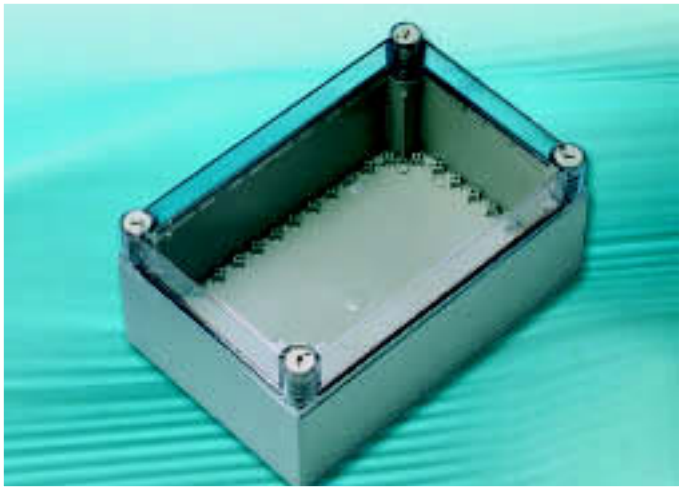

The NA and CNA devices have the same dimensions as those for the German market.

The standard versions of most Moeller devices are approved for use throughout the world, including the USA and Canada.
As such, they can be used without restriction as devices for world markets.

The standard versions of some devices, such as circuit-breakers, can be used worldwide except in the USA and Canada.
Such devices are available in special UL- and CSA-approved versions for export to these countries.

Moeller low-voltage switchgear and switchgear assemblies conform to national and international specifications, making it possible to construct control systems that will conform to the national international specifications of any country in the world.
This, of course, means that due consideration must be given to the particular national standards of the country in question, such as those concerning installation, operation, installation materials and methods, as well as any pertaining to circumstances such as severe environmental conditions.
The component rating data for 220 – 240 V, 380 – 440 V, 500 V, 600 V and 690 V given in this catalogue cover virtually all existing three-phase systems worldwide.
Ratings are also given for the supply voltages in common use in the USA and in Canada.

In addition to the widely differing system conditions, special installation standards and approval requirements also have to be observed for the worldwide use of switchgear:
Where screw fuses have to be used in a control system, some European countries – such as Denmark, Finland, the Netherlands, Norway and Sweden – require gauge screws. In this case, "FORM P" fuse bases must be used. Switzerland no longer requires the use of gauge screws, but they are often still requested by customers.

The majority of countries permit the import of switchgear assemblies and devices on the manufacturer's undertaking that they have been constructed in accordance with the pertinent specifications. In some countries, such as the USA and Canada, however, there is a legal obligation to obtain official approval.
In these countries, devices and enclosures – sometimes even complete control systems – are tested and approved by independent bodies.

To a certain extent, there also used to be a legal obligation to obtain official approval for low-voltage switchgear and controlgear in Scandinavia and in Switzerland. For industrial switchgear, this legal obligation has now been abolished, provided the devices have been manufactured and tested in accordance with harmonized European standards (such as IEC/EN 60947). There is then no longer a requirement for them to carry their country's own approval mark. Moeller develops switchgear to international standards, such as IEC/EN 60947 and applies the corresponding marks.

Since January 1997, all devices must conform to the European Low-Voltage Directive and, where intended for sale within the European Union, must carry the CE mark.

Europe
Conformité Européen
(CE)

This mark denotes that the device carrying it conforms to all relevant requirements and specifications. The mandatory application of this mark therefore enables the unrestricted use of marked devices within the European economic area.

Since January 1996, all devices sold within the European union must comply with the Electromagnetic Compatibility (EMC) Directive. Moeller has passed the required tests for all products subject to these Directives, and the devices carry the CE mark, demonstrating compliance with the EMC Directive. Because devices bearing the CE mark comply with the harmonized standards, approval and the associated marking is no longer required in the following countries:

Belgium
Comité Electro-technique Belge
Belgisch Elektro-technisch Comité
(CEBEC)

Denmark
Danmarks Elektriske Materielkontrol
(DEMKO)

Finland
(FIMKO)

France
Union Technique de l'Electricité
(UTE)

Netherlands
Naamloze Vennootschap tot Keuring van Electrotechnische Materialien
(KEMA)

Norway
Norges Elektriske Materiellkontrol
(NEMKO)

Sweden
Svenska Elektriska Materiel-kontrollanstalten
(SEMKO)

Switzerland
Schweizerischer Elektrotechnischer Verein
(SEV)

An exception is equipment for service installations. The device group of miniature circuit-breakers and residual-current circuit-breakers in certain areas is still subject to mandatory marking and therefore provided with the appropriate approval marks:

Belgium
Comité Electro-technique Belge
Belgisch Elektro-technisch Comité
(CEBEC)

Germany
Verband Deutscher Elektrotechniker
(VDE)

France
Union Technique de l'Electricité
(UTE)

Austria
Österreichischer Verband for Elektrotechnik
(ÖVE)

Switzerland
Schweizerischer Elektrotechnischer Verein
(SEV)

Devices for export to the USA and Canada have either additional UL and CSA approval or are available in a separate version with UL and CSA approval.

USA
Underwriters Laboratories
(UL)

Listing

Recognition

Canada
Canadian Standards Association
(CSA)

Recently introduced is the mandatory approval of electrical products for
- Slovakia
- Poland
- South Africa
- China
- Russia
- Turkey
- Argentina

Marking is partly mandatory for these countries. The IEC rating data is accepted as in other European countries.

Approval is not mandatory in the Czech Republic and Hungary. The manufacturer's declaration of conformity is sufficient here.

Romania requires that components that are to be used in public buildings must be approved by the Romanian test authority ICECON.

Russia
Devices for Russia must bear the appropriate marking.

Russia
Goststandart
(GOST-R)

South Africa
Approval is mandatory in South Africa for circuit-breakers and busbar trunking systems. These devices must bear the appropriate marking.

South Africa
ZA
SABS

Argentina
In Argentina, mandatory approval is based on Resolution 92/98. From 01/04/2001, miniature circuit-breakers and residual-current circuit-breakers are subject to mandatory approval. From 01/04/2002, protective switches up to I_e = 63 A and $U_{e\,max}$ = 440 V are subject to mandatory approval and must bear the following markings:

Selection of devices

"Selection appropriate for export" does not mean merely meeting the requisite approvals and conformity to relevant specifications. The meaning of the term goes a great deal further by even including that equipment and installations must be designed to a concept with export in mind.

The following are important criteria for selecting switchgear suitable for export:

- For **motor-protective circuit-breakers**
  Use inherently short-circuit proof switches capable of controlling the highest prospective fault levels at the point of installation without the need for back-up protection.
  Advantage:
  – No restrictions whatsoever for installation
  – Complete independence from the on-site protective system
  – No problems getting spare parts

- For **circuit-breakers**
  Use types with visible contacts, quick-make and quick-break operation as standard. Use current-limiting circuit-breakers for high short-circuit levels. Selective switches are recommended for the selective graduation of networks.
  Advantage:
  – Independence from local accident prevention regulations requiring visible contacts, and safety fro faults caused by inexperienced operating personnel.
  – The effects of short-circuits are kept to a minimum.
  – Fuseless installations offer greater safety and reliability in plant operation. In the event of a fault, only the faulty section of the system is isolated.

- For **contactors**
  Use contactors whose entire range provides consistently reliable operation in the event of voltage drops (consistently down to 80 % U_n should be aimed for) and whose contact system will not assume an indeterminate position either on closing or on opening in such conditions.
  Advantage:
  – During the electrification work in areas such as Africa and the Middle East, an insufficient voltage stability is – at least for a certain time – likely in many applications (for example due to long spur lines or small local generators). The use of devices that fulfill the above requirements will eliminate one of the main failure causes related to contactors.

- For **enclosures**
  Use insulated enclosures with transparent covers (i.e. "totally insulated" enclosures).
  Advantage:
  – Total insulation is the best possible protective measure from the user's point of view, avoiding, reliance on the possibly doubtful skills of unknown installation personnel. Furthermore, protective measures based on earthing are often extremely difficult, if not impossible (in the Middle East, for example, due to the dryness of the ground).
  – Insulated enclosures completely eliminate the need for any additional protection against corrosion. The transparent covers contribute significantly to the correct operation of a system, because switchgear operation can be monitored even with the doors or covers closed, thus virtually eliminating the possibility of these being left open through carelessness. The transparent cover is an important contribution to safety, especially where exports to areas of uncertain skills are concerned.

- For **overcurrent protective devices**
  Always use circuit-breakers and motor-protective circuit-breakers. Avoid fuses as far as possible.
  Advantage:
  – The operational reliability of a system is especially important for export contracts. Circuit-breakers and motor-protective circuit-breakers provide this reliability in full measure since they can be immediately reclosed once a fault has been cleared, they disconnect all poles, they have ideal protection through high tripping accuracy and they can be used for selective operation. Because they have no fuses or other consumables, they also greatly reduce the problem of obtaining replacement parts. The advantages of fuseless design for export are especially evident in this case. No complicated investigation is needed to find out which fusing system is used in the respective location and which specifications have to be followed to select the correct fuses. Often several different fuse systems with widely varying characteristics are used side-by-side in the same country. For the uninitiated, it may be almost impossible to find the right fuse in these circumstances. These problems do not arise where a circuit-breaker is used.

- For **main switches** and **safety switches**
  Use devices with positive contact separation and clear switch position indication.
  Advantage:
  – The mechanical coupling of the actuating element with the contacts ensues that the Off position is indicated only when all main contacts are separated by the prescribed distance, and only in this position can the switch be padlocked. This ensures safety when carrying out maintenance and repair work on the installation or machinery.

Test authorities

Moeller devices have the approvals required for use in the following countries;
For details → from Page 19/4

USA USA UL	
Canada CDN CSA	
Romania RO ICECON	**ML PAT**
Russia RUS GOST-R	
South Africa ZA SABS	
Slovakia SK SKTC	
Poland PL BBJ-SEP	
Turkey TR TSE	
China PRC CCC	
Ukraine UA Ukrain-GOST	

Shipping classifications

Moeller devices have been approved by the following shipping classification societies:
For details → from Page 19/8

Germany Germanischer Lloyd (GL)	
Great Britain Lloyd's Register of Shipping (LR)	
France Bureau Veritas (BV)	
Russia Russian Maritime Register of Shipping (RS)	
Italy Registro Italiano Navale (RINA)	
Norway Det Norske Veritas (DNV)	
Poland Polski Rejestr Statkow (PRS)	

	Country **Test authorities**									
	USA **UL**	CDN **CSA**	RUS **GOST-R**	SK **SKTC**	RO **ICECON**	PL **BBJ-SEP**	TR **TSE**	ZA **SABS**	PRC **CCC**	UA **Ukrain-GOST**
Control circuit devices										
RMQ16	●	●	●	–	●	●	–	N	–	●
RMQ-Titan	●	●	●	–	–	●	–	N	○	●
FAK.../I	●	●	●	●	●	–	–	N	–	●
SL signal towers	●	●	●	–	–	–	–	N	–	●
Position switches										
LS...	●	●	●	●	–	●	●	N	●	–
AT0-...-...-ZB, AT0-...-...-ZBZ/...	●	●	●	●	●	–	–	N	–	●
Pressure switches										
MCS..., MCSN...	–	●[1]	●	●	●	–	–	N	–	●
Control relays										
EASY205-ASI	●	●	–	–	–	–	–	N	–	●
EASY412-DA-RC	●	●	–	–	–	–	–	N	–	●
EASY412-DC-R	●	●	–	●	–	–	–	N	–	●
EASY412-DC-RC(X)	●	●	–	●	–	–	–	N	–	●
EASY412-DC-TC	●	●	–	–	–	–	–	N	–	●
EASY412-DC-TC(X)	●	●	–	–	–	–	–	N	–	●
EASY412-AC-R	●	●	–	●	–	●	–	N	–	●
EASY412-AC-RC	●	●	–	●	–	●	–	N	–	●
EASY412-AC-RC(X)	●	●	–	–	–	●	–	N	–	●
EASY5...	○	○	–	–	–	–	–	–	–	–
EASY618-DC-RE	●	●	–	–	–	–	–	N	–	●
EASY618-AC-RE	●	●	–	–	–	●	–	N	–	●
EASY619-DC-RC(X)	●	●	–	–	–	–	–	N	–	●
EASY619-AC-RC(X)	●	●	–	–	–	●	–	–	–	–
EASY620-DC-TE	●	●	–	–	–	–	–	N	–	●
EASY621-DC-TC(X)	●	●	–	–	–	–	–	N	–	●
EASY7...	○	○	–	–	–	–	–	–	–	–
EASY200-EASY	●	●	–	–	–	–	–	N	–	●
EASY400-POW	●	●	–	–	–	–	–	N	–	●
EASY819-..	●	●	–	–	–	–	–	–	–	–
EASY820-DC-RC(X)	●	●	–	–	–	–	–	–	–	–
EASY821-DC-TC(X)	●	●	–	–	–	–	–	–	–	–
EASY822-DC-TC(X)	●	●	–	–	–	–	–	–	–	–
Multi function displays										
MFD-80	●	●	–	–	–	–	–	–	–	–
MFD-80-B	●	●	–	–	–	–	–	–	–	–
MFD-CP8-ME	●	●	–	–	–	–	–	–	–	–
MFD-CP8-NT	●	●	–	–	–	–	–	–	–	–
MFD-R16	●	●	–	–	–	–	–	–	–	–
MFD-RA17	●	●	–	–	–	–	–	–	–	–
MFD-T16	●	●	–	–	–	–	–	–	–	–
MFD-TA17	●	●	–	–	–	–	–	–	–	–
MFD-AC-CP8-ME	○	○	–	–	–	–	–	–	–	–
MFD-AC-CP8-NT	○	○	–	–	–	–	–	–	–	–
MFD-AC-R16	○	○	–	–	–	–	–	–	–	–
MFD-CP4, MFD-CP4-500	○	○	–	–	–	–	–	–	–	–
MFD-CP4-800	○	○	–	–	–	–	–	–	–	–
Contactor relays										
DILER	●	●	●	●	●	●	–	N	–	●
DILR...	●	●	●	●	●	●	–	N	●	●
DILA	○	○	○	○	○	○	○	○	○	○
DILA-XHI	○	○	○	○	○	○	○	○	○	○

Notes

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– Not approved or accepted
[1] Form CDN

Moeller HPL0211-2004/2005

	Country Test authorities									
	USA UL	CDN CSA	RUS GOST-R	SK SKTC	RO ICECON	PL BBJ-SEP	TR TSE	ZA SABS	PRC CCC	UA Ukrain-GOST
Electronic timing relays										
ETR 4-...	●	●	●	●	●	–	–	N	–	●
DIL ET	●	●	–	●	●	–	–	N	–	●
Safety relays										
ESR...	●	●	–	–	●	–	–	N	–	●
Measuring and Monitoring Relays										
EMR4...	●	●	–	–	–	–	–	N	–	–
Contactors										
DILM7	○	○	○	○	○	○	○	○	○	○
DILM9	○	○	○	○	○	○	○	○	○	○
DILM12	○	○	○	○	○	○	○	○	○	○
DILM17	○	○	○	○	○	○	○	○	○	○
DILM25	○	○	○	○	○	○	○	○	○	○
DILM32	○	○	○	○	○	○	○	○	○	○
DILM40	○	○	○	○	○	○	○	○	○	○
DILM50	○	○	○	○	○	○	○	○	○	○
DILM65	○	○	○	○	○	○	○	○	○	○
DILMP20	○	○	○	○	○	○	○	○	○	○
DILM32-XHI	○	○	○	○	○	○	○	○	○	○
DILM150-XHI	○	○	○	○	○	○	○	○	○	○
DILM1000-XHI	○	○	○	○	○	○	○	○	○	○
DILM32-XMV	○	○	○	○	○	○	○	○	○	○
DILM150-XMV	○	○	○	○	○	○	○	○	○	○
DILM...-XVB	○	○	○	○	○	○	○	○	○	○
DILM...-XSPR	○	○	○	○	○	○	○	○	○	○
DILM...-XSPV	○	○	○	○	○	○	○	○	○	○
DILM...-XSPVL	○	○	○	○	○	○	○	○	○	○
DILM...-XS1	○	○	○	○	○	○	○	○	○	○
DILM...-XP1	○	○	○	○	○	○	○	○	○	○
DILM...-XSP	○	○	○	○	○	○	○	○	○	○
DILEEM(-G), DIL EM(-G)	●	●	●	●	●	●	–	N	●	●
DIL00(A)M(-G), DIL0(A)M(-G)	●	●	●	●	●	●	●	N	●	●
DIL1(A)M(-G), DIL2(A)M(-G)	●	●	●	●	●	●	●	N	●	●
DIL3(A)M80, DIL3(A)M85	●	●	●	●	●	●	●	N	●	●
DIL4(A)M115, DIL4(A)M145	●	●	●	●	●	●	●	N	●	●
DILM185, DILM225, DILM250	●	●	●	–	–	●	–	N	–	●
DILM300, DILM400, DILM500	●	●	●	–	–	●	–	N	–	●
DILM580, DILM650, DILM750, DILM820	●	●	–	–	–	–	–	N	–	●
DILM1000, DILH1400, DILH2000	○	○	–	–	–	–	–	N	–	–
DIL1MK	●	●	–	–	–	–	–	N	–	●
DIL00MK	●	●	–	–	–	–	–	N	–	●
DIL0MK-10, DIL2MK-10, DIL3MK...	●	●	–	–	–	–	–	N	–	●
Overload relays										
ZB12	○	○	○	○	○	○	○	○	○	○
ZB32	○	○	○	○	○	○	○	○	○	○
ZB65	○	○	○	○	○	○	○	○	○	○
ZE-...	●	●	●	●	●	●	–	N	●	●
Z00-...	●	●	●	●	●	●	●	N	●	●
Z1-...	●	●	●	●	●	●	●	N	●	●
Z5-.../...	●	●	●	●	●	●	●	N	●	●
ZW7-...	●	●	●	●	●	●	–	N	–	●
ZW7-630	–	–	●	●	●	●	–	N	–	●
ZEV	●	●	–	–	–	●	–	N	●	●
Thermistor machine protection										
EMT 6	●	●	●	–	●	–	–	N	–	●

Notes
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Moeller HPL0211-2004/2005

	Country **Test authorities**									
	USA **UL**	CDN **CSA**	RUS **GOST-R**	SK **SKTC**	RO **ICECON**	PL **BBJ-SEP**	TR **TSE**	ZA **SABS**	PRC **CCC**	UA **Ukrain-GOST**
Rotary switches										
T0-..., T3-..., T5-...	●	●	●	●	●	●	–	●	●	
Motor-protective circuit-breakers										
PKZM01	○	○	○	○	○	○	–	○	○	○
PKZM0...	●	●	●	●	●	●	●	N	●	●
PKZM0-T	●	●	–	–	–	–	–	N	–	●
PKZ2.../ZM...	●	●	●	●	●	●	–	●	○	●
PKZ2/.../S-SP...	●[1]	●[1]	N	N	N	N	N	N	–	●
PKZM4-...	●	●	–	–	–	–	–	N	–	●
Switch-disconnectors										
P1, P3	●	●	●	●	●	●	–	●	○	●
P7-...	–	–	●	●	●	–	–	–	–	●
P10-...	–	–	●	●	●	–	–	–	–	●
NZM7-...	●[1]	●[1]	●	●	●	–	–	–	●	●
NZM10...N/B	●[1]	●[1]	●	●	●	–	–	–	–	●
Circuit-breakers										
NZM7-...N	●[1]	●[1]	●	●	●	●	●	●	●	●
NZM10-...N/ZM...	●[1]	●[1]	●	●	●	●	●	●	●	●
NZM7-....S	●[1]	●[1]	●	●	●	●	●	●	●	●
NZM10-...S/ZM...	●[1]	●[1]	●	●	●	●	●	●	●	●
NZM7-...H	–	–	●	●	●	●	●	●	●	●
NZM10-...H/ZM...	●[1]	●[1]	●	●	●	●	●	●	●	●
Selectively-operating circuit-breakers										
NZM10-.../ZMV	●[1]	●[1]	●	●	●	●	–	●	●	
Circuit-breakers										
IZMB(N)(H)2(4)...-800	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-1000	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-1250	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-1600	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-2000	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-2500	–	–	–	–	–	●	–	–	●[2]	–
IZMB(N)(H)2(4)...-3200	–	–	–	–	–	●	–	–	●[2]	–
IZMH3(4)...-4000	–	–	–	–	–	●	–	–	●[2]	–
IZMH3(4)...-5000	–	–	–	–	–	●	–	–	●[2]	–
IZMH3(4)...-6300	–	–	–	–	–	●	–	–	●[2]	–
Supplementary protectors[3]										
FAZB..., FAZC..., FAZR..., FAZS...	●	●	–	–	–	–	–	–	–	–
Miniature circuit-breaker										
FAZ, B characteristic	●	●	○	–	○	○	–	–	○	○
FAZ, C characteristic	●	●	○	–	○	○	–	–	○	○
FAZ, D characteristic	●	●	○	–	○	○	–	–	○	○
FAZ-HK	●	●	○	–	–	○	–	–	○	–
FI...	–	–	–	–	–	–	–	–	○	○
FI-HK...	–	–	–	–	–	–	–	–	○	–
ASA, USA	●	●	–	–	–	–	–	–	–	–
Transformers										
STI/STZ	●	●	N	–	–	●	–	N	–	●
DTI/DTZ	●	●	N	–	–	–	–	N	–	●
UTI	●	●	N	–	–	–	–	N	–	–

Notes

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– Not approved or accepted
[1] Switchgear for North America
[2] IN switch-disconnectors also have approvals
[3] As supplementary protectors up to 40 A only

Moeller HPL0211-2004/2005

	Country Test authorities									
	USA **UL**	CDN **CSA**	RUS **GOST-R**	SK **SKTC**	RO **ICECON**	PL **BBJ-SEP**	TR **TSE**	ZA **SABS**	PRC **CCC**	UA **Ukrain-Gost**
CI insulated enclosures										
CI..-...-NA, CI..-.../(2)T-NA	●	●	N[1)]	Please enquire						●[1)]
CI..X-...-NA, CI..X-.../T-NA	●	●	N[1)]	Please enquire						●[1)]
D...-CI..-NA, T-CI...-NA	●	●	N[1)]	Please enquire						●[1)]
STB...ZOLL	●	●	N[1)]	Please enquire						●[1)]
FL...-X-NA	●	●	N[1)]	Please enquire						●[1)]
ZRF3-NA	●	●	N[1)]	Please enquire						●[1)]
CI-K small enclosure										
CI-K...-NA	●	●	N[1)]	–	–	–	–	–	–	●[1)]
Drives Soft starters and accessories										
DM4-340	●	●	–	–	–	–	–	–	–	–
DE4-KEY-2	●	●	–	–	–	–	–		–	–
DE4-COM-2X	●	●	–	–	–	–	–	–	–	–
DE4-NET-DP2	●	●	–	–	–	–	–	–	–	–
xStart-XS1										
XS1-DSO-340-...	●	●	–	–	–	–	–	–	○	–
XS1-XBMS-DSO-A	●	●	–	–	–	–	–	–	○	–
XS1-RSO-340-...	●	●	–	–	–	–	–	–	○	–
XS1-XBMS-RSO-A	●	●	–	–	–	–	–	–	○	–
Frequency inverters and accessories										
DF5-322	●	●	–	–	–	–	–	–	–	–
DF5-340	●	●	–	–	–	–	–	–	–	–
DF6-340	●	●	–	–	–	–	–	–	–	–

Notes

● Approved or accepted
○ Approval applied for

N Approval or acceptance not required
– Not approved or accepted
1) Applies only for standard CI types, not for NA (North America) versions

	Classification body						
	GB Lloyd's Register of Shipping **LR**	D German Lloyd **GL**	N Det Norske Veritas **DNV**	F Bureau Veritas **BV**	I Registro Italiano Navale **RINA**	RUS Russian Maritime Register of Shipping **RS**	PL Polski Rejestr Statków **PRS**
Control circuit devices							
RMQ16	●	●	●	●	●	●	●
RMQ-Titan	●	●	●	●	●	○	●
FAK.../I	–	–	●	●	–	–	–
SL signal towers	●	●	○	○	N	○	●
Position switches							
LS...	●	●	●	●	–	–	–
AT0-...-1-ZB	–	●	–	–	–	–	–
AT4/11-...	–	●	–	–	–	–	–
Control relays							
EASY221-CO	○	○	●	–	–	–	–
EASY412-AC-R	●	●	●	–	–	–	–
EASY412-AC-RC	●	●	●	–	–	–	–
EASY412-AC-RCX	●	●	●	–	–	–	–
EASY412-DA-RC	●	●	●	–	–	–	–
EASY412-DA-RCX	●	●	●	–	–	–	–
EASY412-DC-R	●	●	●	–	–	–	–
EASY412-DC-RC	●	●	●	–	–	–	–
EASY412-DC-RCX	●	●	●	–	–	–	–
EASY412-DC-TC	●	●	●	–	–	–	–
EASY412-DC-TCX	●	●	●	–	●	–	–
EASY618-AC-RE	●	●	●	–	–	–	–
EASY618-DC-RE	●	●	●	–	●	–	–
EASY619-AC-RC	●	●	●	–	●	–	–
EASY619-AC-RCX	●	●	●	–	●	–	–
EASY619-DC-RC	●	●	●	–	●	–	–
EASY619-DC-RCX	●	●	●	–	●	–	–
EASY620-DC-TE	●	●	●	–	●	–	–
EASY621-DC-TC	●	●	●	–	●	–	–
EASY621-DC-TCX	●	●	●	–	●	–	–
EASY819-AC-RC	●	●	●	●	–	–	–
EASY819-AC-RCX	●	●	●	●	–	–	–
EASY819-DC-RC	●	●	●	●	–	–	–
EASY819-DC-RCX	●	●	●	●	–	–	–
EASY820-DC-RC	●	●	●	●	–	–	–
EASY820-DC-RCX	●	●	●	●	–	–	–
EASY821-DC-TC	●	●	●	●	–	–	–
EASY821-DC-TCX	●	●	●	●	–	–	–
EASY822-DC-TC	●	●	●	●	–	–	–
EASY822-DC-TCX	●	●	●	●	–	–	–
Auxiliary contactors[1)]							
DILER	●	●	●	●	●	●	●
DILR	●	●	●	●	●	●	●
DILA, DILA-XHI	○	○	○	○	–	–	–
Electronic timing relays							
ETR4-...	–	●	–	–	–	–	–
EMR4-...	–	●	–	–	–	–	–

Notes

● Approved or accepted
○ Approval applied for
[1)] Switchgear for North America

N Approval or acceptance not required
– Not approved or accepted

Moeller HPL0211-2004/2005

	Classification body						
	GB Lloyd's Register of Shipping **LR**	D German Lloyd **GL**	N Det Norske Veritas **DNV**	F Bureau Veritas **BV**	I Registro Italiano Navale **RINA**	RUS Russian Maritime Register of Shipping **RS**	PL Polski Rejestr Statków **PRS**
Contactors[1]							
DILM7	○	○	○	○	–	–	–
DILM9	○	○	○	○	–	–	–
DILM12	○	○	○	○	–	–	–
DILM17	○	○	○	○	–	–	–
DILM25	○	○	○	○	–	–	–
DILM32	○	○	○	○	–	–	–
DILM40	○	○	○	○	–	–	–
DILM50	○	○	○	○	–	–	–
DILM65	○	○	○	○	–	–	–
DILMP20	○	○	○	○	–	–	–
DILEEM(-G), DILEM(-G)	●	●	●	●	●	●	●
DIL00(A)M(-G) – DIL2(A)M(-G)	●	●	●	●	●	●	●
DIL3M80, DIL3AM85	●	●	●	●	●	●	●
DIL4M115, DIL4AM145	●	●	●	●	●	●	●
DILM185, DILM225, DILM250[2]	●	●	●	●	●	●	●
DILM300, DILM400, DILM500[2]	●	●	●	●	●	●	●
DILM580, DILM650, DILM750, DILM820, DILM1000[2]	○	○	○	○	–	–	–
DILH1400, DILH2000	○	○	○	○	–	–	–
Overload relays[1]							
ZB12	○	○	○	○	–	–	–
ZB32	○	○	○	○	–	–	–
ZB65	○	○	○	○	–	–	–
ZE-...	●	●	●	●	●	●	●
Z00-...	●	●	●	●	●	●	●
Z1-...	●	●	●	●	●	●	●
Z5-...	●	●	●	●	●	●	●
ZW7-..., ZW7-630	–	●	–	–	–	●	●
Thermistor relay for machine protection							
EMT6	–	●	–	–	–	–	–

Notes

● Approved or accepted
○ Approval applied for
– Not approved or accepted
Z Accepted without approval
N Approval or acceptance not required

[1] The approvals also cover the relevant product accessories.
[2] RA 110, RA 250

	Classification body						
	GB Lloyd's Register of Shipping **LR**	D German Lloyd **GL**	N Det Norske Veritas **DNV**	F Bureau Veritas **BV**	I Registro Italiano Navale **RINA**	RUS Russian Maritime Register of Shipping **RS**	PL Polski Rejestr Statków **PRS**
Rotary switches[1]							
T0..., T3	●	●	–	●	–	●	–
T 5..., T5B	●	–	–	●	–	–	–
Motor-protective circuit-breakers[1]							
PKZM01	○	○	○	○	○	○	○
PKZM0..., PKZ2.../ZM...	●	●	●	●	●	●	●
PKZM4-...	○	○	○	○	○	○	○
Switch-disconnectors[1]							
P1, P3	●	●	–	●	–	–	●
NZM7	●	●	●	●	●	●	●
P7-...	●	●	●	●	●	●	●
P10-...	●	●	●	●	●	●	●
NZM10...N/B	●	●	●	●	●	●	●
Circuit-breakers[1]							
NZM7...N	●	●	●	●	●	●	●
NZM10-...N/ZM...	●	●	●	●	●	●	●
NZM14-...	–	●	–	–	–	–	–
NZM7...S	●	●	●	●	●	●	●
NZM10-...S/ZM...	●	●	●	●	●	●	●
NZM7...H	●	●	●	●	●	●	●
NZM10-...H/ZM...	●	●	●	●	●	●	●
Selectively-operating circuit-breakers[1]							
NZM10-.../ZMV	●	●	●	●	●	●	●
Circuit-breakers[1]							
IZMB(N)1(-4)-...-630	●	●	○	○	–	–	–
IZMB(N)1(-4)-...-800	●	●	○	○	–	–	–
IZMB(N)1(-4)-...-1000	●	●	○	○	–	–	–
IZMB(N)1(-4)-...-1250	●	●	○	○	–	–	–
IZMB(N)1(-4)-...-1600	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-800	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-1000	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-1250	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-1600	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-2000	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-2500	●	●	○	○	–	–	–
IZMB(N)(H)2(-4)-...-3200	●	●	○	○	–	–	–
IZMH3(-4)-...-4000	●	●	○	○	–	–	–
IZMH3(-4)-...-5000	●	●	○	○	–	–	–
IZMH3(-4)-...-6300	●	●	○	○	–	–	–
Switch-disconnectors[1]							
IN...	–	–	●	–	–	–	–
Miniature circuit-breakers[1]							
FAZ, B characteristic	○	○	○	○	●	–	–
FAZ, C characteristic	○	○	○	○	●	–	–
FAZ, D characteristic	○	○	○	○	●	–	–
FIM	○	–	–	–	–	–	–
CI distribution boards							
ID	–	●	–	–	–	–	–

Notes

● Approved or accepted
○ Approval applied for
– Not approved or accepted
Z Accepted without approval
N Approval or acceptance not required

[1] The approvals also cover the relevant product accessories.

Moeller HPL0211-2004/2005

	Classification body															
	GB Lloyd's Register of Shipping			D German Lloyd			N Det Norske Veritas		F Bureau Veritas		I Registro Italiano Navale		RUS Russian Maritime Register of Shipping		PL Polski Rejestr Statków	
	LR			**GL**			**DNV**[1]		**BV**		**RINA**		**RS**		**PRS**	
	Environment	Voltage	Uninterrupted current	Environment	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current
		V	A		V	A	V	A	V	A	V	A	V	A	V	A
Control circuit devices																
RMQ16	1, 2, 3			C												
Contact elements																
E10, E01	–	250	4	–	250	4	250	4	250	4	250	4	250	4	250	4
Indicator lights, illuminated pushbuttons, illuminated selector switch actuators																
Q18(25)L...		24	1 W	C	24	1 W	24	1 W	24	1 W	24	1 W	24	1 W	24	1 W
RMQ-Titan	1, 2, 3			C			Please enquire		Please enquire		Please enquire		Please enquire		Please enquire	
Contact elements																
M22-(C)K(C)...	–	500	6	–	500	6	500	6	500	6	500	6	500	6	500	6
LED elements																
M22-(C)LED...		24	0.26 W		24	0.26 W	24	0.26 W	24	0.26 W	24	0.26 W	24	0.26 W	24	0.26 W
		230	0.33 W		230	0.33 W	230	0.33 W	230	0.33 W	230	0.33 W	230	0.33 W	230	0.33 W
Position switches																
LS... AT0-...-1-ZB	–	–	–	C	500	10	–	–	–	–	–	–	–	–	–	–
AT4/11-1/I/V AT4/11-S/IA/F	–	–	–	A	500	10	–	–	–	–	–	–	–	–	–	–
Contactor relays																
DILA...	1,2,3	500	10	C	500	10	500	10	500	10	–	–	–	–	–	–
DILER...(-G)	1,2,3	600	10	C	500	10	500	10	500	10	600	10	500	10	500	10
DILR...(-G)	1,2,3	500	16	C	500	16	500	16	500	16	500	16	500	16	500	16
DILR...(-G)TP...	1,2,3	500	10	C	500	10	500	10	500	10	500	10	500	10	500	10
Timing and monitoring relays																
EMT6	–	–	–	A	400	3	–	–	–	–	–	–	–	–	–	–
EMR4	–	–	–	D	–	–	–	–	–	–	–	–	–	–	–	–
ETR4	–	–	–	A	440	–	–	–	–	–	–	–	–	–	–	–

Notes [1] For installations inside switchboards/enclosures onboard ships and offshore units

	Classification body															
	GB Lloyd's Register of Shipping			D German Lloyd			N Det Norske Veritas		F Bureau Veritas		I Registro Italiano Navale		RUS Russian Maritime Register of Shipping		PL Polski Rejestr Statków	
	LR			GL			DNV[1]		BV		RINA		RS		PRS	
	Environment	Voltage	Uninterrupted current	Environment	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current
		V	A		V	A	V	A	V	A	V	A	V	A	V	A
Contactors																
DILM7-12	1,2,3	690	20	C	690	20	690	20	690	20	–	–	–	–	–	–
DILM17	1,2,3	690	35	C	690	35	690	35	690	35	–	–	–	–	–	–
DILM25, 32	1,2,3	690	40	C	690	40	690	40	690	40	–	–	–	–	–	–
DILM40	1,2,3	690	50	C	690	50	690	50	690	50	–	–	–	–	–	–
DILM50	1,2,3	690	60	C	690	60	690	60	690	60	–	–	–	–	–	–
DILM65	1,2,3	690	72	C	690	72	690	72	690	72	–	–	–	–	–	–
DILEEM...(-G)	1,2,3	690	20	C	690	20	690	20	690	20	690	20	690	20	690	16
DILEM...(-G)	1,2,3	690	20	C	690	20	690	20	690	20	690	20	690	20	690	16
DIL00M(A)(-G)(/...)	1,2,3	690	20	C	690	20	690	20	690	20	690	20	690	20	690	20
DIL00M4(-G)	1,2,3	690	20	C	690	20	690	20	690	20	690	20	690	20	690	20
DIL0(A)M(-G)(/...)	1,2,3	690	35	C	690	35	690	35	690	35	690	35	690	35	690	35
DIL1(A)M(-G)(/...)	1,2,3	690	55	C	690	55	690	55	690	55	690	55	690	55	690	55
DIL2(A)M(-G)(/...)	1,2,3	690	90	C	690	90	690	90	690	90	690	90	690	90	690	90
DILM185	1,2,3	1000	225	C	1000	225	1000	225	1000	225	1000	225	1000	225	1000	225
DILM225	1,2,3	1000	250	C	1000	250	1000	250	1000	250	1000	250	1000	250	1000	250
DILM250	1,2,3	1000	300	C	1000	300	1000	300	1000	300	1000	300	1000	300	1000	300
DILM300	1,2,3	1000	350	C	1000	350	1000	350	1000	350	1000	350	1000	350	1000	350
DILM400	1,2,3	1000	450	C	1000	450	1000	450	1000	450	1000	450	1000	450	1000	450
DILM500	1,2,3	1000	550	C	1000	550	1000	550	1000	550	1000	550	1000	550	1000	550
Overload relays																
ZB12	1,2	690	12	A	690	12	690	12	690	12	–	–	–	–	–	–
ZB32	1,2	690	32	A	690	32	690	32	690	32	–	–	–	–	–	–
ZB65	1,2	690	65	A	690	65	690	65	690	65	–	–	–	–	–	–
ZE-...	1,2	690	9	A	690	9	690	9	690	9	690	9	690	9	690	9
Z00-...	1,2	690	24	A	690	24	690	24	–	–	–	–	690	24	690	24
Z1-...	1,2	690	75	A	690	75	690	75	–	–	–	–	690	75	690	75
Z5-...	–	–	–	A	–	–	1000	220	–	–	–	–	–	–	–	–
ZW7-...	–	–	–	A	750	630	–	–	–	–	–	–	690	630	690	630
T rotary switches, with disconnect function																
T0-...	1,2,3	690	20	A	660	20	–	–	690	20	–	–	660	20	–	–
T3-...	1,2,3	690	32	A	660	32	–	–	690	32	–	–	660	32	–	–
T5-...	–	–	–	–	–	–	–	–	690	100	–	–	–	–	–	–
P switch-disconnectors (miscellaneous switches) with disconnect function																
P1-...	1,2,3,4	690	32	C	690	32	–	–	690	32	–	–	–	–	690	32
P3-...	1,2,3,4	690	100	C	690	100	–	–	690	100	–	–	–	–	690	100
Motor-protective circuit-breakers																
PKZM01	1,2,3	690	12	A	690	12	690	12	690	12	–	–	–	–	–	–
PKZM0...	1,2,3	690	25	A	690	25	690	25	690	25	690	25	690	25	690	25
PKZM0-...S(E)00...	1,2,3	690	10	A	690	10	690	10	690	10	690	10	690	10	690	10
PKZ 2...	1,2	690	40	A	690	40	660	40	690	40	690	40	690	40	690	40
PKZM4-...	1,2,3	690	63	A	690	63	690	63	690	63	690	63	690	63	690	63

Notes [1] For installations inside switchboards/enclosures onboard ships and offshore units

Moeller HPL0211-2004/2005

	Classification body															
	GB Lloyd's Register of Shipping			D German Lloyd			N Det Norske Veritas		F Bureau Veritas		I Registro Italiano Navale		RUS Russian Maritime Register of Shipping		PL Polski Rejestr Statków	
	LR			**GL**			**DNV**[1]		**BV**		**RINA**		**RS**		**PRS**	
	Environment	Voltage	Uninterrupted current	Environment	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current	Voltage	Uninterrupted current
		V	A		V	A	V	A	V	A	V	A	V	A	V	A
NZM circuit-breakers																
NZM7-...N	1,2,3	690	230[2]	A	690	250	690	250	690	250	690	250	690	250	690	250
NZM10-.../ZM...	1,2,3	690	604[3]	A	690	630	690	630	690	630	690	630	690	630	690	630
Current-limiting NZM circuit-breakers																
NZM7-...S	1,2,3	690	230[2]	A	690	250	690	250	690	250	690	250	690	250	690	250
NZM10-..S/ZM...	1,2,3	690	604[3]	A	690	630	690	630	690	630	690	630	690	630	690	630
NZM7-...H	1,2,3	690	230[2]	A	690	250	690	250	690	250	690	250	690	250	690	250
NZM10-...H/ZM...	1,2,3	690	604[3]	A	690	630	690	630	690	630	690	630	690	630	690	630
NZM selectively-operating circuit-breakers																
NZM10-.../ZMV...	1,2	690	604[3]	A	690	630	690	630	690	630	690	630	690	630	690	630
N, NZM, P switch-disconnectors																
NZM7/P7	1,2,3	690	230[2]	A	690	250	690	250	690	250	690	250	690	250	690	250
P10	1,2,3	660	604[3]	A	690	630	690	630	–	–	690	630	690	630	690	630
NZM10...N/B	1,2,3	690	604[3]	A	690	630	690	630	–	–	690	630	690	630	690	630
IN	–	–	–	–	–	–	690	6300	–	–	–	–	–	–	–	–
IZM circuit-breakers																
IZM32(4)...-800		–	–	A	690	800	–	–	690	800	–	–	–	–	–	–
IZM32(4)...-1000		–	–	A	690	1000	–	–	690	1000	–	–	–	–	–	–
IZM32(4)...-1250		–	–	A	690	1250	–	–	690	1250	–	–	–	–	–	–
IZM32(4)...-1600		–	–	A	690	1600	–	–	690	1600	–	–	–	–	–	–
IZM32(4)...-2000		–	–	A	690	2000	–	–	690	2000	–	–	–	–	–	–
IZM32(4)...-2500		–	–	A	690	2500	–	–	690	2500	–	–	–	–	–	–
IZM32(4)...-3200		–	–	A	690	3200	–	–	690	3200	–	–	–	–	–	–
IZM32(4)...-4000		–	–	A	690	4000	–	–	690	4000	–	–	–	–	–	–
IZM32(4)...-5000		–	–	A	690	5000	–	–	690	5000	–	–	–	–	–	–
IZM32(4)...-6300/AF		–	–	A	690	5700	–	–	690	6300	–	–	–	–	–	–
Miniature circuit-breaker																
FAZ, B, C, D characteristic	1,2,3	440	63	C	440	63	440	63	440	63	400	63	–	–	–	–

Notes

[1] For installations inside switchboards/enclosures onboard ships and offshore units
[2] 230 A at 50 °C ambient temperature
[3] 604 A at 45 °C ambient temperature

In the USA, the legally established OSHA (Occupational Safety and Health Act) and the NEC (National Electrical Code) require the use of approved devices and systems.

In Canada, all electrical apparatus must comply with the CEC (Canadian Electrical Code), which requires that all equipment and installations have CSA approval.

In view of these requirements, and because US and Canadian standards deviate widely from those of other industrial countries and the IEC, Moeller has, until recently, modified product series to bring them in line with North American standards.

New developments are designed as "devices for world markets" from the outset, which means that they meet all requirements – including those of the USA and Canada – without the need for any additional equipment or modifications.

In addition to the normal UL and CSA approvals, the trade regulations originating from the NAFTA agreements allow the application for a joint UL and CSA approval. The devices then carry a logo that is recognized in both countries.
Because market acceptance of the joint approval is still quite low, Moeller has not made use of this facility until now: Some local inspectors and end users still refuse to accept the joint listing.
This section of the Catalogue contains two group of switching devices for North America:

1) Devices for world markets with the following main characteristics:

They have all required approvals including the UL and CSA approval (UL = Underwriters Laboratories, CSA = Canadian Standards Association) and can be used throughout the world.

They have ratings plates with all important data for worldwide use as well as their use in the USA and in Canada.
For unrestricted sale in European Union member states, the devices contain the CE mark.

2) Devices for North America with the following main characteristics:

- They are UL- and/or CSA-approved and can be used in the USA, in Canada and in any country in which UL- and CSA-approval or conformance with North American standards are required.
- They have ratings plates containing all important data for use in the USA and in Canada.
- Except for occasional differences in their design detail required for approval, they are largely identical with the normal devices of the same series.
- Approvals for the USA and for Canada are indicated by a suffix in the device's type designation. The type of approval for a device is indicated on the ratings plates by the following type suffixes and approval marks:
- As a rule, devices for North America also carry IEC or CE-..., for example NZM...-NA circuit-breakers.

Type suffix	Type of approval	Approval mark
-NA	The device is UL- and CSA-approved as discrete device.	
FORM CDN	The device is CSA-approved as discrete device.	
FORM USA	The device is UL-approved as discrete device.	
-CNA	The device contains UL-approved components; its approval conditions must be maintained in use. The device is CSA-approved as discrete device.	

Device types in North America

In Canada and the USA, a distinction is made between distribution equipment and industrial control equipment:

Distribution equipment

This includes, for example
- Circuit-breakers
- Disconnectors
- Switch-disconnectors
- Fuses
- Fused interrupters

These devices are of a rugged design and have larger insulating clearances than other switching devices (for 301 – 600 V: 1 inch = 25.4 mm clearance and 2 inches = 50.8 mm creepage distance).
In power distribution switchgear (switchgear, switchboards, panelboards), only these devices must be used for power supply and tap-off. In addition, they are also used as main switches or circuit-breakers in motor and other load circuits in industrial control.

Testing of these devices is especially stringent, with running production being subject to regular checks by test authority inspectors. The type tests for circuit-breakers with UL- and CSA-approval are among the world's strictest tests.

Circuit-breakers from Moeller have passed all of these tests.

Industrial control equipment

This includes, for example
- Contactors
- Contactor relays
- Overload relays
- Motor-protective circuit-breakers
- Rotary switches
- Control circuit devices
- Electronic devices and systems
- User-programmable controllers

These devices have smaller physical dimensions and the insulating clearances are not as great as those of the devices for power distribution. Running production is also monitored by test authority inspectors, but the inspection requirements are not as extensive as those for circuit-breakers.

This industrial control equipment is used mainly in electrical controllers, motor circuits and consumer circuits of all types, in motor control centres (MCC) and in power distribution systems. In controllers, they can be combined directly with devices for power distribution, for example with circuit-breakers as main switches or in a motor feeder.

Performance data for industrial control equipment

Similar to the "utilization categories for low-voltage switchgear" of the IEC and other national standards, "duty types" for the various types of switched loads have been defined for industrial control equipment in Canada and the USA. The type of load for each duty type is indicated on the device's ratings plate or in its technical specifications and defines is application purpose. The table below provides an overview of this assignment.

Duty type

	Load type indicated on the ratings plate
1) Motors	Horsepower (HP)
2) Coils (in auxiliary and control circuits)	Code Designation, Voltampere, Standard Pilot Duty or Heavy Pilot Duty
3) Resistance (heating)	Amperes, resistance only
4) Incandescent lamps	Amperes or Watts, tungsten
5) Ballast (electric discharge lamps)	Amperes, ballast
6) General Use[1)]	Amperes (A)

[1)] The "General Use" group corresponds with IEC Category AC-1.

Contactors

In North America, these devices are industrial control equipment according to UL 508 and CSA-C 22-2 No. 14). For the North American market, contactors must have so-called "NEMA-sizes", unless they are used for switching motors, for which orders will specify ratings in HP.

NEMA=National Electrical Manufacturers Association (USA).

This part of the Main Catalogue lists the contactors with the HP ratings approved for North America.

The table on → Page 19/17 provides an overview of the NEMA sizes in relation to the HP ratings and continuous currents.

"Contactor and overcurrent relay" combinations ("non-combination motor starters")

First of all, it is important to know that when North American customers speak of "non-combination motor starters" they mean what in Europe is referred to as a "contactor and overcurrent relay" and will give the same ordering information as for contactors. Complete contactor and overcurrent relay combinations can be assembled as per → Page 19/26.

Motor starters ("Combination motor starters")

Motor starters, which in Europe combine all devices for short-circuit protection, overload protection and operational switching of the motor (such as circuit-breaker, contactor and overcurrent relay), are termed "combination motor starter" in North America. This type of motor starter must be configured like a small control system complete with all relevant individual devices. Contactor and overcurrent relay are selected as previously described.

Motor starters without additional short-circuit protection
Type E starters

According to UL 508 and CSA C 22.2 No.14, approved motor starters must be short-circuit-protected with UL- or CSA-approved circuit-breakers or fuses. This short-circuit protection is fitted separately.

According to a supplement to UL 508, motor starters can now also be tested as "combination motor controller type E" for which an additional short-circuit protection is not required (self-protected starter). This test is also accepted by CSA.

All components for a complete motor starter, including full short-circuit protection, are contained in a single device. This reduces the required space and eliminates the wiring between the components. These devices are used in motor control centres (MCC), in controllers and as discrete starters in separate enclosures. Up to the specified switching capacity, these devices do not need additional short-circuit protection.

In the PKZ2 system, these devices are available with type designation PKZ2/ZM-../S-SP.

Manual type E starters

In addition, the "type E combination motor controllers" comprise the "manual self-protected starters", which require larger clearances and creepage distances according to UL 508 or CSA-C 22.2 No. 5.2 if no upstream short-circuit protective devices are to be used. These devices are suitable for manual switching of motors.
The "manual self-protected starters" are implemented with a PKZM0 or PKZM4 with an additional, special BK25/3-PKZ0-E or BK50/3-PKZ4-E incoming terminal. On the PKZM4, the HB-PKZ4 terminal shroud can be used instead of the incoming terminal. For use in Canada, these devices must also be lockable, meaning that starters must be fitted with the AK-PKZ0 rotary handle.
→ Page 19/33

Type F starters

From the combination of a "manual type E starter" with a contactor, you can build "type F combination motor controllers". These, too do not need an additional short-circuit protection device.

Type F starters can be combined and used as per → Page 19/34.

PKZM motor-protective circuit-breakers

In North America, these devices are industrial control equipment to UL 508 and CSA-C 22.2 No. 14) and are used as manually operated motor starters in controllers or separately as discrete devices. They are rated in HP and – if they are equipped with auxiliary contacts – they contain duty type information (pilot duties, → Page 19/17). The devices have fixed or adjustable magnetic short-circuit releases for short-circuit protection and adjustable overload relays for motor overload protection. They can be used for switching motor circuits, and their auxiliary contacts for switching control circuits.

In combination with a downstream contactor, they become a "motor starter combination", in which the contactor, acting as "motor controller" switches and regulates the motor current and the PKZM provides protection. Although PKZM motor-protective circuit-breakers have an inherent short-circuit withstand capability, they must, according to North American standards, always be operated with an upstream short-circuit protection device. With most devices, the specified short-circuit protection device can also be used for protecting a group of PKZMs. This property is referred to as "group-protection" in North America. Some devices can be used only for individual protection.

NZM motor-protective circuit-breakers

In North America, these devices are industrial control equipment to UL 508 and CSA-C 22.2 No. 14) and are used mainly in controllers and motor control centres (MCC). They are rated in HP, their short-circuit strength is given in kA and – if they are equipped with auxiliary contacts – contain duty type information (pilot duties, → Page 19/17).

The devices have adjustable magnetic short-circuit releases for short-circuit protection and adjustable overload relays for motor overload protection. They can be used for switching motor circuits, and their auxiliary contacts for switching control circuits.

In combination with a downstream contactor, they become a "motor starter combination", in which the contactor, acting as "motor controller" switches and regulates the motor current and the NZM provides protection.

NZM motor-protective circuit-breakers can be used in motor circuits up to the specified short-circuit rating, whereby the inclusion of a short-circuit protective device in the main incoming supply (for example a motor control centre) is assumed.

NZM...OBI circuit-breakers

In North America, these devices are circuit-breakers (molded case circuit breakers according to UL 489 or service entrance branch circuit breakers according to CSA-C 22.2 No.5.1) and are used mainly in motor control centres (MCC), controllers and enclosed discrete equipment. They are rated in A and – if they are equipped with auxiliary contacts – contain duty type information (pilot duties, → Page 19/17).

The devices have adjustable magnetic short-circuit releases for short-circuit protection. They can be used for switching motor circuits and other main circuits, and their auxiliary contacts for switching control circuits.

NZM...OBI circuit-breakers are not used as discrete devices; they are always combined to a "combination motor starter" with a downstream contactor and overload relay, in which the contactor performs operational switching and regulation of the motor current, the overload relay acts as overload protective device and the motor-protective circuit-breaker acting as short-circuit protection device. This combination allows a separate indication of trips caused by overload and by short-circuits through the auxiliary contact of the overload relay and the motor-protective circuit-breaker. In North America, combinations of this type are used in motor control centres (MCC) and as discrete starters in separate enclosures.

At locations with short-circuit currents up to the switching capacity specified for the complete "combination motor starter", they can be used without upstream short-circuit protection device.

In motor starter outputs, they can be used as main switches.

NZM...A circuit-breakers

These devices are circuit-breakers (molded case circuit breakers according to UL 489, service entrance branch circuit breakers according to CSA-C 22.2 No. 5.1) in North America, where they are the normal switches for power distribution systems, but can also be used in motor control centres (MCC) and controllers. They are rated in A, their short-circuit switching capacity is given in kA and – if they are equipped with auxiliary contacts – contain duty type information (pilot duties, → Page 19/17).

These devices have adjustable magnetic short-circuit releases for short-circuit protection and fixed-current or adjustable overload relays for overload protection for non-motor-driven outgoing circuits. They can be used as short-circuit protection devices and for switching motor circuits, and their auxiliary contacts for switching control circuits. At mounting locations with short-circuit currents up to their switching capacity, they can be used without upstream short-circuit protection device.
In main current outgoing and incoming lines, they can be used as main switches.

T rotary switches, P 1 and P 3 switch-disconnectors

In North America, these devices are industrial control equipment to UL 508 and CSA-C 22.2 No. 14) and are used mainly in controllers and as discrete devices in motor circuits. They are rated in HP, their rated current is given in A and – if they are equipped with auxiliary contacts – they contain duty type information (pilot duties, → Page 19/17).

The devices can be used for switching motor circuits and other main circuits, and their auxiliary contacts for switching control circuits.

P 1 and P 3 can be used as main switches in motor circuits and in controllers. The required line fuses are detailed on the devices' ratings plates.

N switch-disconnectors

In North America, these devices are industrial control equipment to UL 508 and CSA-C 22.2 No. 14) and are used mainly in controllers and motor control centres (MCC). They are rated in HP, their rated current is given in A and – if they are equipped with auxiliary contacts – they contain duty type information (pilot duties, → Page 19/17).

The devices can be used for switching motor circuits and other main circuits, and their auxiliary contacts for switching control circuits.

N switch-disconnectors require an upstream short-circuit protection device.

In main current outgoing and incoming lines, both devices can be used as main switches.

Fuse bases and fuses

1) Avoid the use of fuses by using fuseless devices, such as motor-protective circuit-breakers, observing the selection criteria (→ Page 19/18). The reasons for this are as follows:
   a) Fuse bases for North American fuses are very large and take up a lot of space.
   b) NZM circuit-breakers provide current isolation, short-circuit protection and overload protection in a single device and are much less expensive and smaller than a combination of fuse base, fuses and overload relay.
   c) In the USA and in Canada, many different fuse systems are in use. For non-American vendors, it may be almost impossible to find out the fuse system used by the end customer (who may not be known at all to the vendor).
   d) The plant or machine becomes independent of the locally used fuse system.

2) Because no replacement fuses are needed, spare parts management is simplified. If the use of fuses is unavoidable, we recommend that you observe the following points:
   a) North American fuses are classified according to physical size, switching capacity and current–time characteristics. The table on → Page 19/19 (Enclosure protection types...) provides a rough overview. It is best, however, to always ask the end customer about the required fuse types.
   b) Motor circuits:
   Where slow fuses ("dual element time delay fuses" or "time delay fuses") are used:
   Rated current of max. line fuse ≦ 1.75 × rated motor current, or next-higher fuse rated current (max. 2.25 × rated motor current).
   Where fast fuses ("non-time delay fuses") are used:
   Rated current of max. line fuse
   ≦ 3 × rated motor current or next-higher rated fuse current (max. 4 × rated motor current).
   c) Circuits with non-motor loads: Select the line fuse specified by the manufacturer.
   d) Switchgear:
   For switchgear requiring line fuses for their own short-circuit protection, select fuses according to the information in the device's technical data or on the ratings plate. For short-circuit protection of the combination of Moeller contactor and overcurrent relay, see → Page 19/26 for the max. line fuses.

To ensure both trouble-free motor starting and short-circuit protection of all devices within a circuit, select the smallest fuse required according to criteria 2b), 2c) and 2d).

FAZ Supplementary protectors

In North America, these devices are industrial control equipment and protectors (supplementary protectors according to UL 1077 and CSA-C22.2 No. 235). They are used mainly in controllers. They can also be used as additional protective device in electrical devices whose incomer is already short-circuit protected or does not need short-circuit protection.

These devices' rated current is given in A. They have non-adjustable magnetic short-circuit releases for short-circuit protection and fixed-current or adjustable overload relays for overload protection for non-motor-driven outgoing circuits.

They can be used as overload and short-circuit protection devices in single-phase control circuits with or without additional neutral pole. They must in addition be fitted with an upstream short-circuit protection device as per device specifications (technical data → Page 19/61).

FAZ supplementary protectors are especially well suited for fuseless protection of control circuits on the secondary side of transformers whose primary side is already short-circuit protected or does not need short-circuit protection.

Auxiliary contacts, voltage releases

For the practice common in Europe of making it possible for customers to retrofit devices with auxiliary contacts, undervoltage releases, shunt releases and other accessories, the corresponding UL and CSA approvals can now be issued.
The modular method makes it possible to extend the range of applications of contactors, circuit-breakers, the PKZ2 system and control circuit devices by fitting add-on modules. For detailed information, see the device data.

Continuous currents and switching duties for auxiliary switches according to the tables for auxiliary switches on → Page 19/17 are assigned to the code designations and switching duty types indicated in the devices' technical specifications and on their ratings plates. The auxiliary contacts of Moeller devices approved mainly for "heavy pilot duty", and on some devices for "standard pilot duty". For detailed information, see the technical data for the devices. The ratings plate for some auxiliary switches contains information such as "600 V, same polarity". This means that adjacent auxiliary contacts of the same auxiliary switch or switch block must be connected only to the same control voltage source.

Enclosures

Requirements:
1) In North America, enclosures are often classified and ordered by NEMA type, and in Canada by EEMAC type, even though the binding design, ingress protection, etc. requirements of enclosures are today contained in NEC NFPA 70, UL 508 and UL 50 for the USA, and in CSA-22.2 No.14 and CSA-C 22.2 No. 94 for Canada.
2) The enclosures used by Moeller are accepted for use in North America, since they are UL- and CSA-approved and meet the most important NEMA requirements regarding contact protection, corrosion protection and ingress protection against solids and liquids.
3) To some extent, the requirement for NEMA types also covers design details, such as hinged doors or covers that can be opened and locks only with a tool, external fixing strips for wall-mounting enclosures, etc. To fulfill the NEMA requirement, consult Moeller about the intended application.
4) Degrees of protection:
   The IEC standards define the ingress protection of enclosures against solids and water. The comparable standards in Canada and the USA go further, also covering protection against ingress of oil and coolant, and corrosion protection of the enclosure; they also define its place of installation. The table on → Page 19/19 provides an overview of the requirements in Canada and the USA and a comparison with the IP ratings.
5) Sheet steel enclosures:
   Sheet steel enclosures can be used for all types of controllers. In North America, cables are still laid mainly in metal conduits that act as continuous earth conductor at the same time. They are connected to the enclosure flanges with suitable metal screwed glands, while flanged enclosures ensure continuous conductivity between incoming and outgoing conduits. All enclosures used must therefore contain metal flanges, and are included in the protective earthing. Sheet steel enclosures with metal flanges are also suitable for connecting plastic conduits and cables, which are connected with commercial glands. In this configuration, an earth conductor routed with the cabling provides the protective earthing. The metal flanges can be taken off for drilling the holes for the glands.

   Insulated enclosures:
   The CI enclosures fulfill the North American statutory design and ingress protection requirements (laid out by UL 508 and NEMA 250 for the USA, in CSA 22.2 No.14 for Canada), and are therefore suitable for the assembly of motor starters and miniature and small control systems for plants and machines. Their absolute corrosion resistance makes them ideal for use in humid or corrosive environments. The enclosures are suitable for the connection of both metal conduits and plastic conduits and cables, which are connected with commercial screwed glands. Because "total insulation" is usually not recognized for insulated enclosures in the USA and Canada, protective earthing must be implemented when these conduits and cables are connected to them. The earth conductor must be routed through the enclosures as described in the attached installation instructions.
   The CI-...-NA enclosures are approved both with and without insulated flanges. For a full selection of UL/CSA-approved CI enclosure types, contact your regional Moeller sales office. The table on → Page 19/19 provides an overview of ingress protection to NEC (National Electrical Code), UL, NEMA and CSA.

Moeller HPL0211-2004/2005

	Code Designation[1]	Conventional free air thermal current I_{th}	Max. switching duty									
			120 V AC		240 V AC		480 V AC		600 V AC		≦ 600 V AC	
			On	Off	On	Off	On	Off	On	Off	On	Off
		A	A	A	A	A	A	A	A	A	VA	VA
Auxiliary switches in AC control circuits												
Heavy pilot duty[2]	A150	10	60	6	–	–	–	–	–	–	7200	720
	A300	10	60	6	30	3	–	–	–	–	7200	720
	A600	10	60	6	30	3	15	1.5	12	1.2	7200	720
Standard pilot duty[3]	B 150	5	30	3	–	–	–	–	–	–	3600	360
	B 300	5	30	3	15	1.5	–	–	–	–	3600	360
	B 600	5	30	3	15	1.5	7.5	0.75	6	0.6	3600	360
	E150	0.5	1.8	0.3	–	–	–	–	–	–	216	36

	Code Designation[1]	Conventional free air thermal current I_{th}	Max. switching duty			
			125V DC On/Off	250V DC On/Off	310 ≦ 600 V DC On/Off	< 600 V DC On/Off
		A	A	A	A	VA
Auxiliary switches in DC circuits						
Heavy pilot duty[2]	N 150	10	2.2	–	–	275
	N 300	10	2.2	1.1	–	275
	N 600	10	2.2	1.1	0.4	275
Standard pilot duty[3]	P 150	1.1	–	–	138	–
	P 300	5	1.1	0.55	–	138
	P 600	5	1.1	0.55	0.2	138
–	Q 150	2.5	0.55	–	–	69
	Q 300	2.5	0.55	0.27	–	69
	Q 600	2.5	0.55	0.27	0.1	69
–	R 150	1	0.22	–	–	28
	R 300	1	0.22	0.11	–	28

	Continuous current	Ratings data[4]			
		200 V/60 Hz	230 V/60 Hz	460 V/60 Hz 575 V/60 Hz	Highest permissible short-time current
	A	HP	HP	HP	A
Three-phase contactors to NEMA					
00	9	1½	1½	2	11
0	18	3	3	5	21
1	27	7½	7½	10	32
2	45	10	15	25	52
3	90	25	30	50	104
4	135	40	50	100	156
5	270	75	100	200	311
6	540	150	200	400	621
7	810	–	300	600	932
8	1215	–	450	900	1400
9	2250	–	800	1600	2590

Notes

1) The values 150, 300 and 600 indicate die maximum voltage for which an auxiliary switch can be used.

2) "Heavy Pilot Duty" = high switching capacity

3) "Standard Pilot Duty" = normal switching capacity

4) Rating data for 3-phase contactors, for single-speed motors, without inching, reversing or plugging.
PS = HP

Type[1]	Construction[1] in USA	Construction[1] in Canada	Tripping characteristic[1]	Switching capacity kA_{rms}	Applications[1]	For use in	
H		–	Fast	10	Primarily domestic	USA, Canada	Types H, K and No. 59 "Code" fit the same bases and are therefore interchangeable. In the USA, the K types are therefore being increasingly replaced by the RK types. Rated current: 1 – 600 A
		No. 59 "Code"	Fast	10	Primarily domestic	Canada, USA	
K	K1/K5	–	Fast	100 – 200	Protection of circuits for heating, lighting and feeders and outgoers for mixed loads.	USA	
		–	Slow	100 – 200	Protection of circuits for motors, transformers, heating and lighting.	USA	
J		–	Fast	200	See item 2 above	USA, Canada	Compact design. Types J and HRCI-J fit the same bases, all other fuse types do not fit into these bases. Rated current: 1 – 600 A
		–	Slow	200	See item 3 above	USA, Canada	
		HRCI-J	Fast	200	See item 2 above	USA, Canada	
			Slow	200	See item 3 above	USA, Canada	
RK	RK1/RK5	–	Fast	100 – 200	See item 2 above	USA, Canada	Types RK1, RK5 and HRCI-R fit the same bases, all other fuse types do not fit into these bases. Rated current: 1 – 600 A
		–	Slow	100 – 200	See item 3 above	USA, Canada	
		HRCI-R	Fast	100 – 200	See item 2 above	Canada, USA	
			Slow	100 – 200	See item 3 above	Canada, USA	
		HRCII-R	Slow – fast	100 – 200	5. Protection of motor circuits	Canada	All other fuse types do not fit into bases for HRCII-R.
CC(CD)		–	Fast	200	See item 2 above	USA, Canada	Very compact design; all other fuse types do not fit into these bases. Rated current: CC 1 – 30 A CD 31 – 60 A
			Slow	200	See item 3 above	USA, Canada	
L		–	Fast	200	See item 2 above	USA, Canada	"Code" fuses for higher ratings Rated current: 601 – 6000 A
			Slow	200	See item 3 above	USA, Canada	

Notes

[1] The tripping characteristics data and the assigned applications are a rough overview only. In practice, it is always advisable to find out both this information and the required fuse type from the North American end customer.

Moeller HPL0211-2004/2005

Enclosures Enclosure and ingress protection marking to NEC NFPA 70[1] NEMA No. 250–1997, Appendix A[2] UL 50 CSA-C 22.2 No. 94	Installation site	Type of protection	Comparable IP rating[3]
Type 1 General use	Indoor installation	Protection against accidental contact with live parts and against a limited amount of falling dirt.	IP 20
Type 2 Drip-tight	Indoor installation	Protection against limited amounts of falling water and dirt	IP 22
Type 3 Dust-tight, rain-tight, resistant to hail and ice	Outdoor installation	Protection against wind-blown dust and wind-blown rain; undamaged by formation of ice on the enclosure	IP 54
Type 3R Rain-tight, resistant to hail and ice, dust-tight	Outdoor installation	Protection against falling rain; undamaged by formation of ice on the enclosure	IP 14
Type 3S Dust-tight, rain-tight, resistant to hail and ice	Outdoor installation	Protection against hail wind-blown dust and wind-blown rain; External mechanisms remain operable while ice laden.	IP 54
Type 4 Dust-tight, water-tight, rain-tight	Indoor or outdoor installation	Protection against falling rain, splashing water and hosed water; undamaged by formation of ice on the enclosure	IP 56
Type 4X Dust-tight, water-tight, corrosion-resistant, rain-tight	Indoor or outdoor installation	Protection against falling rain, splashing water and hosed water; undamaged by formation of ice on the enclosure, corrosion protection	IP 56
Type 6 Rain-tight, water-tight, immersible, resistant to hail and ice	Indoor or outdoor installation	Protection against dust and hosed water; protection against entry of water during temporary limited submersion; undamaged by formation of ice on the enclosure	IP 67
Type 6P Rain-tight, water-tight, submersible, corrosion-resistant	Indoor or outdoor installation	Protection against entry of water during prolonged submersion at limited depths; corrosion-resistant	IP 67
Type 5 Drip-tight, dust-tight, corrosion-resistant	Indoor installation	Protection against limited amounts of falling water and dirt; corrosion-resistant	IP 52
Type 12 For use in industry, drip-tight, dust-tight	Indoor installation	Protection against dust and dripping water	IP 52
Type 12K[4] As Type 12	Indoor installation	As Type 12	IP 52
Type 13 Dust-tight, oil-tight	Indoor installation	Protection against entry of dust, splashing water, oil and non-corrosive fluids.	IP 54

Notes

1) NEC = National Electrical Code
2) NEMA = National Electrical Manufacturers Association
3) The IP rating provided as an approximate comparison. A more accurate comparison is not possible, since different ingress protection tests and assessment criteria apply. The NEMA types cover the corresponding IP ratings but not the other way round. In general, NEMA/UL enclosure protection testing is subject to stricter criteria.
4) For enclosures with knockouts.

Rating data for approved types[1]	Function	Power supply		Inputs	Outputs	Quantity
		External	Bus side	Rated values	Rated values	Digital
Display and operator units					–	
MI4[2]						
MI4-110-KC1	Text Operator Panel	24 V DC	–	–	–	–
MI4-117-KC1[4]	Text Operator Panel	24 V DC	–	–	–	–
MI4-117-KD1[4]	Text operator panel	24 V DC	–	–	–	–
MI4-110-KD1	Text operator panel	24 V DC	–	–	–	–
MI4-110-KG1	Text operator panel	24 V DC	–	–	–	–
MI4-110-KG2	Text operator panel	24 V DC	–	–	–	–
MI4-140-KF1	Text operator panel	24 V DC	–	–	–	–
MI4-140-KI1	Text operator panel	24 V DC	–	–	–	–
MI4-150-KI1	Graphics operator panel	24 V DC	–	–	–	–
MI4-130-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-137-TA1[4]	Touch operator panel	24 V DC	–	–	–	–
MI4-140-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-150-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-160-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-450-KI1	Graphics operator panel	24 V DC	–	–	–	–
MI4-450-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-550-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-570-KH1	Graphics operator panel	24 V DC	–	–	–	–
MI4-570-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-580-TA1	Touch operator panel	24 V DC	–	–	–	–
MI4-590-TA1	Touch operator panel	24 V DC	–	–	–	–
MV4[3]						
MV4-150-TA1	Touch operator panel	24 V DC	–	–	–	–
MV4-450-TA1	Touch operator panel	24 V DC	–	–	–	–
MV4-170-TA1	Touch operator panel	24 V DC	–	–	–	–

General technical data

Maximum operating temperature	50 °C (max. 45 °C: MI4-150/160/450/550/570/580/590-TA1)
Terminal cross-section	2 × 1.5 mm²

Notes

[1] Devices for world markets: IEC ≙ UL/CSA
[2] cULus approval
[3] Approval for UR only
[4] cULus approval applied for

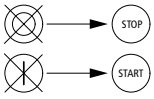
UL-File No. 29184	Pilot Duty	General Use	Terminal capacity
Rating data for UL/CSA-approved types[1]			
RMQ16 contact elements			
E10	C 300, Q 300		Cu cable min. AWG 18, max. AWG 14
E01	C 300, R 300		
RMQ-Titan contact elements			
M22-K... M22-CK...	A 600, Q 300, > 300 V AC same polarity	10 A – 600 V AC 1 A – 250 V DC	2 × 14 – 18 AWG 2 × 12 – 22 AWG
RMQ-Titan LED elements			
M22-LED... M22-CLED...			2 × 14 – 18 AWG 2 × 12 – 22 AWG
M22-LC(H) M22-AMC			2 × 16 – 20 AWG 2 × 16 – 20 AWG

		UL 508 requirements UL 4X	**NEMA recommendation** NEMA 13
Degrees of protection, RMQ-Titan			
All front elements	M22(S)-...	●	●
Legend plates	M22S-ST...	●	●
Emergency-Stop labels	M22-XAK...	●	●
	M22-XZK...	●	●
	M22-XBK...	●	●
	M22-XYK...	●	●
Foot and palm switches	FAK-...	●	●
Signal towers	SL-...	●	–

Notes

[1] Devices for world markets:
IEC ≙ UL/CSA

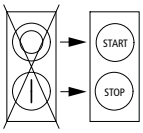
- For North America, the following order in flush mounting plates and surface mounting enclosures:

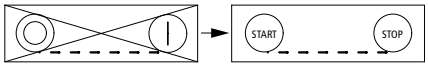


≙ e.g. M22-D-X + M22-XD-R-GB0

≙ e.g. M22-D-X + M22-XD-G-GB1

and





- For details about degrees of protection, see → Page 19/19

UL-File No. E29184	Pilot Duty	General Use	
Rating data for UL/CSA-approved types [1]			
Position switches			
LS...	A 300, Q 300		When using a metal gland (e.g. V1/2″-M20-NA), this must be earthed (not total insulation)
AT4/.../I	A 300, Q 300	10 A – 600 V AC 1 A – 250 V DC	When using a metal gland (e.g. V1/2″-M20-NA), this must be earthed (not total insulation)
Safety interlocks			
AT0-ZBZ	A 300, Q 300	10 A – 300 V AC	

	UL-approved degrees of protection		
	NEMA 4	NEMA 12	NEMA 13
Position switches			
Position switches			
LS...	●	●	●
Safety position switches			
AT0-...-...-ZB		●	●
Safety interlocks			
AT0-...-...-ZBZ	●	●	●

Notes
[1] Devices for world markets: IEC ≙ UL/CSA
For details about degrees of protection, see → Page 19/19

	Type Article no.	**Price** See Price List	See Price List
½ ″ **screw connector for American pipe thread** For use with AT position switches	**V1/2"/M20-NA** 225269		10 off

Rating data for approved types to UL/CSA[1)]

Maximum pressure	Rated insulation voltage	Maximum motor rating HP at					Rated operational current	**Type** Article no.	**Price** See Price List	Std. pack
psi[2)]	U_i V AC	115 V HP	200 V HP	230 V HP	460 V HP	575 V HP	I_e A			
MCS IP 55 pressure switches										
With transparent shroud, 1-pole, for single-phase motors only [4)]										
65	300	0.25 [3)]	0.5 [3)]	–	–	–	10	**MCS4FORMCDN** 024457		1 off
160		0.25 [3)]	0.5 [3)]	–	–	–		**MCS11FORMCDN** 093273		
315		0.25 [3)]	0.5 [3)]	–	–	–		**MCS22FORMCDN** 014965		
Pressure switch MCSN IP 55										
With transparent shroud, 3-pole [4)]										
65	600	–	3	3	5	7.5	10	**MCSN4FORMCDN** 064798		1 off
160		–	3	3	5	7.5		**MCSN11FORMCDN** 036322		
230		–	3	3	5	7.5		**MCSN16FORMCDN** 045814		

Notes

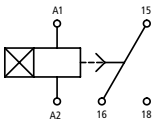
1) Devices for world markets: IEC ≙ UL/CSA
2) In North America, pressure is stated in pounds/inch² (psi) (1 bar = 14.5 psi)
3) Heavy Pilot Duty ≙ high switching capacity
4) Selection data and application notes → pressure switches for the German market

Rating data for approved types[1] **UL-File No. E29184**	Pilot Duty	General Use
Contactor relays		
DILER-40(31)(22) ...(D)DILE	A 600, P 300	10 A – 600 V AC, 0.5 A – 250 V DC
DILR ...DIL	A 600, P 300	15 A – 600 V AC, 1 A – 250 V DC
Timing relays		
DILET, ETR4	B 300	6 A – 250 V AC

Notes [1] Devices for world markets: IEC ≙ UL/CSA

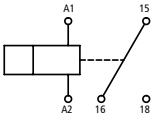
Switchgear for North America

ETR4-11, DILET11



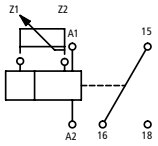
ON-DELAY

ETR4-69

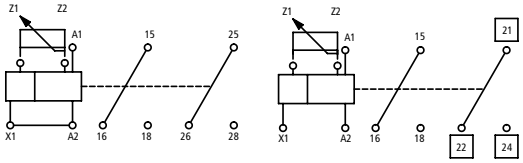


Function: 11 ON-DELAY
21 FLEETING CONTACT ON ENERGIZATION
42 FLASHING
81 PULSE GENERATING CONTACT

DILET70

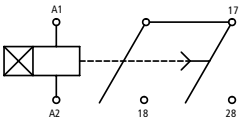


ETR4-70

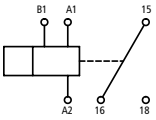


Function: 11 ON-DELAY
21 FLEETING CONTACT ON ENERGIZATION
42 FLASHING
81 PULSE GENERATING CONTACT

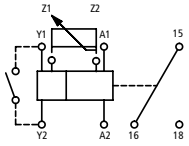
ETR4-51

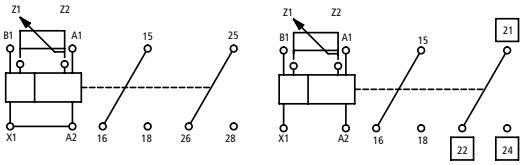


ON-DELAY



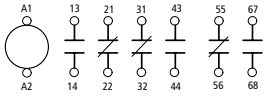
Function: 12 OFF-DELAY
16 ON- and OFF-DELAY
22 FLEETING CONTACT ON DE-ENERGIZATION
82 PULSE SHAPING CONTACT





Function: 12 OFF-DELAY
16 ON- and OFF-DELAY
22 FLEETING CONTACT ON DE-ENERGIZATION
82 PULSE SHAPING CONTACT

DILR22 + TPE11DIL ON-DELAY
DILR22 + TPD11DIL OFF-DELAY



INSTANTANEOUS

ON-DELAY OFF-DELAY

Rating data for approved types[1)]

Maximum three-phase current motor rating HP							Maximum DC motor rating 3 phases in series		Maximum motor rated current I_{th} Open/enclosed	**Contactors**	
Single-phase			Three-phase								NEMA size
115 V HP	200 V HP	230 V HP	200 V HP	230 V HP	460 V HP	575 V HP	115 V HP	230 V HP	A	**Type**	
¼	¾	1	1½	2	3	3	–	–	15/13.5	**DILEEM**	00
½	1	1½	2	3	5	5	–	–	15/13.5	**DILEM(4)**	00
½	1	1½	3	3	5	7½	1	2	20/18	**DIL00M(4)**	0
1	2	2	3	3	7½	10	1½	3	20/18	**DIL00AM**	1
2	2	3	7½	7½	10	15	2	5	35/31	**DIL0M**	1
2	3	5	7½	10	15	20	2	5	35/31	**DIL0AM**	1
3	5	5	10	10	20	25	5	10	55/50	**DIL1M**	1
3	5	7½	10	15	25	30	5	10	55/50	**DIL1AM**	2
3	7½	10	15	20	40	40	7½	15	90/81	**DIL2M**	2
5	10	15	20	25	50	50	10	20	90/81	**DIL2AM**	2
7½	15	15	25	30	60	75	10	20	100/90	**DIL3M80**	3
7½	15	15	25	30	60	75	10	20	100/90	**DIL3AM85**	3
10	25	25	40	50	100	125	15	30	160/140	**DIL4M115**	4
10	25	25	40	50	100	125	15	30	160/140	**DIL4AM145**	4
–	–	–	50	60	125	150	–	–	225/[2)]	**DILM185**	4
–	–	–	60	75	150	200	–	–	250/[2)]	**DILM225**	4
–	–	–	75	100	200	250	–	–	350/[2)]	**DILM250**	5
–	–	–	100	125	250	300	–	–	350/[2)]	**DILM300**	5
–	–	–	125	150	300	400	–	–	450/[2)]	**DILM400**	5
–	–	–	150	200	400	500	–	–	550/[2)]	**DILM500**	6
–	–	–	200	200	400	600	–	–	630/[2)]	**DILM580**	6
–	–	–	200	250	500	600	–	–	700/[2)]	**DILM650**	6
–	–	–	250	300	600	700	–	–	800/[2)]	**DILM750**	6
–	–	–	290	350	700	860	–	–	850/[2)]	**DILM820**	6

Notes

[1)] Devices for world markets IEC ≙ UL/CSA
[2)] Please enquire

Set of connection terminals consisting of three individual terminals

Conductor material	Cross-sections	For use with	**Type** Article no.	**Price** See Price List	Std. pack	**Notes**
CU, Al	2 × (AWG4 to MCM500)	DILM500/22	**DILM500-XK-CNA** 232192		1 off	Incl. terminal cover with control circuit terminal
CU, Al	2 × (AWG2 to MCM500)	DILM580/22 DILM650/22	**DILM650-XK-CNA** 232193			Incl. terminal cover with control circuit terminal
CU, Al	4 × (AWG2 to MCM500)	DILM750/22 DILM820/22	**DILM820-XK-CNA** 232194			Incl. terminal cover
Cu, Al	1 × (AWG6 to 350MCM)	Z5-.../FF250	**Z5-FF250-XK-CNA** 229314			–

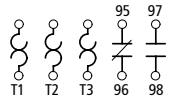
Rating data for approved types[1]					**Contactors**	**Overload relays**	Maximum short-circuit protection for North America		
Maximum three-phase current motor rating HP				Maximum motor rated current			Fuse CEC or NEC	Circuit-breaker[2]	
200 V	230 V	460 V	575 V					Continuous current	Short-circuit release, non-delayed
HP	HP	HP	HP	A	**Type**	**Type** [3]	A	A	A
–	–	½	½	1	**DILEEM**	**ZE-1**	3	15	–
–	–	¾	1	1.4	**DILEEM**	**ZE-1,6**	6	15	–
½	½	1	1½	2.3	**DILEEM**	**ZE-2,4**	6	15	–
–	1	2	3	3.9	**DILEEM**	**ZE-4**	15	15	–
1½	1½	3	–	6	**DILEEM**	**ZE-6**	20	15	–
–	2	–	–	6.8	**DILEEM**	**ZE-9**	35	15	–
2	2	5	5	7.8	**DILEM**	**ZE-9**	35	15	–
2	3	5	5	9.6	**DILEM**	**ZE-12**	45	–	–
–	–	½	½	1	**DIL00M**	**Z00-1**	3	25	200
–	–	¾	1	1.4	**DIL00M**	**Z00-1,6**	6	25	200
½	½	1	1½	2.3	**DIL00M**	**Z00-2,4**	6	25	200
–	1	2	3	3.9	**DIL00M**	**Z00-4**	15	25	200
1½	1½	3	–	6	**DIL00M**	**Z00-6**	20	25	200
2	3	5	5	9.6	**DIL00M**	**Z00-10**	25	25	200
–	–	–	7½	9	**DIL00M**	**Z00-10**	25	25	200
3	–	–	–	11	**DIL00M**	**Z00-16**	25	30	320
–	–	7½	10	11	**DIL00AM**	**Z00-16**	25	30	320
–	5	10	–	15.2	**DIL0M**	**Z00-16**	25	30	320
5	7½	–	15	22	**DIL0M**	**Z00-24**	60	30	320
–	–	15	20	22	**DIL0AM**	**Z00-24**	60	30	320
10	10	20	25	32.2	**DIL1M**	**Z1-40**	125	125	1200
–	–	25	30	34	**DIL1AM**	**Z1-40**	125	125	2000
–	15	–	–	42	**DIL1AM**	**Z1-57**	200	150	2000
–	–	30	–	40	**DIL2M**	**Z1-40**	125	125	1200
15	20	40	40	54	**DIL2M**	**Z1-57**	200	150	2000
–	–	–	50	52	**DIL2AM**	**Z1-57**	200	150	2000
20	–	–	–	62.1	**DIL2AM**	**Z1-63**	200	150	2000
–	25	50	–	68	**DIL2AM**	**Z1-75**	250	200	2400
–	–	–	60	77	**DIL3M80, DIL3AM85**	**Z5-70**	250	250	2400
25	30	60	75	80	**DIL3M80, DIL3AM85**	**Z5-100**	400 CLASS J	400	4800
30	–	75	100	99	**DIL4M115, DIL4AM145**	**Z5-100**	400 CLASS J	400	4800
40	40	100	125	125	**DIL4M115, DIL4AM145**	**Z5-125**	400 CLASS J	500	7200
–	50	–	–	130	**DIL4M115, DIL4AM145**	**Z5-150**	600 CLASS J	600	7200
50	60	125	150	156	**DILM185**	**Z5-160**	600 CLASS J	600	7200
60	75	150	200	192	**DILM225**	**Z5-220**	800 CLASS J	800	16000
75	100	200	250	248	**DILM250**	**Z5-250**	700 CLASS L	600	–
100	125	250	300	312	**DILM300**	**ZW7-400**	1000	1000	–
125	150	300	400	382	**DILM400**	**ZW7-400**	1000	1000	–
150	200	400	500	480	**DILM500**	**ZW7-540**	1000	600	–

Notes

[1] Devices for world markets IEC ≙ UL/CSA
[2] Circuit-breakers → Page 19/44
[3] On request, the ZEV can alternatively be fitted.

Auxiliary contacts	Pilot Duty		General Use			
	AC	DC	AC		DC	
Type			V	A	V	A
DIL(E)EM-10(-01) **...(D)DIL E**	A600	P300	600	10	250	0.5
DIL00(A)M-10(-01)	A600	P300	600	15	250	1
...(D)DILM **...SDILM**	A600	P300	600	15	250	1
DILM820-XHI11-SI **DILM820-XHI11-SA** **DILM820-XHI11V-SI**	A600	P600	600	10	–	–
VS...DIL	B300	R300	600	–	–	–
TP...11DIL	A300	R300	600	10	–	–
ZE	D300	R300	240	1.5	–	–
			600	0.6	–	–
Z00, Z1, Z5, ZW7	B300[1]	R300	–	–	–	–
	B600[2]	R300	–	–	–	–

Notes
[1] at opposite polarity
[2] at same polarity

	Adjustment range, overload release	Contact sequence	Auxiliary contacts	For use with	Short-circuit protection, CEC/NEC fuse	**Type** Article no.	**Price** See Price List	Std. pack
	I_r A				A			
ZE overload relay • For direct mounting • Approved for North America only	9 – 12		1 M/1 B	DILEEM DILEM	45	**ZE-12** 014752		5 off

Rating data for approved types[1)] UL-File No. E36332				T0-...	T3-...	T5B-...
Contacts						
Rated operational voltage U_e			V AC	600	600	600
Rated uninterrupted current I_u						
Current rating			A	16	25	65
Pilot Duty				A600 P 600	A600	
Switching capacity						
AC-3; max. rated power 40 – 60 Hz AC motors						
Three-phase	200 V AC		HP	3	5	15
	230 V AC		HP	3	7½	15
	460 V AC		HP	10	15	40
	575 V AC		HP	10	15	50
Single-phase	120 V AC		HP	¾	1½	3
	200 V AC		HP	2	3	7½
	230 V AC		HP	2	3	10
Short-circuit rating						
Standard	600 V AC		kA	5	5	5
With back-up			A	50	80	CLASS J
With circuit-breaker			Type	NZMH6	NZMH6	–
Current setting			A	50	125	–
Disconnect in motor circuits	600 V AC		kA	10	10	–
With back-up fuse			Class	20 A/J	40 A/J	–
Terminal capacities						
Terminal capacities						
Cu cable	min.		AWG	18	14	12
	max.		AWG	14	10	4
Tightening torque	max.		Nm	1	2	4

Notes

[1)] Devices for world markets:

Surface mounting type — The standard IEC surface mounting types of rotary switches T3, T5 and T5B do not have individual approvals.

Accessories → Rotary switches for the German market
If required, order English-language front plate from the German market product range.
Do not use AW extension terminals where UL/CSA approval is required.

	UL-approved degrees of protection		
	UL/NEMA 1	UL/NEMA 3R	UL/NEMA 12
Rotary switches			
T0-.../E; /Z; /SVB	●	●	●
T3-.../E; /Z; /SVB	●	●	●

Notes For details about degrees of protection, see → Page 19/19

Moeller HPL0211-2004/2005

Rating data for approved types[1)] UL-File No. E36332			P1-25	P1-32	P3-63	P3-100
Contacts						
Rated operational voltage U_e		V AC	600	600	600	600
Rated uninterrupted current I_u						
Current rating		A	20	30	60	100
Pilot Duty			A 600 P 600	A 600 P 600	–	–
Switching capacity						
AC-3; max. rated power 40 – 60 Hz AC motors						
Three-phase	200 V AC	HP	5	7½	15	20
	230 V AC	HP	5	10	15	25
	460 V AC	HP	10	20	40	60
	575 V AC	HP	15	25	50	75
Single-phase	120 V AC	HP	1½	2	3	5
	200 V AC	HP	3	3	7½	10
	230 V AC	HP	3	5	10	15
Short-circuit rating						
Standard	600 V AC	kA	5	5	10	10
With back-up fuse		A	110	110	150	150
With circuit-breaker		Type	NZMH6	NZMH6	NZMH6	NZMH9
Current setting		A	125	125	125	125
Disconnect in motor circuits	600 V AC	kA	10	10	10	–
With back-up fuse		Class	50 A/J	50 A/J	100 A	100 A
Terminal capacities						
Terminal capacities						
Cu cable	min./	AWG	14	14	14	14
	max.	AWG	8	8	3	3
Tightening torque	max.	Nm	1.6	1.6	3	3

	HI 11
Auxiliary switch (1 make + 1 break contact)	
Pilot Duty	P 600
Heavy Pilot Duty	A600
General Use	10 A – 600 V AC

Notes [1)] Devices for world markets: IEC ≙ UL/CSA

Surface mounting type: The standard IEC surface mounting versions of P1 and P3 do not have individual approval.

	UL-approved degrees of protection		
	UL/NEMA 1	UL/NEMA 3R[1)]	UL/NEMA 12
Switch-disconnector:			
P1-.../EA /SVB	●	●	●
P1-.../V /SVB	●	●	●

Notes For details about degrees of protection, see → Page 19/19

[1)] NEMA recommendation

Rating data for approved types[1] UL 508/CSA C 22.2 No. 14	Maximum motor rating Three-phase current HP				Setting ranges		Maximum protective device to UL/CSA Group protection[2]					
					Overload release	Short-circuit release	Max. short-circuit current		Maximum fuse rating		Circuit-breaker max.	
	200 V	230 V	460 V	575 V			600 V	with CL		with CL		with CL
	HP	HP	HP	HP	A	A	kA	kA	A	A	A	A
PKZM01 motor-protective circuit-breakers	"Manual Motor Starter with thermal and magnetic trip"											
PKZM01-0,16	[4]				0.1 – 0.16	2.2	50		600		600	
PKZM01-0,25					0.16 – 0.25	3.4	50		600		600	
PKZM01-0,4					0.25 – 0.4	5.6	50		600		600	
PKZM01-0,63					0.4 – 0.63	8.8	50		600		600	
PKZM01-1			½	½	0.63 – 1	14	50		600		600	
PKZM01-1,6			¾	1	1 – 1.6	22	50		600		600	
PKZM01-2,5	½	½	1	1½	1.6 – 2.5	35	50		600		600	
PKZM01-4	1	1	2	3	2.5 – 4	56	50		600		600	
PKZM01-6,3	1½	1½	3	5	4 – 6.3	88	50		600		600	
PKZM01-10	3	3	7½	10	6.3 – 11	140	10	50	150	600	125[5]	600
PKZM01-12	3	3	7½	10	9 – 12	168	10	50	150	600	125	600
PKZM0 motor-protective circuit-breakers	"Manual Motor Starter with thermal and magnetic trip"											
PKZM0-0,16	[4]				0.1 – 0.16	2.2	50		600		600	
PKZM0-0,25					0.16 – 0.25	3.4	50		600		600	
PKZM0-0,4					0.25 – 0.4	5.6	50		600		600	
PKZM0-0,63					0.4 – 0.63	8.8	50		600		600	
PKZM0-1			½	½	0.63 – 1	14	50		600		600	
PKZM0-1,6			¾	1	1 – 1.6	22	50		600		600	
PKZM0-2,5	½	½	1	1½	1.6 – 2.5	35	50		600		600	
PKZM0-4	1	1	2	3	2.5 – 4	56	50		600		600	
PKZM0-6,3	1½	1½	3	5	4 – 6.3	88	50		600		600	
PKZM0-10	3	3	7½	10	6.3 – 11	140	10	50	150	600	125[5]	600
PKZM0-12	3	3	7½	10	9 – 12	168	10	50	150	600	125	600
PKZM0-16	3	5	10	10	10 – 16	224	10	50	150	600	125[5]	600
PKZM0-20	5	5	10	15	16 – 20	280	10	18	150	600	125	600
PKZM0-25	5	7½	15	20	20 – 25	350	10	18	150	600	125	600
PKZM0-32	7½	10	25	30	24 – 32	448	10	18	150	600	125	600
PKZM4 motor-protective circuit-breakers												
PKZM4-16	3	5	10	15	10 – 16	224	50		600		600	
PKZM4-25	7½	7½	20	25	16 – 25	224	50		600		600	
PKZM4-32	10	10	25	30	25 – 34	350	50		600		600	
PKZM4-40	10	15	30	40	32 – 42	448	50		600		600	
PKZM0-T transformer-protective circuit-breakers[3]	For protection of control transformers											
PKZM0-0,16-T	–	–	–	–	0.1 – 0.16	2.4	50		600		600	
PKZM0-0,25-T	–	–	–	–	0.16 – 0.25	4.25	50		600		600	
PKZM0-0,4-T	–	–	–	–	0.25 – 0.4	6.8	50		600		600	
PKZM0-0,63-T	–	–	–	–	0.4 – 0.63	11.97	50		600		600	
PKZM0-1-T	–	–	–	–	0.63 – 1	20	50		600		600	
PKZM0-1,6-T	–	–	–	–	1 – 1.6	32	50		600		600	
PKZM0-2,5-T	–	–	–	–	1.6 – 2.5	50	50		600		600	
PKZM0-4-T	–	–	–	–	2.5 – 4	84	50		600		600	
PKZM0-6,3-T	–	–	–	–	4 – 6.3	141	50		600		600	
PKZM0-10-T	–	–	–	–	6.3 – 11	224	10	50	150	600	125[5]	600
PKZM0-16-T	–	–	–	–	10 – 16	358	10	50	150	600	125	600
PKZM0-20-T	–	–	–	–	16 – 20	380	10	18	150	600	125	600

Notes

Service factor (SF)
Setting I_r of current scale in dependence of load factor
SF = 1.15 → $I_r = 1 \times I_{n\ mot}$
SF = 1 → $I_r = 0.9 \times I_{n\ mot}$

[1] Devices for world markets: IEC ≙ UL/CSA
[2] Important: Changed requirements for group protection
[3] PZM0(-T) can be used also for transformer protection, provided the HA592 note label (order number 226833) is applied next to the fitted device.
[4] In this range, calculate motor rating according to rated current. Specified values to NEC Table 430 – 150.
[5] 22 kA, 600 V

Moeller HPL0211-2004/2005

Rating data for approved types[1]	Maximum motor rating Three-phase current HP				Setting ranges			Maximum protective device to UL/CSA Group protection[2]		
					Overload release	Short-circuit release		Max. short-circuit current	Maximum fuse rating	Circuit-breaker max.
	200 V	230 V	460 V	575 V		PKZM...	PKZM...T			
	HP	HP	HP	HP	A	A		kA	A	A
PKZM compact starters	"Manual Motor Starter with thermal, magnetic trip and contactor"									
PKZM0-0,16/SE00-11(...)	[3]				0.1 – 0.16	2.2		50	600	600
PKZM0-0,25/SE00-11(...)					0.16 – 0.25	3.4		50	600	600
PKZM0-0,4/SE00-11(...)					0.25 – 0.4	5.6		50	600	600
PKZM0-0,63/SE00-11(...)					0.4 – 0.63	8.8		50	600	600
PKZM0-1/SE00-11(...)			½	½	0.63 – 1	14		50	600	600
PKZM0-1,6/SE00-11(...)			¾	1	1 – 1.6	22		50	600	600
PKZM0-2,5/SE00-11(...)	½	½	1	1½	1.6 – 2.5	35		50	600	600
PKZM0-4/SE00-11(...)	1	1	2	3	2.5 – 4	56		50	600	600
PKZM0-6,3/SE00-11(...)	1½	1½	3	5	4 – 6.3	88		50[4]	600	600
PKZM0-10/SE00-11(...)	3	3	7½	10	6.3 – 11	140		10	150	125[5]
	"Manual Motor Starter with thermal, magnetic trip and contactor"									
PKZM0-0,25/E-10-D	[3]				0.16 – 0.25	3.4		50	600	600
PKZM0-0,4/E-10-D					0.25 – 0.4	5.6		50	600	600
PKZM0-0,63/E-10-D					0.4 – 0.63	8.8		50	600	600
PKZM0-1/E-10/D			½	½	0.63 – 1	14		50	600	600
PKZM0-1,6/E-10/D			¾	1	1 – 1.6	22		50	600	600
PKZM0-2,5/E-10/D	½	½	1	1½	1.6 – 2.5	35		50	600	600
PKZM0-4/E-10/D	1	1	2	3	2.5 – 4	56		50	600	600
PKZM0-6,3/E-10/D	1½	1½	3	5	4 – 6.3	88		50[4]	600	600
PKZM0-10/E-10/D	3	3	7½	10	6.3 – 11	140		10	150	125[5]
PKZM0-10/00-D	3	3	7½	10	6.3 – 11	140		10	150	125[5]
PKZM0-16/00A-D	3	5	10	10	10 – 16	224		10	150	125
PKZM0-16/0-D	3	5	10	10	10 – 16	224		10	150	125
PKZM0-25/0A-D	5	7½	15	20	20 – 25	350		10	150	125
Contact module for PKZM0 AC- or DC-operated	"Contact Module"									
SE00-11-PKZ0(...)	2	3	5	5	Auxiliary contacts Pilot Duty: A 600, Q 300			General Use: 10 A/600 V AC, 1 A/250 V DC		

Notes

Service factor (SF)
Setting I_r, of current scale in dependence of load factor
SF = 1.15 × I_r = 1 × $I_{n\ mot}$
SF = 1 × I_r = 0.9 × $I_{n\ mot}$

[1] Devices for world markets IEC ≙ UL/CSA.
[2] Important: Changed requirements for group protection
[3] In this range, calculate motor rating according to rated current. Stated values to NEC Table 430 – 150
[4] Up to 6.3 A combination no welding of SE00
[5] 22 kA 600 V AC

Rating data for approved types[1] UL 508/CSA C 22.2 No. 14		For use with	Pilot Duty	General Use	
Accessories					
Standard auxiliary contacts	NHI11-PKZ0	PKZM0(-T) PKZM4	A 600, Q 300	5 A – 600 V AC 1 A – 250 V DC	–
	NHI12-PKZ0				
	NHI21-PKZ0				
	NHI2-11S-PKZ0				
	NHI-E-11-PKZ0		E150	0.5 A – 250 V AC	–
	NHI-E-10-PKZ0				
Early-make auxiliary contacts	VHI20-PKZ0	PKZM0(-T)	E150	0.5 A – 250 V AC	–
	VHI20-PKZ01	PKZM01			
Trip-indicating auxiliary contacts	AGM2-10-PKZ0	PKZM0(-T) PKZM4	A 600, Q 300	5 A – 600 V AC 1 A – 250 V DC	–
	AGM2-01-PKZ0				
Voltage releases	A-PKZ0(...)	PKZM0(-T) PKZM4	–	–	Actuating voltages and ordering information → Products for the German market
	U-PKZ0(...)				
Auxiliary switches for contact module	HI11-S/EZ-PKZ0	PKZM0	A 600, Q 300	5 A – 600 V AC 1 A – 250 V DC	–

Notes

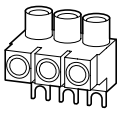
[1] Devices for world markets: IEC ≙ UL/CSA

Separate mounting for contact module	
EZ-PKZ0	–
Mechanical interlock for contact module	
MV-PKZ0	–
Suppressor for (high-capacity) AC version of contact module	
RC-S PKZ0	RC suppressor, CSA-approved
VG-S PKZ0	Varistor suppressor, CSA-approved
Clip plates	
C-PKZ0	–
Door coupling handles	
H-PKZ0	A-H-PKZ0 extension shaft included as standard
RH-PKZ0	
PKZM0 three-phase commoning links	
B3...-PKZ0	–

Extension shaft	
A-H-PKZ0	–
Current limiter	
CL-PKZ0	–
Lockable rotary handle	
AK-PKZM0	–
Terminal for three-phase commoning link	
BK25/3-PKZ0	Maximum continuous current 63 A
BK25/3-PKZ0-E	Maximum continuous current 60 A, for surface mounting of type E starters
BK50/3-PKZ4-E	Maximum continuous current 120 A, for surface mounting of type E starters
Reversing starter wiring kits	
MVS-WB-...	–
Star-delta wiring kits	
MVS-SB-...	–
PKZM4 three-phase commoning links	
B3...-PKZ4	–
Shroud for unused terminals	
H-B3-PKZ4	–

Moeller HPL0211-2004/2005

Type E starters to UL 508 are assembled from a standard PKZM and a special incoming terminal or terminal shroud:											
Maximum motor rating				Setting ranges							
Three-phase current HP				Overload release	Short-circuit release	Rated short-circuit breaking capacity			**Type**	**Type**	**Type**
200 V	230 V	460 V	575 V			240 V	480 V	600 V	Motor-protective circuit-breaker	Infeed terminal	Terminal shroud
HP	HP	HP	HP	A	A	kA	kA	kA			
PKZM0 motor-protective circuit-breakers "Manual self-protected motor starters"											
[1]				0.1 – 0.16	2.2	50	50	50	**PKZM0-0,16**	**BK25/3-PKZ0-E**	–
				0.16 – 0.25	3.4	50	50	50	**PKZM0-0,25**	**BK25/3-PKZ0-E**	–
				0.25 – 0.4	5.6	50	50	50	**PKZM0-0,4**	**BK25/3-PKZ0-E**	–
				0.4 – 0.63	8.8	50	50	50	**PKZM0-0,63**	**BK25/3-PKZ0-E**	–
		½	½	0.63 – 1	14	50	50	50	**PKZM0-1**	**BK25/3-PKZ0-E**	–
		¾	1	1 – 1.6	22	50	50	50	**PKZM0-1,6**	**BK25/3-PKZ0-E**	–
½	½	1	1½	1.6 – 2.5	35	50	50	50	**PKZM0-2,5**	**BK25/3-PKZ0-E**	–
1	1	2	3	2.5 – 4	56	50	50	50	**PKZM0-4**	**BK25/3-PKZ0-E**	–
1½	1½	3	5	4 – 6.3	88	50	50	50	**PKZM0-6,3**	**BK25/3-PKZ0-E**	–
3	3	7½	10	6.3 – 11	140	50	50	50	**PKZM0-10**	**BK25/3-PKZ0-E**	–
3	3	7½	10	9 – 12	168	42	42	–	**PKZM0-12**	**BK25/3-PKZ0-E**	–
3	5	10	10	10 – 16	224	42	42	–	**PKZM0-16**	**BK25/3-PKZ0-E**	–
5	5	10	15	16 – 20	280	18	18	–	**PKZM0-20**	**BK25/3-PKZ0-E**	–
5	7½	15	20	20 – 25	350	18	18	–	**PKZM0-25**	**BK25/3-PKZ0-E**	–
7½	10	25	30	24 – 32	448	18	18	–	**PKZM0-32**	**BK25/3-PKZ0-E**	–
3	5	10	15	10 – 16	224	50	50	10	**PKZM4-16**	**BK50/3-PKZ4-E**	**HB-PKZ4**
5	7½	20	25	16 – 27	224	50	50	10	**PKZM4-25**	**BK50/3-PKZ4-E**	**HB-PKZ4**
7½	10	25	30	24 – 34	350	50	50	10	**PKZM4-32**	**BK50/3-PKZ4-E**	**HB-PKZ4**
10	15	30	40	32 – 40	448	50	50	10	**PKZM4-40**	**BK50/3-PKZ4-E**	**HB-PKZ4**

	For use with		Price See Price List	Std. pack	
Incoming terminal					
For surface mounting type E starters for North America		**Type**			
	PKZM0	**BK25/3-PKZ0-E** 262518		5 off	For three-phase commoning link, finger and back-of-hand-proof, U_e = 690 V, I_u = 60 A for conductor cross-sections: 2.5 – 25 mm² stranded 2.5 – 16 mm² flexible with ferrule AWG 14 – 6
	Available from 11/2004	**BK50/3-PKZ4-E** 272165			Can be combined with B3.1/2(3)-PKZ2 three-phase commoning link
Terminal shroud					
For surface mounting type E starters for North America					
	PKZM4	**HB-PKZ4** 256581			

Notes

Type E starters do not need an upstream protective device.
For use in Canada, the PKZM0/PKZM4 must be fitted with an AK-PKZ0.

Service factor (SF)
Setting I_r of current scale in dependence of load factor
SF = 1.15 → $I_r = 1 \times I_{n\ mot}$
SF = 1 → $I_r = 0.9 \times I_{n\ mot}$

[1] In this range, calculate motor rating according to rated current. Stated values to NEC Table 430 – 150

Maximum motor rating				Setting ranges		Rated short-circuit breaking capacity			Incoming terminal	Motor-protective circuit-breakers	Contactor
Three-phase current HP				Overload release	Short-circuit release						
200 V	230 V	460 V	575 V			240 V	480 V	600 V			
HP	HP	HP	HP	A	A	kA	kA	kA			
[1]				0.1 – 0.16	2.2	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-0,16**	**DILEM-...(...) or DIL00M(...)**
				0.16 – 0.25	3.4	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-0,25**	**DILEM-...(...) or DIL00M(...)**
				0.25 – 0.4	5.6	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-0,4**	**DILEM-...(...) or DIL00M(...)**
				0.4 – 0.63	8.8	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-0,63**	**DILEM-...(...) or DIL00M(...)**
		½	½	0.63 – 1	14	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-1**	**DILEM-...(...) or DIL00M(...)**
		¾	1	1 – 1.6	22	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-1,6**	**DILEM-...(...) or DIL00M(...)**
½	½	1	1½	1.6 – 2.5	35	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-2,5**	**DILEM-...(...) or DIL00M(...)**
1	1	2	3	2.5 – 4	56	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-4**	**DILEM-...(...) or DIL00M(...)**
1½	1½	3	5	4 – 6.3	88	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-6,3**	**DILEM-...(...) or DIL00M(...)**
3	3	7½	10	6.3 – 11	140	50	50	50	**BK25/3-PKZ0-E**	**PKZM0-10**	**DIL00AM(...)**
3	5	10	10	10 – 16	224	18	18	–	**BK25/3-PKZ0-E**	**PKZM0-16**	**DIL0M(...)**
5	5	–	–	16 – 20	280	18	18	–	**BK25/3-PKZ0-E**	**PKZM0-20**	**DIL0M(...)**
5	7½	15	–	20 – 25	350	18	18	–	**BK25/3-PKZ0-E**	**PKZM0-25**	**DIL0AM(...)**

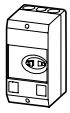
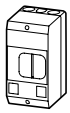
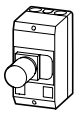
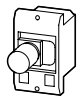
Maximum motor rating				Setting ranges		Rated short-circuit breaking capacity			Incoming terminal	Motor-protective circuit-breakers	Contact module
Three-phase current HP				Overload release	Short-circuit release						
200 V	230 V	460 V	575 V			240 V	480 V	600 V			
HP	HP	HP	HP	A	A	kA	kA	kA			
[1]				0.1 – 0.16	2.2	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-0,16**	**SE00-...-PKZ0(...)**
				0.16 – 0.25	3.4	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-0,25**	**SE00-...-PKZ0(...)**
				0.25 – 0.4	5.6	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-0,4**	**SE00-...-PKZ0(...)**
				0.4 – 0.63	8.8	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-0,63**	**SE00-...-PKZ0(...)**
		½	½	0.63 – 1	14	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-1**	**SE00-...-PKZ0(...)**
		¾	1	1 – 1.6	22	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-1,6**	**SE00-...-PKZ0(...)**
½	½	1	1½	1.6 – 2.5	35	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-2,5**	**SE00-...-PKZ0(...)**
1	1	2	3	2.5 – 4	56	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-4**	**SE00-...-PKZ0(...)**
1½	1½	3	5	4 – 6.3	88	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-6,3**	**SE00-...-PKZ0(...)**
3	3	7½	10	6.3 – 11	140	18	18	18	**BK25/3-PKZ0-E**	**PKZM0-10**	**SE00-...-PKZ0(...)**

Notes

Type F starter combinations do not need an upstream protective device. For use in Canada, the switch must be fitted with an AK-PKZ0.

[1] In this range, calculate motor ratings according to rated current. Stated values to NEC Table 430 – 150

Service factor (SF)
Setting I_r of current scale in dependence of load factor
SF = 1.15 → $I_r = 1 \times I_{n\ mot}$
SF = 1 → $I_r = 0.9 \times I_{n\ mot}$

		Degree of protection	For use with	Type Article no.	Price see price list	Std. pack	
Insulated enclosures for surface mounting							
For PKZM01 motor-protective circuit-breakers							
		IP 41	PKZM01-... +NHI or U or A +NHI-E or VHI +L (2 off)	**CI-PKZ01-NA** 281408		2 off	Built-in terminal for PE(N)
	With actuating diaphragm	IP 65		**CI-PKZ01-NA-G** 281409		2 off	
	Lockable in off position	IP 65	PKZM01-... +U or A +NHI-E or VHI +L (2 off)	**CI-PKZ01-NA-SVB**[1] 281630		2 off	
	Lockable in off position, in combination with VHI-PKZ01	IP 65		**CI-PKZ01-NA-SVB-V**[1] 281945		2 off	
	With Emergency-Stop mushroom pushbutton, stay-put	IP 65		**CI-PKZ01-NA-PVT**[1] 281631		2 off	
	With Emergency-Stop mushroom pushbutton with key release	IP 65		**CI-PKZ01-NA-PVS**[1] 281632		2 off	
For PKZM0 motor-protective circuit-breakers							
	With black/grey rotary handle	IP 55	PKZM0-... +NHI+NHI-E or U+NHI-E or A+NHI-E +L-PKZ0 (2 off)	**CI-K2-PKZ0-NA-G** 262680		2 off	Built-in N and PE terminal, lower part without knockouts
	With red-yellow rotary handle for use as Emergency-Stop switch to VDE 0113	IP 55		**CI-K2-PKZ0-NA-GR** 262681		2 off	
For PKZM0 motor-protective circuit-breaker with early-make auxiliary contact							
	With black/grey rotary handle	IP 55	PKZM0-... +VHI... + U... +L-PKZ0 (2 off)	**CI-K2-PKZ0-NA-GV** 262682		2 off	Built-in N and PE terminal, lower part without knockouts
	With red-yellow rotary handle for use as Emergency-Stop switch to VDE 0113	IP 55		**CI-K2-PKZ0-NA-GRV** 262683		2 off	
Insulated enclosures for flush mounting							
for PKZM01 motor-protective circuit-breakers							
		Front IP 40	PKZM01-... +NHI or U or A +NHI-E or VHI +L (2 off)	**E-PKZ01** 281633		2 off	Built-in terminal for PE(N)
	With actuating diaphragm	Front IP 55		**E-PKZ01-G** 281634		2 off	
	Lockable in off position	Front IP 55	PKZM01 +U or A +NHI-E or VHI +L (2 off)	**E-PKZ01-SVB**[1] 281635		2 off	
	Lockable in off position, in combination with VHI-PKZ01	Front IP 55		**E-PKZ01-SVB-V**[1] 281943		2 off	
	With Emergency-Stop mushroom pushbutton, stay-put	Front IP 55		**E-PKZ01-PVT**[1] 281636		2 off	
	With Emergency-Stop mushroom pushbutton with key release	Front IP 55		**E-PKZ01-PVS**[1] 281637		2 off	
For PKZM0 motor-protective circuit-breakers							
	With black/grey rotary handle	Front IP 55	PKZM0-... +NHI+NHI-E or U+NHI-E or A+NHI-E +L-PKZ0 (2 off)	**E-PKZ0-G** 072907		1 off	Built-in terminal for PE(N) connection, 2 PG 16 cable entry knockouts each top and bottom
	With red-yellow rotary handle for use as Emergency-Stop switch to VDE 0113	Front IP 55		**E-PKZ0-GR** 072908		1 off	

Notes [1] Please enquire before ordering

	UL-approved degrees of protection		
	UL/NEMA 1	UL/NEMA 12	UL/NEMA 3R
Insulated enclosures			
CI-K2-PKZ0-NA-G(R)	●	●	●
CI-K2-PKZ0-NA-G(R)V	●	●	●
E-PKZ0-G(R)[1)]	●	●	●

Notes

[1)] NEMA recommendation
For details about degrees of protection, see → Page 19/19

Moeller HPL0211-2004/2005

Rating data for approved types[1] UL 508/CSA C 22.2 No. 14	Maximum motor rating				Setting ranges		Maximum protective device to UL/CSA			
	Three-phase current HP				Overload releases	Short-circuit release	Group protection[2] To max. short-circuit rating		Maximum fuse rating	Circuit-breaker max.
	200 V HP	230 V HP	460 V HP	575 V HP	A	A	480 V kA	600 V kA	A	A
PKZ2 motor-protective circuit-breakers	"Manual motor starters with thermal and magnetic trip"									
PKZ2/ZM-0.6	[3]				0.4 – 0.6	5 – 8	65	42	500	600
PKZ2/ZM-1			½	½	0.6 – 1	8 – 14	65	42	500	600
PKZ2/ZM-1,6			¾	1	1 – 1.6	14 – 22	65	42	500	600
PKZ2/ZM-2,4	½	½	1	1½	1.6 – 2.4	20 – 35	65	42	500	600
PKZ2/ZM-4	1	1	2	3	2.4 – 4	35 – 55	65	42	500	600
PKZ2/ZM-6	1½	1½	3	5	4 – 6	50 – 80	65	42	500	600
PKZ2/ZM-10	2	3	5	7½	6 – 10	80 – 140	65	42	500	600
PKZ2/ZM-16	3	5	10	10	10 – 16	130 – 220	65	42	500	600
PKZ2/ZM-25	7½	7½	20	25	16 – 27	200 – 350	65	42	500	600
PKZ2/ZM-32	10	10	20	30	24 – 32	275 – 425	65	42	500	600
PKZ2/ZM-40	10	15	30	30	32 – 42	350 – 500	65	42	500	600
PKZ2 high-capacity compact starters	"Manual motor starters with thermal, magnetic trip and contactor"									
PKZ2/ZM-0,6/S(...)	[3]				0.4 – 0.6	5 – 8	65	42	2000	2000
PKZ2/ZM-1/S(...)			½	½	0.6 – 1	8 – 14	65	42	2000	2000
PKZ2/ZM-1,6/S(...)			¾	1	1 – 1.6	14 – 22	65	42	2000	2000
PKZ2/ZM-2,4/S(...)	½	½	1	1½	1.6 – 2.4	20 – 35	65	42	2000	2000
PKZ2/ZM-4/S(...)	1	1	2	3	2.4 – 4	35 – 55	65	42	2000	2000
PKZ2/ZM-6/S(...)	1½	1½	3	5	4 – 6	50 – 80	65	42	2000	2000
PKZ2/ZM-10/S(...)	2	3	5	7½	6 – 10	80 – 140	65	42	2000	2000
PKZ2/ZM-16/S(...)	3	5	10	10	10 – 16	130 – 220	65	42	2000	2000
PKZ2/ZM-25/S(...)	7½	7½	20	25	16 – 27	200 – 350	65	42	2000	2000
PKZ2/ZM-32/S(...)	10	10	20	30	24 – 32	275 – 425	65	42	2000	2000
PKZ2/ZM-40/S(...)	10	15	30	30	32 – 42	350 – 500	65	42	2000	2000
High-capacity contact module	"Contact module" in combination with PKZ2/ZM(R)-... motor-protective circuit-breaker or base for separate mounting of EZ-PKZ2									
S-PKZ2(...)	10		15		30	30				
S/HI20-S-PKZ2(...)	10		15		30	30				
S-G-PKZ2(...)	10		15		30	30				
Reversing combination	"Reversing combination" in combination with ZM-...PKZ2 trip block for motor protection									
PKZ2/SW-MV-11(...)	10		15		30	30				
Reversing busbar system						42 A 600 V AC				
	For UL/CSA-conformance, order a BK50/3-PKZ2 terminal separately.									

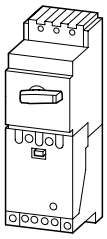
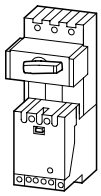
Rating data for approved types[1]	Setting ranges		Group protection[2]	Type Article no.	Price see price list	Std. pack
	Overload releases	Short-circuit release	Max. short-circuit rating			
	A	A				
PKZ2 circuit-breakers						
	10 – 16	130 – 220	10 kA at 240 V	**PKZ2/ZM-16-CB** 264044		1 off
	16 – 27	200 – 350	10 kA at 240 V	**PKZ2/ZM-25-CB** 264042		
	24 – 32	160 – 280	10 kA at 240 V	**PKZ2/ZM-32-8-CB** 264043		

Notes

Service factor (SF)

Setting I_r of current scale in dependence on load factor
SF = 1.15 $\rightarrow I_r = 1 \times I_{n\ mot}$
SF = 1 $\rightarrow I_r = 0.9 \times I_{n\ mot}$

[1] Devices for world markets: IEC ≙ UL/CSA
[2] Important: Changed requirements for group protection
[3] In this range, calculate motor rating according to rated current. Stated values to NEC Table 430 – 150

	Maximum motor rating Three-phase current HP = PS				Setting ranges		Rated short-circuit breaking capacity			Type Article no.	Price see price list	Std. pack
	200 V HP	230 V HP	460 V HP	575 V HP	Overload release A	Short-circuit release A	240 V kA	480 V kA	600 V kA			
PKZ2 system self-protected starters												
Without additional short-circuit protection element, with built-in short-circuit indicator, to UL 508 "Combination motor controller Type E". Immediate continuity of service possible after short-circuit tripping.												
	[1]		½	½	0.6 – 1	8 – 14	100	65	42	**PKZ2/ZM-1/S-SP(120V60HZ)** 050909		1 off
			¾	1	1 – 1.6	14 – 22	100	65	42	**PKZ2/ZM-1,6/S-SP(120V60HZ)** 050912		
	½	½	1	1½	1.6 – 2.4	20 – 35	100	65	42	**PKZ2/ZM-2,4/S-SP(120V60HZ)** 050915		
	1	1	2	3	2.4 – 4	35 – 55	100	65	42	**PKZ2/ZM-4/S-SP(120V60HZ)** 050918		
	1½	1½	3	5	4 – 6	50 – 80	100	65	42	**PKZ2/ZM-6/S-SP(120V60HZ)** 050921		
	2	3	5	7½	6 – 10	80 – 140	100	65	42	**PKZ2/ZM-10/S-SP(120V60HZ)** 050924		
	3	5	10	10	10 – 16	130 – 220	100	65	42	**PKZ2/ZM-16/S-SP(120V60HZ)** 050927		
	7½	7½	20	25	16 – 27	200 – 350	100	65	42	**PKZ2/ZM-25/S-SP(120V60HZ)** 050930		
	10	10	20	–	24 – 32	275 – 425	100	65	–	**PKZ2/ZM-32/S-SP(120V60HZ)** 050933		
	10	15	30	–	32 – 42	350 – 500	100	65	–	**PKZ2/ZM-40/S-SP(120V60HZ)** 050936		
Basic unit												
In combination with ZM-...-PKZ2 trip block for motor protection → Industrial Switchgear Catalogue, Sect. 8 The given values are maximum values that depend on the trip block.												
	10	15	30	25			100	65	42	**PKZ2/S-SP(120V60HZ)** 050940		1 off
Reversing starters [2]												
	10	15	30	25			100	65	42	**PKZ2/S-SP-FVR(*V*HZ)** 925109		1 off

Notes

[1] In this range, calculate motor rating according to rated current. Stated values to NEC Table 430 – 150

[2] Specify actuating voltage in the range 24 – 600 V 50 or 60 Hz.
Other actuating voltages → Page 19/40

Mains system application	Up to 27 A	600 Y/347 V AC 480 Y/277 V AC
	27 A to 42 A	480 Y/277 V AC

Service factor (SF)

Setting range I_r of current scale in dependence on load factor
SF = 1.15 → $I_r = 1 \times I_{n\ mot}$
SF = 1 → $I_r = 0.9 \times I_{n\ mot}$

Terminal capacities, PKZ2/ZM.../S high-capacity compact starters
Main terminals
Cables: Cu 75 °C, min. AWG 14, max. AWG 6
Torque: 1.8 Nm
Control circuit terminals
Cables: min. AWG 20, max. AWG 16 (0.5 – 1 mm²)
with insulated/uninsulated blade terminal, nominal size 2.8

Moeller HPL0211-2004/2005

Rating data for approved types[1] UL 508/CSA C 22.2 No. 14	Maximum motor rating				Setting ranges	
	Three-phase current HP = PS				Overload releases	Short-circuit release
	200 V HP	230 V HP	460 V HP	575 V HP	A	A
Basic unit	"Basic unit" in combination with ZM-...-PKZ2, ZMR -...-PKZ2 trip block for motor protection					
PKZ2	10	15	30	30		
Trip block for motor protection with overload relay function	"Motor Protection Trip Module with overload relay function"					
ZMR-0,6-PKZ2	[2]				0.4 – 0.6	5 – 8
ZMR-1-PKZ2			½	½	0.6 – 1	8 – 14
ZMR-1,6-PKZ2			¾	1	1 – 1.6	14 – 22
ZMR-2,4-PKZ2	½	½	1	1½	1.6 – 2.4	20 – 35
ZMR-4-PKZ2	1	1	2	3	2.4 – 4	35 – 55
ZMR-6-PKZ2	1½	1½	3	5	4 – 6	50 – 80
ZMR-10-PKZ2	2	3	5	7½	6 – 10	80 – 140
ZMR-16-PKZ2	3	5	10	10	10 – 16	130 – 220
ZMR-25-PKZ2	7½	7½	20	25	16 – 27	200 – 350
ZMR-32-PKZ2	10	10	20	30	24 – 32	275 – 425
ZMR-40-PKZ2	10	15	30	30	32 – 42	350 – 500
ZMR auxiliary switch	Pilot Duty General Purpose Terminal capacities Torque		D 300, R 300 1.5 A 240 V AC 0.6 A 600 V AC AWG 18 – 14 1 Nm/9 lb-in			
Trip block for motor protection						
ZM-0,6-PKZ2	[2]				0.4 – 0.6	5 – 8
ZM-1-PKZ2			½	½	0.6 – 1	8 – 14
ZM-1,6-PKZ2			¾	1	1 – 1.6	14 – 22
ZM-2,4-PKZ2	½	½	1	1½	1.6 – 2.4	20 – 35
ZM-4-PKZ2	1	1	2	3	2.4 – 4	35 – 55
ZM-6-PKZ2	1½	1½	3	5	4 – 6	50 – 80
ZM-10-PKZ2	2	3	5	7½	6 – 10	80 – 140
ZM-16-PKZ2	3	5	10	10	10 – 16	130 – 220
ZM-25-PKZ2	7½	7½	20	25	16 – 27	200 – 350
ZM-32-PKZ2	10	10	20	30	24 – 32	275 – 425
ZM-40-PKZ2	10	15	30	30	32 – 42	350 – 500

Notes

Service factor (SF)

Setting I_r of current scale in dependence on load factor

SF = 1.15 $\rightarrow I_r = 1 \times I_{n\ mot}$

SF = 1 $\rightarrow I_r = 0.9 \times I_{n\ mot}$

Terminal capacities

PKZ2/ZM-.../S high-capacity compact starters,
PKZ2/ZM-... motor-protective circuit-breakers

Cables: Cu 75 °C, min. AWG 14, max. AWG 6

Torque: 1.8 Nm

[1] Devices for world markets IEC ≙ UL/CSA.

[2] In this range, calculate motor rating according to rated current.Stated values to NEC Table 430 – 150

AC	PKZ2/ZM-1/S-SP(...) Article no.[1]	PKZ2/ZM-1,6/S-SP(...) Article no.[1]	PKZ2/ZM-2,4/S-SP(...) Article no.[1]	
Normal voltage	Price see price list	Price see price list	Price see price list	
110 V 50 HZ, 120 V 60 HZ	050909	050912	050915	
208 V 60 Hz	010996	011044	011092	
230 V 50 Hz, 240V 60 Hz	050910	050913	050916	
415 V 50 Hz, 480V 60 Hz	050911	050914	050917	
600 V 60 Hz	052262	052965	053105	

AC	PKZ2/ZM-4/S-SP(...) Article no.[1]	PKZ2/ZM-6/S-SP(...) Article no.[1]	PKZ2/ZM-10/S-SP(...) Article no.[1]	PKZ2/ZM-16/S-SP(...) Article no.[1]
Normal voltage	Price see price list	Price see price list	Price see price list	Price see price list
110 V 50 HZ, 120 V 60 HZ	050918	050921	050924	050927
208 V 60 HZ	010829	010949	010997	011045
230 V 50 HZ, 240 V 60 HZ	050919	050922	050925	050928
415 V 50 HZ, 480 V 60 HZ	050920	050923	050926	050929
600 V 60 HZ	053177	053511	053595	054703

AC	PKZ2/ZM-25/S-SP(...) Article no.[1]	PKZ2/ZM-32/S-SP(...) Article no.[1]	PKZ2/ZM-40/S-SP(...) Article no.[1]	PKZ2/S-SP(...) Article no.[1]
Normal voltage	Price see price list	Price see price list	Price see price list	Price see price list
110 V 50 HZ, 120 V 60 HZ	050930	050933	050936	050940
208 V 60 HZ	011093	011078	010950	050939
230 V 50 HZ, 240 V 60 HZ	050931	050934	050937	050941
415 V 50 HZ, 480 V 60 HZ	050932	050935	050938	050942
600 V 60 HZ	055113	050794	050847	050943

Notes

[1] The article number is formed by combining type and actuating voltage.
Devices with dual-voltage coils must be ordered using a single order number.

		Type Article no.	Price see price list	Std. pack	
Insulated enclosures for PKZ2/ZM overload relays[1] Degree of protection NEMA 12					
	Prepared for fitting a (R)H-PKZ2 door coupling handle	**CI19EE-PKZ2-NA** 003183		1 off	Built-in mounting rail to IEC/EN 60715 for connecting conduits and continuous earthing
	With mounting plate without apertures	**CI19E-125/M-NA** 033451		1 off	For connecting conduits and continuous earthing

Notes

[1] Not for use with PKZ2/ZM...S(-SP).

Rating data for approved types[1] Ordering information, PKZ2/S-SP motor-protective circuit-breaker Self-protected starters → Page 19/38		For use with	Pilot Duty	General Use AC	DC
Accessories					
Standard auxiliary contacts	NHI11-PKZ2	PKZ2/ZM..., PKZ2...SP	A 600, R 300	5 A – 600 V 10 A – 300 V	0.5 A – 250 V
	NHI22-PKZ2	PKZ2/ZM..., PKZ2...SP			
	NHI11S-PKZ2	PKZ2/ZM-...			
	NHI22S-PKZ2	PKZ2/ZM-...			
	NHI2-11S-PKZ2	PKZ2/ZM-...			
Trip-indicating auxiliary contact	AGM2-11-PKZ2	PKZ2/ZM..., PKZ2...SP	A 600, R 300	10 A – 600 V	0.5 A – 250 V[2]
Short-circuit indicators	K-AGM-PKZ2	PKZ2/ZM..., PKZ2...SP			
Voltage releases	A-PKZ2-...	PKZ2/ZM..., PKZ2...SP		24 – 600 V	24 – 250 V
	U-PKZ2 (...)	PKZ2/ZM..., PKZ2...SP		24 – 600 V	24 – 125 V
	U-HI20-PKZ2 (...)	PKZ2/ZM..., PKZ2...SP		24 – 600 V	24 – 125 V
			B 600, R 300	10 A – 600 V	0.5 A – 250 V
	UVHI-PKZ2 (...)	PKZ2/ZM..., PKZ2...SP		24 – 600 V	24 – 125 V
			B 600, R 300	10 A – 600 V	0.5 A – 250 V
Auxiliary switches for contact module	HI11-S-PKZ2	PKZ2/ZM-...	A 600, R 300	10 A – 600 V	0.5 A – 250 V[2]
	HI20-S-PKZ2	PKZ2/ZM-...	A600	10 A – 600 V	
	HI11-S/EZ-PKZ2	PKZ2/ZM-...	A 600, R 300	5 A – 600 V 10 A – 300 V	0.5 A – 250 V[2]
Remote operator	RE-PKZ2	PKZ2/ZM..., PKZ2...SP	[3]		
	RS-PKZ2	PKZ2/ZM..., PKZ2...SP	D 300 – R 300	1.5 A – 240 V AC 0.6 A – 600 V AC	
Amplifier module for Remote operator	ETS4-VS3	PKZ2/ZM..., PKZ2...SP	B 300 – R 300	5 A – 250 V AC	
Clip plates	C-PKZ2	PKZ2/ZM-...			
Door coupling handle	H-PKZ2	PKZ2/ZM..., PKZ2...SP			
	RH-PKZ2	PKZ2/ZM..., PKZ2...SP			
Extension shaft	A-H-PKZ2	PKZ2/ZM..., PKZ2...SP			
Base for separate mounting	EZ-PKZ2	–			
Three-phase commoning link	B3.1/3-PKZ2	PKZ2/ZM..., PKZ2...SP	Max. 100 A		
	B3.1/2-PKZ2	PKZ2/ZM..., PKZ2...SP	Max. 85 A		
Terminals for three-phase commoning link	BK50/3-PKZ2	PKZ2/ZM..., PKZ2...SP	Max. 100 A Terminal cross-section Torque	AWG 14-0 4.5 Nm	
Padlocking feature	SVB-PKZ2	PKZ2/ZM..., PKZ2...SP			
Mechanical interlock	MV-PKZ2	–			
Coding pins	CS-PKZ2	PKZ2/ZM..., PKZ2...SP			
Busbar adapter	AD-...	PKZ2/ZM..., PKZ2...SP			

Notes

Terminal capacities for all PKZ2 system add-on modules:
- Cables min. AWG 18, max. AWG 14
- Torque 1.0 Nm

[1] Devices for world markets IEC ≙ UL/CSA.
[2] >150 V same polarity.
[3] Maximum actuating voltage 120 V 60 Hz or 120 V DC.

Rating data for approved types[1)]
UL 508/CSA C 22.2 No. 14

	Maximum motor rating Three-phase current HP = PS				Setting ranges		Type Article no.	Price see price list	Std. pack
	200 V HP	230 V HP	480 V HP	600 V HP	Overload releases I_r A	Short-circuit releases I_{rm} A			
NZM7 motor-protective circuit-breakers									
With clamp-type terminals									
Normal switching capacity:	10	10	30	30	25 – 40	380	**NZM7-40N-CNA** 222946		1 off
480 V, 25 kA 600 V, 14 kA	15	20	40	50	40 – 63	378 – 760	**NZM7-63N-CNA** 222950		
	25	30	60	75	63 – 80	480 – 960	**NZM7-80N-CNA** 222951		
	30	30	75	100	80 – 100	600 – 1200	**NZM7-100N-CNA** 222952		
	40	40	100	125	80 – 125	750 – 1500	**NZM7-125N-CNA** 222953		
	50	50	100	150	125 – 150	960 – 1900	**NZM7-150N-CNA** 222954		
Medium switching capacity:	10	10	30	30	25 – 40	380	**NZM7-40S-CNA** 222955		
480 V, 65 kA 600 V, 22 kA	15	20	40	50	40 – 63	378 – 760	**NZM7-63S-CNA** 222956		
	25	30	60	75	63 – 80	480 – 960	**NZM7-80S-CNA** 222957		
	30	30	75	100	80 – 100	600 – 1200	**NZM7-100S-CNA** 222958		
	40	40	100	125	80 – 125	750 – 1500	**NZM7-125S-CNA** 222959		
	50	50	100	150	125 – 150	960 – 1900	**NZM7-150S-CNA** 222960		
With screw connection and cable lug cover									
Normal switching capacity:	10	10	30	30	25 – 40	380	**NZM7-40N-CNA-M8** 222961		1 off
480 V, 25 kA 600 V, 14 kA	15	20	40	50	40 – 63	378 – 760	**NZM7-63N-CNA-M8** 222962		
	25	30	60	75	63 – 80	480 – 960	**NZM7-80N-CNA-M8** 222963		
	30	30	75	100	80 – 100	600 – 1200	**NZM7-100N-CNA-M8** 222964		
	40	40	100	125	80 – 125	750 – 1500	**NZM7-125N-CNA-M8** 222965		
	50	50	100	150	125 – 150	960 – 1900	**NZM7-150N-CNA-M8** 222966		
Medium switching capacity:	10	10	30	30	25 – 40	380	**NZM7-40S-CNA-M8** 222967		
480 V, 65 kA 600 V, 22 kA	15	20	40	50	40 – 63	378 – 760	**NZM7-63S-CNA-M8** 222968		
	25	30	60	75	63 – 80	480 – 960	**NZM7-80S-CNA-M8** 222969		
	30	30	75	100	80 – 100	600 – 1200	**NZM7-100S-CNA-M8** 222970		
	40	40	100	125	80 – 125	750 – 1500	**NZM7-125S-CNA-M8** 222971		
	50	50	100	150	125 – 150	960 – 1900	**NZM7-150S-CNA-M8** 222972		

Notes

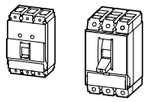
1) All devices have an overall depth of 105 mm.
Because of the circuit-breaker approval, NZM7 motor-protective circuit-breakers have switching capacity.
The values correspond with those of the circuit-breakers → Page 19/55

Moeller HPL0211-2004/2005

Circuit-breakers

UL/CSA approved to UL 489, CSA 5 and to IEC/EN 60947

Rated uninterrupted current I_u = rated current I_n
Adjustable overload release I_r
Adjustable short-circuit release I_i
Delayed short-circuit release I_{sd}



Thermomagnetic releases
Overload releases

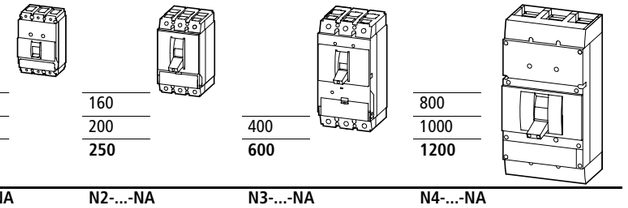
	Fixed		Adjustable			Without	
	I_u		I_u		I_r	I_u	
	A		A		A	A	
	NZM1	NZM2	NZM1	NZM2		NZM1	NZM2
	15 – **125**	15 – **250**	20 – **125**	20 – **250**	0.8 – 1 × I_n	1 – **100**	1.6 – **200**
Basic switching capacity[1]		**NZMB1-...-NA**		**NZMB2-...-NA**			
NEMA Test Procedure 240 V 60 Hz	sym. rms kA	35[4]		35			
480 V 60 Hz	sym. rms kA	25[2]		25[2]			
600 V 60 Hz	sym. rms kA	–		18[3]			
IEC/EN 60947 400/415 V	kA/p. f.	25	0.25	25	0.25		
440 V	kA/p. f.	25	0.25	25	0.25		
525 V	kA/p. f.	15	0.30	15	0.30		
Normal switching capacity[1]		**NZMN1-...-NA**		**NZMN2-...-NA**			
NEMA Test Procedure 240 V 60 Hz	sym. rms kA	85[5]		85			
480 V 60 Hz	sym. rms kA	35[2]		35[2]			
600 V 60 Hz	sym. rms kA	–		25[3]			
IEC/EN 60947 400/415 V	kA/p. f.	50	0.25	50	0.25		
440 V	kA/p. f.	35	0.25	35	0.25		
525 V	kA/p. f.	20	0.30	25	0.25		
690 V	kA/p. f.	10	0.50	20	0.30		
High switching capacity[1]				**NZMH2-...-NA**			
NEMA Test Procedure 240 V 60 Hz	sym. rms kA			100			
480 V 60 Hz	sym. rms kA			65[2]			
600 V 60 Hz	sym. rms kA			35[3]			
IEC/EN 90947 400/415 V	kA/p. f.			100	0.20		
440 V	kA/p. f.			65	0.20		
525 V	kA/p. f.			40	0.25		
690 V	kA/p. f.			20	0.30		
Limiter switching capacity[1]							
NEMA Test Procedure 240 V 60 Hz	sym. rms kA						
480 V 60 Hz	sym. rms kA						
600 V 60 Hz	sym. rms kA						
IEC/EN 90947 400/415 V	kA/p. f.						
440 V	kA/p. f.						
525 V	kA/p. f.						
690 V	kA/p. f.						

Notes
Values printed in grey available on request
[1] The switches conform to the UL/CSA and also to the IEC regulations
IEC switching values contained on the rating label. → Technical data
[2] With NZM...1-...-NA and NZM...2-...-NA the following applies: 480Y/277 V probably until October 2004
[3] With NZM...2-...-NA the following applies: 600V on request
[4] With NZMB1-...-NA the following applies: 25 kA probably until October 2004
[5] With NZMN1-...-NA the following applies: 35 kA probably until October 2004
[6] With NZM(H)L4-... the following applies: 85 kA probably until October 2004
[7] 100 kA probably from October 2004, 120 kA in preparation

Switch-disconnectors:

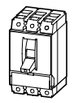
with main switch and isolating characteristics **without** overload and short-circuit release
Rated uninterrupted current $I_u = I_n$

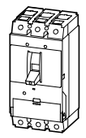
UL/CSA approved to UL 489, CSA 5 and to IEC/EN 60947

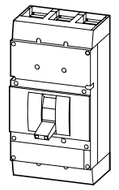


63	160	400	800	
100	200		1000	
125	**250**	**600**	**1200**	
	N1-...-NA	**N2-...-NA**	**N3-...-NA**	**N4-...-NA**
Rated short-circuit making capacity I_{cm}	kA	2.8	5.5	25	53
Rated short time current I_{cw} (1s current$_{rms}$)	kA	2	3.5	20	25

Moeller HPL0211-2004/2005







Electronic releases
Overload releases

Short-circuit releases

	Fixed	Adjustable		Without	Fixed	Adjustable		Without	Fixed	Adjustable		System protection		Motor protection
	I_u	I_u	I_r	I_u	I_u	I_u	I_r	I_u	I_u	I_u	I_r	I_{sd}	I_i	I_i
	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	150 – **250**	100 – **250**	0.5 – 1 × I_n	90 – **220**	250 – **600**	250 – **600**	0.5 – 1 × I_n	220 – **450**	600 – **1200**	800 – **1200**	0.5 – 1 × I_n	2 – 10 × I_r	2 – 12 × I_n	2 – 14 × I_r
Basic switching capacity[1]				**NZMB1-...-NA**				**NZMB2-...-NA**						
NEMA Test Procedure 240 V 60 Hz				35[4]				35						
480 V 60 Hz				25[2]				25[2]						
600 V 60 Hz				–				18[3]						
IEC/EN 60947 400/415 V				25	0.25			25	0.25					
440 V				25	0.25			25	0.25					
525 V				15	0.30			15	0.30					
Normal switching capacity[1]				**NZMN1-...-NA**				**NZMN2-...-NA**						
NEMA Test Procedure 240 V 60 Hz				85[5]				85						
480 V 60 Hz				35[2]				35[2]						
600 V 60 Hz				–				25[3]						
IEC/EN 60947 400/415 V				50	0.25			50	0.25					
440 V				35	0.25			35	0.25					
525 V				20	0.30			25	0.25					
690 V				10	0.50			20	0.30					
High switching capacity[1]								**NZMH2-...-NA**						
NEMA Test Procedure 240 V 60 Hz								100						
480 V 60 Hz								65[2]						
600 V 60 Hz								35[3]						
IEC/EN 90947 400/415 V								100	0.20					
440 V								65	0.20					
525 V								40	0.25					
690 V								20	0.30					
Limiter switching capacity[1]								**NZML3-...E...-NA**				**NZML4-...E...-NA**		
NEMA Test Procedure 240 V 60 Hz								150				150		
480 V 60 Hz								100				100		
600 V 60 Hz								50				50		
IEC/EN 90947 400/415 V								150	0.20			120[6][7]	0.20	
440 V								130	0.20			85	0.20	
525 V								65	0.20			65	0.20	
690 V								35	0.25			50	0.25	

Selection of approved circuit-breakers, switch-disconnectors and accessories as well as technical data and tripping characteristics see chapter NZM circuit-breakers from page 10/28.
The approved switches are suitable for world-wide use. The UL and CSA certificates can be found at www.ul.com and www.csa.com
UL certificate: File No.: E 31593 (NZM1-4)
CSA certificates: File No. NZM1: 165628-1501796
NZM2: please enquire
NZM3: 165828-1467684
NZM4: please enquire

	Rated uninterrupted current I_u A	Setting ranges Overload release I_r A	Short-circuit release I_{rm} A	Normal switching capacity (N) Type Article no. 480 V 25 kA 600 V 14 kA	Price see price list	Std. pack
NZM7 circuit-breakers						
With clamp-type terminals						
With fixed overload releases to UL 489 CSA 22.2 No. 5	25	25	380	**NZM7A-25N-NA** 208658		1 off
	30	30	380	**NZM7A-30N-NA** 208659		
	35	35	380	**NZM7A-35N-NA** 208660		
	40	40	380	**NZM7A-40N-NA** 208661		
	50	50	378 – 760	**NZM7A-50N-NA** 208662		
	60	60	378 – 760	**NZM7A-60N-NA** 208663		
	70	70	480 – 960	**NZM7A-70N-NA** 208664		
	80	80	480 – 960	**NZM7A-80N-NA** 208665		
	90	90	600 – 1200	**NZM7A-90N-NA** 208666		
	100	100	600 – 1200	**NZM7A-100N-NA** 208667		
	125	125	750 – 1500	**NZM7A-125N-NA** 208668		
	150	150	960 – 1900	**NZM7A-150N-NA** 210086		
NZM7 circuit-breakers						
With clamp-type terminals						
With adjustable overload releases to UL 489, CSA 22.2 No. 5	40	25 – 40	380	**NZM7-40N-NA** 210076		1 off
	63	40 – 63	378 – 760	**NZM7-63N-NA** 210077		
	80	63 – 80	480 – 960	**NZM7-80N-NA** 210078		
	100	80 – 100	600 – 1200	**NZM7-100N-NA** 210079		
	125	80 – 125	750 – 1500	**NZM7-125N-NA** 207875		
	150	125 – 150	960 – 1900	**NZM7-150N-NA** 210084		

Notes All devices have an overall depth of 105 mm.

Medium switching capacity (S)		Normal switching capacity (N)		Medium switching capacity (S)		
Type Article no.	**Price** see price list	**Type** Article no. 480 V 25 kA 600 V 14 kA	**Price** see price list	**Type** Article no. 480 V 65 kA 600 V 22 kA	**Price** see price list	Std. pack
		NZM7 circuit-breakers With screw connection and cable lug cover				
NZM7A-25S-NA 220936		**NZM7A-25N-NA-M8** 208669		**NZM7A-25S-NA-M8** 220948		1 off
NZM7A-30S-NA 220937		**NZM7A-30N-NA-M8** 208670		**NZM7A-30S-NA-M8** 220949		
NZM7A-35S-NA 220938		**NZM7A-35N-NA-M8** 208671		**NZM7A-35S-NA-M8** 220950		
NZM7A-40S-NA 220939		**NZM7A-40N-NA-M8** 208672		**NZM7A-40S-NA-M8** 220951		
NZM7A-50S-NA 220940		**NZM7A-50N-NA-M8** 208673		**NZM7A-50S-NA-M8** 220952		
NZM7A-60S-NA 220941		**NZM7A-60N-NA-M8** 208674		**NZM7A-60S-NA-M8** 220953		
NZM7A-70S-NA 220942		**NZM7A-70N-NA-M8** 208675		**NZM7A-70S-NA-M8** 220954		
NZM7A-80S-NA 220943		**NZM7A-80N-NA-M8** 208676		**NZM7A-80S-NA-M8** 220955		
NZM7A-90S-NA 220944		**NZM7A-90N-NA-M8** 208677		**NZM7A-90S-NA-M8** 220956		
NZM7A-100S-NA 220945		**NZM7A-100N-NA-M8** 208678		**NZM7A-100S-NA-M8** 220957		
NZM7A-125S-NA 220946		**NZM7A-125N-NA-M8** 208679		**NZM7A-125S-NA-M8** 220958		
NZM7A-150S-NA 220947		**NZM7A-150N-NA-M8**[1)] 210087		**NZM7A-150S-NA-M8** 220959		
		NZM7 circuit-breakers With screw connection and cable lug cover				
NZM7-40S-NA 220961		**NZM7-40N-NA-M8** 210080		**NZM7-40S-NA-M8** 220967		1 off
NZM7-63S-NA 220962		**NZM7-63N-NA-M8** 210081		**NZM7-63S-NA-M8** 220968		
NZM7-80S-NA 220963		**NZM7-80N-NA-M8** 210082		**NZM7-80S-NA-M8** 220969		
NZM7-100S-NA 220964		**NZM7-100N-NA-M8** 210083		**NZM7-100S-NA-M8** 220970		
NZM7-125S-NA 220965		**NZM7-125N-NA-M8**[1)] 207839		**NZM7-125S-NA-M8** 220971		
NZM7-150S-NA 220966		**NZM7-150N-NA-M8**[1)] 210085		**NZM7-150S-NA-M8** 220972		

Notes All devices have an overall depth of 105 mm

	Rated continuous current I_u A	Type Article no.	Price see price list	Std. pack	
Molded case switch • Without protective device • Remote tripping with voltage release • to UL 489, CSA 22.2 No. 5					
With clamp-type terminals	60	**NZM7-60-NA** 205580		1 off	**Short-circuit protection** Max. fuse: up to 50 kA/600 V 225 A Max. circuit-breaker: up to 25 kA/480 V 250 A (NZMH 9) up to 18 kA/600 V 250 A (NZMH 9)
	100	**NZM7-100-NA** 205581			
	125	**NZM7-125-NA** 205582			
	150	**NZM7-150-NA** 207600			
	200	**NZM7-200-NA** 215430			
With M8 screw connector and cable lug cover	60	**NZM7-60-NA-M8** 205584		1 off	
	100	**NZM7-100-NA-M8** 205585			
	125	**NZM7-125-NA-M8** 205586			
	150	**NZM7-150-NA-M8** 207601			
	200	**NZM7-200-NA-M8** 205588			

Notes All devices have an overall depth of 105 mm.

	For use with	Type suffix Article no. when ordering with basic unit	Price see price list	Std. pack
Terminations				
Fitted above	NZM7-150N-NA NZM7-200-NA	**+K185-NZM7-O** 215428		1 off
Fitted below	NZM7-150N-NA NZM7-200-NA	**+K185-NZM7-U** 215429		1 off

Notes All other switches are fitted with K150-... as standard.

	Type Article no. when ordering separately	Price see price list	Type suffix Article no. when ordering with basic unit	Price see price list	Std. pack
Door coupling rotary handle, IP 55 (UL/NEMA 12/NEMA 3R) For rear mounting switches, switch position OFF – + – ON. Rotary drive required.					
With black handle	**H-NZM7-NA** 228028		**+H-NZM7-NA** 231414		1 off
With red handle	**RH-NZM7-NA** 228029		**+RH-NZM7-NA** 231415		1 off

	Type	For use with	General use		Terminal capacities
			AC	DC	
Accessories NZM7-...N, NZM7					
NHI standard auxiliary contacts RHI trip-indicating auxiliary contacts	**EK..**	NZM7-...N(H), NZM7	A600[1] 10 A – 600 V[1]	P300 5 A – 250 V	Cu cables, min. AWG 18, max. AWG 14
Early-make auxiliary contacts	**VHI-NZM7**	NZM7-...N(H), NZM7	C300 2.5 A – 240 V	Q300 2.5 A – 240 V	Cu cables, min. AWG 18, max. AWG 14
Undervoltage release	**U-NZM7** **UHI-NZM7**	NZM7-...N(H), NZM7	max. 480 V	max. 125 V	Cu cables, min. AWG 18, max. AWG 14
Shunt release	**A-NZM7, AVHI-NZM7**	NZM7-...N(H), NZM7	max. 480 V	max. 125 V	
Rotary drive	**DA(OV)-NZM7**				
Rotary handle	**HU-NZM7**	NZM7-...N(H), NZM7	No UL/CSA approval required		
Door coupling rotary handle	**H(OV)(RH)-NZM7**	NZM7-...N(H), NZM7	NEMA 12		
Main switch assembly kit	**V-NZM7(-SW)**	NZM7-...N(H), NZM7	No UL/CSA approval required		
Side-wall operator	**SWA-NZM7**	NZM7-...N(H), NZM7			
Remote operator	**R-NZM7**	NZM7-...N(H), NZM7	max. 240 V 50/60 Hz		
Terminations	**+K-150-NZM7-0(-U)**	NZM7-...N(H): max. 125 A NZM7: max. 150 A	Available only by direct order		
	+K-185-NZM7-0(-U)	NZM7-...N(H): max. 150 A NZM7: max. 200 A			
Control circuit terminal	**ST250(M8)-NZM7**	NZM7-...N(H), NZM7			Cu cables, min. AWG 18, max. AWG 14
Terminal bolt on rear	**RG250-NZM7-O(-U)**	NZM7-...N(H), NZM7			
Cable lug cover	**KA-250-NZM7**	NZM7-...N(H), NZM7	Included as standard with M8 version		

Notes You can also use purely mechanical parts, which do not need approval, such as MSWA-... mounting brackets and C-... clip plates

[1] > 300 V AC, same polarity

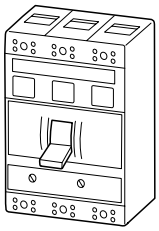
	Rated uninterrupted current	Setting range: Overload releases	Setting range: Short-circuit releases, Non-delayed	Setting range: Short-circuit releases, Delayed	Normal switching capacity (N) Type Article no.	Price see price list	Std. pack
					480 V 42 kA 600 V 35 kA		
	I_u	I_r	I_{rm}	I_{rmv}			
	A	A	A	A			
NZM10/ZM circuit-breakers for protecting plants and generators[1)]							
With fixed overload releases to UL 489, CSA 22.2 No. 5	150	150	300 – 1800	–	**NZM10-400N/ZMA-150-NA** 226744		1 off
	175	175	350 – 2100	–	**NZM10-400N/ZMA-175-NA** 226745		
	200	200	400 – 2400	–	**NZM10-400N/ZMA-200-NA** 093938		
	225	225	450 – 2700	–	**NZM10-400N/ZMA-225-NA** 093939		
	250	250	500 – 3000	–	**NZM10-400N/ZMA-250-NA** 093975		
	300	300	600 – 3600	–	**NZM10-400N/ZMA-300-NA** 093993		
	350	350	700 – 4200	–	**NZM10-400N/ZMA-350-NA** 093824		
	400	400	800 – 4800	–	**NZM10-400N/ZMA-400-NA** 093825		
	500	500	1000 – 6000	–	**NZM10-600N/ZMA-500-NA** 093915		
	600	600	1200 – 7200	–	**NZM10-600N/ZMA-600-NA** 093916		
With adjustable overload releases to UL 489, CSA 22.2 No. 5	250	125 – 250	250 – 3000	–	**NZM10-400N/ZM-250-NA** 226750		
	400	200 – 400	400 – 4800	–	**NZM10-400N/ZM-400-NA** 093914		
	600	300 – 600	600 – 7200	–	**NZM10-600N/ZM-600-NA** 093913		
NZM10/ZM circuit-breakers for time selectivity[1)]							
With fixed overload releases to UL 489, CSA 22.2 No. 5	200	200	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-200-NA** 093713		1 off
	225	225	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-225-NA** 093714		
	250	250	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-250-NA** 093715		
	300	300	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-300-NA** 093716		
	350	350	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-350-NA** 093717		
	400	400	1000 – 9000	2 – 12 × I_r	**NZM10-400N/ZMVA-400-NA** 093718		
	500	500	1000 – 9000	2 – 12 × I_r	**NZM10-600N/ZMVA-500-NA** 093719		
	600	600	1000 – 9000	2 – 12 × I_r	**NZM10-600N/ZMVA-600-NA** 093720		
With adjustable overload releases to UL 489, CSA 22.2 No. 5	400	200 – 400	1000 – 9000	400 – 4800	**NZM10-400N/ZMV-400-NA** 093711		
	600	300 – 600	1000 – 9000	600 – 7200	**NZM10-600N/ZMV-600-NA** 093712		
NZM10/ZM-OBI circuit-breakers[1)]							
Without overload release, for motor circuits	250	–	500 – 3000	–	**NZM10-400N/ZM-250-OBI-CNA** 226753		1 off
	400	–	800 – 4800	–	**NZM10-400N/ZM-400-OBI-CNA** 093912		
	600	–	1200 – 7200	–	**NZM10-600N/ZM-600-OBI-CNA** 093911		
NZM10/N/B molded case switch[1)]							
Without protective device to UL 489, CSA 22.2 No. 5	400	–	–	–	**NZM10-400N/B-NA** 063929		1 off
	600	–	–	–	**NZM10-600N/B-NA** 063928		1 off

Notes Setting range → NZM10 for the German market

1) NZM10...-(C)NA: upper terminal shroud (HNZM-XTCO) is fitted as standard.

Moeller HPL0211-2004/2005

Medium switching capacity (S)			**High switching capacity (H)**			
Type Article no.		**Price** see price list	**Type** Article no.		**Price** see price list	Std. pack
480 V 600 V	65 kA 42 kA		480 V 600 V	100 kA 50 kA		
NZM10-400S/ZMA-150-NA 226746			**NZM10-400H/ZMA-150-NA** 226748			1 off
NZM10-400S/ZMA-175-NA 226747			**NZM10-400H/ZMA-175-NA** 226749			
NZM10-400S/ZMA-200-NA 093880			**NZM10-400H/ZMA-200-NA** 093705			
NZM10-400S/ZMA-225-NA 093881			**NZM10-400H/ZMA-225-NA** 093706			
NZM10-400S/ZMA-250-NA 093918			**NZM10-400H/ZMA-250-NA** 093707			
NZM10-400S/ZMA-300-NA 093919			**NZM10-400H/ZMA-300-NA** 093708			
NZM10-400S/ZMA-350-NA 093944			**NZM10-400H/ZMA-350-NA** 093709			
NZM10-400S/ZMA-400-NA 093979			**NZM10-400H/ZMA-400-NA** 093710			
NZM10-600S/ZMA-500-NA 093854			**NZM10-600H/ZMA-500-NA** 093703			
NZM10-600S/ZMA-600-NA 093879			**NZM10-600H/ZMA-600-NA** 093704			
NZM10-400S/ZM-250-NA 226751			**NZM10-400H/ZM-250-NA** 226752			
NZM10-400S/ZM-400-NA 093853			**NZM10-400H/ZM-400-NA** 093702			
NZM10-600S/ZM-600-NA 093826			**NZM10-600H/ZM-600-NA** 093701			
NZM10-400S/ZMVA-200-NA 093725			–			1 off
NZM10-400S/ZMVA-225-NA 093726			–			
NZM10-400S/ZMVA-250-NA 093727			–			
NZM10-400S/ZMVA-300-NA 093728			–			
NZM10-400S/ZMVA-350-NA 093729			–			
NZM10-400S/ZMVA-400-NA 093730			–			
NZM10-600S/ZMVA-500-NA 093724			–			
NZM10-600S/ZMVA-600-NA 093723			–			
NZM10-400S/ZMV-400-NA 093722			–			
NZM10-600S/ZMV-600-NA 093721			–			
–			**NZM10-400H/ZM-250-OBI-CNA** 226754			1 off
–			**NZM10-400H/ZM-400-OBI-CNA** 093700			
–			**NZM10-600H/ZM-600-OBI-CNA** 093999			

	Rated continuous current I_u A	Setting range overload release I_r A	For use with	Type Article no.	Price see price list	Std. pack
NZM10 circuit-breakers						
	400	Basic units area assembled into complete circuit-breakers with trip blocks from the selection below.[2] NZM10-...H can not be combined with ZMVA trip block.		**NZM10-400N-NA** 063922		1 off
				NZM10-400S-NA 063958		
				NZM10-400H-NA 063957		
	630			**NZM10-600N-NA** 063956		
				NZM10-600S-NA 063955		
				NZM10-600H-NA 063954		
Trip block						
For system protection						
Fixed	150		NZM10-400..., NZM10-600...	**ZMA-150-NZM10-NA** 226742		1 off
	175		NZM10-400..., NZM10-600...	**ZMA-175-NZM10-NA** 226743		
	200		NZM10-400..., NZM10-600...	**ZMA-200-NZM10-NA** 063952		
	225		NZM10-400..., NZM10-600...	**ZMA-225-NZM10-NA** 063953		
	250		NZM10-400..., NZM10-600...	**ZMA-250-NZM10-NA** 063947		
	300		NZM10-400..., NZM10-600...	**ZMA-300-NZM10-NA** 063946		
	350		NZM10-400..., NZM10-600...	**ZMA-350-NZM10-NA** 063945		
	400		NZM10-400..., NZM10-600...	**ZMA-400-NZM10-NA** 063944		
	500		NZM10-600...	**ZMA-500-NZM10-NA** 063943		
	600		NZM10-600...	**ZMA-600-NZM10-NA** 063942		
Adjustable	125 – 250		NZM10-400..., NZM10-600...	**ZM-250-NZM10-NA** 226741		
	200 – 400		NZM10-400..., NZM10-600...	**ZM-400-NZM10-NA** 063948		
	300 – 600		NZM10-600...	**ZM-600-NZM10-NA** 063949		
For time selectivity[1]						
Fixed	200		NZM10-400..., NZM10-600...	**ZMVA-200-NZM10-NA** 063941		1 off
	225		NZM10-400..., NZM10-600...	**ZMVA-225-NZM10-NA** 063940		
	250		NZM10-400..., NZM10-600...	**ZMVA-250-NZM10-NA** 063939		
	300		NZM10-400..., NZM10-600...	**ZMVA-300-NZM10-NA** 063938		
	350		NZM10-400..., NZM10-600...	**ZMVA-350-NZM10-NA** 063937		
	400		NZM10-400..., NZM10-600...	**ZMVA-400-NZM10-NA** 063936		
	500		NZM10-600...	**ZMVA-500-NZM10-NA** 063935		
	600		NZM10-600...	**ZMVA-600-NZM10-NA** 063934		
Adjustable	200 – 400		NZM10-400..., NZM10-600...	**ZMV-400-NZM10-NA** 063950		
	300 – 600		NZM10-600...	**ZMV-600-NZM10-NA** 063951		

Notes

Setting ranges → Page 19/50
Always order complete NZM10OBI-CNA for overload protection.
Always order complete NZM10N/B-NA molded case switches.

[1] Can not be used in combination with NZM10-... H.
[2] NZM10-...-(C)NA: upper terminal shroud (H-NZM10-O) is fitted as standard

Moeller HPL0211-2004/2005

Equipment supplied	Max. uninterrupted current A	Terminal capacities	Material	**Type suffix** Article no.[2] when ordering with basic unit	**Price** see price list[3]	**Type** Article no.[1] when ordering separately	**Price** see price list	Std. pack
Terminations With AWG 18 to 14 control circuit terminal								
With built-in terminal insulator	600	2 × AWG 2 ... 2 × 500 MCM	Cu + Al	**+K2X240W-NZM10-O** 063924		**K2X240W-NZM10** 063926		1 set/ 1 off
				+K2X240W-NZM10-U 063921		–		1 set
With one H-NZM10 terminal shroud per terminal and insulating plate				**+K2X240IP-NZM10-O** 063925		**K2X240IP-NZM10** 063927		1 set/ 1 off
				+K2X240IP-NZM10-U 063923		–		1 set
With 1 H-NZM10 terminal shroud[1]			Cu + Al	–		**K2X240-NZM10** 034939		1 off
Cable clamps in device (without shroud)	350	250 MCM ... 500 MCM	Cu	**+K300-NZM10-O** 093732		**K300-NZM10** 034937		1 set/ 1 off
				+K300-NZM10-U 093731		–		1 set
Double cable clamps in device (without shroud)	500	2 × AWG 3/0 ... 2 × 250 MCM	Cu	**+K2X120-NZM10-O** 093734		**K2X120-NZM10** 034938		1 set/ 1 off
				+K2X120-NZM10-U 093733		–		1 set

Equipment supplied	**Type suffix** Article no.[2] when ordering with basic unit	**Price** see price list[3]	**Type** Article no.[1] when ordering separately	**Price** see price list	Std. pack
Terminal cover					
In three parts for terminal bolts	**+H-NZM10-O** 025348		**H-NZM10** 047889		1 set/ 1 off
	+H-NZM10-U 025347		–		1 set
Single for 3 terminals K300 or K2 × 120	**+HH-NZM10-O** 047578		**HH-NZM10** 043254		1 set/ 1 off
	+HH-NZM10-U 047479		–		1 set
Door coupling rotary handle, IP 55 (UL/NEMA 12) For rear mounting switches, switch position OFF – + – ON. Rotary drive required.					
With black handle	**+H10-SW-NA** 097560		**H10-SW-NA** 093193		1 off
With red handle	**+RH10-NA** 097620		**RH10-NA** 093239		1 off

Notes

[1] UL/CSA-approved connection kit consist of:
1 off K2X240IP + 2 off K2X240

[2] When ordering observe:
– O (fitted above)
– U (fitted below)

[3] Package size: 1 set = 3 off

	Type	For use with	General Use		Terminal capacities	Torque
			AC	DC		
Accessories NZM10						
Standard auxiliary contact	**NHI-NZM10**	NZM10/ZM, NZM10/B	10 A – 600 V [1]	0.5 A – 125 V 0.25 A – 250 V [1]	Cu cables, min. AWG 18, max. AWG 14	1.2 Nm
Early-make auxiliary contacts	**VHI-NZM10**	NZM10/ZM, NZM10/B	10 A – 600 V [1]	0.5 A – 125 V 0.25 A – 250 V [1]	Cu cables, min. AWG 18, max. AWG 14	1.2 Nm
Trip-indicating auxiliary contact	**RHI-NZM10**	NZM10/B	10 A – 600 V [1]	0.5 A – 125 V 0.25 A – 250 V [1]	Cu cables, min. AWG 18, max. AWG 14	1.2 Nm
Annunciation unit	**M-NZM10**[2]	NZM10/B	8 A – 250 V	5 A – 30 V		
Undervoltage release	**U-NZM10(...)**	NZM10/ZM, NZM10/B				
Shunt release	**A-NZM10(...)**	NZM10/ZM, NZM10/B				
Earth-fault release	**TV-NZM10**	NZM10/B				
Remote operator	**R-NZM10**	NZM10/ZM, NZM10/B				
Pushbutton for remote operator	**MD-NZM10**	NZM10/ZM, NZM10/B				
Toggle switch interlock	**SVB-NZM10**	NZM10/ZM, NZM10/B				
Rotary drive	**D-NZM10**	NZM10/ZM, NZM10/B				
Rotary handle	**H10U-SW**	NZM10/ZM, NZM10/B				
Extension shaft	**A-NZM10**	NZM10/ZM, NZM10/B				
	A600-NZM10	NZM10/ZM, NZM10/B				

Notes

[1] > 150 V, same polarity
[2] Supply voltage 24 – 240 V AC/DC

Moeller HPL0211-2004/2005

			NZM7		NZM10		
			7-...N	7-...S	10...N	10...S	10...H
Max. rated uninterrupted current I_u			150	150	400 (600)	400 (600)	400 (600)
Switching capacity [1] **(UL 489, CSA 22.1 No. 5)**							
Sym. rms (60 Hz)							
240 V		kA	65	100	65	100	200
480 V		kA	25	65	42	65	100
600 V		kA	14	22	35	42	50
Threshold current values							
Threshold current							
Sym. rms							
240 V		kA	–	9.75	–	–	39
480 V		kA	–	9.75	–	–	39
600 V		kA	–	9.75	–	–	39
Peak							
240 V		kA	–	11.5	–	–	34
480 V		kA	–	12	–	–	42
600 V		kA	–	13	–	–	40
$i^2dt \times 10^3$							
240 V		A^2s	–	400	–	–	2800
480 V		A^2s	–	550	–	–	5500
600 V		A^2s	–	700	–	–	5500
Intermediate current							
Sym. rms							
240 V		kA	–	100	–	–	125
480 V		kA	–	35	–	–	65
600 V		kA	–	14	–	–	42
Peak							
240 V		kA	–	30	–	–	50
480 V		kA	–	12	–	–	52
600 V		kA	–	20	–	–	45
$i^2dt \times 10^3$							
240 V		A^2s	–	900	–	–	3500
480 V		A^2s	–	300	–	–	6600
600 V		A^2s	–	1200	–	–	7200
High interrupting capacity							
Sym. rms							
240 V		kA	–	200	–	–	200
480 V		kA	–	65	–	–	100
600 V		kA	–	22	–	–	50
Peak							
240 V		kA	–	35	–	–	55
480 V		kA	–	34	–	–	64
600 V		kA	–	23	–	–	48
$i^2dt \times 10^3$							
240 V		A^2s	–	920	–	–	4000
480 V		A^2s	–	1100	–	–	8000
600 V		A^2s	–	1800	–	–	8000

Notes [1] Direction of incoming supply as required

		NZM7-...N NZM7-...S	NZM7-...	NZM10...H NZM10...N/B		
Terminal capacities						
Max. uninterrupted current I_u	A	150	200	350	500	600
Cross terminal	Type	K150[1)]	K185	K300-NZM10	K2X120	K2X240
Terminal cross-section						
Cu cable						
min.	AWG	14	14	MCM 250	2 × AWG 3	–
max.	AWG	MCM 250	MCM 250	MCM 500	MCM 250	–
Cu-Al cable						
min.	AWG	–	–	–	–	2 × AWG 2
max.	AWG	–	–	–	–	MCM 500
Torque	Nm	14	14	8	8	50
Terminal screw, copper busbar		M8	M8	–	–	M12
Torque	Nm	14	14	–	–	50

Notes [1)] NZM 7-150N with K185

In addition to UL/CSA, the following devices also have IEC rating data and contain the CE mark.
Depending on the region, door coupling handles are available for NZM frame size 6 – 10.
Keep this in mind when making your selection.

Load interrupters	Motor-protective circuit-breakers	Circuit-breakers
NZM7-...	NZM6B-...CNA	NZM7-...-NA
NZM10-...N/B-NA	NZMH6-...CNA	NZM10-...-NA

Rated uninterrupted current	Setting ranges			Switching capacity	Type	Price	Std. pack
	Overload releases	Short-circuit releases Delayed	Short-circuit releases Non-delayed		Article no.	see price list	
$I_n = I_u$ A	I_r A	I_{sd} A	I_i A	480 V kA			
IZM circuit-breakers, approved to UL 489, for selective protection (V)							
1000	400 – 1000	1250 – 12000	20000	65	**IZMN1-V1000-NA** 281498		1 off
1600	640 – 1600	2000 – 19200	32000	65	**IZMN1-V1600-NA** 281499		
2000	800 – 2000	2500 – 24000	40000	100	**IZMH2-V2000-NA** 281500		
2500	1000 – 2500	3125 – 30000	50000	100	**IZMH2-V2500-NA** 281501		
3000	1200 – 3000	3750 – 36000	50000	100	**IZMH2-V3000-NA** 281502		
4000	1600 – 4000	5000 – 48000	50000	100	**IZMH3-V4000-NA** 281503		
5000	2000 – 5000	6250 – 60000	50000	100	**IZMH3-V5000-NA** 281504		
IZM circuit-breakers, approved to UL 489, for universal protection (U)							
1000	400 – 1000	1250 – 12000	20000	65	**IZMN1-U1000-NA** 281505		1 off
1600	640 – 1600	2000 – 19200	32000	65	**IZMN1-U1600-NA** 281506	**0**	
2000	800 – 2000	2500 – 24000	40000	100	**IZMH2-U2000-NA** 281507		
2500	1000 – 2500	3125 – 30000	50000	100	**IZMH2-U2500-NA** 281508		
3000	1200 – 3000	3750 – 36000	50000	100	**IZMH2-U3000-NA** 281509		
4000	1600 – 4000	5000 – 48000	50000	100	**IZMH3-U4000-NA** 281510		
5000	2000 – 5000	6250 – 60000	50000	100	**IZMH3-U5000-NA** 281511		

Notes: IZM circuit-breakers approved to UL 489 are available as 3-pole devices up to 600 V.

The rated current is determined by the rated current module.
The module, which is supplied as standard, has the max. rated switching current.
If you require a smaller rated current module, add type suffix "+IZM-XRP..." (see IEC selection pages, section 11).

Current transformers for vector total current formation or to protect the neutral pole, and current transformers for measuring the earth-fault current at the transformer's earthed star point must be ordered separately
(see IEC selection pages, section 11).

For LC display and optional earth-fault protection (see IEC selection pages, section 11).

Designation	Type Article no.	Price	Std. pack	Notes
Electronic overcurrent release				
Selectively-operating circuit-breaker	**IZM-XZMV-NA** 281497		1 off	Order individually for replacement. State your circuit-breaker's ID number on your order. If needed, order internal wiring separately: IZM-XZM-VLIS(-VLEW) (see IEC Selection Pages, section 11). For trip block IZM-XZMU-NA, the X8 control circuit plug is required. If do not already have one, order control circuit plug IZM-XKL(Z)(-AV) (see IEC Selection Pages, section 11). Measuring accuracy: Protective function to UL 489 Current display ≦ 5% Measuring functions, primary values ≦ 1% Measuring function, derived values ≦ 4%
Universal circuit-breakers	**IZM-XZMU-NA** 281496			
Universal circuit-breakers with power measuring function	**IZM-XZMU-MP-NA** 281495			
Hand-held test unit				
For testing the correct function of the overcurrent release, the power and current transformers and the F5 tripping magnet.	**IZM-XPH-NA** 281471		1 off	
Rated current module/rating plug				
Replaceable module allowing a reduction of the device current for system optimization, for example when commissioning a subassembly.	**IZM-XRP250-NA** 281476		1 off	The upper limit of the circuit-breaker's rated uninterrupted current I_u can not be exceeded.
	IZM-XRP315-NA 281478			
	IZM-XRP400-NA 281480			
	IZM-XRP500-NA 281482			
	IZM-XRP630-NA 281484			
	IZM-XRP800-NA 281485			
	IZM-XRP1000-NA 281472			
	IZM-XRP1250-NA 281473			
	IZM-XRP1600-NA 281474			
	IZM-XRP2000-NA 281475			
	IZM-XRP2500-NA 281477			
	IZM-XRP3000-NA 281479			
	IZM-XRP4000-NA 281481			
	IZM-XRP5000-NA 281483			
Earth-fault protection for IZM with universal circuit-breaker				
Earth-fault protection (vector total current generation, can be selected), with alarm and trip function	**IZMU-XT-NA** 281460		1 off	For reading the current in the neutral pole, an external inverter is required (see IEC Selection Pages, section 11). The measurement method can be selected, so that direct measurement of the earth-fault current is possible (at the transformer's star point). An external, commercial 1200 A/1 A inverter with an apparent power of P_n = 15 VA is required for this.
Earth-fault protection (vector total current formation, can be selected), alarm function only	**IZMU-XTA-NA** 281461		1 off	
4-line display for universal circuit-breaker				
	IZM-XAM-NA 281462		1 off	Alphanumeric LCD, display options: currents IL1, IL2, IL3, IN, I_g, maintenance information, reason for tripping and phase. In addition, in combination with measurement function IZM-XMP, indication of *U*, *P*, p.f., W, f, THD. For full range of functions, an external 24 V DC supply is required.

Designation	Type Article no.	Price	Std. pack	Notes
Parameter assignment module: please enquire				
Suitable for IZM...-U...-NA Control, diagnostics and configuration of the IZM through the control unit's local interface.	**IZM-XEM-PG-NA** 281669		1 off	Details: see description on IEC Selection Pages, section 11
	IZM-XEM-PGE-NA 281721			
Separate communication module without BSS module				
PROFIBUS DP communication port including connection cable, without bus signalling of internal operational states (BSS module). With built-in temperature sensor and microswitches for position signalling (for drawout switches).	**IZM-XCO-DP-NA** 281494		1 off	When you use the communication module, auxiliary contacts IZM-XHIA, -XHIF, -XHIS and -XHIS1 can not be fitted. These signals are then available only through communication in combination with the BSS module. External 24 V DC power supply required.
Breaker status sensor (BSS module), separate				
Suitable for IZM...-U...-NA Used for signalling the internal operational states (main contacts ON/OFF, trip indication, state of spring-operated stored energy mechanism, availability signal, voltage trip status signal)	**IZM-XBSS-NA** 281493		1 off	When you use the BSS module, auxiliary contacts IZM-XHIA, -XHIF, -XHIS and -XHIS1 can not be fitted. These signals are then available through PROFIBUS DP (only in combination with a communication module) or external expansion modules. External 24 V DC power supply required.
Power measuring function				
Suitable for IZM...-U...-NA For the measuring function, an external 3-phase voltage transformer is required (see IEC Selection Pages, section 11). Allows the determination of *I*, *U*, *P*, p.f., W, *f* and THD, peak factor and form factor.	**IZM-XMP-NA** 281463		1 off	Parameterization and operation keypad IZM-XEM-PG(E)-NA required for configuring the measuring function (setting transformer primary and secondary voltage, power direction and transformer connection type). External 24 V DC power supply required.
Expansion modules, including 0.2 m connection cable				
Suitable for IZM...-U...-NA	**IZM-XEM-4AO-NA** 281464		1 off	Dimensions w × h × d: 70 × 86 × 95 mm Installation on 35 mm mounting rail External 24 V DC power supply required. Each expansion module is supplied with a prefabricated 0.2 m cable for connecting the modules with each other. To connect them to the circuit-breaker, a longer connection cable – IZM-XVL1(VL2)(VLM-X8) – is required (see IEC Selection Pages, section 11). For reading the internal switching states, an IZM-XBSS breaker status sensor is required.
	IZM-XEM-6DI-NA 281465			
	IZM-XEM-6DO-R-NA 281466			
	IZM-XEM-6DO-T-NA 281467			
	IZM-XEM-6PDO-R-NA 281468			
	IZM-XEM-6PDO-T-NA 281469			
	IZM-XEM-ZSI-NA 281470			
Withdrawable unit				
Up to 1000 A	**IZM1-XAV10-NA** 281486		1 off	Standard: horizontal terminals; for versions see "Connection system for withdrawable unit" (IEC Selection Pages, section 11). When ordering, this separately, observe the following: – Withdrawable unit is already fitted with 4 screw terminal type control circuit plugs (X5 to X8). – Can be combined only with basic units prepared for withdrawable modules (basic unit + IZM-XAVE or with conversion kit IZM...-XUS...-AV).
1600 A	**IZM1-XAV16-NA** 281487			
2000 A	**IZM2-XAV20-NA** 281488		1 off	
2500 A	**IZM2-XAV25-NA** 281489			
3000 A	**IZM2-XAV30-NA** 281490			
4000 A	**IZM3-XAV40-NA** 281491		1 off	
5000 A	**IZM3-XAV50-NA** 281492			

General notes for UL accessories: Observe description of communication components; see IEC Selection Pages, section 11.
Except for +IZM...-X1000V, +IZM-XT and +IZM-XMH, all IZM type suffixes from the IEC Selection Pages can be used for the UL devices, provided the UL regulations do not prohibit this.
Individual IZM accessories not listed here can be used for UL devices, provided the UL regulations do not prohibit this.

Frame size		IZMN1-...	IZMH2-...	IZMH3-...
General technical data				
Short-circuit switching capacity				
Up to 480 V AC	kA	65	100	100
Up to 600 Y/347 V AC	kA	50	–	85
Up to 600 V AC	kA	–	85	–
Rated short-time withstand current				
At max. delay time t_{sd} = 0.4 s	kA	65	85	85

Technical data deviating from the products for the IEC market:

Frame size		IZMN1-...		IZMH2-...			IZMH3-...	
Rated current I_n at 40 °C, at 50/60 Hz Main cable	A	1000	1600	2000	2500	3000	4000	5000
Rated voltage U_e at 50/60 Hz	V AC	600Y / 347	600Y / 347	600	600	600	600Y / 347	600Y / 347
Ambient temperature of plant	C	-25/+40						
Lifespan								
Mechanical (without maintenance)	Operations	10000	10000	10000	10000	10000	5000	5000
Mechanical (with maintenance)[1]	Operations	20000	20000	15000	15000	15000	10000	10000
Electrical (without maintenance)	Operations	4000	4000	4000	4000	4000	1000	1000
Minimum dimensions								
Switch compartment Width × height × depth	3-pole/mm	400×460 ×380	500×460 ×380	800×460 ×380	–	–	–	–
	4-pole/mm	500×460 ×380	600×460 ×380	1000×460 ×380	–	–	–	–
Min. cross-sections of main cable	Number	2	2	2	2	4	4	4
Cross-section in mm²	mm²	6.4 × 76.2	6.4 × 76.2	6.4 × 102	6.4 × 127	6.4 × 102	10 × 120	10 × 120
Cross-section in inches	inches	1/4 × 3	1/4 × 3	1/4 × 4	1/4 × 5	1/4 × 4	1/4 × 5[2]	1/4 × 5[2]
Control circuit cable (Cu)								
Max. number or control circuit cables × cross-section (solid/stranded)								
Standard connection = screw terminal without ferrule		2 x 0.5 mm² (AWG 20) to 2 × 1.5 mm² (AWG 16), 1 × 2.5 mm² (AWG 14)						
With ferrule to DIN 46228 T.2		1 x 0.5 mm² (AWG 20) to 1 × 1.5 mm² (AWG 16)						
With twin ferrule		2 x 0.5 mm² (AWG 20) to 2 × 1.5 mm² (AWG 16)						
Optional connection = tension spring Without ferrule		2 x 0.5 mm² (AWG 20) to 2 × 2.5 mm² (AWG 14)						
With ferrule to DIN 46228 T.2		2 x 0.5 mm² (AWG 20) to 2 × 1.5 mm² (AWG 16)						

[1] Maintenance means replacement of the main contacts and the arcing chamber (see operator manual)
[2] 1/4 × 5 for fixed mounted breaker on request

IZM-XHI... standard auxiliary contact			
Rated insulation voltage U_i		AC/DC V	300
Rated operational voltage U_e		AC/DC V	240
Switching capacity		AC/DC V	
AC, 50/60 Hz	A 300 heavy duty	A	10
Direct current	P 300 heavy duty	A	10
Availability signalling switch IZM-XHIB (to UL 1054)			
Switching capacity			
Rated operational voltage		V	250
Rated operational current		A	3

Moeller HPL0211-2004/2005

UL 1077/CSA 22.2 No. 235		
Supplementary protectors		With appropriate line-side elements, FAZ miniature circuit-breakers are UL 1077 approved as "supplementary protectors".
FAZ; B characteristic; 6 – 63 A FAZ; C characteristic; 0.5 – 63 A FAZ; D characteristic; 1 – 40 A FAZ; R characteristic; 6 – 40 A FAZ; S characteristic; 1 – 16 A		
Switching capacity		
1-pole		5 kA – 277 V 60 Hz; without line-side element
Multi-pole		5 kA – 480/277 V 60 Hz; in combination with a line-side element (100 A or max. 4 × I_n fuse)
1-pole		10 kA 48 V DC
2-pole		10 kA 125 V DC
Tripping current		155 % I_n at 30 °C
Accessories		
Auxiliary contacts FAZ-XHI/FAZ-XRHI		
General Use		
	230 V AC/240 V AC	2 A/2 A
	110 V DC/120 V DC	0.5 A/0.5 A
Pilot Duty		A 600 Q 300
Voltage releases		
FAZ-XAA shunt release		
Rated operational voltage		
FAZ-XAA(110-415 V AC)	V AC	110 – 415
	V DC	110 – 230
FAZ-XAA(12-110 V AC)	V AC	12 – 110
	V DC	24 – 60
FAZ-XUA undervoltage release		
Rated operational voltage		
FAZ-XUA(115 V AC)	V AC	115
FAZ-XUA(230 V AC)	V AC	230
FAZ-XUA(400 V AC)	V AC	400
Terminal capacities		
Supplementary protectors FAZ-B FAZ-C FAZ-D FAZ-XAA FAZ-R FAZ-S		
Cables		Cu 75 °C, min. AWG 18, max. AWG 4
Torque	Nm	2.4
Accessories		
Cables		Cu 75 °C, min. AWG 18, max. AWG 14
Torque		
FAZ-XHI FAZ-XRHI	Nm	0.8
FAZ-XUA	Nm	0.8

Characteristic	Rated continuous current I_u A	1-pole Type Article no.	Price see price list	Std. pack	Notes
Circuit-breakers (UL 489)					**Circuit-breakers to UL 489** 1-pole unit, 240 V AC Field terminals: 75 °C CU only no. 14 – 12 AWG, torque 2.4 Nm int. rating: 10,000 AMP RMS SYM. Spacings for multiple pole installations where breakers are mounted adjacent to each other and are connected to different polarity circuits must be maintained as follows: Through air: 19.1 mm Over surface: 31.8 mm Single-pole miniature circuit-breakers with UL 489 approval can be used as output circuit-breakers, e.g. for lamps and sockets.
Switching capacity 10 kA					
B Response current of short-circuit release $3 - 5 \times I_n$	0.5	**FAZ-B0,5-NA** 263490		12 off	
	1	**FAZ-B1-NA** 263491			
	1.5	**FAZ-B1,5-NA** 263492			
	2	**FAZ-B2-NA** 263493			
	3	**FAZ-B3-NA** 263494			
	4	**FAZ-B4-NA** 263495			
	5	**FAZ-B5-NA** 263496			
	6	**FAZ-B6-NA** 232304			
	7	**FAZ-B7-NA** 263497			
	10	**FAZ-B10-NA** 232305			
	13	**FAZ-B13-NA** 232306			
	15	**FAZ-B15-NA** 263498			
	16	**FAZ-B16-NA** 232307			
	20	**FAZ-B20-NA** 232308			
C Response current of short-circuit release $5 - 10 \times I_n$	0.5	**FAZ-C0,5-NA** 232309		12 off	
	1	**FAZ-C1-NA** 232310			
	1.5	**FAZ-C1,5-NA** 263500			
	2	**FAZ-C2-NA** 232311			
	3	**FAZ-C3-NA** 232312			
	4	**FAZ-C4-NA** 232313			
	5	**FAZ-C5-NA** 263501			
	6	**FAZ-C6-NA** 232314			
	7	**FAZ-C7-NA** 263502			
	10	**FAZ-C10-NA** 223513			
	13	**FAZ-C13-NA** 232315			
	15	**FAZ-C15-NA** 263503			
	16	**FAZ-C16-NA** 223514			
	20	**FAZ-C20-NA** 223515			

Moeller HPL0211-2004/2005

Dimensions			Mounting depth	Features	Type	Price	
					Article no.	see price list	Std. pack
Width	Height	Depth					
mm			mm				
CI-K basic enclosures							
• Degree of protection IP 65 • Enclosure base RAL 9005, black; enclosure top RAL 7035, light grey • Smooth sides all round • Approved for UL, CSA							
100	160	100	73	With mounting rail	**CI-K2X-100-TS-NA** 231220		1 off
			79	With mounting plate	**CI-K2X-100-M-NA** 231228		
		145	118	With mounting rail	**CI-K2X-145-TS-NA** 231221		
			124	With mounting plate	**CI-K2X-145-M-NA** 231229		
120	200	125	93	With mounting rail	**CI-K3X-125-TS-NA** 231222		
			98	With mounting plate	**CI-K3X-125-M-NA** 231230		
		160	128	With mounting rail	**CI-K3X-160-TS-NA** 231223		
			133	With mounting plate	**CI-K3X-160-M-NA** 231231		
160	240	125	93	With mounting rail	**CI-K4X-125-TS-NA** 231224		
			98	With mounting plate	**CI-K4X-125-M-NA** 231232		
		160	128	With mounting rail	**CI-K4X-160-TS-NA** 231225		
			133	With mounting plate	**CI-K4X-160-M-NA** 231233		
200	280	125	93	With mounting rail	**CI-K5X-125-TS-NA** 231226		
			98	With mounting plate	**CI-K5X-125-M-NA** 231234		
		160	128	With mounting rail	**CI-K5X-160-TS-NA** 231227		
			133	With mounting plate	**CI-K5X-160-M-NA** 231236		

Notes Degrees of protection of enclosures to NEC (NFPA 70), NEMA, UL, CSA: Type 1, 3R, 4X, 12, 13
→ Degrees of protection, Page 19/19

UL File No. E54120

Dimensions			Mounting depth	**Type** Article no.	**Price** see price list	Std. pack
Width mm	Height	Depth	mm			
Panel enclosures						
• Degree of protection IP 65 • Enclosure base RAL 7032, removable, smooth flanges on all sides • Fixing straps for wall fixing • Approved for UL, CSA						
Panel enclosures with cover and flanges						
• Transparent cover, cover fasteners can be sealed						
234	296	150	125	**CI23-125-NA**[1)] 002234		1 off
		175	150	**CI23-150-NA**[1)] 002237		
421	296	150	125	**CI43-125-NA**[1)] 002238		
		175	150	**CI43-150-NA**[1)] 002241		
		225	200	**CI43-200-NA**[1)] 002242		
	421	150	125	**CI44-125-NA**[1)] 002245		
		175	150	**CI44-150-NA**[1)] 002246		
		225	200	**CI44-200-NA**[1)] 002249		
		275	225	**CI44-250-NA**[1)] 002250		
	546	225	200	**CI45-200-NA**[1)] 264024		
	796	225	200	**CI48-200-NA**[2)] 002253		
		275	250	**CI48-250-NA**[2)] 002254		
Panel enclosures with door and flanges						
• Transparent cover with door, cover fasteners can be sealed • Transparent door with quick-release fasteners and 180° door opening angle • Door hinges can be subsequently changed to left, right, top or bottom						
234	296	166	125	**CI23-125/T-NA**[2)] 002235		1 off
		191	150	**CI23-150/T-NA**[2)] 002236		
421	296	166	125	**CI43-125/T-NA**[2)] 002239		
		191	150	**CI43-150/T-NA**[2)] 002240		
		241	200	**CI43-200/T-NA**[2)] 002243		
	421	166	125	**CI44-125/T-NA**[2)] 002244		
		191	150	**CI44-150/T-NA**[2)] 002247		
		241	200	**CI44-200/T-NA**[2)] 002248		
		291	250	**CI44-250/T-NA**[2)] 002251		
	796	241	200	**CI48-200/T-NA**[2)] 002252		
		291	250	**CI48-250/T-NA**[2)] 002255		
		241	200	**CI48-200/2T-NA**[2)] 002256		
		291	250	**CI48-250/2T-NA**[2)] 002257		

Notes

- Degrees of protection
  - [1)] IEC/EN 60 529: IP 65; NEMA, UL 508: Type 12, Type 13
    4 X indoor; CSA-C 22.2 No.94: Enclosure 4, Enclosure 5
  - [2)] IEC/EN 60 529: IP 65; NEMA, UL 508: Type 12, Type 13
    CSA-C 22.2 No. 94: Enclosure 5
- UL approval
  File No. E 54120, Vol. 2, Sec. 4; Guide No. NITW
- CSA approval
  Report No. LR 27130-5; Class No. 321107

Moeller HPL0211-2004/2005

Dimensions			Mounting depth	**Type** Article no.	**Price** see price list	Std. pack
Width	Height	Depth				
mm			mm			
Individual enclosures						
• Degree of protection IP 65 • Enclosure base RAL 7032 with smooth sides • Fixing straps for wall fixing • Approved for UL, CSA						
Individual enclosures with cover						
• Transparent cover, cover fasteners can be sealed						
187.5	250	150	125	**CI23X-125-NA** 002209		1 off
		175	150	**CI23X-150-NA** 002212		
375	250	150	125	**CI43X-125-NA** 002213		
		175	150	**CI43X-150-NA** 002232		
		225	200	**CI43X-200-NA** 002217		
	375	150	125	**CI44X-125-NA** 002218		
		175	150	**CI44X-150-NA** 002219		
		225	200	**CI44X-200-NA** 002220		
		275	250	**CI44X-250-NA** 002224		
	500	225	200	**CI45X-200-NA** 264023		
Individual enclosures with covers and doors						
• Transparent cover with door, cover fasteners can be sealed • Transparent door with quick-release fasteners and 180° door opening angle • Door hinges can be subsequently changed to left, right, top or bottom						
187.5	250	166	125	**CI23X-125/T-NA** 002210		1 off
		191	150	**CI23X-150/T-NA** 002211		
375	250	166	125	**CI43X-125/T-NA** 002214		
		191	150	**CI43X-150/T-NA** 002215		
		241	200	**CI43X-200/T-NA** 002216		
	375	166	125	**CI44X-125/T-NA** 002233		
		191	150	**CI44X-150/T-NA** 002222		
		241	200	**CI44X-200/T-NA** 002221		
		291	200	**CI44X-250/T-NA** 002223		

Notes

- Degrees of protection
  IEC/EN 60529: IP 65
  NEMA, UL 508: Type 12, Type 13
  4 X indoor
  CSA-C 22.2 No. 94: Enclosure 4, Enclosure 5
- UL approval
  File No. E 54120, Vol. 2, Sec. 4
  Guide No. NITW
- CSA approval
  Report No. LR 27130-5
  Class No. 321107

For use with	Mounting depth mm	**Type** Article no.	**Price** see price list	Std. pack
Covers, transparent				
• Sealable cover fasteners • Gaskets				
U-CI 23...	125	**D125-CI23-NA** 014286		10 off
	150	**D150-CI23-NA** 014334		4 off
U-CI-43...	125	**D125-CI43-NA** 014433		5 off
	150	**D150-CI43-NA** 014480		2 off
	200	**D200-CI43-NA** 014771		2 off
U-CI-44...	125	**D125-CI44-NA** 014838		5 off
	150	**D150-CI44-NA** 010937		2 off
	200	**D200-CI44-NA** 010985		2 off
	250	**D250-CI44-NA** 011049		1 off
U-CI 45...	200	**D200-CI45-NA** 264022		
U-CI 48...	200	**D200-CI48-NA** 011878		
	250	**D250-CI48-NA** 011906		

For use with	**Type** Article no.	**Price** see price list	Std. pack
Doors			
• Degree of protection IP 65 • Door opening angle to 180° • Door hinges can be subsequently changed to left, right, top or bottom • Adhesive film for marking the cutout • Fixing screws • Transparent			
Surface mounting on all enclosure covers D...-CI23-NA	**T-CI23-NA** 011925		1 off
Surface mounting on all enclosure covers D...-CI23-NA	**T-CI43-NA** 011957		
Surface mounting on all enclosure covers D...-CI44-NA and D...-CI 48-NA	**T-CI44-NA** 012001		

For use with	Mounting depth mm	Type Article no.	Price see price list	Std. pack
Covers with door				
• Degree of protection IP 65				
U-CI 23...	125	**D125-CI23/T-NA** 012038		1 off
	150	**D150-CI23/T-NA** 012097		
U-CI 43...	125	**D125-CI43/T-NA** 012115		
	150	**D150-CI43/T-NA** 012147		
	200	**D200-CI43/T-NA** 012195		
U-CI 44...	125	**D125-CI44/T-NA** 012335		
	150	**D150-CI44/T-NA** 012357		
	200	**D200-CI44/T-NA** 012780		
	250	**D250-CI44/T-NA** 012809		
U-CI 48...	200	**D200-CI48/T-NA** 012842		
	205	**D250-CI48/T-NA** 012863		
	200	**D200-CI48/2T-NA** 012392		
	205	**D250-CI48/2T-NA** 012411		

For use with	Type Article no.	Price see price list	Std. pack
Flanges			
For enclosure dimension 187.5 mm	**FL2-X-NA** 208310		10 off
For enclosure dimension 250 mm	**FL3-X-NA** 012462		
For enclosure dimension 375 mm	**FL4-X-NA** 208309		
Spacers			
For enlarging the cable entry space in combination with FL 3-X-NA	**ZRF3-NA** 012479		20 off

Suitable for commercial conduits	**Type** Article no.	**Price** see price list	Std. pack
PG cable glands			
• Conduit union and lock nut with earthing screw • Suitable for all ...-NA CI enclosures • Approved for UL, CSA			
½ ″	**STB1/2ZOLL** 045878		1 off
¾ ″	**STB3/4ZOLL** 060116		
1″	**STB1ZOLL** 052997		
1 ¼ ″	**STB1-1/4ZOLL** 043505		
1 ½ ″	**STB1-1/2ZOLL** 041132		
2″	**STB2ZOLL** 002203		

Notes

- UL approval
  File No. E 23018
  File No. E 3060
- CSA approval
  Report No. LR 636
  Report No. LR 2884

This glossary contains brief explanations of the terms used in this section.

For further definitions, see the main glossary in section 20.

Abbreviations

AWG	American Wire Gauge	An American unit of measurement, the AWG or MCM value indicates wire thickness. For a conversion to mm and inches, see http://www.coilcraft.com/awg.html
HP	Horsepower	1 HP = 0.75 kW; 1 PS = 0.986 HP

Organizations

CSA	Canadian Standards Association	Further information at: http://www.csa.ca
NEC	National Electrical Code	Further information at: http://www.nfpa.org
NEMA	National Electrical Manufacturers Association	Further information at: http://www.nema.org
NFPA	National Fire Protection Association	Further information at: http://www.nfpa.org
OSHA	Occupational Safety and Health Administration	Further information at: http://www.osha.gov
UL	Underwriters Laboratories	Further information at: http://ultesting.com

Terminology

A600, Q300, B300	Indicate magnitude and type of switching capacity in control circuits.
Fleeting contact on energization	Fleeting contact on energization
Heavy Pilot Duty	Highest duty type for control circuits
Instantaneous	Tripping without delay
Molded case switch	Switch-disconnector in circuit-breaker format
Pilot Duty	Control circuit duty type
Standard pilot duty	Normal duty type for control circuits
Supplementary protectors	Supplementary protective devices