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Flexible. Intelligent. Trendsetting.

Product Information

Motor-protective circuit-breaker PKE

with electronic wide-range overload protection.

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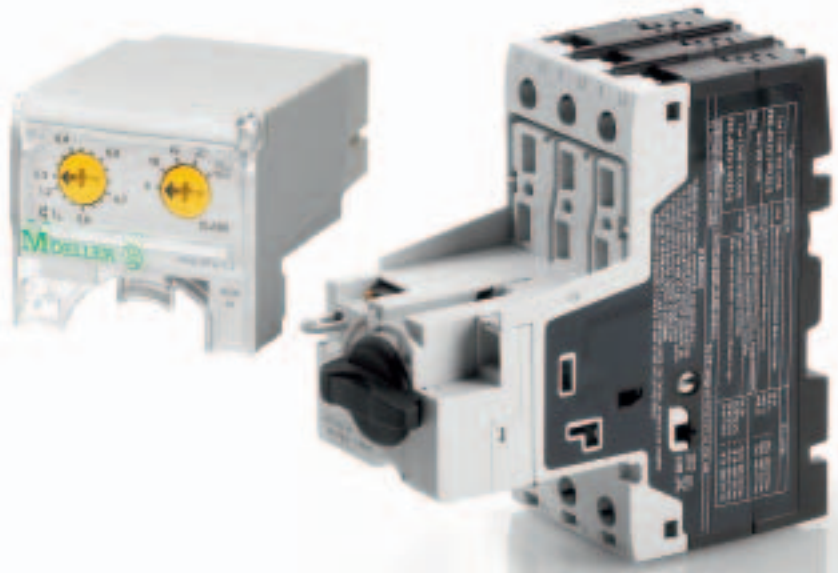


Obliged by tradition

Motor-protective circuit-breakers PKZ have been manufactured by Moeller since 1932. Our ideas and developments have decisively influenced the trends in the protection of motors since then. The results are progressive concepts and marketable product innovations that again and again assume the role of international trendsetting, pioneering products.

It was Moeller who pioneered the integration of overload protection and short-circuit protection into a compact device, thus abolishing the usual separation between both protective functions as used up to then. The awareness of this long tradition in the motor protection field has helped establish and maintain a core competence which has remained intact through to today. The term PKZ is not just the embodiment of quality, but also the generally used synonym by experts for motor-protective circuit-breakers.

Motor-protective circuit-breaker PKE – Switch and protect motors up to 65 A with electronic wide-range overload protection

Modular design. Highest level of flexibility. Highest level of performance.

The selection of a suitable motor-protective circuit-breaker is decisive for the functional safety and service life of a motor. Motor-protective circuit-breakers PKE with electronic overload protection offer an interesting alternative to the bimetal solution here, and complement the intelligent PKZ series from Eaton Moeller.

The motor-protective circuit-breaker PKE provides the highest level of flexibility featuring a compact and modular design with plug-in control unit for motor currents up to 65 A.

- The large current setting ranges decisively reduce the number of variants and minimise the engineering work and costs accordingly.

3 base units + 5 control units = current range up to 65 A

12 A (45 mm)

PKE 12

0.3 A – 12 A

0.09 - 5.5 kW (400 V)

32 A (45 mm)

PKE 32

3 A – 32 A

1.5 - 15 kWa (400 V)

65 A (55 mm)

PKE 65

8 A – 65 A

4 - 34 kW (400 V)

5 plug-in control units up to 65 A in 2 versions.

0.3 A – 1.2 A

1 A – 4 A

3 A – 12 A

8 A – 32 A

16 A – 65 A

PKE – Advantages at a glance

- Autonomous supply via current transformer
- Large electronically controlled setting range
- Exchangeable control units
- Tripping classes greater than CLASS 10
- Precise and extremely long-time stable tripping characteristic curves
- Minimum heat losses
- Protection suited to individual starting conditions
- Motor starter design with standard components
- Common range of accessories from system PKZ0
- Parameter data read out options
- Very service friendly
- Reduction of engineering time and costs

Systematic solutions

Mounting and wiring of motor-protective circuit-breakers is a time and cost intensive process. Furthermore, wiring faults are not seldom.

On Eaton Moeller xStart switchgear, plug-in main and auxiliary current connections replace the classical wiring. Whereas motor starters were wired using complex wiring or wire links between motor-protective circuit-breakers and contactors up to now, contact is now established between the motor-protective circuit-breaker and contactor using mechanical plug-in modules to create stable units. Tool-less plug connections mean fast, tool-less and fault-free wiring.

PKE in the xStart system

The motor-protective circuit-breaker PKE has versatile, approved accessories available from the xStart range for safe and rational control panel construction. On most applications, an auxiliary switch is required with varying contact assignment for interlock or for signalling purposes.

The motor starter design with two separate contact systems including visible isolating gaps, enables a unique assignment of the protective devices PKE and switching device DIL M, whereby switchgear devices can be exchanged individually.

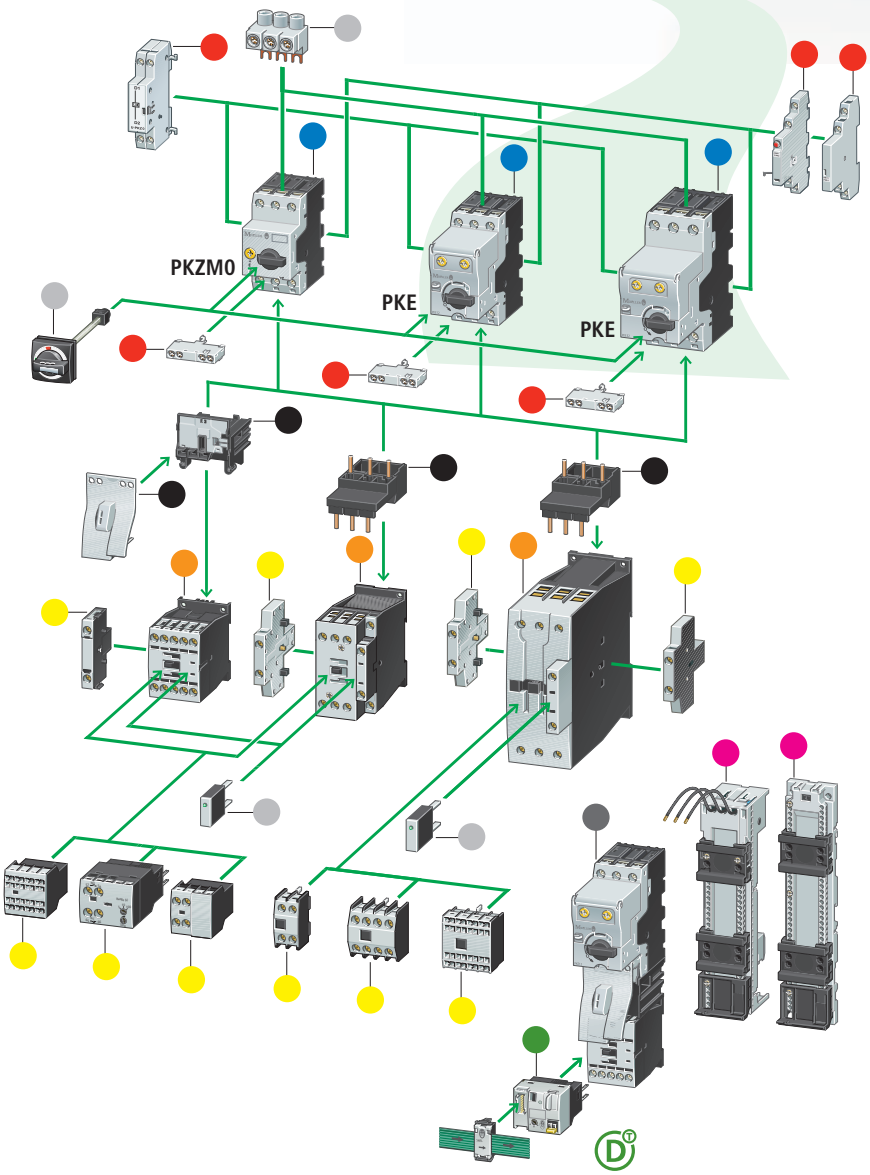
▶ A universal accessory series from the PKZM0 system facilitates economy in logistical terms and reduces engineering costs.

The modular xStart system

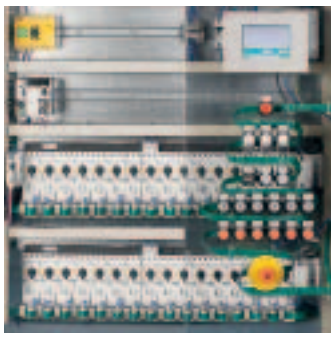
Modular standard components for motor starter configuration, optimally matched to one another and simple to combine with the same accessories from the PKZ system, fulfil the customer requirements for exchangeable "standard" devices.

- Base units PKE/PKZ
- Auxiliary contacts and trip releases PKE/PKZ
- Connection technology for motor starter configuration PKE/PKZ
- Contactors DIL
- Auxiliary contacts DIL
- Top-hat rail adapter and busbar adapter
- Communication module SmartWire-Darwin
- Accessories
- Motor starter MSC

PKE in the xStart System





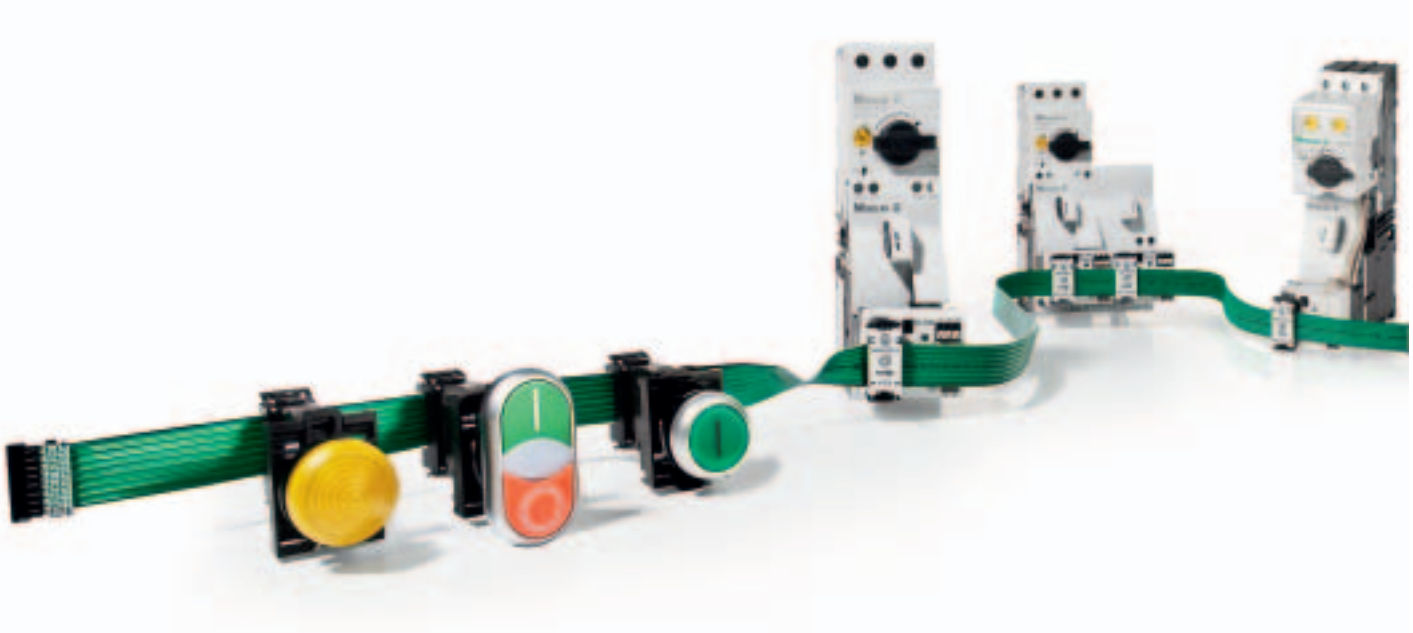



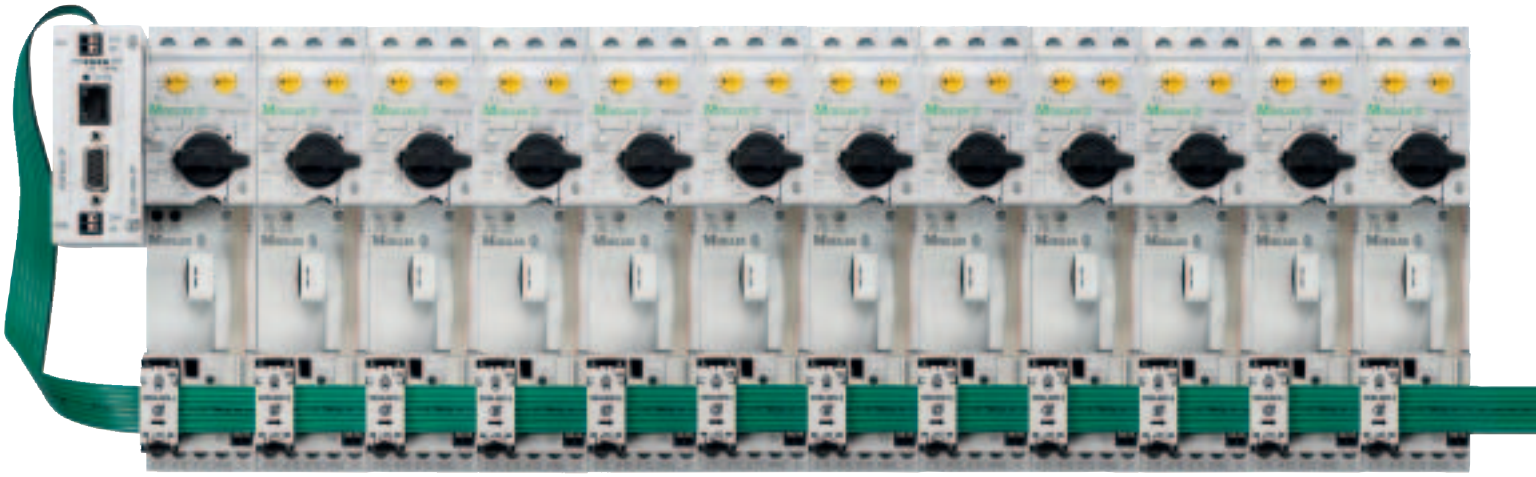
Future inclusive

SmartWire-Darwin (SWD) is the innovative and intelligent connection technology for the control panel. Without control wiring, without distributed I/O level, without laborious addressing via DIP switch. Simply connect and work.

SmartWire-Darwin is continued in the peripherals directly on the machine and transforms standard switchgear to intelligent and communicative automation devices. RMQ-Titan control circuit devices are also connected by just a single cable.

SmartWire-Darwin is the optimum extension to the motor starter combinations PKE. It offers all the necessary information without complex wiring.





Information at your fingertips thanks to SmartWire-Darwin

Motor starter combinations with PKE enable integration into the automation environment via SmartWire-Darwin.

The actual flow of current in the PKE can also be detected via the modular COM port PKE-SWD-32 in addition to the different indication functions such as diagnostics, status or overload messages. The data can be transferred directly into the control and is available across the system.

- The data transparency created enhances the efficiency and the operational reliability of the drives in the operation environment of the motor-protective circuit-breaker.

Current values

Maximum motor current (relative value): Maximum current in the respective phase (three-phase load). Overload warning function possible

Diagnostics data

Differential fault display: Overload, overcurrent (short-circuit), phase failure, trip via TEST

Status messages

Set value display: Control unit type, overload, time-lag, switching state PKE, switching state DILM

Additional functions

Overload relay function (ZMR function): The contactor switches off at overload with set ZMR function. Motor-protective circuit-breaker PKE remains on (ON position), contactor reset is implemented with the manual/auto function via SmartWire-Darwin

Technical data

Motor-protective circuit-breaker PKE 12 / PKE 32

General

Standards and regulations		IEC/EN 60947-4-1, VDE 0660, UL 508, CSA C 22.2 No. 14
Climatic proofing		Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature		
Storage		- 25...80 °C
Open		- 25...55 °C
Enclosed		- 25...40 °C
Direction of incoming supply		any
Degree of protection	Device	IP20
	Terminals	IP00
Touch protection		
Mechanical shock resistance half-sinusoidal shock 10 ms to IEC 60068-2-27		25 g
Altitude		max. 2000 m

Conductor cross-sections

Screw terminals	Solid	1 x (1 - 6) mm^2 2 x (1 - 6) mm^2
	Stranded with ferrule to DIN 46228	1 x (1 - 6) mm^2 2 x (1 - 6) mm^2
	Solid or stranded	18 - 10 AWG
Spring-loaded terminal	Solid	1 x (1 ... 2.5) mm^2 2 x (1 ... 2.5) mm^2
	Stranded with ferrule to DIN 46228	1 x (1 ... 2.5) mm^2 2 x (1 ... 2.5) mm^2
	Solid or stranded	18 ... 14 AWG

Screw terminal tightening torque

Main conductor		1.7 Nm
Auxiliary conductor		1 Nm

Main circuit

Rated impulse withstand voltage	U_{mp}	6000 V AC
Overvoltage category / pollution degree	U_1	III/3 V AC
Rated operational voltage	$I_1 = I_4$	690 V
Rated uninterrupted current = rated output current		32 A or setting value of the overcurrent release
Rated frequency		40 - 60 Hz
Current heating losses (3-pole at operating temperature)		6 W
Lifespan, mechanical	Operations	0.05 x 10^6
Lifespan, electrical (AC-3 at 400 V)	Operations	0.05 x 10^6
Maximum operating frequency	Operations/h	60 ops./h

Short-circuit rating

Motor switching capacity AC	AC-3 up to 690 V	32 A

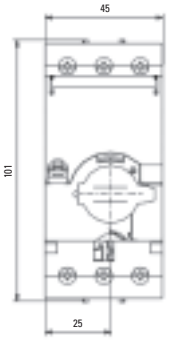
Trip release

Temperature compensation to IEC/EN 60947, VDE 0660		-5...40 °C
Operating range		-25...55 °C
Temperature compensation residual error for T> 40°C		≤ 0.1 %K
Overload release setting range		0.25 - 1 xI_u
Fixed short-circuit trip setting		12 xI_u
Short-circuit release tolerance		± 20 %
Single-phasing sensitivity		yes

Selection overview




Motor-protective circuit-breaker PKE 12 / PKE 32							Modules			Complete devices
Motor rating	**Rated motor current AC-3**					**Overload release setting range**	**Base unit**	**Control unit Standard**	**Control unit Extended**	**Motor-protective circuit-breaker standard**
	220 V 230 V 240 V	380 V 400 V 415 V	440 V	500 V	660 V 690 V		**Part no.** Article no.	**Part no.** Article no.	**Part no.** Article no.	**Part no.** Article no.
kW	A	A	A	A	A					
	Motor-protective circuit-breaker, Coordination type "1" and "2"									
0.06	0.37	-	-	-	-	0.3 ... 1.2 A	**PKE12** 121721	**PKE-XTU-1,2** 121723	**PKE-XTUA-1,2** 121727	**PKE12/XTU-1,2** 121731
0.09	0.54	0.31	-	-	-					
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 A	**PKE12** 121721	**PKE-XTU-4** 121724	**PKE-XTUA-4** 121728	**PKE12/XTU-4** 121732
0.25	1.4	-	-	-	-					
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 A	**PKE12** 121721	**PKE-XTU-12** 121725	**PKE-XTUA-12** 121729	**PKE12/XTU-12** 121733
1.1	4.6	-	-	-	-					
1.5	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 A	**PKE32** 121722	**PKE-XTU-32** 121726	**PKE-XTUA-32** 121730	**PKE12/XTU-32** 121734
3	11.5	-	-	-	-					
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					



Selection overview



Motor starter MSC (current range up to 32 A)

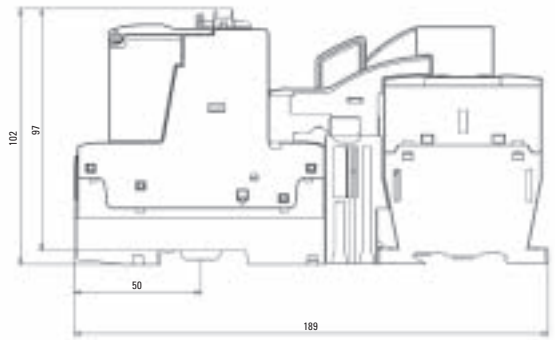
Motor rating	Rated motor current AC-3					Setting range overload release	Version Standard 230V/50Hz	Version Standard 24V DC	Version Extended 24V DC
	220 V	380 V	440 V	500 V	660 V		**Part no.** Article no.	**Part no.** Article no.	**Part no.** Article no.
	230 V	400 V			690 V				
	240 V	415 V							
kW	A	A	A	A	A				
	Motor starter, Coordination type "1" and "2"								
0.06	0.37	-	-	-	-	0.3 ... 1.2 A	**MSC-DE-1,2-M7 (230V/50Hz)** 121735	**MSC-DE-1,2-M7 (24VDC)** 121736	**MSC-DEA-1,2-M7 (24VDC)** 121753
0.09	0.54	0.31	-	-	-				
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 A	**MSC-DE-4-M7 (230V/50Hz)** 121737	**MSC-DE-4-M7 (24VDC)** 121738	**MSC-DEA-4-M7 (24VDC)** 121754
0.25	1.4	-	-	-	-				
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 A	**MSC-DE-12-M7 (230V/50Hz)** 121739	**MSC-DE-12-M7 (24VDC)** 121740	**MSC-DEA-12-M7 (24VDC)** 121755
1.1	4.6	-	-	-	-				
1.5	6.3	3.6	3.3	-	-				
2.2	-	5	4.6	4	-				
3	-	6.6	6	5.3	3.8				
4	-	-	-	6.8	4.9				
5.5	-	-	-	-	6.5				
0.75	3.2	-	-	-	-	3 ... 12 A	**MSC-DE-12-M9 (230V/50Hz)** 121741	**MSC-DE-12-M9 (24VDC)** 121742	**MSC-DEA-12-M9 (24VDC)** 121756
1.1	4.6	-	-	-	-				
1.5	6.3	3.6	3.3	-	-				
2.2	8.7	5	4.6	4	-				
3	-	6.6	6	5.3	3.8				
4	-	8,5	7.7	6.8	4.9				
5.5	-	-	-	9	6.5				
7.5	-	-	-	-	8.8				
0.75	3.2	-	-	-	-	3 ... 12 A	**MSC-DE-12-M12 (230V/50Hz)** 121743	**MSC-DE-12-M12 (24VDC)** 121744	**MSC-DEA-12-M12 (24VDC)** 121757
1.1	4.6	-	-	-	-				
1.5	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				
0.75	3.2	-	-	-	-	3 ... 12 A	**MSC-DE-12-M17 (230V/50Hz)** 121745	**MSC-DE-12-M17 (24VDC)** 121746	**MSC-DEA-12-M17 (24VDC)** 121758
1.1	4.6	-	-	-	-				
1.5	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				

Selection overview

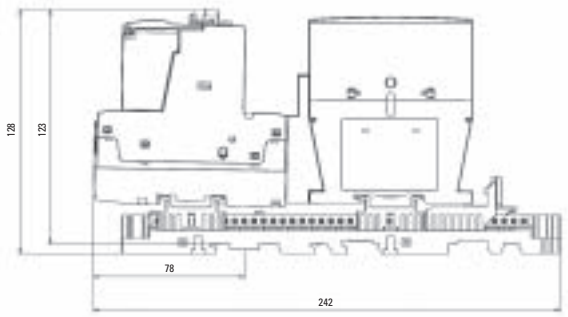


Motor starter MSC (current range up to 32 A)

Motor rating	Rated motor current AC-3					Setting range overload release	Version Standard 230V/50Hz	Version Standard 24VDC	Version Extended 24VDC
	220 V	380 V	440 V	500 V	660 V				
	230 V	400 V			690 V		**Part no.** Article no.	**Part no.** Article no.	**Part no.** Article no.
	240 V	415 V							
kW	A	A	A	A	A				
	Motor starter, Coordination type "1" and "2"								
2.2	8.7	-	-	-	-	8 ... 32 A	**MSC-DE-32-M17 (230V/50Hz)** 121747	**MSC-DE-32-M17 (24VDC)** 121748	**MSC-DEA-32-M17 (24VDC)** 121759
3	11.5	-	-	-	-				
4	14.8	8.5	-	-	-				
5.5	-	11.3	10.2	9	-				
7.5	-	15.2	13.8	12.1	8.8				
11	-	-	-	-	12.6				
15	-	-	-	-	17				
2.2	8.7	-	-	-	-	8 ... 32 A	**MSC-DE-32-M25 (230V/50Hz)** 121749	**MSC-DE-32-M25 (24VDC)** 121750	**MSC-DEA-32-M25 (24VDC)** 121760
3	11.5	-	-	-	-				
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	19.7	17.4	12.6				
15	-	-	-	23.4	17				
18.5	-	-	-	-	20.9				
22	-	-	-	-	23.8				
2.2	8.7	-	-	-	-	8 ... 32 A	**MSC-DE-32-M32 (230V/50Hz)** 121751	**MSC-DE-32-M32 (24VDC)** 121752	**MSC-DEA-32-M32 (24VDC)** 121761
3	11.5	-	-	-	-				
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	19.7	17.4	12.6				
15	-	29.3	26.6	23.4	17				
18.5	-	-	-	28.9	20.9				
22	-	-	-	-	23.8				
30	-	-	-	-	32				



Motor starter MSC-DE ... -M7 to MSC-DE...-M12



Motor starter MSC-DE ... -M17 to MSC-DE...-M32

Communication interface for PKE12/32

	**SWD function element for PKE12/32**	**Part no.** Article no.
		PKE-SWD-32 126895

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Moeller addresses worldwide:
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Internet: **www.moeller.net**
www.eaton.com

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