Motor-Protective Circuit-Breakers **PKE**
Moeller® series

Product Range Catalog

Motor-Protective Circuit-Breakers PKE

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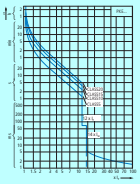

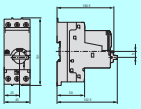

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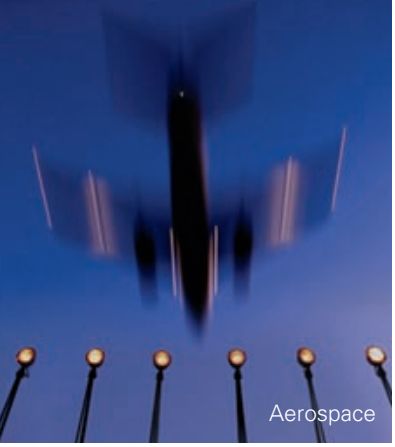

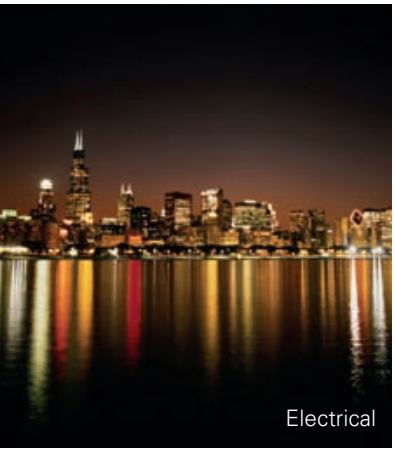

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  - Pharmaceuticals
  - Pulp and paper
- Material handling

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  - Wind
  - Hydropower
- Traditional energy:
  - Oil
  - Gas
- Smart grid
- Water and waste water

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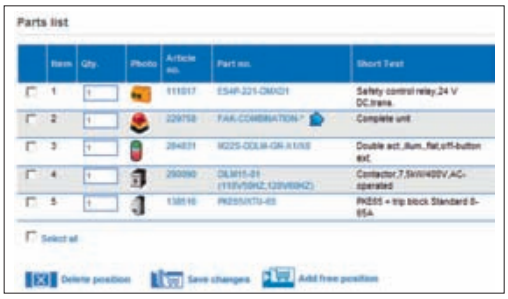
Parts lists

From your search results you can create a parts list that you can then send to your Eaton sales partner as a query.

HTML data sheet; can be saved as PDF file.



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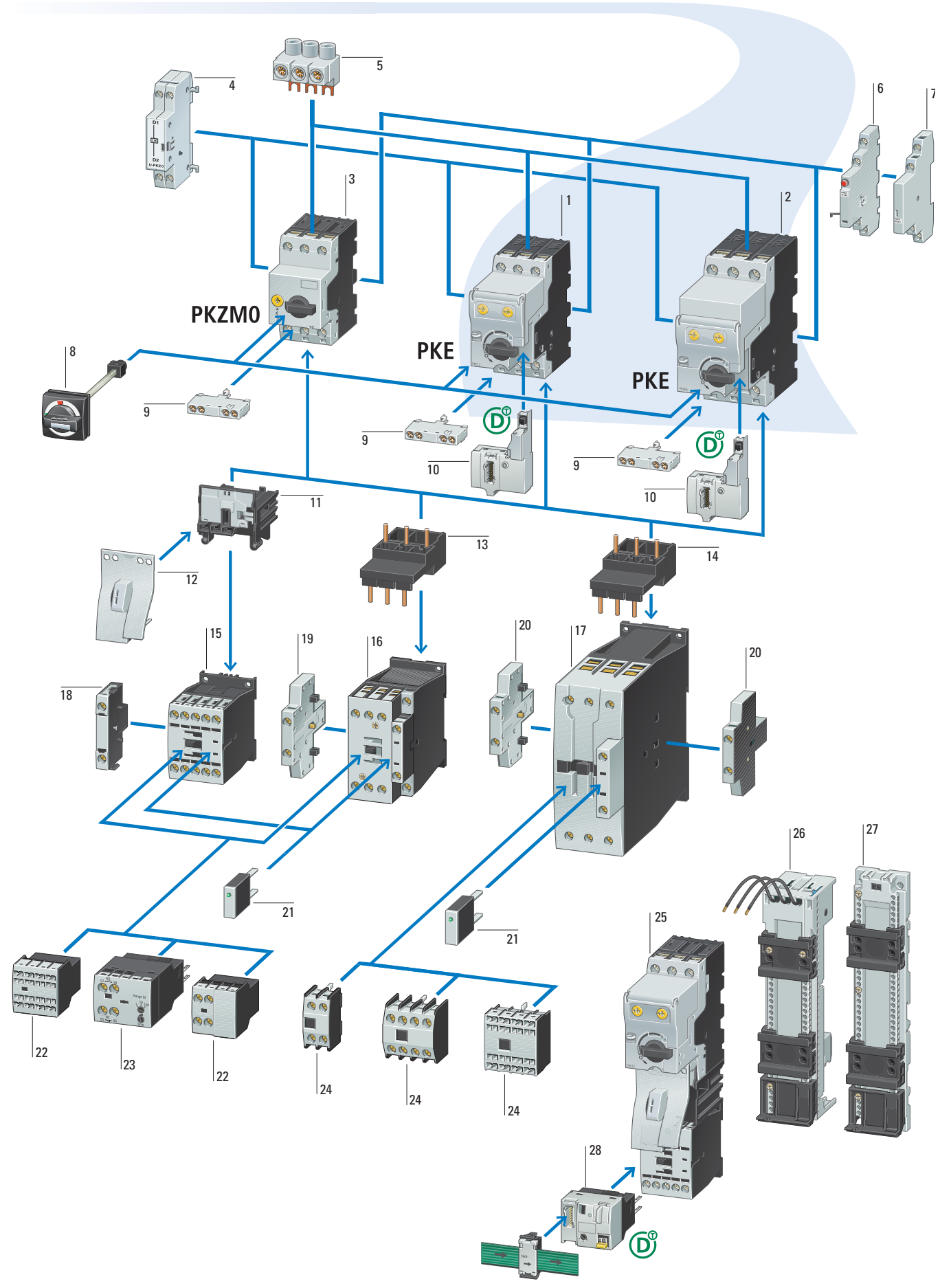
It is often the case that product information is required which is not available in the product catalogs. The "Eaton Catalogs" contain article numbers and type designations that are linked to the Online Catalog. This enables the user to access highly detailed production information in the form of a technical data sheet. From here other documents such as installation instructions and technical publications can be called up.

Whether on the building site, at the customer, on the train or at home – "Eaton Catalogs" make sure that all product information is close to hand.

System overview



Motor-protective circuit-breaker
Motor-starter combinations

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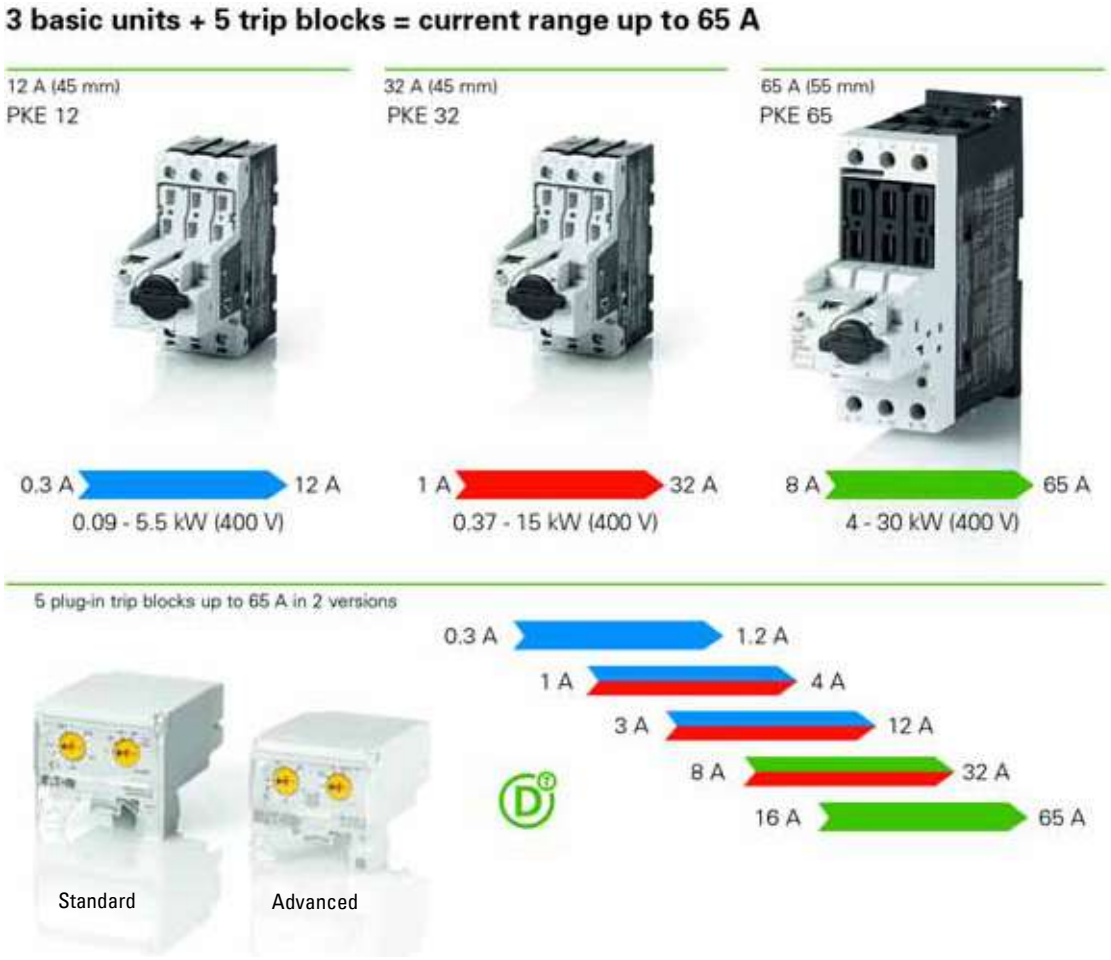
Description



System features and operation

PKE motor-protective circuit-breakers are based on a modular design that consists of three basic devices (PKE12, PKE32, PKE65) and a series of plug-in trip blocks (PKE-XTU…) that cover five current ranges going from 0.3 to 65 A.

The plug-in trip blocks can be comfortably combined with the basic devices in order to put together a PKE motor-protective circuit-breaker, and do not require any tools for this purpose.
This modular plug-in design makes it possible to quickly change current ranges by simply replacing the trip block while leaving the basic device in place.

Removing the trip block produces a visible isolating gap, with protection against contact (IP20 protection type), that separates the main current paths.

In contrast to the bimetallic motor-protective circuit-breakers normally used to date, the PKE relies on an electronic measuring and protection method. This provides a wider setting range for the adjustable rated motor current (ratio of 4:1) than the use of a bimetallic design (ratio of 1.6:1).

The use of wider current ranges reduces the need for different models by up to 80 %, minimizing engineering and design complexity and stockkeeping costs.

A selectable tripping class (CLASS 5, 10, 15, 20) for different motor startup conditions and reduced heat dissipation results in additional advantages behind this electronic unit.

Essential features

- Plug-in trip blocks of up to 65 A make it possible to quickly adjust the current range
- Electronic wide-range overload protection reduces the need for different models and makes design, engineering, and stockkeeping simpler

Communication capability and accessories

In addition to the "standard" trip blocks (PKE-XTU-…) for PKE units, "advanced" trip blocks (PKE-XTUA-…) are available so that the motor-protective circuit-breaker can be connected to the communications architecture of machines and systems with the SmartWire-DT system.

Moreover, the fact that the PKE has been fully incorporated into the xStart system means that the globally approved accessory components (such as auxiliary contacts, undervoltage releases, shunt releases, etc.) for the PKZM0 motor-protective circuit-breaker are compatible with the PKE.
In fact, motor-starter combinations (consisting of a motor-protective circuit-breaker and a contactor) can continue to be put together as usual with the existing accessory components from the xStart system.

Essential features

- The data transparency that is established makes it possible to monitor machines and systems
- The use of existing, proven accessories from the xStart system reduces the need for different models

Motor-starter combinations with PKE

As usual, motor-starter combinations are made up of DILM contactors and PKE motor-protective circuit-breakers. This makes it possible to clearly assign the two contact systems to operational switching and to motor and short-circuit protection functions.

The motor-starter's individual components can be replaced without having to change the entire motor-starter, ensuring an ideal level of cost-effectiveness. In addition, a versatile range of accessory components for putting together starter combinations reduces assembly and mounting complexity while freeing up space in control panels.
The xStart system's plug-in main current wiring even makes it possible to put together motor-starter combinations of up to 15.5 A without any tools.

Motor-starter combinations with PKE units of up to 32 A make a compelling case with their high short-circuit breaking capacity of 100 kA/400 V. In addition, motor-starter combinations with DILM17 to 32 contactors meet the criteria for type 2 coordination for this level.

Essential features

- Motor-starter combinations with two contact systems provide for added safety and reduce material costs when worn components need to be replaced.
- A high short-circuit breaking capacity (100 kA/400 V) simplifies engineering and design and prevents having to use an additional back-up protection.

PKE as a circuit-breaker to EN 60947-2

In addition to use as a motor-protective circuit-breaker, the PKE can also be used as a circuit-breaker to IEC/EN 60947-2.
With the corresponding PKE-XTUCP-… trip blocks the PKE can also be used for protecting cables and wiring up to rated currents of 65 A.

In contrast to motor protection applications, a PKE used as a circuit-breaker for system protection can work with unbalanced loading caused by different loads.

The additional adjustability of the electronic short-circuit release facilitates reliable protection with various cable lengths and cable cross-sections.

Essential features

- Can be used flexibly as a motor-protective circuit-breaker or a circuit-breaker by simply replacing the trip block.
- Adjustable short-circuit protection simplifies engineering and design and guarantees that the unit can be used with various cable lengths and cross-sectional areas.

Integrated communications interface

The PKE electronic motor-protective circuit-breaker can also be integrated into automation environments with the SmartWire-DT networking system. SmartWire-DT makes it possible to send the motor-protective circuit-breaker's data directly to the controller so it can be processed or directly to an HMI so that motor feeder data can be visualized.
The integration of the motor-protective circuit-breaker PKE into the system SmartWire-DT can be undertaken both for the individual PKE motor-protective circuit-breaker as well as for the PKE motor-starter combinations (MSC-DEA).

In contrast to the previous method of detecting status messages for motor-starters by means of auxiliary contacts, the status messages for motor-starter combinations with PKE and for PKE motor-protective circuit-breakers are acquired electronically via SmartWire-DT. This not only eliminates the need for additional component wiring, but also frees up space in control panels. In addition, it also prevents incorrect information resulting from poorly made contacts or broken wires.

Networked PKE motor-protective circuit-breaker

The plug-in networking solution based on the SmartWire-DT PKE module (PKE-SWD-SP) makes it possible to connect a PKE with an advanced trip block to the SmartWire-DT system. This makes it possible to put together a communications-capable motor-protective circuit-breaker in no time.
Both simple status data (e.g., switching state, trip reason, switch settings) and analog information (current current flow and thermal motor image) are provided with this solution. This provides a better overview of the system and additional options for optimizing processes in order to prevent process failures.

The PKE-SWD-SP PKE module can be combined with all PKE basic devices and with all PKE-XTU(W)A-… trip blocks. This results in a universal network solution for a current range of 0.3 to 65 A.

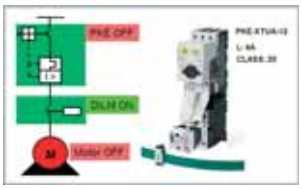
Networked motor-starter combination with PKE up to 32 A

The SmartWire-DT PKE module (PKE-SWD-32) makes it possible to connect motor-starter combinations with a PKE of up to 32 A (MSC-DEA) to a SmartWire-DT system. The PKE module is simply plugged directly into the motor-starter combination's contactor and connected to the motor-protective circuit-breaker via an additional connection.

The circuit breaker's and monitored motor's readings and status data is acquired via the connection to the PKE motor-protective circuit-breaker. The integrated interface to the contactor coil enables the control of the motor-starter combination and reports the state. The control wiring required up to now as well as the respective digital input/output level of the PLC are no longer required.

An additional overload relay function makes it possible to ensure that the contactor will de-energize the motor in the event of an overload. The contactor can then be switched back on in an automated manner. During this process, the motor-protective circuit-breaker will remain switched on and will not have to be actuated.

PROFI CANopen EtherNet/IP conformance tested **Modbus TCP**



Status messages / Contactor states

- Contactor state PKE
- Contactor state
- Set rated operational current (I_r)
- CLASS
- PKE trip block

The reported digital switching states for the contactor and the motor-protective circuit-breaker replace the auxiliary contacts normally used to date, as well as their wiring. Moreover, this eliminates the need for the input modules that were previously used to read these switching states.

PLCs can acquire, analyze, and check the plausibility of contactor state changes at any time.

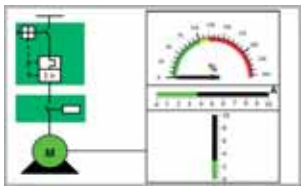
Finally, this switching state acquisition function provides an additional way to check whether the motor-protective circuit-breaker has been configured correctly.

Specific trip indications

- Overload
- Short-circuit
- Phase failure
- Test

The use of specific trip indications renders the auxiliary contacts previously used for this type of application, as well as their wiring, unnecessary. Digital input modules for acquiring auxiliary contact states in the PLC are no longer needed as a result.

Information regarding the circuit-breaker's trip reason enables operators to troubleshoot trips in a more targeted manner.

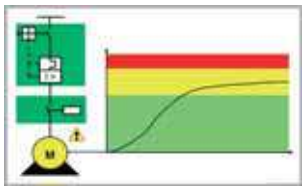


Motor current analysis

- Maximum phase current as a % (PKE-XTU(W)A-… motor protection trip block)
- Current value for L1, L2, L3 as a % (PKE-XTU(W)ACP-… system protection trip block)

The integrated current analysis function replaces previously used accessories (e.g., current transformers) and required PLC acquisition peripherals (e.g., analog input modules) without taking up extra space in your control panel.

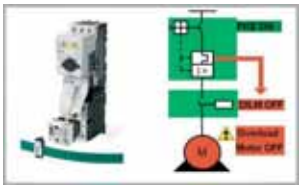
Indicating the current as a relative percentage value (reference value : set rated operational current I_r) makes it possible to quickly detect deviations and provides a better overview of the process.



Overload prewarning

- Thermal motor model as a %

The thermal motor model reproduces the currently calculated thermal motor load based on the switching state, the current flow, and the tripping characteristic in the PKE.
A fixed switching threshold for overload tripping (110 % thermal motor load) based on the motor model makes it possible to determine when the PKE will trip due to a thermal motor overload before it happens. This makes it possible to identify moments when the process is about to be interrupted and take appropriate preventive measures.



Overload relay function

Overload relay functions that can be selected via SmartWire-DT make it possible to ensure that the contactor will be automatically switched off in the event of an overload when working with DOL starters with a SmartWire-DT connection.
Since the contactor can be switched back on automatically, the motor-protective circuit-breaker does not need to be actuated.

Ordering

Motor rating	Motor full-load current AC-3					Setting range of overload releases	Basic device with standard knob Basic device with AK lockable rotary handle		Std. pack	For use with	Trip block motor protection Standard		Std. pack	For use with Connection to SmartWire-DT with PKE-SWD-32 or PKE-SWD-SP	Trip block motor protection Advanced		Std. pack	Complete device with standard knob Complete device with AK lockable rotary handle		Std. pack
	220 V 230 V 240 V	380 V 400 V 410 V	440 V	500 V	660 V 690 V		Part no. Article no.	Price see price list			Part no. Article no.	Price see price list			Part no. Article no.	Price see price list		Part no. Article no.	Price see price list	
P	I	I	I	I	I	I_r														
kW	A	A	A	A	A	A														
Coordination type “1” and “2”																				
0.06	0.37	-	-	-	-	0.3 - 1.2	**PKE12** 121721		1 off	PKE12 basic device	**PKE-XTU-1,2** 121723		1 off	PKE12 basic device	**PKE-XTUA-1,2** 121727		1 off	**PKE12/XTU-1,2** 121731		1 off
0.09	0.54	0.31	-	-	-		**PKE12/AK** 158241											**PKE12/AK/XTU-1,2** 158242		
0.12	0.72	0.41	0.37	0.33	-															
0.18	1.04	0.6	0.54	0.48	0.35															
0.25	-	0.8	0.76	0.7	0.5															
0.37	-	1.1	1.02	0.9	0.7															
0.55	-	-	-	-	0.9															
0.75	-	-	-	-	1.1															
0.18	1.04	-	-	-	-	1 - 4	**PKE12** 121721		1 off	PKE12 basic device PKE32 basic device	**PKE-XTU-4** 121724		1 off	PKE12 basic device PKE32 basic device	**PKE-XTUA-4** 121728		1 off	**PKE12/XTU-4** 121732		1 off
0.25	1.4	-	-	-	-		**PKE12/AK** 158241											**PKE12/AK/XTU-4** 158244		
0.37	2	1.1	1.02	-	-															
0.55	2.7	1.5	1.39	1.2	-															
0.75	3.2	1.9	1.68	1.5	1.1															
1.1	-	2.6	2.41	2.1	1.5															
1.5	-	3.6	3.28	2.9	2.1															
2.2	-	-	-	4	2.9															
3	-	-	-	-	3.8															
0.75	3.2	-	-	-	-	3 - 12	**PKE12** 121721		1 off	PKE12 basic device PKE32 basic device	**PKE-XTU-12** 121725		1 off	PKE12 basic device PKE32 basic device	**PKE-XTUA-12** 121729		1 off	**PKE12/XTU-12** 121733		1 off
1.1	4.6	-	-	-	-		**PKE12/AK** 158241											**PKE12/AK/XTU-12** 158243		
0.15	6.3	3.6	3.3	-	-															
2.2	8.7	5	4.6	4	-															
3	11.5	6.6	6	5.3	3.8															
4	-	8.5	7.7	6.8	4.9															
5.5	-	11.3	10.2	9	6.5															
7.5	-	-	-	-	8.8															
2.2	8.7	-	-	-	-	8 - 32	**PKE32** 121722		1 off	PKE32 basic device	**PKE-XTU-32** 121726		1 off	PKE32 basic device	**PKE-XTUA-32** 121730		1 off	**PKE32/XTU-32** 121734		1 off
3	11.5	-	-	-	-		**PKE32/AK** 158245											**PKE32/AK/XTU-32** 158246		
4	14.8	8.5	-	-	-															
5.5	19.6	11.3	10.2	9	-															
7.5	26.4	15.2	13.8	12.1	8.8															
11	-	21.7	19.8	17.4	12.6															
15	-	29.3	26.6	23.4	17															
18.5	-	-	-	28.9	20.9															
22	-	-	-	-	23.8															
30	-	-	-	-	32															

Rated uninterrupted current	Setting range Overload releases	Short-circuit releases	Basic device with standard knob Part no. Article no.	Price see price list	Std. pack	For use with	Trip block system protection Standard Part no. Article no.	Price see price list	Std. pack	For use with Connection to SmartWire-DT with PKE-SWD-32 or PKE-SWD-SP	Trip block system protection Advanced Part no. Article no.	Price see price list	Std. pack	Complete device with standard knob Part no. Article no.	Price see price list	Std. pack
I_u	I_r	I_{rm}														
A	A	A														
36	15 - 36	75 - 288	**PKE32** 121722		1 off	PKE32 basic device	**PKE-XTUCP-36** 153164		1 off	PKE32 basic device	**PKE-XTUACP-36** 168795		1 off	**PKE32/XTUCP-36** 168972		1 off

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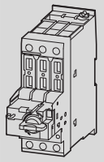
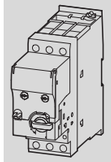
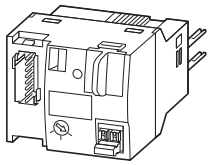
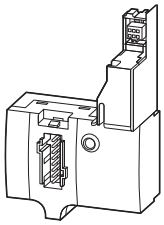




Motor rating	Motor full-load current AC-3					Setting range of overload releases	Basic device with standard knob Basic device with AK lockable rotary handle		Std. pack	For use with	Trip block motor protection Standard		Std. pack	For use with Connection to SmartWire-DT with PKE-SWD-SP	Trip block motor protection Advanced		Std. pack	Complete device with standard knob Complete device with AK lockable rotary handle		Std. pack
	220 V 230 V 240 V	380 V 400 V 410 V	440 V	500 V	660 V 690 V															
							Part no. Article no.	**Price** see price list			**Part no.** Article no.	**Price** see price list			**Part no.** Article no.	**Price** see price list		**Part no.** Article no.	**Price** see price list	
P kW	I A	I A	I A	I A	I A	I_r A														
Coordination type “1” and “2”																				
5.5	19.6	-	-	-	-	16 - 65	**PKE65** 138258		1 off	PKE65 basic device	**PKE-XTU-65** 138259		1 off	PKE65 basic device	**PKE-XTUA-65** 138260		1 off	**PKE65/XTU-65** 138516		1 off
7.5	26.4	-	-	-	-		**PKE65/AK** 158247											**PKE65/AK/XTU-65** 158248		
11	38	21.7	19.7	17.4	-															
15	51	29.3	26.6	23.4	17															
18.5	63	36	32.9	28.9	20.9															
22	-	41	37.4	33	23.8															
30	-	55	50.3	44	32															
37	-	-	61.4	54	39															
45	-	-	-	65	47															
55	-	-	-	-	58															
2.2	8.7	-	-	-	-	8 - 32	**PKE65** 138258		1 off	PKE65 basic device	**PKE-XTUW-32** 138261		1 off	PKE65 basic device	**PKE-XTUWA-32** 138262		1 off	**PKE65/XTUW-32** 138517		1 off
3	11.5	-	-	-	-		**PKE65/AK** 158247											**PKE65/AK/XTUW-32** 158249		
4	14.8	8.5	-	-	-															
5.5	19.6	11.3	10.2	9	-															
7.5	26.4	15.2	13.8	12.1	8.8															
11	-	21.7	19.8	17.4	12.6															
15	-	29.3	26.6	23.4	17															
18.5	-	-	-	28.9	20.9															
22	-	-	-	-	23.8															
30	-	-	-	-	32															

Rated uninterrupted current	Setting range		Basic device with standard knob		Std. pack	For use with	Trip block system protection Standard		Std. pack	For use with Connection to SmartWire-DT with PKE-SWD-SP	Trip block system protection Advanced		Std. pack	Complete device with standard knob		Std. pack
	Overload releases	Short-circuit releases	**Part no.** Article no.	**Price** see price list			**Part no.** Article no.	**Price** see price list			**Part no.** Article no.	**Price** see price list		**Part no.** Article no.	**Price** see price list	
I_u A	I_r A	I_{rm} A														
36	15 - 36	75 - 288	**PKE65** 138258		1 off	PKE65 basic device	**PKE-XTUWCP-36** 168796		1 off	PKE65 basic device	**PKE-XTUWACP-36** 168797		1 off	**PKE65/XTUWCP-36** 168973		1 off
65	30 - 65	150 - 520	**PKE65** 138258		1 off	PKE65 basic device	**PKE-XTUCP-65** 168798		1 off	PKE65 basic device	**PKE-XTUACP-65** 168799		1 off	**PKE65/XTUCP-65** 168974		1 off

Information relevant for export to North America → Page 35

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
SmartWire-DT PKE module (motor-starter combinations)					
For connecting the motor-starter combination to SmartWire-DT, "expanded" 24 VDC version (MSC-DEA…) up to 15 kW.					
	Surface-mounting to contactors. One module per contactor and PKE necessary. Additional SWD contactor module required fir actuation of reversing starter. 1 electrical interlock for the surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Selectable overload relay function (ZMR) for switching off the contactor on overload. Wiring sets DILM 12-XRL and PKZM0-XRM12 cannot be used. For current consumption of the contactor coils > 3 A (UL/CSA > 2 A) use additional power feeder module. A2 connections must not be bridged. Connecting cable between module and trip block PKE-XTUA-… included as standard. Messages Switch position contactor/PKE/1-0-A switch Motor current in % Thermal motor image in % Trip indications (Overload, Short-circuit,...) Set value of overload releases Set time lag (CLASS) Part no. of trip block Commands Contactor actuation Activation Overload relay function (ZMR)	DILM(C)7… - DILM(C)32 MSC-DEA	**PKE-SWD-32** 126895		4 off
SmartWire-DT PKE (motor-protective circuit-breaker)					
For connecting the PKE motor-protective circuit-breaker with trip block to SmartWire-DT					
	Fitted on PKE motor-protective circuit-breaker Messages Contactor state PKE Motor current in % Thermal motor image in % Trip indications (Overload, Short-circuit,...) Set value of overload releases Set time lag (CLASS) Part no. of trip block Commands Remote disconnection of motor-protective circuit-breaker	PKE12 PKE32 PKE65	**PKE-SWD-SP** 150614		1 off

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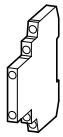
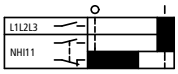
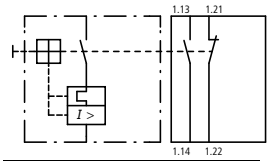
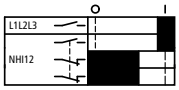
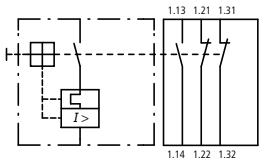
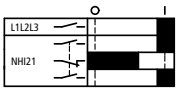
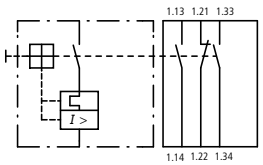
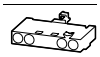
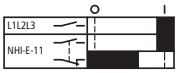
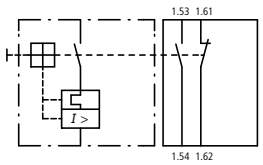
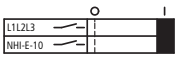
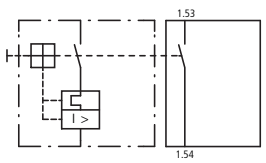
	Contacts N/O = Normally open	Contacts N/C = Normally closed	Contact diagram	Contact sequence	Connection technique	For use with	Part no. Article no.	Price see price list	Std. pack
Standard auxiliary contact									
	1 N/O	1 N/C			Screw terminals	PKZM01 PKZM0 PKZM4 PKZM0-T PKM0 PKE	**NHI11-PKZ0**[1] 072896		5 off
	1 N/O	2 N/C					**NHI12-PKZ0**[1] 072895		
	2 N/O	1 N/C					**NHI21-PKZ0**[1] 072894		
	1 N/O	1 N/C					**NHI-E-11-PKZ0**[2] 082882		
	1 N/O	-					**NHI-E-10-PKZ0**[2] 082884		

Hinweise

[1] Can be fitted to the right of motor-protective circuit-breakers, transformer-protective circuit-breakers, motor-protective circuit-breakers for starter combinations.

Can be combined with:
AGM, NHI-E-… trip-indicating auxiliary contact

[2] Can be retrofitted to motor-protective circuit-breakers, transformer-protective circuit-breakers, motor-protective circuit-breakers for starter combinations from serial number 01.
45 mm (PKZM0 and PKZM01) or 55 mm (PKZM4) widths of the motor-protective circuit-breakers remain unchanged.

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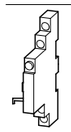
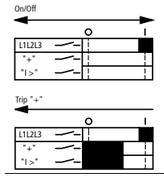
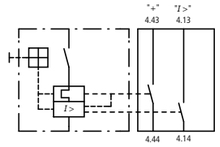
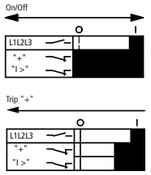
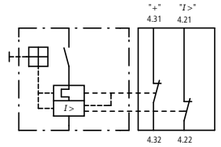
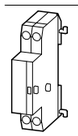
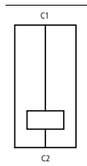
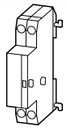
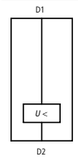
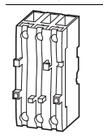
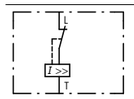
	Contacts N/O = Normally open	 N/C = Normally closed	Contact diagram	Contact sequence	For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Trip-indicating auxiliary contacts									
	2 x 1 N/O	-			PKZM0 PKZM4 PKZM0-T PKM0 PKZM01 PKE	**AGM2-10-PKZ0** 072898		2 off	Can be retrofitted on the right side of motor-protective circuit-breakers Differential status indication a) General trip indication (overload) b) Short-circuit release Short-circuits indicated locally by means of a red indicator that can be manually reset Can be combined with auxiliary contact NHI11-PKZ0 NHI12-PKZ0 NHI21-PKZ0 NHI-E-...
	-	2 x 1 N/C			PKZM0 PKZM4 PKZM0-T PKM0 PKZM01 PKE	**AGM2-01-PKZ0** 072899			
Shunt release									
	-	-	-		PKZM0 PKZM4 PKZM0-T PKM0 PKZM01 PKE	**A-PKZ0(230V50HZ)** 073187		2 off	Can be fitted to the left of: Motor-protective circuit-breakers Cannot be combined with: U-PKZ0 undervoltage release DC: Intermittent operation 5 s For PKE, only A-PKZ0 or U-PKZ0... with a serial number of 02 or higher can be retrofitted.
	-	-	-		PKZM0 PKZM4 PKZM0-T PKM0 PKZM01 PKE	**A-PKZ0(24VDC)** 073200			
Undervoltage release									
	-	-	-		PKZM0 PKZM4 PKZM0-T PKM0 PKZM01 PKE	**U-PKZ0(230V50HZ)** 073135		2 off	Can be fitted to the left of: Motor-protective circuit-breakers Cannot be combined with: A-PKZ0 shunt release When combined with circuit-breaker, can be used as emergency-stop device to IEC/EN 60204. For PKE, only A-PKZ0 or U-PKZ0... with a serial number of 02 or higher can be retrofitted.
Current limiter									
Motor-protective circuit-breaker, non-auto-protected in order to increase switching capacity									
	-	-	-		PKZM0 PKZM4 PKE	**CL-PKZ0** 082881		1 off	Max. rated operational voltage U_e = 690 V, rated uninterrupted current I_u = 63 A Can be used for individual and group protection For group protection and in combination with PKZM4, order additional BK25/3 incoming terminal if required. Mounting next to or behind the motor-protective circuit-breaker. PKZM0: 16 - 32 A, 150 kA/440 V PKZM4: 16 - 63 A, 100 kA/400 V PKZM4: 16 - 63 A, 10 kA/690 V

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Actuating voltage	Part no. Article no.	Price see price list	Std. pack	Part no. Article no.	Price see price list	Std. pack	Notes
Shunt release, Undervoltage release							
AC							
Standard voltage							
24 V 50 Hz	**A-PKZ0(24V50HZ)** 073181		2 off	**U-PKZ0(24V50HZ)** 073129		2 off	For PKE, only A-PKZ0 or U-PKZ0... with a serial number of 02 or higher can be retrofitted.
110 V 50 Hz	**A-PKZ0(110V50HZ)** 073184			**U-PKZ0(110V50HZ)** 073132			
220 V 50 Hz	**A-PKZ0(220V50HZ)** 073186			**U-PKZ0(220V50HZ)** 073134			
230 V 50 Hz	**A-PKZ0(230V50HZ)** 073187			**U-PKZ0(230V50HZ)** 073135			
240 V 50 Hz	**A-PKZ0(240V50HZ)** 073188			**U-PKZ0(240V50HZ)** 073136			
380 V 50 Hz	**A-PKZ0(380V50HZ)** 073189			**U-PKZ0(380V50HZ)** 073137			
400 V 50 Hz	**A-PKZ0(400V50HZ)** 073190			**U-PKZ0(400V50HZ)** 073138			
415 V 50 Hz	**A-PKZ0(415V50HZ)** 073191			**U-PKZ0(415V50HZ)** 073139			
120 V 60 Hz	**A-PKZ0(120V60HZ)** 073195			**U-PKZ0(120V60HZ)** 073143			
240 V 60 Hz	**A-PKZ0(240V60HZ)** 073198			**U-PKZ0(240V60HZ)** 073146			
440 V 60 Hz	**A-PKZ0(440V60HZ)** 082164			**U-PKZ0(440V60HZ)** 082161			
480 V 60 Hz	**A-PKZ0(480V60HZ)** 073199			**U-PKZ0(480V60HZ)** 073147			
Non-standard voltages apart from previously stated standard voltages							
...V 50 Hz (24 - 500 V)	**A-PKZ0(*V50HZ)** 982165		2 off	**U-PKZ0(*V50HZ)** 982162		2 off	For PKE, only A-PKZ0 or U-PKZ0... with a serial number of 02 or higher can be retrofitted. The article no. results from combining the part no. and the actuating voltage. With non-standard voltages the required actuating voltage from the defined range (...–...V) must be stated. Minimum order quantity: 10 units.
...V 60 Hz (24 – 600 V)	**A-PKZ0(*V60HZ)** 982166			**U-PKZ0(*V60HZ)** 982163			
DC							
Standard voltage							
24 V DC	**A-PKZ0(24VDC)** 073200		2 off	**U-PKZ0(24VDC)** 157862		2 off	For PKE, only A-PKZ0 or U-PKZ0... with a serial number of 02 or higher can be retrofitted.
110 V DC	**A-PKZ0(110VDC)** 073203			-			

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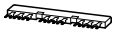
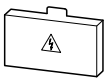
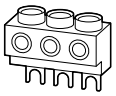
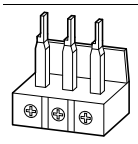
	Circuit-breaker Number	Length mm	Unit width mm	Part no. Article no.	Price see price list	Std. pack	Notes
Three-phase commoning link							
Protected against accidental contact, short-circuit proof, U_e = 690 V, I_u = 63 A Can be extended by rotating by installation							
For PKZM0-... or PKE without side mounted auxiliary contacts or shunt releases							
	2	90	45	**B3.0/2-PKZ0** 063961		10 off	For parallel power feed to several motor-protective circuit-breakers on terminals 1, 3, 5
	3	135	45	**B3.0/3-PKZ0** 232289			
	4	180	45	**B3.0/4-PKZ0** 063960			
	5	225	45	**B3.0/5-PKZ0** 232290			
Attached on the right, for motor-protective circuit-breakers, with an auxiliary contact or trip-indicating auxiliary contact							
	2	99	45 + 9	**B3.1/2-PKZ0** 044945		10 off	For parallel power feed to several motor-protective circuit-breakers on terminals 1, 3, 5
	3	153	45 + 9	**B3.1/3-PKZ0** 044946			
	4	207	45 + 9	**B3.1/4-PKZ0** 044947			
	5	261	45 + 9	**B3.1/5-PKZ0** 044948			
for PKZM0-... or PKE: attached with an auxiliary contact and a trip-indicating auxiliary contact on the right or attached on the left with a shunt release							
	2	108	45 + 18	**B3.2/2-PKZ0** 063963		10 off	For parallel power feed to several motor-protective circuit-breakers on terminals 1, 3, 5
	4	234	45 + 18	**B3.2/4-PKZ0** 063959			

	For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Shroud for unused terminals					
Protection against direct contact.					
	For covering unused terminals on three-phase commoning link B3...-PKZ0	**H-B3-PKZ0** 032721		20 off	-
Incoming terminal					
	PKZM0 PKE	**BK25/3-PKZ0** 032720		5 off	For three-phase commoning link, protected against accidental contact, U_e = 690 V, I_u = 63 A For conductor cross-sections: 2.5 - 25 mm² stranded 2.5 - 16 mm² flexible with ferrules AWG 14 - 6, for use on terminals 1, 3, 5
	PKE32/XTUCP-36 PKE32 + PKE-XTUCP-36 PKE32 + PKE-XTUACP-36	**BK25/3-PKZ0-U** 292886		10 off	for three-phase commoning link, protected against accidental contact, U_e = 690 V, I_u = 63 A For conductor cross-sections: 2.5 - 25 mm² stranded 2.5 - 16 mm² Flexible with ferrule AWG 14 - 6, usable on terminals 2, 4, 6

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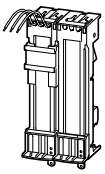
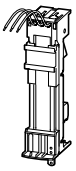
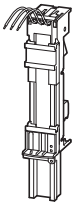
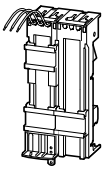
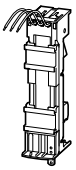
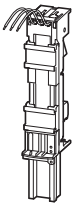
	Rated operational voltage U_e V	Terminal capacity	Adapter width mm	DIN rail Quantity	For use with	**Part no.** Article no.	**Price** see price list	Std. pack	**Notes**
Busbar adapters									
For fitting to flat Cu-busbars with 60 mm between busbar centres, suitable for 5 mm and 10 mm busbar thickness									
Rated operational current 25 A									
For reversing starters									
	690	AWG 12 (4 mm²)	90	1	PKZM0, PKE + 2 x DILM7-01 PKZM0, PKE + 2 x DILM9-01 PKZM0, PKE + 2 x DILM12-01 MSC-R-0,25-M7… - MSC-R-12-M12…	**BBA0R-25** 101453		2 off	In combination with individual components PKZM0, PKE and DILM DOL reversing starter use PKZM0-XRM12. Completely mounted and tested combination with MSC-R...
For DOL Starter									
	690	AWG 12 (4 mm²)	45	1	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15 MSC-D-0,25-M7… - MSC-D-16-M15…	**BBA0-25** 101451		4 off	In combination with individual components PKZM0, PKE and DILM. Use with direct starter set PKZM0-XMD12. Completely mounted and tested combination with MSC-D...
For soft starter									
	690	AWG 12 (4 mm²)	45	1	PKZM0, PKE + DS7...004N... PKZM0, PKE + DS7...007N... PKZM0, PKE + DS7...009N... PKZM0, PKE + DS7...012N...	**BBA0L-25** 142526		1 off	-
Rated operational current 32 A									
For reversing starters									
	690	AWG 10 (6 mm²)	90	3	PKZM0, PKE + 2 x DILM17-01 PKZM0, PKE + 2 x DILM25-01 PKZM0, PKE + 2 x DILM32-01	**BBA0R-32** 101454		2 off	In combination with individual components PKZM0, PKE and DILM use electrical contact module PKZM0 XM32DE and reversing wiring kit DILM 32-XRL. Completely mounted and tested combination with MSC-R...
For DOL Starter									
	690	AWG 10 (6 mm²)	45	2	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32	**BBA0-32** 101452		4 off	In combination with individual components PKZM0, PKE and DILM use electrical contact module PKZM0-XM32DE. Completely mounted and tested combination with MSC-D...
For soft starter									
	690	AWG 10 (6 mm²)	45	2	PKZM0, PKE + DS7...016N... PKZM0, PKE + DS7...024N... PKZM0, PKE + DS7...032N...	**BBA0L-32** 142527		1 off	-

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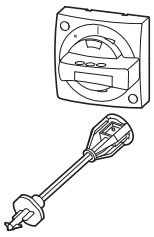
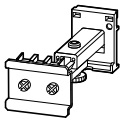
			For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Door coupling handle							
IEC: IP65, UL/CSA Type: 4X, 12							
	For use as main switch to IEC/EN 60204	Black	PKE	**PKE-XH** 142416		1 off	Plug-in extension shaft PKZ0-XAH can be cut to desired length for mounting depths of 100 – 240 mm. Carrier with extension shaft included in delivery. With ON/OFF switch position and "+" (tripped), lockable With 3 padlocks, 4 – 8 mm hasp.
	For use as a main switch with Emergency-Stop function, to EN 60204	Red-yellow	PKE	**PKE-XRH** 142417			
	For use as a main switch to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90°	Black	PKE	**PKE-XH-MCC** 142418			
	For use as a main switch with Emergency-Stop function to EN 60204 in MCC power distribution systems and with PKE installed when rotated by 90°	Red-yellow	PKE	**PKE-XRH-MCC** 142419			
Telescopic adapters							
with 45 mm top-hat rail to IEC/EN 60715 for compensation of the mounting depth of rear mounted devices in CI-K... enclosures and cabinets							
	Infinitely adjustable from 75 to 115 mm through scales		PKZM0 PKE	**M22-TA** 226161		1 off	
Rotary handle, lockable							
	for locking motor-protective circuit-breakers PKZM0, PKZM4 and PKE as a main switch in compliance with EN 60204 Can be padlocked in the "0" position with a padlock Hasp thickness: 3 – 6.35 mm		Cannot be combined with VHI-PKZ0.	**AK-PKZ0** 030851		5 off	
Mounting angle bracket							
	For screw fixing to mounting plate		-	**PKE32-XMB** 134837		20 off	-
Documentation							
Manual							
	PKE12, 32 and 65 motor-protective circuit-breaker, overload monitoring of Ex e motors		-	**MN03402004Z-DE/EN** 134836		1 off	German/English
Selector slide							
	Engineering aid for electronic motor-starters with PKE or ZEB		-	**SA04205001Z-EN** 153375		1 off	-

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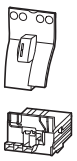
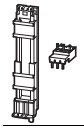
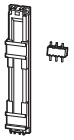
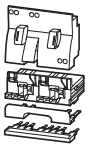
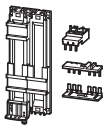
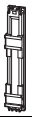
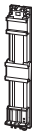
	For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Wiring set					
DOL starter					
	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15 DS7-34…SX004… DS7-34…SX007… DS7-34…SX009… DS7-34…SX012…	**PKZM0-XDM12** 283149		1 off	Consists of: • Mechanical connection element for PKZM0, PKE, and contactor • Main current wiring between PKZM0, PKE, and contactor with tool-less plug connection • Cable routing Use as auxiliary contact DILA-XHIT... Cannot be combined with NHI-E…PKZ0-C. Ue ≤ 415 V
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32	**PKZM0-XDM32** 283153		1 off	Consists of: • Top hat rail adapter plate • Main current wiring between PKZ, PKE, and contactor
	PKZM4, PKE65 + DILM40 PKZM4, PKE65 + DILM50 PKZM4, PKE65 + DILM65	**PKZM4-XDM65** 101053		1 off	
Reversing starter					
	PKZM0, PKE + DILM7-01 PKZM0, PKE + DILM9-01 PKZM0, PKE + DILM12-01	**PKZM0-XRM12** 283185		1 off	Consists of: • Mechanical connection element for PKZM0, PKE, and contactor • Main current wiring for reversing starter with tool-less plug connection • Control cables for electrical interlock with tool-less plug connection: – K1M: A1 -K2M: 21 – K1M: 21 -K2M: A1 – K1M: A2 -K2M: A2 • Cable routing Use as auxiliary contact DILA-XHIT... Not combinable with AGM-PKZ0. U_e ≤ 415 V
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32	**PKZM0-XRM32** 283189		1 off	Consists of: • Top hat rail adapter plate • Main current wiring for reversing starter
Electric contact module					
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32 DS7-34…SX016… DS7-34…SX024… DS7-34…SX032…	**PKZM0-XM32DE** 239349		5 off	• Use main current wiring between PKZM0, PKE, and contactor • only in combination with busbar adapter or top hat rail adapter plate
	PKZM4, PKE65 + DILM40 PKZM4, PKE65 + DILM50 PKZM4, PKE65 + DILM65	**PKZM4-XM65DE** 101056		5 off	• Main current wiring between PKZM4, PKE65 and contactor
Top hat rail adapter plate					
	PKZM0-XDM12 PKZM0-XRM12	**PKZM0-XC45** 283132		4 off	Comprised of: • 45 mm wide adapter plate
	PKZM4, PKE65 + DILM40 PKZM4, PKE65 + DILM50 PKZM4, PKE65 + DILM65	**PKZM4-XC55/2** 101054		4 off	Comprised of: • 55 mm wide adapter plate • Connection cams for further plates • For use with reversing and star-delta starters
	PKZM0, PKE + DS7...004N... PKZM0, PKE + DS7...007N... PKZM0, PKE + DS7...009N... PKZM0, PKE + DS7...012N...	**PKZM0-XC45L** 142529		1 off	Consists of: • 45 mm wide adapter plate
	PKZM0, PKE + DS7...016N... PKZM0, PKE + DS7...024N... PKZM0, PKE + DS7...032N...	**PKZM0-XC45L/2** 142570		1 off	Consists of: • 45 mm wide adapter plate

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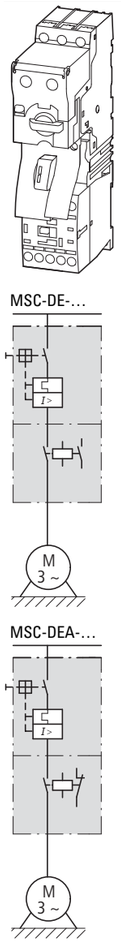
Notes

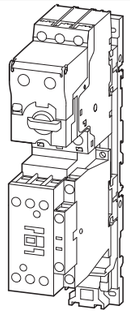
Motor rating	Motor full-load current AC-3 220 V 230 V 240 V I_q = 100 kA	380 V 400 V I_q =100 kA	415 V I_q = 50 kA	Setting range Overload releases	Standard motor-starter Actuating voltage 230 V 50 Hz Part no. Article no.	Price see price list	Std. pack	Standard motor-starter Actuating voltage 24 V DC Part no. Article no.	Price see price list	Std. pack	Extended motor-starter Actuating voltage 24 V DC Part no. Article no.	Price see price list	Std. pack	Notes
P kW	I A	I A	I A	I_r A										
Type of coordination "1"														
0.06	0.37	-	-	0.3 - 1.2	**MSC-DE-1,2-M7(230V50HZ)** 121735		1 off	**MSC-DE-1,2-M7(24VDC)** 121736		1 off	**MSC-DEA-1,2-M7(24VDC)** 121753		1 off	The DOL starter (complete devices) consists of a PKE motor-protective circuit-breaker and a DILM contactor. With the adapter-less top-hat rail mounting of starters up to 15 A, only the motor-protective circuit-breaker on the top-hat rail requires an adapter. The contactors are provided with mechanical support via a mechanical connection element. Control wire guide with max. 6 conductors up to 2.5 mm external diameter or 4 conductors up to 3.5 mm external diameter. From 16 A, the motor-protective circuit-breaker and contactor are mounted on the top-hat rail adapter plate. The connection of the main circuit between PKE and contactor is established with electrical contact modules. When using DILA-XHIT… auxiliary contacts with MSC-DE-... DOL starters, the plug-in electrical connectors can be removed without removing the front-mounted auxiliary contact. Cannot be combined with NHI-E…PKZ0-C. MSC-DEA... DOL starters are prepared for communications via SmartWire-DT. In order to be used this way, they first need to be expanded with the PKE-SWD-32 communications module.
0.09	0.54	0.31	0.31											
0.12	0.72	0.41	0.41											
0.18	1.04	0.6	0.6											
0.25	-	0.8	0.8											
0.37	-	1.1	1.1											
0.18	1.04	-	-	1 - 4	**MSC-DE-4-M7(230V50HZ)** 121737			**MSC-DE-4-M7(24VDC)** 121738			**MSC-DEA-4-M7(24VDC)** 121754			
0.25	1.4	-	-											
0.37	2	1.1	1.1											
0.55	2.7	1.5	1.5											
0.75	3.2	1.9	1.9											
1.1	-	2.6	2.6											
1.5	-	3.6	3.6											
0.75	3.2	-	-	3 - 12	**MSC-DE-12-M7(230V50HZ)** 121739			**MSC-DE-12-M7(24VDC)** 121740			**MSC-DEA-12-M7(24VDC)** 121755			
1.1	4.6	-	-											
1.5	6.3	3.6	3.6											
2.2	-	5	5											
3	-	6.6	6.6											
0.75	3.2	-	-	3 - 12	**MSC-DE-12-M9(230V50HZ)** 121741			**MSC-DE-12-M9(24VDC)** 121742			**MSC-DEA-12-M9(24VDC)** 121756			
1.1	4.6	-	-											
1.5	6.3	3.6	3.6											
2.2	8.7	5	5											
3	-	6.6	6.6											
4	-	8.5	8.5											
0.75	3.2	-	-	3 - 12	**MSC-DE-12-M12(230V50HZ)** 121743			**MSC-DE-12-M12(24VDC)** 121744			**MSC-DEA-12-M12(24VDC)** 121757			
1.1	4.6	-	-											
1.5	6.3	3.6	3.6											
2.2	8.7	5	5											
3	11.5	6.6	6.6											
4	-	8.5	8.5											
5.5	-	11.3	11.3											

MSC-DE-...

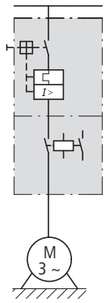


MSC-DEA-...

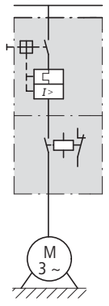
Type of coordination "2"



MSC-DE-...

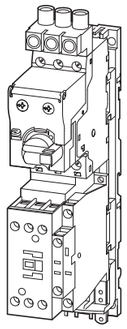


MSC-DEA-...

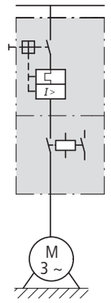


Motor rating	Motor full-load current AC-3							Setting range Overload releases
	220 V 230 V 240 V	380 V 400 V	415 V	440 V	500 V	500 V mit CL-PKZ0	660 V 690 V	
					I_q = 50 kA			
	I_q = 100 kA	I_q =100 kA	I_q = 65 kA	I_q = 65 kA	I_q = 10 kA[1]	I_q = 100 kA	I_q = 3 kA	
P	I	I	I	I	I	I	I	I_r
kW	A	A	A	A	A	A	A	A
0.06	0.37	-	-	-	-	-	-	0.3 - 1.2
0.09	0.54	0.31	0.31	-	-	-	-	
0.12	0.72	0.41	0.41	0.37	0.33	0.33	-	
0.18	1.04	0.6	0.6	0.54	0.48	0.48	0.35	
0.25	-	0.8	0.8	0.76	0.7	0.7	0.5	
0.37	-	1.1	1.1	1.02	0.9	0.9	0.7	
0.55	-	-	-	-	-	-	0.9	
0.75	-	-	-	-	-	-	1.1	
0.18	1.04	-	-	-	-	-	-	1 - 4
0.25	1.4	-	-	-	-	-	-	
0.37	2	1.1	1.1	1.02	-	-	-	
0.55	2.7	1.5	1.5	1.39	1.2	1.2	-	
0.75	3.2	1.9	1.9	1.68	1.5	1.5	1.1	
1.1	-	2.6	2.6	2.41	2.1	2.1	1.5	
1.5	-	3.6	3.6	3.28	2.9	2.9	2.1	
2.2	-	-	-	-	4	4	2.9	
3	-	-	-	-	-	-	3.8	
0.75	3.2	-	-	-	-	-	-	3 - 12
1.1	4.6	-	-	-	-	-	-	
1.5	6.3	3.6	3.6	3.3	-	-	-	
2.2	8.7	5	5	4.6	4	4	-	
3	11.5	6.6	6.6	6	5.3	5.3	3.8	
4	-	8.5	8.5	7.7	6.8	6.8	4.9	
5.5	-	11.3	11.3	10.2	9	9	6.5	
7.5	-	-	-	-	-	-	8.8	
2.2	8.7	-	-	-	-	-	-	8 - 32
3	11.5	-	-	-	-	-	-	
4	14.8	8.5	8.5	-	-	-	-	
5.5	-	11.3	11.3	10.2	9	9	-	
7.5	-	15.2	15.2	13.8	12.1	12.1	8.8	
11	-	-	-	-	-	-	12.6	
15	-	-	-	-	-	-	17	
2.2	8.7	-	-	-	-	-	-	8 - 32
3	11.5	-	-	-	-	-	-	
4	14.8	8.5	8.5	-	-	-	-	
5.5	19.6	11.3	11.3	10.2	9	9	-	
7.5	26.4	15.2	15.2	13.8	12.1	12.1	8.8	
11	-	21.7	21.7	19.7	17.4	17.4	12.6	
15	-	29.3	29.3	-	23.4	23.4	17	
18.5	-	-	-	-	28.9	28.9	20.9	
22	-	-	-	-	-	-	23.8	
2.2	8.7	-	-	-	-	-	-	8 - 32
3	11.5	-	-	-	-	-	-	
4	14.8	8.5	8.5	-	-	-	-	
5.5	19.6	11.3	11.3	10.2	9	9	-	
7.5	26.4	15.2	15.2	13.8	12.1	12.1	8.8	
11	-	21.7	21.7	19.7	17.4	17.4	12.6	
15	-	29.3	29.3	26.6	23.4	23.4	17	
18.5	-	-	-	-	28.9	28.9	20.9	
22	-	-	-	-	-	-	23.8	
30	-	-	-	-	-	-	32	

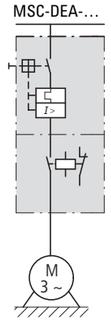
Standard motor-starter Actuating voltage 230 V 50 Hz Part no. Article no.	Price see price list	Std. pack	Standard motor-starter Actuating voltage 24 V DC Part no. Article no.	Price see price list	Std. pack	Extended motor-starter Actuating voltage 24 V DC Part no. Article no.	Price see price list	Std. pack	Notes
MSC-DE-1,2-M17(230V50HZ)[1] 168800		1 off	**MSC-DE-1,2-M17(24VDC)**[1] 168801		1 off	**MSC-DEA-1,2-M17(24VDC)**[1] 168804		1 off	The DOL starter (complete devices) consists of a PKE motor-protective circuit-breaker and a DILM contactor. From 16 A, the motor-protective circuit-breaker and contactor are mounted on the top-hat rail adapter plate. The connection of the main circuit between PKE and contactor is established with electrical contact modules. MSC-DEA... DOL starters are prepared for communications via SmartWire-DT. In order to be used this way, they first need to be expanded with the PKE-SWD-32 communications module.
MSC-DE-4-M17(230V50HZ) 168802			**MSC-DE-4-M17(24VDC)** 168803			**MSC-DEA-4-M17(24VDC)** 168805			
MSC-DE-12-M17(230V50HZ) 121745			**MSC-DE-12-M17(24VDC)** 121746			**MSC-DEA-12-M17(24VDC)** 121758			
MSC-DE-32-M17(230V50HZ) 121747			**MSC-DE-32-M17(24VDC)** 121748			**MSC-DEA-32-M17(24VDC)** 121759			
MSC-DE-32-M25(230V50HZ) 121749			**MSC-DE-32-M25(24VDC)** 121750			**MSC-DEA-32-M25(24VDC)** 121760			
MSC-DE-32-M32(230V50HZ) 121751			**MSC-DE-32-M32(24VDC)** 121752			**MSC-DEA-32-M32(24VDC)** 121761			



MSC-DE-...



MSC-DEA-...



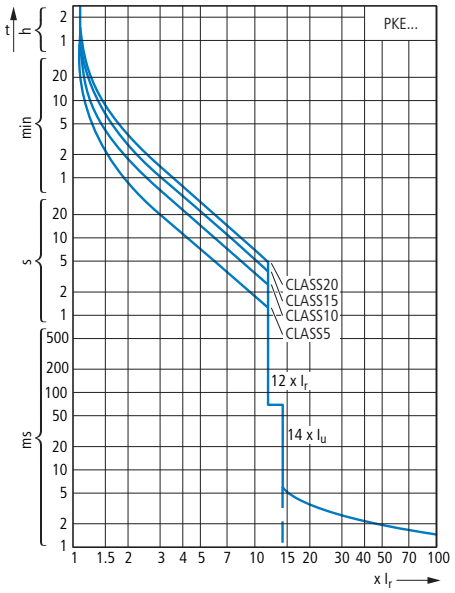
Maximum motor rating AC HP = PS				Setting range		Short Circuit Current Rating		
				Overload releases	Short-circuit releases			
200 V 208 V	230 V 240 V	460 V 480 V	575 V 600 V	I_r	I_{rm}	240 V	480 Y 277 V	600 Y 347 V
HP	HP	HP	HP	A	A	kA	kA	kA
Complete devices type E standard up to 32 A								
Actuating voltage 110 V 50 Hz, 120 V 60 Hz								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	0.75	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Actuating voltage 220 V 50 Hz, 240 V 60 Hz								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	0.75	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Actuating voltage 230 V 50 Hz, 240 V 60 Hz								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	0.75	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Actuating voltage 24 V 50/60 Hz								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	0.75	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Actuating voltage 24 V DC								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	7.5	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Complete devices type E extended up to 32 A								
Actuating voltage 24 V DC								
-	-	0.5	0.5	0.3 - 1.2	168	14	14	14
0.75	0.75	2	-	1 - 4	168	18	18	-
3	3	7.5	-	3 - 12	168	18	18	-
5	7.5	15	-	8 - 32	448	18	18	-
Complete devices type E Standard up to 65 A (without contactor)								
7,5	7,5	20	25	8 - 32	448	65	65	25
15	15	40	-	16 - 65	910	65	65	-

Information relevant for export to North America → Page 35

Part no. Article no.	**Price** see price list	Std. pack	**Notes**
MSC-DE-1,2-M17-SP(110V50HZ,120V60HZ) 167802		1 off	The DOL starter type E (complete devices) consists of a PKE motor-protective circuit-breaker with AK-PKZ0, a DILM contactor and an extension terminal BK25/3-PKZ0-E. Motor-protective circuit-breaker and contactor mounted on top hat rail adapter plate. The connection of the main circuit between PKE and contactor is established with electrical contact modules.
MSC-DE-4-M17-SP(110V50HZ,120V60HZ) 167803			
MSC-DE-12-M17-SP(110V50HZ,120V60HZ) 167804			
MSC-DE-32-M32-SP(110V50HZ,120V60HZ) 167805			
MSC-DE-1,2-M17-SP(220V50HZ,240V60HZ) 167806			
MSC-DE-4-M17-SP(220V50HZ,240V60HZ) 167807			
MSC-DE-12-M17-SP(220V50HZ,240V60HZ) 167808			
MSC-DE-32-M32-SP(220V50HZ,240V60HZ) 167809			
MSC-DE-1,2-M17-SP(230V50HZ,240V60HZ) 167810			
MSC-DE-4-M17-SP(230V50HZ,240V60HZ) 167811			
MSC-DE-12-M17-SP(230V50HZ,240V60HZ) 167812			
MSC-DE-32-M32-SP(230V50HZ,240V60HZ) 167813			
MSC-DE-1,2-M17-SP(24V50/60HZ) 167814			
MSC-DE-4-M17-SP(24V50/60HZ) 167815			
MSC-DE-12-M17-SP(24V50/60HZ) 167816			
MSC-DE-32-M32-SP(24V50/60HZ) 167817			
MSC-DE-1,2-M17-SP(24VDC) 167818			
MSC-DE-4-M17-SP(24VDC) 167819			
MSC-DE-12-M17-SP(24VDC) 167820			
MSC-DE-32-M32-SP(24VDC) 167821			
MSC-DEA-1,2-M17-SP(24VDC) 167822		1 off	The DOL starter type E (complete devices) consists of a PKE motor-protective circuit-breaker with AK-PKZ0, a DILM contactor and an extension terminal BK25/3-PKZ0-E. Motor-protective circuit-breaker and contactor mounted on top hat rail adapter plate. The connection of the main circuit between PKE and contactor is established with electrical contact modules. The MSC-DEA... DOL starters are prepared for communication via SmartWire-DT. In order to be used this way, they first need to be expanded with the PKE-SWD-32 communications module.
MSC-DEA-4-M17-SP(24VDC) 167823			
MSC-DEA-12-M17-SP(24VDC) 167824			
MSC-DEA-32-M32-SP(24VDC) 167825			
PKE65/AK/XTUW-32-SP 170483		1 off	Starter type E consists of a PKE65 motor-protective circuit-breaker with AK-PKZ0 and an extension terminal BK50/3-PKZ4-E.
PKE65/AK/XTU-65-SP 170482			

Engineering

Tripping characteristics



Short-circuit protection for PVC-insulated Cu cables

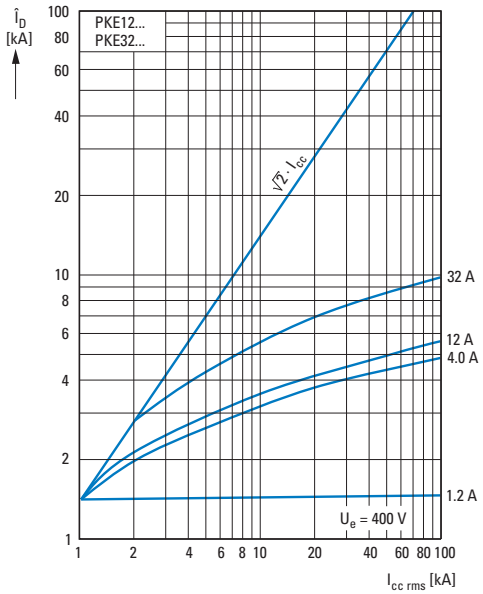
Trip block	Protected minimum cross-sectional area in mm²							
Part no.	0.5	0.75	1.5	2.5	4	6	10	16
PKE-XTU(A)-1.2								
PKE-XTU(A)-4								
PKE-XTU(A)-12								
PKE-XTU(A)-32								
PKE-XTUCP(A)-36								
PKE-XTUW(A)-32								
PKE-XTU(A)-65								
PKE-XTUWCP(A)-36								
PKE-XTUCP(A)-65								

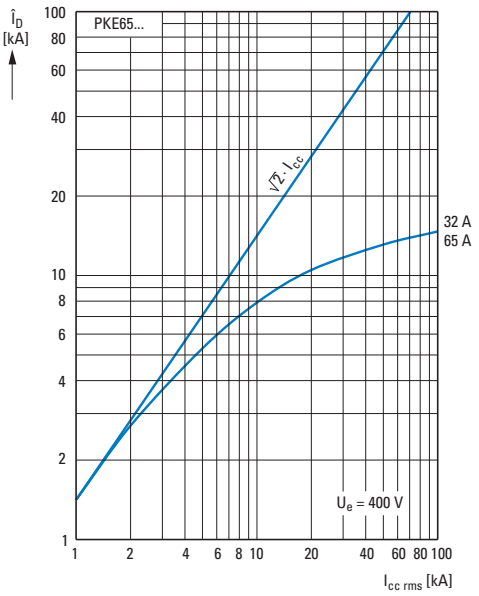
Motor-protective circuit-breaker switching capacities, motor-starter combinations

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 60947-2
Rated service short-circuit breaking capacity I_{cs} IEC/EN 60947-2

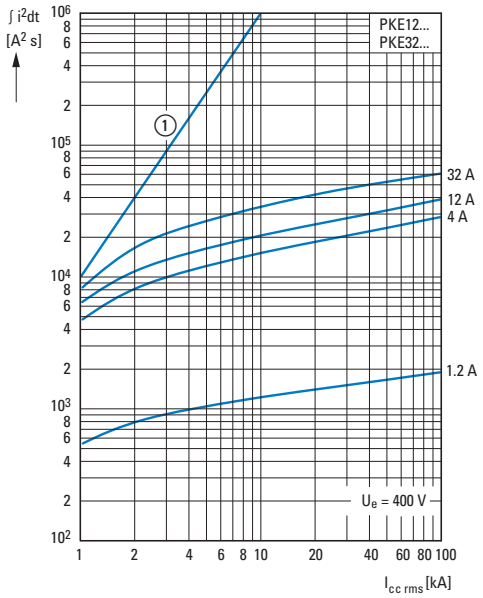
	230/400 V			415 V			440 V			500 V			525 V			690 V		
I_u	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}
A	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA
PKE12/XTU(A)-... with type 1 and 2 coordination																		
1.2	100			50			15			10			10			3		
4	100			50			50			10			10			3		
12	100			50			20			20			10			3		
PKE32/XTU(A)-... with type 1 and 2 coordination																		
32	100			50			25			6			3			3		
PKE32/XTUCP(A)-... with type 1 and 2 coordination																		
36	-	50	12.5	-			-			-			-			-		
PKE65/XTU(W)(A) with type of coordination 1 and 2																		
32 - 65	80			80			45			15			10			5		
Motor-starter combinations MSC-DE(A)-...-M7(12)... with type 1 coordination																		
1.2	100			50			15			10			-			-		
4	100			50			50			50			-			-		
12	100			50			50			20			-			-		
Motor-starter combinations MSC-DE(A)-...-M17(32)... type 1 coordination																		
12	100			65			65			35			35			3		
32	100			100			65			50			5			5		
Motor-starter combinations MSC-DE(A)-...-M17(32)... with type 2 coordination																		
1.2	100			65			65			10			3			3		
4	100			65			65			50			3			3		
12	100			65			65			50			35			3		
32	100			100			65			50			35			3		
PKE12/XTU-...+DILM17+CL-PKZ0 with type 2 coordination																		
1.2 - 12	100			100			100			100			-			-		
PKE32/XTU-32+DILM32+CL-PKZ0 with type 2 coordination																		
32	100			100			100			100			-			-		
PKE65/XTU(A)-65+DILM(40, 50)65 with type 2 coordination																		
65	80			50			50			50			10			10		

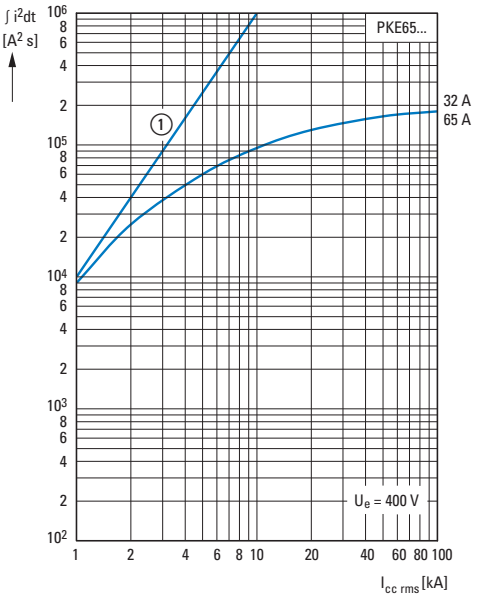
Let-through current





Let-through energy





① 1 half-cycle

Engineering

ATEX approval

PKE motor-protective circuit-breakers comply with the requirements set forth in Directive 94/9/EC (ATEX 100a) concerning the protection of motors in "e" hazardous areas. A PTB 10 ATEX 3021 approval is available; please refer to manual MN03402004Z.

Switchgear and cable sizing corresponding to the respective starting inertia (CLASS)

The switchgear is designed for “CLASS 10” in normal and overload operation. To ensure that the switchgear (circuit-breaker and contactor) as well as the cables are not overloaded with extended tripping times, they must be over-dimensioned accordingly. The rated operational current I_e for switchgear and cables can be calculated with the following current factor while taking the tripping class into account:

Tripping class	Class 5	Class 10	Class 15	Class 20	Class 25	Class 30	Class 35	Class 40
Current factor for rated operational current I_e	1.00	1.00	1.22	1.41	1.58	1.73	1.89	2.00

Switching loads with large inrush currents

PKE motor-protective circuit-breakers come with two separate short-circuit protection systems with different pick-up times so as to ensure that they will also be able to handle the large inrush currents characteristic of high-efficiency motors (HEM) and transformers.

- PKE12, PKE32, PKE65 basic devices
  Magnetic short-circuit release
  Pick-up time of 14 x I_u, non-delayed (I_u = rated uninterrupted current)
- Standard and advanced trip blocks
  Electronic short-circuit release
  Pick-up time of 12 x I_r, short-time delay of 60 milliseconds (I_r = set rated operational current)

Example:

Switching on a transformer
- Rated operational current: I_e = 10 A
- inrush current: 30 x I_e = 300 A
- Inrush current duration: 10 ms (1 half-cycle)

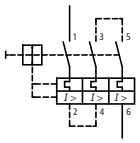
Solution: PKE32 basic device + PKE-XTU-12 trip block
- Pick-up time for non-delayed release: 14 x 32 A = 448 A
- Pick-up time for delayed trip block (I_e = I_r): 12 x 10 A = 120 A

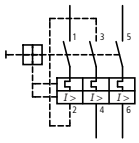
Combining PKE motor-protective circuit-breakers with variable frequency drives

Connecting a PKE upstream of a variable frequency drive:
- A PKE with a standard trip block can be used to provide short-circuit protection / overload protection for the cable leading to a variable frequency drive. The recommended setting for the PKE overload protection is the cable's operating current.
- Using a PKE with an advanced trip block for SmartWire-DT connections is not possible, since its functions, e.g., current measurements, phase failure, may work incorrectly.

Using a PKE downstream of a variable frequency drive is permitted within a frequency range of 20 to 120 Hz.

PKE in single-pole and double-pole configuration with alternating current





National approvals

Country	USA	CDN	RUS	PRC	UA	South Africa	Australia
Test authority	**UL**	**CSA**	**GOST-R**	**CCC**	**Ukrain-GOST**	**SABS**	**C-Tick**
PKE12, PKE32, PKE65	✓	✓	✓	Applied for	Currently under review	Applied for	✓

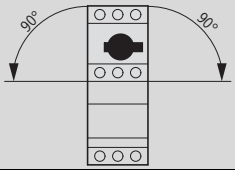
Shipping classifications

	Lloyd's Register of shipping	**Germa-nischer Lloyd**	**Det Norske Veritas**	**Bureau Veritas**	**Registro Italiano Navale**	**Russian Maretime Register of Shipping**	**Polski Rejestr Statkow**
PKE12, PKE32	✓	✓	✓	✓	Applied for	Applied for	Applied for
PKE65	Applied for	Applied for	Applied for	Applied for	Applied for	Applied for	Applied for

UL/CSA approvals

Product Standards		UL508; CSA-C22.2 No.14;IEC60947-4-1; CE marking
UL File No.	E36332	PKE12(/AK)…, PKE32(/AK)…, PKE65(/AK)…, PKE-XTU(W)(A)-…, NHI(-E)-…-PKZ0, AGM2-…-PKZ0, A(U)-PKZ0…, CL-PKZ0, BK25/3-PKZ0, PKZM0-XD(R)M12, PKE-X(R)H…, AK-PKZ0, B3…/…-PKZ0, H-B3-PKZ0
	E29184	PKE-SWD-32, PKE-SWD-SP, M22-TA
	E300273	BBA0(R)-25, BBA0(R)-32
	E123500	MSC-DE(A)-…-M…-SP(…), PKE65/AK/XTUW-32-SP, PKE65/AK/XTU-65-SP
UL CCN	NLRV	PKE12(/AK)…, PKE32(/AK)…, PKE65(/AK)…, PKE-XTU(W)(A)-…, NHI(-E)-…-PKZ0, AGM2-…-PKZ0, A(U)-PKZ0…, CL-PKZ0, BK25/3-PKZ0, PKZM0-XD(R)M12, PKE-X(R)H…, AK-PKZ0, B3…/…-PKZ0, H-B3-PKZ0
	NKCR	PKE-SWD-32, PKE-SWD-SP, M22-TA
	NMTR, NMTRZ	BBA0(R)-25, BBA0(R)-32
	NKJH	MSC-DE(A)-…-M…-SP(…), PKE65/AK/XTUW-32-SP, PKE65/AK/XTU-65-SP
CSA File No.	165628	PKE12(/AK)…, PKE32(/AK)…, PKE65(/AK)…, PKE-XTU(W)(A)-…, NHI(-E)-…-PKZ0, AGM2-…-PKZ0, A(U)-PKZ0…, CL-PKZ0, BK25/3-PKZ0, PKZM0-XD(R)M12, PKE-X(R)H…, AK-PKZ0, MSC-DE(A)-…-M…-SP(…), PKE-SWD-32, PKE-SWD-SP (CSA applied for), PKE65/AK/XTUW-32-SP, PKE65/AK/XTU-65-SP
	98494	B3…/…-PKZ0, H-B3-PKZ0
	232140	BBA0(R)-25, BBA0(R)-32
CSA Class No.	3211-05	PKE12(/AK)…, PKE32(/AK)…, PKE65(/AK)…, PKE-XTU(W)(A)-…, NHI(-E)-…-PKZ0, AGM2-…-PKZ0, A(U)-PKZ0…, CL-PKZ0, BK25/3-PKZ0, PKZM0-XD(R)M12, PKE-X(R)H…, AK-PKZ0
	3211-06	B3…/…-PKZ0, H-B3-PKZ0
	3211-07	PKE-SWD-32, PKE-SWD-SP (CSA applied for)
	3211-37	BBA0(R)-25, BBA0(R)-32
	3211-08	MSC-DE(A)-…-M…-SP(…), PKE65/AK/XTUW-32-SP, PKE65/AK/XTU-65-SP
	3211-03	M22-TA
NA Certification	UL listed, CSA certified	
Specially designed for NA	only MSC-DE(A)-…-M…-SP(…)	
Degree of protection	only PKE-X(R)H…; IEC: IP65, UL/CSA Type: 4X, 12	

Technical data

			PKE12..., PKE32...	PKE65...
General				
Standards			IEC/EN 60947, VDE 0660	
Climatic proofing			Damp heat, constant to IEC 60068-2-78 Damp heat, cyclic to IEC 60068-2-30	
Ambient temperature				
Storage	ϑ	°C	-40 - +80	
Open		°C	-25 - +55	
Enclosed		°C	-25 - +40	
Mounting position				
Direction of incoming supply			as required	
Degree of protection				
Device			IP20	
Terminations			IP00	
Busbar tag shroud to EN 50274			Finger- and back-of-hand proof	
Mechanical shock resistance half-sinusoidal shock 10 ms to IEC 60068-2-27		g	25	
Altitude		m	Max. 2000	
Terminal capacity screw terminals				
Solid		mm^2	1 x (1 - 6) 2 x (1 - 6)	1 x (0.75 - 16) 2 x (0.75 - 16)
Flexible with ferrule to DIN 46228		mm^2	1 x (1 - 6) 2 x (1 - 6)	1 x (0.75 - 35) 2 x (0.75 - 25)
Solid or stranded		AWG	14 - 10	14 - 2
Specified tightening torque for terminal screws				
Main cable		Nm	1.7	3.3
Control circuit cables		Nm	1	1
Main conducting paths				
Rated impulse withstand voltage	U_{imp}	V AC	6000	
Overvoltage category/pollution degree			III/3	
Rated operational voltage	U_e	V AC	690	
Rated uninterrupted current = rated operational current	$I_u = I_e$	A	12 A or set current of the overload release 32 A or set current of the overload release	65 A or set current of the overload release
Rated frequency	f	Hz	40 - 60	
Current heat loss (3 pole at operating temperature)		W	6 (with PKE-XTU(A)-32) 3.5 (with PKE-XTU(A)-12) 0.5 (with PKE-XTU(A)-4) 0.4 (with PKE-XTU(A)-1,2)	22 (with PKE65-XTU(A)-65) 6 (with PKE-XTUW(A)-32)
Lifespan, mechanical	Operations	x 10^6	0.05	
Lifespan, electrical (AC-3 at 400 V)	Operations	x 10^6	0.05	
Max. operating frequency		Ops/h	60	60
Motor switching capacity				
AC-3 (up to 690 V)		A	12 32	65
Releases				
Temperature compensation		°C	-5 - +40 (to IEC/EN 60947, VDE 0660) -25 - +55 (operating range)	
Setting range of overload releases			0.25 - 1 x I_u	
Fixed short-circuit release			Basic device 14 x I_u	
Short-circuit release tolerance			± 20%	
Phase-failure sensitivity			yes	

			PKE-SWD-32	PKE-SWD-SP
General				
Standards			IEC/EN 61131-2 EN 50178 IEC/EN 60947	IEC/EN 61131-2
Dimensions (W x H x D)		mm	45 x 38 x 76	45 x 46.8 x 70.3
Weight		kg	0.04	0.02
Mounting			on DILM7…DILM32	at PKE12/32/65
Mounting position			as DILM7 to DILM32	as PKE 12/35/65
Ambient conditions, mechanical				
Protection type (IEC/EN 60529, EN50178, VBG 4)			IP20	IP20
Vibrations (IEC/EN 61131-2:2008)				
Constant amplitude 3,5 mm		Hz	5 - 8.4	5 - 8.4
Constant acceleration 1 g		Hz	8.4 - 150	8.4 - 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	9	9
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	0.3	0.3
Electromagnetic compatibility (EMC)				
Overvoltage category			II	II
Pollution degree			2	2
Electrostatic discharge (IEC/EN 61131-2:2008)				
Air discharge (Level 3)		kV	8	8
Contact discharge (Level 2)		kV	4	4
Electromagnetic fields (IEC/EN 61131-2:2008)				
80 - 1000 MHz		V/m	10	10
1.4 - 2 GHz		V/m	3	3
2 - 2.7 GHz		V/m	1	1
Radio interference suppression SmartWire-DT			EN 55011 Class A	EN 55011 Class A
Burst (IEC/EN 61131-2:2008, Level 3)				
CAN/DP-bus cable		kV	1	1
SmartWire-DT cables		kV	1	1
Radiated RFI (IEC/EN 61131-2:2008, Level 3)		V	10	10
Climatic environmental conditions				
Operating ambient temperature (IEC 60068-2)		°C	-25 - +60	-25 - +60
Condensation			Take appropriate measures to prevent condensation	Take appropriate measures to prevent condensation
Storage	ϑ	°C	-30 - +70	-30 - +70
relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 - 95	5 - 95
SmartWire-DT network				
Station type			SmartWire-DT slave	SmartWire-DT slave
Address allocation			automatic	automatic
Status SmartWire-DT		LED	green/orange	Green
Connections			Plug, 8-pole	Plug, 8-pole
Connection			External device plug SWD4-8SF2-5	External device plug SWD4-8SF2-5
Current consumption				
15-V-SWD supply		mA	58	35
24-V-DC-SWD control voltage	U_{aux}		See the contactor's pick-up current and holding current (max. 0.5 A).	-
Operating mode				
Manual/automatic mode			yes	-
Setting			Rotary switch	-
Connection auxiliary contact				
Cable length		m	≦ 2.8	-
Connection type			Push in terminals	-
Terminal capacities				
Solid		mm^2	0.2 - 1.5 (AWG 24 - 16)	-
Flexible with ferrule		mm^2	0.25 - 1.5	-

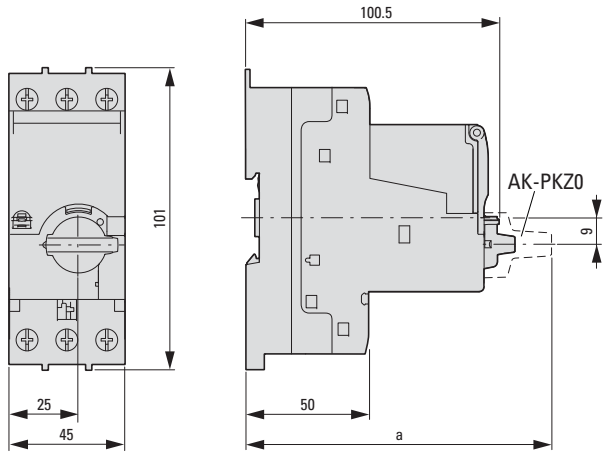
				NHI…PKZ0	NHI-E-…-PKZ0	AGM2-…-PKZ0
Auxiliary contacts						
Rated impulse withstand voltage		U_{imp}	V AC	6000	4000	6000
Overvoltage category/pollution degree				III/3	III/3	III/3
Rated operational voltage						
		U_e	V AC	500	440	500
		U_e	V DC	250	250	250
Safe isolation according to EN 61140						
Between auxiliary contacts and main contacts			V AC	690	690	690
Rated operational current						
AC-15						
	220 V 230 V 240 V	I_e	A	3.5	1	3.5
	380 V 400 V 415 V	I_e	A	2	-	2
	440 V 500 V	I_e	A	1	-	1
DC-13 L/R - 100 ms						
	24 V	I_e	A	2	2	2
	60 V	I_e	A	1.5	-	1.5
	110 V	I_e	A	1	-	1
	220 V	I_e	A	0.25	-	0.25
Lifespan						
Lifespan, mechanical		Operations	x 10^6	0.1	0.1	0.01
Lifespan, electrical		Operations	x 10^6	0.05	0.1	0.05
Control circuit reliability		Failure rate	λ	<10^{-8}, < one failure at 100 million operations (at U_e = 24 V DC, U_{min} = 17 V, I_{min} = 5.4 mA)		
interlocked opposing contacts				yes	-	-
Short-circuit rating without welding						
Fuseless			Type	FAZ-B4/1-HI	-	FAZ-B4/1-HI
Fuse			A gG/gL	10	10	10
Terminal capacities						
Solid or flexible conductor with ferrule			mm^2	0.75 - 2.5	0.75 - 1.5	0.75 - 2.5
Solid or stranded			AWG	18 - 14	18 - 16	18 - 14

			A-PKZ0…	U-PKZ0…
General				
Terminal capacities				
Solid or flexible conductor with ferrule		mm^2	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Solid or stranded		AWG	1 x (18 - 14) 2 x (18 - 14)	1 x (18 - 14) 2 x (18 - 14)
Pick-up-/drop-out voltage				
Pick-up voltage	x U_s		-	0.85 - 1.1
Drop-out voltage	x U_s		-	0.7 - 0.35
Operating range				
AC	x U_s		0.7 - 1.1	-
DC (Short-time operation 5 s)	x U_s		0.7 - 1.1	-
Power consumption				
AC				
Pick-up AC	Pick-up	VA	5	5
Sealing AC	Sealing	VA	3	3
DC				
Pick-up DC	Pick-up	W	3	3
Sealing DC	Sealing	W	3	3

Dimensions

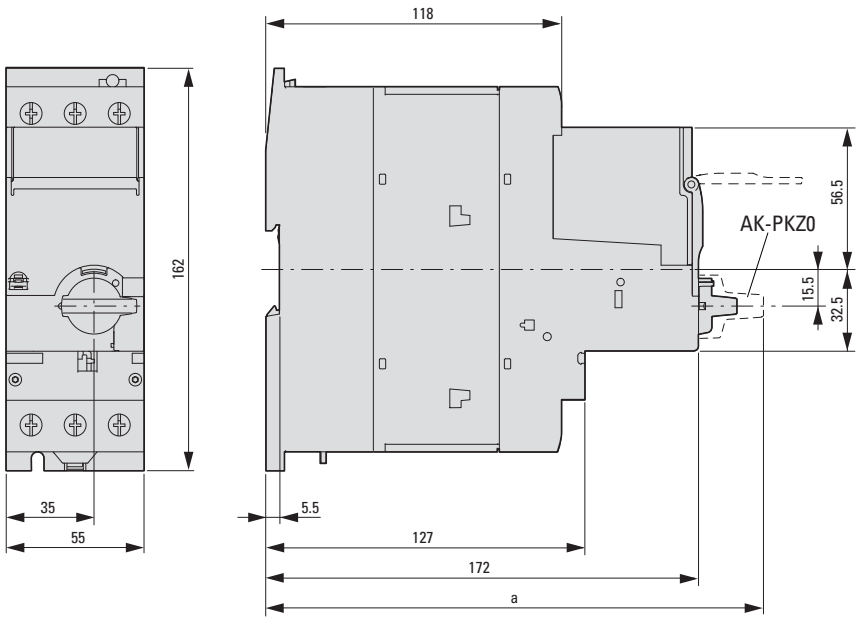
Motor-protective circuit-breakers

Complete device with standard knob
Complete device with AK lockable rotary handle
PKE12
PKE32



Part no.	a
PKE12/...	102.5
PKE12/AK...	120.5
PKE32/...	102.5
PKE32/AK...	120.5

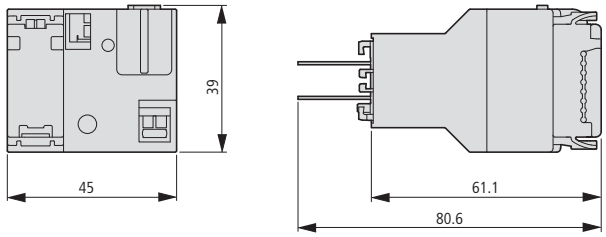
PKE65



Part no.	a
PKE65/...	187
PKE65/AK...	198

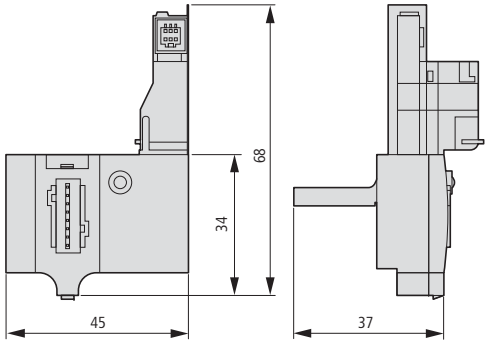
SmartWire-DT PKE module (motor-starter combinations)

PKE-SWD-32



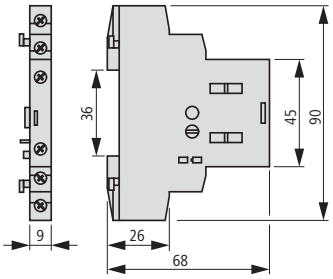
SmartWire-DT PKE (motor-protective circuit-breaker)

PKE-SWD-SP



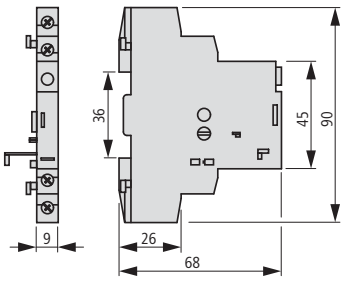
Standard auxiliary contact

NHI...-PKZ0



Trip-indicating auxiliary contacts

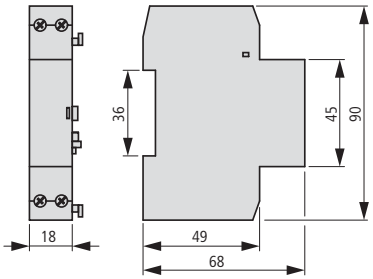
AGM2-...-PKZ0



Shunt release

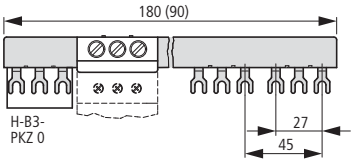
Undervoltage release

A-PKZ0
U-PKZ0

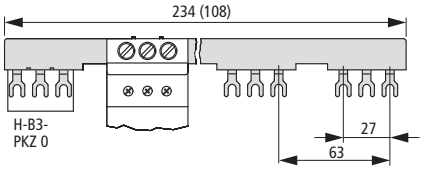


Three-phase commoning link

B3.0/4-PKZ0
B3.0/2-PKZ0

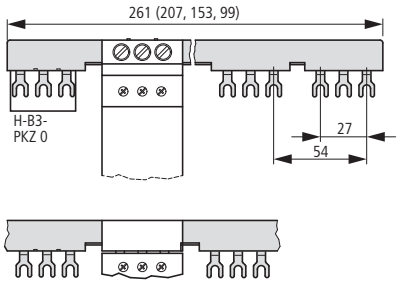


B3.2/4-PKZ0
B3.2/2-PKZ0



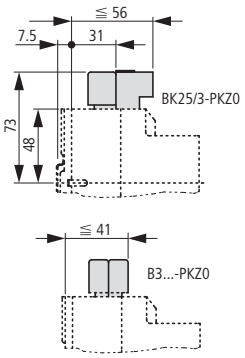
B3.1/5-PKZ0
B3.1/4-PKZ0

B3.1/3-PKZ0
B3.1/2-PKZ0



Incoming terminal

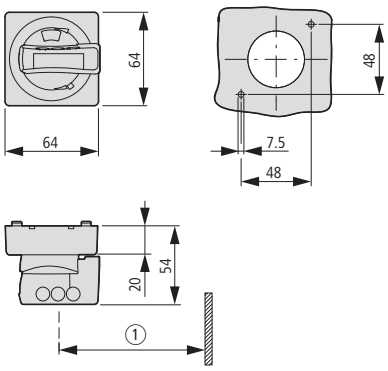
BK25/3-PKZ0



Overlapping mounting to extend the three-phase commoning link

Door coupling handle

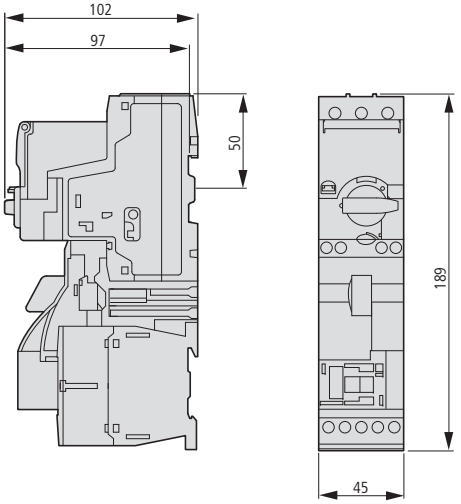
PKE-X(R)H...



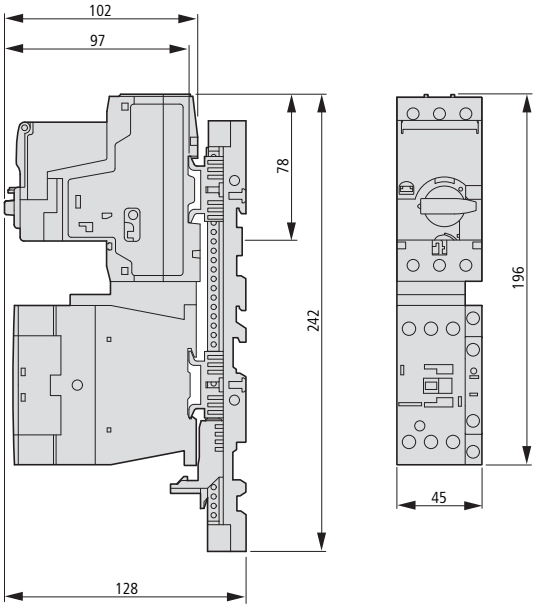
Mounting depth: 152 to 267 mm from the top edge of the top-hat rail to the front edge of the cabinet door/cover
① At least 100 mm from cover hinge

DOL starters (complete units)

MSC-DE(A)-…-M7[…12]…

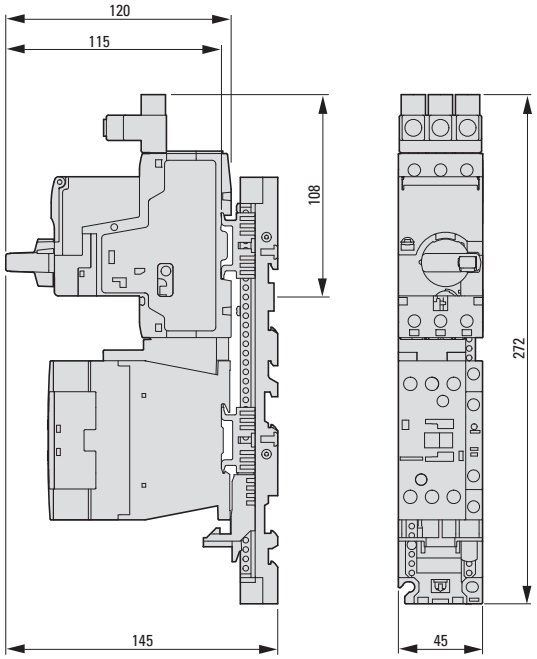


MSC-DE(A)-…-M17[…32]…



DOL starter type E

MSC-DE(A)-…-M17-SP…



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