24)** 239555 |
| | 150 | 75 | | – | | **DILM150(RAC240)** 239588 | **DILM150(RAC24)** 239585 | **DILM150(RAC120)** 239587 | **DILM150(RDC24)** 239591 |

The listed auxiliary and main contacts up to 12 A are available with springloaded terminals.
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.

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## Auxiliary contact modules[2)]

| | | $I_{th} = I_e$ open A | Contacts M = Make B = Break $M_E$ = Early-make contacts $B_L$ = Late-break contacts | | Can be combined with basic units | Type | Article no. |
|---|---|---|---|---|---|---|---|
|  | 2-pole | 10 | 1 M | 1 B | DILM7-10... DILM9-10... DILM12-10... DILM15-10... 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... DILM15... DILM17... DILM25... DILM32... | **DILA-XHI20** | **276422** |
| | | | 1 M | 1 B | | **DILA-XHI11** | **276421** |
| | | | – | 2 B | | **DILA-XHI02** | **276420** |
| | | | 1 $M_E$ | 1 $B_L$ | | **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, 1 $M_E$ | 1 B, 1 $B_L$ | | **DILA-XHIV22** | **276429** |
|  | 2-pole | 10 | 2 M | – | DILM40... DILM50... DILM65... DILM80... DILM95... DILM115... DILM150... | **DILM150-XHI20** | **277945** |
| | | | 1 M | 1 B | | **DILM150-XHI11** | **277946** |
| | | | – | 2 B | | **DILM150-XHI02** | **277947** |
|  | 4-pole | | 4 M | – | | **DILM150-XHI40** | **277948** |
| | | | 3 M | 1 B | | **DILM150-XHI31** | **277949** |
| | | | 2 M | 2 B | | **DILM150-XHI22** | **277950** |
| | | | 1 M | 3 B | | **DILM150-XHI13** | **277951** |
| | | | – | 4 B | | **DILM150-XHI04** | **277952** |
| | | | 1 M, 1 $M_E$ | 1 B, 1 $B_L$ | | **DILM150-XHIV22** | **277953** |
| – | 2-pole | | 1 M | 1 B | | **DILM1000-XHI11-SI** | **278425** |
| | | | 1 M | 1 B | | **DILM150-XHIA11**[1)] | **283463** |

The listed auxiliary and main contacts up to 12 A are available with springloaded terminals.
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.

[2)] The following applies for all auxiliary contact modules: $I_e$=3 A for AC-15 at 380 V, 400 V, 415 V



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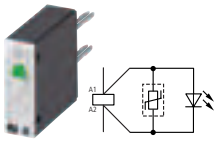
## Accessories

| | $U_s$ V AC | For use with | Type | Article no. | Notes |
|---|---|---|---|---|---|
| **Suppressor** Varistor suppressor  | 24 – 48 | DILM7 – DILM15 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 – DILM95 | **DILM95-XSPV48** | **281216** | |
| | 48 – 130 | | **DILM95-XSPV130** | **281217** | |
| | 130 – 240 | | **DILM95-XSPV240** | **281218** | |
| | 240 – 500 | | **DILM95-XSPV500** | **281219** | |
| Varistor suppressors with built-in LED  | 24 – 48 | DILM7 – DILM15 DILMP20 DILA | **DILM12-XSPVL48** | **281220** | For AC operated contactors, 50-60 Hz, DC operated contactors have an integrated suppressor Note drop-out delay |
| | 130 – 240 | | **DILM12-XSPVL240** | **281221** | |
| | 24 – 48 | DILM17 – DILM32 | **DILM32-XSPVL48** | **281222** | |
| | 130 – 240 | | **DILM32-XSPVL240** | **281223** | |
| | 24 – 48 | DILM40 – DILM95 | **DILM95-XSPVL48** | **281224** | |
| | 130 – 240 | | **DILM95-XSPVL240** | **281225** | |
| RC suppressor  | 24 – 48 | DILM7 – DILM15 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 – DILM95 | **DILM95-XSPR48** | **281205** | |
| | 110 – 240 | | **DILM95-XSPR240** | **281206** | |
| | 240 – 500 | | **DILM95-XSPR500** | **281207** | |
| Voltage indicator  | 24 – 48 | DILM7-DILM15 DILMP20 DILA | **DILM12-XSPI48** | **285251** | |
| | 48 – 130 | | **DILM12-XSPI130** | **285252** | |
| | 130 – 250 | | **DILM12-XSPI250** | **285253** | |
| | 24 – 48 | DILM17-DILM32 | **DILM32-XSPI48** | **285254** | |
| | 48 – 130 | | **DILM32-XSPI130** | **285255** | |
| | 130 – 250 | | **DILM32-XSPI250** | **285256** | |
| | 24 – 48 | DILM40-DILM150 | **DILM150-XSPI48** | **285257** | |
| | 48 – 130 | | **DILM150-XSPI130** | **285258** | |
| | 130 – 250 | | **DILM150-XSPI250** | **285259** | |
| **Connector** For the mechanical connection of contactors to groups of components  | | DILM7 – DILM65 DILA | **DILM32-XVB** | **281227** | 0 mm distance between contactors |
| | | DILM80 – DILM150 | **DILM150-XVB** | **281226** | |
| **Mechanical interlock**  | | DILM7 – DILM15 DILMP20 DILA | **DILM12-XMV** | **281196** | For two contactors with AC or DC operation, distance between contactors 0 mm, mechanical lifespan 2.5 X $10^6$ switching operations, additional auxiliary contact modules can be fitted |
|  | | DILM17 – DILM32 | **DILM32-XMV** | **281197** | |
| | | DILM40 – DILM65 | **DILM65-XMV** | **281198** | |
| | | DILM80 – DILM150 | **DILM150-XMV** | **240081** | |

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## Technical data

| | | | | | DILM7 | DILM9 | DILM12 | DILM15 |
|---|---|---|---|---|---|---|---|---|
| **General** | | | | | | | | |
| Lifespan, mechanical | | | | | | | | |
| AC operated | | | Operations | × $10^6$ | 10 | 10 | 10 | 10 |
| DC operated | | | Operations | × $10^6$ | 10 | 10 | 10 | 10 |
| Ambient temperature | | open | | °C | –25/60 | –25/60 | –25/60 | –25/60 |
| Mechanical shock resistance (IEC/EN 60068-2-27) | | | | | | | | |
| Half-sinusoidal shock | Main contacts | Make contact | | g | 10 | 10 | 10 | 10 |
| | Auxiliary contacts | Make contact | | g | 7 | 7 | 7 | 7 |
| | | Break contact | | g | 5 | 5 | 5 | 5 |
| Weight | AC operated | | | kg | 0.23 | 0.23 | 0.23 | 0.23 |
| | DC operated | | | kg | 0.28 | 0.28 | 0.28 | 0.28 |
| Terminal capacity, main contacts | | | | | | | | |
| Solid | | | | $mm^2$ | 1 × (0.75 – 4)<br>2 × (0.75 – 2.5) | | | |
| Flexible with ferrule | | | | $mm^2$ | 1 × (0.75 – 4)<br>2 × (0.75 – 2.5) | | | |
| Stranded | | | | $mm^2$ | – | – | – | – |
| Solid or stranded | | | | AWG | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 |
| Flat conductor | | | Number of layers × width × thickness | mm | – | – | – | – |
| Terminal capacity, auxiliary contacts | | | | | | | | |
| Solid | | | | $mm^2$ | 1 x (0.75 – 4)<br>2 x (0.75 – 2.5) | | | |
| Flexible with ferrule | | | | $mm^2$ | 1 x (0.75 – 2.5)<br>2 x (0.75 – 2.5) | | | |
| Solid or stranded | | | | AWG | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 |
| **Main contacts** | | | | | | | | |
| Rated insulation voltage | | | $U_i$ | V AC | 690 | 690 | 690 | 690 |
| Rated operational voltage | | | $U_e$ | V AC | 690 | 690 | 690 | 690 |
| Making capacity (cos φ to IEC/EN 60947) to 690 V | | | | A | 108 | 108 | 144 | 155 |
| Breaking capacity | | 220/230 V | | A | 70 | 90 | 120 | 124 |
| | | 380/400 V | | A | 70 | 90 | 120 | 124 |
| | | 500 V | | A | 50 | 70 | 100 | 100 |
| | | 660/690 V | | A | 40 | 50 | 70 | 70 |
| | | 1000 V | | A | – | – | – | – |
| Component lifespan | | AC-3 | Operations | × $10^6$ | 1.3 | 1.3 | 1.3 | 0.75 |
| | | AC-4 | Operations | × $10^6$ | 0.2 | 0.2 | 0.2 | 0.2 |



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## Technical data

| DILM17 | DILM25 | DILM32 | DILM40 | DILM50 | DILM65 | DILM80 | DILM95 | DILM115 | DILM150 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| –25/60 | –25/60 | –25/60 | –25/60 | –25/60 | –25/60 | –25/60 | –25/60 | –25/60 | –25/60 |
| | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 0.4 | 0.4 | 0.4 | 0.9 | 0.9 | 0.9 | 2 | 2 | 2 | 2 |
| 0.4 | 0.4 | 0.4 | 0.9 | 0.9 | 0.9 | 2.1 | 2.1 | 2.1 | 2.1 |
| | | | | | | | | | |
| | 1 × (0.75 – 16)<br>2 × (0.75 – 10) | | | 1 × (2.5 – 16)<br>2 × (2.5 – 16) | | – | | | |
| | 1 × (0.75 – 16)<br>2 × (0.75 – 10) | | | 1 × (2.5 – 35)<br>2 × (2.5 – 25) | | 1 × (4 – 70)<br>2 × (4 – 50) | | 1 × (10 – 95)<br>2 × (10 – 70) | |
| | 1 × 16 | | | 1 × (16 – 50)<br>2 × (16 – 35) | | 1 × (16 – 95)<br>2 × (16 – 70) | | 1 × (16 – 120)<br>2 × (16 – 95) | |
| 14 – 6 | 14 – 6 | 14 – 6 | 12 – 2 | 12 – 2 | 12 – 2 | 10 – 4/0 | 10 – 4/0 | 8 – 250 MCM | 8 – 250 MCM |
| – | – | – | | 2 × (6 × 9 × 0.8) | | | 2 × (6 × 16 × 0.8) | | |
| | | | | | | | | | |
| | | | 1 × (0.75 – 4)<br>2 × (0.75 – 2.5) | | | | 1 × (0.75 – 4)<br>2 × (0.75 – 4) | | |
| | | | 1 × (0.75 – 2.5)<br>2 × (0.75 – 2.5) | | | | 1 × (0.75 – 2.5)<br>2 × (0.75 – 2.5) | | |
| 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 | 18 – 14 |
| | | | | | | | | | |
| 690 | 690 | 690 | 690 | 690 | 690 | 1000 | 1000 | 1000 | 1000 |
| 690 | 690 | 690 | 690 | 690 | 690 | 1000 | 1000 | 1000 | 1000 |
| 238 | 350 | 448 | 560 | 700 | 910 | 1120 | 1330 | 1610 | 2100 |
| 170 | 250 | 320 | 400 | 500 | 650 | 800 | 950 | 1150 | 1500 |
| 170 | 250 | 320 | 400 | 500 | 650 | 800 | 950 | 1150 | 1500 |
| 170 | 250 | 320 | 400 | 500 | 650 | 800 | 950 | 1150 | 1500 |
| 120 | 150 | 180 | 250 | 320 | 370 | 650 | 800 | 1100 | 1320 |
| – | – | – | – | – | – | 320 | 370 | 450 | 550 |
| 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.4 | 0.4 | 0.4 | 0.4 |
| 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |

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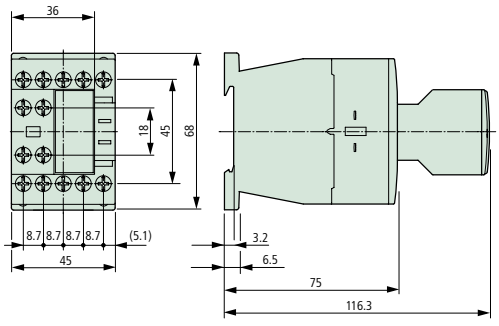
## Technical data

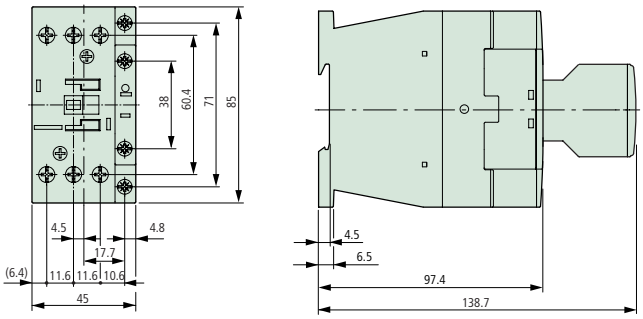
| | | | | | DILM7 | DILM9 | DILM12 | DILM15 |
|---|---|---|---|---|---|---|---|---|
| **AC** | | | | | | | | |
| AC-1 actuation | | | | | | | | |
| Conventional free air thermal Current 3-pole 50 – 60 Hz | Open | at 40 °C | | A | 22 | 22 | 22 | 22 |
| | | at 60 °C | | A | 20 | 20 | 20 | 20 |
| AC actuation | | | | | | | | |
| Rated operational current, AC-3 open, 50 – 60 Hz, 3-pole | | 220/230 V | $I_e$ | A | 7 | 9 | 12 | 15.5 |
| | | 380/400 V | $I_e$ | A | 7 | 9 | 12 | 15.5 |
| | | 500 V | $I_e$ | A | 5 | 7 | 10 | 12.5 |
| | | 660/690 V | $I_e$ | A | 4 | 5 | 7 | 8.5 |
| Motor rating | | 220/230 V | $P$ | kW | 2.2 | 2.5 | 3.5 | 4 |
| | | 380/400 V | $P$ | kW | 3 | 4 | 5.5 | 7.5 |
| | | 500 V | $P$ | kW | 3.5 | 4.5 | 7 | 7.5 |
| | | 660/690 V | $P$ | kW | 3.5 | 4.5 | 6.5 | 7 |
| **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 | 0.8 – 1.1 |
| DC operated | | | Pick-up | × $U_c$ | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 |
| Coil consumption from cold and 1.0 × $U_c$ | | | | | | | | |
| AC operated | 50 Hz coil<br>60 Hz coil | | Pick-up | VA | 24<br>29 | 24<br>29 | 24<br>29 | 24<br>29 |
| | | | | W | 19<br>23 | 19<br>23 | 19<br>23 | 19<br>23 |
| | | | Sealing | VA | 4.0<br>4.4 | 4.0<br>4.4 | 4.0<br>4.4 | 4.0<br>4.4 |
| | | | | W | 1.2<br>1.3 | 1.2<br>1.3 | 1.2<br>1.3 | 1.2<br>1.3 |
| DC operated | | | Pick-up | W | 3 | 3 | 4.5 | 4.5 |
| | | | Sealing | W | 3 | 3 | 4.5 | 4.5 |

## Dimensions

**DILM7 – DILM15, DILA with auxiliary contact module**




**DILM17 – DILM32 basic unit with auxiliary contact module**



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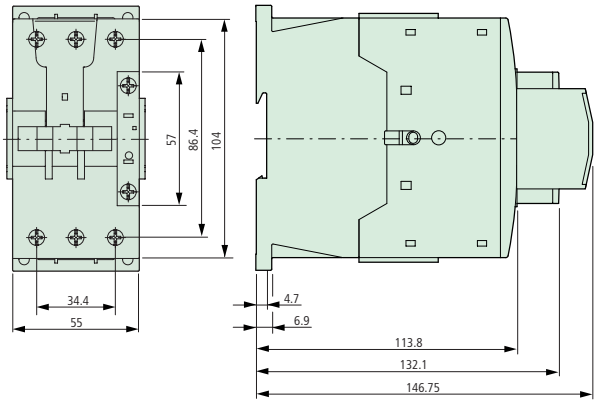
## Technical data

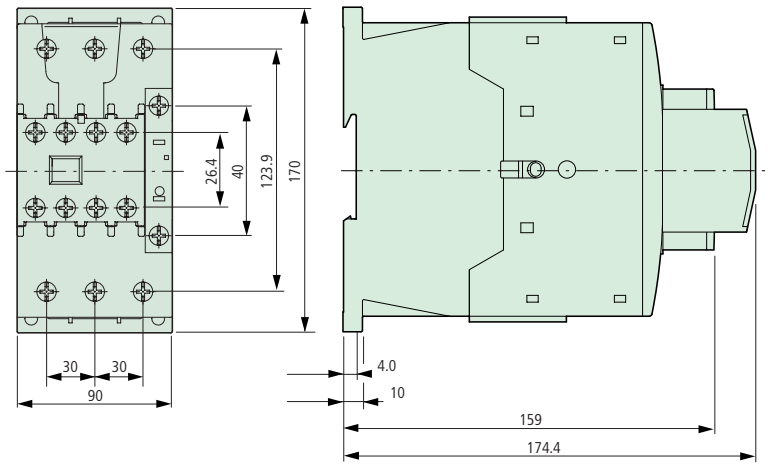
| DILM17 | DILM25 | DILM32 | DILM40 | DILM50 | DILM65 | DILM80 | DILM95 | DILM115 | DILM150 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| 40 | 45 | 45 | 60 | 70 | 85 | 130 | 130 | 190 | 190 |
| 35 | 36 | 36 | 50 | 60 | 72 | 110 | 110 | 160 | 160 |
| | | | | | | | | | |
| 18 | 25 | 32 | 40 | 50 | 65 | 80 | 95 | 115 | 150 |
| 18 | 25 | 32 | 40 | 50 | 65 | 80 | 95 | 115 | 150 |
| 18 | 25 | 32 | 40 | 50 | 65 | 80 | 95 | 115 | 150 |
| 12 | 15 | 18 | 25 | 32 | 37 | 65 | 80 | 110 | 132 |
| 5 | 7.5 | 10 | 12.5 | 15.5 | 20 | 25 | 30 | 37 | 48 |
| 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
| 12 | 17.5 | 23 | 28 | 36 | 47 | 58 | 70 | 85 | 110 |
| 11 | 14 | 17 | 23 | 30 | 35 | 63 | 75 | 105 | 125 |
| | | | | | | | | | |
| 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 1.1 | 0.8 – 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 | 0.7 – 1.2 | 0.7 – 1.2 | 0.7 – 1.2 | 0.7 – 1.2 |
| | | | | | | | | | |
| 50<br>62 | 50<br>62 | 50<br>62 | 150<br>185 | 150<br>185 | 150<br>185 | 310<br>375 | 310<br>375 | 130<br>130 | 130<br>130 |
| 40<br>50 | 40<br>50 | 40<br>50 | 95<br>120 | 95<br>120 | 95<br>120 | 165<br>190 | 165<br>190 | 130<br>130 | 130<br>130 |
| 8.0<br>9.1 | 8.0<br>9.1 | 8.0<br>9.1 | 16.0<br>19.0 | 16.0<br>19.0 | 16.0<br>19.0 | 26.0<br>31.0 | 26.0<br>31.0 | 3.5<br>3.5 | 3.5<br>3.5 |
| 2.4<br>2.7 | 2.4<br>2.7 | 2.4<br>2.7 | 4.0<br>4.6 | 4.0<br>4.6 | 4.0<br>4.6 | 5.5<br>6.8 | 5.5<br>6.8 | 2.0<br>2.0 | 2.0<br>2.0 |
| 12 at 24 V | 12 at 24 V | 12 at 24 V | 24 at 24 V | 24 at 24 V | 24 at 24 V | 90 at 24 V | 90 at 24 V | 130 at 24 V | 130 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 | 2 at 24 V | 2 at 24 V | 2 at 24 V | 2 at 24 V |

## Dimensions

**DILM40 – DILM65 basic unit with auxiliary contact module**




**DILM80 – DILM150 basic unit with auxiliary contact module**



## DILA contactor relays

| | Contacts | | AC-15<br>380 V<br>400 V<br>415 V | | Can be combined with auxiliary contact | **AC operation** | | | **DC operation** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Type**<br>Article no. | **Type**<br>Article no. | **Type**<br>Article no. | |
| | M = Make<br>B = Break | | $I_e$<br>A | $I_{th}$<br>A | | 230 V 50 Hz<br>240 V 60 Hz | 24 V 50/60 Hz | 110 V 50 Hz<br>120 V 60 Hz | 24 V DC |
| **Basic units with interlocked opposing contacts** | 4 M | – | 4 | 10 | DILA-XHI(V)... | **DILA-40(...)**<br>276329 | **DILA-40(...)**<br>276333 | **DILA-40(...)**<br>276326 | **DILA-40(...)**<br>276344 |
|  | 3 M | 1 B | 4 | 10 | DILA-XHI(V)... | **DILA-31(...)**<br>276364 | **DILA-31(...)**<br>276368 | **DILA-31(...)**<br>276361 | **DILA-31(...)**<br>276379 |
| | 2 M | 2 B | 4 | 10 | DILA-XHI(V)... | **DILA-22(...)**<br>276399 | **DILA-22(...)**<br>276403 | **DILA-22(...)**<br>276396 | **DILA-22(...)**<br>276414 |

The listed auxiliary and main contacts up to 12 A are available with springloaded terminals.
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<br>M = Make contact,<br>B = Break contact<br>$M_E$ = Early-make contacts<br>$B_L$ = Late-break contacts | | Rated operating current<br>AC-15<br>380 V<br>400 V<br>415 V<br>$I_e$<br>A | Conventional current, open at 60 °C<br>$I_{th}$<br>A | Can be combined with basic unit | **Type**<br>Article no. |
|---|---|---|---|---|---|---|
| 2-pole | – | 2 B | 3 | 10 | DILA...<br>DILM7...<br>DILM9...<br>DILM12...<br>DILM15...<br>DILM17...<br>DILM25...<br>DILM32... | **DILA-XHI02**<br>276420 |
|  | 1 M | 1 B | | | | **DILA-XHI11**<br>276421 |
| | 2 M | – | | | | **DILA-XHI20**<br>276422 |
| | 1 $M_E$ | 1 $B_L$ | | | | **DILA-XHIV11**<br>276423 |
| 4-pole | – | 4 B | | | DILA-40...<br>DILA-31...<br>DILM7...<br>DILM9...<br>DILM12...<br>DILM15...<br>DILM17...<br>DILM25...<br>DILM32... | **DILA-XHI04**<br>276424 |
|  | 1 M | 3 B | | | | **DILA-XHI13**<br>276425 |
| | 2 M | 2 B | | | | **DILA-XHI22**<br>276426 |
| | 3 M | 1 B | | | | **DILA-XHI31**<br>276427 |
| | 4 M | – | | | | **DILA-XHI40**<br>276428 |
| | 1 M, 1 $M_E$ | 1 B, 1 $B_L$ | | | | **DILA-XHIV22**<br>276429 |

→ Dimensions Page 18



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## 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 | – | – |
| Fault frequency at $U_e$ = 24 V DC, $U_{min}$ = 17 V, $I_{min}$ = 5.4 mA | | Fault rate | $H_F$ | < $10^{-8}$, < 1 failure to 100 million 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 = Sealing | W | 3 | – |

**Notes**

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

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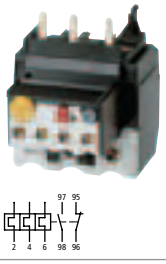
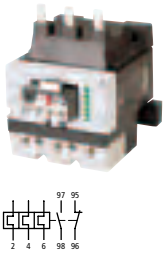
## ZB overload relays

| | Overload release setting range $I_r$ A | For use with | Short-circuit protection Coordination type gG/gL A "1" | "2" | Type | Article no. | |
|---|---|---|---|---|---|---|---|
| **ZB12 overload relays**<br>Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102<br>Direct fitting<br>  | 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<br><br>Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor.<br><br>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 | | | | **ZB12-12** | **278441** | |
| | 12 – 16 | | | | **ZB12-16** | **290168** | |
| **ZB32 overload relays**<br>Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102<br>Direct fitting<br>  | 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<br><br>Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor.<br><br>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**<br>Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102<br>Direct fitting<br>  | 6 – 10 | DILM40, DILM50, DILM65, DIULM40, DIULM50, DIULM65 SDAINLM70, SDAINLM90, SDAINLM115 | 50 | 25 | **ZB65-10** | **278455** | Overload release: tripping class 10 A<br><br>Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor.<br><br>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** | |
| **ZB150 overload relays**<br>Single-phasing sensitivity to IEC/EN 60947, VDE 0660 Part 102<br>Direct fitting<br>  | 25-35 | DILM80, DILM95, DILM115, DILM150, DIULM80, DIULM95, DIULM115, DIULM150, SDAINLM140, SDAINLM165, SDAINLM200, SDAINLM260 | 125 | 100 | **ZB150-35** | **278461** | Overload release: tripping class 10 A<br><br>Short-circuit protection: when fitting directly, note maximum admissible fuse for the contactor.<br><br>Suitable for the protection of EEx e-motors. EU prototype test certificate available on request. |
| | 35-50 | | 160 | 125 | **ZB150-50** | **278462** | |
| | 50-70 | | 250 | 160 | **ZB150-70** | **278463** | |
| | 70-100 | | 315 | 200 | **ZB150-100** | **278464** | |
| | 95-125 | | 315 | 250 | **ZB150-125** | **278465** | |
| | 120-142 | | 315 | 250 | **ZB150-150** | **278466** | |



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## Overload relay technical data

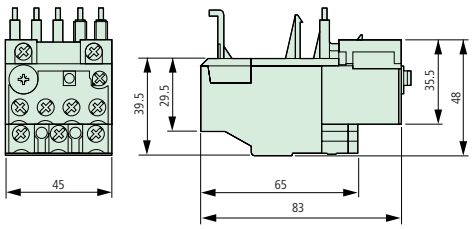
| | | | | ZB12, ZB32 | ZB65 | ZB150 |
|---|---|---|---|---|---|---|
| **General** | | | | | | |
| Standards and regulations | | | | IEC/EN 60947, VDE 0660, UL, CSA | | |
| Ambient temperature | | | | | | |
| open[1] | | | °C | –25/50 | –25/50 | –25/50 |
| enclosed[1] | | | °C | –25/40 | –25/40 | –25/40 |
| **Main contacts** | | | | | | |
| Rated operational voltage | | | $U_e$ | V AC | 690 690 | 1000 |
| Terminal capacity | | | | | | |
| Solid | | | mm² | 2 × (1 – 6) | 2 × (1 – 16) | 16 |
| Flexible without ferrule | | | mm² | – | – | 70 |
| Flexible with ferrule | | | mm² | 2 × (1 – 4) | 1 × 25 | 70 |
| | | | | 2 × (1 – 6)[2] | 2 × (1 – 10)[3] | |
| Solid or stranded | | | AWG | 14 – 8 | 14 – 2 | 2/0 |
| **Auxiliary circuits and control circuits** | | | | | | |
| Conventional free air thermal current | | $I_{th}$ | A | 6 | 6 | 6 |
| Rated operational current | | | | | | |
| AC-15 | | | | | | |
| | Make contact | 240 V | $I_e$ | A | 1.5 | 1.5 | 1.5 |
| | | 415 V | $I_e$ | A | 0.5 | 0.5 | 0.5 |
| | | 500 V | $I_e$ | A | 0.5 | 0.5 | 0.5 |
| | Break contact | 240 V | $I_e$ | A | 1.5 | 1.5 | 1.5 |
| | | 415 V | $I_e$ | A | 0.9 | 0.9 | 0.9 |
| | | 500 V | $I_e$ | A | 0.8 | 0.8 | 0.8 |
| DC-13 L/R ≦ 15 ms[4] | | | | | | |
| | | 24 V | $I_e$ | A | 0.9 | 0.9 | 0.9 |
| | | 60 V | $I_e$ | A | 0.75 | 0.75 | 0.75 |
| | | 110 V | $I_e$ | A | 0.4 | 0.4 | 0.4 |
| | | 220 V | $I_e$ | A | 0.2 | 0.2 | 0.2 |

**Notes**

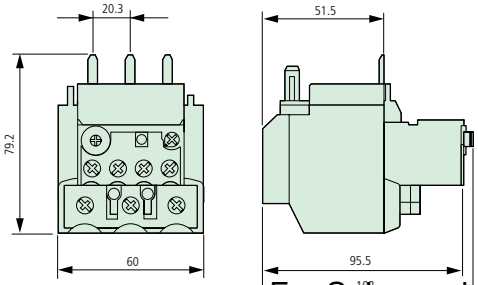
[1] Ambient temperature: operating range to IEC/EN 60947, PTB: –5 °C to +50 °C
[2] 6 mm² flexible with ferrule to DIN 46228
[3] Terminal capacity of main contacts solid and flexible with ferrule:
when using 2 conductor of equal cross-section
[4] Rated operational current: making and breaking currents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

## Dimensions

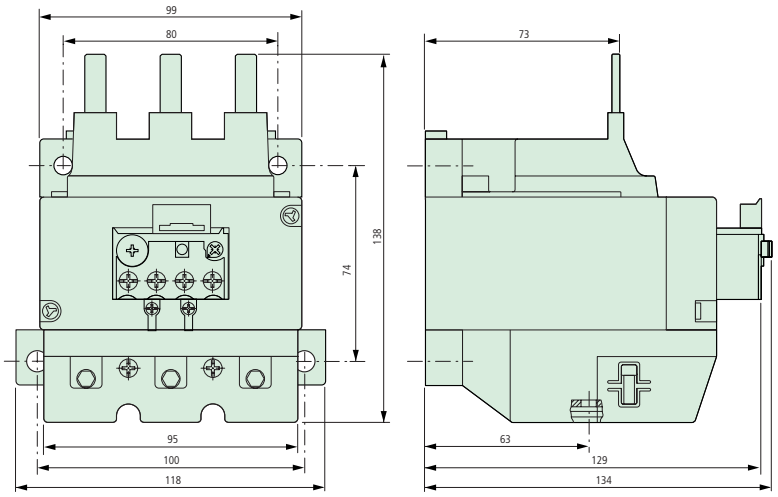
**ZB12/ZB32**




**ZB65**




**ZB150**

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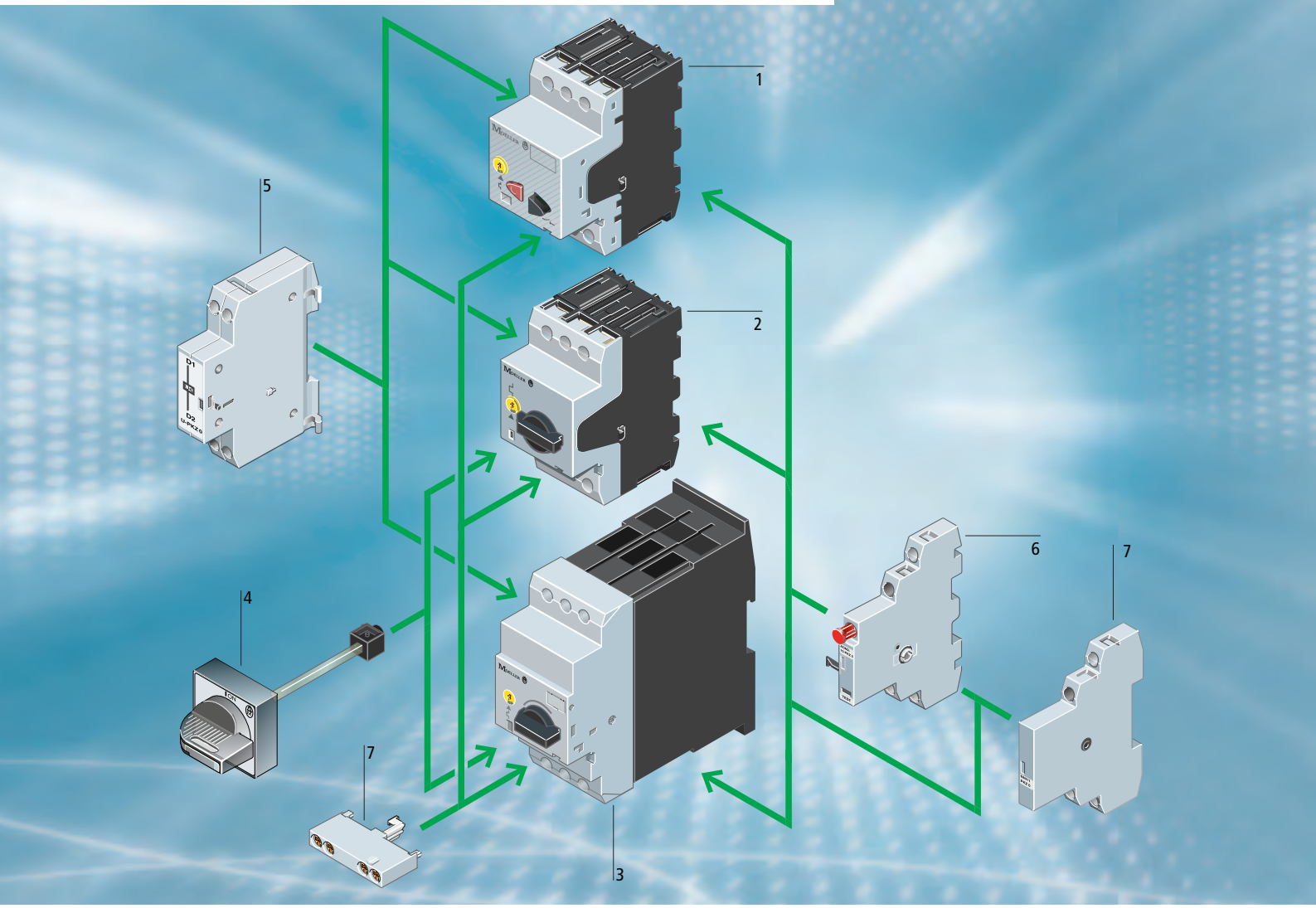
# PKZ
# motor-protective circuit-breaker




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



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## 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, coordination 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, coordination 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 – 65 | 882 | **PKZM4-63** 222413 |





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

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## PKZM01 motor-protective circuit-breaker

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

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

## Insulated enclosures

| | | Protection type | For use with | **Type**<br>Article no. |
|---|---|---|---|---|
| **Insulated enclosures for surface mounting** | – | IP40<br>NEMA Type 1 | PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off) | **CI-PKZ01**<br>281403 |
|  | With actuating diaphragm | IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off) | **CI-PKZ01-G**<br>281404 |
| | Lockable in the Off position | IP65<br>NEMA 4X | PKZM01+NHI-E+U or A (undervoltage or shunt release)+L (2 off) | **CI-PKZ01-SVB**<br>281405 |
| | Lockable in the Off position, in conjunction with VHI-PKZ01 | IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **CI-PKZ01-SVB-V**<br>281944 |
| | With stay-put Emergency-Stop mushroom button | IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **CI-PKZ01-PVT**<br>281406 |
| | With key-release Emergency-Stop mushroom button | IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **CI-PKZ01-PVS**<br>281407 |
| **Insulated enclosures for flush mounting** | – | Front IP40<br>NEMA Type 1 | PKZM01+NHI-E orVHI-PKZ01+U or A or NHI+L (2 off) | **E-PKZ01**<br>281633 |
|  | With actuating diaphragm | Front IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A or NHI+L (2 off) | **E-PKZ01-G**<br>281634 |
| | Lockable in the Off position | Front IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **E-PKZ01-SVB**<br>281635 |
| | Lockable in the Off position, in conjunction with VHI-PKZ01 | Front IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **E-PKZ01-SVB-V**<br>281943 |
| | With stay-put Emergency-Stop mushroom button | Front IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **E-PKZ01-PVT**<br>281636 |
| | With key-release Emergency-Stop mushroom button | Front IP65<br>NEMA 4X | PKZM01+NHI-E or VHI-PKZ01+U or A (undervoltage or shunt release)+L (2 off) | **E-PKZ01-PVS**<br>281637 |



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## 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<br>PKZM4<br>PKZM01 | **AGM2-10-PKZ0**<br>072898 |
| | – | 2 × 1 B | – | | **AGM2-01-PKZ0**<br>072899 |
| **Early-make auxiliary contacts**  | 2 M | – | – | PKZM0 | **VHI20-PKZ0**<br>203595 |
| – | 2 M | – | – | PKZM01 | **VHI20-PKZ01**<br>278495 |
| **Shunt release**  | – | – | AC operation | PKZM0<br>PKZM4<br>PKZM01 | **A-PKZ0(230V50HZ)**<br>073187 |
| | – | – | DC operation | | **A-PKZ0(24VDC)**<br>073200 |
| **Undervoltage release**  | – | – | AC operation | PKZM0<br>PKZM4<br>PKZM01 | **U-PKZ0(230V50HZ)**<br>4073135 |
| **Standard auxiliary contact**  | 1 M | 1 B | – | PKZM0<br>PKZM4<br>PKZM01 | **NHI11-PKZ0**<br>072896 |
| | 1 M | 2 B | – | | **NHI12-PKZ0**<br>072895 |
| | 2 M | 1 B | – | | **NHI21-PKZ0**<br>072894 |
| **Standard auxiliary contact**  | 1 M | 1 B | – | | **NHI-E-11-PKZ0**<br>082882 |
| | 1 M | – | – | | **NHI-E-10-PKZ0**<br>082884 |

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## Technical data basic units

| | | | PKZM01... | PKZM0-... | PKZM4 |
|---|---|---|---|---|---|
| **General** | | | | | |
| Ambient temperature | | | | | |
| open | | °C | –25/55 | –25/55 | –25/55 |
| Terminal capacity | | | | | |
| Solid | | $mm^2$ | 1 × (1 – 6)<br>2 × (1 – 6) | 1 × (1 – 6)<br>2 × (1 – 6) | 1 × (1 – 50)<br>2 × (1 – 35) |
| Flexible with ferrule | | $mm^2$ | 1 × (1 – 6)<br>2 × (1 – 6) | 1 × (1 – 6)<br>2 × (1 – 6) | 1 × (1 – 35)<br>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 | 65 open<br>63 enclosed<br>or setting current of overcurrent release |
| Lifespan, mechanical | Operations | × $10^6$ | 0.05 | 0.1 | 0.03 |
| Lifespan, electric (AC-3 at 400 V) | Operations | × $10^6$ | 0.05 | 0.1 | 0.03 |
| Maximum operating frequency | | S/h | 40 | 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,<br>VDE 0660 Part 102 | IEC/EN 60947-4-1,<br>VDE 0660 Part 102 | IEC/EN 60947-4-1,<br>VDE 0660 Part 102 |

## Technical data auxiliary contacts

| | | NHI...PKZ0 | NHI-E-...PKZ0 | VHI...PKZ0 | AGM |
|---|---|---|---|---|---|
| **Terminal capacity** | | | | | |
| Solid or flexible with ferrule | $mm^2$ | 0.75 – 2.5 | 0.75 – 1.5 | 0.75 – 1.5 | 0.75 – 2.5 |
| Solid or stranded | AWG | 18 – 14 | 18 – 16 | 18 – 16 | 18 – 14 |



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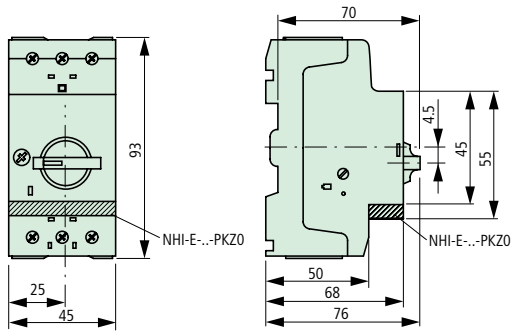
## PKZM, dimensions

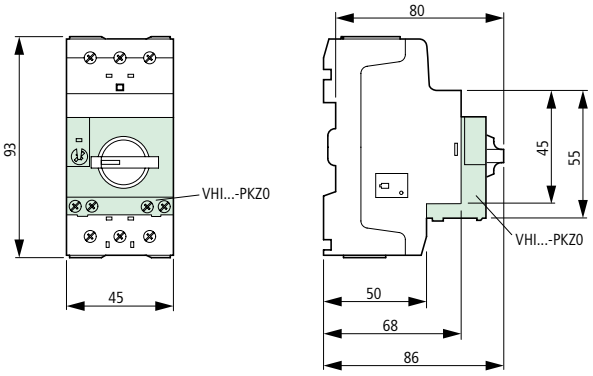
**Motor-protective circuit-breakers**

PKZM0-…(+NHI-E-..-PKZ0)



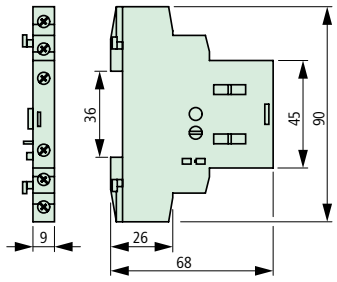

**Motor-protective circuit-breaker with early-make auxiliary contact**

PKZM0-…+VHI-…-PKZ0



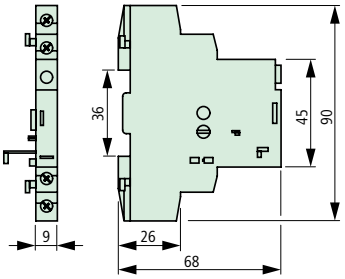

**Standard auxiliary contact**

NHI…-PKZ0



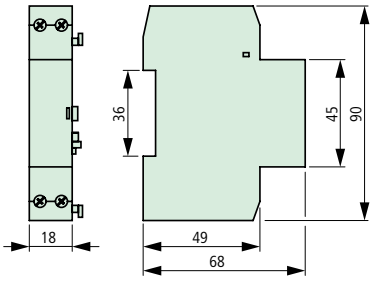

**Trip-indicating auxiliary contact**

AGM2-…-PKZ0



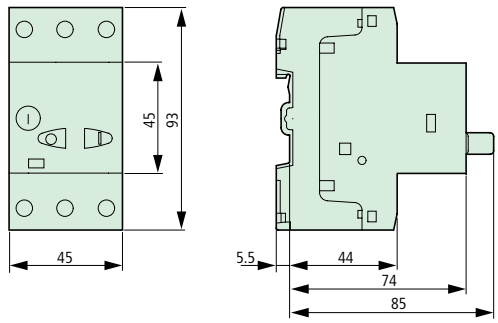

**Voltage release**

U/A-PKZ0




**Motor-protective circuit-breakers**

PKZM01




**Switching capacity with coordination 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 | 0 | 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 $I_{cu}$
Rated breaking capacity $I_{cs}$
} IEC/EN 60947-2

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)

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## Direct-on-line starter, 400/415 V

| | Motor data | | | Setting range | | Motor starter Coordination type "1" | |
|---|---|---|---|---|---|---|---|
| | | | | | | Actuating voltage 230 V 50 Hz 240 V 60 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 | | |
| | $P$ kW | $I_e$ A | $I_q$ kA | $I_r$ A | $I_{rm}$ A | **Type** Article no. | **Type** Article no. |
| **Complete units PKZ and DILM** | 0.06 | 0.21 | 150 (50)[1] | 0.16 – 0.25 | 3.5 | **MSC-D-0,25-M7 (...)** 281925 | **MSC-D-0,25-M7 (...)** 283154 |
| | 0.09 | 0.31 | 150 (50)[1] | 0.25 – 0.4 | 5.6 | **MSC-D-0,4-M7 (...)** 281926 | **MSC-D-0,4-M7 (...)** 283155 |
| | 0.12 | 0.41 | 150 (50)[1] | 0.40 – 0.63 | 8.82 | **MSC-D-0,63-M7 (...)** 281927 | **MSC-D-0,63-M7 (...)** 283156 |
| | 0.18 | 0.6 | 150 (50)[1] | 0.40 – 0.63 | 8.82 | **MSC-D-0,63-M7 (...)** 281927 | **MSC-D-0,63-M7 (...)** 283156 |
| | 0.25 | 0.8 | 150 (50)[1] | 0.63 – 1 | 14 | **MSC-D-1-M7 (...)** 281929 | **MSC-D-1-M7 (...)** 283158 |
| | 0.37 | 1.1 | 150 (50)[1] | 1.00 – 1.6 | 22.4 | **MSC-D-1,6-M7 (...)** 283140 | **MSC-D-1,6-M7 (...)** 283159 |
| | 0.55 | 1.5 | 150 (50)[1] | 1.00 – 1.6 | 22.4 | **MSC-D-1,6-M7 (...)** 283140 | **MSC-D-1,6-M7 (...)** 283159 |
| | 0.75 | 1.9 | 150 (50)[1] | 1.60 – 2.5 | 35 | **MSC-D-2,5-M7 (...)** 283142 | **MSC-D-2,5-M7 (...)** 283161 |
| | 1.1 | 2.6 | 150 (50)[1] | 2.50 – 4 | 56 | **MSC-D-4-M7 (...)** 283143 | **MSC-D-4-M7 (...)** 283162 |
| | 1.5 | 3.6 | 150 (50)[1] | 2.50 – 4 | 56 | **MSC-D-4-M7 (...)** 283143 | **MSC-D-4-M7 (...)** 283162 |
| | 2.2 | 5 | 150 (50)[1] | 4.00 – 6.3 | 88.2 | **MSC-D-6,3-M7 (...)** 283145 | **MSC-D-6,3-M7 (...)** 283164 |
| | 3 | 6.6 | 150 (50)[1] | 6.30 – 10 | 140 | **MSC-D-10-M7 (...)** 283146 | **MSC-D-10-M7 (...)** 283165 |
| | 4 | 8.5 | 150 (50)[1] | 6.30 – 10 | 140 | **MSC-D-10-M9 (...)** 283147 | **MSC-D-10-M9 (...)** 283166 |
| | 5.5 | 11.3 | 50 | 8 – 12 | 168 | **MSC-D-12-M12 (...)** 283148 | **MSC-D-12-M12 (...)** 283167 |
| | 7.5 | 16 (15.5[2]) | 50 | 10 – 16 | 224 | - | - |
| | 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 |
| **Components PKZM4 and DILM** | 5.5 | 11.3 | 50 | 10 - 16 | 224 | - | - |
| | 7.5 | 16 | 50 | 10 - 16 | 224 | - | - |
| | 11 | 21.7 | 50 | 20 - 25 | 350 | - | - |
| | 15 | 29.3 | 50 | 25 - 32 | 448 | - | - |
| | 18.5 | 36 | 50 | 32 - 40 | 560 | - | - |
| | 22 | 41 | 50 | 40 - 50 | 700 | - | - |
| | 30 | 55 | 50 | 50 - 58 | 812 | - | - |
| | 34 | 63 | 50 | 55 - 65 | 910 | - | - |

[1] Type of coordination type "2". [2] If DILM15 is used.



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## Direct-on-line starter, 400/415 V

| Motor-protective circuit-breake<br>Type<br>Article no. | Contactor<br>Coordination type "1"<br>Type[3] | DOL starter set<br>Mechanical connection element +<br>Electrical contact element<br>Type<br>Article no. | Contactor<br>Coordination type "2"<br>Type[3] | DOL starter set<br>Mechanical connection element +<br>Electrical contact element<br>Type<br>Article no. |
|---|---|---|---|---|
| **PKZM0-0,25**<br>072731 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-0,4**<br>072732 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-0,63**<br>072733 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-0,63**<br>072733 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-1**<br>072734 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-1,6**<br>072735 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-1,6**<br>072735 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-2,5**<br>072736 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-4**<br>072737 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-4**<br>072737 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-6,3**<br>072738 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM7-...** | **PKZM0-XD M12**<br>283149 |
| **PKZM0-10**<br>072739 | **DILM7-...** | **PKZM0-XD M12**<br>283149 | **DILM17-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-10**<br>072739 | **DILM9-...** | **PKZM0-XD M12**<br>283149 | **DILM17-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-12**<br>278486 | **DILM12-...** | **PKZM0-XD M12**<br>283149 | **DILM17-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-16**<br>046938 | **DILM15-...** | **PKZM0-XD M12**<br>283149 | **DILM17-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-16**<br>046938 | **DILM17-...** | **PKZM0-XD M32**<br>283153 | **DILM17-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-25**<br>046989 | **DILM25-...** | **PKZM0-XD M32**<br>283153 | **DILM25-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM0-32**<br>278489 | **DILM32-...** | **PKZM0-XD M32**<br>283153 | **DILM32-...** | **PKZM0-XD M32**<br>283153 |
| **PKZM4-16**<br>222350 | **DIL M17-...** | - | **DIL M17-...** | - |
| **PKZM4-16**<br>222350 | **DIL M17-...** | - | **DIL M17-...** | - |
| **PKZM4-25**<br>222352 | **DIL M25-...** | - | **DIL M25-...** | - |
| **PKZM4-32**<br>222353 | **DIL M32-...** | - | **DIL M32-...** | - |
| **PKZM4-40**<br>222354 | **DIL M40** | - | **DIL M40** | - |
| **PKZM4-50**<br>222355 | **DIL M50** | - | **DIL M50** | - |
| **PKZM4-58**<br>222394 | **DIL M65** | - | **DIL M65** | - |
| **PKZM4-63**<br>222413 | **DIL M65** | - | **DIL M65** | - |

**Notes**
The direct-on-line starters (complete units) consist of a PKZM0 motor-protective circuit-breaker and a DILM contactor.
Up to 15.5 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.

[3] Please find the order number in the Industrial Switchgear main catalogue to suit the actuation voltage.

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## Reversing starter 400/415 V

| | Motor data | | | Setting range | | Motor starter Coordination type "1" | |
|---|---|---|---|---|---|---|---|
| | | | | | | Actuating voltage 230 V 50 Hz 240 V 60 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 | | |
| | $P$ kW | $I_e$ A | $I_q$ kA | $I_r$ A | $I_{rm}$ A | **Type** Article no. | **Type** Article no. |
| **Complete units PKZ and DILM** | 0.06 | 0.21 | 150 (50)[1] | 0.16 – 0.25 | 3.5 | **MSC-R-0,25-M7 (...)** 283171 | **MSC-R-0,25-M7 (...)** 283190 |
| | 0.09 | 0.31 | 150 (50)[1] | 0.25 – 0.4 | 5.6 | **MSC-R-0,4-M7 (...)** 283172 | **MSC-R-0,4-M7 (...)** 283191 |
| | 0.12 | 0.41 | 150 (50)[1] | 0.40 – 0.63 | 8.82 | **MSC-R-0,63-M7 (...)** 283173 | **MSC-R-0,63-M7 (...)** 283192 |
| | 0.18 | 0.6 | 150 (50)[1] | 0.40 – 0.63 | 8.82 | **MSC-R-0,63-M7 (...)** 283173 | **MSC-R-0,63-M7 (...)** 283192 |
| | 0.25 | 0.8 | 150 (50)[1] | 0.63 – 1 | 14 | **MSC-R-1-M7 (...)** 283175 | **MSC-R-1-M7 (...)** 283194 |
| | 0.37 | 1.1 | 150 (50)[1] | 1.00 – 1.6 | 22.4 | **MSC-R-1,6-M7 (...)** 283176 | **MSC-R-1,6-M7 (...)** 283195 |
| | 0.55 | 1.5 | 150 (50)[1] | 1.00 – 1.6 | 22.4 | **MSC-R-1,6-M7 (...)** 283176 | **MSC-R-1,6-M7 (...)** 283195 |
| | 0.75 | 1.9 | 150 (50)[1] | 1.60 – 2.5 | 35 | **MSC-R-2,5-M7 (...)** 283178 | **MSC-R-2,5-M7 (...)** 283197 |
| | 1.1 | 2.6 | 150 (50)[1] | 2.50 – 4 | 56 | **MSC-R-4-M7 (...)** 283179 | **MSC-R-4-M7 (...)** 283198 |
| | 1.5 | 3.6 | 150 (50)[1] | 2.50 – 4 | 56 | **MSC-R-4-M7 (...)** 283179 | **MSC-R-4-M7 (...)** 283198 |
| | 2.2 | 5 | 150 (50)[1] | 4.00 – 6.3 | 88.2 | **MSC-R-6,3-M7 (...)** 283181 | **MSC-R-6,3-M7 (...)** 283200 |
| | 3 | 6.6 | 150 (50)[1] | 6.30 – 10 | 140 | **MSC-R-10-M7 (...)** 283182 | **MSC-R-10-M7 (...)** 283201 |
| | 4 | 8.5 | 150 (50)[1] | 6.30 – 10 | 140 | **MSC-R-10-M9 (...)** 283183 | **MSC-R-10-M9 (...)** 283202 |
| | 5.5 | 11.3 | 50 | 8 – 12 | 168 | **MSC-R-12-M12 (...)** 283184 | **MSC-R-12-M12 (...)** 283203 |
| | 7.5 | 16 (15.5[2]) | 50 | 10 - 16 | 224 | - | - |
| | 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 |
| **Components PKZM4 and DILM** | 5.5 | 11.3 | 50 | 10 - 16 | 224 | - | - |
| | 7.5 | 16 | 50 | 10 - 16 | 224 | - | - |
| | 11 | 21.7 | 50 | 20 - 25 | 350 | - | - |
| | 15 | 29.3 | 50 | 25 - 32 | 448 | - | - |
| | 18.5 | 36 | 50 | 32 - 40 | 560 | - | - |
| | 22 | 41 | 50 | 40 - 50 | 700 | - | - |
| | 30 | 55 | 50 | 50 - 58 | 812 | - | - |
| | 34 | 63 | 50 | 55 - 65 | 910 | - | - |









[1] For coordination type "2" [2] If DILM15 - is used



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## Reversing starter 400/415 V

| Motor-protective circuit-breakers | Contactor | DOL starter set | Contactor | DOL starter set |
|---|---|---|---|---|
| | Coordination type "1" | Mechanical connection element + Electrical contact element | Coordination type "2" | Mechanischer connection element + Electrical contact element |
| **Type** Article no. | **Type**[3] | **Type** Article no. | **Type**[3] | **Type** Article no. |
| **PKZM0-0,25** 072731 | **2 X DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-0,4** 072732 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-0,63** 072733 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-0,63** 072733 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-1** 072734 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-1,6** 072735 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-1,6** 072735 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-2,5** 072736 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-4** 072737 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-4** 072737 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-6,3** 072738 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 |
| **PKZM0-10** 072739 | **2 x DILM7-01** | **PKZM0-XR M12** 283185 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-10** 072739 | **2 x DILM9-01** | **PKZM0-XR M12** 283185 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-12** 278486 | **2 x DILM12-01** | **PKZM0-XR M12** 283185 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-16** 046938 | **2 x DILM15-01** | **PKZM0-XR M12** 283185 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-16** 046938 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 | **2 x DILM17-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-25** 046989 | **2 x DILM25-01** | **PKZM0-XR M32** 283189 | **2 x DILM25-01** | **PKZM0-XR M32** 283189 |
| **PKZM0-32** 278489 | **2 x DILM32-01** | **PKZM0-XR M32** 283189 | **2 x DILM32-01** | **PKZM0-XR M32** 283189 |
| **PKZM4-16** 222350 | **2 X DIL M17-..** | - | **2 X DIL M17-..** | - |
| **PKZM4-16** 222350 | **2 X DIL M17-..** | - | **2 X DIL M17-..** | - |
| **PKZM4-25** 222352 | **2 X DIL M25-..** | - | **2 X DIL M25-..** | - |
| **PKZM4-32** 222353 | **2 X DIL M32-..** | - | **2 X DIL M32-..** | - |
| **PKZM4-40** 222354 | **2 X DIL M40** | - | **2 X DIL M40** | - |
| **PKZM4-50** 222355 | **2 X DIL M50** | - | **2 X DIL M50** | - |
| **PKZM4-58** 222394 | **2 X DIL M65** | - | **2 X DIL M65** | - |
| **PKZM4-63** 222413 | **2 X DIL M65** | - | **2 X DIL M65** | - |

**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.

[3] Please find the order number in the Industrial Switchgear main catalogue to suit the actuation voltage.

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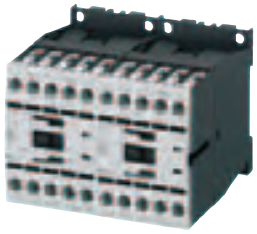
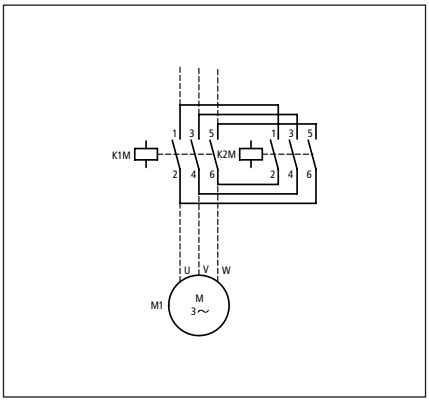
## Reversing combinations

| | Rated operational current | Max. three-phase motor rating at 50-60 Hz | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | AC-3<br>380 V<br>400 V | AC-3<br>220 V<br>230 V | 380 V<br>400 V | 660 V<br>690 V | AC-4<br>220 V<br>230 V | 380 V<br>400 V | 660 V<br>690 V | |
| | $I_e$ | *P* | *P* | *P* | *P* | *P* | *P* | **Type** |
| | A | kW | kW | kW | kW | kW | kW | Article no. |
|  | 7 | 2.2 | 3 | 3.5 | 1 | 2.4 | 2.9 | **DIULM7/21**(230V50HZ)<br>278061 |
| | 9 | 2.5 | 4 | 4.5 | 1.5 | 2.5 | 3.6 | **DIULM9/21**(230V50HZ)<br>278086 |
| | 12 | 3.5 | 5.5 | 6.5 | 2 | 3 | 4.4 | **DIULM12/21**(230V50HZ)<br>278111 |
| | 18 | 5 | 7.5 | 11 | 2.5 | 4.5 | 6.5 | **DIULM17/21**(230V50HZ)<br>278136 |
| | 25 | 7.5 | 11 | 14 | 3.5 | 6 | 8.5 | **DIULM25/21**(230V50HZ)<br>278161 |
| | 32 | 10 | 15 | 17 | 4 | 7 | 10 | **DIULM32/21**(230V50HZ)<br>278186 |
| | | | | | | | | |
|  | 40 | 12.5 | 18.5 | 23 | 5 | 9 | 12 | **DIULM40/11**(230V50HZ)<br>278211 |
| | 50 | 15.5 | 22 | 30 | 6 | 10 | 14 | **DIULM50/11**(230V50HZ)<br>278236 |
| | 65 | 20 | 30 | 35 | 7 | 12 | 17 | **DIULM65/11**(230V50HZ)<br>278261 |
| | 80 | 25 | 37 | 63 | 12 | 20 | 28 | **DIUL M80/11** (230V 50Hz)<br>239799 |
| | 95 | 30 | 45 | 75 | 15 | 26 | 36 | **DIUL M95/11** (230V 50Hz)<br>239841 |
| | 115 | 37 | 55 | 105 | 17 | 30 | 42 | **DIUL M115/11** (RAC240)<br>239862 |
| | 150 | 48 | 75 | 125 | 20 | 34 | 48 | **DIUL M150/11** (RAC240)<br>239880 |



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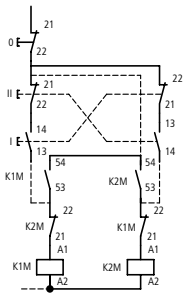
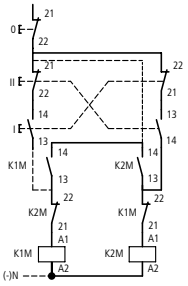
## Reversing combinations

| Individual combination components | | Free auxiliary switch M = Make | | Mechanical interlock | |
|---|---|---|---|---|---|
| Contactor K1M | Contactor K2M | K1M | K2M | | |
| **Type** | **Type** | | | | |
| DILM7-01 + DILA-XHI20 | DILM7-01 + DILA-XHI20 | 1 M | 1 M | + |  |
| DILM9-01 + DILA-XHI20 | DILM9-01 + DILA-XHI20 | 1 M | 1 M | + | |
| DILM12-01 + DILA-XHI20 | DILM12-01 + DILA-XHI20 | 1 M | 1 M | + | |
| DILM17-01 + DILA-XHI20 | DILM17-01 + DILA-XHI20 | 1 M | 1 M | + | |
| DILM25-01 + DILA-XHI20 | DILM25-01 + DILA-XHI20 | 1 M | 1 M | + | |
| DILM32-01 + DILA-XHI20 | DILM32-01 + DILA-XHI20 | 1 M | 1 M | + | |
| | | | | | |
| DILM40 + DILM150-XHI11 | DILM40 + DILM150-XHI11 | - | - | + |  |
| DILM50 + DILM150-XHI11 | DILM50 + DILM150-XHI11 | - | - | + | |
| DILM65 + DILM150-XHI11 | DILM65 + DILM150-XHI11 | - | - | + | |
| DIL M80 + DIL M150-XHI11 | DIL M80 + DIL M150-XHI11 | - | - | + | |
| DIL M95 + DIL M150-XHI11 | DIL M95 + DIL M150-XHI11 | - | - | + | |
| DIL M115 + DIL M150-XHI11 | DIL M115 + DIL M150-XHI11 | - | - | + | |
| DIL M150 + DIL M150-XHI11 | DIL M150 + DIL M150-XHI11 | - | - | + | |

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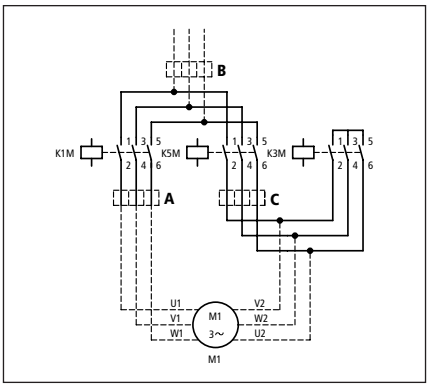
## Star-delta combinations

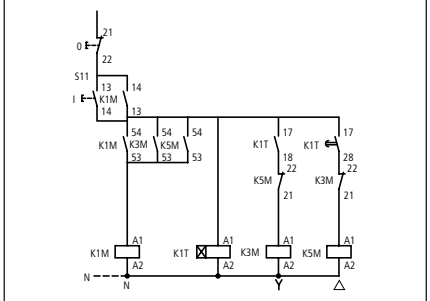
| Rated operational current | Max. three-phase motor rating at 50-60 Hz | | | | Switchover time up to | |
|---|---|---|---|---|---|---|
| AC-3<br>380 V<br>400 V | AC-3<br>220 V<br>230 V | 380 V<br>400 V | 500 V | 660 V<br>690 V | s | |
| $I_e$ | $P$ | $P$ | $P$ | $P$ | | **Type** |
| A | kW | kW | kW | kW | s | Article no. |
| 12 | 3 | 5.5 | 5.5 | 5.5 | 20 | **SDAINLM12**(230V50HZ)<br>278286 |
| 16 | 4 | 7.5 | 7.5 | 7.5 | 20 | **SDAINLM16**(230V50HZ)<br>278311 |
| 22 | 5.5 | 11 | 11 | 11 | 20 | **SDAINLM22**(230V50HZ)<br>278336 |
| 30 | 7.5 | 15 | 18.5 | 18.5 | 20 | **SDAINLM30**(230V50HZ)<br>278361 |
| 45 | 11 | 22 | 30 | 22 | 20 | **SDAINLM45**(230V50HZ)<br>278386 |
| 55 | 15 | 30 | 37 | 30 | 20 | **SDAINLM55**(230V50HZ)<br>278411 |
| 70 | 18.5 | 37 | 45 | 37 | 20 | **SDAINLM70**(230V50HZ)<br>239895 |
| 90 | 22 | 45 | 55 | 45 | 20 | **SDAINLM90**(230V50HZ)<br>239937 |
| 115 | 30 | 55 | 75 | 55 | 20 | **SDAINLM115**(230V50HZ)<br>239963 |
| 140 | 37 | 75 | 90 | 90 | 20 | **SDAINLM140**(230V50HZ)<br>240009 |
| 165 | 45 | 90 | 110 | 132 | 20 | **SDAINLM165**(230V50HZ)<br>240035 |
| 200 | 55 | 110 | 132 | 160 | 20 | **SDAINLM200**(RAC240)<br>240060 |
| 260 | 75 | 132 | 160 | 200 | 20 | **SDAINLM260**(RAC240)<br>240078 |



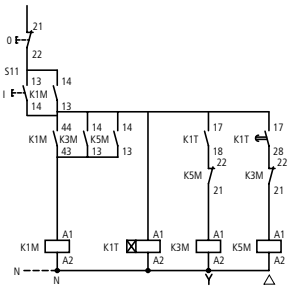





**for SDAINL M12-M55**




**for SDAINL M70-M260**



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## Star-delta combinations

| Individual combination components | | | | Free auxiliary switch B = Break M = Make | | |
|---|---|---|---|---|---|---|
| Mains contactor<br><br>K1M<br>**Type** | Delta contactor<br><br>K5M<br>**Type** | Star contactor<br><br>K3M<br>**Type** | Timing relay<br><br>**Type** | K1M | K3M | K5M |
| DILM7-10<br>+ DILA-XHI20 | DILM7-01<br>+ DILA-XHI20 | DILM7-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DILM9-10<br>+ DILA-XHI20 | DILM9-01<br>+ DILA-XHI20 | DILM9-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DILM12-10<br>+ DILA-XHI20 | DILM12-01<br>+ DILA-XHI20 | DILM12-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DILM17-10<br>+ DILA-XHI20 | DILM17-01<br>+ DILA-XHI20 | DILM17-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DILM25-10<br>+ DILA-XHI20 | DILM25-01<br>+ DILA-XHI20 | DILM17-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DILM32-10<br>+ DILA-XHI20 | DILM32-01<br>+ DILA-XHI20 | DILM25-01<br>+ DILA-XHI20 | ETR4-51 | 1 M | 1 M | 1 M |
| DIL M40<br>+ DIL M150-XHI31 | DIL M40<br>+ DIL M150-XHI11 | DIL M40<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M50<br>+ DIL M150-XHI31 | DIL M50<br>+ DIL M150-XHI11 | DIL M40<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M65<br>+ DIL M150-XHI31 | DIL M65<br>+ DIL M150-XHI11 | DIL M40<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M80<br>+ DIL M150-XHI31 | DIL M80<br>+ DIL M150-XHI11 | DIL M50<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M95<br>+ DIL M150-XHI31 | DIL M95<br>+ DIL M150-XHI11 | DIL M65<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M115<br>+ DIL M150-XHI31 | DIL M115<br>+ DIL M150-XHI11 | DIL M80<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| DIL M150<br>+ DIL M150-XHI31 | DIL M150<br>+ DIL M150-XHI11 | DIL M80<br>+ DIL M150-XHI11 | ETR4-51 | 1 B 1M | - | - |
| | | | | | | |

**Overload relay settings** **Starting**

A: $I_N$ x 0.58 ≤15 s
Protection of the motor in Y and △ configuration

B: $I_N$ x 1 15-40 s
In Y configuration only conditional motor protection

C: $I_N$ x 0.58 > 40 s
No motor protection in Y configuration

Timing relay setting to approx. 10 s

Main circuit:
Depending on the aspired co-ordination type "1" or "2", it is necessary to verify if the fusing and the incomer to the mains and delta contactor can be used together, or if they must be used separately.

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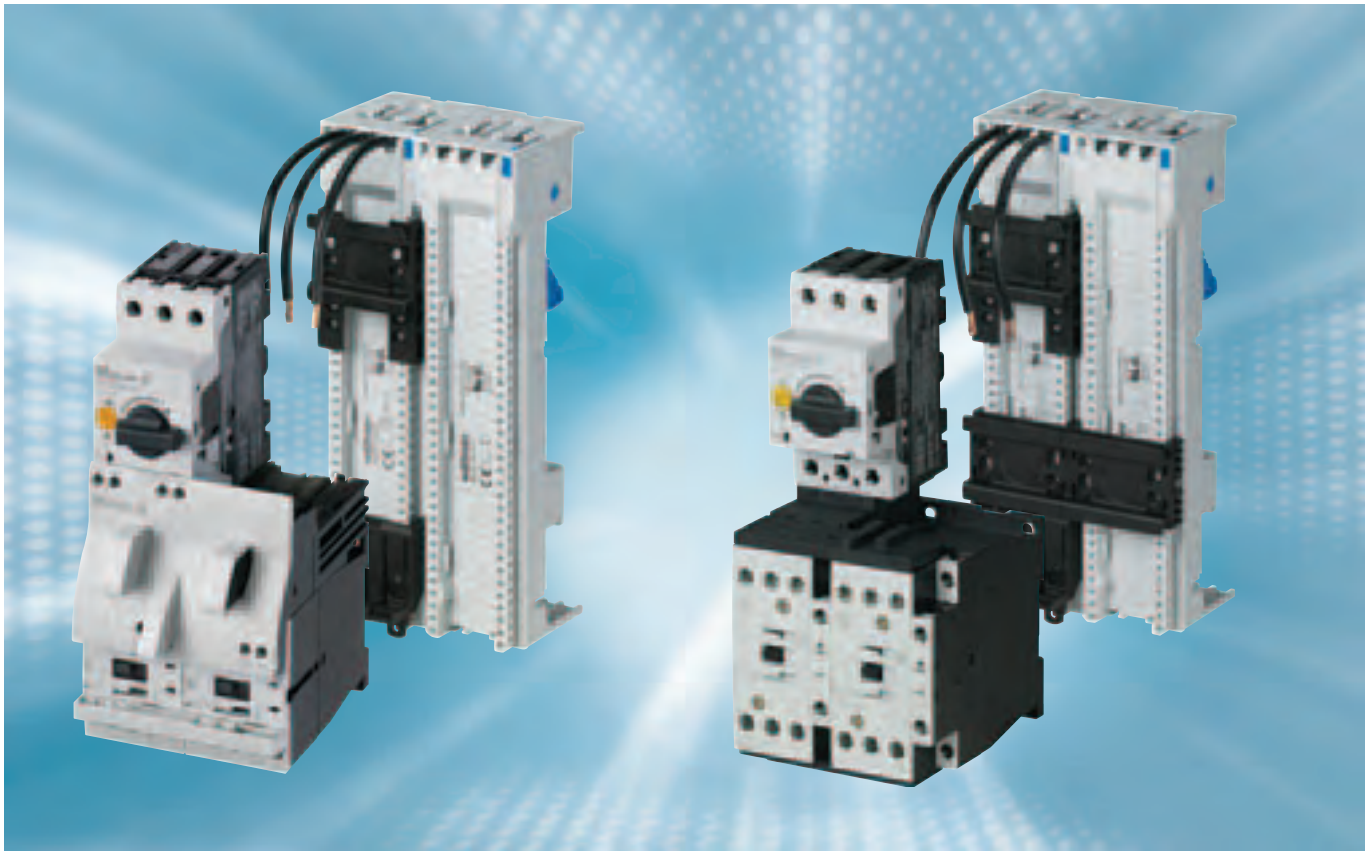
## Busbar adapter







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| Busbar adapter, 3-pole[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| wöhner | Rated operational voltage | Rated operational current | Conductor cross-section | Adapter width | Adapter length | Mounting rail | For use with | Wöhner EQUES Easy Connector<br>Order no. | **Notes**<br>Electrical connections |
| **Version** | $U_e$<br>V | $I_e$<br>A | | mm | mm | | | | |
| **Busbar adapter 25 A** | 690 | 25 | AWG 12<br>(4 mm²) | 45 | 200 | 1 | PKZM0 +<br>DIL M 7 contactor<br>DIL M 9 contactor<br>DIL M 12 contactor<br>DIL M 15 contactor | **32450** | PKZM0 and contactor DIL M7..M9..M12..M15 via PKZM0-XDM12 |
| | 690 | 25 | AWG 12<br>(4 mm²) | 90 | 200 | 1 | PKZM0 +<br>2 x DIL M 7-01 contactor<br>2 x DIL M 9-01 contactor<br>2 x DIL M 12-01 contactor | **32452** | PKZM0 and 2 x contactor DIL M 7..M9..M12 via PKZM0-XRM12 |
| **Busbar adapter 32 A** | 690 | 32 | AWG 10<br>(6 mm²) | 45 | 200 | 2 | PKZM0 +<br>DIL M 17 contactor<br>DIL M 25 contactor<br>DIL M 32 contactor | **32451** | PKZM0 and contactor DIL M17..M25..M32 via PKZM0-XDM32 |
| | 690 | 32 | AWG 10<br>(6 mm²) | 90 | 200 | 2 | PKZM0 +<br>2 x DIL M 17-01 contactor<br>2 x DIL M 25-01 contactor<br>2 x DIL M 32-01 contactor | **32453** | PKZM0 and 2 x contactor DIL M17..M25..M32 via PKZM0-XRM32 |
| **Busbar adapter 63 A** | 690 | 40 | AWG 8<br>(10 mm²) | 72 | 260 | 2 | PKZ2 +<br>DIL M 7 contactor<br>DIL M 9 contactor<br>DIL M 12 contactor<br>DIL M 17 contactor<br>DIL M 25 contactor<br>DIL M 32 contactor<br>DIL M 40 contactor | **32463** | PKZ2 and contactor DIL M7..M9..M12 via flexible connectors MVS-LB0-00M-G (AWG 12)<br>DIL M17..M25..M32 via flexible connectors MVS-LB0-0M-G (AWG 10) |
| | 690 | 40 | AWG 8<br>(10 mm²) | 72 | 200 | 1 | PKZ2 | **32457** | |
| | 690 | 63 | AWG 8<br>(10 mm²) | 54 | 260 | 2 | PKZM4 +<br>DIL M 17 contactor<br>DIL M 25 contactor<br>DIL M 32 contactor<br>DIL M 40 contactor<br>DIL M 50 contactor<br>DIL M 65 contactor | **32460** | PKZM4 and contactor DIL M 17..M25..M32 via flexible connectors MVS-LB0-0M-G (AWG 10)<br>DIL M40..M50..M65 via contact module PKZM4-XM65 DE |
| | 690 | 63 | AWG 8<br>(10 mm²) | 54 | 200 | 1 | PKZM4 | **32454** | |
| **Side module plug-in on both sides** | | | | 9 | 200 | 4 | | **32963** | Can be grouped on AD... for expansion of the mounting width |
| **Connection elements** | | | | | | | | **32954** | |

[1] Can be used in all 60 mm systems. Suitable for 5 and 10 mm rail thickness' via combination foot
[2] Busbar adapter without electrical contacting
[3] Mounting by snap fitting onto the voltage-free busbar

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