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Full-service, independent repair center
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along with credit for buybacks and trade-ins.

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so your equipment works exactly as you specify.

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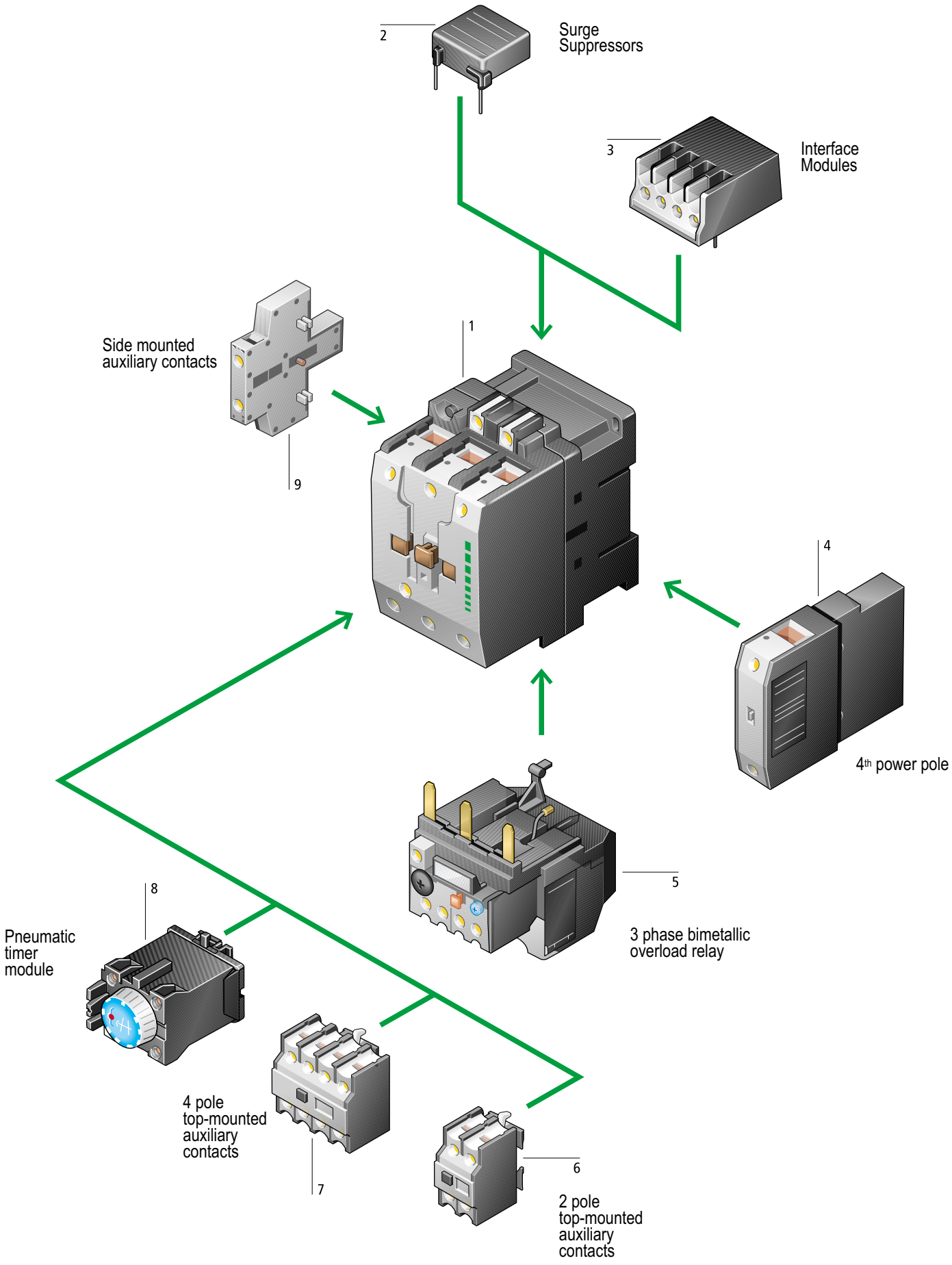
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DIL...M

1 Main Contactor – Page 3/4

Main Contacts
- 3 & 4 power poles (**DIL 00M**)
- 3 pole + 4th pole side-mounted (**DIL 0M, 1M, 2M**)

Magnet System
- AC Coil Range: 12 – 600 V, 50, 60, 50/60 Hz
- DC Coil Range: 12 – 250 V DC
- Coils also available for non-standard voltages

Added Reliability
- Standard AC coils are dual voltage, each optimized at 60 Hz and 50 Hz. Example: 120 V 60 Hz / 110 V 50 Hz
- Coils are also available in single voltage, single frequency; single voltage, dual frequency and DC. Magnet system characteristics for standard AC coils feature a broader response range than required by standards:
- Pull-in: 80 – 110%, Drop-out: 40 – 60% of coil rating.

2,3,8 Accessories – Page 3/35

- Pneumatic timer module
- Mechanical latch module (for **DIL 00M, 00AM**)
- Interface modules (to enable energizing from low level sources)
- Surge Suppressors
- Mechanical Interlock

4 Add-on Power Pole – Page 3/36

4TH power pole can be added on to contactors type **DIL 0M** through **DIL 2M.**

5 3 Phase Bimetallic Overload Relay for DIL...M Starters – Page 3/33

- Plug-in or separately mounted
- Phase failure sensitive to IEC, UL & CSA
- Ambient compensated to IEC, UL & CSA
- Accurate and reliable tripping
- Hand (supplied from factory) or automatic reset, Test button to simulate trip, OFF button to open the N.C. contact only, Yellow trip indicator flag

Type **Z00, Z1, Z5**

6,7,9 Auxiliary Contacts – Page 3/35

- Maximum 5
- Top-mounted contacts, 2 & 4 pole
- Side-mounted contacts, 1 & 2 pole (not for **DIL 00(A)M**)
- Time delayed contacts, 1 N.O. & 1 N.C.
- Overlapping contacts, 1 Early Make, 1 Late Break
- *Safety feature* - Positively driven auxiliary contacts
- In accordance with ZH 1/457 safety circuit requirements:
  - All N.O. & N.C. contacts can never be simultaneously closed, with the exception of overlapping contacts.
  - For contactor type **DIL 0(A)M, 1(A)M, 2(A)M**: Only side-mounted auxiliary contacts.

Mounting

- Modularly designed system, available as components or as completely assembled units
- Provisions for both Panel and DIN rail mounting
- All terminal and mounting screws, for both contactors and overload relays, can be fastened with the identical screwdriver (Size 2 posidrive)
- Finger-safe termination design for compliance with worldwide standards
- Screw-clamp terminal connections for more secure tightening of conductors
- Fast-on connectors available for more convenient control and coil circuit tap-offs

UL / CSA / CE / IEC / EN 60 947

DIL...M and **DIL** universal contactors,
ZE / Z00 / Z1 / Z5 / ZW7 overload relays are:
- UL listed
- CSA certified
- CE marked
- IEC/EN 60 947 compliant

Suitable for worldwide markets

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1	2							3				4	5		6	7
Snap-on fastening to DIN rail or panel mounting	**Rating data** UL/CSA maximum Horsepower rating (HP) 50/60 Hz							**IEC 60 947/EN 60 947** Maximum 3-phase Motor Ratings (kW) 50/60 Hz				General Purpose Cont. Current	Standard auxiliary contacts		**Type** **Important:** Add coil voltage and frequency from page **3**/46 - **3**/47 to end of type. See page **3**/5 for more details.	**Price**
	1 phase			**3 phase**				**AC-3**								
	115 V HP	200 V HP	230 V HP	200 V HP	230 V HP	**460 V HP**	575 V HP	220 V 230 V kW	**380 V 440 V kW**	660 V 690 V kW	1000 V kW	open/ enclosed Amps	NO	NC		**$**
	3-pole															
	1/4	3/4	1	1 1/2	2	**3**	3	1.5	**3**	3	-	15/13.5	1	0	**DIL EEM-10**	See Price List
													0	1	**DIL EEM-01**	See Price List
	1/2	1	1 1/2	2	3	**5**	5	2.2	**4**	4	-	15/13.5	1	0	**DIL EM-10**	See Price List
													0	1	**DIL EM-01**	See Price List
	4-pole															
	1/2	1	1 1/2	2	3	**5**	5	2.2	**4**	4	-	15/13.5	0	0	**DIL EM-4**	See Price List
	1/2	1	1 1/2	3	3	**5**	7 1/2	2.2	**4**	5.5	-	20/18	0	0	**DIL 00M 4**	See Price List
	3-pole															
	1/2	1	1 1/2	3	3	**5**	7 1/2	2.2	**4**	5.5	-	20/18	0	0	**DIL 00M**	See Price List
													1	0	**DIL 00M-10**	See Price List
													0	1	**DIL 00M-01**	See Price List
	1	2	2	3	3	**7 1/2**	10	3	**5.5**	7.5	-	20/18	0	0	**DIL 00AM**	See Price List
													1	0	**DIL 00AM-10**	See Price List
													0	1	**DIL 00AM-01**	See Price List
	2	2	3	7 1/2	7 1/2	**10**	15	4	**7.5**	11	-	35/31	0	0	**DIL 0M**	See Price List
	2	3	5	7 1/2	10	**15**	20	5.5	**11**	15	-	35/31	0	0	**DIL 0AM**	See Price List
	3	5	5	10	10	**20**	25	7.5	**15**	18.5	-	55/50	0	0	**DIL 1M**	See Price List
	3	5	7 1/2	10	15	**25**	30	11	**18.5**	22	-	55/50	0	0	**DIL 1AM**	See Price List
	3	7 1/2	10	15	20	**40**	40	15	**22**	30	-	90/81	0	0	**DIL 2M**	See Price List
	5	10	15	20	25	**50**	50	18.5	**30**	37	-	90/81	0	0	**DIL 2AM**	See Price List
	7 1/2	15	15	25	30	**60**	75	22	**37**	55	37	100/90	0	0	**DIL 3M 80**	See Price List
	10	25	25	40	50	**100**	125	37	**55**	90	55	130	0	0	**DIL 4M 115**	See Price List
				50	60	**125**	150	55	**90**	175	108	225	2	2	**DIL M 185/22**	See Price List
				60	75	**150**	200	70	**110**	215	108	250	2	2	**DIL M 225/22**	See Price List
				75	100	**200**	250	75	**132**	240	108	350	2	2	**DIL M 250/22**	See Price List
				100	125	**250**	300	90	**160**	286	132	350	2	2	**DIL M 300/22**	See Price List
				125	150	**300**	400	125	**200**	344	132	450	2	2	**DIL M 400/22**	See Price List
				150	200	**400**	500	155	**250**	344	132	550	2	2	**DIL M 500/22**	See Price List

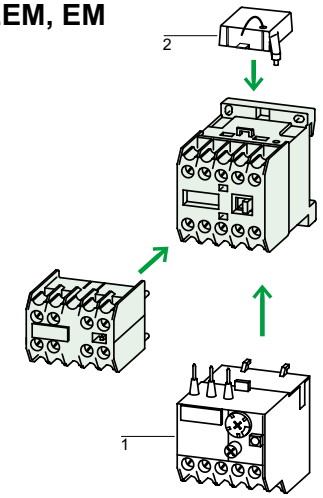
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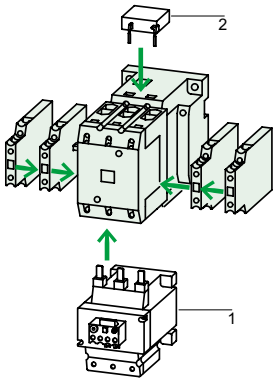
Accessory and Ordering Guide

DIL EEM, EM



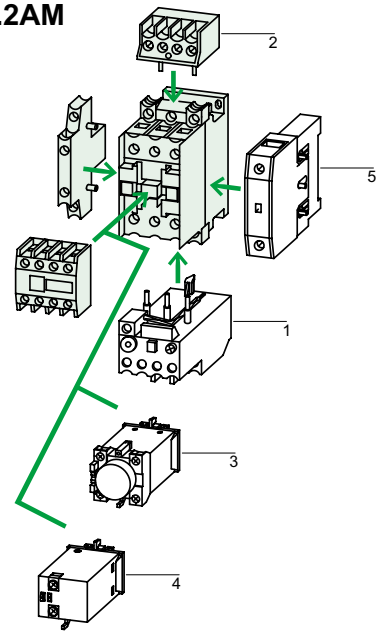
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DIL 3M 80, 4M 115



1.	Overload Relay	Page **4**/4
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DIL 00M...2AM



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DIL M 185...500

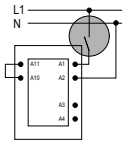
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For enclosed contactor information, consult Moeller Electric Corporation.

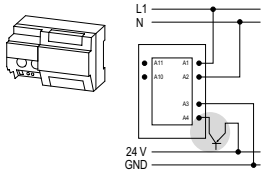
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Energization options for contactors DIL M185...500 with electronically controlled magnet systems

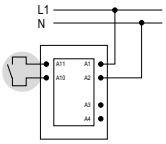
Conventionally:
Using terminals A1 – A2
for supply feed



Directly from a PLC output:
Using terminals A3 – A4 to
connect to the PLC



Using low power sources:
Using terminals A10 – A11
for connection to low power
sources such as limit
switches, sensors, solid
state relays etc...



Stock Coil Voltages

24 V 60 Hz(through **DIL 4M 115**)	12 V DC (**DIL EM** only)
120 V 60 Hz / 110 V 50 Hz	24 V DC (through **DIL 4M 115**)
208 V 60 Hz	120 V DC
240 V 60 Hz / 230 V 50 Hz	
480 V 60 Hz / 415 V 50 Hz	For a complete listing of
600 V 60 Hz	standard and special coils,
	see page **3**/46

How to Order

To Order Specify:	**Example:** 10 HP @ 460 V AC, 3 PH contactor with 1NO and 1NC standard auxiliary contacts and 120 V 60 Hz coil	
	Type Number	Coil Voltage
1 Type Number	**DIL 0M/11**	**120V 60 HZ**
2 Accessories		
3 Coil Voltage		

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1	2				3			4		5	6
Snap-on fastening to DIN rail or panel mounting	**Rating data** UL/CSA maximum Horsepower rating (HP) 50/60 Hz **3-phase**				**IEC/EN 60 947** Maximum 3-phase Motor Ratings (kW) 50/60 Hz **AC-3**			Standard Auxiliary Contacts		**Type** open **Important:** Add coil voltage and frequency from page **3**/46 - **3**/47 to end of type. See page **3**/7 for more details.	Price
	200 V HP	230 V HP	**460 V HP**	575 V HP	220 V 230 V 240 V kW	**380 V 400 V 440 V kW**	660 V 690 V kW	NO	NC		$
	2	3	**5**	5	2.2	**4**	4	2	1	**DIUL EM/21/MV**	See Price List
	3	3	**7 1/2**	10	3	**5.5**	–	1	1	**DIUL 00AM/11/MV**	See Price List
	7 1/2	7 1/2	**10**	15	4	**7.5**	–	1	1	**DIUL 0M/11/MV**	See Price List
	7 1/2	10	**15**	20	5.5	**11**	–	1	1	**DIUL 0AM/11/MV**	See Price List
	10	10	**20**	25	7.5	**15**	–	1	1	**DIUL 1 M/11/MV**	See Price List
	10	15	**25**	30	11	**18.5**	–	1	1	**DIUL 1 AM/11/MV**	See Price List
	15	20	**40**	40	15	**22**	–	1	1	**DIUL 2 M/11/MV**	See Price List
	20	25	**50**	50	18.5	**30**	–	1	1	**DIUL 2 AM/11/MV**	See Price List
	25	30	**60**	75	22	**37**	55	2	2	**DIUL 3M 80/11/XMV**	See Price List
	40	50	**100**	125	37	**55**	90	2	2	**DIUL 4M 115/11/XMV**	See Price List
	30	30	**60**	75	32	**45**	55	2	2	**DIUL 3-22-V**	See Price List
	40	50	**100**	100	55	**75**	90	2	2	**DIUL 4-22-V**	See Price List
	60	75	**150**	175	65	**110**	132	2	2	**DIUL 6-22-V**	See Price List
	75	100	**200**	250	90	**160**	200	2	2	**DIUL 8-22-V**	See Price List
	125	150	**300**	350	110	**200**	–	2	2	**DIUL 8A-22-V**	See Price List

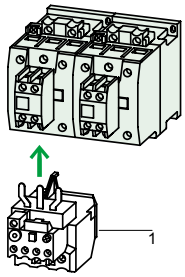
Note: Reversing contactors are provided standard with a mechanical interlock and minimum 1NO and 1NC auxiliary contact per contactor (1 NC contact per contactor is normally used as an electrical interlock).

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Accessory and Ordering Guide

DIUL 00M - DIUL 4M 115



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For enclosed contactor information, consult Moeller Electric Corporation.

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Overload Relays	**4**/2
Accessories	**3**/35

Stock Coil Voltages

24 V 60 Hz (through **DIUL 4M 115**)
120 V 60 Hz / 110 V 50 Hz
208 V 60 Hz
240 V 60 Hz / 230 V 50 Hz
480 V 60 Hz / 415 V 50 Hz
600 V 60 Hz

For a complete listing of standard and special coils, see page **3**/46

How to Order

To Order Specify:

1 Type Number
2 Accessories
3 Coil Voltage

Example: 10 HP @ 460 V AC, 3 PH reversing contactors with 1NO and 1NC standard auxiliary contacts and 120 V 60 Hz coil

Type Number	Coil Voltage
DIUL 0M/11/MV	**120 V 60 Hz**

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1	2							3				4	5		6	7
Snap-on fastening to DIN rail or panel mounting	**Rating data** UL/CSA maximum Horsepower rating (HP) 50/60 Hz							**IEC 60 947/EN 60 947** Maximum 3-phase Motor Ratings (kW) 50/60 Hz				General Purpose Continuous Current	Standard auxiliary contacts		**Type** **Important:** Add coil voltage from page **3**/46 - **3**/47 to end of type. See page **3**/9 for more details.	**Price**
	1 phase			**3 phase**				**AC-3**								
	115 V HP	200 V HP	230 V HP	200 V HP	230 V HP	**460 V HP**	575 V HP	220 V 230 V kW	**380 V 440 V kW**	660 V 690 V kW	1000 V kW	open/ enclosed Amps	NO	NC		$
	3-pole															
	1/4	3/4	1	1 1/2	2	**3**	3	1.5	**3**	3	-	15/13.5	1	0	**DIL EEM-10-G**	See Price List
													0	1	**DIL EEM-01-G**	See Price List
	1/2	1	1 1/2	2	3	**5**	5	2.2	**4**	4	-	15/13.5	1	0	**DIL EM-10-G**	See Price List
													0	1	**DIL EM-01-G**	See Price List
	4-pole															
	1/2	1	1 1/2	2	3	**5**	5	2.2	**4**	4	-	15/13.5	0	0	**DIL EM-4-G**	See Price List
	1/2	1	1 1/2	3	3	**5**	7 1/2	2.2	**4**	5.5	-	20/18	0	0	**DIL 00M 4-G**	See Price List
	3-pole															
	1/2	1	1 1/2	3	3	**5**	7 1/2	2.2	**4**	5.5	-	20/18	0	0	**DIL 00M-G**	See Price List
													1	0	**DIL 00M-G-10**	See Price List
													0	1	**DIL 00M-G-01**	See Price List
	1	2	2	3	3	**7 1/2**	10	3	**5.5**	7.5	-	20/18	0	0	**DIL 00AM-G**	See Price List
													1	0	**DIL 00AM-G-10**	See Price List
													0	1	**DIL 00AM-G-01**	See Price List
	2	2	3	7 1/2	7 1/2	**10**	15	4	**7.5**	11	-	35/31	0	0	**DIL 0M-G**	See Price List
	2	3	5	7 1/2	10	**15**	20	5.5	**11**	15	-	35/31	0	0	**DIL 0AM-G**	See Price List
	3	5	5	10	10	**20**	25	7.5	**15**	18.5	-	55/50	0	0	**DIL 1M-G**	See Price List
	3	5	7 1/2	10	15	**25**	30	11	**18.5**	22	-	55/50	0	0	**DIL 1AM-G**	See Price List
	3	7 1/2	10	15	20	**40**	40	15	**22**	30	-	90/81	0	0	**DIL 2M-G**	See Price List
	5	10	15	20	25	**50**	50	18.5	**30**	37	-	90/81	0	0	**DIL 2AM-G**	See Price List
	7 1/2	15	15	25	30	**60**	75	22	**37**	55	37	100/90	0	0	**DIL 3M 80**	See Price List
	10	25	25	40	50	**100**	125	37	**55**	90	55	130	0	0	**DIL 4M 115**	See Price List
				50	60	**125**	150	55	**90**	175	108	225	2	2	**DIL M 185/22**	See Price List
				60	75	**150**	200	70	**110**	215	108	250	2	2	**DIL M 225/22**	See Price List
				75	100	**200**	250	75	**132**	240	108	350	2	2	**DIL M 250/22**	See Price List
				100	125	**250**	300	90	**160**	286	132	350	2	2	**DIL M 300/22**	See Price List
				125	150	**300**	400	125	**200**	344	132	450	2	2	**DIL M 400/22**	See Price List
				150	200	**400**	500	155	**250**	344	132	550	2	2	**DIL M 500/22**	See Price List

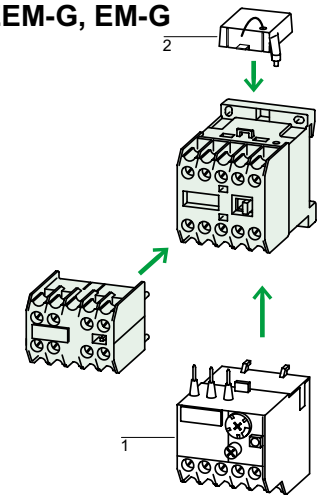
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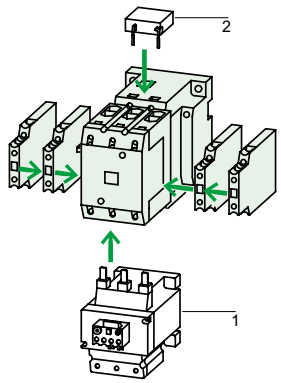
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DIL EEM-G, EM-G



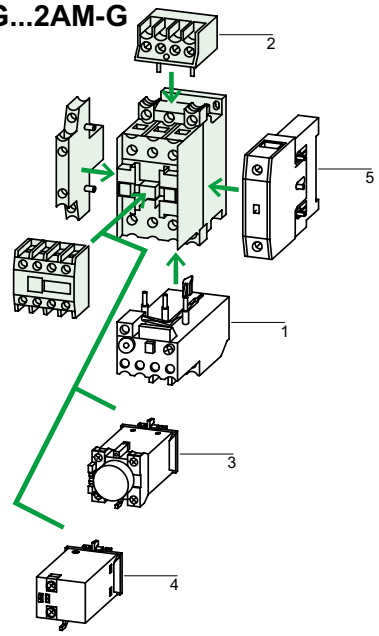
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DIL 3M 80, 4M 115



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2.	Surge Suppressor	Built-in
	Accessories	Page **3**/35

DIL 00M-G...2AM-G



1.	Overload relay	Page **4**/2
2.	Interface module	Page **3**/43
3.	Pneumatic Timer Module	Page **3**/40
4.	Mechanical Latching Module	Page **3**/40
5.	4th Power pole (**DIL 0M-G...2M-G**)	Page **3**/36
	Accessories	Page **3**/35

DIL M 185...500

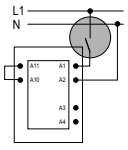
Accessories	Page **3**/36

For enclosed contactor information, consult Moeller Electric Corporation.

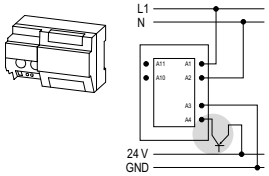
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Energization options for contactors DIL M185...500 with electronically controlled magnet systems

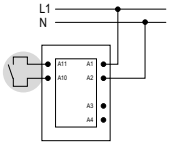
Conventionally:
Using terminals A1...A2
for supply feed



Directly from a PLC output:
Using terminals A3...A4 to
connect to the PLC



Using low power sources:
Using terminals A10...A11
for connection to low power
sources such as limit
switches, sensors, solid
state relays etc...



Stock Coil Voltages

DIL EM-G:	12, 24, 110 V DC
DIL 00M-G through **4M 115**:	24, 48, 120, 240 V DC

See page **3**/46 for other available coil voltages, some of which may require use of a DC interposing relay.

How to Order

To Order Specify:

1 Type Number
2 Accessories
3 Coil Voltage

Example: 10 HP @ 460 V AC, 3 PH contactor with 1NO and 1NC standard auxiliary contacts and 24 VDC coil

Type Number	Coil Voltage
DIL 0M-G/11	**24 VDC**

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1	2		3		6	7	6	7
The following **DIL...M(-G)** contactors are identical to the ones shown on pages **3**/4 & **3**/8. Below are the DC motor horsepower ratings associated to each type (these are not shown on pages **3**/4 & **3**/8).	**Rating data** UL/CSA maximum Horsepower rating (HP) **3 Poles**		Standard auxiliary contacts		**Type** **Important:** Add coil voltage and frequency from page **3**/46 - **3**/47 to end of type.	**Price**	**Type** **Important:** Add coil voltage from page **3**/46 - **3**/47 to end of type.	**Price**
	125 V DC HP	250 V DC HP	NO	NC	**AC OPERATED**	**$**	**DC OPERATED**	**$**
	1	2	0	0	**DIL 00M**	See Price List	**DIL 00M-G**	See Price List
	1	2	1	0	**DIL 00M-10**	See Price List	**DIL 00M-G-10**	See Price List
	1	2	0	1	**DIL 00M-01**	See Price List	**DIL 00M-G-01**	See Price List
	1	2	0	0	**DIL 00M 4**	See Price List	**DIL 00M 4-G**	See Price List
	1 1/2	3	0	0	**DIL 00AM**	See Price List	**DIL 00AM-G**	See Price List
	1 1/2	3	1	0	**DIL 00AM-10**	See Price List	**DIL 00AM-G-10**	See Price List
	1 1/2	3	0	1	**DIL 00AM-01**	See Price List	**DIL 00AM-G-01**	See Price List
	2	5	0	0	**DIL 0M**	See Price List	**DIL 0M-G**	See Price List
	2	5	0	0	**DIL 0AM**	See Price List	**DIL 0AM-G**	See Price List
	5	10	0	0	**DIL 1M**	See Price List	**DIL 1M-G**	See Price List
	5	10	0	0	**DIL 1AM**	See Price List	**DIL 1AM-G**	See Price List
	7 1/2	15	0	0	**DIL 2M**	See Price List	**DIL 2M-G**	See Price List
	10	20	0	0	**DIL 2AM**	See Price List	**DIL 2AM-G**	See Price List
	10	20	0	0	**DIL 3M 80**	See Price List	**DIL 3M 80**	See Price List
	15	30	0	0	**DIL 4M 115**	See Price List	**DIL 4M 115**	See Price List

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1				2			3	4		5	6	7	8
Rating Data UL/CSA maximum Horse-power rating (HP) 50/60 Hz				**AC 4** Inching and Plugging 30,000 Operations			General use con-tinuous current	Standard auxiliary contacts		**AC Operated** non-reversing		**DC Operated** non-reversing	
3 phase				**3 phase**						**Type**	**Price**	**Type**	**Price**
200 V HP	230 V HP	**460 V HP**	575 V HP	230 V HP	**460 V HP**	575 V HP	open (90% if enclosed) Amps	NO	NC	**Important:** Add coil voltage and frequency from page **3**/46 - **3**/47 to end of type. See below for more details.	$	**Important:** Add coil voltage from page **3**/46 - **3**/47 to end of type. See below for more details.	$
30	30	**60**	75	20	**40**	50	120	2	2	**DIL 3-22**	See Price List	**DIL 3-22/G**	See Price List
40	50	**100**	100	25	**50**	60	160	2	2	**DIL 4-22**	See Price List	**DIL 4-22/G**	See Price List
60	75	**150**	175	50	**100**	125	210	2	2	**DIL 6-22**	See Price List	**DIL 6-22/G**	See Price List
75	100	**200**	250	60	**125**	150	360	2	2	**DIL 8-22**	See Price List	**DIL 8-22/G**	See Price List
125	150	**300**	350	–	**–**	–	400	2	2	**DIL 8A-22**	See Price List	**DIL 8A-22/G**	See Price List

Additional Information	Page
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Stock Coil Voltages

24 V 60 Hz
120 V 60 Hz / 110 V 50 Hz
208 V 60 Hz
240 V 60 Hz / 220 V 50 Hz
120 V DC

See page **3**/46 for other available coil voltages. Some DC coils may require use of a DC interposing relay.

General

Moeller Electric's **DIL** "Universal" contactors can provide a cost-effective solution for motor switching in applications that do not require the full modularity of **DIL...M** contactors.
They are UL listed and CSA certified and in compliance with IEC/EN 60 947 standards.
Universal Contactors are also CE marked.
2NO and 2NC auxiliary contacts are provided standard for each contactor. Each auxiliary contact can be reversed to achieve 3NO + 1NC, 1NO + 3NC or 4NC contact configurations.
Optional NO-early make and NC-late break contacts are also available.

How to Order

To Order Specify:	**Example:** 100 HP @ 460 V AC (column 1), 3 PH contactor, 2NO and 2NC auxiliary contacts and 120 V 60 Hz coil	
1 Type Number 2 Coil Voltage	Type Number	Coil Voltage
	DIL 4-22	**120 V 60 Hz**

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At Moeller Electric, everything starts with quality and service.

Moeller Electric's line of heavy duty starters are designed to withstand the most severe applications. They are built to meet your requirements, whether for installation across the street or across the ocean. Whatever the application, nearby Moeller Electric technical experts stand ready to help you select the right combination of components for the job.

The following pages list the most popular starter types and accessories. If you require a modification that you do not see here, just give us a call and we will be most pleased to discuss your needs.

For quality starters and quick delivery, there is no better place to start looking than Moeller Electric.

Magnetic starter ordering information.

Moeller Electric magnetic motor starters utilize reliable Type **DIL** contactor(s) and precision Type **Z** bimetallic overload relay(s). The starter catalog numbers are a modular representation of the main starter components and make it easy to see at a glance, what is actually being provided.

For your convenience, the buildup of catalog numbers for the most frequently used starters are explained on this page.

Magnetic starter catalog number identification

DIL	0M	/ 11	/ Z00-...	/S	120V 60H z
A	B	C	D	E	F

A - Starter Type

DIL = Non-reversing
DIUL = Reversing
M = Combination
MW = Combination Reversing
2S = Two Speed
AT = Autotransformer
SD = Star Delta

B - Contactor Frame Size

Moeller Electric Type **DIL** contactors are available in a variety of sizes to match the motor being started.

C - Auxiliary Contact

Starters rated 10 HP and greater come standard with 1 normally open (NO) and one normally closed (NC) auxiliary contact. Additional contacts can be added in the field or specified as follows:

Suffix Code		# of Auxiliary Contacts
10	=	1 NO - 0 NC
11	=	1 NO - 1 NC
20	=	2 NO - 0 NC
22	=	2 NO - 2 NC

D - Overload Relay

The starters listed on the following pages include the base overload type designation (beginning with **Z**) and some of these have the overload fully identified.
For those starters where the **Z** is followed by **...** , you must select the proper overload relay current range. In order to do this, find out the motor full load amp rating and select the overload range accordingly. See page **3**/33 for listings of overload relay code suffixes.
The overload relay is calibrated for long time tripping at 125% of the dial setting and therefore, for motors with a service factor of 1.15 or greater, use the motor nameplate full load current to select the dial setting. For motors with a service factor of less than 1.15, multiply the motor nameplate full load current by 0.9 and use the resulting value to set the overload relay dial.

E - Enclosure Suffix

/S = General Purpose, Type 1
/SD = Dust and Drip Resistant, Type 12
/DW = Outdoor use, Type 3R
/I = Corrosion Resistant, Type 12, 13, Indoor 4X
no suffix = Open Type (no enclosure)

F - Coil Voltage

The standard contactor coil voltage is 120 V 60 Hz.
Most starters can be provided with a different coil voltage in the range from 12 V DC to 480 V AC. See Page **3**/46 and **3**/47 for a listing of the available coil voltages. Simply add the appropriate coil voltage to the end of the starter catalog number.

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Selecting and Completing the Type Number

The following is an explanation of the HOW TO ORDER box.
Each box contains an ordering example. For this example (from page **3**/12), suppose a full-voltage, non-reversing, non-combination starter in a general purpose Type 1 enclosure and with a contactor coil voltage of 120 V 60 Hz.

How to Order

To Order Specify:	**Type Number Example: DIL 0M/11/Z00-16/S 120 V 60 Hz**			
Type Number Overload Relay Suffix (page **3**/33) Enclosure Suffix Coil Voltage (page **3**/46) Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Coil Voltage
	DIL 0M/11/Z00-	**16**	**/S**	**120 V 60 Hz**
	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Ⓐ Type

This is the basic starter type. It includes:

DIL = Non-reversing, across-the-line starter.
0M = Contactor frame size (10 HP @ 460 V AC, 3-ph). Accessories such as control transformers are chosen according to contactor frame size.
/11 = Auxiliary contacts- 1 NO, 1 NC.
/Z00- = Type **Z00** overload relay (motor current setting range suffix to be added).

Ⓑ Overload Relay Suffix

Z00- = This part requires completion by adding a suffix code from page **3**/33.

Example: For the 10 HP motor at 460 V AC, 3-ph, the motor full load current is 14 (if possible, use actual nameplate rating). Following the guidelines found on the previous page, select an overload setting range within the **Z00-** type from page **3**/33 that includes the 14 A motor FLC. The first choice would be the **Z00-16** with an adjusted range of 10 to 16 A. The suffix number to be inserted into the starter catalog number is the maximum of the setting range, or in this case, **16**.

Ⓒ Enclosure Suffix

/S = General purpose indoor, Type 1
/SD = Dust and drip resistant, Type 12.
/DW = Weather resistant outdoor, Type 3R.
/I = Corrosion resistant non-metallic indoor, Type 4X or 13.

For the starter in question, therefore, the correct enclosure suffix would be **/S**.
Other enclosure types are also available - contact Moeller Electric.

Ⓓ Coil Voltage

From page **3**/46, select the required coil voltage; in this case, **120 V 60 Hz**.

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Starters, Non-Combination
Full Voltage Non-Reversing

1				2		3	4	5	6	7
UL/CSA Maximum HP Rating 50/60 Hz Consult Moeller Electric for export applications requiring kilowatt-rated starters complying with IEC standards				Standard Auxiliary Contacts		**Type**[1] Insert overload relay suffix code **...** from page **3**/33. Note: Suffix has already been provided in certain types.	Enclosed General Purpose Enclosure Type 1 Add suffix **/S** to type	 Industrial use Dusttight Enclosure Type 12, add suffix **/SD** to type For Weatherproof Type 3R, add suffix **/DW** to type	 Insulating Material Enclosure Corrosion resistant Dusttight Type 12, 13, Indoor 4X, add suffix **/I** to type	Open Without Enclosure
3 phase HP Ratings@										
200 V HP	230 V HP	**460 V HP**	575 V HP	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
DIL...M Contactors										
1 1/2	2	**3**	3	1	0	**DIL EEM-10/ZE-...**	See Price List	See Price List	See Price List	See Price List
2	3	**5**	5	1	0	**DIL EM-10/ZE-...**	See Price List	See Price List	See Price List	See Price List
3	3	**5**	5	1	0	**DIL 00M-10/Z00-...**	See Price List	See Price List	See Price List	See Price List
3	3	**7 1/2**	10	1	0	**DIL 00AM-10/Z00-...**	See Price List	See Price List	See Price List	See Price List
5	7 1/2	**10**	15	1	1	**DIL 0M/11/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**15**	20	1	1	**DIL 0AM/11/Z00-24**	See Price List	See Price List	See Price List	See Price List
7 1/2	–	**–**	–	1	1	**DIL 0M/11/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	10	**–**	–	1	1	**DIL 0AM/11/Z1-40**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	1	1	**DIL 1M/11/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	–	**25**	30	1	1	**DIL 1AM/11/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	**–**	–	1	1	**DIL 1AM/11/Z1-57**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	1	1	**DIL 2M/11/Z1-57**	See Price List	See Price List	See Price List	See Price List
–	–	**–**	50	1	1	**DIL 2AM/11/Z1-57**	See Price List	See Price List	See Price List	See Price List
20	–	**–**	–	1	1	**DIL 2AM/11/Z1-63**	See Price List	See Price List	See Price List	See Price List
–	25	**50**	–	1	1	**DIL 2AM/11/Z1-75**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	1	1	**DIL 3M 80/11/Z5-100**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	125	1	1	**DIL 4M 115/11/Z5-...**	See Price List	See Price List	See Price List	See Price List
DIL Universal Contactors										
30	30	**60**	75	2	2	**DIL 3-22/Z4-100**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	100	2	2	**DIL 4-22/Z4-...**[2]	See Price List	See Price List	See Price List	See Price List
60	75	**150**	175	2	2	**DIL 6-22/Z4-...**[2]	See Price List	See Price List	See Price List	See Price List
75	–	**200**	–	2	2	**DIL 8-22/Z4-240**[3]	See Price List	See Price List	See Price List	See Price List
–	100	**–**	250	2	2	**DIL 8-22/ZW7-290**[3]	See Price List	See Price List	See Price List	See Price List
125	150	**300**	350	2	2	**DIL 8A-22/ZW7-400**[3]	See Price List	See Price List	See Price List	See Price List

1) UL listed overload relays Types **ZE**, **Z00**, **Z1** and **Z5** are normally supplied with the starters on this page. For more flexibility, they can also be field installed. Consult Moeller Electric for additional details.
2) These starters with suffix **/I** enclosures are available in Types 12 and 13 only.
3) These starters are not available with suffix **/I** enclosures.

1 phase HP Ratings @										
115V HP	200 V HP	230 V HP								
DIL...M Contactors										
1/4	3/4	1	1	0	**DIL EEM-10/ZE-...**	See Price List	See Price List	See Price List	See Price List	See Price List
1/2	1	1 1/2	1	0	**DIL EM-10/ZE-...**	See Price List	See Price List	See Price List	See Price List	See Price List
1/2	1	1 1/2	1	0	**DIL 00M-10/Z00-...**	See Price List	See Price List	See Price List	See Price List	See Price List
1	2	2	1	0	**DIL 00AM-10/Z00-...**	See Price List	See Price List	See Price List	See Price List	See Price List
2	2	3	1	1	**DIL 0M/11/Z00-...**	See Price List	See Price List	See Price List	See Price List	See Price List
2	3	3	1	1	**DIL 0AM/11/Z00-...**	See Price List	See Price List	See Price List	See Price List	See Price List
3	5	5	1	1	**DIL 1M/11/Z1-40**	See Price List	See Price List	See Price List	See Price List	See Price List
3	5	7 1/2	1	1	**DIL 1AM/11/Z1-40**	See Price List	See Price List	See Price List	See Price List	See Price List
3	–	–	1	1	**DIL 2M/11/Z1-40**	See Price List	See Price List	See Price List	See Price List	See Price List
–	7 1/2	10	1	1	**DIL 2M/11/Z1-57**	See Price List	See Price List	See Price List	See Price List	See Price List
5	–	–	1	1	**DIL 2AM/11/Z1-57**	See Price List	See Price List	See Price List	See Price List	See Price List
–	10	–	1	1	**DIL 2AM/11/Z1-63**	See Price List	See Price List	See Price List	See Price List	See Price List
–	–	15	1	1	**DIL 2AM/11/Z1-75**	See Price List	See Price List	See Price List	See Price List	See Price List

How to Order: see page **3**/12 & **3**/13 for detailed instructions and selection hints

To Order Specify:	Catalog Number			
	Type	Overload Relay Suffix	Enclosure Suffix	Add coil voltage from page **3**/46-47
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	**DIL 0M/11/Z00-**	**10**	**/S**	**120 V 60 Hz**

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1				2		3	4	5	6	7
UL/CSA Maximum HP Rating 50/60 Hz Consult Moeller Electric for export applications requiring kilowatt-rated starters complying with IEC standards **3 phase HP Ratings@**				Standard Auxiliary Contacts		**Type** Insert overload relay suffix code **...** from page **3**/33. Note: Suffix has already been provided in certain types.	Enclosed General Purpose Enclosure Type 1 Add suffix **/S** to type	Industrial use Dusttight Enclosure Type 12, add suffix **/SD** to type For Weatherproof Type 3R, add suffix **/DW** to type	Insulating Material Enclosure Corrosion resistant Dusttight Type 12, 13, Indoor 4X, add suffix **/I** to type	Open Without Enclosure
200 V HP	230 V HP	**460 V HP**	575 V HP	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
DIL...M Contactors										
$1^1/_2$	2	**3**	3	0	1	**DIUL EEM-01/ZE-...**	See Price List	See Price List	See Price List	See Price List
2	3	**5**	5	0	1	**DIUL EM-01/ZE-...**	See Price List	See Price List	See Price List	See Price List
3	3	**5**	5	0	1	**DIUL 00M-01/Z00-.../MV**	See Price List	See Price List	See Price List	See Price List
3	3	**$7^1/_2$**	10	0	1	**DIUL 00AM-01/Z00-.../MV**	See Price List	See Price List	See Price List	See Price List
5	$7^1/_2$	**10**	15	1	1	**DIUL 0M/11/Z00-.../MV**	See Price List	See Price List	See Price List	See Price List
–	–	**15**	20	1	1	**DIUL 0AM/11/Z00-24/MV**	See Price List	See Price List	See Price List	See Price List
$7^1/_2$	–	**–**	–	1	1	**DIUL 0M/11/Z1-40/MV**	See Price List	See Price List	See Price List	See Price List
–	10	**–**	–	1	1	**DIUL 0AM/11/Z1-40/MV**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	1	1	**DIUL 1M/11/Z1-40/MV**	See Price List	See Price List	See Price List	See Price List
–	–	**25**	30	1	1	**DIUL 1AM/11/Z1-40/MV**	See Price List	See Price List	See Price List	See Price List
–	15	**–**	–	1	1	**DIUL 1AM/11/Z1-57/MV**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	1	1	**DIUL 2M/11/Z1-57/MV**	See Price List	See Price List	See Price List	See Price List
–	–	**–**	50	1	1	**DIUL 2AM/11/Z1-57/MV**	See Price List	See Price List	See Price List	See Price List
20	–	**–**	–	1	1	**DIUL 2AM/11/Z1-63/MV**	See Price List	See Price List	See Price List	See Price List
–	25	**50**	–	1	1	**DIUL 2AM/11/Z1-75/MV**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	1	1	**DIUL 3M 80/11/Z5-100/XMV**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	125	1	1	**DIUL 4M 115/11/Z5-../XMV**[1]	See Price List	See Price List	See Price List	See Price List
DIL Universal Contactors										
30	30	**60**	75	2	2	**DIUL 3-22/Z4-100-V**[1]	See Price List	See Price List	See Price List	See Price List
40	50	**100**	100	2	2	**DIUL 4-22/Z4-...-V**[2]	See Price List	See Price List	See Price List	See Price List
60	75	**150**	175	2	2	**DIUL 6-22/Z4-...-V**[2]	See Price List	See Price List	See Price List	See Price List
75	–	**200**	–	2	2	**DIUL 8-22/Z4-240-V**[2]	See Price List	See Price List	See Price List	See Price List
–	100	**–**	250	2	2	**DIUL 8-22/ZW7-...-V**[2]	See Price List	See Price List	See Price List	See Price List
125	150	**300**	350	2	2	**DIUL 8A-22/ZW7-...-V**[2]	See Price List	See Price List	See Price List	See Price List

1) These starters with suffix **/I** enclosures are available in Types 12 and 13 only.
2) These starters are not available with suffix **/I** enclosures.

For larger size Starters, consult Moeller Electric.

How to Order: see page **3**/12 & **3**/13 for detailed instructions and selection hints

To Order Specify:	**Type Number**
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type: **DIUL 0M/11/Z00-.../MV** Overload Relay Suffix: **24** Enclosure Suffix: **/SD** Add coil voltage from page **3**/46-47: **120 V 60 HZ**

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Starters, Non-Combination
Two Speed

1				2	3	4	5
UL/CSA[1] Maximum HP Rating 50/60 Hz				2-Speed, 2-Winding (Separate Winding) Wye-Connected motors (YY)[2]	Enclosed[3]	2-Speed, 1-Winding (Consequent pole) motors	Enclosed[3]
3 phase				**Type** Insert overload relay suffix code ... from page **3**/33.	Includes two 3-phase bimetallic overload relays	**Type** Insert overload relay suffix code ... from page **3**/33.	Includes two 3-phase bimetallic overload relays
200 V HP	230 V HP	**460 V HP**	575 V HP		**Price** $		**Price** $
Constant or Variable Torque **DIL...M Contactors**							
3	3	**5**	5	**2S2W 00M/Z00-.../Z00-.../S**	See Price List	**2S1W 00M/Z00-.../Z00-.../S**	See Price List
–	3	**7 1/2**	10	**2S2W 00AM/Z00-.../Z00-.../S**	See Price List	**2S1W 00AM/Z00-.../Z00-.../S**	See Price List
5	7 1/2	**10**	15	**2S2W 0M/Z00-.../Z00-.../S**	See Price List	**2S1W 0M/Z00-.../Z00-.../S**	See Price List
7 1/2	–	**–**	–	**2S2W 0M/Z1-.../Z00-.../S**	See Price List	**2S1W 0M/Z1-.../Z00-.../S**	See Price List
–	–	**15**	20	**2S2W 0AM/Z00-.../Z1-.../S**	See Price List	**2S1W 0AM/Z00-.../Z1-.../S**	See Price List
–	10	**–**	–	**2S2W 0AM/Z1-.../Z1-.../S**	See Price List	**2S1W 0AM/Z1-.../Z1-.../S**	See Price List
10	–	**20**	25	**2S2W 1M/Z1-.../Z1-.../S**	See Price List	**2S1W 1M/Z1-.../Z1-.../S**	See Price List
–	15	**25**	30	**2S2W 1AM/Z1-.../Z1-.../S**	See Price List	**2S1W 1AM/Z1-.../Z1-.../S**	See Price List
15	20	**40**	40	**2S2W 2M/Z1-.../Z1-.../S**	See Price List	**2S1W 2M/Z1-.../Z1-.../S**	See Price List
20	25	**50**	50	**2S2W 2AM/Z1-.../Z1-.../S**	See Price List	**2S1W 2AM/Z1-.../Z1-.../S**	See Price List
DIL Universal Contactors							
30	–	**–**	–	**2S2W 3-22/Z4-.../Z1-.../S**	See Price List	**2S1W 3-22/Z4-.../Z1-.../S**	See Price List
40	50	**100**	100	**2S2W 4-22/Z4-.../Z1-.../S**	See Price List	**2S1W 4-22/Z4-.../Z1-.../S**	See Price List
60	75	**150**	150	**2S2W 6-22/Z4-.../Z4-.../S**	See Price List	**2S1W 6-22/Z4-.../Z4-.../S**	See Price List
75	–	**200**	200	**2S2W 8-22/Z4-.../Z4-.../S**	See Price List	**2S1W 8-22/Z4-.../Z4-.../S**	See Price List
–	100	**–**	250	**2S2W 8-22/ZW7-.../Z4-.../S**	See Price List	**2S1W 8-22/ZW7-.../Z4-.../S**	See Price List
100	–	**250**	300	**2S2W 8A-22/ZW7-.../Z4-.../S**	See Price List	**2S1W 8A-22/ZW7-.../Z4-.../S**	See Price List
125	150	**300**	350	**2S2W 8A-22/ZW7-.../ZW7-.../S**	See Price List	**2S1W 8A-22/ZW7-.../ZW7-.../S**	See Price List
Constant Horsepower **DIL...M Contactors**							
2	2	**3**	3	**2S2W 00M/Z00-.../Z00-.../S**	See Price List	**2S1W 00M/Z00-.../Z00-.../S**	See Price List
–	–	**5**	7 1/2	**2S2W 00AM/Z00-.../Z00-.../S**	See Price List	**2S1W 00AM/Z00-.../Z00-.../S**	See Price List
5	5	**7 1/2**	10	**2S2W 0M/Z00-.../Z00-.../S**	See Price List	**2S1W 0M/Z00-.../Z00-.../S**	See Price List
–	7 1/2	**10**	15	**2S2W 0AM/Z00-.../Z00-.../S**	See Price List	**2S1W 0AM/Z00-.../Z00-.../S**	See Price List
7 1/2	–	**15**	20	**2S2W 1M/Z1-.../Z1-.../S**	See Price List	**2S1W 1M/Z1-.../Z1-.../S**	See Price List
–	10	**20**	25	**2S2W 1AM/Z1-.../Z1-.../S**	See Price List	**2S1W 1AM/Z1-.../Z1-.../S**	See Price List
10	15	**30**	30	**2S2W 2M/Z1-.../Z1-.../S**	See Price List	**2S1W 2M/Z1-.../Z1-.../S**	See Price List
15	20	**40**	40	**2S2W 2AM/Z1-.../Z1-.../S**	See Price List	**2S1W 2AM/Z1-.../Z1-.../S**	See Price List
DIL Universal Contactors							
25	25	**50**	60	**2S2W 3-22/Z1-.../Z1-.../S**	See Price List	**2S1W 3-22/Z1-.../Z1-.../S**	See Price List
30	40	**75**	75	**2S2W 4-22/Z4-.../Z1-.../S**	See Price List	**2S1W 4-22/Z4-.../Z1-.../S**	See Price List
50	60	**100**	125	**2S2W 6-22/Z4-.../Z1-.../S**	See Price List	**2S1W 6-22/Z4-.../Z1-.../S**	See Price List
–	–	**125**	150	**2S2W 8-22/Z4-.../Z1-.../S**	See Price List	**2S1W 8-22/Z4-.../Z1-.../S**	See Price List
60	75	**150**	200	**2S2W 8-22/Z4-.../Z4-.../S**	See Price List	**2S1W 8-22/Z4-.../Z4-.../S**	See Price List
–	100	**200**	250	**2S2W 8-22/ZW7-.../Z4-.../S**	See Price List	**2S1W 8-22/ZW7-.../Z4-.../S**	See Price List
100	–	**–**	–	**2S2W 8A-22/ZW7-.../Z4-.../S**	See Price List	**2S1W 8A-22/ZW7-.../Z4-.../S**	See Price List

1) UL listed Starters through 50 HP at 460 V.
2) Separate winding Starters are for Wye-Connected motors only. For other winding configurations, use corresponding price from Column 5 and supply a motor winding connection diagram in addition to the complete ordering information referenced below.
3) General Purpose Enclosure Type 1. For other special purpose enclosures consult Moeller Electric.

Complete Ordering Information:

State **Type** from column 2 or 4.
Insert the **Overload Relay Suffix** codes from page **3**/33 (corresponding to the Motor full load currents at each speed).
Complete **Type** with **Coil Voltage** rating from **3**/46-47.

Also provide the following useful motor data for faster order processing:

Line Voltage and Horsepower, Phase and Frequency.
Control Voltage and Frequency, if different from Line Voltage.
2-Speed, 2-Winding or 2-Speed, 1-Winding. Include Full Load Current at each speed.
Constant or Variable Torque, or Constant Horsepower.
Motor Connection Diagram for nonstandard separate winding motors.

For Factory Modification see page 3/28.

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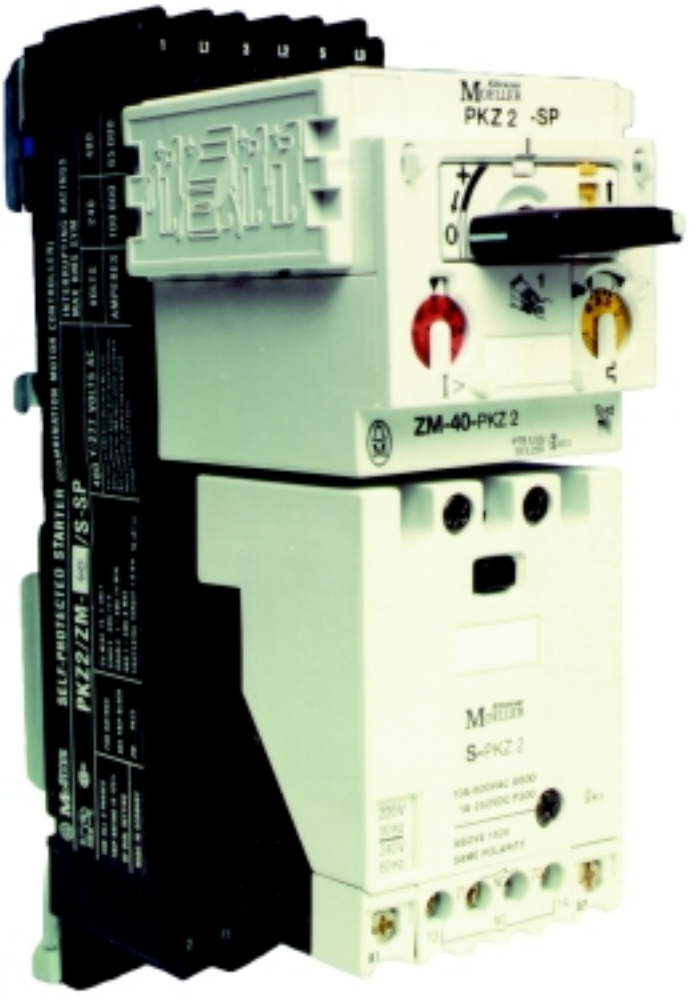
Type PKZ 2/ZM/S-SP Motor Starters: A Higher Level of Protection And Versatility

General:

The **PKZ 2/ZM/S-SP** is a self-protected starter, the FIRST motor controller to be UL listed and CSA certified under Type E, the category for self-protected control devices. In other words, it is a combination motor controller featuring main disconnect, over-current, overload and motor switching functions in one compact unit.

In addition, the **PKZ 2/ZM/S-SP** incorporates the latest technological advances in current limitation to provide a high short circuit interrupting rating and continuity of service capability.

The **PKZ 2/ZM/S-SP is a stand-alone device which does not require any backup protection up to its maximum interrupting rating!** It is available in both Full Voltage Non-Reversing and Full Voltage Reversing versions.



Features

- UL listed, self-protected combination motor controller, UL 508/CSA 22.2 No. 14 category E.
- Fuseless, high fault interrupting current-limiting design, with separate main contacts for disconnect and contactor.
- Its modular construction integrates both thermal and magnetic trips.
- It controls and protects motors up to 30 HP at 460 V, 25 HP at 575 V.
- One basic device accommodates up to 11 different plug-in trip modules, simplifies engineering and reduces stocking costs.
- Suitable for PLC controlled, fully automated operation.
- Differentiated overload and short-circuit trip indication.
- A wide range of accessories.

Contents

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Full Voltage, Non-Reversing complete with trip module	**3**/20
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Plug-in trip module	**3**/21
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All-In-One Starter Eliminates Upstream Circuit Breaker or Fuses

Application:

As per the intent of NEC Article 430, the self-protected control device will perform the functions of Motor Disconnecting Means (Part J), Motor Branch-Circuit, Short-Circuit and Ground-Fault Protection (Part D), Motor Controller (Part G) and Motor Overload Protection (Part C). Up to the maximum rated short circuit current available, NO upstream circuit breaker or set of fuses is required.
The **PKZ 2/ZM-.../S-SP** has 2 sets of main contacts, both current-limiting in design. This provides it with a high interrupting rating and the capability to protect itself against damage under fault conditions. No contact welding can ensue thus providing for continuity of service.
Each unit consists of a basic frame (disconnect switch and contactor) rated to switch a motor load of 30 HP @ 460 V AC. Eleven plug-in trip modules are available to cover motor loads ranging from fractional HP sizes through 30 HP @ 460 V AC. As a result, stocking of parts is minimized and use of the starter for other motor loads may be as simple as plugging-in a new trip module and setting the trip response dials.

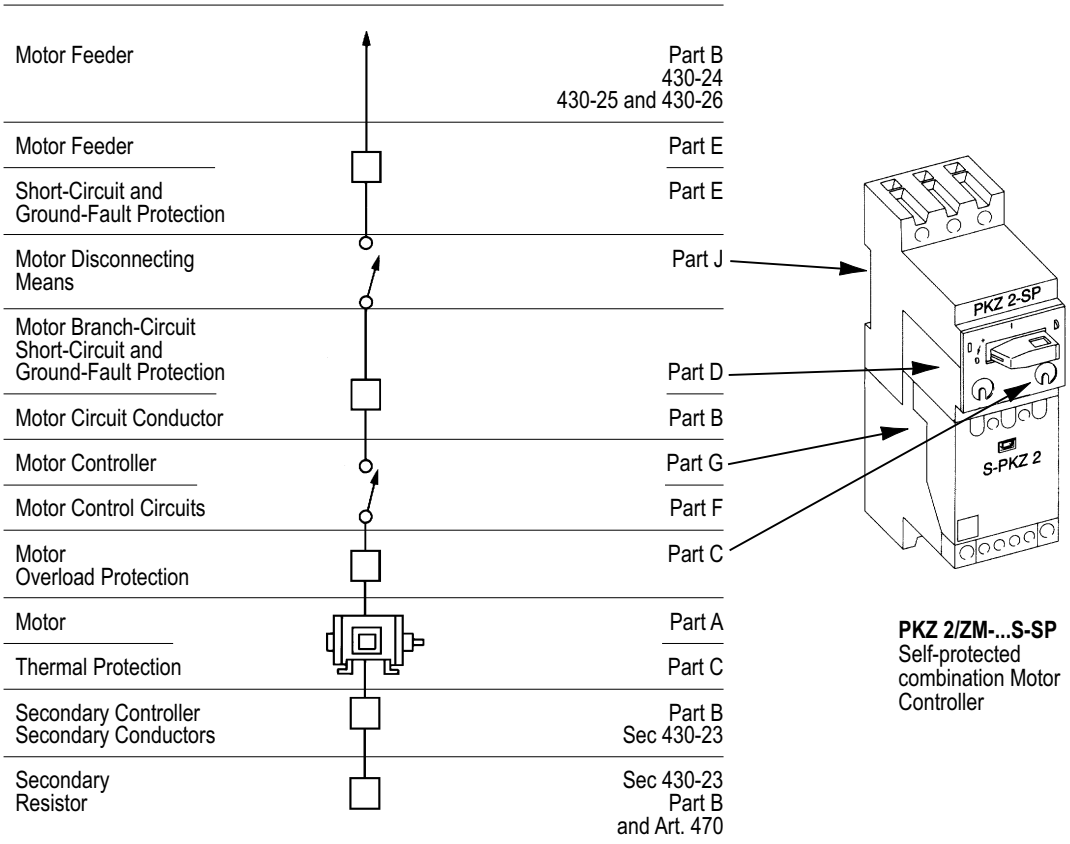


Diagram 430-1 from NEC Article 430

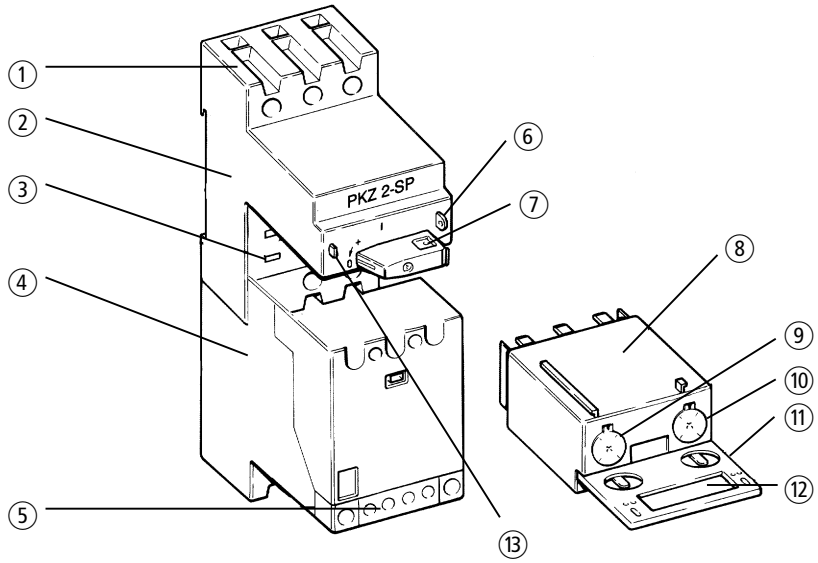
PKZ 2/ZM-...S-SP
Self-protected
combination Motor
Controller

Choose the PKZ 2/ZM-.../S-SP starter for maximum protection and flexibility.

- UL Listed for use on circuits capable of delivering 65,000 RMS Sym amps @480Y/277 V AC and 42,000 RMS Sym amps @ 600Y/347 V AC
- NO backup short circuit protection required (replaces the fuses or circuit breakers required by other conventional starters)
- Plug-in trip modules can be removed/installed without disturbing power wiring
- Field-adjustable, coordinated and sealable settings for motor overload and short circuit trip response
- Compact design allows installation in hard-to-fit areas
- Exceeds IEC "Type 2" coordination without the need for additional fuses or circuit breaker
- Removal of trip block (for maintenance or servicing) provides visible electrical isolation gap between line disconnecting and contactor portions
- All live parts (including terminals) are shrouded against accidental contact ("finger proof" per IEC 536), even with the plug-in trip module removed
- Maximum continuity of service (protects itself against damage from fault currents)

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The **PKZ 2/ZM-.../S-SP** Self-Protected Starter comes standard as a one piece construction featuring a Main Disconnect and a Contactor. The unit can be either panel or rail mounted. Integral power takeoffs are provided between the Disconnect and Contactor for control circuit feed. Adjustable Motor protective thermal-magnetic Trip modules are set in accordance with the Motor Full Load Current and plugged directly into the base of the Disconnect. Trip modules and accessories can all be field installed for maximum versatility.
The Main Disconnect and Contactor modules can also be separately mounted. This is particularly suitable for Full Voltage Reversing applications which combine the **PKZ 2-SP** disconnect with two mechanically interlocked **S-PKZ 2** contactors (see page **3**/21).



① Both field wiring terminals on the line side (Disconnect) and load side (Contactor) have large Service Entrance spacings typical of molded case circuit breakers.

② The Main Disconnect isolating contacts are current limiting in design.

③ Visible, "finger-touch-proof" open circuit power path when Trip Module is removed.

④ The Contactor Motor Switching contacts are also current limiting in design and significantly enhance the device's overall interrupting ability.

⑤ The Contactor comes standard with 1 NO and 1 NC auxiliary contacts. 2 NO also available.

⑥ The Trip Module can be set and then sealed with a wire lock.

⑦ Padlockable Handle with ON, OFF and TRIP (+) indication.

⑧ Field-interchangeable plug-in Motor Protective Trip Modules with Coordinated Overload and Short-Circuit protection built-in.

⑨ Adjustable magnetic trip dial, range: 8.5 – 14 times Trip Module rating.

⑩ Adjustable thermal trip dial, range: 0.6 – 1 times Trip Module rating (set to Motor FLC).

⑪ Test-to-trip slot.

⑫ Coding feature to differentiate Trip Modules.

⑬ Short-circuit trip indicator **K-AGM-PKZ 2** provides visual indication of short circuit trip condition and differentiation between short circuit and general trip due to overload and/or voltage trips.



ZMR-...-PKZ 2

Trip Module Type ZMR
Under overload and short circuit fault conditions the standard trip module will open the Main Disconnect portion of the **PKZ 2** Self-Protected starter, much like the operation of an inverse time molded case circuit breaker.
As an option, the trip module Type **ZMR** can be provided. It features a set of auxiliary contacts which are actuated under overload conditions. Similar to the operation of an overload relay in a conventional combination controller, the N.C. contact can be used to de-energize the contactor coil circuit in the event of an overload and the N.O. contact can be used to annunciate the condition. A short circuit fault will trip open the Main disconnect instantaneously just like the standard trip module.
The **ZMR** module is ideal for applications which need to take full advantage of the Self-Protected Starter's capabilities over conventional combination controllers, but wish to retain the operating features of a conventional overload relay in a starter. See page **7**/26 for further info.

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Starters – Combination
Self-protected, Full Voltage Non-Reversing

Standard Features

- UL listed/CSA certified, self-protected combination motor controller, UL 508/CSA 22.2 No.14 Type E.
- Main Disconnect and Contactor modules rated max 42 A, 30 HP @ 460 V AC; max. 27 A, 25 HP @ 575 V AC.
- Stand-alone device, no back-up overcurrent protection required up to its full interrupting rating, 100/65/42 kA @ 240/480/600 V AC.
- Continuity of service (protects itself against damage under fault conditions).
- For additional safety, plug-in trip module, which creates an open circuit path to the motor when removed.
- Adjustable thermal and magnetic trips; built-in phase loss differential trip.
- Built-in 1 NO & 1 NC auxiliary contacts in the contactor portion. 2 N.O. also available.
- Electrical life: 1 million operations, AC-3 (30 HP at 460 V AC)
- Adapter plate for rail or panel mounting.
- Tap-off terminals on load side of disconnect for easy control circuit feed.
- Full range of accessories including voltage trips, standard and differentiated trip indicating auxiliary contacts, remote control drive.
- Environmentally safe! No cadmium, asbestos, mercury, PCB's. No Fluorocarbons produced during manufacture.
- Enclosed starters provided with door interlocking and padlockable handle.

1				2	3	4	5	6	7	8
UL/CSA Maximum HP Rating 50/60 Hz **3 Phase**				Adjustable current range		**Type**	Open	Enclosed		
				Adjustable Thermal settings (set to motor FLC)[1]	Adjustable Instantaneous Trip Range	When ordering Specify: - **Type** - **Enclosure Suffix** from columns 6, 7 or 8, if applicable - **Coil voltage** and **frequency** (See example at bottom of page) Standard coil voltages: AC: 24, 120, 208, 240,480, 600 60 Hz DC: 24 V		General Purpose Enclosure Type 1 Add suffix **/S** to type	Industrial use Dusttight Enclosure Type 12 Add suffix **/SD** to type Weatherproof Type 3R Add suffix **/DW** to type	Insulating Material Enclosure Corrosion resistant Dusttight Type 12 Add suffix **/I** to type[2]
200 V HP	230 V HP	**460 V HP**	575 V HP	Amps	Amps		**Price** $	**Price** $	**Price** $	**Price** $
In this range, select devices in accordance with motor FLC				0.4-0.6	5-8	**PKZ 2/ZM-0.6/S-SP**	See Price List	See Price List	See Price List	See Price List
		1/2	1/2	0.6-1.0	8-14	**PKZ 2/ZM-1/S-SP**				
	1/3	3/4	1	1.0-1.6	14-22	**PKZ 2/ZM-1.6/S-SP**				
1/2	1/2	**1**	1 1/2	1.6-2.4	20-35	**PKZ 2/ZM-2.4/S-SP**				
1	1	**2**	3	2.4-4.0	35-55	**PKZ 2/ZM-4/S-SP**				
1 1/2	1 1/2	**3**	5	4.0-6.0	50-80	**PKZ 2/ZM-6/S-SP**				
2	3	**5**	7 1/2	6-10	80-140	**PKZ 2/ZM-10/S-SP**				
3	5	**10**	10	10-16	130-220	**PKZ 2/ZM-16/S-SP**				
7 1/2	7 1/2	**20**	25	16-27	200-350	**PKZ 2/ZM-25/S-SP**				
10	10	**20**	–	24-32	275-425	**PKZ 2/ZM-32/S-SP**				
10	15	**30**	–	32-42	350-500	**PKZ2/ZM-40/S-SP**				

1) Set bimetal trips (yellow dial) to motor FLC
   – Tripping current = 125% of setting
   – For motors of Service Factor 1.0, set dial to 0.9 of Motor FLC setting
   – Ambient compensated
   – Phase failure sensitive
2) For type 4X, consult Moeller Electric.

Additional Information	Page
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How to Order

To Order Specify:	**Type Number**		
	Type	Enclosure Suffix	Coil Voltage
Type Number Enclosure Suffix Coil Voltage Accessories	**PKZ 2/ZM-1/S-SP**	**/DW**	**120V 60Hz**



A 30 HP, 460 V self protected combination motor controller: **PKZ 2-SP** installed in a NEMA 1 enclosure with fused control transformer, extra auxiliary contact and pilot devices

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Select the appropriate FVNR/FVR open style basic starters and trip modules from the tables below



PKZ 2/S-SP...
Non-Reversing starter

FVNR-Self-Protected. Full Voltage Non-Reversing basic starter (without trip module)

Maximum HP rating **3 phase**				**Type**	**Price** $
200 V	230 V	**460 V**	575 V	**PKZ 2/S-SP...**	See Price List
10	15	**30**	25	**Specify coil voltage Standard: (AC) 24,120, 208, 240, 480, 600V, 60Hz (DC) 24 V**	

The **PKZ 2/S-SP (...)** Self-Protected Full Voltage Non-Reversing starter is the same device as featured on page **3**/20 but without the trip module **ZM-...-PKZ 2**. It is fully ready to be mounted and wired in its own enclosure, MCC unit or panel assembly. The HP values shown above are the maximum allowable and are dependent on the trip module chosen. The **ZM-...-PKZ 2** trip modules which are shown below can be later selected in accordance with desired motor HP and FLC and plugged into the disconnect to complete the starter. Trip modules can be field installed for maximum flexibility.



PKZ 2/S-SP-FVR...
Reversing starter

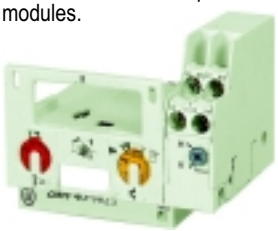
FVR-Self-Protected. Full Voltage Reversing basic starter (without trip module)

Maximum HP rating **3 phase**				**Type**	**Price**
200 V	230 V	**460 V**	575 V	**PKZ 2/S-SP-FVR...**	See Price List
10	15	**30**	25	**Specify coil voltage Standard: (AC) 24,120, 208, 240, 480, 600V, 60Hz (DC) 24 V**	

The **PKZ 2/S-SP (...)** Self-Protected Full Voltage Reversing starter is supplied with factory mounted and wired disconnect and mechanically interlocked contactors. Its features and ratings are otherwise identical to the FVNR starter. It is fully ready to be mounted and wired in its own enclosure, MCC unit or panel assembly. The HP values shown above are the maximum allowable and are dependent on the trip module chosen. The **ZM-...-PKZ 2** trip modules which are shown below can be later selected in accordance with desired motor HP and FLC and plugged into the disconnect to complete the starter. Trip modules can be field installed for maximum flexibility.



Trip module **ZM-...-PKZ 2**[1] plugs into the **PKZ 2** Disconnect to complete starter. See page **7**/26 for more info on **ZM-..-PKZ 2** trip modules.



Trip module **ZMR-...-PKZ 2**[1] plugs into the **PKZ 2** Disconnect to complete starter. Includes 1N.O . 1 N.C overload relay trip & signalling contacts. See page **7**/26 for more info on **ZMR-...-PKZ 2** trip modules.

Trip Modules – ZM-...-PKZ 2

Maximum HP rating **3 phase** 200 V HP	230 V HP	**460 V HP**	575 V HP	Adjustable thermal current range[1] Amps	Adjustable instantaneous trip range Amps	**Type**	**Price** $	**Type** Includes 1N.O. & 1 N.C overload relay trip & signalling contacts	**Price** $
In this range, select devices in accordance with motor FLC				0.4-0.6	5-8	**ZM-0.6-PKZ 2**	See Price List	**ZMR-0.6-PKZ 2**	See Price List
		1/2	1/2	0.6-1.0	8-14	**ZM-1-PKZ 2**	See Price List	**ZMR-1-PKZ 2**	See Price List
	1/3	3/4	1	1.0-1.6	14-22	**ZM-1.6-PKZ 2**	See Price List	**ZMR-1.6-PKZ 2**	See Price List
1/2	1/2	**1**	1 1/2	1.6-2.4	20-35	**ZM-2.4-PKZ 2**	See Price List	**ZMR-2.4-PKZ 2**	See Price List
1	1	**2**	3	2.4-4.0	35-55	**ZM-4-PKZ 2**	See Price List	**ZMR-4-PKZ 2**	See Price List
1 1/2	1 1/2	**3**	5	4.0-6.0	50-80	**ZM-6-PKZ 2**	See Price List	**ZMR-6-PKZ 2**	See Price List
2	3	**5**	7 1/2	6-10	80-140	**ZM-10-PKZ 2**	See Price List	**ZMR-10-PKZ 2**	See Price List
3	5	**10**	10	10-16	130-220	**ZM-16-PKZ 2**	See Price List	**ZMR-16-PKZ 2**	See Price List
7 1/2	7 1/2	**20**	25	16-27	200-350	**ZM-25-PKZ 2**	See Price List	**ZMR-25-PKZ 2**	See Price List
10	10	**20**	–	24-32	275-425	**ZM-32-PKZ 2**	See Price List	**ZMR-32-PKZ 2**	See Price List
10	15	**30**	–	32-42	350-500	**ZM-40-PKZ 2**	See Price List	**ZMR-40-PKZ 2**	See Price List

1) **ZM-...-PKZ 2 & ZMR-...-PKZ 2** Trip Modules:
-- Thermal trips (yellow dial) set to motor Full Load Current
– Tripping current = 125% of setting
– For motors of Service Factor 1.0, set dial to 0.9 of Motor FLC setting
– Ambient compensated
– phase failure sensitive

UL listed/CSA certified maximum interrupting ratings	
240 V AC	100 kA RMS sym
480 Y/277 V AC	65 kA RMS sym
600 Y/347 V AC	42 kA RMS sym
Up to 27 A :	Suitable for maximum 600 V AC power distribution system when the voltage between any phase to ground does not exceed 347 V
Up to 42 A :	Suitable for maximum 480 V AC power distribution systems when the voltage between any phase to ground does not exceed 277 V

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Starters – Combination
Breaker Type, Full Voltage, Non Reversing

1				2		3	4	5	6	7
UL/CSA Maximum HP Rating 50/60 Hz				Standard Auxiliary Contacts		**Type**[1] Insert overload relay suffix code ... from page **3**/33 (Suffix has already been provided on certain types.)	Enclosed			
3 phase							General Purpose Enclosure	Weather-proof enclosure	Dusttight enclosure Industrial	Insulating Material Enclosure
							Type 1	Type 3R	Type 12	Type 12
							Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460 V HP**	575 V HP	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
DIL...M System Contactors										
3	3	**5**	–	1	0	**M 00M-10/ZM/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**7 1/2**	–	1	0	**M 00AM-10/ZM/Z00-...**	See Price List	See Price List	See Price List	See Price List
5	7 1/2	**10**	15	1	1	**M 0M/11/ZM/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	10	**15**	20	1	1	**M 0AM/11/ZM6/Z..-...**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	1	1	**M 1M/11/ZM6/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	**30**	30	1	1	**M 2M/11/ZM6/Z1-...**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	1	1	**M 2M/11/ZM6/Z1-57**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	1	1	**M 2AM/11/ZM6/Z1-...**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	1	1	**M 3M 80/11/ZM6/Z5-...**	See Price List	See Price List	See Price List	See Price List
30	40	**75**	100	1	1	**M 4M 115/11/ZM6/Z5-...**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	125	1	1	**M 4M 115/11/ZM9/Z5-...**	See Price List	See Price List	See Price List	See Price List
DIL Universal Contactors										
30	30	**60**	75	2	2	**M 3-22/ZM6/Z4-...**	See Price List	See Price List	See Price List	See Price List
–	40	**75**	100	2	2	**M 4-22/ZM6/Z4-...**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	–	2	2	**M 4-22/ZM9/Z4-140**	See Price List	See Price List	See Price List	See Price List
60	75	**150**	150	2	2	**M 6-22/ZM9/Z4-...**	See Price List	See Price List	See Price List	See Price List
–	–	**–**	200	2	2	**M 8-22/ZM9/Z4-...**	See Price List	See Price List	See Price List	See Price List
75	–	**200**	–	2	2	**M 8-22/ZM10/Z4-240**	See Price List	See Price List	See Price List	See Price List
–	100	**–**	250	2	2	**M 8-22/ZM10/ZW7-...**	See Price List	See Price List	See Price List	See Price List
125	150	**300**	300	2	2	**M 8A-22/ZM10/ZW7-...**	See Price List	See Price List	See Price List	See Price List

1) UL listed short circuit withstand for **DIL...M...(...)M/** starters (using **DIL...M** System contactors through 50 HP at 460V) is 25 kA RMS sym. at 480 V AC.

How to Order

To Order Specify:	**Type Number** (for 10 HP @ 460 V AC)			
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
	M 0M/11/ZM/Z00-	**16**	**/S**	**120 V 60 Hz**

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1				2		3	4	5	6	7
UL/CSA Maximum HP Rating 50/60 Hz				Standard Auxiliary Contacts		**Type**[1] Insert overload relay suffix code **...** from page **3**/33 (Suffix has already been provided on certain types.)	Enclosed			
3 phase							General Purpose Enclosure	Weather-proof en-closure	Dusttight enclosure Industrial	Insulating Material Enclosure
							Type 1	Type 3R	Type 12	Type 12
							Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460V HP**	575 V HP	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
DIL...M System Contactors										
3	3	**5**	–	0	1	**MW 00M-01/ZM/Z00-...**[2]	See Price List	See Price List	See Price List	See Price List
–	–	**7 1/2**	–	0	1	**MW 00AM-01/ZM/Z00-...**[2]	See Price List	See Price List	See Price List	See Price List
5	7 1/2	**10**	15	1	1	**MW 0M/11/ZM/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	10	**15**	20	1	1	**MW 0AM/11/ZM6/Z...-...**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	1	1	**MW 1M/11/ZM6/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	**30**	30	1	1	**MW 2M/11/ZM6/Z1-...**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	1	1	**MW 2M/11/ZM6/Z1-57**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	1	1	**MW 2AM/11/ZM6/Z1-...**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	1	1	**MW 3M 80/11/ZM6/Z5-...**	See Price List	See Price List	See Price List	See Price List
30	40	**75**	100	1	1	**MW 4M 115/11/ZM6/Z5-...**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	125	1	1	**MW 4M 115/11/ZM9/Z5-...**	See Price List	See Price List	See Price List	See Price List
DIL Universal Contactors										
30	30	**60**	75	2	2	**MW 3-22/ZM6/Z4-...**	See Price List	See Price List	See Price List	See Price List
–	40	**75**	100	2	2	**MW 4-22/ZM6/Z4-...**	See Price List	See Price List	See Price List	See Price List
40	50	**100**	–	2	2	**MW 4-22/ZM9/Z4-140**	See Price List	See Price List	See Price List	See Price List
60	75	**150**	150	2	2	**MW 6-22/ZM9/Z4-...**	See Price List	See Price List	See Price List	See Price List
–	–	**–**	200	2	2	**MW 8-22/ZM9/Z4-...**	See Price List	See Price List	See Price List	See Price List
75	–	**200**	–	2	2	**MW 8-22/ZM10/Z4-240**	See Price List	See Price List	See Price List	See Price List
–	100	**–**	250	2	2	**MW 8-22/ZM10/ZW7-...**	See Price List	See Price List	See Price List	See Price List
125	150	**300**	300	2	2	**MW 8A-22/ZM10/ZW7-...**	See Price List	See Price List	See Price List	See Price List

1) UL listed short circuit withstand for **MW...M/** starters (using **DIL...M** System contactors through 50 HP at 460V) is 25 kA RMS sym. at 480 V AC.
2) Contactors equipped with 1 NC auxiliary contact only for electrical interlocking purposes. For additional auxiliary contacts see page **3**/35.

How to Order

To Order Specify:	**Type Number** (for 30 HP @ 460 V AC)			
	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	**MW 2M/11/ZM6/Z1-...**	**57**	**/S**	**120 V 60 Hz**

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Starters – Combination
Fusible & Non-Fusible, Full Voltage, Non Reversing, Class J

1				2	3	4		5	6	7	8	9
UL/CSA Maximum HP Rating 50/60 Hz				Discon-nect switch Size	Class J Time Delay Fuse Clips Size[1]	Standard Auxiliary Contacts		**Type**[2]	Enclosed			
3 phase								Insert overload relay suffix code ... from page **3**/33	General Purpose Enclosure	Weather-proof en-closure	Dusttight enclosure Industrial	Insulating Material Enclosure
								For optimal motor protection, obtain actual motor nameplate full load amp rating and select overload per instructions found on pages **3**/12 – **3**/13. Consult Moeller Electric if motor FLA falls outside the overload frame size suggested.	Type 1	Type 3R	Type 12	Type 12
									Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460 V HP**	575 V HP	Amps	Amps	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
3	3	**5**	7 1/2	30	30	1	0	**M 00M/10/P2-30FC23/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**7 1/2**	10	30	30	1	0	**M 00AM/10/P2-30FC23/Z00-...**	See Price List	See Price List	See Price List	See Price List
5	5	**10**	15	30	30	1	1	**M 0M/11/P2-30FC23/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	7 1/2	**–**	–	30	60	1	1	**M 0M/11/P2-30FC26/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	10	**15**	20	30	60	1	1	**M 0AM/11/P2-30FC26/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**20**	25	30	60	1	1	**M 1M/11/P2-30FC26/Z1-...**	See Price List	See Price List	See Price List	See Price List
10	–	**–**	–	60	60	1	1	**M 1M/11/P2-60FC26/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**30**	30	60	60	1	1	**M 2M/11/P2-60FC26/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	**–**	40	60	60	1	1	**M 2M/11/P2-60FC26/Z1-57**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	–	60	100	1	1	**M 2M/11/P2-60FC110/Z1-...**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	100	100	1	1	**M 2AM/11/P2-100FC110/Z1-...**	See Price List	See Price List	See Price List	See Price List
30	30	**60**	75	100	200	2	2	**M 3-22/P2-100-62003J/Z4-...**	See Price List	See Price List	See Price List	See Price List
Combination Starters Non-Fusible Disconnect Switch Type												
3	3	**5**	7	30	None	1	1	**M 00M/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**7 1/2**	10	30	None	1	1	**M 00AM/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	7 1/2	**10**	15	30	None	1	1	**M 0M/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	10	**15**	20	30	None	1	1	**M 0AM/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	60	None	1	1	**M 1M/11/P2-60/Z1-...**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	60	None	1	1	**M 2M/11/P2-60/Z1-...**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	100	None	1	1	**M 2AM/11/P2-100/Z1-...**	See Price List	See Price List	See Price List	See Price List
30	30	**60**	75	100	None	2	2	**M 3-22/P2-100/Z 4-...**	See Price List	See Price List	See Price List	See Price List

Contact Moeller Electric for larger sizes.

1) Recommended Class J Time-Delay Fuse Ampacity. Range: 1.25 to 1.5 times motor full load current
2) UL listed short circuit withstand of fusible starters with class J fuses is 100 kA RMS sym. at 480 V AC.

How to Order

To Order Specify:	**Type Number**			
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
	M 0M/11/P2-30FC26/Z00-	**16**	**/S**	**120 V 60 Hz**

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1				2	3	4		5	6	7	8	9
UL/CSA Maximum HP Rating 50/60 Hz				Disconnect switch Size	Class R Time Delay Fuse Clips Size[1]	Standard Auxiliary Contacts		**Type**	Enclosed			
3 phase								Insert overload relay suffix code **...** from page **3**/33	General Purpose Enclosure	Weather-proof enclosure	Dusttight enclosure Industrial	Insulating Material Enclosure
								For optimal motor protection, obtain actual motor nameplate full load amp rating and select overload per instructions found on pages **3**/12 - **3**/13. Consult Moeller Electric if motor FLA falls outside the overload frame size suggested.	Type 1	Type 3R	Type 12	Type 12
									Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460 V HP**	575 V HP	Amps	Amps	NO	NC					
3	3	–	–	30	30	1	0	**M 00M/10/P2-30FC33/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**5**	7 1/2	30	30	1	0	**M 00M/10/P2-30FC43/Z00-...**				
–	–	**7 1/2**	10	30	30	1	0	**M 00AM/10/P2-30FC43/Z00-...**				
5	5	**10**	–	30	30	1	1	**M 0M/11/P2-30FC33/Z00-...**				
–	–	**10**	15	30	30	1	1	**M 0M/11/P2-30FC43/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	–	–	–	30	60	1	1	**M 0M/11/P2-30FC43/Z1-...**				
–	10	–	–	30	60	1	1	**M 0AM/11/P2-30FC43/Z1-...**				
–	–	**15**	20	30	60	1	1	**M 0AM/11/P2-30FC46/Z00-...**				
–	–	**20**	25	30	60	1	1	**M 1M/11/P2-30FC46/Z1-...**				
10	–	–	–	60	60	1	1	**M 1M/11/P2-60FC43/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**30**	30	60	60	1	1	**M 2M/11/P2-60FC46/Z1-40**				
–	15	–	–	60	60	1	1	**M 2M/11/P2-60FC43/Z1-...**				
–	–	–	40	60	60	1	1	**M 2M/11/P2-60FC46/Z1-57**				
15	20	**40**	–	60	100	1	1	**M 2M/11/P2-60FC310/Z1-...**				
20	25	**50**	50	100	100	1	1	**M 2AM/11/P2-100FC310/Z1-...**				
30	–	–	–	100	200	2	2	**M 3-22/P2-100-22003R/Z4-...**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	100	200	2	2	**M 3-22/P2-100-62003R/Z4-...**				

Contact Moeller Electric for larger sizes.

1) Recommended Class R Rejection-Time-Delay Fuse Ampacity Range: 1.25 to 1.5 times motor full load current

Starters – Combination
Fusible & Non-Fusible, Full Voltage, Reversing, Class J

1				2	3	4		5	6	7	8	9
UL/CSA Maximum HP Rating 50/60 Hz				Discon-nect switch Size	Class J Time Delay Fuse Clips Size[1]	Standard Auxiliary Contacts		**Type**[2] Insert overload relay suffix code ... from page **3**/33 For optimal motor protection, obtain actual motor nameplate full load amp rating and select overload per instructions found on pages **3**/12 - **3**/13. Consult Moeller Electric if motor FLA falls outside the overload frame size suggested.	Enclosed			
3 phase									General Purpose Enclosure	Weather-proof en-closure	Dusttight enclosure Industrial	Insulating Material Enclosure
									Type 1	Type 3R	Type 12	Type 12
									Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460 V HP**	575 V HP	Amps	Amps	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
3	3	**5**	7½	30	30	0	1	**MW 00M-01/P2-30FC23/Z00-...**[3]	See Price List	See Price List	See Price List	See Price List
–	–	**7½**	10	30	30	0	1	**MW 00AM-01/P2-30FC23/Z00-...**[3]	See Price List	See Price List	See Price List	See Price List
–	5	**10**	15	30	30	1	1	**MW 0M/11/P2-30FC23/Z00-...**	See Price List	See Price List	See Price List	See Price List
7½	7½	**–**	–	30	60	1	1	**MW 0M/11/P2-30FC26/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**15**	20	30	60	1	1	**MW 0AM/11/P2-30FC23/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	10	–	–	30	60	1	1	**MW 0AM/11/P2-30FC26/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**20**	25	30	60	1	1	**MW 1M/11/P2-30FC26/Z1-...**	See Price List	See Price List	See Price List	See Price List
10	–	**–**	–	60	60	1	1	**MW 1M/11/P2-60FC26/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**30**	30	60	60	1	1	**MW 2M/11/P2-60FC26/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	–	40	60	60	1	1	**MW 2M/11/P2-60FC26/Z1-57**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	–	60	100	1	1	**MW 2M/11/P2-60FC110/Z1-...**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	100	100	1	1	**MW 2AM/11/P2-100FC110/Z1-...**	See Price List	See Price List	See Price List	See Price List
30	30	**60**	75	100	200	2	2	**MW 3-22/P2-100-62003J/Z 4-...**	See Price List	See Price List	See Price List	See Price List
Combination Starters Non-Fusible Disconnect Switch Type												
3	3	**5**	7½	30	None	1	1	**MW 00M/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**7½**	10	30	None	1	1	**MW 00AM/11/P2-30/Z00-...**	See Price List	See Price List	See Price List	See Price List
7½	7½	**10**	15	30	None	1	1	**MW 0M/11/P2-30/Z00- ...**	See Price List	See Price List	See Price List	See Price List
–	10	**15**	20	30	None	1	1	**MW 0AM/11/P2-30/Z00- ...**	See Price List	See Price List	See Price List	See Price List
10	–	**20**	25	60	None	1	1	**MW 1M/11/P2-60/Z1-...**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	40	60	None	1	1	**MW 2M/11/P2-60/Z1-...**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	100	None	1	1	**MW 2AM/11/P2-100/Z1-...**	See Price List	See Price List	See Price List	See Price List
30	30	**60**	75	100	None	2	2	**MW 3-22/P2-100/Z4-...**	See Price List	See Price List	See Price List	See Price List

Contact Moeller Electric for larger sizes.

1) Recommended Class J Time-Delay Fuse Ampacity.
Range: 1.25 to 1.5 times motor full load current
2) UL listed short circuit withstand of fusible starters with class J fuses is 100 kA RMS sym. at 480 V AC.
3) Contactors equipped with 1 NC auxiliary contact only for electrical interlocking purposes. For additional auxiliary contacts see page **3**/35.

How to Order

To Order Specify:	**Type Number**			
	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	**MW 1M/11/P2-30FC26/Z1-**	**40**	**/S**	**120 V 60 Hz**

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1				2	3	4		5	6	7	8	9
UL/CSA Maximum HP Rating 50/60 Hz				Discon-nect switch Size	Class R Time Delay Fuse Clips Size[1]	Standard Auxiliary Contacts		**Type** Insert overload relay suffix code ... from page **3**/33 For optimal motor protection, obtain actual motor nameplate full load amp rating and select overload per instructions found on pages **3**/12 - **3**/13. Consult Moeller Electric if motor FLA falls outside the overload frame size suggested.	Enclosed			
3 phase									General Purpose Enclosure	Weather-proof en-closure	Dusttight enclosure Industrial	Insulating Material Enclosure
									Type 1	Type 3R	Type 12	Type 12
									Add suffix **/S** to type	Add suffix **/DW** to type	Add suffix **/SD** to type	Add suffix **/I** to type
200 V HP	230 V HP	**460 V HP**	575 V HP	Amps	Amps	NO	NC		**Price** $	**Price** $	**Price** $	**Price** $
3	3	–	–	30	30	0	1	**MW 00M-01/P2-30FC33/Z00-...**[2]	See Price List	See Price List	See Price List	See Price List
–	–	**5**	7 1/2	30	30	0	1	**MW 00M-01/P2-30FC43/Z00-...**[2]	See Price List	See Price List	See Price List	See Price List
–	–	**7 1/2**	10	30	30	0	1	**MW 00AM-01/P2-30FC43/Z00-...**[2]	See Price List	See Price List	See Price List	See Price List
5	5	–	–	30	30	1	1	**MW 0M/11/P2-30FC33/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**10**	15	30	30	1	1	**MW 0M/11/P2-30FC43/Z00-...**	See Price List	See Price List	See Price List	See Price List
7 1/2	–	–	–	30	60	1	1	**MW 0M/11/P2-30FC43/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	10	–	–	30	60	1	1	**MW 0AM/11/P2-30FC43/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**15**	20	30	60	1	1	**MW 0AM/11/P2-30FC43/Z00-...**	See Price List	See Price List	See Price List	See Price List
–	–	**20**	25	30	60	1	1	**MW 1M/11/P2-30FC46/Z1-...**	See Price List	See Price List	See Price List	See Price List
10	–	–	–	60	60	1	1	**MW 1M/11/P2-60FC43/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**25**	30	60	60	1	1	**MW 2M/11/P2-60FC46/Z1-40**	See Price List	See Price List	See Price List	See Price List
–	15	–	–	60	60	1	1	**MW 2M/11/P2-60FC43/Z1-...**	See Price List	See Price List	See Price List	See Price List
–	–	**30**	40	60	60	1	1	**MW 2M/11/P2-60FC46/Z1-57**	See Price List	See Price List	See Price List	See Price List
15	20	**40**	–	60	100	1	1	**MW 2M/11/P2-60FC310/Z1-...**	See Price List	See Price List	See Price List	See Price List
20	25	**50**	50	100	100	1	1	**MW 2AM/11/P2-100FC310/Z1-...**	See Price List	See Price List	See Price List	See Price List
25	30	**60**	75	100	200	2	2	**MW 3-22/P2-100-62003R/Z4-...**	See Price List	See Price List	See Price List	See Price List
30	–	–	–	100	200	2	2	**MW 3-22/P2-100-22003R/Z4-...**	See Price List	See Price List	See Price List	See Price List

Contact Moeller Electric for larger sizes.

1) Recommended Class R Rejection-Time-Delay Fuse Ampacity. Range: 1.25 to 1.5 times motor full load current
2) Contactors equipped with 1 NC auxiliary contact only for electrical interlocking purposes. For additional auxiliary contacts see page **3**/35.

How to Order

To Order Specify:	**Type Number**			
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
	MW 0M/11/P2-30FC43/Z00-	**16**	**/S**	**120 V 60 Hz**

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Overload Relays	**4**/2
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Starters – Full Voltage
Factory Modifications

Ordering Information:

Order by description
The standard modifications shown on this page are those available for factory installation. Prices for these modifications are shown in the alphanumeric price book under "Starters - Full Voltage Factory Modifications". The enclosure may or may not change with the addition of any of these items. When accurate dimensions of the enclosure are required, refer to your nearest Moeller Electric distributor or sales office.

Description	Enclosure Type	Price addition all sizes $
Push Buttons		
"START-STOP" or "ON-OFF"	1, 12, 12K, 3R	See Price List
Double push button	13, 3, 4, 4X	See Price List
"START-STOP" or "ON-OFF"	1, 12, 12K, 3R	See Price List
Double push button with indicating light	13, 3, 4, 4X	See Price List
Standard 1 unit push button	1, 12, 12K, 3R	See Price List
Standard 2 unit push button	1, 12, 12K, 3R	See Price List
Standard 3 unit push button	1, 12, 12K, 3R	See Price List
Selector Switches		
"HAND-O-AUTO" Selector Switch	1, 12, 12K, 3R, 4X	See Price List
"MAN-AUTO" Selector Switch	1, 12, 12K, 3R, 4X	See Price List
Pilot Lights		
Pilot light (specify color)	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List
Push-to-test light or illuminated push button	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List

Description	Price addition all sizes $
Control Circuit	
Separate control circuit	See Price List
Fused control circuit – 250 V, 1 or 2 fuses	See Price List
Fused control circuit – 600 V, 2 fuses	
Auxiliary Relays	
Control relay, maximum of 4 poles – unwired	See Price List
– wired	See Price List
Timing relay	
Terminal Block wired – per pole	
Auxiliary Relays for Multi-speed Starter Only	
Compelling relay	See Price List
Accelerating relay – 2 speed	See Price List
Time decelerating relay – 2 speed	
Phase reversal and failure relay	
Overload Relays	
Ambient compensated, phase failure sensitive 3 Phase bimetallic O/L relay Type **Z...** supplied as standard	See Price List
P.T.C. Thermistor Tripping Unit	See Price List
Name Plates	
Special nameplates, 3" x 1"	

Price addition to Starter – Select using contactor frame size

Description	(E)EM 00M 00AM 0M $	0AM 1M 1AM $	2M 2AM $	3-22 4-22 $	3M 80 $	4M 115 6-22 $	8-22 8a-22 $	PKZ 2 Self-Protected Starter $
Control Circuit Transformers								
Transformer 60 Hz with fused primary	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Transformer with additional capacity up to 100 V, 60 Hz with fused primary	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Overload Relay								
Omit overload relay – deduct	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Mechanical Interlock for Contactors	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Disconnect Device (for Multi-speed Starters only)								
Disconnect switch – non-fusible	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
– fusible	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Circuit Breaker	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List

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Application

Reduced voltage starting is required when there are limitations on inrush current or when the load cannot stand the mechanical shock of starting. Starting current and starting torque can be reduced by reducing the applied voltage to the motor stator terminals. A change in voltage applied to the stator results in a change of flux proportional to primary voltage. Stator and rotor currents vary in proportion to applied stator voltage. Since motor torque is proportional to the product of flux and rotor current, torque is proportional to the square of the voltage applied to the stator. The commonly used types of reduced voltage or current motor starters are Autotransformer, Star-Delta, Part Winding, Primary Resistor and Reactor.

Comparison Chart for Reduced Voltage Starters

	Autotransformer Starter Type **AT** (page **3**/30)	Star-Delta Starter Type **SD** (page **3**/31)	Part Winding Starter Type **PW**[1)]	Primary Resistor Starter Type **PR**[1)]	Reactor Starter Type **R**[1)]
Motor Requirements	Can be used with any standard squirrel cage motor.	Requires a special motor with 6 leads brought out (Delta wound stator).	Requires a special motor in which the stator windings are divided into two or more equal parts with six leads provided. Also dual voltage motors can be used on the lower range.	Can be used with any standard squirrel cage motor.	Can be used with any standard squirrel cage motor.
Description of Operation	The motor is connected to the line through the reduced voltage taps of an autotransformer for the starting interval and then directly across the line for running condition.	This method requires two main or line contactors to connect the motor winding in delta connection for running. A third contactor is used to form the star point on the starting step.	Like the star-delta starter, this starter requires no external equipment. One winding is connected to the line for starting. After a time interval the second or run contactor connects the other motor winding to the line in parallel with the first winding.	A high resistance is connected in series with the motor on starting and after a time interval this resistance is short-circuited and motor is connected directly to the line.	The motor is connected to the line through the reduced voltage taps of a reactor for the starting interval and then directly across the line for running condition.
Starting Characteristics in percent of normal:	Autotransformer taps at: 80- 65- 50% Current 64 | 42 | 25% Torque 64 | 42 | 25%	100% 33% 33%	100% Line voltage 60% 45%	80% 100% 80% 65% 64% 42%	Variable with tap setting and load.
Advantages	High torque efficiency. All the power taken from the line, except for transformer losses, is transmitted to the motor. The starting current and torque are easily adjusted by changing autotransformer taps. Closed circuit transition.	The star-delta starter provides low inrush current with high torque efficiency, without the use of any external equipment. Open circuit transition is standard but closed transition can be achieved with the use of resistors and an additional contactor.	Part-winding starting provides one-step acceleration at a reduced current. So that the second current inrush is not objectionable. Closed circuit transition.	This type provides almost as smooth starting as the reactor type starter. The current becomes lower and the voltage at the motor terminals rises as the motor accelerates. Closed circuit transition.	This type provides the smoothest starting of all reduced voltage starting methods. More suitable for jogging or inching service. Closed circuit transition.
Limitations	Torque remains practically constant for the first step and practically constant at another value for the second step.	Starting characteristics depend on motor design and cannot be adjusted. Requires special delta wound motor.	Requires special motor or dual-voltage motor on low range. Torque efficiency is usually poor for high speed motors.	Unavoidable power loss in resistor. Low torque efficiency. Duty cycle limited by thermal capacity of resistor.	Taps must be selected on job site to obtain starting voltage level suitable for the load.
Applications	Applications where there are limitations on starting voltage and current. Most widely used.	Low starting torque applications.	Commercial air conditioning equipment.	Geared or belted drives, and other delicate applications.	Textile machinery, and other driven loads requiring smooth shock-less starting.
Approximate Price Comparison (% of Type **AT**)	100%	60%	40%	More than 100%	More than 100%

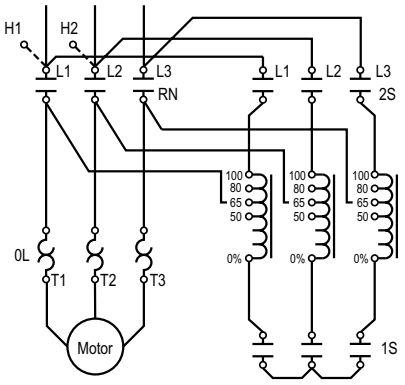
1) Please contact Moeller Electric for information about these items.

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Starters – Reduced Voltage
Autotransformer Type

1				2	3	4	5
UL/CSA Maximum HP Rating 50/60 Hz				**Type**	Enclosed		
3 phase				Insert overload relay suffix code ... from page **3**/33	General Purpose Enclosure Type 1 Add suffix **/S** to type	Dusttight enclosure Industrial Use Type 12 Add suffix **/SD** to type	Weatherproof enclosure Type 3R Add suffix **/DW** to type
200 V HP	230 V HP	**460 V HP**	575 V HP		**Price** $	**Price** $	**Price** $
DIL...M Contactors							
–	–	**15**	20	**AT 0AM/22/Z00-...**	See Price List	See Price List	See Price List
–	–	**20**	25	**AT 1M/22/Z1-40**	See Price List	See Price List	See Price List
–	15	**25**	30	**AT 1AM/22/Z1-...**	See Price List	See Price List	See Price List
15	–	**30**	–	**AT 2M/22/Z1-...**	See Price List	See Price List	See Price List
–	20	**40**	40	**AT 2M/22/Z1-57**	See Price List	See Price List	See Price List
20	–	**–**	50	**AT 2AM/22/Z1-...**	See Price List	See Price List	See Price List
–	25	**50**	–	**AT 2AM/22/Z1-75**	See Price List	See Price List	See Price List
25	30	**60**	75	**AT 3M 80/22/Z5-100**	See Price List	See Price List	See Price List
40	50	**100**	125	**AT 4M 115/22/Z5-...**	See Price List	See Price List	See Price List
DIL... Universal Contactors							
30	–	**–**	–	**AT 3-22/Z4-100**	See Price List	See Price List	See Price List
–	40	**75**	–	**AT 4-22/Z4-...**	See Price List	See Price List	See Price List
40	50	**100**	100	**AT 4-22/Z4-...**	See Price List	See Price List	See Price List
50	–	**–**	125	**AT 6-22/Z4-...**	See Price List	See Price List	See Price List
60	60	**125**	150	**AT 6-22/Z4-...**	See Price List	See Price List	See Price List
–	75	**150**	–	**AT 6-22/Z4-...**	See Price List	See Price List	See Price List
75	–	**–**	–	**AT 8-22/Z4-...**	See Price List	See Price List	See Price List
–	100	**–**	–	**AT 8-22/ZW7-290**	See Price List	See Price List	See Price List
–	–	**200**	200	**AT 8-22/Z4-240**	See Price List	See Price List	See Price List
–	–	**–**	250	**AT 8-22/ZW7-290**	See Price List	See Price List	See Price List
100	–	**–**	–	**AT 8A-22/ZW7-290**	See Price List	See Price List	See Price List
125	125	**–**	–	**AT 8A-22/ZW7-400**	See Price List	See Price List	See Price List
–	150	**250**	–	**AT 8A-22/ZW7-400**	See Price List	See Price List	See Price List
–	–	**300**	300	**AT 8A-22/ZW7-400**	See Price List	See Price List	See Price List

Autotransformer with thermal protection



Standard Features
- 3 phase overload protection.
- Reset button in cover.
- Auxiliary contacts are standard on all starters.
- Closed transition, by 3 core dry type autotransformer duty cycle of one 15 second period out of each 4 minutes for one hour followed by a rest period of 2 hours.
- 65% and 80% voltage taps available on all sizes.
- Additional 50% tap for 60 HP and larger starters.
- All starters are normally connected to the 65% tap at the factory.
- Autotransformer supplied with thermal protection.

How to Order

To Order Specify:	**Type Number**			
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
	AT 2M/22/Z1-...	**57**	**/S**	**120 V 60 Hz**

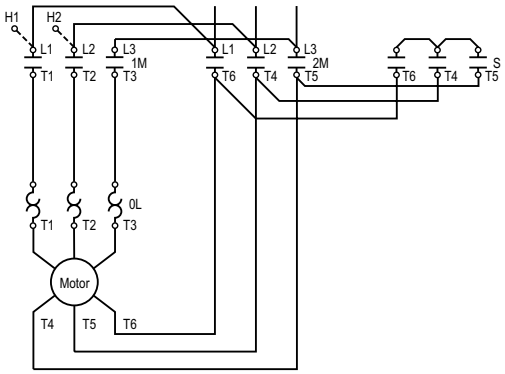
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1				2	3	4	5
UL/CSA Maximum HP Rating 50/60 Hz				**Type**	Enclosed		
3 phase				Insert overload relay suffix code ... from page **3**/33[1]	General Purpose Enclosure Type 1 Add suffix **/S** to type	Dusttight enclosure Industrial Use Type 12 Add suffix **/SD** to type	Weatherproof enclosure Type 3R Add suffix **/DW** to type
200 V HP	230 V HP	**460 V HP**	575 V HP		**Price** $	**Price** $	**Price** $
Open Transition2)							
DIL...M Contactors							
–	–	**15**	20	**SD 0M/22/Z00-...**	See Price List	See Price List	See Price List
–	–	**25**	30	**SD 0AM/22/Z00-...**	See Price List	See Price List	See Price List
–	15	**30**	40	**SD 1M/22/Z1-...**	See Price List	See Price List	See Price List
–	25	**40**	50	**SD 1AM/22/Z1-...**	See Price List	See Price List	See Price List
25	30	**50**	60	**SD 2M/22/Z1-...**	See Price List	See Price List	See Price List
30	40	**75**	75	**SD 2AM/22/Z1-...**	See Price List	See Price List	See Price List
40	50	**100**	125	**SD 3M 80/22/Z4-...**	See Price List	See Price List	See Price List
DIL... Universal Contactors							
50	–	**100**	–	**SD 3-22/Z4-...**	See Price List	See Price List	See Price List
60	75	**150**	150	**SD 4-22/Z4-...**	See Price List	See Price List	See Price List
100	125	**250**	250	**SD 6-22/Z4-...**	See Price List	See Price List	See Price List
–	150	**350**	400	**SD 8-22/ZW7-...**	See Price List	See Price List	See Price List
200	250	**500**	–	**SD 8A-22/ZW7-...**	See Price List	See Price List	See Price List

1) Overload relays selected for setting at 58% of Motor FLC.
2) For Star-Delta Closed Transition starters, please consult Moeller Electric.

Open transition starter



Standard Features
- 3 phase overload protection for setting at 58% of Motor FLC.
- Reset button in cover.
- Standard auxiliary contacts.

How to Order

To Order Specify:	Type Number			
Type Number Overload Relay suffix Enclosure Suffix Coil Voltage Accessories	Type	Overload Relay Suffix	Enclosure Suffix	Add Coil Voltage from p. **3**/46-47
	SD 1M/22/Z1-...	**40**	**/S**	**120 V 60 Hz**

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Starters – Reduced Voltage
Factory Modifications

Ordering Information:

Order by description
The standard modifications shown on this page are those available for factory installation. Prices for these modifications are shown in the alphanumeric price book under "Starters - Reduced Voltage Factory Modifications". The enclosure may or may not change with the addition of any of these items. When accurate dimensions of the enclosure are required, refer to your nearest Moeller Electric distributor or sales office.

Description	Enclosure Type	Price addition all sizes $
Push Buttons		
"START-STOP" or "ON-OFF" Double push button	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List
"START-STOP" or "ON-OFF" Double push button with indicating light	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List
Standard 1 unit push button	1, 12, 12K, 3R	See Price List
Standard 2 unit push button	1, 12, 12K, 3R	See Price List
Standard 3 unit push button	1, 12, 12K, 3R	See Price List
Selector Switches		
"HAND-O-AUTO" Selector Switch	1, 12, 12K, 3R	See Price List
"MAN-AUTO" Selector Switch	1, 12, 12K, 3R	See Price List
Pilot Lights		
Pilot light (specify color)	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List
Push-to-test light or illuminated push button	1, 12, 12K, 3R 13, 3, 4, 4X	See Price List
Control Circuit		
Separate control circuit		See Price List
Fused control circuit		See Price List
250 V, 1 or 2 fuses		
600 V, 2 fuses		

Description	Price addition all sizes $
Auxiliary Relays	
Control relay, maximum of 4 poles – unwired	See Price List
– wired	See Price List
Timing relay	See Price List
Terminal Block wired – per pole	See Price List
Overload Relays	
Ambient compensated, phase failure sensitive 3 Phase bimetallic O/L relay Type **Z...** supplied as standard	See Price List
P.T.C. Thermistor Tripping	See Price List
Meters	
Ammeter, maximum 3 $^1/_2$" panel type	See Price List
Current transformer	See Price List
Voltmeter, maximum 3 $^1/_2$" panel type direct reading to 600 V	See Price List
3 phase ammeter or voltmeter switch	See Price List
Elapsed time meter	See Price List
Name Plates	
Special nameplates, 3" x 1"	See Price List

Price addition to Starter – Select using contactor frame size

Description	(E)EM 00M 00AM 0M $	0AM 1M 1AM $	2M 2AM $	3-22 4-22 $	3M 80 $	4M 115 6-22 $	8-22 $	8A-22 $
Control Circuit Transformers								
Transformer 60 Hz with fused primary	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Transformer with additional capacity up to 100 VA, 60 Hz with fused primary	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Disconnect Device								
– non-fusible	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
– fusible	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Circuit Breaker	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
Reversing Starters								
To change non-reversing to reversing	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List

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Overload relay selection:

1. Select the appropriate starter by HP and motor voltage from the previous starter selection pages.
2. Determine motor full load current from motor nameplate data or by using NEC Table 430-150 (3 phase) or Table 430-148 (1 phase) located on the inside back cover of this catalog.
3. Select the overload relay whose adjustable current range includes the FLC determined above. Insert the suffix code in the starter type.

EXAMPLE:

1. Selected starter is 3 phase, 10 HP @ 460 V AC, Non-Combination, Full Voltage Non-Reversing.
   From page **3**/12, starter type is:

   DIL 0M/11/Z00-...

2. **Motor Full Load Current** from NEC Table 430-150 (see back inside cover) for 10 HP @ 460 V AC (3 phase) is:

   14 Amps

3. The 14 Amps falls within the adjustable setting range of 10 – 16 corresponding to the Overload Relay suffix code of **Z00-16** from the table below.
   The suffix code **"16"** is added to complete the starter part number.
   The desired contactor coil voltage from pages **3**/46-47 is specified at the end to complete the starter ordering information.

Complete Starter Type: **DIL 0M/11/Z00-16 120V 60Hz**

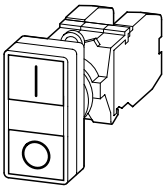
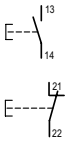
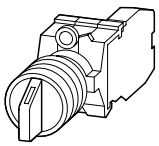
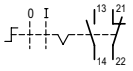
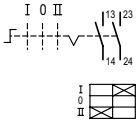
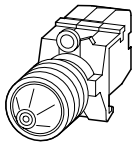
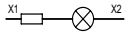
Overload Relay Suffix Code Selection Table

Type	Adjustable setting range	Suffix code
Z00	0.1 – **0.16**	**0.16**
Z00	0.16 – **0.24**	**0.24**
Z00	0.24 – **0.4**	**0.4**
Z00	0.4 – **0.6**	**0.6**
Z00	0.6 – **1.0**	**1.0**
Z00	1.0 – **1.6**	**1.6**
Z00	1.6 – **2.4**	**2.4**
Z00	2.4 – **4**	**4**
Z00	4 – **6**	**6**
Z00	6 – **10**	**10**
Z00	10 – **16**	**16**
Z00	16 – **24**	**24**
Z1	6 – **10**	**10**
Z1	10 – **16**	**16**
Z1	16 – **24**	**24**
Z1	24 – **40**	**40**
Z1	40 – **57**	**57**
Z1	50 – **63**	**63**
Z1	63 – **75**	**75**
Z4	50 – **70**	**70**
Z4	70 – **100**	**100**
Z4	100 – **140**	**140**
Z4	140 – **180**	**180**
Z4	180 – **240**	**240**
Z5	70 – **100**	**100**
Z5	95 – **125**	**125**
Z5	120 – **160**	**160**
Z5	160 – **225**	**225**
Z5	200 – **250**	**250**
ZW7	42 – **63**	**63**
ZW7	60 – **90**	**90**
ZW7	85 – **125**	**125**
ZW7	110 – **160**	**160**
ZW7	160 – **240**	**240**
ZW7	190 – **290**	**290**
ZW7	270 – **400**	**400**
ZW7	360 – **540**	**540**

For overload relay technical information see page **4**/11.

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Field Modification Kits

1 Illustrations	2 Symbols and legend plates	3 Description	4 **Type** For use in enclosures with lift-off or hinged covers	5 **Price** $
Double Pushbutton				
		Double pushbutton mounting in single hole Contacts: 1 NO, 1 NC	**QDD/K11-CS**	See Price List
		Double pushbutton with transformer type indicating light for mounting in single hole V AC: Primary / Secondary		
		115-125 / 6	**QDDL/K11/FT125/6-CS**	See Price List
		220-240 / 6	**QDDL/K11/FT240/6-CS**	See Price List
		480-500 / 6	**QDDL/K11/FT480/6-CS**	See Price List
Selector Switches				
2 positions 		Two position selector switch with legend plate. Maintained position. Contacts: 1 NO	**RWK1V/K10-CS**	See Price List
		1 NO, 1 NC	**RWK1V/K11-CS**	See Price List
3 positions		Three position selector switch with legend plate. Maintained position. Contacts: 2 NO	**RWK3R/K20-CS**	See Price List
Indicating Light red (incandescent)				
		Transformer type indicating light V AC: Primary / Secondary		
		115-125 / 6	**RL-RT/FT125/6-CS**	See Price List
		220-240 / 6	**RL-RT/FT220/6-CS**	See Price List
		480-500 / 6	**RL-RT/FT500/6-CS**	See Price List
Control Transformers[1] Including primary fuse block and fuses	VA Rating	For use with contactor:		
	50	**DIL EEM, EM DIL 00M, DIL 00AM DIL 0M, DIL 0AM DIL 1M, DIL 1AM**	**T50-230-460/120-PR**	See Price List
	75	**DIL 2M, DIL 2AM, S-PKZ2**	**T75-230-460/120-PR**	See Price List
	100	**DIL 3-22,-NA, DIL 3M 80, DIL 4-22-NA DIL M 185, DIL M 225, DIL M 250**	**T100-230-460/120-PR**	See Price List
	150	**DIL 4M 115, DIL 6-22-NA, DIL M 300 DIL M 400, DIL M 500**	**T150-230-460/120-PR**	See Price List
	500	**DIL 8-22-NA, DIL 8A-22-NA**	**T500-230-460/120-PR**	See Price List

1) The standard enclosure may or may not have room for the addition of a control transformer. Consult Moeller Electric.
Transformers are dual voltage primary: 220–240 V/440–480 V; single voltage secondary: 110–120 V. Class CC primary fusing supplied as standard.
Consult Moeller Electric for secondary fusing options and fuseless primary/secondary protection alternatives.

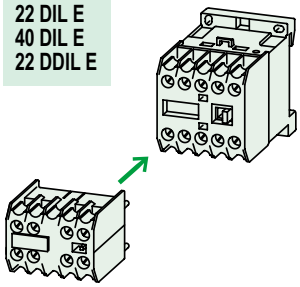
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1	2		3	4	5	6
	Number of Contacts NO = Normally Open NC = Normally Closed		For use with Contactor frame size	**Type**	**Price**	Remarks
	NO	NC			$	
Auxiliary Contacts – Top Mounted[1]						
2-Pole						
	1	1	**DIL 00AM** **DIL 00M(4)**	**11 DIL M**		Contactor Frame Size **DIL EEM, EM**. The following auxiliary contact combinations are possible:
	0	2	**DIL 0(A)M** **DIL 1(A)M**	**02 DIL**		
	2	0	**DIL 2(A)M**	**20 DIL**		
	1	1	**DIL (E)EM-10(-G)** **DIL EM4(-G)**	**11 DIL EM**		
	0	2		**02 DIL EM**		
	0	2	**DIL (E)EM-01(-G)** **DIL (E)EM-10(-G)**	**02 DIL E**		
	2	0	**DIL EM4(-G)**	**20 DIL E**		
	1	1		**11 DDIL E**[2]		
	1	1		**11 DIL E**		
4-Pole						
	2	2	**DIL 00AM** **DIL 00M(4)**	**22 DIL M**		Contactor Frame Size **DIL 00M...2AM**. The following auxiliary contact combinations are possible:
	3	1	**DIL 0(A)M** **DIL 1(A)M**	**31 DIL M**		
	2	2	**DIL 2(A)M**	**22 DDIL M**[2]		
	0	4		**04 DIL**		
	1	3		**13 DIL**		
	4	0		**40 DIL**		
	3	1		**31 DIL**		
	2	2		**22 DIL**		
	2	2	**DIL (E)EM-10(-G)** **DIL EM4(-G)**	**22 DIL EM**		
	0	4	**DIL (E)EM-01(-G)** **DIL (E)EM-10(-G)**	**04 DIL E**		
	1	3	**DIL EM4(-G)**	**13 DIL E**		
	2	2		**22 DIL E**		
	3	1		**31 DIL E**		
	4	0		**40 DIL E**		
	2	2		**22 DDIL E**[2]		

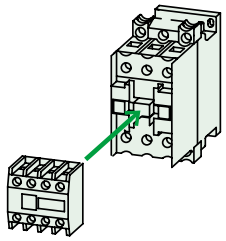
See Price List

DIL (E)EM-01(-G)
DIL (E)EM-10(-G)
DIL EM4(-G)
+
02 DIL E
11 DIL E
20 DIL E
11 DDIL E
04 DIL E
13 DIL E
22 DIL E
40 DIL E
22 DDIL E

DIL (E)EM-10(-G)
DIL EM4(-G) +
22 DIL EM
02 DIL EM
11 DIL EM

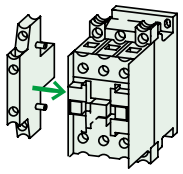
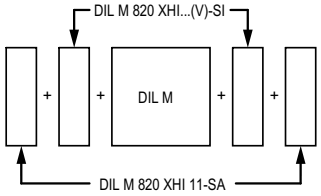
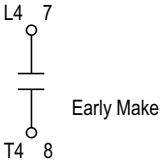
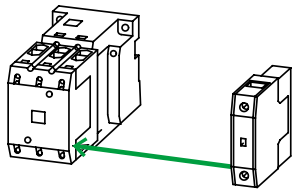
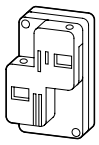
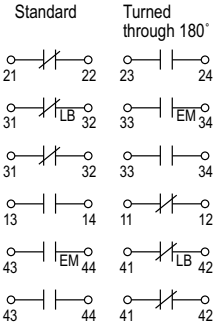
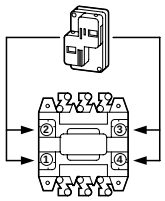


DIL 00AM
DIL 00M(4)
DIL 0(A)M
DIL 1(A)M
DIL 2(A)M
+
11 DIL M
02 DIL
20 DIL
22 DIL M
31 DIL M
22 DDIL M
04 DIL
13 DIL
40 DIL
31 DIL
22 DIL



1) Refer to next page for side-mounted auxiliary contact combinations
2) Includes one early-make and one late-break contact pair

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1	2		3	4	5	6
	Number of Contacts NO = Normally Open NC = Normally Closed		For use with Contactor frame size	**Type**	**Price**	Notes
	NO	NC			$	
Auxiliary Contacts-Side Mounted						
	1	0	**DIL 0(A)M** **DIL 1(A)M**	**10 S DIL M**	See Price List	**01 S DIL M** **10 S DIL M** **11 S DIL M** Maximum: 4 side -mounted contacts, 1 block on each side for **DIL 0(A)M...2(A)M** contacts. Maximum of 5 contacts possible when combined with top-mounted contacts. **...S DIL M** contacts cannot be combined with **DIL M 820...** contacts. 
	0	1	**DIL 2(A)M**	**01 S DIL M**	See Price List	
	1	1		**11 S DIL M**	See Price List	
	1	1	**DIL 0M through DIL M 500**	**DIL M 820-XHI 11-SI**	See Price List	**DIL M 820-XHI 11-SI** **DIL M 820-XHI 11V-SI** **DIL M 820-XHI 11-SA**  **DIL 3M 80** through **M 500**: Maximum of 8 contacts possible, 2 blocks on each side. **DIL M 820-XHI 11(V)-SI** contact blocks can only be mounted on the inside directly to the contactor. (reference diagram above) **DIL M 820-XHI 11-SA** contact blocks can only be mounted on the outside to the **DIL M 820...SI** contact blocks. (reference diagram above) Auxiliary contact blocks can not be mounted between a mechanical interlock and the contactor.
	1	1	**DIL M 820-XHI 11V-SI**[2]	**DIL M 820-XHI 11V-SI**[2]	See Price List	
	1	1	**DIL 3M 80 through DIL M 500**	**DIL M 820-XHI 11-SA**	See Price List	
					See Price List	**DIL 0(A)M** through **2(A)M**: Maximum of 4 contacts possible, 1 **DIL M 820-XHI 11(V)-SI** block on each side. The **DIL M 820...** contact blocks can not be used in conjuction with the **DIL 0(A)M-G** contactor.
Power Pole open/enclosed						
1 Pole 	Ratings: (A) Continu-ous current	35/30	**DIL 0M**	**N DIL 0M**	See Price List	 **N DIL ...M**  Maximum 1 additional pole only. Mounts on left or right side.
		55/44	**DIL 1M**	**N DIL 1M**	See Price List	
		75/60	**DIL 2M**	**N DIL 2M**	See Price List	
Auxiliary Contacts for Universal Contactors						
1 Pole 			**DIL 3-22** **DIL 4-22** **DIL 6-22** **DIL 8(A)-22**	**HSI-1**	See Price List	 EM = Early Make LB = Late Break **HS...**  See following page for auxiliary contact conversion information. Maximum number of NO contacts: **DIL 3 – DIL 6** = 3 NO **DIL 8 – DIL 8A** = 7 NO
DIL 3-22 through **DIL 8A-22** contactors are supplied with 4 auxiliary contacts (2 NO & 2 NC). Each single pole auxiliary contact can be exchanged for another or its function can be modified by turning it through 180˚. See right and conversion information on following page for further information.				**HSII-1**	See Price List	
				HSIII-1	See Price List	
				HSI-2	See Price List	
				HSII-2	See Price List	
				HSIII-2	See Price List	

1) Late-break contact
2) Includes one early-make and one late break contact pair.

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Auxiliary contact combinations for system **DIL M** contactors **DIL 0M** through **DIL 2AM.**

Auxiliary contact modules for side and top mounting can be combined for up to a maximum of 5 auxiliary contacts.

The diagram at right shows the possible contact configurations which can be realized by combining side and top-mounted auxiliary contact modules.

DIL 0(A)M(-G) to DIL 2(A)M(-G)

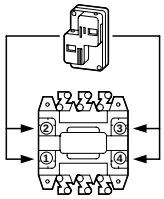
For side mounting

		10 S DIL M 01 S DIL M	2 x 10 S DIL M 2 x 01 S DIL M	11 S DIL M	2 x 11 S DIL M
	Contactor with no auxiliary contacts	x	x	x	x
For top mounting	11 DILM	x	x	x	–
	22 DIL M	x	–	–	–
	22 DDIL M	x	–	–	–
	31 DIL M	x	–	–	–
	02 DIL	x	x	x	–
	11 DIL	x	x	x	–
	20 DIL	x	x	x	–
	04 DIL	x	–	–	–
	13 DIL	x	–	–	–
	22 DIL	x	–	–	–
	40 DIL	x	–	–	–
	31 DIL	x	–	–	–

x = Possible – = Not possible

Conversion of auxiliary contacts for Universal Contactors

DIL 3-22 through DIL 8A-22



On contactors **DIL 3** to **DIL 8A**, a single-pole auxiliary contact can be exchanged for another single-pole auxiliary contact (see above) or its function can be modified by turning it through 180˚. By turning, the NO auxiliary contact becomes NC and NC becomes NO, 4 NO contacts not permissible for **DIL 3 – DIL 6**.

Up to 4 additional auxiliary contacts can be mounted on **DIL 8** and **DIL 8A**. Maximum of 7 NO contacts. Permissible auxiliary contacts combination, either 2 X standard or 2 X same "sond (form...)"

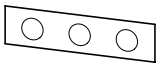
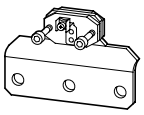
Position	Type of auxiliary contact circuit diagram 1	2	3	4	Auxiliary contact NO	NC
Standard	HS I-2	HS I-1	HS III-1	HS III-2	2	2
as above but **HS III-1** turned through 180˚	HS I-2	HS I-1	HS III-1	HS III-2	3	1
as above but **HS III-1** turned through 180˚	HS I-2	HS I-1	HS III-1	HS III-2	1	3
as above but **HS 1-2** and **HS III-2** turned through 180˚	HS I-2	HS I-1	HS III-1	HS III-2	–	4
HS III-1 and **HS III-2** replaced by **HSII-1** and **HS II-2** (see page **3**/36)	HS I-2	HS I-1	HS II-1	HS II-2	2	2
as above but **HS II-1** turned through 180˚	HS I-2	HS I-1	HS II-1	HS II-2	3	1
as above but **HS II-2** turned through 180˚	HS I-2	HS I-1	HS II-1	HS II-2	1	3
as above but **HS II-2** and **HS II-2** turned through 180˚	HS I-2	HS I-1	HS II-1	HS II-2	–	4

EM = Early Make
LB = Late Break

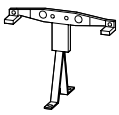
1	2	3	4	5	6
		For use with	**Type**	**Price** $	Remarks
Suppressors					
RC suppressors					
	24 – 48 V	**EEM, EM**	**RC DIL E 48**		For AC operated devices.
	110 – 250 V		**RC DIL E 250**		Drop out delay should be taken into consideration
	24 – 48 V	**00(A)M 0(A)M**	**RCB DIL 48**		
	110 – 250 V	**1(A)M 2(A)M**	**RCB DIL 250**		
	380 – 415 V		**RCB DIL 415**		
	24 – 48 V	**3M 80 4M 115**	**RCS DIL 48**		
	110 – 250 V		**RCS DIL 250**		
	380 – 415 V		**RCS DIL 415**		
Varistor suppressors					
	24 – 48 V	**EEM, EM**	**VG DIL E 48**		For use with AC operated devices. The DC operated devices have built-in surge suppressors as standard. (**DIL (E)EM-...-G**)
	110 – 250 V		**VG DIL E 250**		
	380 – 415 V		**VG DIL E 415**		
	12 – 24 V	**00(A)M 0(A)M**	**VGB DIL 24**		For use with AC 50/60 Hz operated devices (**DIL 00M** through **DIL 4M 115**) and DC operated devices (**DIL 00M-G** through **DIL 2AM-G**).
	24 – 48 V	**1(A)M 2(A)M**	**VGB DIL 48**		
	110 – 250 V	**3M 80 4M 115**	**VGB DIL 250**		DC operated devices **DIL 3M 80** and **4M 115** have varistor surge suppressors built-in.
	380 – 415 V		**VGB DIL 415**		
	12 – 24 V	**00(A)M 0(A)M**	**VGC DIL 24**		For use with AC and DC operated contactors (DIL 00(A)M....2(A)M).
	24 – 48 V	**1(A)M 2(A)M**	**VGC DIL 48**		
	110 – 250 V		**VGC DIL 250**		
	380 – 415 V		**VGC DIL 415**		
Free-wheel diode suppressor					
	 12-250V DC	**00(A)M 0(A)M 1(A)M 2(A)M**	**FD B DIL**		For DC operated devices. Drop out delay should be taken into consideration.

See Price List

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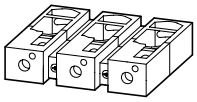
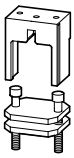
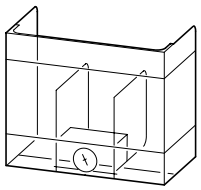
1	2	3	4	5	6
		For use with type	**Type**	**Price** $	Remarks
Star-point Bridges					
		**00(A)M**	**S 1 DIL 00M**	See Price List	Finger-safe design
		0(A)M	**S 1 DIL 0M**	See Price List	
		1(A)M	**S 1 DIL 1M**	See Price List	
		2(A)M	**S 1 DIL 2M**	See Price List	
		3M 80	**S 1 DIL 3M**	See Price List	
		4M 115	**S 1 DIL 4M**	See Price List	
		**M 185, M 225, M 250 M 300, M 400**	**DIL M 400-XS1**	See Price List	With type **DIL M 400-XS1**, a **DIL M 400-XHB** cover is included for protection against accidental contact.
		M 500	**DIL M 500-XS1**	See Price List	With type **DIL M 500-XS1**, a **DIL M 500-XHB** cover is included for protection against accidental contact.
Paralleling Bridges **For main contacts**					
		4-pole **EEM, EM**	**P 1 DIL EM**	See Price List	Finger safe design. Increases the open continuous current (ACI) value of the contactor by a factor of 2.5. **P 1 DIL EM** and **P 1 DIL 00M** are 4 pole units. 2 per set. The 4th pole can be broken off.
		00(A)M	**P 1 DIL 00M**	See Price List	
		3-pole **0(A)M**	**P 1 DIL 0M**	See Price List	
		1(A)M	**P 1 DIL 1M**	See Price List	
		2(A)M	**P 1 DIL 2M**	See Price List	
		3M 80	**P 1 DIL 3M**	See Price List	
		4M 115	**P 1 DIL 4M**	See Price List	
		**M 185**	**DIL M 185-XP1**	See Price List	A **DIL M 400-XHB** cover is included for protection against accidental contact.

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1	2	3	4	5
	For use with **DIL...**	**Type**	**Price** $	Remarks
Paralleling links For auxiliary contacts				
 	All top mounting auxiliary contacts	**BT 480**[1]	See Price List	Not insulated. Standard quantity: 100
Adaptor For cable lug connection				
	**3M 80**	**AK DIL 3M**	See Price List	1 set = 6 pieces For connecting cables with crimped lugs. Set includes 2 terminal covers.
	4M 115	**AK DIL 4M**	See Price List	
Mechanical Interlocks				
	**EEM, EM**	**MV DIL E**	See Price List	For contactors with the same or different magnet systems, mounted vertically or horizontally. Distance between contactors: 0 mm Mechanical lifespan: 2.5×10^6 operations Additional auxiliary contacts can be fitted.
	**00(A)M** **0(A)M** **1(A)M** **2(A)M**	**MV DIL M**	See Price List	For contactors of the same or different frame sizes but with the same magnet system, mounted vertically or horizontally. Distance between contactors: 15 mm Mechanical lifespan: 5×10^6 operations
	**3M 80 through M 500**	**DIL M 500-XMV**	See Price List	For contactors with the same or different magnet systems, mounted vertically or horizontally. An auxiliary contact cannot be placed between the mechanical interlock and the contactor. Distance between contactors: DIL 3M 80-DIL 4M 115: 10 mm DIL M 185-DIL M 500: 15 mm Mechanical lifespan: 5×10^6 operations
	**3-22**	**V DIL 3**	See Price List	For contactors with the same or different magnet systems, mounted vertically or on surfaces inclined to within 30° of vertical. Distance between contactors according to dimensions, page **3**/65 Mechanical lifespan: 1×10^6 operations
	4-22	**V DIL 4**	See Price List	
	6-22	**V DIL 6**	See Price List	
	8(A)-22	**V DIL 8**	See Price List	
Pneumatic Timer Module Convertible 0.2 – 30 s and 20 – 180 s				
 On-delay with 1 NO/ 1 NC	**0(A)M - 2AM R**	**TPE 11 DIL**	See Price List	Snap-on mount **DIL 00 M** through **DIL 2 AM** contactors and to all basic relays.
Off-delay with 1 NO/ 1 NC	**0(A)M - 2AM R**	**TPD 11 DIL**	See Price List	
Mechanical Latching Module For DC operation pulse duration of 200 ms maximum.				
 DC operation	**00(A)M R**	**V-G DIL**	See Price List	
AC operation	**00(A)M R**	**V-DIL**	See Price List	

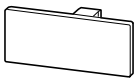
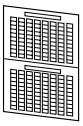
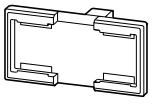
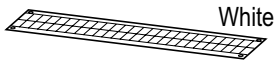
1) Must be ordered in standard quantity.

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1	2	3	4	5
	For use with	**Type**	**Price** $	Remarks
Control circuit terminals				
	DIL 0(A)M	**ZK DIL 0M**	See Price List	Pressure wire connectors mounted directly to the main terminals for control circuit tap-off. 15 A, 600 V max. AWG 18 – 14
	DIL 1(A)M **DIL 2(A)M**	**ZK DIL 1M**	See Price List	
	DIL 3M 80 **DIL 4M 115**	**ZK DIL M**	See Price List	
	DIL 3	**BZ 260**	See Price List	
	DIL 4	**BZ 185**	See Price List	
	DIL 6	**BZ 184**	See Price List	
	DIL 8(A)	**BZ 240**	See Price List	
Terminal Kits[1] with control circuit terminals				
	**DIL M 185** **DIL M 225**	**DIL M 225-XKU-S**	See Price List	For cable conection, single or multi-stranded conductors and flexibus.
	DIL M 250 **DIL M 300** **DIL M 400**	**DIL M 400-XKU-S**	See Price List	For cable conection, single or multi-stranded conductors and flexibus.
	**DIL M500**	**DIL M 650-XKB-S**	See Price List	For bus and flexibus connection.
Terminal Covers				
	**DIL M 185** **DIL M 225** **DIL M 250** **DIL M 300** **DIL M 400** **DIL M 400-XS1**	**DIL M 400-XHB**	See Price List	Cover provides protection against shock hazards and accidental contact.
	DIL M 500 **DIL M 500-XS1**	**DIL M 500-XHB**	See Price List	
	DIL 3	**HV-DIL 3**	See Price List	For line and load terminals (2 pieces).
	DIL 4	**HV-DIL 4**	See Price List	
	DIL 6	**HV-DIL 6**	See Price List	
	DIL 8(A)	**HV-DIL 8**	See Price List	

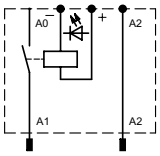
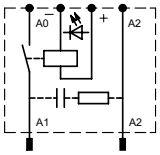
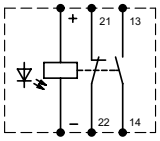
1) UL/CSA pending

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1	2	3	4	5
	For use with	**Type**	**Price** $	Remarks
Connection tabs for fast-on connectors			See Price List	
For auxiliary contact and coil connections	**DIL (E)EM, DIL 00(A)M DIL 0(A)M, DIL 1(A)M DIL 2(A)M, DIL 3M 80, DIL 4M 115, DIL 3, 4, 6, 8(A)**	**BT 483**[1]	See Price List	Use connectors with insulated sleeves. Standard quantity: 100
Tamper-proof cover			See Price List	
Transparent	**DIL (E)EM**	**H DIL E**	See Price List	Cover snap-fits onto the device and can be sealed to prevent tampering.
	**TPE TPD**	**PL-DIL T**	See Price List	Cover is fastened via a screw. Sealable to prevent access.
Couplers			See Price List	
 Provides a mechanical link for stability when groups of components are mounted together in combinations. Mounts between contactors.	**DIL (E)EM**	**V0 DIL E**	See Price List	0 mm spacing between contactors (Std. qty: 50)
	**DIL 00(A)M, DIL 0(A)M DIL 1(A)M, DIL 2(A)M**	**V0 DIL**	See Price List	0 mm spacing between contactors (Std. qty: 20)
		**V5/15 DIL**	See Price List	5 mm spacing between contactors, can be used with DC magnet systems 15 mm spacing between contactors, for mechanical interlock between two contactors (Std. qty: 10)
		**V10/A 5 DIL**	See Price List	10 mm spacing between contactors, for side mounting auxiliary contacts between contactors 5 mm spacing between contactors, can be used with DC magnet systems without permanent connection (Std. qty: 10)
Component Labelling System			See Price List	
Clip-in Label Plate			See Price List	
 8 x 10 mm	**...DIL**	**KG 10**[1]	See Price List	Clip-in type label nameplate can be marked with felt-tip pen or adhesive labels. Clips onto 2 pole auxiliary contact modules. Standard quantity: 500
8 x 20 mm	**...DIL E, DIL ER... ...DIL, DIL R...**	**KG 20**[1]	See Price List	Clips onto 4 pole auxiliary contact modules and base relays. Standard quantity: 500
Label Plate with Mounting Stud			See Price List	
 8 x 17.5 mm	**DIL...**	**XGKS-Z**	See Price List	For use with Moeller equipment with the corresponding mounting hole. Standard quantity: 500
Adhesive Labels[2]			See Price List	
 7.5 x 17 mm Yellow (RAL 1018)	**XGKS-Z KG 20**	**XGKE-GE**	See Price List	For inscription using laser printer, plotter, marker pen, photocopier Standard quantity: Pad of 25 sheets, 240 labels per sheet, perforated and self-adhesive, for use with label plates.
Adapter with Mounting Stud			See Price List	
 Light Grey (RAL 7035)	**DIL...**	**XGKA-Z**	See Price List	Secures label type XGKS-T on Moeller equipment with corresponding mounting hole. Standard quantity: 250
Card of Label Plates[2]			See Price List	
 8 x 17.5 mm White	**XGKS...**	**XGKS-T**	See Price List	Can be inscribed by marker pen or plotter by Phoenix Contact or others. Standard quantity: 10 cards. 40 labels per card.

1) Must be ordered in standard quantity.
2) Consult Moeller Electric for inscription software.

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1	2	3	4	5	6	7
	Ratings	Connection Diagram	For use with Contactor frame Size	**Type**	**Price** $	Remarks
Interface Module, plug in						
	Actuating voltage & current: 24 V DC, 11 mA max. Output, Pilot duty rating: B 300/R 300		**DIL 00(A)M** **DIL 0(A)M** **DIL 1(A)M** **DIL 2(A)M**	**VS 1 DIL**	See Price List	For energizing of contactors and relays from low level 24 V DC inputs. The **VS 1** and **VS 2** plug directly into **DIL M** coil terminals (and **DIL R** relays, see previous chapter) whereas the **ETS 4-VS 3** mounts separately on a DIN rail and is suitable for all contactors and relays. The **VS 2** and **ETS 4-VS 3** are equipped with surge suppressors. In cases where the rated coil current of a device exceeds 2 Amps, use a **DIL ER-G** as an interface relay.
Interface Module with built-in Surge Suppressor						
	Actuation voltage & current: 24 V DC, 11 mA max. Output, Pilot duty rating: B 300/R 300		**DIL 00(A)M** **DIL 0(A)M** **DIL 1(A)M** **DIL 2(A)M**	**VS 2 DIL**	See Price List	
Interface Module, for separate mounting						
	Actuating voltage & current: 24 V DC, 11 mA max. Output, Pilot duty rating: B 300		**All contactors and relays**	**ETS 4-VS3**	See Price List	

Application Notes

Interface modules incorporate contacts which are actuated upon energizing of the module from low power 24 V DC sources such as the outputs of sensors and programmable controllers. These contacts can then be used to switch in the high inrush coils of electromechanical relays and contactors which normally would be too much of a burden for these outputs. This also enables the relays and contactors to be energized directly from the AC line, thus saving the expense of more costly DC magnet systems for these components.

Control Circuit Reliability:
24 V DC voltage and current tolerances are as per DIN EN 61 131-2: At minimum actuation levels of 17 V and 5.4 mA, the error rate is less than 1 fault in 100 million operations.

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At Moeller Electric, It All Starts With Quality

When you're looking for a motor starter that you can install and forget, you need look no further than your authorized Moeller Electric Key Distributor. There you'll find the culmination of over 100 years of devotion to quality and dependability.

The critical components found in Moeller Electric starters are designed and produced by Moeller Electric, all with the mission to produce a starter that installs easily, in a minimum amount of space and that will withstand the rigors of a tough industrial environment.

Moeller Electric starters can be found in most environments and locations around the world. From nuclear power generating stations to cement plants, from New York City to Guangzhou, China, Moeller Electric magnetic motor starters are busy starting and stopping motors, day after day, with no required maintenance.

Call or visit your authorized Moeller Electric Key Distributor today !



Which Standard to Follow?

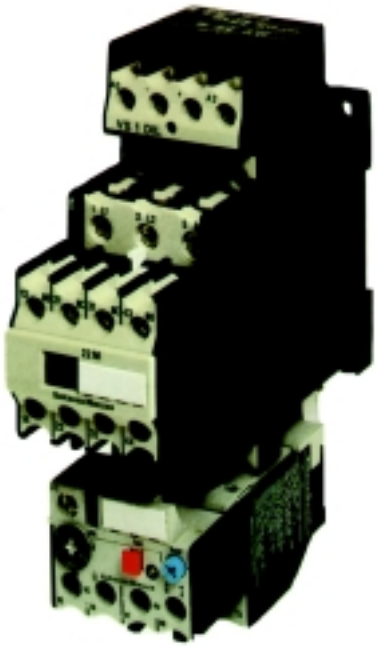
Moeller Electric's heavy-duty, industrial starters are built to withstand the most severe applications where requirements for continuous operation can place heavy demands on control equipment.

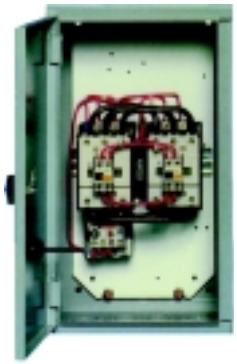
Starters are manufactured to meet or exceed the standard(s) that are applicable to your application. Whether this requires NEMA, UL/CSA, European CE or any other standard, we will quickly supply, either off-the-shelf or custom-built, all at a very cost-effective price.

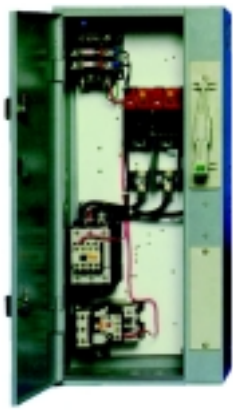
What Flavor?

Moeller Electric starters are available in a wide variety of sizes and types and many standard features that you may be now paying extra for:

- Three phase bimetallic, ambient compensated overload ... no need to purchase, stock and install separate overload "heaters".
- Contactor coil pulls-in and seals-in at 80 to 110 percent of the marked rating.
- Contactor coil magnet system is balanced to minimize contact bounce, one of







NAED ASSOCIATE

1 For use with Contactor **DIL...**	2	3 **AC Type** Insert coil voltage (...) and frequency. See pages **3**/46-47	4 **Price** Standard Coil $	5 **Price** Non-Standard Coil $	6 **DC Type**[1] Insert coil voltage (...). See pages **3**/46-47	7 **Price** Standard Coil $	8 **Price** Non-Standard Coil $
00(A)M		**J-DIL 00M (...)**	See Price List	See Price List	**G-DIL 00M (...)**	See Price List	See Price List
0(A)M		**J-DIL 0M (...)**	See Price List	See Price List	**G-DIL 0M (...)**	See Price List	See Price List
1(A)M		**J-DIL 1M (...)**	See Price List	See Price List	**G-DIL 1M (...)**	See Price List	See Price List
2(A)M		**J-DIL 2M (...)**	See Price List	See Price List	**G-DIL 2M (...)**	See Price List	See Price List
3M 80		**J-DIL 3M (...)**	See Price List	See Price List	**G-DIL 3M (...)**	See Price List	See Price List
4M 115		**J-DIL 4M (...)**	See Price List	See Price List	**G-DIL 4M (...)**	See Price List	See Price List
PKZ 2		**J-S-PKZ 2 (...)**	See Price List	See Price List		See Price List	See Price List
M 185 **M 225** **M 250**		**DILM250-XSP/E (...)**	See Price List	See Price List	**DILM250-XSP/E (...)**	See Price List	See Price List
M 300 **M 400** **M 500**		**DILM500-XSP/E (...)**	See Price List	See Price List	**DILM500-XSP/E (...)**	See Price List	See Price List
3		**J-DIL 3 (...)**	See Price List	See Price List	**G-DIL 3 (...)**	See Price List	See Price List
4		**J-DIL 4 (...)**	See Price List	See Price List	**G-DIL 4 (...)**	See Price List	See Price List
6		**J-DIL 6 (...)**	See Price List	See Price List	**G-DIL 6 (...)**	See Price List	See Price List
8		**J-DIL 8 (...)**	See Price List	See Price List	**G-DIL 8 (...)**	See Price List	See Price List
8A		**J-DIL 8A (...)**	See Price List	See Price List	**G-DIL 8 (...)**	See Price List	See Price List

1) Coils **G-DIL 3M** and **G-DIL 4M** are protected against overvoltages by means of varistor suppressors as standard.

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Select the appropriate coil voltage for your system from the following list of standard and non-standard AC and DC coils.
Select by contactor type. Insert coil voltage and frequency after the contactor or starter type number.

Example:

contactor	overload relay	enclosure suffix	coil voltage
DIL 0AM/11	/Z00-16	/S	120V 60Hz

AC

DIL EEM, EM contactors

Standard coils

12 V 50 Hz	24 V 60 Hz	42 V 50 Hz, 48 V 60Hz	24 V 50/60 Hz
24 V 50 Hz	110 V 60 Hz	110 V 50 Hz, 120V 60Hz	42 V 50/60 Hz
48 V 50 Hz	115 V 60 Hz	190 V 50 Hz, 220 V 60Hz	110 V 50/60 Hz
240 V 50 Hz	600 V 60 Hz	220 V 50 Hz, 240 V 60Hz	230 V 50/60 Hz
		230 V 50 Hz, 240 V 60Hz	
		380 V 50 Hz, 440 V 60Hz	
		400 V 50 Hz, 440 V 60Hz	
		415 V 50 Hz, 480 V 60Hz	

DIL M contactors

Standard coils

24 V 50 Hz	24 V 60 Hz	42 V 50 Hz, 48 V 60Hz	24 V 50/60 Hz
48 V 50 Hz	115 V 60 Hz	110 V 50 Hz, 120V 60Hz	42 V 50/60 Hz
240 V 50 Hz	208 V 60 Hz	190 V 50 Hz, 220 V 60Hz	110 V 50/60 Hz
500 V 50 Hz	600 V 60 Hz	220 V 50 Hz, 240 V 60Hz	230 V 50/60 Hz
		230 V 50 Hz, 240 V 60Hz	380 V 50/60 Hz
		380 V 50 Hz, 440 V 60Hz	
		400 V 50 Hz, 440 V 60Hz	
		415 V 50 Hz, 480 V 60Hz	

Non-standard coils[2)]

DIL 00M DIL 00AM	12-600 V 50 Hz or 12-600 V 60Hz
DIL 0M DIL 0AM	12-600 V 50 Hz or 12-600 V 60Hz
DIL 1M DIL 1AM	24-600 V 50 Hz or 24-600 V 60Hz
DIL 2M DIL 2AM	24-600 V 50 Hz or 24-600 V 60Hz
DIL 3M 80 DIL 4M 115	24-600 V 50 Hz or 24-600 V 60Hz

DIL 3-22 Universal Contactors

Standard coils

24 V 50 Hz	24 V 60 Hz	36 V 50 Hz, 42 V 60 Hz
48 V 50 Hz	110 V 60 Hz	42 V 50 Hz, 48 V 60 Hz
240 V 50 Hz	115 V 60 Hz	110 V 50 Hz, 120V 60 Hz
500 V 50 Hz	208 V 60 Hz	190 V 50 Hz, 220 V 60 Hz
	600 V 60 Hz	220 V 50 Hz, 240 V 60 Hz
		230 V 50 Hz, 240 V 60 Hz
		380 V 50 Hz, 440 V 60 Hz
		400 V 50 Hz, 440 V 60 Hz
		415 V 50 Hz, 480 V 60 Hz

Non-standard coils[2)]

24-600 V 50 Hz or 24-600 V 60Hz

DC

DIL EEM, EM contactors

Standard coils

12 V DC
24 V DC
48 V DC
60 V DC
110 V DC
220 V DC

DIL M contactors

Standard coils

24 V DC
48 V DC
60 V DC
110 V DC
120V DC
220 V DC
240 V DC

Non-standard coils[2)]

12-250 V DC
12-250 V DC
12-250 V DC
12-250 V DC
24-250 V DC

DIL 3-22 Universal Contactors

Standard coils

24 V DC[1)]
48 V DC[1)]
60 V DC
110 V DC
120V DC
220 V DC
240 V DC

Non-standard coils[2)]

24-250 V DC

1) Requires the addition of a DC interposing relay **DIL R-22-G**.
2) There is an additional cost for non-standard coils.

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AC				DC
DIL 4-22, DIL 6-22 Universal Contactors				
Standard coils	48 V 50 Hz 240 V 50 Hz 500 V 50 Hz	110 V 60 Hz 115 V 60 Hz 208 V 60 Hz 600 V 60 Hz	42 V 50 Hz, 48 V 60 Hz 110 V 50 Hz, 120 V 60 Hz 190 V 50 Hz, 220 V 60 Hz 220 V 50 Hz, 240 V 60 Hz 230 V 50 Hz, 240 V 60 Hz 380 V 50 Hz, 440 V 60 Hz 400 V 50 Hz, 440 V 60 Hz 415 V 50 Hz, 480 V 60 Hz	24 V DC[1] 48 V DC[1] 60 V DC 110 V DC 120 V DC 220 V DC 240 V DC
Non-standard coils[2]	42-600 V 50 Hz or 42-600 V 60Hz			
DIL 8-22, DIL 8A-22 Universal Contactors				
Standard coils	240 V 50 Hz 500 V 50 Hz	110 V 60 Hz 115 V 60 Hz 208 V 60 Hz 600 V 60 Hz	110 V 50 Hz, 120 V 60 Hz 190 V 50 Hz, 220 V 60 Hz 220 V 50 Hz, 240 V 60 Hz 230 V 50 Hz, 240 V 60 Hz 380 V 50 Hz, 440 V 60 Hz 400 V 50 Hz, 440 V 60 Hz 415 V 50 Hz, 480 V 60 Hz	24 V DC[1] 48 V DC[1] 60 V DC 110 V DC 120 V DC 220 V DC 240 V DC
Non-standard coils[2]	110-600 V 50 Hz or 110-600 V 60Hz			
S-PKZ 2 Contactor for PKZ 2/ZM-.../S-SP Self-protected Combination Controller				
Standard coils		24 V 60 Hz 208 V 60 Hz 600 V 60 Hz	110 V 50 Hz, 120 V 60 Hz 230 V 50 Hz, 240 V 60 Hz 415 V 50 Hz, 480 V 60 Hz	

1) Requires the addition of a DC interposing relay **DIL R-22-G**.
2) There is an additional cost for non-standard coils.

DIL M 185/22, DIL M 225/22, DIL M 250/22, DIL M 300/22, DIL M 400/22, DIL M 500/22 Contactors

Coils including electronic module	**RDC 48**	Coil Range: 24-48 V DC
	RA 110	Coil Range: 48-110 V 40-60 Hz/DC
	RA 250	Coil Range: 110 - 250 V 40-60 Hz/DC
	RAC 500	Coil Range: 250-500 V 40-60Hz

Note: Part numbers in green shaded area above must be added to complete contactor type (p **3**/4, 8) and replacement coil type (p **3**/45).

Example: **DIL M185/22 (RA 110)**
DIL M250-XSP/E (RA 110)

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Contactors

By far the most common application of contactors is the control of electric motors. As a prime mover, the 3 phase AC motor, in particular the squirrel cage motor, dominates the field, and most of them are controlled by contactors. Contactors are expected to start, stop, reverse, plug, jog and sequence motors and, in conjunction with overload relays, to protect motors in the event of overloads.
The load rating stated in HP is the basic data required to enable the correct selection of contactors to be made, but this figure by itself is not always sufficient. The type of load, its operating cycle, switching frequency and total life required, all influence the overall stress on contactors.
The electrical durability tests of contactors, outlined in Appendix B of IEC 60 947-4, are used by manufacturers to establish contactor ratings which incorporate a sufficient and verifiable switching capability to cover a broad range of applications as defined in the IEC Utilization categories (e.g. AC-3, AC-4). The IEC 60 947 standard states that, with respect to its resistance to electrical wear, a contactor or starter is by convention characterized by the number of ON-LOAD operating cycles corresponding to the different utilization categories which can be made without repair or replacement.
The IEC Utilization categories AC-3 and AC-4 are most often encountered in contactor applications and are outlined below. See Section **13** for additional details.
The curves at right provide a reliable guide for selection based on the electrical life desired.

Normal switching duty AC-3 for squirrel-cage motors

Operating characteristic: Starting: From rest
Stopping: After attaining full running speed

Typical applications:	Compressors	Lifts	Mixers
	Pumps	Escalators	Agitators
	Fans	Conveyors	Centrifuges
	Valves	Bucket elevators	Air conditioning systems

Electrical characteristics: Drives in general in manufacturing and processing machines

Make: up to 6 x rated motor current
Break: 1 x rated motor current
100% AC-3

Extreme switching duty AC-4 for squirrel-cage motors

Operating characteristic: Switching, plugging, reversing

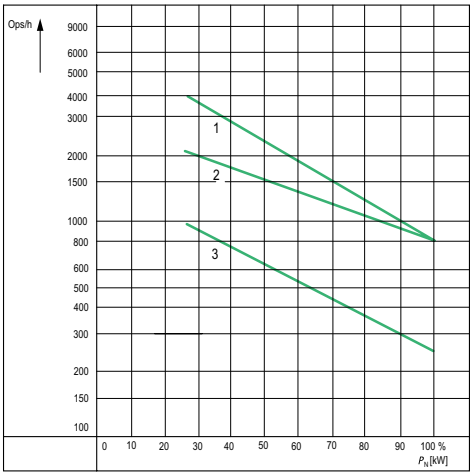
Typical applications:
Printing presses
Wire drawing machines
Centrifuges
Special drives for
manufacturing and processing machines

Electrical characteristics: Make: 6 x rated motor current
Break: 6 x rated motor current

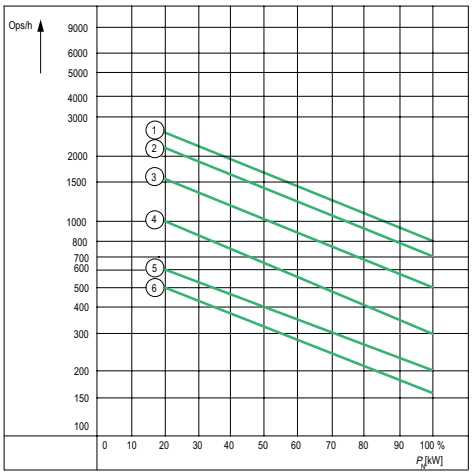
Utilization category: 100% AC-4

Determination of the maximum number of operations per hour in relation to rating and utilization category

Pn = Maximum motor rating (kW/HP) of the contactor per pages **3**/4 & **3**/8 Ops/h = Maximum number of operations per hour



Type	AC 1	AC 3	AC 4
DIL E(E)M	2	1	3
DIL 00(A)M(-G)	2	1	3
DIL 0(A)M(-G)	2	1	3
DIL 1(A)M(-G)	2	1	3
DIL 2(A)M(-G)	2	1	3



Type	AC 1	AC 3	AC 4
DIL 3M80	1	1	4
DIL 4M115	1	1	4
DIL M 185	1	2	5
DIL M 225	1	2	5
DIL M 250	1	2	5
DIL M 300	2	3	6
DIL M 400	2	3	6
DIL M 500	2	3	6

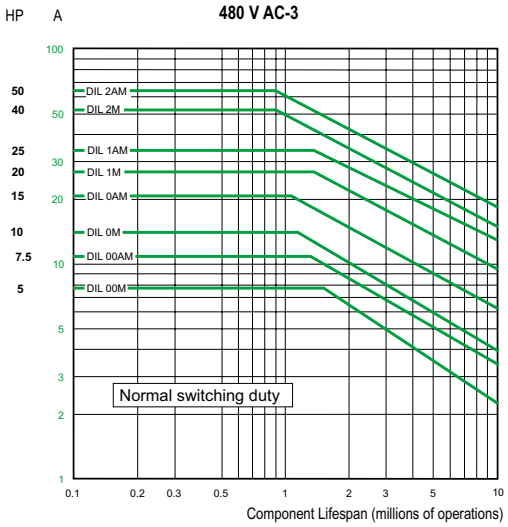
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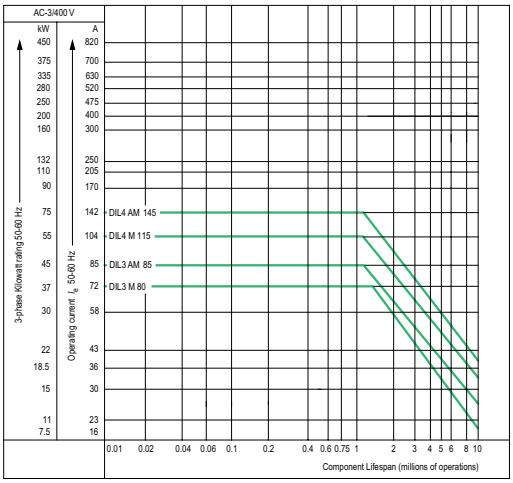
Contactor life expectancy based on utilization categories at 460 V, 50/60 Hz

AC-3

Electrical characteristics: Make: 6 times motor FLC
Break: 1 times motor FLC
Normal switching duty (100% AC-3)

Y Axis (ordinate):
Bold Numbers (HP) - 3 phase motor HP rating at 50 - 60 Hz
Green Numbers (A) - 3 phase motor FLC at 50 - 60 Hz

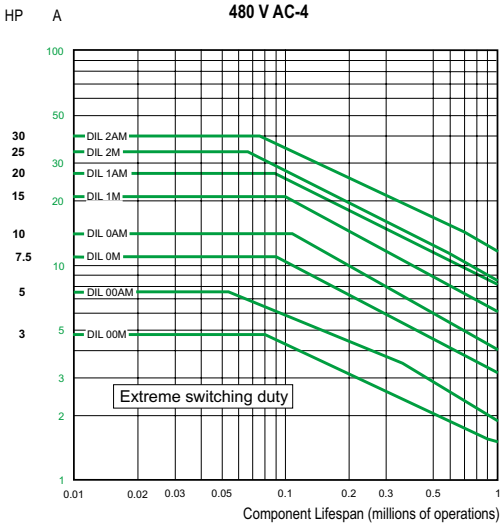


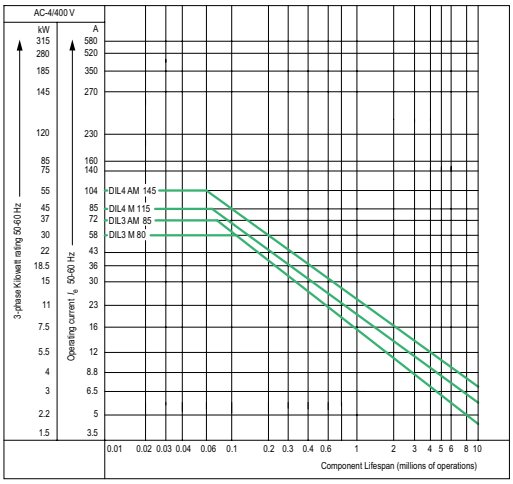


AC-4

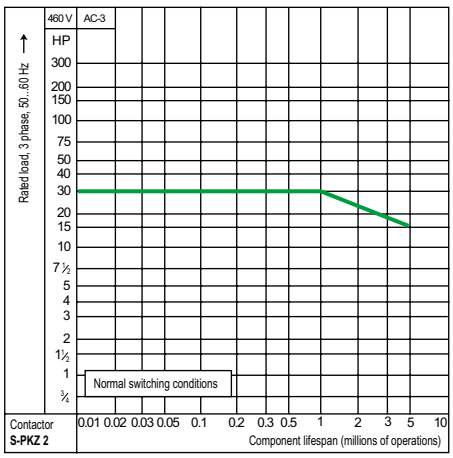
Electrical characteristics: Make: 6 times motor FLC
Break: 6 times motor FLC
Extreme switching duty (inching, plugging) (100% AC-4)

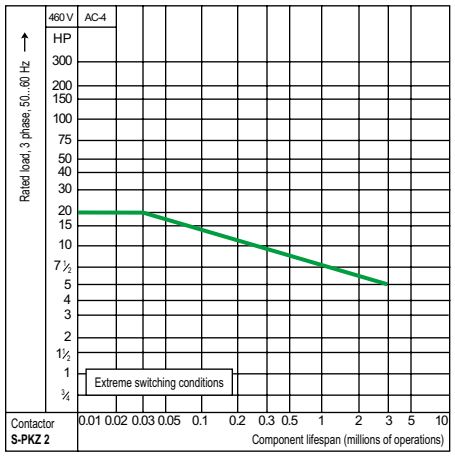
Y Axis (ordinate):
Bold Numbers (HP) - 3 phase motor HP rating at 50 - 60 Hz
Green Numbers (A) - 3 phase motor FLC at 50 - 60 Hz





S-PKZ 2





Note: AC 3 and AC 4 Lifespan values for DIL 3M 80 to 4M 145 are determined at 400 V AC.
Apply a derating factor of 0.9 (90%) for corresponding 460 V AC values.

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			EEM	EM	00M	00AM	0M	0AM
General								
Specifications			UL, CSA, IEC/EN 60 947, CE, DIN VDE 0660					
Mechanical life span								
AC operated		x 10^6 operations	10	10	10	10	10	10
DC operated		x 10^6 operations	20	20	10	10	10	10
Max. operating frequency, mechanical								
AC operated		ops/h	9000	9000	7000	7000	9000	9000
DC operated		ops/h	9000	9000	9000	9000	9000	5000
Max. operating frequency electrical			see diagram on Page **3**/49					
Climatic Proofing			Damp heat, constant to, IEC/EN 60 068-2-3 Damp heat, cyclic, to IEC/EN 60 068-2-30					
Ambient temperature	Open	max./min. C°	+50/-25	+50/-25	+50/-25	+50/-25	+50/-25	+50/-25
	Enclosed	max./min. C°	+40/-25	+40/-25	+40/-25	+40/-25	+40/-25	+40/-25
Impact resistance of make (break) contacts		g	10(8)	10(8)	10	10	8	8
Dimensions			Page **3**/61					
Main contacts								
Rated coil voltage		V AC / V DC	600/250	600/250	600/250	600/250	600/250	600/250
Rated making capacity (IEC/EN 60 947)		A	110	110	200	200	270	270
Rated breaking capacity								
IEC/EN 60 947	220/230 V	A	90	90	130	130	230	230
	380/400 V	A	90	90	120	120	230	230
	500 V	A	64	64	120	120	230	230
	660/690 V	A	54	54	100	100	210	210
Contactor life span		Operations	See pages **3**/48 – 49					
AC-1 duty								
Rated thermal current I_{th} ≙ Rated operating current I_e								
50/60 Hz								
three-pole	Open	A	20	20	20	20	35	35
	Enclosed	A	16	16	16	16	30	30
single-pole	Open	A	50	50/60	50	50	85	85
	Enclosed	A	40	40/50	40	40	75	75
(three/four current paths in parallel)								
AC-3 duty								
Rated operating current I_e (Open and enclosed)								
50/60 Hz	220/230 V	A	6.6	8.8	8.8	12	15.5	22.5
	380/400 V	A	6.6	8.8	8.8	12	15.5	22.5
	500 V	A	5	6.4	9	12	17	22.5
	660/690 V	A	3.5	4.8	6.7	9	13	17.5
AC-4 duty								
Rated operating current I_e (Open and enclosed)								
50/60 Hz	220/230 V	A	5	6.6	6.6	8.7	11.5	15.5
	380/400 V	A	5	6.6	6.6	8.5	11.5	15.5
	500 V	A	3.7	5	6.4	9	11.5	17
	660/690 V	A	2.9	3.4	4.9	6.7	9	13
Magnet system								
Pick-up values								
AC operated (dual voltage coils)								
50 Hz, 60 Hz	Pick-up	x V coil	0.8 - 1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1
DC operated[1]	Pick-up	x V coil	–	–	0.85 - 1.1	0.85-1.1	0.85-1.1	0.85-1.1
Power consumption of the coil								
AC operated (dual voltage coils)								
50 Hz, 60 Hz	Pick-up	VA/W	25/22	25/22	67/52	67/52	100/72	100/72
	Sealed	VA/W	4.6/1.3	4.6/1.3	8.6/2.5	8.6/2.5	10/3	10/3
DC operated[1]	Pick-up	W	2.6	2.6	9.5	9.5	10	10
	Sealed	W	2.6	2.6	9.5	9.5	10	10
Duty factor DF		%	100	100	100	100	100	100
Switching times at 100% rated coil voltage (guide only)								
Main contacts AC operated Closing delay		ms	14-21	14-21	14-22	14-22	9-19	9-19
Opening delay		ms	8-18	8-18	5-14	5-14	5-13	5-13
Arcing time		ms	12	12	≤ 10	≤ 10	< 20	< 20

1) True DC voltage or derived from a full wave 3-phase bridge rectifier of filtered 1-phase AC supply.

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				EEM	EM	00M	00AM	0M	0AM
Auxiliary contacts									
Pilot duty rating (UL/CSA)			AC	A600	A600	A600	A600	A600	A600
			DC	P300	P300	P300	P300	P300	P300
Operating current I_e IEC/EN 60 947									
AC-15	220/240 V		A	6	6	6	6	6	6
	380/415 V		A	3	3	4	4	4	4
	500 V		A	1.5	1.5	1.5	1.5	1.5	1.5
DC-13	24/60/110/220 V		A	2.5/2.5/1.5/.5	2.5/2.5/1.5/.5	10/6/3/1	10/6/3/1	10/6/3/1	10/6/3/1
	L/R ≤ 15 ms								
Terminal capacity									
Main contacts (1 or 2 conductors per terminal)									
Solid[1]		1 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-4)	(.75-4)	(1-6)	(1-6)
		2 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-4)	(.75-4)	(1-6)	(1-6)
Flexible with ferrule		1 x (...)	mm²	(.75-1.5)	(.75-1.5)	(.75-4)	(.75-4)	(1-6)	(1-6)
		2 x (...)	mm²	(.75-1.5)	(.75-1.5)	(.75-4)	(.75-4)	(1-6)	(1-6)
Solid or stranded	Min – Max		AWG	18-14	18-14	18-10	18-10	16-10	16-10
Tightening torque			Nm	1.2	1.2	1.2	1.2	1.8	1.8
Auxiliary contacts									
Solid		1 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-4)	(.75-4)	(.75-4)	(.75-4)
		2 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-4)	(.75-4)	(.75-4)	(.75-4)
Flexible with ferrule		1 x (...)	mm²	(.75-1.5)	(.75-1.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)
		2 x (...)	mm²	(.75-1.5)	(.75-1.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)
Solid or stranded	Min - Max		AWG	18-14	18-14	18-12	18-12	18-12	18-1.2
Tightening torque			Nm	1.2	1.2	1.2	1.2	1.2	1.2

1) Maximum of one size difference admissible when using 2 conductors.

			PKZ 2/ZM-.../S-SP
Specifications			UL 508/CSA 22.2 No. 14, Category E self-protected control devices
Maximum continuous current		A	42 at 480 V AC
		A	27 at 600 V AC
Maximum HP ratings		200 V	10 HP
3 phase at		230 V	15 HP
		460 V	30 HP
		575 V	25 HP
UL listed/CSA certified maximum interrupting ratings			
240 V AC	kA RMS	sym	100
480 Y/277 V AC	kA RMS	sym	65
600 Y/347 V AC	kA RMS	sym	42
System Rating			600 Y/347 V AC, up to 27 A 480 Y/277 V AC, up to 42 A Up to 27 A: Suitable for maximum 600 V AC power distribution systems when the voltage between any phase to ground does not exceed 347 V Up to 42 A: Suitable for maximum 480 V AC power distribution systems when the voltage between any phase to ground does not exceed 277 V

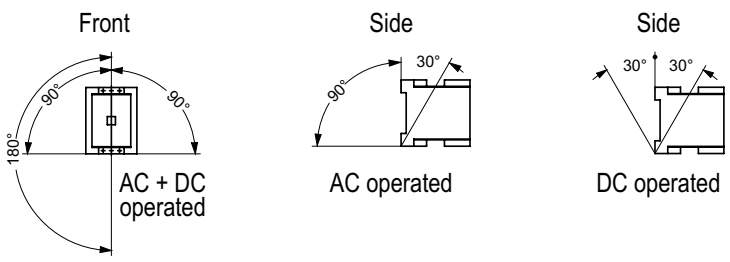
Additional technical data on the **PKZ 2** can be found in section 7 of this catalog.

Mounting positions

DIL EEM, EM: As required, except with terminals A1 and A2 inverted

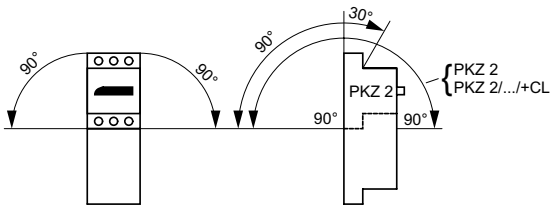


DIL 00M...2 AM:



For DC operated devices a distance of at least 5 mm separating each contacter must be maintained.

PKZ 2/ZM-.../S-SP



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			1M	1AM	2M	2AM	3M 80	4M 115
General								
Specifications			UL, CSA, IEC/EN 60 947, CE, DIN VDE 0660					
Mechanical life span								
AC operated		x 10^6 operations	10	10	10	10	10	10
DC operated		x 10^6 operations	10	10	10	10	3	3
Max. operating frequency, mechanical								
AC operated		ops/h	9000	5000	5000	5000	5000	5000
DC operated		ops/h	5000	5000	5000	5000	1000	1000
Max. operating frequency electrical			see diagram on Page **3**/49					
Climatic Proofing			Damp heat, constant to, IEC/EN 60 068-2-3 Damp heat, cyclic, to IEC/EN 60 068-2-30					
Ambient temperature	Open	max./min. C°	+50/-25	+50/-25	+50/-25	+50/-25	+55/-25	+55/-25
	Enclosed	max./min. C°	+40/-25	+40/-25	+40/-25	+40/-25	+40/-25	+40/-25
Impact resistance of make contacts		g	8	8	8	8	10	10
Dimensions			see Page **3**/61					
Main contacts								
Rated Voltage (UL/CSA)		V AC / V DC	600/250	600/250	600/250	600/250	600/250	600/250
Rated making capacity (IEC/EN 60 947)		A	730	730	950	950	1300	1800
Rated breaking capacity								
IEC/EN 60 947	220/230 V	A	380	380	750	750	1100	1800
	380/400 V	A	380	380	600	600	1100	1800
	500 V	A	355	355	600	600	1100	1800
	660/690 V	A	255	255	545	545	650	1200
	1000 V	A	–	–	–	–	330	630
Contactor life span		Operations	See pages **3**/48...49					
AC-1 duty (IEC/EN 60 947) Rated thermal current I_{th} = Rated operating current I_e 50/60 Hz								
three-pole	Open	A	55	55	90	90	104	167
	Enclosed	A	44	44	80	80	90	140
single-pole	Open	A	140	140	225	225	250	400
	Enclosed	A	110	110	200	200	225	350
AC-3 duty (IEC/EN 60 947) Rated operating current I_e (Open [1]))								
50/60 Hz	220/230 V	A	30	38	50	62	75	104
	380/400 V	A	30	36	43	58	72	104
	500 V	A	28	32	43	54	64	106
	660/690 V	A	21	25	33	42	60	98
	1000 V	A	–	–	–	–	28	40
AC-4 duty (IEC/EN 60 947) Rated operating current I_e (Open [1]))								
50/60 Hz	220/230 V	A	22.5	30	37	49	64	86
	380/400 V	A	22.5	30	36	43	58	85
	500 V	A	22.5	28	32	43	54	78
	660/690 V	A	17.5	21	25	33	49	60
	1000 V	A	–	–	–	–	28	40
Magnet system								
Pick-up values AC operated (dual voltage coils)								
50 Hz, 60 Hz	Pick-up	x V coil	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1	0.8 - 1.1
DC operated [2])	Pick-up	x V coil	0.85 -1.1	0.85 -1.1	0.85 -1.1	0.85 -1.1	0.8 - 1.1	0.8 - 1.1
Power consumption of the coil AC operated (dual voltage coils)								
50 Hz, 60 Hz	Pick-up	VA/W	136/88	136/88	185/106	185/106	320/150	550/220
	Sealed	VA/W	15/4	15/4	16.5/5.8	16.5/5.8	26/7	40/10
DC operated [2])	Pick-up	W	14.5	14.5	16	16	230	360
	Sealed	W	14.5	14.5	16	16	5	5.7
Duty factor DF		%	100	100	100	100	100	100
Switching times at 100% rated coil voltage (guide only)								
Main contacts AC operated	Closing delay	ms	11-19	11-19	14-22	14-22	20-24	18-28
	Opening delay	ms	6-13	6-13	5-15	5-15	8-13	7-11
	Arcing time	ms	< 20	< 20	< 20	< 20	10-20	10-25

1) At maximum allowable ambient temperature

2) True DC voltage or derived from a full wave 3-phase bridge rectifier of filtered 1-phase AC supply.

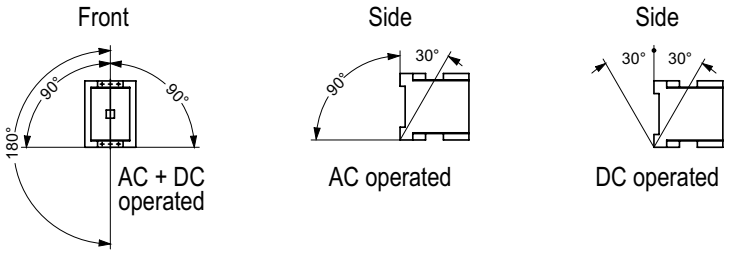
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				1M	1AM	2M	2AM	3M 80	4M 115
Auxiliary contacts									
Pilot duty rating (UL/CSA)			AC	A600	A600	A600	A600	A600	A600
			DC	P300	P300	P300	P300	P300	P300
Operating current I_e IEC/EN 60 947									
AC-15	220/240 V		A	6	6	6	6	6	6
	380/415 V		A	4	4	4	4	4	4
	500 V		A	1.5	1.5	1.5	1.5	1.5	1.5
DC-13	24/60/110/220 V		A	10/6/3/1	10/6/3/1	10/6/3/1	10/6/3/1	10/6/3/1	10/6/3/1
	L/R ≤ 15 ms								
Terminal capacity									
Main contacts (1 or 2 conductors per terminal)									
Solid[1]		1 x (...)	mm²	(2.5-10)	(2.5-10)	(2.5-16)	(2.5-16)	(6-16)	–
		2 x (...)	mm²	(2.5-10)	(2.5-10)	(2.5-16)	(2.5-16)	(6-16)	–
Flexible with ferrule		1 x (...)	mm²	(2.5-16)	(2.5-16)	(2.5-25)	(2.5-25)	(4-50)	(16-70)
		2 x (...)	mm²	(2.5-10)	(2.5-10)	(2.5-10)	(2.5-10)	(4-50)	(16-70)
Solid or stranded		Min – Max	AWG	12 – 4	12 – 4	12 – 2	12 – 2	10 – 2	6 – 2/0
Tightening torque			Nm	4	4	4	4	6	10
Auxiliary contacts									
Solid		1 x (...)	mm²	(.75-4)	(.75-4)	(.75-4)	(.75-4)	(.75-4)	(.75-4)
		2 x (...)	mm²	(.75-4)	(.75-4)	(.75-4)	(.75-4)	(.75-4)	(.75-4)
Flexible with ferrule		1 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)
		2 x (...)	mm²	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)	(.75-2.5)
Solid or stranded		Min – Max	AWG	18 – 12	18 – 12	18 – 12	18 – 12	18 – 12	18 – 12
Tightening torque			Nm	1.2	1.2	1.2	1.2	1.2	1.2

1) Maximum of one size difference admissible when using 2 conductors.

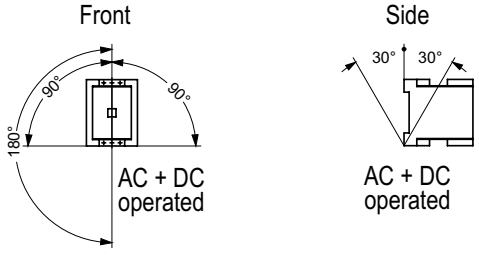
Mounting positions

DIL 00M...2 AM:



For DC operated devices a distance of at least 5 mm separating each contacter must be maintained.

DIL 3M 80...DIL M 500:



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				M 185	M 225	M 250	M 300	M 400	M 500
General									
Specifications				UL, CSA, IEC/EN 60 947, CE, DIN VDE 0660					
Mechanical lifespan									
AC operated			x 10^6 ops	10	10	10	10	10	10
DC operated			x 10^6 ops	10	10	10	10	10	10
Climatic Proofing			open	Damp heat, constant to IEC/EN 60 068, Pt. 2-3					
			enclosed	Damp heat, cyclic, to IEC/EN 60 068, Pt. 2-30					
Ambient temperature		Open	max./min. C°	+60/-25	+60/-25	+60/-25	+60/-25	+60/-25	+60/-25
Mounting position			Refer to	P. 3/53	P. 3/53	P. 3/53	P. 3/53	P. 3/53	P. 3/53
impact resistance Main contacts, Duration 10 ms			g	10	10	10	10	10	10
Dimensions			mm	See pages **3**/61					
Main Contacts									
Rated max. voltage (per IEC)			V	1000	1000	1000	1000	1000	1000
Rated making capacity, AC									
cos ø to IEC/EN 60 947			A	3000	3000	3000	6000	6000	6000
Rated breaking capacity, AC									
cos ø to IEC/EN 60 947		220/230 V	A	2500	2500	2500	5000	5000	5000
		380/400 V	A	2500	2500	2500	5000	5000	5000
		500 V	A	2500	2500	2500	5000	5000	5000
		660/690 V	A	2500	2500	2500	3600	3600	3600
		1000 V	A	760	760	760	950	950	950
Contactor life span- AC3, AC4			ops	See pages **3**/48 – 49					
Current heat loss (3 pole) at conventional free									
air thermal current rating I_{th} at I_e AC-3/400 V			W	36	55	48	69	120	120
Continuous current UL/CSA		open	A	225	250	350	350	450	550
50/60 Hz 3 pole									
AC 1-duty IEC/EN 60 947									
Continuous current I_{th}									
Δ Rated operating current I_e									
50/60 Hz 3 pole:		open at 40˚C	A	276	306	367	429	551	674
		open at 50˚C	A	246	274	329	383	493	602
		open at 55˚C	A	235	261	313	366	470	574
		open at 60˚C	A	225	250	300	350	450	550
AC 3-duty									
Rated operating current I_e		220/230 V	A	185	225	250	300	400	500
(open at max. ambient temperature)		380/400 V	A	185	225	250	300	400	500
50/60 Hz		500 V	A	185	225	250	300	400	500
		660/690 V	A	185	225	250	300	360	360
		1000 V	A	76	76	76	95	95	95
AC 4-duty									
Rated operating current I_e		220/230 V	A	136	164	200	240	296	360
(open at max. ambient temperature)		380/400 V	A	136	164	200	240	296	360
50/60 Hz		500 V	A	136	164	200	240	296	360
		660/690 V	A	136	164	200	240	296	296
		1000 V	A	76	76	76	95	95	95
Main Terminals via Terminal Kits (standard bolt-on termination)									
Terminal capacity									
Multi-stranded with ferrule		Min.	mm^2	50	70	70	70	70	70
		Max.	mm^2	120	240	240	240	240	240
(Cu cable)	one conductor	Min.-Max.	AWG-kcmil	6 - 350	6 - 350	1/0 - 600	1/0 - 600	1/0 - 600	1)
	two conductor	Min.-Max.	AWG-kcmil	6 - 350	6 - 350	1/0 - 500	1/0 - 500	1/0 - 500	
Tightening torque			Nm	24	24	24	24	24	24
Main Contacts DC									
IEC/EN 60 947 (open) I_e operating current									
DC-1, DC-3, DC-5 duty		60-220 V DC	A	300	300	300	400	400	400

1) Terminal Kit type **DIL M 650-XKB-S** suitable for flat Cu Flexibus connection only. Bolt-on termination (supplied standard) can accommodate crimped cable lug connection.

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				M 185	M 225	M 250	M 300	M 400	M 500
Magnet System (U_c = Rated Coil Voltage)									
Pick-up values									
AC or DC [1] operated		Pick-up	xU_c	0.7-1.15	0.7-1.15	0.7-1.15	0.7-1.15	0.7-1.15	0.7-1.15
		Drop-out	xU_c	0.2- 0.6	0.2- 0.6	0.2- 0.6	0.2- 0.6	0.2- 0.6	0.2- 0.6
Power consumption of the coil									
AC operated at 100% U_c		Pick-up	VA	250	250	250	450	450	450
			W	200	200	200	350	350	350
	Multi-Voltage coils	Sealing	VA	3.3	3.3	3.3	3.3	3.3	3.3
			W	4.3	4.3	4.3	4.3	4.3	4.3
DC operated[1] at 100% U_c		Pick-up	W	170	170	170	350	350	350
		Sealing	W	4.3	4.3	4.3	4.3	4.3	4.3
Duty factor DF			%	100	100	100	100	100	100
Switching times at 100% rated coil voltage main contacts									
AC operated									
	making delay		ms	≤ 100	≤ 100	≤ 100	≤ 80	≤ 80	≤ 80
	breaking delay		ms	≤ 80	≤ 80	≤ 80	≤ 80	≤ 80	≤ 80
DC operated[1]									
	making delay		ms	≤ 100	≤ 100	≤ 100	≤ 80	≤ 80	≤ 80
	breaking delay		ms	≤ 80	≤ 80	≤ 80	≤ 80	≤ 80	≤ 80
Stability of Magnet System under variable control voltage conditions (U_s = Control Voltage Supply Rating)									
	Behavior of magnet system during:								
	Voltage Interruptions								
	(0...0.2 x U_s)	≤ 10ms		Magnet system bridges the time gap. Contactor remains energized.					
	(0...0.2 x U_s)	> 10ms		Contactor drops out.					
	Voltage dips								
	(0.2...0.6 x U_s)	≤ 12ms		Magnet system bridges the time gap. Contactor remains energized.					
	(0.2...0.6 x U_s)	> 12ms		Contactor drops out.					
	(0.6...0.7 x U_s)			Contactor remains energized.					
	Voltage surges								
	(1.15...1.3 x U_s)			Contactor remains energized.					
	(> 1.3 x U_s)	≤ 3 sec.		Contactor remains energized.					
	(> 1.3 x U_s)	> 3 sec.		Contactor drops out. [2]					
	Start-up								
	(0...0.7 x U_s)			Contactor does not energize.					
	(0.7...1.15 x U_s)			Contactor energizes.					
	(> 1.15 x U_s)			Contactor does not energize.					
Maximum allowable resistance of contact used to energize contactor via A11 terminal			mΩ	≤ 500	≤ 500	≤ 500	≤ 500	≤ 500	≤ 500
Maximum allowable leakage current of electronic output used to energize contactor via A11 terminal			mA	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
PLC Signal level, in accordance with EN 61 131 (Type 2)									
		High	V	15	15	15	15	15	15
		Low	V	5	5	5	5	5	5
Auxiliary Contacts									
Rated voltage			V	600	600	600	600	600	600
Pilot duty rating (UL/CSA)			AC	A 600	A 600	A 600	A 600	A 600	A 600
			DC	P 300	P 300	P 300	P 300	P 300	P 300
IEC 947 Operating Current I_e									
	AC-15	220/240 V	A	6	6	6	6	6	6
		380/415 V	A	4	4	4	4	4	4
		500 V	A	1.5	1.5	1.5	1.5	1.5	1.5
	DC-13	24/60 V	A	10/6	10/6	10/6	10/6	10/6	10/6
	L/R ≤ 15 ms	110/220 V	A	3/1	3/1	3/1	3/1	3/1	3/1
Terminal capacity (one or two conductors)									
	Solid	Minimum	mm^2	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)
		Maximum	mm^2	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)
	Flexible with ferrule	Minimum	mm^2	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)	1 x (.75-2.5)
		Maximum	mm^2	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)	2 x (.75-2.5)
	Solid or stranded	Min – Max	AWG	18 – 12	18 – 12	18 – 12	18 – 12	18 – 12	18 – 12
Tightening torque			Nm	1.2	1.2	1.2	1.2	1.2	1.2

1) Pure DC or from 3 phase bridge rectifier or at least two-pulse bridge rectifier.
2) Some damage to the magnet system cannot be ruled out.

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			DIL 3	DIL 4	DIL 6	DIL 8	DIL 8A
General							
Specifications			UL, CSA, IEC/EN 60 947, CE , DIN VDE 0660				
Mechanical life-span							
AC operated		x 10^6 operations	10-15	10-15	10-15	10-15	1
DC operated		x 10^6 operations	1.5	1.5	1.5	0.4	0.4
Climatic Test		open	Damp heat, constant to IEC/EN 60 068, Pt. 2-3				
		enclosed	Damp heat, cyclic, to IEC/EN 60 068, Pt. 2-30				
Ambient temperature	open	max./min. C˚	+50/-25	+50/-25	+50/-25	+50/-25	+50/-25
	enclosed	max./min. C˚	+40/-25	+40/-25	+40/-25	+40/-25	+40/-25
Mounting position			Either vertical or inclined up to 30˚ in any direction from vertical				
Impact resistance of NO (NC) contacts, Duration 20 ms, (make/break)		g	7(4)	10(8)	13(9)	7(5)	7(5)
Dimensions		mm	See pages **3**/61				
Main Contacts							
Rated Voltage		V	600	600	600	600	600
Rated making capacity, AC							
cos = 0.35		A	1600	2100	2500	2900	3700
cos = 1		A	1620	2200	2600	3400	3900
Rated breaking capacity, AC	220-230 V	A	970	1800	2500	2900	3000
cos = 0.35	380-400 V	A	970	1800	2500	2900	3000
50 – 60 Hz	500 V	A	800	1700	1900	2900	2900
	660-690 V	A	620	1070	1120	1500	1100
Contactor life span							
AC1, AC3, AC4		ops	Consult Moeller Electric				
Current heat loss (3 poles)							
At continuous current rating I_{th}		W	25	75	116	120	125
Continuous current UL/CSA	open	A	140	160	210	360	400
50-60 Hz 3 pole	enclosed	A	126	144	189	324	360
AC 1-duty IEC/EN 60 947							
Continuous current I_{th}							
Δ Rated operating current I_e							
50-60 Hz 3 pole:	open	A	140	225	250	420	500
	enclosed	A	125	170	200	350	400
AC 3-duty							
Rated operating current I_e							
open and enclosed	230 V	A	103	170	204	300	360
50-60 Hz	500 V	A	78	127	182	285	355
	660 V	A	60	98	140	214	–
AC 4-duty							
Rated operating current I_e							
open and enclosed	230 V	A	52	75	125	180	250
50-60 Hz	500 V	A	54	78	127	182	220
	660 V	A	42	60	98	140	–
Main Terminals							
Wire capacity One Conductor							
(Cu cable)	Min.	AWG	#6	#6	#6	#1/0	#1/0
	Max.	AWG	#2/0	250 kcmil	300 kcmil	500 kcmil	500 kcmil
Wire capacity Two Conductors							
(Cu cable)	Min.	AWG	#18	#18	#18	#1/0	#1/0
	Max.	AWG	#4	#2	#1/0	250 kcmil	250 kcmil

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				DIL 3	DIL 4	DIL 6	DIL 8	DIL 8A
Magnet System								
Pick-up and drop-out values								
AC operated			pick-up	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1
				(for coil voltages < 60 V AC for **DIL 3-8A**: 0.85 to 1.1 x rated voltage)				
			drop-out	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6
DC operated[1]			pick-up	0.85-1.1	0.85-1.1	0.85-1.1	0.85-1.1	0.85-1.1
			drop-out	0.2-0.4	0.2-0.4	0.2-0.4	0.2-0.4	0.2-0.4
Power consumption of the coil AC operated								
dual voltage coils ...V, 50 Hz . ..V, 60 Hz		pick-up	VA/W	300/126	410/172	580/190	1265/350	1370/410
		seal	VA/W	36/8.5	46/13	55/16	88/30	92/35
DC operated[1]		pick-up	W	300	360	360	525	525
(with economy resistor)		seal	W	18	14	14	21	21
Duty factor DF			%	100	100	100	100	100
Switching times at 100% rated coil voltage main contacts								
AC operated								
	making delay		ms	25-34	22-47	21-38	19-32	20-35
	breaking delay		ms	10-15	10-15	9-14	15-25	12-20
DC operated[1]								
	making delay		ms	27-30	29-33	31-34	25-30	25-30
	breaking delay		ms	18-20	18-20	20-34	20-25	20-25
Reversing contactors								
change-over time at 110% Control Voltage			ms	27-37	27-47	25-40	25-37	27-42
Arcing time (AC)			ms	<20	<20	<20	<20	<20
Auxiliary Contacts								
Rated voltage			V	600	600	600	600	600
Pilot duty rating (UL/CSA)			AC	A 600	A 600	A 600	A 600	A 600
			DC	N 300	N 300	N 300	N 300	N 300
IEC Operating Current I_e								
AC-15	220-240 V		A	6	6	6	6	6
	380-415 V		A	4	4	4	4	4
	500 V		A	1.5	1.5	1.5	1.5	1.5
DC-13	24/60/110/220 V							
	L/R ≤ 15 ms		A	6/2.5/1.5/0.6	6/2.5/1.5/0.6	6/2.5/1.5/0.6	6/2.5/1.5/0.6	6/2.5/1.5/0.6
Terminal capacity	Min.		AWG	18	18	18	18	18
one or two conductors	Max.		AWG	14	14	14	14	14

1) True DC voltage or derived from a full wave 3-phase bridge rectifier or filtered 1-phase AC supply

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AC MAGNETIC FULL VOLTAGE NON-REVERSING STARTERS (PAGE 3/14)

Type DIL	Enclosure - w x h x d /S cm (inches)	/SD, /DW cm (inches)	/I cm (inches)
(E)EM/ZE-... 00(A)M/11/Z00-...	17 x 24 x 15 ($6^5/_8$ x $9^1/_2$ x 6)	23 x 40 x 17.5 (9 x $15^3/_4$ x 7)	18.75 x 25 x 15 ($7^3/_4$ x $9^7/_8$ x 6)
0M/11/Z00-... 0AM/11/Z00-...			
1M/11/Z1-... 1AM/11/Z1-...			
2M/11/Z1-... 2AM/11/Z1-...		23 x 40 x 17.5 (9 x $15^3/_4$ x 7)	37.5 x 25 x 17.5 ($14^3/_4$ x $9^7/_8$ x 7)
2AM/11+Z1-75	23 x 30 x 17.5 (9 x $11^7/_8$ x 7)		
3M 80/11/Z5	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	37.5 x 25 x 22.5 ($14^3/_4$ x $9^7/_8$ x $8^7/_8$)
4M 115/11/Z5			37.5 x 37.5 x 22.5 ($14^3/_4$ x $14^3/_4$ x $8^7/_8$)
3-22/Z4-...	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	37.5 x 37.5 x 22.5 ($14^3/_4$ x $14^3/_4$ x $8^7/_8$)
4-22/Z4-...			42.1 x 79.6 x 27.5 ($16^1/_2$ x $31^1/_3$ x $9^7/_8$)
6-22/Z4-...	50 x 80 x 17.5 ($19^5/_8$ x $31^1/_2$ x 7)	50 x 80 x 17.5 ($19^5/_8$ x $31^1/_2$ x 7)	42.1 x 79.6 x 25 ($16^1/_2$ x $31^1/_3$ x $9^7/_8$)
8-22/Z4-... 8-22/ZW7-... 8A-22/ZW7-...			— — —

AC MAGNETIC FULL VOLTAGE REVERSING STARTERS (PAGE 3/15)

Type DIUL...	Enclosure - w x h x d /S cm (inches)	/SD, /DW cm (inches)	/I cm (inches)
(E)EM-... 00(A)M-01/Z00-... 0(A)M/11/Z00-...	17 x 24 x 15 ($6^5/_8$ x $9^1/_2$ x 7)	23 x 40 x 17.5 (9 x $15^3/_4$ x 7)	37.5 x 25 x 15 ($14^3/_4$ x $9^7/_8$ x 6)
0(A)M/11+Z1-...	23 x 30 x 17.5 (9 x $11^7/_8$ x 7)		
1M/11/Z1-... 1AM/11/Z1-...	23 x 40 x 17.5 (9 x $15^3/_4$ x 7)		37.5 x 25 x 15 ($14^3/_4$ x $9^7/_8$ x 6)
2(A)M/11/Z1-... 2AM/11+Z1-75			
3M 80/11/Z5-...	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	27 x 60 x 17.5 ($10^5/_8$ x $23^1/_2$ x 7)	37.5 x 37.5 x 22.5 ($14^3/_4$ x $14^3/_4$ x $8^7/_8$)
4M 115/11/Z5-...	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	37.5 x 37.5 x 22.5 ($14^3/_4$ x $14^3/_4$ x $8^7/_8$)
3-22/Z4-...	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	42.1 x 79.6 x 22.5 ($16^1/_2$ x $31^1/_3$ x $9^7/_8$)
4-22/Z4-...	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	50 x 60 x 17.5 ($19^5/_8$ x $23^1/_2$ x 7)	–
6-22/Z4-...	50 x 80 x 17.5 ($19^5/_8$ x $31^1/_2$ x 7)	50 x 80 x 17.5 ($19^5/_8$ x $31^1/_2$ x 7)	–
8-22/Z4-... 8-22/ZW7-... 8A-22/ZW7-...	80 x 120 x 27.5 ($31^1/_2$ x $47^1/_4$ x 10)	80 x 120 x 27.5 ($31^1/_2$ x $47^1/_4$ x 10)	– – –

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COMBINATION STARTERS - BREAKER TYPE (PAGE 3/22)

Type	Enclosure - w x h x d		
M	/S cm (inches)	/SD, /DW cm (inches)	/I cm (inches)
00(A)M-10/ZM/Z00-... 0M/11/ZM/Z00-...	23 x 40 x 17.5 (9 x 15 3/4 x 7)	23 x 40 x 17.5 (9 x 15 3/4 x 7)	37.5 x 25 x 15 (14 3/4 x 9 7/8 x 6)
0AM/11/ZM6/Z-... 1M/11/ZM6/Z1-40 2M/11/ZM6/Z1-57 2AM/11/ZM6/Z1-...	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	37.5 x 25 x 17.5 (14 3/4 x 9 7/8 x 7)
3M 80/11/ZM6/Z5			37.5 x 37.5 x 22.5 (14 3/4 x 14 3/4 x 8 7/8)
4M 115/11/ZM6/Z5 4M 115/11/ZM9/Z5	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)	42.1 x 79.6 x 22.5 (16 5/8 x 31 3/8 x 8 7/8)
3-22/ZM6/Z4-... 3-22/ZM6/Z4-100 4-22/ZM6/Z4-... 4-22/ZM6/Z4-140			
4-22/ZM9/Z4-140 6-22/ZM9/Z4-...	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)	– –
8-22/ZM9/Z4-240 8-22/ZM10/ZW7-... 8A-22/ZM10/ZW7-...	80 x 100 x 27.5 (31 1/2 x 39 3/8 x 11)	80 x 100 x 27.5 (31 1/2 x 39 3/8 x 11)	– – –

COMBINATION REVERSING STARTERS - BREAKER TYPE (PAGE 3/23)

Type	Enclosure - w x h x d		
MV	/S cm (inches)	/SD, /DW cm (inches)	/I cm (inches)
00M-01/ZM/Z00-... 00AM-01/ZM/Z00-...	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	37.5 x 25 x 15 (14 3/4 x 9 7/8 x 6)
0M/11/ZM/Z00-... 0AM/11/ZM6/Z-... 1M/11/ZM6/Z1-40	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	37.5 x 37.5 x 17.5 (14 3/4 x 14 3/4 x 7)
2M/11/ZM6/Z1-... 2AM/11/ZM6/Z1-...	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	37.5 x 37.5 x 17.5 (14 3/4 x 14 3/4 x 7)
3M 80/11/ZM6/Z5-... 4M 115/11/ZM6/Z5-... 4M 115/11/ZM9/Z5-...	50 x 60 x 17.5 (19 1/2 x 23 1/2 x 7)	50 x 60 x 17.5 (19 1/2 x 23 1/2 x 7)	42.1 x 79.6 x 22.5 (16 5/8 x 31 3/8 x 8 7/8)
3-22/ZM6/Z4-...	60 x 80 x 17.5 (23 1/2 x 31 1/2 x 7)	60 x 80 x 17.5 (23 1/2 x 31 1/2 x 7)	42.1 x 79.6 x 22.5 (16 5/8 x 31 3/8 x 8 7/8)
4-22/ZM6/Z4-... 4-22/ZM9/Z4-140 6-22/ZM9/Z4-...	60 x 80 x 17.5 (23 1/2 x 31 1/2 x 7)	60 x 80 x 17.5 (23 1/2 x 31 1/2 x 7)	– – –
8-22/ZM9/Z4-... 8-22/ZM10/Z4-... 8-22/ZM10/ZW7-... 8A-22/ZM10/ZW7-...	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)	– – – –

The enclosure may or not change with the addition of modifications. When accurate dimensions of the enclosure are required, refer to your nearest Moeller Electric Office.

COMBINATION STARTERS – SELF-PROTECTED TYPE, FVNR (PAGE 3/20)

Type	Enclosure - w x h x d		
	/S cm (inches)	/SD, /DW cm (inches)	/I cm (inches)
PKZ 2/ZM.../S-SP	23 x 40 x 17.5 (9 x 15 3/4 x 7)	23 x 40 x 17.5 (9 x 15 3/4 x 7)	37.5 x 25 x 12.5 (14 3/4 x 9 7/8 x 6)

COMBINATION STARTERS – DISCONNECT TYPE (PAGE 3/24)

Type		Enclosure - w x h x d	
M		/S cm (inches)	/SD, /DW cm (inches)
00M/11/P2-30	/Z00-.../S	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)
00AM/11/P2-30	/Z00-.../S		
0M/11/P2-30	/Z00-.../S		
0AM/11/P2-30	/Z00-.../S		
0AM/11/P2-60	/Z1-.../S		
1M/11/P2-60	/Z1-.../S		
1M/11/P2-30	/Z1-40/S		
1M/11/P2-60	/Z1-40/S		
1AM/11/P2-60	/Z1-.../S		
2M/11/P2-60	/Z1-57/S		
2M/11/P2-100	/Z1-57/S		
2AM/11/P2-100	/Z1-.../S		
2AM/11/P2-100	/Z4-.../S		

COMBINATION REVERSING STARTERS – DISCONNECT TYPE (PAGE 3/26)

Type		Enclosure - w x h x d	
MW		/S cm (inches)	/SD, /DW cm (inches)
00M/11/P2-30	/Z00-.../S	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)
00AM/11/P2-30	/Z00-.../S		
0M/11/P2-30	/Z00-.../S		
0AM/11/P2-30	/Z00-.../S		
0AM/11/P2-60	/Z1-.../S		
1M/11/P2-60	/Z1-.../S		
1M/11/P2-30	/Z1-40/S		
1M/11/P2-60	/Z1-40/S		
1AM/11/P2-60	/Z1-.../S		
2M/11/P2-60	/Z1-57/S		
2M/11/P2-100	/Z1-57/S		
2AM/11/P2-100	/Z1-.../S		
2AM/11/P2-100	/Z4-.../S		

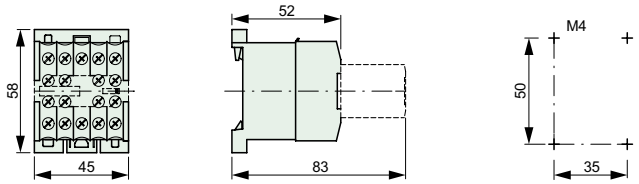
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AC MAGNETIC TWO-SPEED STARTER – 1 WINDING (PAGE 3/16)		
Type	Enclosure - w x h x d	
	/S cm (inches)	**/SD, /DW** cm (inches)
2S1W 00M/Z00-.../Z00-... **2S1W 00AM/Z00-.../Z00-...** **2S1W 0M/Z00-.../Z00-...** **2S1W 0AM/Z00-.../Z00-...**	23 x 40 x 17.5 (9 x 15 3/4 x 7)	23 x 40 x 17.5 (9 x 15 3/4 x 7)
2S1W 1M/Z1-.../Z1-... **2S1W 1AM/Z1-.../Z1-...** **2S1W 2M/Z1-.../Z1-...** **2S1W 2AM/Z1-.../Z1-...**	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)
2S1W 3-22/Z1-.../Z1-...	50 x 80 x 17.5 (19 5/8 x 31 1/2 x 7)	50 x 80 x 17.5 (19 5/8 x 31 1/2 x 7)
2S1W 4-22/Z4-.../Z1-... **2S1W 6-22/Z4-.../Z1-...**	60 x 100 x 17.5 (23 1/2 x 39 3/8 x 7)	60 x 100 x 17.5 (23 1/2 x 39 3/8 x 7)
2S1W 8-22/Z4-.../Z1-... **2S1W 8-22/Z4-.../Z4-...** **2S1W 8-22/ZW7-.../Z4-...** **2S1W 8A-22/ZW7-.../Z4-...**	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)

AC MAGNETIC TWO-SPEED STARTER – 2 WINDING (PAGE 3/16)		
Type	Enclosure - w x h x d	
	/S cm (inches)	**/SD, /DW** cm (inches)
2S2W 00M/Z00-.../Z00-... **2S2W 00AM/Z00-.../Z00-...** **2S2W 0M/Z00-.../Z00-...** **2S2W 0AM/Z00-.../Z00-...**	23 x 40 x 17.5 (9 x 15 3/4 x 7)	23 x 40 x 17.5 (9 x 15 3/4 x 7)
2S2W 1M/Z1-.../Z1-... **2S2W 1AM/Z1-.../Z1-...** **2S2W 2M/Z1-.../Z1-...** **2S2W 2AM/Z1-.../Z1-...**	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)	27 x 60 x 17.5 (10 1/2 x 23 1/2 x 7)
2S2W 3-22/Z1-.../Z1-...	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)	50 x 60 x 17.5 (19 5/8 x 23 1/2 x 7)
2S2W 4-22/Z4-.../Z1-... **2S2W 6-22/Z4-.../Z1-...**	50 x 80 x 17.5 (19 5/8 x 31 1/2 x 7)	50 x 80 x 17.5 (19 5/8 x 31 1/2 x 7)
2S2W 8-22/Z4-.../Z1-... **2S2W 8-22/Z4-.../Z4-...** **2S2W 8-22/ZW7-.../Z4-...** **2S2W 8A-22/ZW7-.../Z4-...**	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)	80 x 120 x 27.5 (31 1/2 x 47 1/4 x 11)

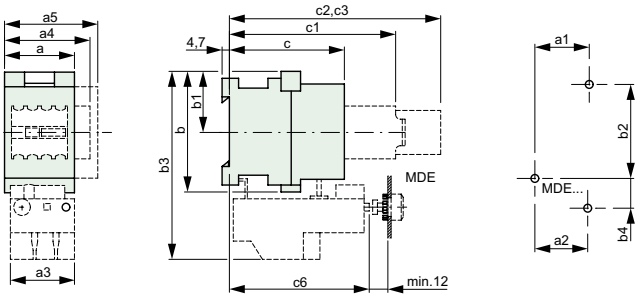
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DIL E(E)M-...
DIL E(E)M-...-G



DIL	00 M (-G) 00 AM (-G) 00 M 4 (-G)		0 M (-G) 0 AM (-G)		1 M (-G) 1 AM (-G)		2 M (-G) 2 AM (-G)	
a	45	(45)	45	(45)	60	(60)	70	(70)
a1	35	(35)	35	(35)	50	(50)	60	(60)
a4	–	–	55	(55)	70	(70)	80	(80)
a5	–	–	60	(60)	80	(80)	90	(90)
b	77	(77)	91	(91)	98	(98)	118	(118)
b1	39	(39)	46	(46)	49	(49)	59	(59)
b2	60	(60)	75	(75)	75	(75)	90	(90)
c (w/out **H DIL**)	74	(99)	79	(104)	97	(122)	102	(127)
c (with **H DIL**)	76.5	(101.5)	86.3	(113.3)	–	–	–	–
c1	107	(132)	112	(137)	130	(155)	135	(160)
c2	136	(161)	141	(166)	159	(184)	164	(189)
c3	136	(161)	–	–	–	–	–	–

DIL 00M to DIL 2AM
DIL 00M-G to DIL 2AM-G



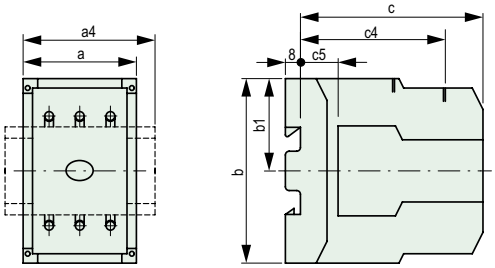
Maintain a minimum spacing of 5 mm between DC operated **DIL 00M-G** to **DIL 2AM-G** contactors mounted side by side.

Overload Relays

Z	00		00		1		1	
a2	34	(34)	34	(34)	42	(42)	47	(47)
a3	45	(45)	45	(45)	60	(60)	60	(60)
b3	120	(120)	133	(133)	153	(153)	171	(171)
b4	19	(19)	18	(18)	26	(26)	27	(27)
c6	90	(115)	96	(121)	91	(116)	91	(116)

2 M4 x 16	2 M5 x 16
00 (A)M	**1 (A)M**
0 (A)M	**2 (A)M**

DIL 3M 80
DIL 4M 115



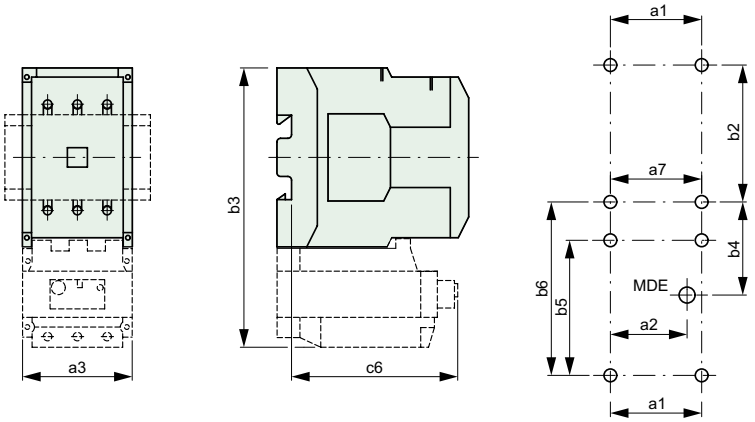
DIL	3 M 80	4 M 115
a	100	120
a1	80	100
a4	112	130
b	130	150
b1	65	75
b2	110	130
c (w/out **H DIL**)	127	137
c4	77	79
c5	20	47

2 M5 x 20	2 M6 x 20
DIL 3M 80	**DIL 4M 115**
Z 5-.../SK 3	**Z 5-.../SK 4**

Overload Relays

Z	5-.../SK 3	5-.../SK 4
a2	57	67
a3	100	120
a7	80	80
b3	238	263
b4	51	56
b5	74	74
b6	95	100
c6	125	125

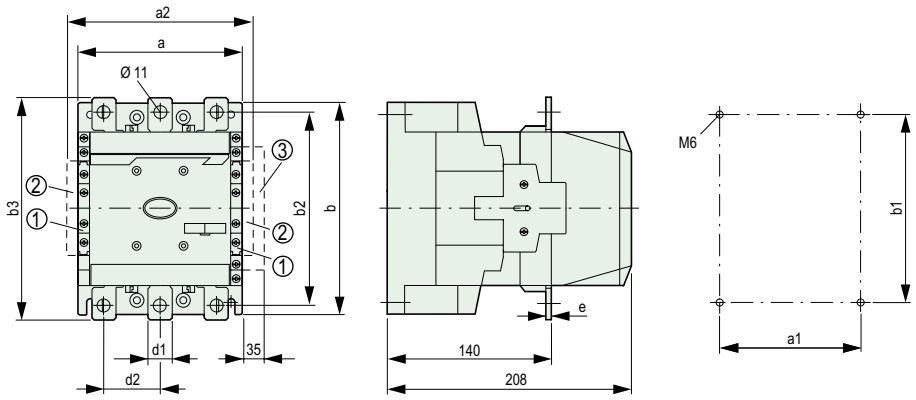
DIL 3M 80 + Z5-.../SK3
DIL 4M 115 + Z5-.../SK4



a4 = With side mounting auxiliary contact module on **DIL 0M** to **DIL 2AM**, with second side mounting auxiliary contact module type **DIL M 820-XHI11-SA** on **DIL 3M 80** to **DIL 4M 115**
a5 = With **N DIL...M** 4th pole module
c1 = With **...DIL M** auxiliary contact module
c2 = With **TP...11 DIL** pneumatic timer module
c3 = With **V(-G) DIL** mechanical latching module

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DIL M 185
DIL M 225
DIL M 250
DIL M 300
DIL M 400
DIL M 500



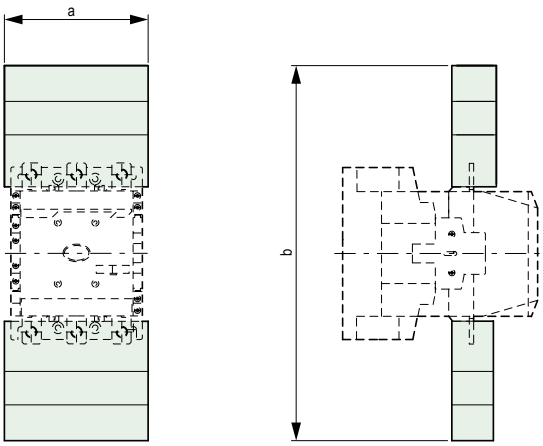
① **DIL M 820-XHI...-SI**
② **DIL M 820-XHI11-SA**
③ **DIL M ...-XMV**

DIL	M 185	M 225	M 250	M 300	M 400	M 500
a	140	140	140	160	160	160
a1	120	120	120	130	130	130
a2	160	160	160	180	180	180
b	180	180	180	200	200	200
b1	160	160	160	180	180	180
b2	164	164	164	184	184	189
b3	189	189	189	209	209	219
d1	20	20	25	25	25	35
d2	48	48	48	48	48	57
e	5	5	5	6	6	6

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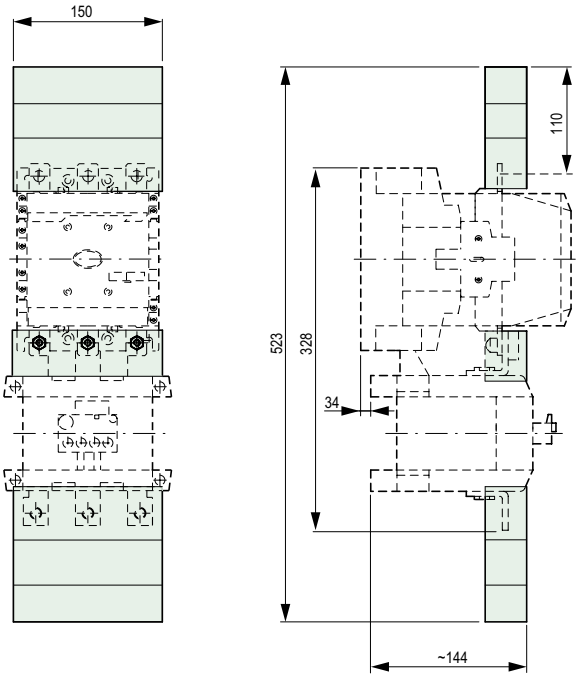
Contactors with Terminals Covers

DIL M 185 to DIL M 500 with DIL M...-XHB



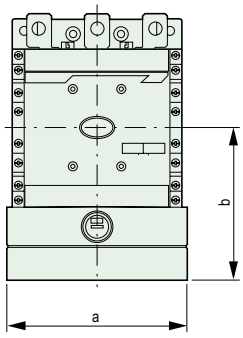
	DIL M 185 DIL M 225 DIL M 250 DIL M 300 DIL M 400 DIL M 185-XP1	DIL M 500
a	150	174
b	384	369

DIL M 185 to DIL M 250 with Z5-.../FF 250



Contactors with Star Point bridges and Terminal Covers

DIL M...-XS1



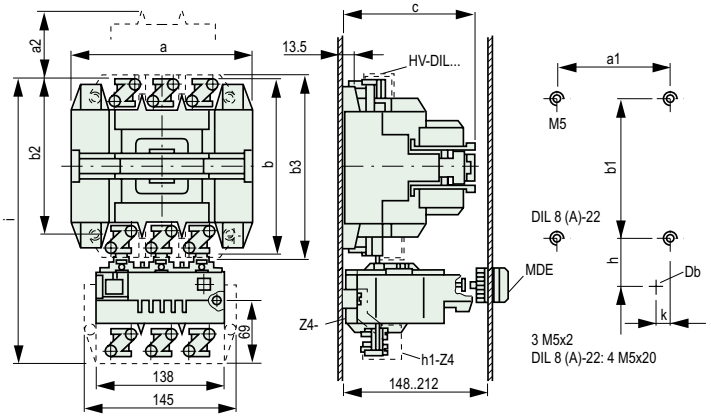
DIL M	185 – 250	300 – 400	500
a	150	150	176
b	127	137	146

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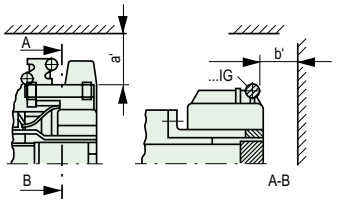
Universal Contactors

DIL 3-22/Z4
DIL 4-22/Z4
DIL 6-22/Z4
DIL 8-22/Z4
DIL 8A-22/Z4

Reset Button
MDE-287



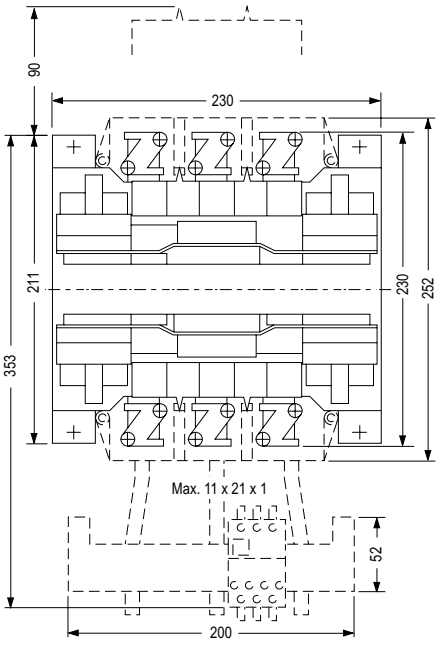
DIL Z	3-22 4.../K 3	4-22 4...	6-22 4...	8(A)-22 4.../K 8
a = b	136	158	182	230
c	131	141	150	190
a1 = b1	118	136	150	192
a2	70	70	70	90
b2	127	147	166	211
h	54	58	57	69
i	254	278	296	353
k	14	23	30	51
b3	152	176	200	252

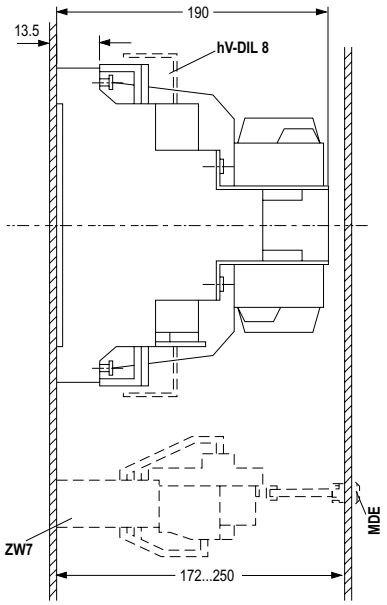


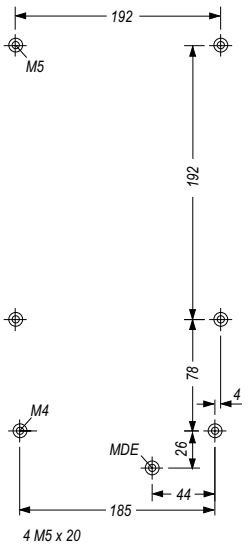
Minimum clearance a' and b' between **DIL.../G** and neighboring components

DIL	3-22/G	4-22/G	6-22/G	8(A)-22/G
a'	65	65	65	65
b'	15	15	15	10

DIL 8-22/ZW7
DIL 8A-22/ZW7



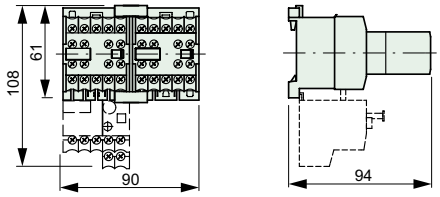




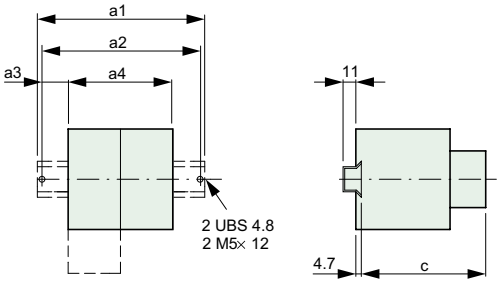
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Reversing Contactors

DIUL E(E)M



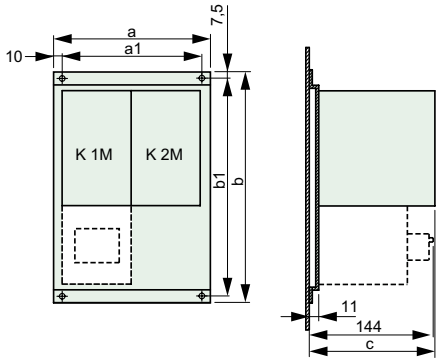
DIUL 00 (A)M/11 to DIUL 2 (A)M/11



DIUL	00 AM	0 M 0 AM	1 M	2 M
a1	114	114	164	189
a2	100	100	150	175
a3	5	5	15	17.5
a4	90	90	120	140
c	107	112	130	135

Note: Width increases by 15 mm for reversing contactors with mechanical interlock

DIUL 3 M 80/11 to DIUL 4 M 115/11



DIUL	3 M 80	4 M 115
a	225	265
a1	205	245
b	268	294
b1	253	279
c	146	156

Note: Width increases by 10 mm for reversing contactors with mechanical interlock

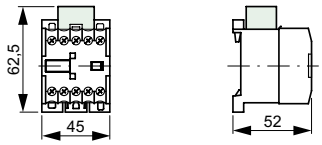
DIUL 3 to 8 A:

Consult Moeller Electric Corporation

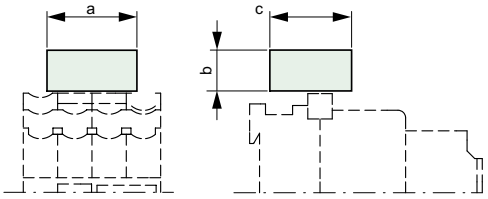
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Surge Suppressors

RC DIL E
VG DIL E



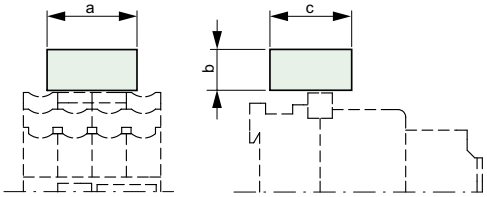
RC B DIL...
RC S DIL...
FD B DIL...
VG B DIL...
VG C DIL...



	RC B DIL	RC S DIL	FD B DIL	VG B DIL	VG C DIL
a	33	33	33	33	38
b	15	15	15	15	8
c	30	30	30	30	33

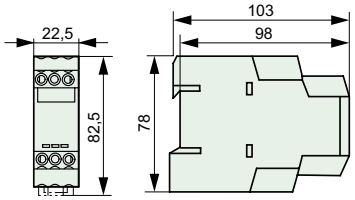
Interface Modules

VS1 DIL
VS2 DIL



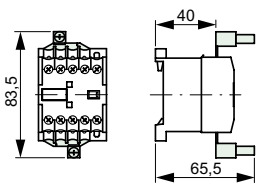
	VS1 DIL VS2 DIL
a	45
b	26
c	55

ETS 4-VS 3

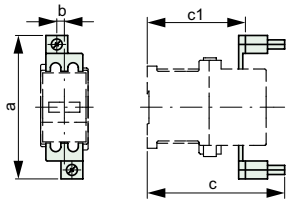


Paralleling Bridges

P1 DIL EM



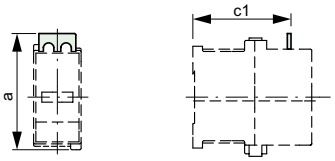
P1 DIL... M



For Type DIL...	a	b	c		c1	
00(A)M(-G)	95	5	91	(116)	65	(90)
0(A)M(-G)	114	–	103	(128)	69	(94)
1(A)M(-G)	170	9	138	(163)	79	(101)
2(A)M(-G)	188	12	138	(163)	79	(101)
3M 80	195	19	150		88	
4M 115	244	17	182		92	

Star-point Bridges

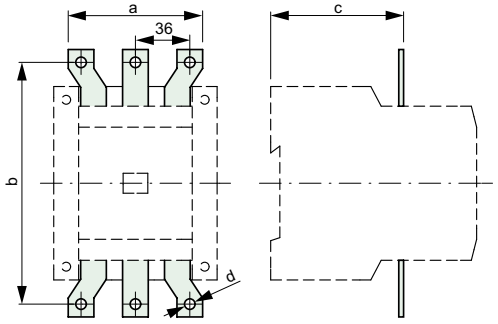
S1 DIL...M



Type	a	c1
S1 DIL 00M	77	65
S1 DIL 0M	91	69
S1 DIL 1M	106	79
S1 DIL 2M	126	79
S1 DIL 3M	150	92
S1 DIL 4M	169	93

Adapter

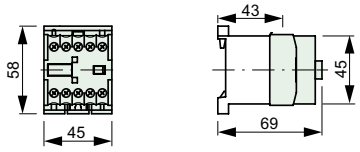
AK DIL...M



Type	AK DIL...	
For DIL	3M 80	4M 115
a	89	94
b	160	190
c	88	91
d	7	8.4

Tamper-proof Transparent Cover

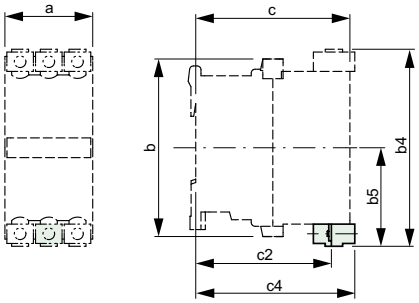
H DIL E



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Supplementary Terminals

ZK DIL 0M
ZK DIL 1M
ZK DIL M
HK DIL M

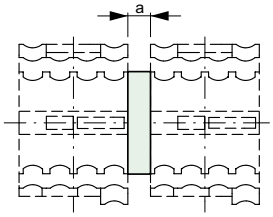


	ZK DIL 0M		ZK DIL 1M				ZK DIL M	
DIL	**0M 0AM**	**(-G) (-G)**	**1M 1AM**	**(-G) (-G)**	**2M 2AM**	**(-G) (-G)**	**3M 80**	**4M 115**
a	45	(45)	60	(60)	70	(70)	100	120
b	91	(91)	98	(98)	118	(118)	–	–
b4	101	(101)	98	(98)	112.5	(112.5)	136	166
b5	50.5	(50.5)	49	(49)	56.3	(56.3)	68	83
c	79	(104)	97	(122)	102	(127)	127	137
c2 (max. with **HK DIL M**)	69.5	(94.5)	80.5	(105.5)	80.5	(105.5)	102	105
c4 (max. with **HK DIL M**)	81.5	(106.5)	92.5	(117.5)	92.5	(117.5)	118	121

	HK DIL M...			
DIL	**1M 1AM**	**(-G) (-G)**	**2M 2AM**	**(-G) (-G)**
a	60	(60)	70	(70)
b	98	(98)	118	(118)
b4	104.5	(104.5)	123	(123)
b5	52.3	(52.3)	61.5	(61.5)
c	97	(122)	102	(127)
c2	73.5	(98.5)	74.2	(99.2)
c4	107.4	(132.4)	107.7	(132.7)

Mechanical Interlocks

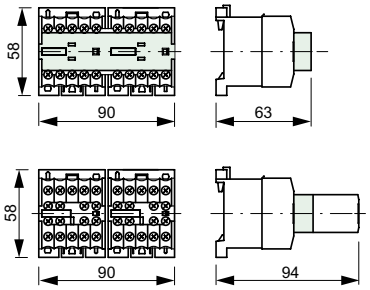
MV DIL M
DIL M 500-XMV



DIL	**00M(-G) up to 2AM(-G)**	**3M 80 up to 4M 115**	**DIL M 185 up to DIL M 500**
a	15	10	15

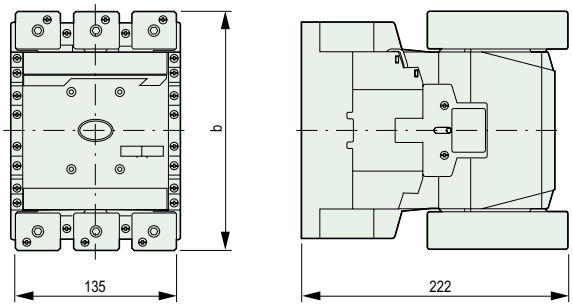
V-DIL...:
Consult Moeller Electric Corporation

MV DIL E



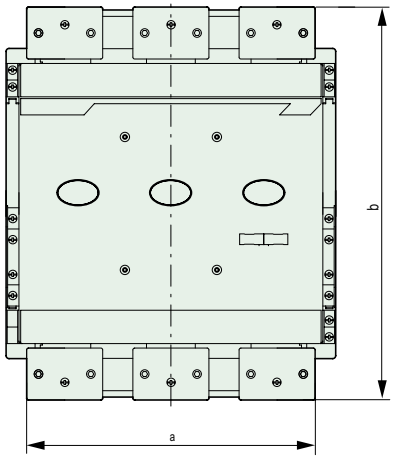
Cable Terminal Blocks

DIL M...-XKU-S



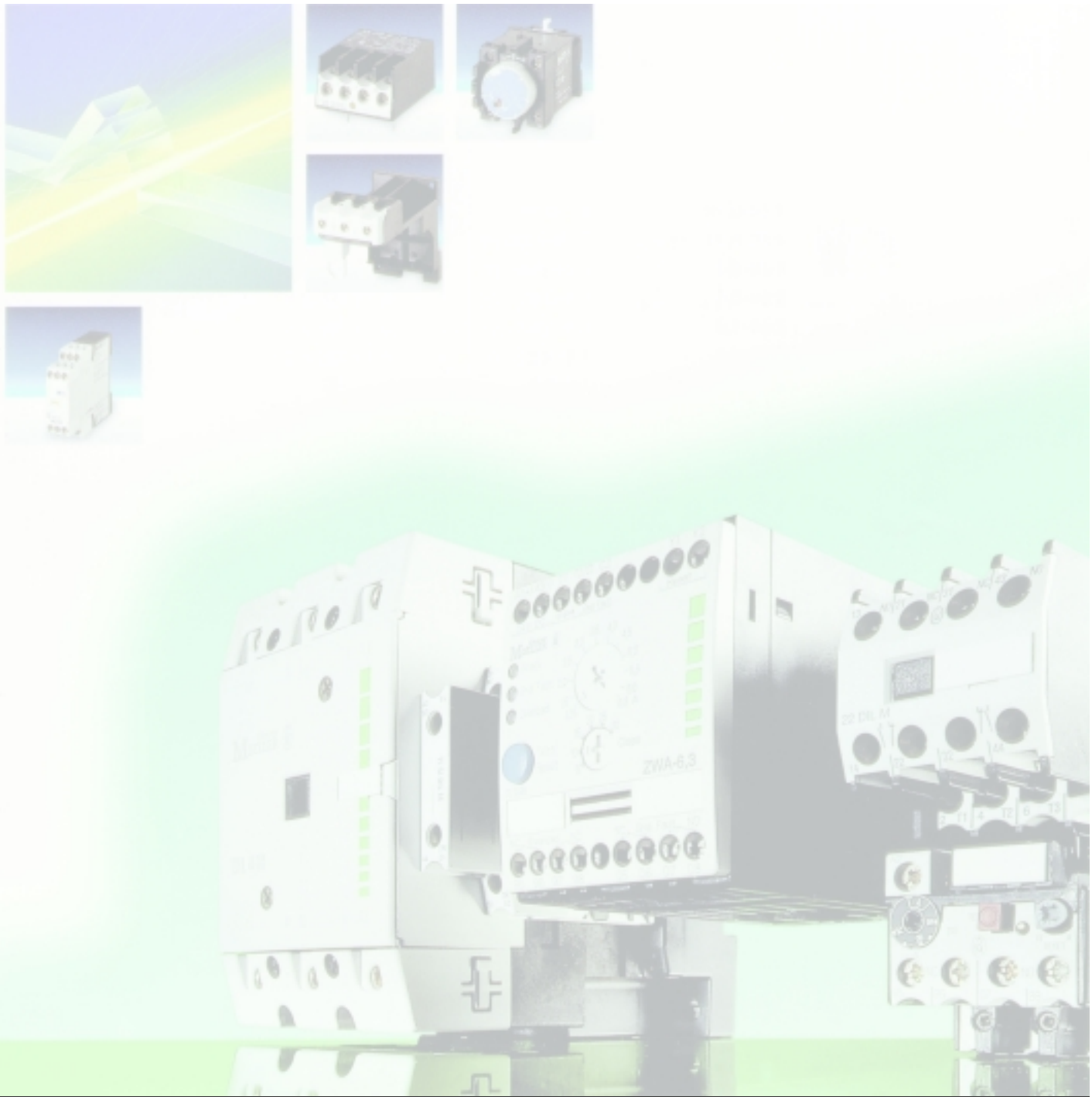
For **DIL M**	185 – 225	250	300 – 400
b	198	198	218

DIL M 500-XKB-S



For **DIL M**	500
a	171
b	232

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